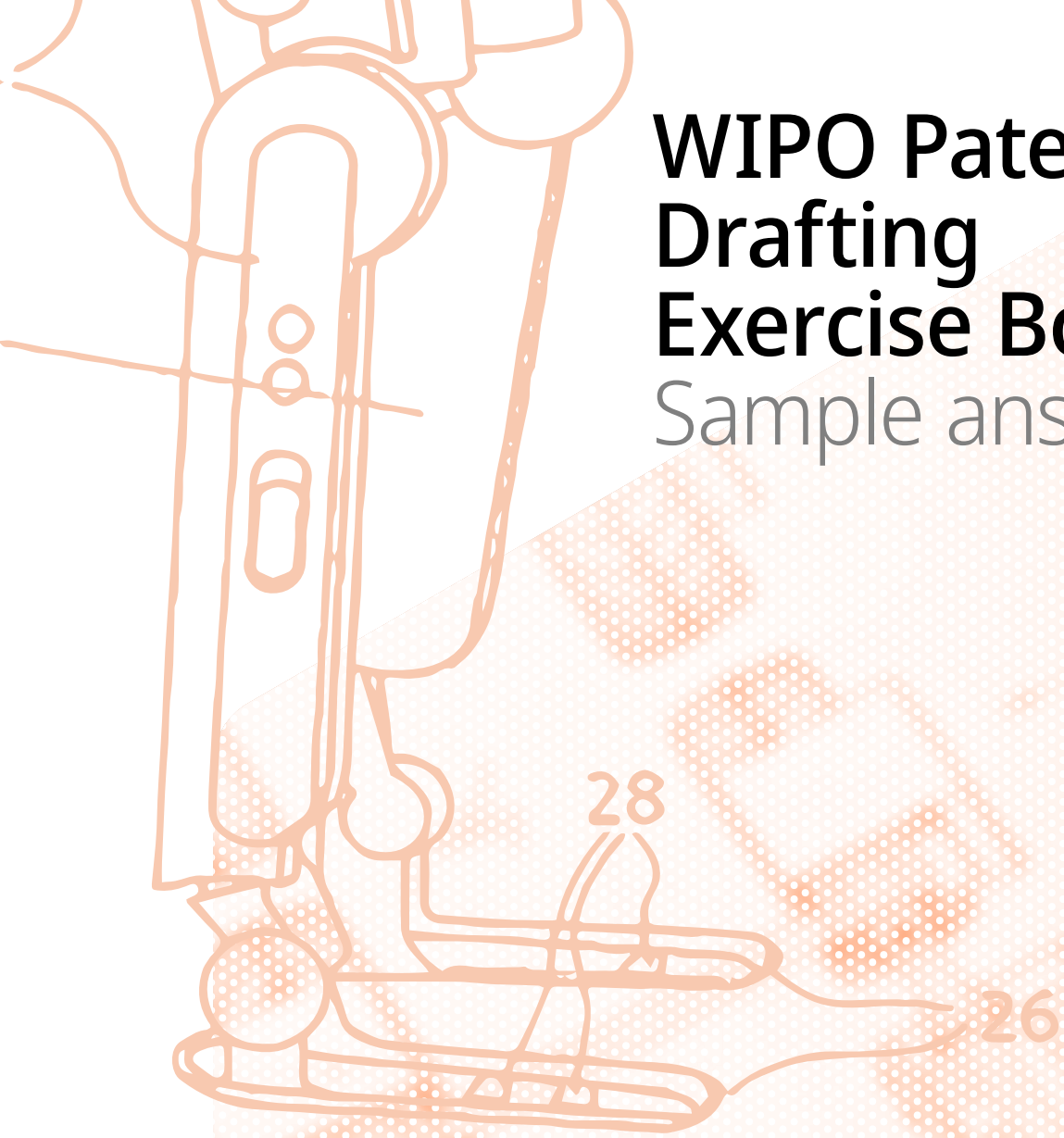
# WIPO Patent Drafting Exercise Book

## Sample answers




WIPO

This booklet contains sample answers to the exercises contained in the *WIPO Patent Drafting Exercise Book*. The sample answers are one possible way of drafting patent claims or specifications and only indicate examples.

National/regional patent laws and practices vary, particularly with respect to patentable subject matter, acceptable claim formats and other patent drafting practices. The sample answers may reflect one particular national/regional practice, which should not be considered as universally acceptable.

# WIPO Patent Drafting Exercise Book

## Sample answers

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WORLD
INTELLECTUAL PROPERTY
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# Contents

# Exercises in Chapter 1 Multiple-choice and short answer questions

## 1.1 General knowledge on patents

### Role of a patent system

**Question 1:** A, C

### Purpose of patent protection

**Question 2:** All parts are true

### Intangible assets

**Question 3:** B

### Different IP

**Question 4:** C

### Patents and trade secrets

**Question 5:** B, F

### Inventorship and ownership

**Question 6:** False; True; True; False; True; False; True

### Exclusive patent rights

**Question 7:** A, C, E

### Priority claim

**Question 8:** True; False; False

**Question 9:** B, D

### Territoriality

**Question 10:** (1) D
(2) A

**Question 11:** D

### Patent Cooperation Treaty

**Question 12:** False; True; False; False; True; False

### Prior art

**Question 13:** B, C, D

**Question 14:** A

**Question 15:** C

**Question 16:** True; False; False; False

**Question 17:** B

**Question 18:** C, D

**Question 19:** C

**Question 20:** B, C, D

## 1.2 Patent drafting theory

### General structure and purpose of each part of a patent application

**Question 21:** (a) Request, Description, Claims, Drawings and Abstract.[1]
(b) For example, a power of attorney, a copy of the earlier application on which priority is based, a nucleotide and/or amino acid sequence listing and a document relating to the applicant's entitlement to file a patent application may be required in certain applicable cases.

**Question 22:** All answers are false.

**Question 23:** (a) A. Request – (5), (6), (8)
B. Claims – (1), (6), (8), (10)
C. Description – (4), (6), (8), (9)
D. Drawings – (3), (7), (8), (9)
E. Abstract – (2), (6), (8), (9)
(b) Many patent drafters prepare claims first, because it helps them better refine the novel and inventive concept of the invention in their mind. Since the claims define the scope of protection, starting with drafting claims assists patent drafters to formulate the claimed invention in other parts of a specification, particularly in the description and drawings.

1 The exact name of each part of patent applications may be slightly different in various jurisdictions.

## Claims

**Question 24:** E. Using a term "leg" might preclude the possibility of supporting a platform by a member having a shape of, for example, a board or a plank. The terms "chair," "seat" and "wooden" would unduly limit the claims for a specific use or to a specific material.

**Question 25:** C

**Question 26:** (a) (i) preamble part – A vehicle for transporting a person over ground
(ii) transition phrase – comprising
(iii) body part – a frame carrying a seat for the person to sit on and at least one wheel rotationally supported by the frame to make rolling contact with the ground.

Novel features: a seat for the person to sit on.

(b) (i) preamble part – A vehicle for transporting a person over ground
(ii) transition phrase – comprising
(iii) body part – a frame carrying a seat for the person to sit on and only two wheels, each wheel rotationally supported by the frame to make rolling contact with the ground.

Novel features: only two wheels.

**Question 27:** A. Claim A uses a transitional phrase "comprising."

**Question 28:** A: The words "consisting of" can be replaced with the word "comprising." In addition, it may be preferable not to limit the dispenser to be a toothpaste dispenser or to contain only toothpaste. The claim may be drafted in a way that it covers a tube dispenser for other products.

B: The use of relative terms, such as "wide," "narrow," "long" and "short" should be avoided, because such words do not often provide clear limitations unless they are used with reference to another claim element. For example, in relation to a first wiper and a second wiper, the relevant part of the claim may read:

"a first wiper with a first rubber strip;

a second wiper with a second rubber strip, wherein the first wiper is longer than the second wiper."

In addition, the claim is not clear, because the connection between each element (such as a wind screen, a rear screen, a motor etc.) is not clearly described.

Furthermore, the preamble "a car" may be replaced by another term, for example, "a vehicle," which would cover other similar means.

C: There is no antecedent basis for the words "the scooter." The term in the preamble, "vehicle," should be used.

The relative terms, "front" and "back" should be avoided, since if the vehicle moves backwards, what is claimed as "back" can become "front." One possible way of avoiding these terms is to define the position with reference to the iron frame, for example, one end of the iron frame and the other end of the iron frame.

D: The phrase "moving the cut corn into a hopper" is a process step that is not adequate for an apparatus claim. One possible way is to define it with elements such as "a hopper" and "a conveyor member that moves the cut corn to the hopper."

## Independent/dependent claims

**Question 29:** A set of claims in a patent application normally includes one or more independent claims and a number of dependent claims. A set of claims that range from the broadest to narrowest scope may effectively capture the complete scope of the invention, which is, having regard to prior art, novel and non-obvious. Narrower dependent claims often serve as fallback positions, in case where the broader claims are rejected because of the existence of prior art that destroys novelty and/or inventive step of such broader claims.

**Question 30:** 1. A device, comprising a pencil, an eraser attached at one end of the pencil, and a light attached to the central part of the pencil.

## Dependencies and multiple dependencies

**Question 31:** 1. An apparatus comprising: a pencil; and an eraser attached to the pencil.
2. The apparatus of Claim 1, wherein the eraser is attached to one end of the pencil.
3. The apparatus of Claim 1, further comprising a light attached to the pencil.
4. The apparatus of Claim 1, wherein the pencil is made of wood.
5. The apparatus of Claim 3, wherein the light is detachably attached to the pencil.
6. The apparatus of Claims 3 or 5, further comprising a photoelectric device controlling luminosity of the light.
7. The apparatus of Claims 1 or 3, further comprising a pencil lead release button attached to the pencil.
8. The apparatus of Claim 3, wherein the eraser is attached to one end of the pencil.

The apparatus of Claim 8, wherein the pencil lead is red in color.

Regarding the dependent Claims 2 and 8 (re-numbered), Claim 2 may be deleted and Claim 8 may be drafted in a multiple dependent claim format, by referring to "Claim 1 or Claim 3 [to be re-numbered after the deletion of Claim 2]."

## Claim categories

**Question 32:** (i) product claims: A, B, C, F, G, I
(ii) process claims: D, H
(iii) product by process claims: E

**Question 33:** A method for performing an internet search, the method comprising:
storing search request data;
performing a search on the internet based on the search request data;
storing results produced by the search; and presenting the search results.

**Question 34:** B, D

## Patent infringement and invent-around by competitors

**Question 35:** A, B, C, E

**Question 36:** C

## Analyzing claims

**Question 37:** E.
A and D are not novel, because a layer of gold on an n-type GaAs substrate to form an ohmic contact is already known.
B and C uses a process claim format, while the preamble of the claim in question shows that it is a product claim.

**Question 38:** C.
B and D do not recite the features of a method claim with steps (...ing). The feature in A and E, i.e., decomposition of water into pure hydrogen and pure oxygen, does not accurately characterize the invention.

**Question 39:** E.
Lack of antecedent basis is found in A ("the weighted end portion") and D ("said hook portion"). B does not accurately describe the invention, since if the alloy has a higher melting point than the metallic hook, the hook would melt in the alloy during the coating process. C is anticipated by the prior art.

**Question 40:** C.
According to the graph, the friction efficiency is less than 0.6 when the Cr2O3 content ratio is in the range of 20% to 60% by weight. A, B, D and E cover the range where the friction efficiency is more than 0.6.

**Question 41:** A.
B and C are not in the correct Markush claim format. D is anticipated by the prior art (platinum). E does not properly claim the invention: the claimed invention in E requires presence of each of silver, hold and iridium.

**Question 42:** D.
A lacks antecedent basis ("said first and second signals"). B uses a process claim format, while the preamble of the claim in question shows that it is a product claim. C and E are anticipated by the prior art.

**Question 43:** A.
B to E are anticipated by the prior art.

**Question 44:** B.
A lacks clarity, since it is not clear whether the words "said wall" refer to a side wall or a bottom wall. C and D lack the antecedent basis ("the bottom wall"). E is anticipated by the prior art.

**Question 45:** E.
A and D are misdescriptive of the invention, since the polyp is marked, but not crushed. B lacks the antecedent basis ("the extended and retracted positions"). C is anticipated by the prior art.

**Question 46:** (1) E.
The description states that each alloy has a higher melting temperature than the alloy previously applied.

(2) D.

(3) B.
The description states that compounds which have a common property that function in a manner to be used as the passivation layer are gallium nitride, silicon nitride and silicon oxynitride.

(4) C.
Claims shall be drafted in one sentence.

(5) E.
The description states that a diffusion barrier metal layer 31 is deposited over the adhesion layer 32.

(6) A.

(7) D.
Claim 4 cannot refer to the succeeding Claim 5.

# Exercises in Chapter 2 Drafting claims

## 2.1 Exercise 1: Staple remover

**Question 1:** The overall purpose of the tool is to remove staples from pieces of paper.

**Question 2:** A problem is – how to enable many staples to be removed in quick succession.

**Question 3:**
(i) How to enable many staples to be removed in quick succession.
(ii) How to grip staples.
(iii) How to allow for easy disposal of the removed staple.
(iv) How to address spring fatigue during repeated use.
(v) How to enable comfortable operation.
(vi) How to enable safe operation.
(vii) How to improve the compactness of the tool.
(viii) How to improve teeth durability.

**Question 4:**

(i) Problem: How to enable many staples to be removed in quick succession.
**Solution:** Torsion spring to force teeth to return to their original position once the gripping pressure is released.

(ii) Problem: How to grip staples.
**Solution:** Pivoting movement of teeth on jaws.

(iii) Problem: How to allow for easy disposal of the removed staple.
**Solution:** Torsion spring to force teeth to return to their original position once the gripping pressure is released.

(iv) Problem: How to address spring fatigue during repeated use.
**Solution:** Torsion spring comprises chrome-plated steel.

(v) Problem: How to enable comfortable operation.
**Solution:** Plastic finger grips.

(vi) Problem: How to enable safe operation.
**Solution:** Locking pin to allow the jaws to remain closed.

(vii) Problem: How to improve the compactness of the tool.
**Solution:** Locking pin to allow the jaws to remain closed.

(viii) Problem: How to improve teeth durability.
**Solution:** Teeth comprise metal.

**Question 5:**

(i) Problem: How to enable many staples to be removed in quick succession.
Solution: Torsion spring to force teeth to return to their original position once the gripping pressure is released.
**Prior Art:** No torsion spring. There are pivoting parts and hence no spring.

(ii) Problem: How to grip staples.
Solution: Pivoting movement of teeth on jaws.
**Prior Art:** No. As the prior art works by levering the staple out of the paper, there are no gripping parts.

(iii) Problem: How to enable comfortable operation.
Solution: Plastic finger grips.
**Prior Art:** Equivalent: Prior art includes a plastic handle, which is equivalent to the plastic grips (both are the components that are held by an operator during use of the device).

(iv) Problem: How to address spring fatigue during repeated use.
Solution: Chrome-plated steel torsion spring.
**Prior Art:** No torsion spring. There are pivoting parts and hence no spring.

(v) Problem: How to allow for easy disposal of the removed staple.
Solution: Torsion spring to force teeth to return to their original position once the gripping pressure is released.
**Prior Art:** No torsion spring. There are pivoting parts and hence no spring.

(vi) Problem: How to enable safe operation.
Solution: Locking pin to allow the jaws to remain closed.
**Prior Art:** No: prior art works by levering the staple out of the paper, there are no pivoting parts and hence no locking pin.

(vii) Problem: How to improve the compactness of the tool.
Solution: Locking pin to allow the jaws to remain closed.
**Prior Art:** No: prior art works by levering the staple out of the paper, there are no pivoting parts and hence no locking pin.

(viii) Problem: How to improve teeth durability.
Solution: Metal teeth.
**Prior Art:** Equivalent: prior art includes a metal plate, which is equivalent to the teeth (both are the components that contact the staples).

**Question 6:**

(i) Teeth
(ii) Teeth comprise metal
(iii) Jaws
(iv) Finger grips
(v) Finger grips comprise plastic
(vi) Locking pin
(vii) Lockable movement of jaws/teeth
(viii) Torsion spring
(ix) Forced return of jaws/teeth to their original position
(x) Torsion spring comprises chrome-plated steel
(xi) Pivotal movement of jaws/teeth.

## Question 7:

| | Technical features | Technical effects |
|---|---|---|
| i | Teeth | For gripping staples |
| ii | Teeth comprise metal | Durability |
| iii | Jaws | Support the teeth |
| iv | Finger grips | Comfortable operation |
| v | Finger grips comprise plastic | Comfortable operation |
| vi | Locking pin | Safety and compactness – allows the jaws to remain closed |
| vii | Lockable movement of jaws | Safety and compactness – allows the jaws to remain closed |
| viii | Torsion spring | Biases the jaws to an open position, allowing for easy disposal of the removed staple and removal of many staples in quick succession |
| ix | Forced return of jaws to their original position | Biases the jaws to an open position, allowing for easy disposal of the removed staple and removal of many staples in quick succession |
| x | Torsion spring comprises chrome-plated steel | Improved fatigue properties during repeated use |
| xi | Pivotal movement of jaws/teeth | For gripping staples |

## Question 8:

| | Technical features | Technical effects |
|---|---|---|
| i | Teeth | For gripping staples |
| xi | Pivotal movement of jaws/teeth | |
| ii | Teeth comprise metal | Durability |
| iii | Jaws | Support the teeth |
| iv | Finger grips | Comfortable operation |
| v | Finger grips comprise plastic | |
| vi | Locking pin | Safety and compactness – allows the jaws to remain closed |
| vii | Lockable movement of jaws | |
| viii | Torsion spring | Biases the jaws to an open position, allowing for easy disposal of the removed staple and removal of many staples in quick succession |
| ix | Forced return of jaws to their original position | |
| x | Torsion spring comprises chrome-plated steel | Improved fatigue properties during repeated use |

## Question 9:

| | Technical features | Technical effects | Prior art |
|---|---|---|---|
| i | Teeth | For gripping staples | Equivalent. Prior art includes a plate |
| xi | Pivotal movement of jaws | | No. Prior art works by levering the staple out of the paper. There are no gripping parts |
| ii | Teeth comprise metal | Durability | Equivalent. Prior art includes a metal plate |
| iii | Jaws | Support the teeth | Equivalent. Prior art includes a handle for supporting the plate |
| iv | Finger grips | Comfortable operation | Equivalent. Prior art includes a handle, which is equivalent to the plastic grips (both are the components that are held by an operator during use of the device) |
| v | Finger grips comprise plastic | | Equivalent. Prior art includes a plastic handle |
| vi | Locking pin | Safety and compactness – allows the jaws to remain closed | No. Prior art works by levering the staple out of the paper. There are no pivoting parts and hence no locking pin |
| vii | Lockable movement of jaws | | No. Prior art works by levering the staple out of the paper. There are no gripping parts and hence no locking pin |

| | Technical features | Technical effects | Prior art |
|---|---|---|---|
| viii | Torsion spring | Biases the jaws to an open position, allowing for easy disposal of the removed staple and removal of many staples in quick succession | No. There are no pivoting parts and hence no spring |
| ix | Forced return of jaws to their original position | | No. There are no pivoting parts and hence no forced return |
| x | Torsion spring comprises chrome-plated steel | | No. There are no pivoting parts and hence no spring |

**Question 10:** (i) the preamble;
(ii) the transitional phrase; and
(iii) the body.

**Question 11:** There is no single right answer here. The invention relates to a physical entity (rather than a method) and any broad term to refer to any physical entity suitable for removing staples would be acceptable here.

Exemplary terms include "A tool," "A device," "A gadget," "An implement," etc.

**Question 12:** Again, there is no single right answer here. Any open-ended phrase would be suitable. Generally, claim drafters use the word "comprising" for open-ended claims.

**Question 13:** (a) The following features are the minimum essential features:
- pair of jaws
- pivotal movement of the jaws
- tooth on each jaw to grip staple.

(b) The following features are not involved in this primary aspect of the invention:
- teeth comprise metal
- finger grips
- finger grips comprise plastic
- locking pin
- torsion spring
- torsion spring comprises chrome-plated steel.

**Question 14:** 1. A tool for removing fasteners, the tool comprising:
a pair of jaws,
a tooth on each jaw, the tooth of one jaw opposing the tooth of the other jaw, wherein jaws are pivotable relative to one another between a first position in which the teeth are brought together and a second position in which the teeth are apart.

NOTE: It is emphasized here that this claim is not the only correct answer. There are many ways to draft an independent claim directed to this invention and this is merely an example.

**Question 15:** Not applicable.

**Question 16:** 2. The tool as claimed in claim 1.....

NOTE: Here, the statement of dependency used is "...as claimed in claim 1...." There are many options that would be equally acceptable, such as "... according to claim 1...," "...of claim 1...," "...as defined in claim 1...," etc.

**Question 17:** 2. The tool as claimed in claim 1, further comprising a locking pin for releasably locking the pair of jaws in the second position.

**Question 18:** 3. The tool as claimed in claim 1 or claim 2, wherein the teeth comprise metal.

NOTE: The statement of dependency in claim 3 refers to claim 1 or claim 2. This means that claim 3 covers: (i) the features of claim 3 in combination with the features of claim 1 ("as claimed in claim 1"); and optionally (ii) the features of claim 3 in combination with the features of claims 1 and 2 ("as claimed in claim 2," noting that claim 2 is itself dependent on claim 1, meaning that a dependency on claim 2 indirectly incorporates the features of claim 1 as well).

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**TIP**

A claim having multiple dependencies is known as a "multiply dependent claim." It is standard (and indeed recommended) practice to include such multiply dependent claims in European claim drafting (i.e. for prosecution before the European Patent Office) and is in some jurisdictions.

Please note that some other jurisdictions have different rules relating to multiply dependent claims. For example, in the United States of America (i.e. for prosecution before the United States Patent and Trademark Office), there are restrictions on multiply dependent claims: for example, multiple dependent claims may not depend on another multiple dependent claim.

The remainder of this exercise will be based on European claim drafting practice, where multiple dependencies are permitted.

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**Question 19:** 4. The tool as claimed in any preceding claim, wherein the tool is biased towards the second position by means of a torsion spring.

NOTE: In the example answer of Question 19, the statement of dependency refers to "any preceding claim." This is standard patent terminology to refer to any one of claims 1, 2 or 3. This means that claim 4 covers various permutations of features. Specifically, claim 4 covers the features of claim 4 in combination with the features of:

- claim 1;
- claims 1 and 2;
- claims 1 and 3;
- claims 2 and 3; or
- claims 1, 2 and 3.

Alternative ways of writing this dependency would be "...according to any one of claims 1 to 3...," "...of claim 1, 2 or 3...," "...as defined in any one of claims 1 to 3...," etc.

**Question 20:** 4. The tool as claimed in any preceding claim, wherein the tool is biased towards the second position.

**Question 21:** 5. The tool as claimed in claim 4, wherein the bias is provided by a torsion spring.

NOTE: Here, the claim is dependent on claim 4, rather than "any preceding claim." This is because we refer to "the bias" and we must have antecedent basis for that bias. The bias is first introduced in claim 4, and we must refer to claim 4 to gain proper antecedent basis.

**Question 22:** 5. The tool as claimed in claim 4, wherein the bias is provided by a spring.

**Question 23:** 6. The tool as claimed in claim 5, wherein the spring is a torsion spring.

**Question 24:** 7. The tool as claimed in claim 5 or 6, wherein the spring comprises chrome-plated steel.

**Question 25:** 8. The tool as claimed in any preceding claim, wherein one or both jaws are provided with gripping members.

9. The tool as claimed in claim 8, wherein the or each gripping member comprises plastic.

10. The tool as claimed in any preceding claim, further comprising a locking pin for releasably locking the pair of jaws in the second position.

11. The tool as claimed in any preceding claim, wherein the teeth comprise steel.

12. The tool as claimed in any preceding claim, wherein the teeth comprise stainless steel.

**Question 26:** Not applicable.

## 2.2 Exercise 2: Tea pot

**Question 1:** Overall purpose of article 1: a tea pot for serving or dispensing tea.
Overall purpose of article 2: a tea cup for receiving tea

**Question 2:** Problem 1: How to reduce time to fill many cups?

**Question 3:** Problem 2: How to better handle a cup?

**Question 4:** Problem 1: How to reduce time to fill many cups?

Solution 1: By adding a second spout to the tea pot.

Problem 2: How to better handle a cup (improving also comfort and safety)?

Solution 2: By adding a second handle.

**Question 5:**

| Prior Art | 1 | 2 |
|---|---|---|
| Problem | How to reduce time to fill many cups? | How to better handle a cup (and improving safety and comfort)? |
| Solution | By adding a second spout to the tea pot. | By adding a second handle. |
| Prior art | No: there is only one spout.<br>To solve this problem you should use two tea pots simultaneously, for example, by using your two hands or by hiring two waiters. | No: there is only one handle. |

**Question 6:**

| Prior Art | 1 | 2 |
|---|---|---|
| Problem | How to reduce time to fill many cups? | How to better handle a cup (and safety improving also comfort)? |
| Solution | By adding a second spout to the tea pot. | By adding a second handle. |
| Prior art | No: there is only one spout.<br>To solve this problem you should use two tea pots simultaneously, for example, by using your two hands or by hiring two waiters. | No: there is only one handle. |
| Dependency | No | No |

**Question 7:** Problem 1 fulfills a commercial need and its solution solves a technical problem which represents a gain of time (filling time reduced) and of money (no need to hire additional waiter).

Problem 2 does not seem to respond to a commercial need, besides, one single handle for handling a cup of tea is usually sufficient. The public of the invention could be young children (babies) or elderly people subject to Parkinson's disease or the like. The problem would not be fully solved, at least for young children, because it is not sufficient to have a second handle connected to the cup; it would also be necessary to cover the cup to prevent the liquid from spilling at the top edge of the cup. An additional system such as the one for baby bottles would be necessary. In addition to this, babies do not usually drink tea. The protection of a tea cup having two handles appears therefore of no commercial interest.

The protection of a tea pot having two spouts appears therefore of commercial interest.

**Question 8:**
- a container (1 in Figure 1)
- a spout (3)
- a second spout (3)
- a handle (2)
- a cover (4)

**Question 9:** Not applicable.

**Question 10:**
A suggested claim 1 would be:

1. A vessel for dispensing a liquid comprising a hollow body (1) adapted to be filled with a liquid and means (3) for discharging the liquid, characterized in that the means for discharging the liquid consists of a plurality of spouts (3).

Alternatively if you do not choose the two-part format and do not include reference signs:

1. A vessel for dispensing a liquid comprising a hollow body adapted to be filled with a liquid and means for discharging the liquid consisting of a plurality of spouts.

**Question 11:**
The examples of dependent claims are as follows.

2. The vessel according to claim 1, wherein the vessel has two spouts (3).
3. The vessel according to claim 2, wherein the hollow body (1) of the vessel is provided with a handle (2) and the two spouts (3) are attached to the hollow body (1) on the side opposite to the handle (2).
4. The vessel according to claim 2 or 3, wherein the spouts (3) are at a distance allowing to fill simultaneously two cups placed next to each other on a support surface.
5. The vessel according to any of the preceding claims wherein the vessel is suitable to serve tea.

## 2.3 Exercise 3: Dimple key

**Question 1:** (1)
List of technical features

| |
|---|
| Elongated bar |
| Elongated bar is made of metal |
| Elongated bar is rectangular in cross section and rectangular in plan view (forming two “flat” sides and two “edges”) |
| Elongated bar has beveled corners at distal end |
| A plurality of dimples |
| Dimples are aligned linearly in rows, but spaced randomly, along the length of the elongated bar |
| Two or more rows of dimples can be present |
| Dimples are of varying depth and width |
| Dimple pattern corresponds to pin pattern in a lock |
| Dimple pattern is repeated on both flat sides of the elongated bar |
| Finger grip |

(2)

| Technical feature | Technical effect | Prior art |
|---|---|---|
| Elongated bar | A structural element | References 1 and 3, elongated bars. |
| Elongated bar is made of metal | Durability, low cost and high processability | References 1, a bar of metal |
| Elongated bar is rectangular in cross section and rectangular in plan view (forming two “flat” sides and two “edges”) | Provides a surface for dimples | References 1 and 3 |
| Elongated bar has beveled corners at distal end | Enhances user experience, improves insertion of key into lock | None |
| A plurality of dimples | Interfaces with lock in unique combination | References 2 and 3 |
| Dimples are aligned linearly in rows, but spaced randomly, along the length of the elongated bar | Standardizing of production | References 2 and 3 |
| Two or more rows of dimples can be present | Increases number of permutations and variability of key, reduces likelihood of random duplicates | References 2 and 3 |
| Dimples are of varying depth and width | Increases variability of key, reduces likelihood of random duplicates | Reference 2 |
| Dimple pattern corresponds to pin pattern in a lock | Only the unique dimple pattern aligns the pins, thus opening the lock | Reference 1 |
| Dimple pattern is repeated on both flat sides of the elongated bar | Key functions equally in two orientations | None |
| Finger grip | Ease of operability | Reference 1 |

**Question 2:**
An example of an independent claim begins as follows:

1. A device comprising:
   - an elongated bar;

The second limitation relates to the first, and introduces a technical feature that is critical to the operation of the key:

1. A device comprising:
   - an elongated bar;
   - a plurality of dimples disposed on a face of the elongated bar;

The third limitation again relates to our backbone technical feature, and provides another feature that will be found on all dimple keys:

1. A device comprising:
   - an elongated bar;
   - a plurality of dimples disposed on a face of the elongated bar; and
   - a finger grip attached to a proximal end of the elongated bar.

This could be the entire claim, if such a device (an elongated bar with a grip, and dimples on the bar) is not known in the prior art. Indeed, our three prior art references do not disclose any such device, and it may be wise for the drafter to leave claim 1 in this form. However, there is no indication from the claim, yet, as to the function of the device. The drafter has two choices for introducing a function: either mention the function in the preamble, or introduce a function into one of the limitations. Using the first option, the claim might read as follows:

1. A device for opening a lock, the device comprising:
   - an elongated bar;
   - a plurality of dimples disposed on a face of the elongated bar; and
   - a finger grip attached to a proximal end of the elongated bar.

In this claim, assigning functionality to the various structural features can be done in dependent claims. Using the second option, the claim might read as follows:

1. A device comprising:
   - an elongated bar;
   - a plurality of dimples disposed on a face of the elongated bar, wherein the dimples are arranged to be complementary to a set of pins in a lock; and
   - a finger grip attached to a proximal end of the elongated bar.

Again, a variety of factors will help the drafter to decide which strategy to use, such as the prior art, clarity of the claim and personal preference.

**Question 3:**
An example of a full set of claims, using dependent claims referring back to the independent claim 1, may look as follows:

1. A device comprising:
   - an elongated bar;
   - a plurality of dimples disposed on a face of the elongated bar, wherein the dimples are arranged to be complementary to a set of pins in a lock; and
   - a finger grip attached to a proximal end of the elongated bar.

2. The device of claim 1, wherein the elongated bar is made of metal.
3. The device of claim 1, wherein the elongated bar comprises beveled corners at a distal end.
4. The device of claim 1, wherein the plurality of dimples are aligned linearly in one or more rows, but spaced randomly, along the length of the elongated bar.
5. The device of claim 1, wherein the plurality of dimples are aligned linearly in at least two rows along the length of the elongated bar.
6. The device of claim 1, wherein the dimples are of varying depth and width.
7. The device of claim 1, wherein the plurality of dimples are arranged in a pre-determined pattern, and wherein the device further comprises a second plurality of dimples arranged in the pre-determined pattern along a second face of the elongated bar.
8. The device of claim 1, wherein the elongated bar is made of metal, and wherein the plurality of dimples are aligned linearly in rows, but spaced randomly, along the length of the elongated bar.
9. The device of claim 1, wherein: the plurality of dimples are aligned linearly in one or more rows, but spaced randomly, along the length of the elongated bar; the plurality of dimples are arranged in a pre-determined pattern; and the device further comprises a second plurality of dimples arranged in the pre-determined pattern along a second face of the elongated bar.

## Comments

1. Claim 4 includes a reference to "the length of the elongated bar." This is the first reference to such an element, and some patent examiners may reject this language for lack of antecedent basis, unless the limitation is changed to read "a length of the elongated bar." Other examiners, however, may consider that an elongated bar inherently has a length, and it is therefore allowable to use the article "the" in the first reference to the element. The context and jurisdiction may be influential as to which approach is preferred.
2. If you are preparing a patent application to be filed with certain patent offices, such as the European Patent Office, it is a standard practice to use a multiple dependent claim. For example, claim 3 may read:
3. "The device of claim 1 or 2, wherein the elongated bar comprises beveled corners at a distal end."

# 2.4 Exercise 4: Vehicle

| Feature | Name | Function/essential | In prior art? |
|---|---|---|---|
| 1 | Frame | Hold the other components together (Y) | Yes |
| 2 | Wheel | Support on ground (Y) | Yes |
| 3 | Handlebar | Steering (Y) | No |
| 4 | Fork | Connect handlebar to wheel (N) | Yes |
| 5 | Second wheel | Support on ground (Y) | No |
| 6 | Pedals | Turn back wheel via sprocket and chain (N) | Yes |
| 7 | Sprocket and Chain | Power back wheel (Y) | No |
| 8 | Seat | User can sit (N) | Yes |
| 8a | Seat on frame between front and back wheels | Ease user access to handlebar and pedals (N) | No |
| 9 | Shock absorbers | Dampen impact on front wheel (N) | No |
| 10 | Bell | Alert others (N) | No |

## Claims

1. A vehicle comprising:
   - a frame coupling a first wheel to a second wheel;
   - a steering mechanism coupled to said first wheel for controlling a direction of a vehicle; and
   - a traction mechanism coupled to said second wheel for powering said second wheel so that the vehicle is propelled.

2. The vehicle of claim 1, wherein the first wheel is positioned in front of said second wheel.
3. The vehicle of claim 1, wherein said first wheel is steered by said steering mechanism.
4. The vehicle of claim 1, further comprising a first fork coupling the first wheel to said steering mechanism.
5. The vehicle of claim 1, wherein said steering mechanism comprises a handlebar.
6. The vehicle of claim 1, wherein said traction mechanism is mounted on said frame.
7. The vehicle of claim 1, wherein said traction mechanism comprises foot operated means turning a sprocket and a chain.
8. The vehicle of claim 1, wherein said foot operated means comprises pedals.
9. The vehicle of claim 1, further comprising a seat coupled to said frame.
10. The vehicle of claim 9, wherein said seat is coupled to the frame between said first wheel and said second wheel.
11. The vehicle of claim 1, further comprising a second fork coupling the second wheel to said frame.
12. The vehicle of claim 4, wherein said first fork includes shock absorbing means.
13. The vehicle of claim 9, wherein said second fork includes shock absorbing means.
14. The vehicle of claim 1, further comprising an audible alert means.
15. The vehicle of claim 14, wherein said audible alert means is a bell.
16. The vehicle of claim 1, wherein said frame is made of metal.

## 2.5 Exercise 5: Clothes peg

| Feature | Name | Function/essential | In prior art? |
|---|---|---|---|
| 1a,1b | Arms | Provide lever means to open and close a jaw means (N) | Yes |
| 1c,1d | Lever parts | Open and close the jaw (N) | Yes |
| 1e,1f | Jaw parts | Press against the cloth (N) | Yes |
| 8 | Jaw | Hold clothing in place (N) | Yes |
| 7 | Bridge | (Y) | No |
| 2 | Spring | Bias lever parts away from each other (Y) | No |
| 3a,3b | Spigots | Hold the spring in place (N) | No |
| 5 | Rubber pads | Reduce damage to clothing (N) | No |
| 6 | Ribbed surface | Allow ease of grip (N) | No |
| 9 | Shock absorbers | Dampen impact on front wheel (N) | No |

### Claims

1. A clothes peg comprising:
   - a pair of arms having two jaw elements on one end and two lever elements on another end thereof;
   - a bridge extending between said pair of arms and being configured to allow said pair of arms to rotate relative to each other; and
   - a biasing element configured to bias the lever elements away from each other and the jaw elements towards each other in a closed position.

2. The clothes peg of claim 1, wherein said biasing element is a spring.
3. The clothes peg of claim 2, wherein said biasing element is a coil spring.
4. The clothes peg of claim 2, wherein said biasing element is a leaf spring.
5. The clothes peg of claim 1, wherein said biasing element is coupled between inner surfaces of said lever elements.
6. The clothes peg of claim 1, wherein said biasing element is coupled between outer surfaces of said lever elements.
7. The clothes peg of claim 1, further comprising holding elements configured to hold said biasing element in place.
8. The clothes peg of claim 1, further comprising lever gripping elements provided on said lever elements.
9. The clothes peg of claim 8, wherein said lever gripping elements are positioned on an outer surface of said lever elements.
10. The clothes peg of claim 8, wherein said lever gripping elements are flexible.
11. The clothes peg of claim 8, wherein said lever gripping elements are made of rubber.
12. The clothes peg of claim 8, wherein said lever gripping elements comprise a ribbed surface.
13. The clothes peg of claim 1, further comprising jaw gripping elements provided on said jaw elements.
14. The clothes peg of claim 13, wherein said jaw gripping elements are positioned on an inner surface of said jaw elements.
15. The clothes peg of claim 13, wherein said jaw gripping elements are flexible.
16. The clothes peg of claim 13, wherein said jaw gripping elements are made of rubber.
17. The clothes peg of claim 13, wherein said jaw gripping elements comprise a corrugated surface.
18. The clothes peg of claim 4, wherein said leaf spring comprises a U-shaped strip.
19. The clothes peg of claim 18, wherein said U-shaped strip is made of metal.
20. The clothes peg of claim 1, wherein a force applied to said lever elements causes the pair of arms to rotate so that said lever elements move towards each other and said jaw elements move away from each other into an open position.

## 2.6 Exercise 6: Picture hanging hook

The term “panel structure” is selected to encompass a single panel, a plurality of stacked panels or any other object having a front surface, a rear surface and a pass-through opening between both surfaces.

### Claims

1. A reusable anchoring device comprising:
   - a socket configured to receive a threaded fastener; and
   - a securing element coupled to said socket and having a pair of elastic arms that are hinged together at a distal end thereof through a distal joint having an opening, wherein said pair of elastic arms is configured to bend and spread apart when said threaded fastener threadably engages said opening effectively securing said pair of elastic arms against a rear surface of a panel structure.

2. The reusable anchoring device of claim 1, wherein each elastic arm comprises a front arm and a rear arm hinged together through an arm joint.
3. The reusable anchoring device of claim 1, wherein said pair of elastic arms comprise proximal ends that are hingeably coupled to said socket.
4. The reusable anchoring device of claim 1, wherein said socket comprises at least one projection element longitudinally protruding from said socket to prevent rotation of the anchoring device inside a hole of said panel structure.
5. A method of installing a reusable anchoring device on a panel structure, said method comprising: compressing against each other a pair of elastic arms of an anchoring device that comprises a socket configured to receive a threaded fastener, and a securing element coupled to said socket and having said pair of elastic arms hinged together at a distal end thereof through a distal joint having an opening; inserting said compressed pair of elastic arms into a hole of the panel structure, wherein said pair of elastic arms returns to an uncompressed state after being inserted into the hole; and rotating the threaded fastener to threadably engage the opening of said distal joint so that the distal joint is directed towards said socket causing said pair of elastic arms to bend and spread apart until said pair of elastic arms is secured against the rear surface of the panel structure.
6. The method of claim 5, wherein said anchoring device is uninstalled from said panel structure by removing said threaded fastener from the socket so that the distal joint is directed away from said socket until the threaded fastener is disengaged from the opening of said distal joint causing said pair of elastic arms to return to its uncompressed state and removing said anchoring device from the hole.
7. The method of claim 5, wherein each elastic arm comprises a front arm and a rear arm hinged together through an arm joint.
8. The method of claim 5, wherein said pair of elastic arms comprises proximal ends that are hingeably coupled to said socket.
9. The method of claim 5, wherein said socket comprises at least one projection element longitudinally protruding from said socket to prevent rotation of the anchoring device inside a hole of said panel structure.

## 2.7 Exercise 7: Bag for storing food

### Claims

1. A manually operable pump comprising:
   - a rigid outer cylinder,
   - a rigid inner cylinder including a piston at a first end of said rigid inner cylinder, telescopically and slidably mounted inside said rigid outer cylinder, said rigid inner cylinder including:

   (a) a valved air opening at one of (i) said first end and (ii) an opposite second end of said rigid inner cylinder, and
   (b) an air opening at the other of said first end and second end of said rigid inner cylinder, said rigid outer cylinder including a valved air opening at a first end thereof a respective valve for each of said valved air openings, allowing (a) air to be drawn through said valved air opening of said first end of said rigid outer cylinder and into said rigid outer cylinder during a suction stroke in which the piston is pulled in a direction away from said first distal end of rigid outer cylinder and (b) air to be passed through said air opening of said rigid inner cylinder and out of said rigid inner cylinder during a return stroke in which said piston is pushed in a direction towards said first distal end of said rigid outer cylinder.

2. A manually operable pump as claimed in claim 1 wherein said valve of the valved air opening of said inner cylinder seals its valved air opening during said suction stroke.
3. A manually operable pump as claimed in claims 1 or 2 wherein said valve of valved opening of said outer cylinder seals its valved air opening during said return stroke.
4. A manually operable pump as claimed in any one of claims 1 to 3 wherein said valved opening of inner cylinder is provided at the first end of the inner cylinder and said inner cylinder is provided with said air opening at the second end of the inner cylinder.
5. A manually operable pump as claimed in claim 4 wherein said valved opening of said inner cylinder is provided at the piston of said inner cylinder.
6. A manually operable pump as claimed in any one of claims 1 to 3 wherein said valved opening of inner cylinder is provided at the second end of the inner cylinder and said inner cylinder is provided with said air opening at the first end of the inner cylinder.
7. A manually operable pump as claimed in claim 6 wherein said inlet opening of said inner cylinder is provided at the piston of said inner cylinder.
8. A manually operable pump as claimed in any one of claims 1 or 7 wherein said valved openings of said inner cylindrical member is open and the valved opening of the outer cylindrical member is closed when the inner cylindrical is moving in the return stroke.
9. A manually operable pump as claimed in any one of claims 1 or 8 wherein said valved openings of said inner cylindrical member is closed and the valved opening of the outer cylindrical member is open when the inner cylindrical is moving in the suction stroke.
10. A manually operable pump as claimed in any one of claims 1 to 9 wherein each said valve is a flap valve.

## 2.8 Exercise 8: Convertible poncho

### Claims

1. A foldable article comprising:
   - a sheet of flexible material having four sides; and
   - a plurality of fasteners provided along edges of said four sides.

2. The foldable article of claim 1, wherein said flexible material is a fabric.
3. The foldable article of claim 1, wherein said flexible material is a waterproof material.
4. The foldable article of claim 1, further comprising a hole within the edges of said four sides.
5. The foldable article of claim 4, further comprising a cover panel covering said hole.
6. The foldable article of claim 5, wherein said cover panel is removably coupled to said sheet of flexible material.
7. The foldable article of claim 6, wherein said cover panel is removably coupled with a hook and loop fastener.
8. The foldable article of claim 6, wherein said cover panel is removably coupled with a zip fastener.
9. The foldable article of claim 1, wherein said plurality of fasteners comprises first fasteners and second fasteners configured to releasably mate with said first fasteners.
10. The foldable article of claim 9, wherein each side of the sheet of flexible material includes said first fasteners and said second fasteners provided along said edges.
11. The foldable article of claim 9 or 10, wherein said first fasteners and said second fasteners are provided in the same amount.
12. The foldable article of claim 9, wherein the plurality of fasteners are equally spaced along said edges.
13. The foldable article of claim 9, wherein each of said first fasteners includes a protrusion and each of said second fasteners includes a groove configured to releasably mate with said protrusion.
14. The foldable article of claim 10, wherein said sheet of flexible material is folded in half so that the edge of the first side overlaps the edge of the second side opposite to said first side, said first and second fasteners of the first side are releasably mated with said second and first fasteners of the second side, respectively; and a half of the third side overlaps the other half of said third side, said first fasteners of the third side are releasably mated with said second fasteners of the third side.

15. The foldable article of claim 14, wherein a half of the fourth side overlaps the other half of said fourth side, said first fasteners of the fourth side are releasably mated with said second fasteners of the fourth side.
16. The foldable article of claim 1 or 15, wherein each of two opposite sides of the sheet of flexible material comprises a drawstring contained within a hem.
17. The foldable article of claim 16, further comprising a fastener provided on an end of each drawstring, wherein the fasteners of both drawstrings are configured to be releasably fastened together.
18. The foldable article of claim 10, wherein said sheet of flexible material is folded diagonally so that the edge of the first side overlaps the edge of the second side contiguous to said first side and the edge of the third side overlaps the edge of the fourth side contiguous to said third side; and at least one of said first and second fasteners of the first side are releasably mated with said second and first fasteners of the second side or said first and second fasteners of the third side are releasably mated with said second and first fasteners of the fourth side.
19. The foldable article of claim 1, wherein the article is a tent canopy formed by folding said sheet of flexible material in half.
20. The foldable article of claim 4, wherein said article is a garment and said hole is configured to receive a head of a person therethrough.
21. The foldable article of claim 1, wherein said article is a blanket.

## 2.9 Exercise 9: Road cone

### Device claims

1. A stabilizing device comprising:
   - a stabilizing element with a pass-through opening and being configured to be positioned onto a base of an object for maintaining said object stable on a surface.

2. The stabilizing device of claim 1, wherein said stabilizing element is heavier than said object.
3. The stabilizing device of claim 1, wherein said stabilizing element has a uniform weight distribution.
4. The stabilizing device of claim 1, wherein said stabilizing element has an uneven weight distribution.
5. The stabilizing device of claims 1 or 4, wherein said stabilizing element further comprises a visual indicia configured to indicate a position where a heaviest portion of the stabilizing element is located.
6. The stabilizing device of claim 5, wherein said visual indicia is a directional arrow.
7. The stabilizing device of claim 1, wherein said stabilizing element has a round shape.
8. The stabilizing device of claim 1, wherein said pass-through opening has a round shape.
9. The stabilizing device of claim 1, wherein said object is a road marker having an elongated body extending from said base.
10. The stabilizing device of claim 9, wherein said elongated body has a conical shape.
11. The stabilizing device of claim 1, wherein said stabilizing element is made from metal.
12. The stabilizing device of claim 9, wherein said elongated body comprises at least one reflective surface.
13. The stabilizing device of claim 12, wherein said at least one reflective surface comprises an attachable band.

### System claims

1. An object stabilizing system comprising:
   - an object having a base;
   - and a stabilizing element with a pass-through opening and being configured to be positioned onto said base in order to maintain said object stable on a surface.

2. The object stabilizing system of claim 1, wherein said stabilizing element is heavier than said object.
3. The object stabilizing system of claim 1, wherein said stabilizing element has a uniform weight distribution.

4. The object stabilizing system of claim 1, wherein said stabilizing element has an uneven weight distribution.
5. The object stabilizing system of claims 1 or 4, wherein said stabilizing element further comprises a visual indicia configured to indicate a position where a heaviest portion of the stabilizing element is located.
6. The object stabilizing system of claim 5, wherein said visual indicia is directional arrow.
7. The object stabilizing system of claim 1, wherein said stabilizing element has a round shape.
8. The object stabilizing system of claim 1, wherein said pass-through opening has a round shape.
9. The object stabilizing system of claim 1, wherein said object is a road marker having an elongated body extending from said base.
10. The object stabilizing system of claim 9, wherein said elongated body has a conical shape.
11. The object stabilizing system of claim 1, wherein said stabilizing element is made from metal.
12. The object stabilizing system of claim 9, wherein said elongated body comprises at least one reflective surface.
13. The object stabilizing system of claim 12, wherein said at least one reflective surface comprises an attachable band.

## 2.10 Exercise 10: Quick release shackle

### Claims

1. A quick release shackle comprising:
   - a main body and an arm hinged to said main body characterized by having a pin integrated onto the main body and an opening on said arm configured to receive a distal end of said pin.

2. The quick release shackle of claim 1, further comprising a biasing element configured to force the distal end of said pin outside said main body.
3. The quick release shackle of claim 1, wherein said pin further comprises a pulling element configured to move the distal end of said pin inside the main body when pulled by a user.
4. The quick release shackle of claim 1, wherein said pin slideably moves inside a pass-through hole on said main body.
5. The quick release shackle of claim 2, wherein the biasing element comprises a spring.
6. The quick release shackle of claim 4, wherein the pulling element comprises a ring.
7. The quick release shackle of claim 3, wherein said quick release shackle is unlocked when a user pulls said pulling element until the distal end of said pin is out of the opening of said arm.
8. The quick release shackle of claim 2, wherein said quick release shackle is locked when the distal end of said pin is inside the opening of said arm.
9. The quick release shackle of claim 2, wherein said quick release shackle is locked when said arm hingedly approaches said main body until the distal of the pin is pushed inside the opening of said arm.
10. The quick release shackle of claim 9, wherein the pin is pushed inside the opening of said arm by a biasing element configured to force the distal end of said pin outside said main body.

# Exercises in Chapter 3 Drafting patent specifications

## 3.1 Exercise 1: Step-by-step process of drafting a patent specification (staple remover)

**Question 1:**
Any word or phrase indicating that the application relates to a tool, such as a tool suitable for removing staples, would be acceptable, provided that it is consistent with the preamble of the independent claims. Options include:

- Product
- Tool
- Device for removing staples
- Implement
- Gadget etc.

**Question 2:**

**Technical field:**
The present application relates generally to a tool for removing fasteners. The invention relates more particularly, but not exclusively to a tool suitable for removing staple fasteners from articles such as paper.

**Question 3:**

**Background:**
It is useful to fasten multiple articles of paper together using fasteners. However, certain fasteners, such as staples, are semi-permanent in that their removal is difficult without using a tool and without damaging the articles fastened by the fastener. As is well known, staples comprise a two-pronged fastener, usually comprising metal. The prongs of staples are configured for piercing multiple articles, such as a stack of paper, and thereby fastening the articles together.

Often, the prongs of the staple are bent following said piercing, substantially preventing removal of the staple from the fastened articles without bending the prongs or without tearing the paper.

Existing tools for removal of staples are slow to use and/or not particularly effective.

**Question 4:**

**Detailed description:**
In an aspect of the present application, there is provided a tool for removing fasteners, the tool comprising a pair of jaws, each jaw being provided with a tooth, the tooth of one jaw opposing the tooth of the other jaw, said jaws being pivotable relative to one another between a first position in which the teeth are brought together and a second position in which the teeth are apart.

The tool has particular, but not exclusive, utility in the removal of staple fasteners from articles such as paper. The teeth of the tool can be used to slide under and thereby grip a staple. To remove the staple from the paper, the operator can apply a force to the tool to pull the gripped staple from the paper.

**Question 5:**
One or both teeth may be wedge-shaped (i.e. comprising a relatively thin end and a relatively thick end). The thin end of the or each wedge may be located on a jaw-opposing part of the or each tooth such that it is the thin end which is brought towards the opposing tooth when the jaws are pivoted towards the first position, with the thick end being distal therefrom. Such wedge shaping facilitates sliding of the or each tooth under the staple, thereby facilitating removal of the staple.

The tool may be biased towards the second position, optionally by means of a spring (such as a torsion spring). Biasing allows for quick release of a staple once it has been removed from the article.

In instances where the tool comprises a spring, it may be comprising chrome-plated steel. Such materials are resistant to fatigue resulting from repeated use, thereby imparting durability to the tool.

One or both jaws may be provided with gripping members, optionally comprising plastic. Such gripping members may improve the ergonomics of the tool, which may be important during repeated use.

The tool may further comprise a locking pin for releasably locking the pair of jaws in the second position. Locking the jaws in the second position may improve the safety of the tool. It will be appreciated that the teeth of the tool may be sharp (e.g. in instances where the teeth are wedge-shaped). Therefore, locking the tool in the second position in which the teeth are brought together may be useful be useful for masking the sharp edges of the teeth (e.g. in instances where the tool is used around children).

The teeth may comprise steel (optionally stainless steel).

One or both jaws may be provided with two teeth. In the context of the removal of a staple, which comprises an elongate portion with prongs at ends thereof, using a tool comprising two teeth on one or both jaws may be useful for sliding under two points of the elongate portion. When the pulling force is applied to release the staple, the force is thereby distributed across the elongate portion and towards the prongs. Such a design may be useful for reducing damage to the paper when removing staples.

**Question 6:**
In a second aspect of the present application, there is provided a kit of parts for a tool, the kit comprising:

a pair of jaws, each jaw being provided with a tooth, said jaws being pivotably connectable to one another such that the tooth of one jaw opposes the tooth of the other jaw and pivotable relative to one another between a first position in which the teeth are brought together and a second position in which the teeth are apart.

The kit of parts can be used to assemble the tool described above. For example, the tool may be constructed of multiple different parts, e.g. by different manufacturers, and assembled later.

As with the tool above, the kit for the tool may comprise a biasing means (e.g. a spring) configured to bias the tool towards the second position when the jaws are connected.

The kit may comprise one or more gripping members for corresponding attachment to one or both jaws. Alternatively, one or both jaws is provided with an integral gripping member.

Optional features described above in relation to the tool apply equally to the kit of parts for the tool above. In particular, optional features of the biasing means/spring and/or the one or more gripping members described above apply equally to the kit. Furthermore, it will be evident to the skilled person that advantages set out above in respect of the tool are also offered by the kit.

In a third aspect of the present application, there is provided a method of manufacturing a tool comprising a pair of jaws, each jaw being provided with a tooth, the method comprising pivotably connecting a first jaw in the pair to a second jaw in the pair such that the tooth of one jaw opposes the tooth of the other jaw and such that pivotal movement of the jaws causes said teeth to move relative to one another between a first position in which the teeth are brought together and a second position in which the teeth are apart.

Optional features described above in relation to the tool apply equally to the method above. Furthermore, it will be evident to the skilled person that advantages set out above in respect of the tool are also offered by the method.

**Question 7:**
In the context of the present application, metal fatigue may be understood to be a weakening of a metal material due to repeated application of applied loads. Metal fatigue may involve structural damage to a given component and can lead to cracks in the material.

**Question 8:**

**Brief description of the drawings:**
The invention will now be further described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 is a side-on view of a tool according to the present application;

Figure 2 is a top-down view of the tool shown in Figure 1; and

Figure 3 is a front view of the tool shown in Figures 1 and 2.

**Question 9:**

**Specific description:**
The figures show a staple removal tool (1) for removing fasteners such as staples from articles such as a stack of paper. The tool (1) comprises a pair of elongate stainless-steel jaws (3a, 3b) (collectively (3)) which may be used to slide under a staple and facilitate removal thereof.

Each jaw (3) is provided with two wedge-shaped teeth (5a, 5b) (collectively referred to as (5)) at an end thereof. The teeth (5) are disposed on the jaws (3) such that the teeth (5a) of one jaw (3a) oppose the teeth (5b) of the other jaw (3b), to enable gripping of a fastener therebetween.

The wedges of the teeth (5) are shaped such that a thin part (7a, 7b) of the respective tooth wedge is disposed on the jaw and faces an opposing thin part of the wedge on the opposing jaw (3). The elongate jaws (3) are pivotally connected to one another at an end (9) distal to the ends (7) provided with the teeth. By means of said pivotal connection, said jaws (3) are able to pivot relative to one another between a first position in which the teeth (5) are brought together and a second position in which the teeth (5) are apart.

It will be appreciated than when the tool (1) is used to remove a staple, bringing the jaws (3) together allows for the teeth (5) to slide under a staple and thereby facilitate removal thereof.

The tool (1) is provided with a chrome-plated torsion spring (not visible in the figures) to bias the tool (1) towards the first position shown in the figures (second position not shown).

Both jaws (3) are provided with gripping members (11a, 11b) comprising plastic which improves the ergonomics of the tool (1).

The tool (1) further comprises a locking pin (13) for releasably locking the pair of jaws (3) in the second position, thereby improving safety when working with the tool (1).

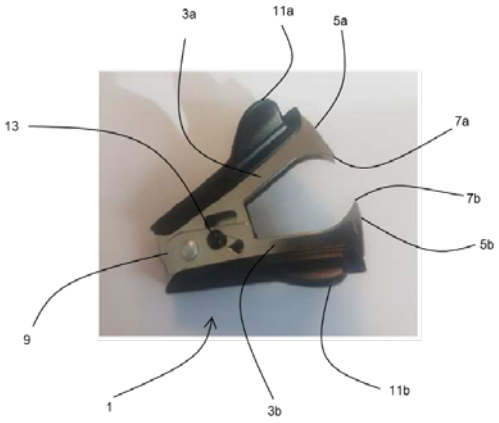



***Figure 1***

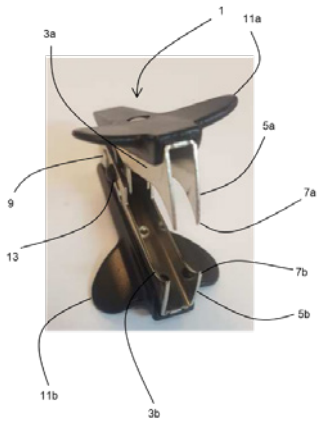



***Figure 2***

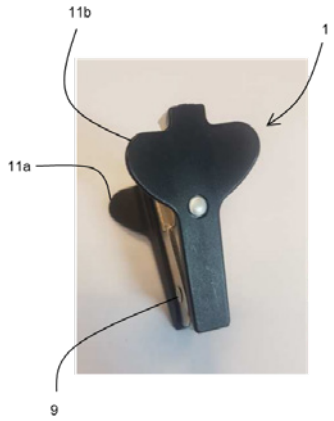



***Figure 3***

**Question 10:**
A tool for removing fasteners comprises a pair of jaws, each jaw being provided with a tooth. The tooth of one jaw opposes the tooth of the other jaw. Said jaws are pivotable relative to one another between a first position in which the teeth are brought together and a second position in which the teeth are apart.

## 3.2 Exercise 2: Tea pot

**Question 1:**

- Title
  Improvements in or relating to vessels for dispensing a liquid

- Prior art discussion
  Teapot with one spout

- Drawback of the prior art
  Time-consuming

- Problem to solve
  Reduce filling time

- Solution
  Provide a second spout

- Advantage of the invention
  The time needed to fill multiple cups is reduced.

**Question 2:**
Improvements in or relating to vessels for dispensing a liquid.

**Technical field:**
The invention consists broadly of a vessel for dispensing a liquid, such as a tea pot or the like, comprising a single pot or container or hollow body and a plurality of spouts.

**Background art:**
A teapot with one spout is known but it is time-consuming to pour several cups. To solve this problem it is possible to use two hands to hold two teapots but this would require having a second teapot but also to be skillful enough with both hands. Another possibility would be to ask someone to help you but you would probably need to pay for this assistance.

Thus, there is still a need to pour several cups at the same time with a single tea pot.

**Summary of invention:**
The present invention relates to a vessel for dispensing a liquid such as a tea pot or like portable pouring vessel and has for its primary object the provision of an improved vessel or the like whereby the liquid may be poured out into cups with reduced time compared to a conventional tea pot or the like.

It is one object of the invention to provide a vessel for dispensing a liquid comprising a hollow body adapted to be filled with a liquid and means for discharging the liquid, wherein the means for discharging the liquid consists of a plurality of spouts from which the contained liquid may be poured simultaneously.

The invention is therefore particularly useful in, for example, tea shops in which large numbers of cups of tea have to be served in a short time.

However, the invention may obviously be applied to other portable pouring vessels than tea pots.

**Brief description of the drawings:**

In order that the invention may be more clearly understood a vessel in accordance therewith will now be described, reference being made to the accompanying drawings.

Fig. 1 is a perspective view of a vessel according to the invention. Figure 1 illustrates a vessel (1) with a handle (2) and two spouts (3).

Fig. 2 is a plan of the same.

**Description of embodiments:**
It is one object of the invention to provide a vessel for dispensing a liquid comprising a hollow body (1) adapted to be filled with a liquid and means (3) for discharging the liquid, wherein the means for discharging the liquid consists of a plurality of spouts (3).

Preferably, the vessel has two spouts (3).

According to the embodiment of the invention, the body (1) of the vessel is provided with a handle (2) and the two spouts (3) are attached to the hollow body (1) on the side opposite to the handle (2).

According to the invention, the spouts (3) are at a distance allowing to fill simultaneously two cups placed next to each other on a support surface.

In a preferred embodiment of the invention, the vessel is suitable to serve tea.

Referring to the drawings (Figures 1 and 2) said vessel comprises a single individual pot or container or hollow body (1) of usual rotund form and a single handle (2) for lifting and operating the same. Symmetrically on each side of the point diametrically opposite to said handle (2) and disposed radially with respect to the vertical center line of the hollow body (1) are two spouts (3) at such a distance apart that tea or liquid may be conveniently poured from said spouts into two cups simultaneously.

In accordance with the invention, the vessel comprises a single undivided pot or container or hollow body (1) of usual rotund form and a single handle for lifting and operating the same. Symmetrically on each side of the point diametrically opposite to said handle and disposed radially with respect to the vertical center line of the hollow body (1) are plurality of spouts preferably two spouts at such a distance apart that liquid such as tea may be conveniently poured from said spouts into two cups simultaneously.

The invention may obviously be applied to other portable pouring vessels than tea pots.

**Drawings:**

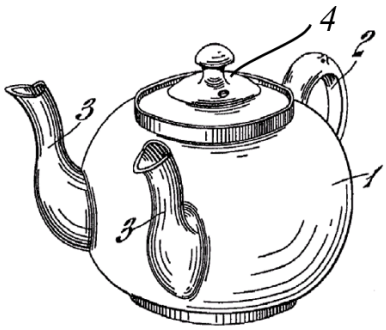



*Fig.1.*

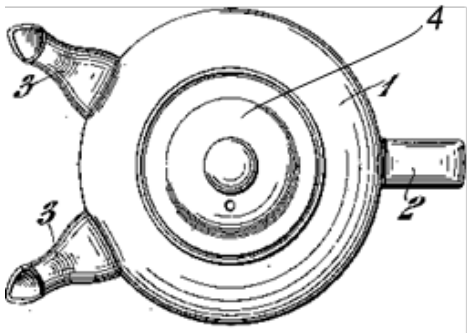



*Fig.2.*

**Abstract:**
The invention consists broadly of vessel for dispensing a liquid such as a tea pot or the like comprising a single pot or container or hollow body and a plurality of spouts.

# Exercises in Chapter 4 Amending patent specifications

## 4.1 Exercise 1: Staple remover (continued)

**Cover letter**
This is in response to the office action issued on patent application no.1234567.1.

***Amendments***
Please cancel the current claims in favor of the enclosed replacement claims, which are provided in both “marked-up” and “clean” format. In the marked-up format enclosure, text for deletion is stricken through (e.g. text) and newly added text is underlined. (e.g. text).

Claim 1 has been amended to specify that the tool is biased towards the second position. Basis for this amendment can be found in original claim 4. Claim 4 has thereby been incorporated into claim 1. It is noted that the examiner objected to original claim 4 for reasons of lack of clarity. Here, it will be appreciated that the tool being “biased apart” in original claim 4 is equivalent to the tool being “biased to the second position” as is now referred to in amended claim 1. The numbering and claim dependencies of the remaining claims have been adjusted accordingly.

The dependency of claim 8 has been amended to refer to claim 7.

Claim 9 has been amended to specify that the teeth comprise steel. Basis for this amendment is evident from original claim 9.

The numbering adopted in the office action will be adopted below for ease of reference.

***Clarity***
1. The claims are now numbered sequentially and so this objection no longer applies.
2. As noted above, the subject matter of original claim 4 has now been incorporated into claim 1. Claim 1 has been amended with wording set out in original claim 1, to specify that the tool is biased towards the second position. It is submitted that this revised wording is clear.
3. As mentioned above, claim 8 is now dependent on claim 7 and so this objection no longer applies.
4. As mentioned above, claim 9 has been amended to specify that the teeth comprise steel. This objection no longer applies.

***Novelty and inventive step***
5. The office action refers to cited document ‘Stationery Supplies Weekly: 7 January 2019 edition’ (D1) as the basis for objections of lack of novelty and inventive step. We request reconsideration of this position having regard to the amendments set out above and for the reasons detailed below.

As mentioned above, claim 1 has been amended to specify that the tool is biased towards the second position. D1 fails to disclose such a bias.

Therefore, claim 1 as amended is novel in view of the disclosure in D1.

Bias towards the second position allows for easy disposal of the removed staple and removal of many staples in quick succession. Specifically, once a staple has been gripped between the teeth and pulled from the paper, the operator of the tool needs only to loosen their grip on the tool to release the staple. This permits disposal of the staple and concurrently readies the tool for removal of another staple.

Therefore, the tool as defined in claim 1 as amended possesses clear advantages over the tool disclosed in D1. It is therefore submitted that claim 1 as amended is inventive over the disclosure in D1.

***Closing remarks***
We trust that the application may proceed to acceptance on the basis of the present response.

**Amended claims (marked up)**

1. A tool for removing fasteners, the tool comprising:
   - a pair of jaws,
   - a tooth on each jaw, the tooth of one jaw opposing the tooth of the other jaw,
   wherein jaws are pivotable relative to one another between a first position in which the teeth are brought together and a second position in which the teeth are apart; **and wherein the tool is biased towards the second position.**

2. The tool as claimed in claim 1, further comprising a locking pin for releasably locking the pair of jaws in the first position.
3. The tool as claimed in claim 1 or claim 2, wherein the teeth comprise metal.
4. The tool according to **any preceding** claim, wherein the bias is provided by a spring.
5. The tool according to claim 4, wherein the spring is a torsion spring.
6. The tool according to claim **4 or 5**, wherein the spring comprises chrome-plated steel.
7. The tool according to any preceding claim, wherein one or both jaws are provided with gripping members.
8. The tool according to any preceding claim **7**, wherein the or each gripping member comprises plastic.
9. The tool according to any preceding claim, **wherein the teeth comprise** steel (optionally stainless steel).
10. The tool according to any preceding claim, wherein the teeth comprise stainless steel.

**Amended claims (clean)**

1. A tool for removing fasteners, the tool comprising:
   - a pair of jaws,
   - a tooth on each jaw, the tooth of one jaw opposing the tooth of the other jaw,
   - wherein jaws are pivotable relative to one another between a first position in which the teeth are brought together and a second position in which the teeth are apart; and
   - wherein the tool is biased towards the second position.

2. The tool as claimed in claim 1, further comprising a locking pin for releasably locking the pair of jaws in the first position.
3. The tool as claimed in claim 1 or claim 2, wherein the teeth comprise metal.
4. The tool according to any preceding claim, wherein the bias is provided by a spring.
5. The tool according to claim 4, wherein the spring is a torsion spring.
6. The tool according to claim 4 or 5, wherein the spring comprises chrome-plated steel.
7. The tool according to any preceding claim, wherein one or both jaws are provided with gripping members.
8. The tool according to claim 7, wherein the or each gripping member comprises plastic.
9. The tool according to any preceding claim, wherein the teeth comprise steel (optionally stainless steel).
10. The tool according to any preceding claim, wherein the teeth comprise stainless steel.

## 4.2 Exercise 2: Tea pot (continued)

You may start by identifying the technical features of the set of claims and prepare a table of features to compare the technical features of the invention versus the technical features of the cited prior art D1 and D2.

Current claims comprise the following technical features:

| Claim | Technical features |
|---|---|
| 1 | – A vessel for dispensing a liquid<br>– A hollow body (1) adapted to be filled with a liquid and<br>– Means (3) for discharging the liquid consisting of a plurality of spouts (3). |
| 2 | – Two spouts |
| 3 | – A handle (2)<br>– Two spouts (3) are opposite to the handle (2). |
| 4 | – Spouts (3) are at a distance allowing to fill simultaneously two cups placed next to each other |
| 5 | – Tea pot |

We can then compare each technical feature with the prior art reference D1 and D2.

| Technical features | D1 | D2 |
|---|---|---|
| Vessel | vessel | similar: a container |
| Hollow body (1) | hollow | hollow but **two compartments** |
| Plurality of spouts (3) | double spout | two spouts |
| Two spouts | double spout | two spouts |
| Handle (2) | bridge equivalent to the handle | a handle |
| Two spouts (3) opposite to the handle (2) | spouts **in extension** of the handle, same direction as the handle | spouts are in the **same direction** as the handle |
| Spouts (3) at a distance allowing to fill simultaneously two cups | spouts located **opposite each other** | spouts located **opposite each other** |
| Tea pot | similar: any liquid | **fuel/oil** |

The closest prior art is D1, because D1 shares the greatest number of elements with the invention.

The main difference between D2 and the invention is that the container comprises two hollow bodies, namely two compartments, one containing fuel, the other oil. This is not the case in the present invention since claim 1 only defines one hollow body (1).

D2 fails to disclose all the elements of claim 1, therefore the novelty objection of the examiner with regard to D2 is not valid.

On the other hand, D1 fully discloses all the technical features of claim 1 and claim 2. It is the closest prior art directed to a similar purpose.

The fact that claim 1 of the present invention discloses a plurality of spouts and that D1 only discloses two spouts makes no difference in terms of novelty, because two spouts are comprised within the definition of a plurality of spouts, which means at least two. Note: if one claims a vessel having three spouts this would not be supported by the description as originally filed and this would also not be considered as inventive because this would not give any unexpected advantage to solve the problem of the invention. The invention works equally with two, three or even more spouts.

However, the feature of claim 3 wherein the two spouts (3) are opposite to the handle (2) is not disclosed in D1. In contrary, the spouts of D1 are in the same direction as the handle, namely located in extension of the handle (bridge) which is at the top of the vessel. Thus, this feature disclosed in claim 3 is novel over D1.

The objective technical problem of the invention is to reduce the filling time so as to pour several cups at the same time. This is why the two spouts (3) are located opposite to the handle (2) at a distance allowing to fill simultaneously two cups (see current claim 4).

The geometry of the double spout and bridge vessel of D1 does not allow pouring several cups at the same time, because the spouts are located opposite each other. It will be necessary to pour the liquid into one cup after the other to fill the two cups. Simultaneous pouring is not possible with D1.

Thus, D1 would not be able to solve the objective technical problem of the invention. The presence of the feature of claim 3 wherein the "two spouts (3) are opposite to the handle (2)" contributes to solve the technical problem of the invention. This feature is thus inventive over D1.

In summary, it would be necessary to combine claim 1 with this feature of claim 3 so as to restore the novelty and inventive step of the invention.

In term of claim amendments, it is recommended at least for Europe to replace the feature "plurality of spouts" of former claim 1 with the feature "two spouts" because claim 3 which depends on claim 2 discloses a vessel with "two spouts." Consequently, to comply with Article 123 (2) EPC as explained in the Tips, the feature "two spouts" of claim 2 should be added to the new amended claim 1.

This would not be the case if the description would disclose that the hollow body (1) of the vessel is provided with a handle (2) and a **plurality of spouts** (3) are attached to the hollow body (1) on the side opposite to the handle (2). Unfortunately, the description does only provide support for the embodiment limited to two spouts; this is why we cannot generalize new amended claim 1 with the feature "a plurality of spouts." Generalization of this feature in Europe would lead to an objection of added subject matter and since the office action was issued in Europe, it is necessary to comply with the European patent law.

This would however not be the case in other jurisdictions (like in the USA) where the requirement for support in the description is not so strictly applied.

New suggested amended claim 1 and the dependent claims reads as follows:

**Marked-up version:**
1. A vessel for dispensing a liquid comprising a hollow body (1) adapted to be filled with a liquid and means (3) for discharging the liquid, means for discharging the liquid consistings of two spouts (3), characterized in that

The hollow body (1) of the vessel is provided with a handle (2) and the two spouts (3) are attached to the hollow body (1) on the side opposite to the handle (2).

2. The vessel according to claim 1, wherein the two spouts (3) are at a distance allowing to fill simultaneously two cups placed next to each other on a support surface.

3. The vessel according to any of the preceding claims, wherein the vessel is suitable to serve tea.

Clean version of the set of claims:

A vessel for dispensing a liquid comprising a hollow body (1) adapted to be filled with a liquid and means (3) for discharging the liquid, means for discharging the liquid consisting of two spouts (3), characterized in that the hollow body (1) of the vessel is provided with a handle (2) and the two spouts (3) are attached to the hollow body (1) on the side opposite to the handle (2).

The vessel according to claim 1, wherein the two spouts (3) are at a distance allowing to fill simultaneously two cups placed next to each other on a support surface.

The vessel according to any of the preceding claims, wherein the vessel is suitable to serve tea.

**Amendment of the description:**
Amendments appear underlined or marked-up.

Improvements in or relating to vessels for dispensing a liquid

**Technical field:**
The invention consists broadly of a vessel for dispensing a liquid such as a tea pot or the like comprising a single pot or container or hollow body and a plurality of spouts.

**Background art:**
A teapot with one spout is known but it is time-consuming to pour several cups. To solve this problem it is possible to use two hands to hold two teapots but this would require having a second teapot but also to be skillful enough with both hands. Another possibility would be to ask someone to help you but you would probably need to pay for this assistance.

**WEDCO discloses a Two-in-One Mix Gas/Bar Oil Container https://www.ebay.ie/itm/121786938930 this container stores two-cycle gas/oil mix in one side and chain bar oil in the other side. Contrary to the present invention, WEDCO's container comprises two hollow bodies, namely two compartments, one containing fuel and the other oil.**

**It is also known from the Paracas culture from the 7th–5th century B.C. in Peru a double Spout and Bridge Bottle, https://www.metmuseum.org/art/collection/search/307622**
**This type of spouted vessel may have been intended to hold liquids. The vessel's form and elaborate decoration implies it was a special vessel, likely used in ceremonies and not for everyday use. Many Paracas double-spouted vessels of this type feature an internal construction that produces whistling sounds when liquids are poured. However the particular geometry of the double spout and bridge vessel does not allow for simultaneous pouring of liquid in several cups at the same time. Because the spouts are located opposite each other it will be necessary to pour the liquid into one cup after the other to fill the two cups. Simultaneous pouring of liquid in several cups is therefore not possible.**

Thus, there is still a need to pour several cups at the same time with a single tea pot.

**Summary of invention:**
The present invention relates to a vessel for dispensing a liquid such as a tea pot or like portable pouring vessel and has for its primary object the provision of an improved vessel or the like whereby the liquid may be poured out into cups with reduced time compared to a conventional tea pot or the like.

It is one object of the invention to provide a vessel for dispensing a liquid comprising a hollow body adapted to be filled with a liquid and means for discharging the liquid, wherein the means for discharging the liquid consists of **two spouts** from which the contained liquid may be poured simultaneously, **wherein the hollow body of the vessel is provided with a handle and the two spouts are attached to the hollow body on the side opposite to the handle**.

The invention is therefore particularly useful in, for example, tea shops in which large numbers of cups of tea have to be served in a short time.

However, the invention may obviously be applied to other portable pouring vessels than tea pots.

**Brief description of the drawings:**
In order that the invention may be more clearly understood a vessel in accordance therewith will now be described, reference being made to the accompanying drawings.

Fig. 1 is a perspective view of a vessel according to the invention. Figure 1 illustrates a vessel (1) with a handle (2) and two spouts (3).

Fig. 2 is a plan of the same.

**Description of embodiments:**
It is one object of the invention to provide a vessel for dispensing a liquid comprising a hollow body (1) adapted to be filled with a liquid and means (3) for discharging the liquid, wherein the means for discharging the liquid consists of **two spouts (3), wherein the hollow body (1) of the vessel is provided with a handle (2) and the two spouts (3) are attached to the hollow body (1) on the side opposite to the handle (2).**

According to the invention, the spouts (3) are at a distance allowing to fill simultaneously two cups placed next to each other on a support surface.

In a preferred embodiment of the invention, the vessel is suitable to serve tea.

Referring to the drawings (Figures 1 and 2), said vessel comprises a single individual pot or container or hollow body (1) of usual rotund form and a single handle (2) for lifting and operating the same. Symmetrically on each side of the point diametrically opposite to said handle (2) and disposed radially with respect to the vertical center line of the hollow body (1) are two spouts (3) at such a distance apart that tea or liquid may be conveniently poured from said spouts into two cups simultaneously.

In accordance with the invention, the vessel comprises a single undivided pot or container or hollow body (1) of usual rotund form and a single handle for lifting and operating the same. Symmetrically on each side of the point diametrically opposite to said handle and disposed radially with respect to the vertical center line of the hollow body (1) are plurality of spouts preferably two spouts at such a distance apart that liquid such as tea may be conveniently poured from said spouts into two cups simultaneously.

The invention may obviously be applied to other portable pouring vessels than tea pots.

## Comments

Because of the cited prior art, the applicant was obliged to limit the scope of protection of the claims so as to only cover an object that is novel and inventive in respect of the state of the art (namely D1).

The description is the source of any allowable amendments during prosecution of the patent application. No matter can be added after filing. Therefore, what you disclose in the description is very important for any future amendments, because amendments to the claims need to be supported by the description as originally filed.

When adapting the description to the amended set of claims, the solution with a plurality of spouts needs to be removed from the description because the claims are now limited to two spouts. This is especially true for Europe (see above).

In the present exercise, original claim 3 as filed was containing features that were able to restore novelty to the current invention; however, claim 3 was directed to a particular embodiment of the invention actually offering limitation to original claim 1.

However in view of this limitation, the new amended claim would not cover a competitor producing for example a pot with two spouts having a handle at its top. This embodiment would not be covered by currently amended claim 1 and would therefore not infringe claim 1 as amended. This is why it is very important to think about all possible alternatives and various embodiments of the invention when drafting the description.

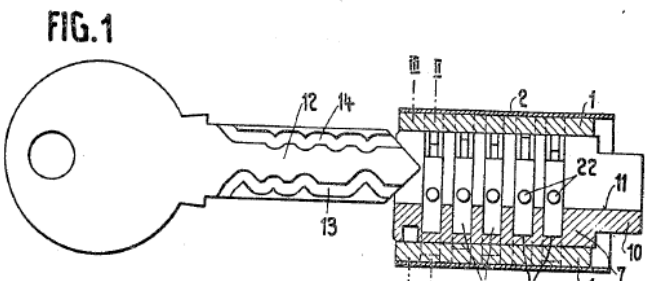
In other jurisdictions like the USA where literal support in the description is not requested for amending the claims, it would be possible to file amended claims claiming a plurality of spouts as follows (reference numbers are not needed):

1. A vessel for dispensing a liquid comprising a hollow body adapted to be filled with a liquid and means for discharging the liquid, means for discharging the liquid consisting of a plurality of spouts, wherein the hollow body of the vessel is provided with a handle and the plurality of spouts are attached to the hollow body on the side opposite to the handle.
2. The vessel according to claim 1, wherein the plurality of spouts are at a distance allowing to fill simultaneously a plurality of cups placed next to each other on a support surface.
3. The vessel according to claim 1, wherein the vessel has two spouts.
4. The vessel according to claim 1, wherein the vessel is suitable to serve tea.

## 4.3 Exercise 3: Dimple key (continued)

In the instant case, with claim 1 rejected as obvious in view of Ching, the drafter may try to argue, for example, that the flat design of the dimple key would be non-obvious because of the difficulty of maintaining alignment of the dimples and the pins. Developing such arguments is often most effective when the drafter consults the inventor(s), although the drafter should be cautiously aware that inventors rarely understand the nuances of the legal concept of obviousness.

Regarding Rejection #2, the reference Gysin includes the following image as Fig. 1:




The rejection requires that the edge key and dimple key are obvious variants, and the response could focus on the fallacy of this argument. Alternatively or in addition, the response can focus on the different implementation of the symmetry in Gysin as opposed to the symmetry of the dimple key. For example, in Gysin, the key can be inserted either “up” or “down” – but in either orientation, only a single set of pins interfaces with the ridges. In contrast, in the dimple key, both faces interact with a separate set of pins. As a third option for responding, the claims can be amended to specify that the two faces of the dimple key have distinct dimple patterns, thus forcing the lock to also have two distinct sets of pins.

Regarding Rejection #3, the examiner appears to be stating that the limitations of claim 10 do not substantively narrow the scope of claim 1, i.e., claim 10 merely clarifies the limitation, present in claim 1, that the arrangement of the dimples is complementary to the arrangement of the pins in the lock. This rejection is easily overcome by deleting the rejected claim, but an alternative is to amend the claim with a limitation from another claim or the specification. In the instant case, the drafter may elect to argue that the limitation in claim 10 pertaining to aligning the pins of the lock for rotational motion is, in fact, a narrowing of the limitations present in claim 1.

Regarding Rejection #4, this rejection is most easily overcome by amending claim 6, e.g., to state “each dimple from the plurality of dimples.”

Taking account of all four rejections, here is a sample amended set of claims:

1. A device comprising:
   - an elongated bar;
   - a **first** plurality of dimples disposed on a **first** face of the elongated bar **in a first pre-determined pattern that is** complementary to a **first** set of pins in a lock;
   - **a second plurality of dimples disposed on a second face of the elongated bar in a second pre-determined pattern that is complementary to a second set of pins in the lock, wherein the first pre-determined pattern is distinct from the second pre-determined pattern;** and
   - a finger grip attached to a proximal end of the elongated bar.

2. The device of claim 1, wherein the elongated bar is made of metal.
3. The device of claim 1, wherein the elongated bar comprises beveled corners at a distal end.
4. The device of claim 1, wherein the **first** plurality of dimples are aligned linearly in one or more rows, but spaced randomly, along the length of the elongated bar.
5. The device of claim 1, wherein the **first** plurality of dimples are aligned linearly in at least two rows along the length of the elongated bar.
6. The device of claim 1, wherein the **first plurality of** dimples **comprises dimples that** are of varying depth and width.
7. Canceled.
8. The device of claim 1, wherein the elongated bar is made of metal, and wherein the **first** plurality of dimples are aligned linearly in rows, but spaced randomly, along the length of the elongated bar.
9. Canceled.
10. The device of claim 1, wherein each dimple in the **first** plurality of dimples is **independently selected from a diameter in the range 0.5–2 mm, and is** positioned to align with a corresponding pin from the set of pins in the lock, such that, when the elongated bar is at least partially inserted in the lock, the plurality of dimples align with the set of pins in the lock and shift each pin horizontally to align the pins and enable rotational movement within the lock.

## 4.4 Exercise 4: Computer system for organization of medical records

In response to the office action, the applicant amends the claims as follows.

### Claim amendments:

1. A non-transitory machine-readable medium storing executable program instructions which when executed by a data processing system cause the data processing system to perform a method comprising:
   - receiving a plurality of icons, **each icon comprising an image**, wherein for each **icon** in the plurality of icons there are a plurality of versions of the image, **each version to be used** with different operating systems;
   - creating a plurality of packages **in a memory**, each of the packages containing icons for one of the different operating systems;
   - receiving a first request from a first device for a set of icons, the first request specifying an operating system of the first device; **and**
   - sending **to said first device**, in response to the first request, one of the packages **created in the memory** that is for use with the operating system of the first device **to display the icons on the package on a screen of said first device.**

2. The medium as in claim 1 wherein one of the versions of the plurality of versions is a high-resolution version image for use on a first operating system and another version of the plurality of versions is a low-resolution version image for use on a second operating system and wherein each of the packages contain icons for only one of the different operating systems.

3. The medium as in claim 1 wherein the method is performed by one or more servers in a service that provides one or more catalogs of icons and wherein the plurality of icons are received from a developer of icons or a graphic artist.
4. The medium as in claim 1 wherein the first request specifies an operating system either implicitly or explicitly.
5. The medium as in claim 4 wherein the first request implicitly specifies the operating system by specifying a set of model and manufacturer identifiers.
6. The medium as in claim 5 wherein each package includes a metadata file that contains icon identifiers, one for each icon in the package.

Response to office action:

**Clarity/indefiniteness rejections**
The examiner rejected claim 1 for lack of clarity and/or antecedent basis because the phrase "each image in the plurality of icons" is not clear or lacks antecedent basis.

Accordingly, claim 1 has been amended to now recite: "…each icon comprising an image, wherein for each icon in the plurality of icons there are a plurality of versions of the image…"

This is supported on the original specification where it is explained that the icons can be images that are created in a set of different resolutions. For example, a particular icon can have in one embodiment three different versions of the same image, but each being for use on devices with different screen resolutions. For example, a particular icon can have a High Definition (high resolution) version, a medium resolution version, and a low-resolution version [*include where this description is found on the specification*]. No new matter has been added.

The examiner further rejected claim 1 for lack of clarity, as the nexus between "creating a plurality of packages" and "sending… one of the packages" is unclear. The examiner argues that although a package is "created," such creation is digital and there is no indication that such digitally created package remains available for later "sending."

Accordingly, claim 1 has been amended to now recite: "…creating a plurality of packages in a memory… sending to said first device, in response to the first request, one of the packages created in the memory…"

This is supported on the original specification where it is explained that after receiving a plurality of icons, a plurality of packages are created in a memory, each of the packages containing icons of one of the different screen resolutions, and sending, in response to a first user device request, one of the packages that is for use with the screen resolution of the first device [*include where this description is found on the specification*]. No new matter has been added.

**Subject matter eligibility rejection**
The examiner rejected claims 1–6 for lacking patentable subject matter because the claims are directed to an abstract idea implemented in the circuitry of a computer.

Applicant respectfully disagrees.

In order to determine if a claim is directed to an abstract idea the following questions must be considered:
- Is the claim directed to a process, machine, manufacture or composition of matter?
- Does the claim recite an abstract idea and if so, does the claim recite additional elements that amount to significantly more than the abstract idea?

In the instant case, the claims are directed to a process performed by a data processing system to carry out a series of steps which clearly falls within the technological categories of patent eligible subject matter (i.e., a process, machine, manufacture or composition of matter).

Furthermore, the claimed subject matter is directed to a software-implemented method with specific steps to receive, create, manipulate and exchange data between devices. As can be appreciated, none of the claimed steps recite the use of a mathematical relationship, mathematical formula or calculation performed with the data.

In addition, the specification and the claims as a whole clearly set forth a technological improvement over the prior art.

The specification explains that a computer application such as a mobile phone application may be deployed on a variety of different operating systems having different requirements and parameters. The mobile application is generally created to include icons with a predefined resolution suitable to be displayed on a mobile environment running on a specific operating system. The problem arises when the mobile application is run on an environment having a different operating system where the predefined resolution of the icons is not sufficient for adequately displaying the icon affecting the user experience.

The present invention solves this technological problem and improves the way mobile applications run on different operating systems by providing a process that ensures compatibility among different operating systems having different image resolution requirements.

Specifically, the invention creates different packages of the same set of icons, wherein all the icon images of each package have the same resolution. For example, one package can contain the icons having a high-resolution version of the icon images and another package can contain a low-resolution version of the same icon images. In operation, every time a mobile application runs on a device having a specific operating system, the process ensures that the icons of the mobile application are displayed with a resolution compatible with the operating system and the specifications of the device without affecting the user experience.

As can be appreciated, the claims distinctly specify all the above-described technical features that are necessary for achieving the claimed technical solution of the process because they set forth a specific application that improves the way mobile applications run on different operating systems and the functioning of the display function on the device running the mobile application.

Accordingly, Applicant submits that the claims are not directed to an abstract idea and withdrawal of the instant rejection is respectfully requested.

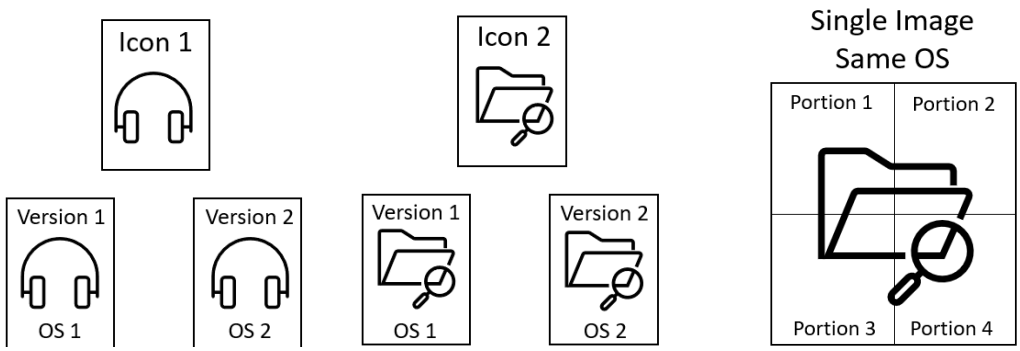
**Prior art rejection**
The examiner rejected claim 1 for lack of novelty in view of US Patent Application XXXXX.

The examiner argued that the cited document discloses that in an embodiment, the invention includes a system comprising: at least one processor; and a memory storing instructions that, when executed by the at least one processor, cause the system to perform: storing a set of image portions that forms an image formatted for a specific operating system; acquiring a request from a client device for the image, the request including information about one or more properties associated with the client device; selecting a subset of image portions out of the set of image portions based on the one or more properties associated with the client device; and transmitting the subset of image portions to the client device in response to the request.

Applicant respectfully disagrees.

The claim recites that each icon comprises an image and that for each icon a plurality of versions of that same image is provided. In clear contrast, the cited art teaches providing a set of different portions of the same image that when combined form the image.

Furthermore, the claim recites that each version of the image is to be used with a different operating system. In clear contrast, the cited art teaches the set of image portions forming an image formatted for a specific operating system.




In addition, the claim recites creating plural packages, each package containing the version of the images of said icons for one of the different operating systems. In clear contrast, the cited art teaches creating a single set of portions of the same image formatted for a single operating system.

The examiner is reminded that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

In the instant case, as previously explained, the cited art fails to teach the above-indicated claim limitations.

Accordingly, Applicant submits that the claim is allowable over the cited art and respectfully requests withdrawal of the instant rejection.

# Exercises in Chapter 5 Patent drafting in certain technical fields

## 5.1 Mechanics

### 5.1.1 Exercise 1: Bag for storing food

The independent claim already covers both embodiments with the inner cylinder using the one-way flap valve because the valved air opening was recited as being positioned at either end of the cylinder. Moreover, placing and removing a thumb against the air opening (10) can be considered equivalent to the one-way flap valve (17) shown in Figure 1A, so the third embodiment is also covered by the claim.

However, since the third embodiment must have the "thumb-valved air opening" positioned only on one end of the inner cylinder (i.e., the end outside the outer cylinder), the claim as drafted might raise an indefinite issue during examination.

Thus, a broader claim could be drafted that recites the inner cylinder having the valved air opening and the air opening without limiting their respective position in relation to each other.

The following set of claims is proposed:

1. A manually operable pump comprising:
   - a rigid outer cylinder including a valved air opening; and
   - a rigid inner cylinder including a piston at a first end of said rigid inner cylinder, telescopically and slidably mounted inside said rigid outer cylinder, said rigid inner cylinder further including a valved air opening and an air opening, wherein (a) air is drawn through said valved air opening of the rigid outer cylinder and into said rigid outer cylinder during a suction stroke in which the piston is pulled in a direction away from the valved air opening of said rigid outer cylinder and (b) air passes through the air opening of said rigid inner cylinder and out of said rigid inner cylinder during a return stroke in which said piston is pushed in a direction towards the valved air opening of said rigid outer cylinder.

2. The manually operable pump as claimed in claim 1 wherein the valved air opening of said inner cylinder is sealed during said suction stroke.
3. The manually operable pump as claimed in claims 1 or 2 wherein the valved air opening of said outer cylinder is sealed during said return stroke.
4. The manually operable pump as claimed in any one of claims 1 to 3 wherein said valved air opening of inner cylinder is provided at said first end of the inner cylinder and said inner cylinder is provided with said air opening at a second end of the inner cylinder.
5. The manually operable pump as claimed in claim 4, wherein said valved air opening of said inner cylinder is provided at the piston of said inner cylinder.

6. The manually operable pump as claimed in any one of claims 1 to 3, wherein said valved opening of inner cylinder is provided at a second end of the inner cylinder and said inner cylinder is provided with said air opening at the first end of the inner cylinder.
7. The manually operable pump as claimed in claim 6, wherein said air opening of said inner cylinder is provided at the piston of said inner cylinder.
8. The manually operable pump as claimed in any one of claims 1 or 7, wherein said valved air opening of said inner cylinder is open and the valved air opening of the outer cylinder is closed when the inner cylinder is moving in the return stroke.
9. The manually operable pump as claimed in any one of claims 1 or 8, wherein said valved air opening of said inner cylinder is closed and the valved air opening of the outer cylinder is open when the inner cylindrical is moving in the suction stroke.
10. The manually operable pump as claimed in any one of claims 1 to 9, wherein the valved air openings comprise a flap valve.
11. The manually operable pump as claimed in any one of claims 1–3, 6–9, wherein the valved air opening of said inner cylinder is manually opened or closed by a user.
12. The manually operable pump as claimed in any one of claims 1–3, 6–9, wherein the valved air opening of said inner cylinder is opened or closed by a finger of a user.

The following claims are proposed to cover the flexible cylinder embodiment.

13. A manually operable pump comprising:
    – a flexible cylinder including a first valved air opening at a first end and an air opening at a second end thereof, said flexible cylinder being biased to an expanded state, wherein

      (a) air is drawn through said first valved air opening and into said flexible cylinder during an expansion movement of said flexible cylinder and (b) air passes through the air opening of said second end and out of said flexible cylinder during a compression movement of said flexible cylinder.

14. The manually operable pump as claimed in claim 13, wherein the air opening of said second end is sealed during said expansion movement.
15. The manually operable pump as claimed in claims 13 or 14, wherein the first valved air opening is sealed during said compression movement.
16. The manually operable pump as claimed in any one of claims 13–15, wherein said first valved air opening of said flexible cylinder is open and the air opening of the second end is closed during said expansion movement.
17. The manually operable pump as claimed in any one of claims 13–16, wherein said first valved air opening of said flexible cylinder is closed and the air opening of the second end is opened during said compression movement.
18. The manually operable pump as claimed in any one of claims 13–17, wherein the first valved air opening comprises a valve.
19. The manually operable pump as claimed in any one of claims 13–18, wherein said valve is a flap valve.
20. The manually operable pump as claimed in any one of claims 13–19, wherein the air opening comprises a valve.
21. The manually operable pump as claimed in any one of claims 13-20, wherein the valve of said air opening comprises a flap valve.
22. The manually operable pump as claimed in any one of claims 13–19, wherein the air opening of said second end is manually opened or closed by a user.
23. The manually operable pump as claimed in any one of claims 13–19, wherein the air opening of said second end is opened or closed by a finger of a user.

### 5.1.2 Exercise 2: Picture hanging hook

This is a table listing the main differences between the inventor's hanging hook and the new prior art and indicating whether the difference is disclosed in the previous prior art.

| Difference | Disclosed in previous prior art? |
|---|---|
| Flexible/elastic | yes |
| Reusable | yes |
| Projections to prevent rotation of anchor inside the hole | yes |
| Wings are biased into an expanded position away from each other | no |
| Need to compress wings prior to inserting into the hole | no |
| Wings return to the expanded position once the screw is removed | no |
| Does not have projecting teeth on socket (39) | yes |

The previously drafted independent claim avoids this new prior art since it requires the pair of arms to be elastic, while the arms (29) of the new prior art are rigid and made of metal.

However, a new independent claim can be added reciting the wings being biased into an expanded position away from each other which is not taught by the new prior art.

**Claims**

1. A reusable anchoring device comprising:
   - a socket configured to receive a threaded fastener; and
   - a securing element coupled to said socket and having a pair of arms that are hinged together at a distal end thereof through a distal joint having an opening so that said pair of arms are biased into an expanded position away from each other, wherein said pair of arms is configured for bending and spreading apart when said threaded fastener threadably engages said opening effectively securing said pair of arms against a rear surface of a panel structure.

Additional dependent claims can be added directed to the wings being compressed prior to inserting into the hole and/or the wings returning to the expanded position once the screw is removed.

2. The reusable anchoring device of claim 1, wherein said pair of wings are compressed towards each other prior to inserting said anchoring device into a hole on said panel structure.
3. The reusable anchoring device of claim 1, wherein said pair of wings return to said expanded position once said threaded fastener is unthreaded from said anchoring device.

Note that the previously drafted independent method claim recited a method of installing the device where the pair of elastic wings are compressed prior to inserting into the hole and the wings returning to an uncompressed state once the pair of wings exit the hole. There is also a dependent claim reciting an uninstalling step where the pair of elastic arms also return to its uncompressed state when the threaded fastener is disengaged from the opening of said distal joint.

### 5.1.3 Exercise 3: Road cone

The previously drafted independent claim requires the stabilizing element having a pass-through opening, whereas the prior art's stabilizing element comprises a solid metal weight having a male lip mating with a female slot provided on the road marker base. Thus, the claims as drafted avoid the prior art. The following claims are proposed to cover the donut-shaped container embodiment and other variations.

**Device claims**

1. A stabilizing device comprising:
   - a hollow stabilizing element being configured for positioning onto a base of an object for maintaining said object stable on a surface.

2. The stabilizing device according to claim 1, wherein said stabilizing element has an inlet aperture configured to allow said hollow stabilizing element to be filled with a liquid.
3. The stabilizing device according to claims 1 or 2, wherein said stabilizing element has a uniform weight distribution.
4. The stabilizing device according to claims 1 or 2, wherein said stabilizing element has an uneven weight distribution.
5. The stabilizing device according to claim 1, wherein said hollow stabilizing element comprises a plurality of internal compartments separated from each other.
6. The stabilizing device according to claim 5, wherein each internal compartment of said plurality of compartments has an inlet aperture configured to allow said internal compartment to be filled with a liquid.
7. The stabilizing device of claim 1, wherein said stabilizing element has a round shape.
8. The stabilizing device of claim 1, wherein said stabilizing element has a pass-through opening.
9. The stabilizing device of claim 1, wherein said pass-through opening has a round shape.
10. The stabilizing device of claim 1, wherein said object is a road marker having an elongated body extending from said base.
11. The stabilizing device of claim 10, wherein said elongated body has a conical shape.
12. The stabilizing device of claim 1, wherein said stabilizing element is made from plastic.
13. The stabilizing device of claim 10, wherein said elongated body comprises at least one reflective surface.
14. The stabilizing device of claim 13, wherein said at least one reflective surface comprises an attachable band.

**System claims**

1. An object stabilizing system comprising:
   - an object having a base; and
   - a hollow stabilizing element being configured for positioning onto the base of said object for maintaining the object stable on a surface.

2. The object stabilizing system according to claim 1, wherein said stabilizing element has an inlet aperture configured to allow said hollow stabilizing element to be filled with a liquid.
3. The object stabilizing system according to claims 1 or 2, wherein said stabilizing element has a uniform weight distribution.
4. The object stabilizing system according to claims 1 or 2, wherein said stabilizing element has an uneven weight distribution.
5. The object stabilizing system according to claim 1, wherein said hollow stabilizing element comprises a plurality of internal compartments separated from each other.
6. The object stabilizing system according to claim 5, wherein each internal compartment of said plurality of compartments has an inlet aperture configured to allow said internal compartment to be filled with a liquid.
7. The object stabilizing system of claim 1, wherein said stabilizing element has a round shape.
8. The object stabilizing system of claim 1, wherein said stabilizing element has a pass-through opening.
9. The object stabilizing system of claim 1, wherein said pass-through opening has a round shape.
10. The object stabilizing system of claim 1, wherein said object is a road marker having an elongated body extending from said base.
11. The object stabilizing system of claim 10, wherein said elongated body has a conical shape.
12. The object stabilizing system of claim 1, wherein said stabilizing element is made from plastic.
13. The object stabilizing system of claim 10, wherein said elongated body comprises at least one reflective surface.
14. The object stabilizing system of claim 13, wherein said at least one reflective surface comprises an attachable band.

## 5.2 Chemistry

### 5.2.1 Exercise 1: Detergent

**Outline of possible claims**

1. Use of compound X as a detergent.
2. Detergent, characterized in that it comprises compound X.
3. Compound X1, obtainable by heating compound X to a temperature of 150°C to 250°C, for 15 mins, and subsequently cooling it to room temperature.
4. Compound X1 according to claim 3, for use as a medicament.
5. Compound X1 according to claim 3, for use in the treatment of skin burns.
6. Pharmaceutical formulation comprising the compound X1 of claim 3.
7. The pharmaceutical formulation according to claim 6, characterized in that it is a topical formulation.
8. The pharmaceutical formulation according to any of claims 6–7, characterized in that the pharmaceutical formulation is in the form of a cream, lotion, butter, solution and/or powder.
9. A process of preparing Compound X1, comprising the steps of:
   - heating compound X to a temperature of 150°C to 250°C, for 15 minutes,
   - and subsequently cooling it to room temperature.

10. A method of treating patient suffering from skin burns, wherein an effective amount of the compound of claim 3 or the pharmaceutical formulation of claim 6 is administered to said patient. (*US Equivalent to claim 5*)

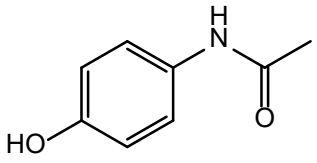
**Note:**
*Allowable claim formats are different from one jurisdiction to another. Therefore, not all types of claims 1 to 10, above, may be accepted in your jurisdiction.*

*For example, claim 5 is called a second medical use claim, which is accepted in, for example, Europe. Claim 10 is a "method of treatment type claim," which covers the equivalent scope as claim 5, and is accepted in a limited number of countries, such as the United States of America.*

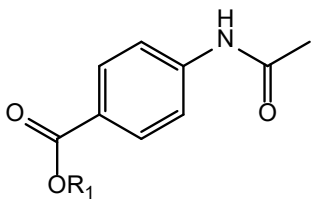
### 5.2.2 Exercise 2: Paracetamol

**Field**
The present application relates to the chemical compounds. The application relates more particularly, but not exclusively, to chemical compounds useful as analgesics (pain relievers).

**Background**
Analgesic compounds are often prescribed to patients in pain. Paracetamol (below) is a commonly used analgesic and has broad applicability for a variety of patients.




**Detailed description**
According to a first aspect of the application, there is provided a chemical compound comprising the general formula:

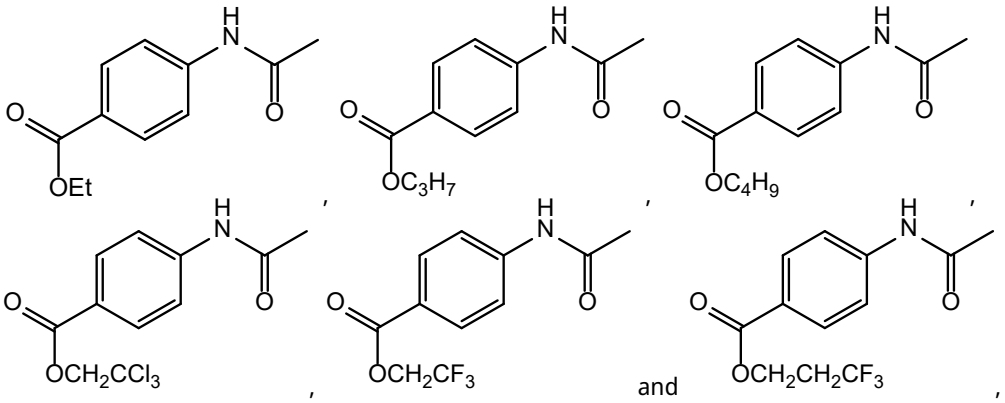



or a pharmaceutically acceptable salt thereof, wherein $R_1$ is alkyl or haloalkyl.

Compounds of the invention have been found to possess analgesic (pain-relieving) properties. $R_1$ has 2 to 10 carbon atoms.

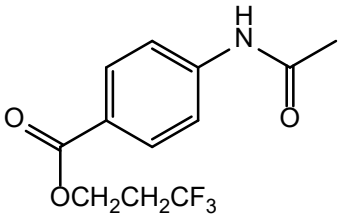
$R_1$ may have 2 to 4 carbon atoms, such as 3 carbon atoms. Optionally, $R_1$ is a haloalkyl moiety. $R_1$ may be a haloalkyl moiety comprising fluorine as a halogen atom thereof. The haloalkyl moiety may comprise three halogen atoms. Said three halogen atoms may be located on a terminal carbon atom of the $R_1$ moiety.

The compound is optionally selected from:




or a pharmaceutically acceptable salt thereof.

The compound may be:




or a pharmaceutically acceptable salt thereof.

According to a second aspect of the application, there is provided a compound according to the first aspect, or a pharmaceutically acceptable salt thereof, for use as a medicament.

According to a third aspect of the application, there is provided a compound according to the first aspect, or a pharmaceutically acceptable salt thereof, for use as an analgesic.

According to a fourth aspect of the application, there is provided a method of relieving pain, comprising administering a compound according to the first aspect, or a pharmaceutically acceptable salt thereof, to a patient in need thereof.

According to a fifth aspect of the application, there is provided a pharmaceutical composition, comprising a compound of the first aspect, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier, diluent, excipient or combination thereof.

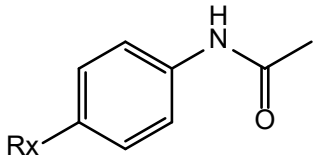
As used herein, "alkyl" refers to a straight or branched hydrocarbon chain that comprises a fully saturated (no double or triple bonds) hydrocarbon group. The alkyl group may have 1 to 20 carbon atoms. Typical alkyl groups include, but are in no way limited to, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tertiary butyl, pentyl and hexyl.

"Haloalkyl" refers to an alkyl group in which one or more of the hydrogen atoms are replaced by a halogen (e.g., mono-haloalkyl, di-haloalkyl and tri-haloalkyl). Such groups include but are

not limited to, chloromethyl, fluoromethyl, difluoromethyl, trifluoromethyl, trifluoropropyl, 1 -chloro-2-fluoromethyl, 2-fluoroisobutyl, etc.

"Halogen" refers to any one of the atoms of column 7 of the Periodic Table of the Elements, such as fluorine, chlorine, bromine and iodine.

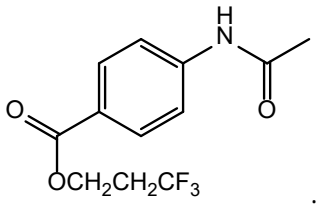
**Example**
A series of experiments were conducted to demonstrate the pain-relieving properties of selected compounds. The tested had the general formula below:




The results are shown in the table below, wherein pain relief is measured relative to paracetamol (taking a reference pain relief value of "1").

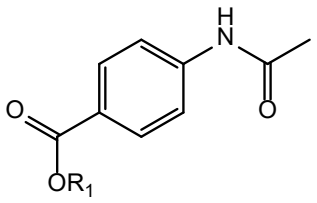
| Expt. ID | Rx | Pain relief |
|---|---|---|
| Paracetamol | OH | 1 |
| P1 | C(O)Me | 0.94 |
| P2 | C(O)Et | 0.81 |
| P3 | $C(O)C_3H_7$ | 0.71 |
| P4 | COOMe | 0.72 |
| P5 | COOEt | 1.6 |
| P6 | $COOC_3H_7$ | 1.5 |
| P7 | $COOC_4H_9$ | 1.3 |
| P8 | $COOCF_3$ | 0.8 |
| P9 | $COOCH_2CCl_3$ | 2.4 |
| P10 | $COOCH_2CF_3$ | 2.8 |
| P11 | $COOCH_2CH_2CF_3$ | 3 |

As can be seen, compounds having ester or halogenated ester groups having at least two carbon atoms at the Rx position had better pain-relieving properties than paracetamol.
It can also be seen that ester or halogenated ester groups having 3 carbon atoms performed best, particularly when those were substituted with 3 halogens. Compound P11 provided the best effect in this regard. Compound P11 had the formula:




.

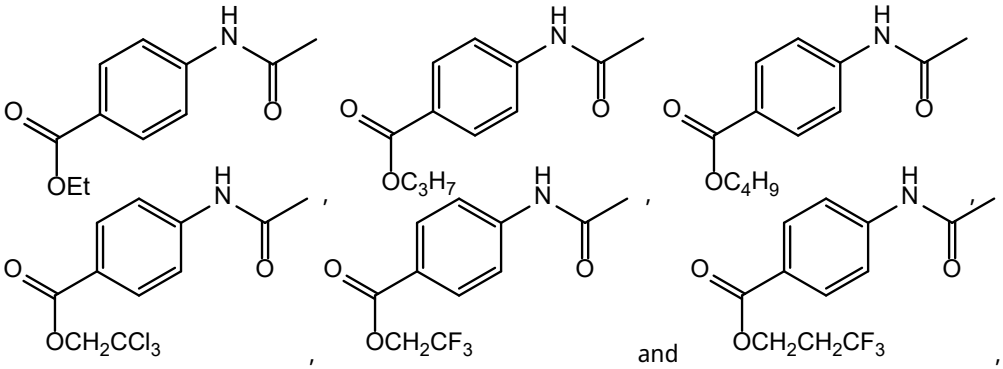
**Claims**
1. A compound comprising the general formula:




or a pharmaceutically acceptable salt thereof, wherein $R_1$ is an alkyl moiety having at least two carbon atoms or a haloalkyl moiety having at least two carbon atoms.

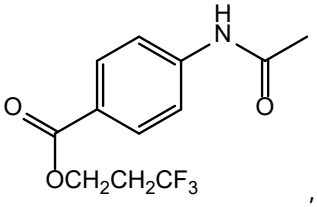
2. The compound of claim 1, wherein $R_1$ has 2 to 10 carbon atoms.
3. The compound of any preceding claim, wherein $R_1$ has 2 to 4 carbon atoms.

4. The compound of any preceding claim, wherein $R_1$ has 3 carbon atoms.
5. The compound of any preceding claim, wherein $R_1$ is a haloalkyl moiety.
6. The compound of any preceding claim, wherein $R_1$ is a haloalkyl moiety comprising fluorine as a halogen atom thereof.
7. The compound of any preceding claim, wherein $R_1$ is a haloalkyl moiety comprising three halogen atoms.
8. The compound of claim 7, wherein said three halogen atoms are located on a terminal carbon atom of the $R_1$ moiety.
9. The compound of any preceding claim, wherein the compound is selected from:




or a pharmaceutically acceptable salt thereof.

10. The compound of any preceding claim, wherein the compound is:




or a pharmaceutically acceptable salt thereof.

11. A compound of any one of claims 1 to 10, or a pharmaceutically acceptable salt thereof, for use as a medicament.
12. A compound of any one of claims 1 to 10, or a pharmaceutically acceptable salt thereof, for use as an analgesic.
13. A method of pain relief, comprising administering a compound according to any one of claims 1 to 10, or a pharmaceutically acceptable salt thereof, to a patient in need thereof.
14. A pharmaceutical composition, comprising a compound of any one of claims 1 to 10, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier, diluent, excipient or combination thereof.

**Abstract**
A compound comprising the general formula defined herein, or a pharmaceutically acceptable salt thereof, wherein $R_1$ is an alkyl moiety having at least two carbon atoms or a haloalkyl moiety having at least two carbon atoms.

### 5.2.3 Exercise 3: Hollandaise sauce (method of making an emulsion)

**Technical field**
The present application relates to a method of forming an emulsion. The application relates more particularly, but not necessarily, to a method of making an edible sauce.

**Background**
Emulsions are used in a wide variety of applications, such as foodstuffs in the form of sauces, pharmaceuticals and cosmetics in the form of creams and the like, fire-fighting compositions in the form of foams, etc. Numerous other emulsions exist and are well known to those of skill in this technical field.

**Detailed description**
According to a first aspect of the present application, there is provided a method of forming an emulsion, wherein the method comprises:

- combining water, an emulsifier and an aliphatic component to form a mixture,
- heating the mixture to a temperature of at least about 35°C; and
- agitating the heated mixture.

Usually, water and aliphatic components do not combine well. The present method enables these components to come together to form an emulsion.

The method may comprise heating the mixture to a temperature of at most about 65°C. It has been found that excessive heating can lead to negative results. Specifically, excessive heating can lead to the breaking of the emulsion by flocculation, creaming and coalescence. This is known in the context of edible sauces as curdling.

Optionally, the method comprises heating the mixture to a temperature of about 60°C to 63°C. It has been found that this temperature is particularly useful for the formation of edible sauces.

Agitating may be conducted at a pressure of at least 125 kPa. It has been found that conducting the agitating step at a pressure above atmospheric pressure leads to a finer emulsion. This means that the sauce has a smoother consistency. Agitating may be conducted at a pressure between about 200 kPa and 300 kPa. It has been found that conducting the agitating step at such a pressure produces optimum results.

Agitating may be conducted for at least 20 seconds. Below 20 seconds, it has been found that the emulsion is unstable. Agitation may be conducted for at least 2 minutes. It has been found that agitation for at least two minutes leads to the formation of an emulsion with smoothness that is optimal for use as an edible sauce.

The emulsifier may be derived from egg yolks, such as lecithin. Egg-derived emulsifiers, and lecithin in particular, are particularly useful emulsifiers in the context of edible sauces. Eggs are themselves edible and, by extension, can be incorporated into edible sauces safely. Lecithin is a generic term for a class of amphiphilic organic compounds. Lecithins are typically found in nature as a mixture of glycerophospholipids, including phosphatidylcholine, phosphatidylethanolamine, phosphatidylinositol, phosphatidylserine and phosphatidic acid.

The aliphatic component may be butter.

The method may comprise combining one or more components selected from lemon juice, salt, vinegar, white pepper and/or cayenne pepper to form said mixture. Such components may impart desirable flavor characteristics to edible sauces.

According to a second aspect, there is provided an emulsion formed by the method according to the first aspect.

**Claims**

1. A method of forming an emulsion, wherein the method comprises:
   - combining water, an emulsifier and an aliphatic component to form a mixture,
   - heating the mixture to a temperature of at least about 35°C to form a heated mixture; and
   - agitating the heated mixture.

2. The method according to claim 1, comprising heating the mixture to a temperature of at most about 65°C.
3. The method according to any preceding claim, comprising heating the mixture to a temperature of about 60°C to 63°C.
4. The method according to any preceding claim, wherein agitating is conducted at a pressure of at least 125 kPa.
5. The method according to any preceding claim, wherein agitating is conducted at a pressure between about 200 kPa and 300 kPa.
6. The method according to any preceding claim, wherein agitating is conducted for at least 20 seconds.
7. The method according to any preceding claim, wherein agitating is conducted for at least 2 minutes.
8. The method according to any preceding claim, wherein the emulsifier is derived from egg yolks.
9. The method according to any preceding claim, wherein the emulsifier comprises lecithin.
10. The method according to any preceding claim, wherein the emulsifier comprises one or more components selected from phosphatidylcholine, phosphatidylethanolamine, phosphatidylinositol, phosphatidylserine and phosphatidic acid.
11. The method according to any preceding claim, wherein the aliphatic component is derived from butter.
12. The method according to any preceding claim, wherein the method comprises combining one or more components selected from lemon juice, salt, vinegar, white pepper and/or cayenne pepper to form said mixture.
13. An emulsion formed by the method according to any preceding claim.

**Abstract**

A method of forming an emulsion is disclosed. The method comprises combining water, an emulsifier and an aliphatic component to form a mixture. The mixture is then heated to a temperature of at least about 35°C to form a heated mixture. The heated mixture is then agitated.

### 5.2.4 Exercise 4: Polymers (Copolymer)

**Technical field**

The present application relates to a copolymer. The application relates more particularly, but not necessarily exclusively, to textiles comprising fibers of a copolymer.

Textiles are generally produced from fibers. These fibers can be naturally derived, or synthetically produced (man-made). Synthetic fibers offer advantages in that the chemical composition of copolymers forming the fibers can be tailored to yield desirable properties for the end-product textile.

**Detailed description**

In a first aspect, the present application relates to a copolymer, comprising units derived from a diamine and a dicarboxylic acid.

It has been found that such copolymers have particularly useful properties in terms of elasticity, strength and resistance to shrinkage which enable these copolymers to be made into fibers suitable for manufacturing textiles for clothing purposes.

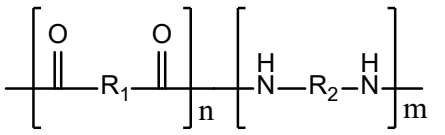
The dicarboxylic acid may be a straight chain dicarboxylic acid. Straight chain dicarboxylic acids may improve copolymer elasticity.

In some instances, the dicarboxylic acid comprises 2 to 4 carbon atoms. Fibers formed from copolymers comprising dicarboxylic acids with 2 to 4 carbon atoms had suitable elasticity for textile purposes. The dicarboxylic acid may comprise 3 carbon atoms. Dicarboxylic acids with 3 carbon atoms were found to be optimal.

The diamine may be a branched diamine. Branched diamines may improve strength of fibers formed from the copolymers.

The diamine may, in some instances, comprise 2 to 4 carbon atoms. Fibers formed from copolymers comprising diamines with 2 to 4 carbon atoms had suitable strength for textile purposes. The diamine optionally comprises 3 carbon atoms. Diamines with 3 carbon atoms were found to be optimal.

Both the diamine and the dicarboxylic acid may comprise 3 carbon atoms. Copolymers in which both the diamine and the dicarboxylic acid comprise 3 carbon atoms were found to be optimal. The copolymer may have the structure:

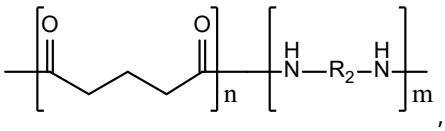


,

wherein:

$R_1$ is an alkyl moiety;
$R_2$ is an alkyl moiety;
n and m are integers greater than 0; and
n+m is greater than 100.

The copolymer may have the structure:

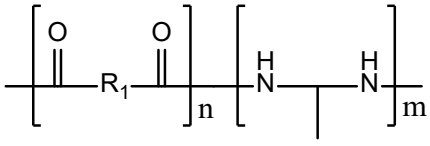


,

wherein:

$R_2$ is an alkyl moiety;
n and m are integers greater than 0; and
n+m is greater than 100.

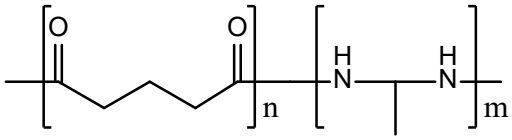
In some instances, the copolymer has the structure:



wherein:

$R_1$ is an alkyl moiety;
n and m are integers greater than 0; and
n+m is greater than 100.

Optionally, the copolymer has the structure:




wherein:

n and m are integers greater than 0; and
n+m is greater than 100.

In some instances, the copolymer has an average molecular weight of 7,000 to 13,000 Daltons, such as an average molecular weight of 9,000 to 11,000 Daltons. Copolymers having such an average molecular weight were found to have resistance to shrinkage properties that were useful for textile formation for clothing purposes.

In a second aspect, the present application relates to a fiber comprising a copolymer according to the first aspect.

In a third aspect, the present application relates to a textile comprising a fiber according to the second aspect.

As used herein, "alkyl" refers to a straight or branched hydrocarbon chain that comprises a fully saturated (no double or triple bonds) hydrocarbon group. The alkyl group may have 1 to 20 carbon atoms. Typical alkyl groups include, but are in no way limited to, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tertiary butyl, pentyl and hexyl.

Average molecular weight refers to a number average molecular weight. This is suitably measured in accordance with the standard methodology set out in ISO 16014-2.

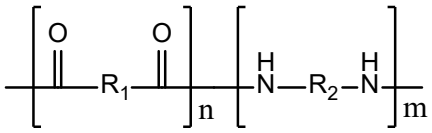
Elasticity is suitably measured in accordance with ASTM E111 – 17.

Tensile strength is suitably measured in accordance with ISO 3781:2011.

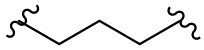
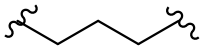
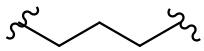
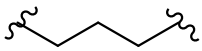
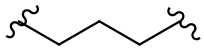
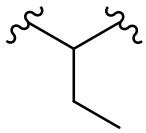
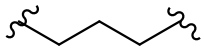
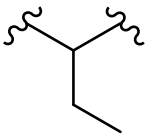
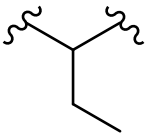
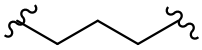
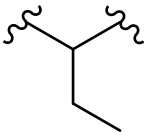
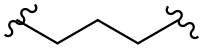
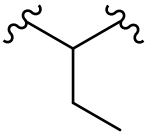
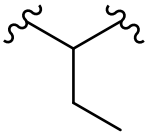
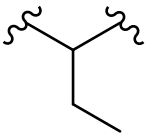
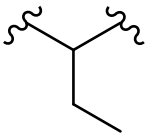
**Examples**
Various textiles were formed from copolymers having the general structure below by spunbonding. The properties of the textiles were tested and the results are set out in the table below.

Spunbonding was conducted to yield fibers having a uniform thickness of 0.01 mm and circular cross section. The textiles produced had a fiber density of about 100 fibers /mm$^2$. The textiles had a thickness of about 1 mm.

Copolymer general structure:



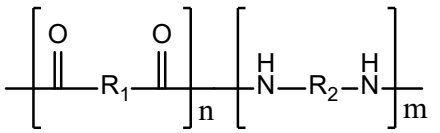
Textile properties:

| $R_1$ | $R_2$ | MWt | Elasticity ($N/mm^2$) | Strength MPa | Shrinkage at 40 °C wash cycle |
|---|---|---|---|---|---|
|  |  | 7,000 | 8,500 | 600 | 6% |
|  |  | 10,000 | 9,000 | 750 | 2% |
|  |  | 8,500 | 8,750 | 1,000 | 7% |
|  |  | 11,000 | 9,250 | 900 | 3% |
|  |  | 9,000 | 6,500 | 800 | 8% |
|  |  | 10,500 | 7,000 | 650 | 4% |
|  |  | 5,000 | 6,000 | 950 | 9% |
|  |  | 10,000 | 6,750 | 1050 | 1% |

Generally speaking, fibers having an elasticity of 6,000 to 10,000 $N/mm^2$, a strength of at least 500 MPa and which shrink by less than 10 percent when washed at a 40°C wash cycle, are considered to be suitable for textile formation for clothing purposes. Textiles with an elasticity of 7,500 to 8,500 $N/mm^2$, a strength of at least 850 and which shrink by less than 5 percent when washed at a 40°C wash cycle, are considered to be optimal.

**Claims**

1. A copolymer, comprising units derived from a diamine and a dicarboxylic acid.
2. The copolymer according to any preceding claim, wherein the dicarboxylic acid is a straight chain dicarboxylic acid.
3. The copolymer according to any preceding claim, wherein the dicarboxylic acid comprises 2 to 4 carbon atoms.
4. The copolymer according to claim 3, wherein the dicarboxylic acid comprises 3 carbon atoms.
5. The copolymer according to any preceding claim, wherein the diamine is a branched diamine.
6. The copolymer according to any preceding claim, wherein the diamine comprises 2 to 4 carbon atoms.
7. The copolymer according to claim 6, wherein the diamine comprises 3 carbon atoms.
8. The copolymer according to any preceding claim, wherein both the diamine and the dicarboxylic acid comprise 3 carbon atoms.
9. The copolymer according to any preceding claim, having the structure:

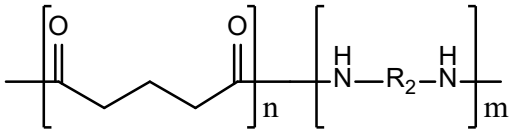


,

wherein:

$R_1$ is an alkyl moiety;
$R_2$ is an alkyl moiety;
n and m are integers greater than 0; and
n+m is greater than 100.

10. The copolymer according to any preceding claim, having the structure:

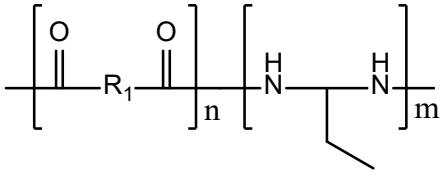


,

wherein:

$R_2$ is an alkyl moiety;
n and m are integers greater than 0; and
n+m is greater than 100.

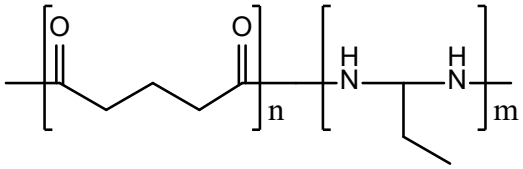
11. The copolymer according to any preceding claim, having the structure:



wherein:

$R_1$ is an alkyl moiety;
n and m are integers greater than 0; and
n+m is greater than 100.

12. The copolymer according to any preceding claim, having the structure:




wherein:

n and m are integers greater than 0; and
n+m is greater than 100.

13. The copolymer according to any preceding claim, wherein the copolymer has an average molecular weight of 7,000 to 13,000 Daltons.
14. The copolymer according to claim 13, wherein the copolymer has an average molecular weight of 9,000 to 11,000 Daltons.
15. A fiber comprising a copolymer according to any preceding claim.
16. A textile comprising a fiber according to claim 16.

**Abstract**
A copolymer, comprising units derived from a diamine and a dicarboxylic acid.

### 5.2.5 Exercise 5: Compositions (coating composition)

**Technical field**
The present application relates to a coating composition. The application relates more particularly, but not necessarily exclusively, to a coating composition having improved durability.

**Background**
Coatings are commonly applied to surfaces to alter the color of that surface. Such coatings are desirably durable, such that they resist damage from, for example, scratching or UV bleaching.

**Summary**
The present application relates to a coating composition comprising:
- about 55 to 85 wt% pigment particles;
- about 10 to 20 wt% surfactant;
- about 5 to 25 wt% binder; and
- solvent.

wherein said weight percentages are calculated based on the total weight of the pigment nanoparticles, surfactant and binder; and

wherein the pigment nanoparticles have an average particle size of about 100 μm to 250 μm.

**Detailed description**
In an aspect, the present application relates to a coating composition comprising:
- about 55 to 85 wt% pigment particles;
- about 10 to 20 wt% surfactant;
- about 5 to 25 wt% binder; and
  - solvent;

wherein said weight percentages are calculated based on the total weight of the pigment nanoparticles, surfactant and binder; and

wherein the pigment nanoparticles have an average particle size of about 100 to 250 μm.

It has been found that such compositions are useful for adding a pigment to a surface, while forming a durable finish that is resistant to scratching and UV damage (bleaching).

The composition may have a pH of between about 4 and 5, such as about 4.7. Compositions having such a pH may have UV-radiation resistance (i.e. against bleaching of the pigment).

Optionally, the composition comprises about 65–75 wt% pigment particles. In some instances, the composition comprises about 69–71 wt% pigment particles.

The pigment nanoparticles may have an average particle size of about 150 µm to 200 µm. This particle sizing was found to produce the optimum results in terms of scratch resistance.

The surfactant is optionally an anionic surfactant. Such surfactants are more compatible with pigment nanoparticles than cationic and non-ionic counterparts. The surfactant may be sodium alkyl sulfate, such as sodium dodecyl sulfate.

The binder may be selected from a polyurethane, polyester or siloxanes. The binder is optionally a polyurethane. Polyurethane has useful thermosetting properties and so may be useful in applications involving high temperatures.

As used herein, average particle size refers to a number average particle size. This may suitably be determined in accordance with the standard methodology set out in ISO 22412:2017.

**Claims**

1. A coating composition comprising:
   - about 55 to 85 wt% pigment particles;
   - about 10 to 20 wt% surfactant;
   - about 5 to 25 wt% binder; and
   - solvent.

wherein said weight percentages are calculated based on the total weight of the pigment nanoparticles, surfactant and binder; and

wherein the pigment nanoparticles have an average particle size of about 100 µm to 250 µm.

2. The coating composition according to claim 1, wherein the composition has a pH of between about 4 and 5.
3. The coating composition according to claim 2, wherein the composition has a pH of about 4.7.
4. The coating composition according to any preceding claim, wherein the composition comprises about 65–75 wt% pigment particles.
5. The coating composition according to any preceding claim, wherein the composition comprises about 69–71 wt% pigment particles.
6. The coating composition according to any preceding claim, wherein the pigment nanoparticles have an average particle size of about 150 µm to 200 µm.
7. The coating composition according to any preceding claim, wherein the surfactant is an anionic surfactant.
8. The coating composition according to any preceding claim, wherein the surfactant is sodium alkyl sulfate.
9. The coating composition according to any preceding claim, wherein the surfactant is sodium dodecyl sulfate.
10. The coating composition according to any preceding claim, wherein the binder is selected from a polyurethane, polyester or siloxanes.
11. The coating composition according to any preceding claim, wherein the binder is a polyurethane.

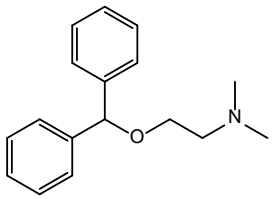
**Abstract**

A coating composition is disclosed herein. The composition comprises about 55 to 85 wt% pigment particles, about 10 to 20 wt% surfactant, about 5 to 25 wt% binder and a solvent. Said weight percentages are calculated based on the total weight of the pigment nanoparticles, surfactant and binder. The pigment nanoparticles have an average particle size of about 100 µm to 250 µm

## 5.2.6 Exercise 6: Diphenhydramine (compound)

**Field**
The present application relates to the chemical compounds. The application relates more particularly, but not exclusively, to chemical compounds useful for inhibiting histamine receptors.

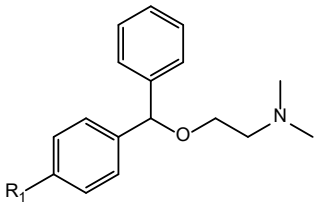
**Background**
Antihistamines are commonly used drugs for the treatment of excess histamine reaction, e.g. as caused by exposure to pollen. Diphenhydramine (below) is a commonly used antihistamine for this purpose, and is particularly effective for treatment of excess histamine reaction.




*Diphenhydramine*

However, diphenhydramine easily crosses the blood-brain-barrier (BBB) and causes drowsiness in those taking it as a result. Drowsiness is directly related to the quantity of the antihistamine crossing the BBB.

**Detailed description**
According to a first aspect of the application, there is provided a chemical compound comprising the general formula:

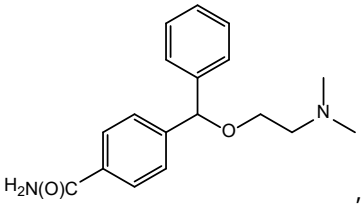


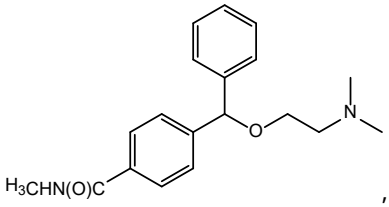

wherein $R_1$ is -C(O)$NR_2R_3$,
and wherein $R_2$ and $R_3$ are independently selected from H or $C_1$ to $C_9$ alkyl;
or a pharmaceutically acceptable salt thereof.

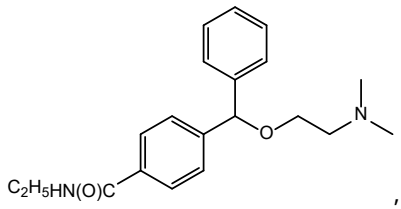
Compounds of the invention have utility in inhibiting histamine receptors. Such compounds have reduced ability to cross the blood-brain-barrier (BBB) as diphenhydramine. Drowsiness is directly related to the quantity of the compound crossing the BBB. As a result, the compounds of the invention are advantageous, since they cause less drowsiness in patients taking them.

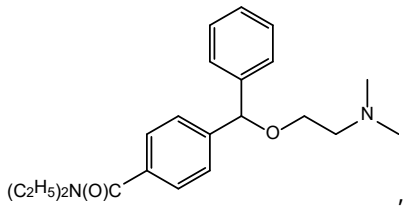
$R_2$ and $R_3$ may independently be selected from H or $C_2$ to $C_8$ alkyl. Optionally, $R_2$ and $R_3$ are independently selected from H or $C_3$ to $C_7$ alkyl. $R_2$ and $R_3$ may be independently selected from H or $C_4$ to $C_6$ alkyl. Optionally, $R_2$ and $R_3$ are independently selected from H or $C_6$ alkyl. In some instances, $R_2$ and $R_3$ are the same. For example, $R_2$ and $R_3$ may both be alkyl groups.

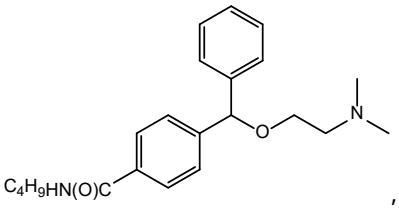
The compound is optionally selected from:

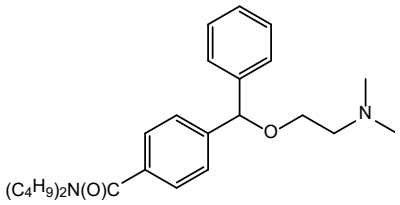


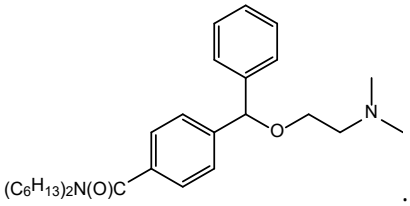
,


,


,


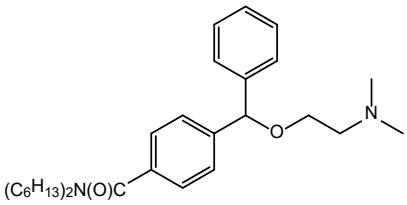
,


,




and .

In one embodiment, the chemical compound is:




or a pharmaceutically acceptable salt thereof.

The chemical compound of the invention may be for use as a medicament, such as for inhibiting histamine receptors.

The present invention also relates to a method of inhibiting histamine receptors comprising administering a compound of the invention to a patient in need thereof.

According to a second aspect of the application, there is provided a compound according to the first aspect, or a pharmaceutically acceptable salt thereof, for use as a medicament.

According to a third aspect of the application, there is provided a compound according to the first aspect, or a pharmaceutically acceptable salt thereof, for use as an antihistamine.

According to a fourth aspect of the application, there is provided a method of inhibiting histamine receptors comprising administering a compound according to the first aspect, or a pharmaceutically acceptable salt thereof, to a patient in need thereof.

According to a fifth aspect of the application, there is provided a pharmaceutical composition, comprising a compound of the first aspect, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier, diluent, excipient or combination thereof.

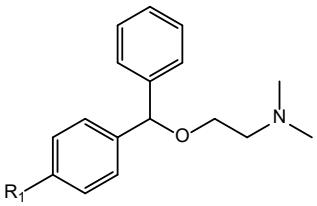
As used herein, “alkyl” refers to a straight or branched hydrocarbon chain that comprises a fully saturated (no double or triple bonds) hydrocarbon group. The alkyl group may have 1 to 20 carbon atoms. Typical alkyl groups include, but are in no way limited to, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, tertiary butyl, pentyl and hexyl.

**Brief description of the figure**
Figure 1 is a graph showing the ability of selected compounds to cross the blood-brain-barrier (BBB).

**Example**
A series of experiments were conducted to demonstrate the ability of selected compounds to cross the blood-brain-barrier (BBB). The following compounds were tested:

| Compound ID | Subst. |
|---|---|
| Diphenhydramine | H |
| D1 | $NH_2$ |
| D2 | NHCHO |
| D3 | $NCH_3C(O)CH_3$ |
| D4 | $C(O)NH_2$ |
| D5 | $C(O)NHCH_3$ |
| D6 | $C(O)N(CH_3)_2$ |
| D7 | $C(O)NHC_2H_5$ |
| D8 | $C(O)N(C_2H_5)_2$ |
| D9 | $C(O)NHC_4H_9$ |
| D10 | $C(O)N(C_4H_9)_2$ |
| D11 | $C(O)N(C_6H_{13})_2$ |

Wherein “Subst.” indicates the $R_1$ substituent in the formula below:



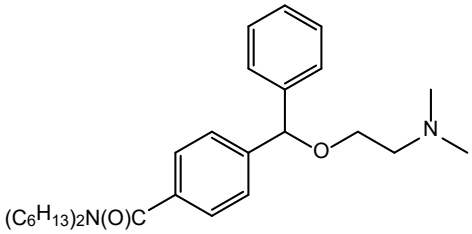

The results are shown in Figure 1. As can be seen, compounds having amino groups at the $R_1$ position, or having an N-linked amido group (i.e. $-NR_xC(O)R_y$) – compounds D1, D2 and D3 – crossed the BBB more easily than diphenhydramine. Drowsiness is directly related to the quantity of the compound crossing the BBB. As a result, compounds D1 to D3 cause more drowsiness in patients taking them than diphenhydramine.

It can also be seen that when $R_1$ was a C-linked amido group (i.e. $-C(O)NR_2R_3$), the compounds provided less drowsiness in patients taking them than diphenhydramine and compounds D1 to D3.

Generally speaking, it can be seen that longer-chain alkyl groups pendent to the nitrogen atom of the $R_1$ group were less able to cross the BBB and therefore provided less drowsiness.

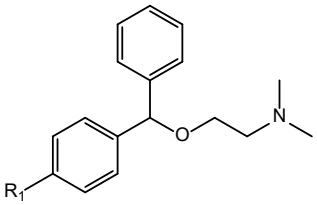
Generally speaking, it can also be seen that when both $R_2$ and $R_3$ groups are the same, particularly when both $R_2$ and $R_3$ were alkyl, the relevant compounds were less able to cross the BBB and therefore provided less drowsiness.

Compound D11 provided the best effect in this regard. Compound D11 had the formula:



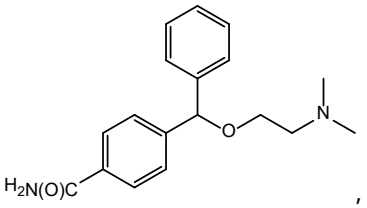

**Claims**

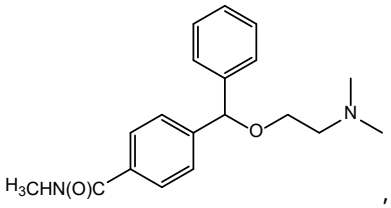
1. A compound comprising the general formula:

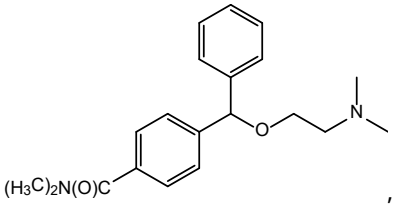


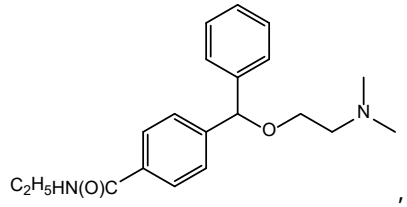

wherein $R_1$ is -C(O)$NR_2R_3$,
and wherein $R_2$ and $R_3$ are independently selected from H or $C_1$ to $C_9$ alkyl;
or a pharmaceutically acceptable salt thereof.

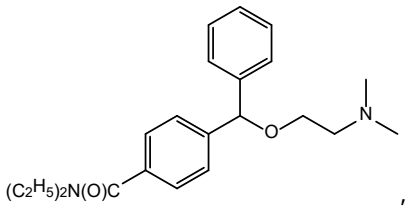
2. The compound of claim 1, wherein $R_2$ and $R_3$ are independently selected from H or $C_2$ to $C_8$ alkyl.
3. The compound of claim 1 or claim 2, wherein $R_2$ and $R_3$ are independently selected from H or $C_3$ to $C_7$ alkyl.
4. The compound of any one of claims 1 to 3, wherein $R_2$ and $R_3$ are independently selected from H or $C_4$ to $C_6$ alkyl.
5. The compound of any one of claims 1 to 4, wherein $R_2$ and $R_3$ are independently selected from H or C6 alkyl.
6. The compound of any one of claims 1 to 5, wherein $R_2$ and $R_3$ are the same.
7. The compound of any one of claims 1 to 6, wherein $R_2$ and $R_3$ are both alkyl groups.
8. The compound of any one of claims 1 to 7, wherein the compound is selected from:



,


,


,


,


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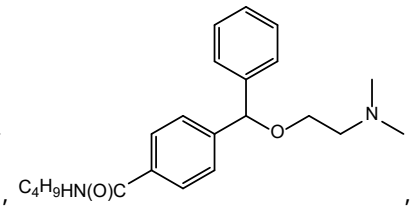
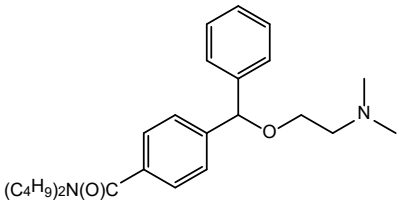
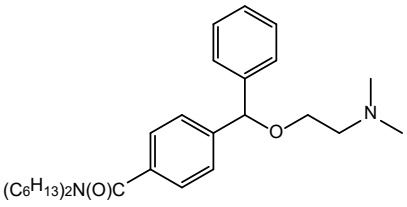


,



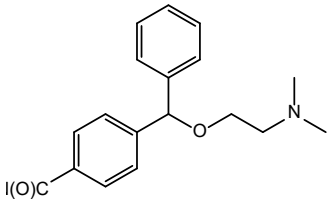

and




or

a pharmaceutically acceptable salt thereof.

9. The compound of any one of claims 1 to 7, wherein the compound is:

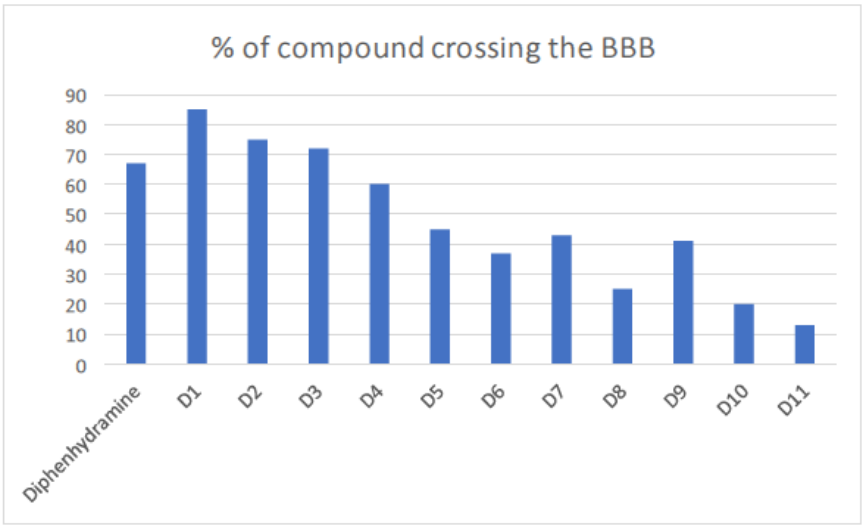



,

or a pharmaceutically acceptable salt thereof.

10. The compound of any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, for use as a medicament.
11. The compound of any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, for use as an antihistamine.
12. A method of inhibiting histamine receptors comprising administering a compound according to any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, to a patient in need thereof.
13. A pharmaceutical composition, comprising a compound of any one of claims 1 to 9, or a pharmaceutically acceptable salt thereof, together with a pharmaceutically acceptable carrier, diluent, excipient or combination thereof.

**Figure**




**Abstract**

A compound comprising the general formula defined here, wherein $R_1$ is -C(O)$NR_2R_3$, and wherein $R_2$ and $R_3$ are independently selected from H or $C_1$ to $C_9$ alkyl; or a pharmaceutically acceptable salt thereof.

## 5.3 Biotechnology

### 5.3.1 Exercise 1: Genetically modified *Prunus Persica seeds*

**Claims**

1. *Prunus persica* seeds genetically modified with vector V.
2. A dwarf peach tree grown from the seeds of claim 1.
3. A peach containing seeds genetically modified by vector V.
4. A method of genetically modifying *Prunus persica* seeds, which comprises:
   - providing the suitable conditions for the transformation of *Prunus persica* seeds;
   - providing the vector V; and
   - transforming the *Prunus persica* seeds with said vector V under said suitable conditions.

5. A method for *in vitro* production of dwarf peach trees, said method comprising the steps of:
   - transforming the *Prunus persica* seeds with the vector V under suitable conditions; and
   - allowing to growth said transformed seeds under *in vitro* conditions for obtaining dwarf peach trees.

6. Use of vector V for promoting *in vitro* growth of peaches.
7. Possibly broaden to other fruit trees!

### 5.3.2 Exercise 2: Drug for the treatment of cancer

**Question 1:**
A sample claim can be:
"A platinum coordination complex for use in the treatment of breast cancer."
Note: The following claims would not be appropriate:

"A platinum coordination complex"
[Claiming a platinum coordination complex as such will cover that product for any use. You already know that such complexes have been described before.]

"A platinum coordination complex for use in the treatment of suffering people."
[This wording covers indefinite use, and is not supported by the description of your invention.]

**Question 2:**

1. A combination of a platinum coordination complex and an HSP 90 inhibitor for use in the treatment of breast cancer.
2. The combination according to claim 1, characterized in that the HSP 90 inhibitor is 17-AAG.
3. The combination according to claim 1, characterized in that the platinum coordination complex is oxaliplatin.
4. The combination according to claim 2, characterized in that the platinum coordination complex is oxaliplatin.

**Question 3:**

**Comparison of the invention with the prior art**

| | Cancer treatment reports | WO 02/15925 |
|---|---|---|
| **Technical features of the invention** | | |
| Claim 1: Combination of HSP 90 inhibitor and Pt coordination complex | No | ✓ |
| Claim 2: Features of claim 1 + HSP90 inhibitor = 17-AAG | No | No |
| Claim 3: Features of claim 1 + Pt coordination complex = oxaliplatin | No | No |
| Claim 4: Features of claims 1 + 2 + Pt coordination complex = oxaliplatin | No | No |
| **Advantages/technical result** | | |
| Improved effect (additive) | No | ✓ |
| Synergism (more than additive) | No | No |

**Result of the analysis:**
Although the individual elements of the invention are known, the **combination** of specific compounds **is not** and it produces a **new**, **unique benefit**. But we should take into account that:

**Claim 2** refers to the use of **17-AAG**. To use this specific HSP 90 inhibitor is considered to be trivial, because WO 02/15925 recommends using **any** HSP 90 inhibitor in combination with an anticancer agent.

**Claim 3** teaches the use of **oxaliplatin**. Again, since WO 02/15925 hints at the use of **any** anticancer drug, the use of oxaliplatin is also considered to be obvious.

**Claim 4** describes the use of the combination of **oxaliplatin** and **17-AAG**. It is shown in the patent application that the combination produces a synergistic (= more than additive) effect. This is not disclosed in WO 02/15925.

The use of **17-AAG** and **oxaliplatin**, which leads to an unexpected synergistic combination, is therefore inventive.

Consequently, claim 1 may be amended to read, for example:

1. A medicament comprising 17-Alkylamino-17-desmethoxygeldanamycin (17-AAG) and oxaliplatin for use in the treatment of breast cancer in a patient.

### 5.3.3 Exercise 3: Actinomycete strain X

**Question 1:**
Answer:
The first step is to carry out a prior art search in order to find out if the same technical problem has been solved in a similar manner. If no herbicide substance has been previously disclosed as produced by an actinomycete strain, we can assume that we are in presence of a patentable invention.

**Question 2:**
Answer:
Because the isolated strain is new, it is necessary to deposit it in a depositary institution as prescribed in the applicable patent law. If you intend to protect your invention in foreign countries, you may consider a deposit with an International Depositary Authority (IDA) in accordance with the Budapest Treaty, on or before the filing date of the patent application.

**Question 3:**
Answer:
Sample claims:

1. An actinomycete strain, characterized in that it produces the herbicide substance Y.
2. The actinomycete strain of claim 1, characterized in that it is the strain X deposited with the accession number xxxxxxxxxxxxx.
3. A herbicide substance Y, characterized in that it is produced by an actinomycete strain.
4. The herbicide substance Y of claim 1, which is produced by the actinomycete strain X.
5. A herbicide composition, characterized in that it comprises the herbicide substance Y and a herbicidally acceptable vehicle.
6. A method for obtaining the herbicide substance Y, comprising the following steps:
   - allowing growth of an actinomycete strain that produces the herbicide substance Y in a suitable culture medium;
   - recovering the culture medium in which the herbicide substance Y has been excreted; and
   - purifying the herbicide substance Y from said culture medium.

7. The method of claim 6, wherein the actinomycete strain is the strain X deposited with the accession number xxxxxxxxxxxxx.
8. A method of controlling weed growth, comprising the following steps:

- preparing a herbicide composition comprising the herbicide substance Y in a suitable concentration together with a herbicidally acceptable vehicle; and
- applying the herbicide composition of the above step on a field in which the weed growth control is to be achieved.

**Question 4:**
The structure of the herbicide substance Y as well as a method for its chemical synthesis should be elucidated. If both matters are new and inventive over the prior art, another patent application should be filed for them.

### 5.3.4 Exercise 4: Biodegradable strip

**Question 1:**
(1) The essence of the invention concerns a chemical composition, and although rules for utility model registration vary from country to country, in most of the countries this modality is primarily used for mechanical innovations.
(2) Claim 1 does not define its legal scope in terms of technical features, but as advantages or ways of use, which is incorrect.
(3) Sample claims

1. A biodegradable composition comprising:
   - Polymeric material 69 to 82 % (w/w);
   - Stearic acid 1 to 2 % (w/w);
   - Zinc oxide 1 to 3 % (w/w);
   - *Mercaptobenzothiazole disulfide* 0.75 to 1 % (w/w);
   - Tetramethylthiuram monosulfide 0.25 to 0.3 % (w/w);
   - Micronized sulfur 2 to 3 % (w/w);
   - Paraffin 2 to 3 % (w/w);
   - Vaseline 0.5 to 3% (w/w);
   - Precipitated silicon dioxide 10 to 15 % (w/w);
   - Bis[3-(triethoxysilyl)propyl]tetrasulfide 0.5 to 0.7 % (w/w).

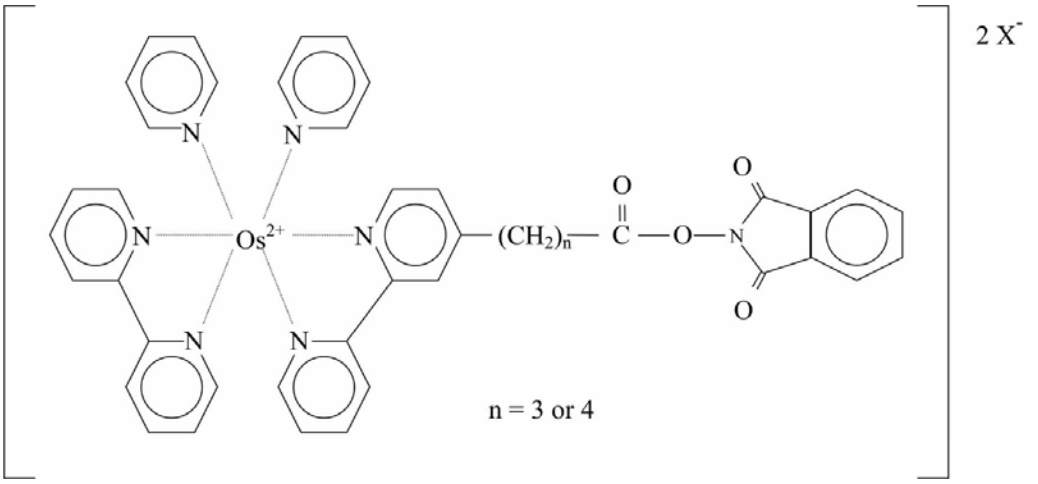
2. A biodegradable and self-breakable strip made from the composition of claim 1.
3. Use of the strip of claim 2 for keeping together banana or plantain hands during their growth.
4. A method for keeping together banana or plantain hands during their growth comprising the steps of:
   - providing the biodegradable and self-breakable strip of claim 2;
   - placing and knotting said strip around the flower glomeruli of a banana or plantain hand; and
   - allowing growth of the banana or plantain hand.

Note: Claim 4 (a method claim) refers to claim 2, which is a dependent claim of claim 1 on a biodegradable composition (a product claim). This practice is common, for example, in Europe for filing a patent application before the European Patent Office, but not in certain other jurisdictions, such as the United States of America.

## 5.3.5 Exercise 5: Immunological assay

**Sample claims**

1. A tris(2,2-bipyridine)osmium complex substituted with an ester of (i) a carboxylic acid containing 3 to 8 carbon atoms and (ii) N-hydroxysuccinimide or N-hydroxyphthalimide.
2. A tris(2,2′-bipyridine)osmium complex as claimed in claim 1 having the structure:




wherein n is 3 or 4.

3. A method for preparing a tris(2,2′-bipyridine)osmium complex as defined in claim 1, the method comprising reacting (i) a starting complex comprising a tris(2,2′-bipyridine) complex substituted with a $C_3$ to $C_8$ carboxylic acid with (ii) a N-hydroxysuccinimide or N-hydroxyphthalimide to form the tris(2,2′-bipyridine)osmium complex defined in claim 1.
4. A method as claimed in claim 3, wherein in the method, the starting complex is a tris(2,2′-bipyridine) complex substituted with a $C_3$ to $C_4$ carboxylic acid, and this starting complex is reacted with N-hydroxysuccinimide to form the complex defined in claim 2.
5. An antibody labeled with a chemiluminescent label comprising a tris(2,2′-bipyridine)osmium complex as defined in claim 1 or claim 2.
6. An antibody as claimed in claim 5, wherein the antibody is a monoclonal antibody belonging to the immunoglobulins gamma class of proteins derived from rabbits (a monoclonal antibody of the IgG type).
7. A process for labeling an antibody, the process comprising:
   (i) dissolving an antibody in a saline buffer at a pH of 8.0 to 9.5 to form an antibody solution;
   (ii) adding the antibody solution to a label comprising a tris(2,2′-bipyridine)osmium complex as defined in claim 1 or claim 2;
   (iii) stirring the antibody solution for a period of 5 to 30 minutes to allow the antibody to bind to the label.

8. A process for labeling an antibody as claimed in claim 7, wherein, after step (iii), the labeled antibody solution is purified.
9. An immunological method for detecting Salmonella bacteria present in a bacterial culture or in a contaminated food sample, which comprises the following steps:
   (a) bringing the sample to be tested into contact with a solid phase, during a first incubation time sufficient to allow the bacteria to be immobilized upon or inside the structure of the solid phase;
   (b) subjecting the solid phase with the immobilized bacteria to a first wash step to remove the unbound bacteria;
   (c) bringing the washed solid phase into contact with an antibody labeled with a chemiluminescent label comprising an osmium complex as defined in claim 1 or claim 2, wherein said antibody has binding sites for Salmonella bacteria;
   (d) subjecting the solid phase from step (c) to a second wash step to remove any unbound labeled antibody; and

(e) placing the solid phase obtained in step (d) under conditions whereby light may be produced, and the luminescent activity produced may be quantitatively measured with the help of an appropriate device.

10. An immunological method as claimed in claim 9, wherein in step (a), the first incubation time is from 20 minutes to 2 hours 30 minutes.
11. An immunological method as claimed in claim 9 or claim 10, wherein the wash steps are each performed using a saline buffer having a pH of from 8.0 to 9.5.
12. An immunological method as claimed in any one of claims 9 to 11, wherein the incubation time in step (c) is from 20 minutes to 2 hours 30 minutes.
13. An immunological method as claimed in any one of claims 9 to 12, wherein the incubation step is performed in the presence of buffer at a pH of 8.0 to 9.5.
14. A kit for testing Salmonella bacteria in a culture or in a contaminated food sample, the kit comprising:
    (i) a solid phase;
    (ii) an antibody, labeled with a chemiluminescent label, as defined in claim 5, and wherein said antibody has binding sites for Salmonella bacteria; and
    (iii) an aqueous solution of sodium oxalate (0.05 M) and of hydrogen peroxide (0.02 M).

15. A kit as claimed in claim 14, wherein the antibody is a monoclonal antibody of the IgG type.
16. A kit as claimed in claim 14 or claim 15, wherein the solid phase is in the form of a microtiter plate well.

## Comments and tips

This exercise dealt with the detection of Salmonella by means of an antibody chemically linked to a label. The said label was a certain osmium complex. Document 1 referred to the detection of Salmonella by means of an antibody labeled with an acridinium compound. Document 2 concerned light-emitting devices containing osmium complexes similar to the ones used in the present invention except for lacking the necessary linker groups.

Independent claims were expected to direct to:

(i) a compound used to label the antibody, i.e. a tris(2,2'-bipyridine)osmium complex substituted with an ester of a C3- to C8-carboxylic acid and N-hydroxysuccinimide or N-hydroxyphthalimide (see page Exercise 5–3, last paragraph).
(ii) a method for making the same by reacting a tris(2,2'-bipyridine)osmium complex substituted with a C3- to C8-carboxylic acid with N-hydroxysuccinimide or N- hydroxyphthalimide (see page Exercise 5–3, last paragraph).
(iii) an antibody for Salmonella labeled with said osmium complex.
(iv) a method for labeling an antibody with said osmium complex involving the steps listed in page Exercise 5–4, first paragraph.
(v) a method for detecting Salmonella using said labeled antibody and involving the steps listed on page Exercise 5–2, sixth paragraph.
(vi) a use of the compound of claim 1 as a label for an antibody for detecting Salmonella and to the use of the antibody of claim 3 in a process for detecting Salmonella.
(vii) a test kit comprising a solid phase, the labeled antibody and an activating solution that causes the label to emit light.

**As to claim 1:**
Those who just claimed the compounds of the formula depicted on page Exercise 5–4 did not claim the invention at best.
Those who claimed the compounds of the formula depicted on page Exercise 5–4 with n= 2 to 7 also limited the scope of protection.

Those who drafted a claim to the osmium complex depicted on page Exercise 5–4 with n = 3 to 8 should have realized that n = 3 to 8 corresponds to a carboxylic acid having 4 to 9 carbon atoms (including the -COOH group), contrary to the paragraph preceding the formula in said page, where the carboxylic acid is stated to have 3 to 8 carbon atoms.

It was not necessary to formulate the claim to the complex as a product by process claim, which may limit the protection.

**As to claim 2:**
Those who drew up a claim which also contained the known step for making the tris(2,2'-bipyridine)osmium complex substituted with a C3- to C8-carboxylic acid (see page Exercise 5–3, last paragraph) narrowed the scope of protection. This restriction was unnecessary.

**As to claim 7:**
You should have realized that it was not essential that the activating solution had the specific concentrations defined in page Exercise 5–4, first paragraph. A more general disclosure for the activating solution was to be found on page Exercise 5–3, fifth paragraph.

**Dependent claims**
Could be directed to:
- the compounds of the formula depicted on page Exercise 5–4;
- a labeled antibody where the antibody is an immunoglobulin, especially IgG;
- any preferred features of the process for detecting Salmonella, mentioned on page Exercise 5–3, second to seventh paragraphs.

An abundance of dependent claims, which did not provide useful fallback positions, generally does not reach the goal of effectively protecting the invention.

## 5.4 Software-implemented inventions

### 5.4.1 Exercise 1: Face recognition door lock

**Method claims:**

**Alternative 1:**
1. A method of operating a lock comprising the steps of:
   - receiving at a controller a facial image of a user;
   - comparing said facial image of the user with at least one authorized facial image; and
   - operating a lock from a locked position to an unlocked position or vice versa, based on the comparison between said facial image of the user and said at least one authorized facial image.

2. The method of claim 1, wherein said lock is a door lock.
3. The method of claim 1, wherein said at least one authorized facial image is stored on a remote server.
4. The method of claim 3, wherein the facial image of the user is sent to said remote server by said controller and said comparison is performed on the remote server.
5. The method of claim 4, wherein said remote server instructs the controller to operate said lock based on said comparison.
6. The method of claim 1, wherein said at least one authorized facial image is stored on said controller.
7. The method of claim 6, wherein said comparing is performed by said controller.
8. The method of claim 7, wherein said controller operates said lock based on said comparison.
9. The method of claim 3, wherein said controller and said remote server are connected via a wireless connection.
10. The method of claim 9, wherein said wireless connection is at least one of a Wi-Fi connection or a mobile connection.
11. The method of claim 1, wherein said facial image of the user is obtained by a camera.
12. The method of claim 3, wherein said controller and said remote server are connected via a wired connection.
13. The method of claim 3, wherein said controller and said remote server are connected via a WAN.

**Alternative 2:**

1. A computer-implemented method for operating a lock, the method comprising the steps of:
   - receiving at a controller a facial image of a user;
   - comparing said facial image of the user with at least one authorized facial image; and
   - operating a lock from a locked position to an unlocked position or vice versa, based on the comparison between said facial image of the user and said at least one authorized facial image.

2. The method of claim 1, wherein said lock is a door lock.
3. The method of claim 1, wherein said at least one authorized facial image is stored on a remote server.
4. The method of claim 3, wherein the facial image of the user is sent to said remote server by said controller and said comparison is performed on the remote server.
5. The method of claim 4, wherein said remote server instructs the controller to operate said lock based on said comparison.
6. The method of claim 1, wherein said at least one authorized facial image is stored on said controller.
7. The method of claim 6, wherein said comparing is performed by said controller.
8. The method of claim 7, wherein said controller operates said lock based on said comparison.
9. The method of claim 3, wherein said controller and said remote server are connected via a wireless connection.
10. The method of claim 9, wherein said wireless connection is at least one of a Wi-Fi connection or a mobile connection.
11. The method of claim 1, wherein said facial image of the user is obtained by a camera.
12. The method of claim 3, wherein said controller and said remote server are connected via a wired connection.
13. The method of claim 3, wherein said controller and said remote server are connected via a WAN.

**Product/system claims:**

**Alternative 1:**

1. A lock system comprising:
   - a controller connected to a lock;
   - a camera connected to said controller; and
   - a server connected to said controller.

2. The lock system of claim 1, wherein said lock is a door lock.
3. The lock system of claim 1, wherein said camera is configured to take facial images.
4. The lock system of claim 1, wherein said server stores at least one authorized facial image.
5. The lock system of claim 1, wherein said server is located at a remote location.
6. The lock system of claim 1, further comprising a communication module providing communication between said controller and said server.
7. The lock system of claim 6, wherein the communication between said controller and said server is bi-directional.
8. The lock system of claim 6, wherein the communication between said controller and said server is a wireless communication.
9. The lock system of claim 6, wherein the communication between said controller and said server is a wired communication.
10. The lock system of claim 8, wherein said wireless connectivity comprises at least one of Wi-Fi or mobile.
11. The lock system of claim 5, wherein said server is connected to said controller via a WAN.
12. The lock system of claim 4, wherein said server compares said at least one authorized facial image with a facial image taken by said camera and sends an instruction to said controller based on said comparison.
13. The lock system of claim 12, wherein said instruction directs the controller to operate said lock from a locked to an unlocked position or vice versa.
14. The lock system of claim 1, wherein said controller stores at least one authorized facial image.
15. The lock system of claim 14, wherein said controller compares said at least one authorized facial image with a facial image taken by said camera and operates said lock based on said comparison.

16. The lock system of claim 15, wherein said controller operates said lock from a locked to an unlocked position or vice versa.
17. The lock system of claim 1, further comprising a power source.
18. The lock system of claim 17, wherein said power source comprises at least one of a solar cell, a battery or a main power grid.

**Alternative 2:**

1. A lock system configured to operate a lock, the system comprising:
   a processor configured to perform the steps of
   - receiving at a controller a facial image of a user;
   - comparing said facial image of the user with at least one authorized facial image; and
   - operating a lock from a locked position to an unlocked position or vice versa, based on the comparison between said facial image of the user and said at least one authorized facial image.

2. The lock system of claim 1, wherein said lock is a door lock.
3. The lock system of claim 1, wherein said camera is configured to take facial images.
4. The lock system of claim 1, wherein said server stores at least one authorized facial image.
5. The lock system of claim 1, wherein said server is located at a remote location.
6. The lock system of claim 1, further comprising a communication module providing communication between said controller and said server.
7. The lock system of claim 6, wherein the communication between said controller and said server is bi-directional.
8. The lock system of claim 6, wherein the communication between said controller and said server is a wireless communication.
9. The lock system of claim 6, wherein the communication between said controller and said server is a wired communication.
10. The lock system of claim 8, wherein said wireless connectivity comprises at least one of Wi-Fi or mobile.
11. The lock system of claim 5, wherein said server is connected to said controller via a WAN.
12. The lock system of claim 4, wherein said server compares said at least one authorized facial image with a facial image taken by said camera and sends an instruction to said controller based on said comparison.
13. The lock system of claim 12, wherein said instruction directs the controller to operate said lock from a locked to an unlocked position or vice versa.
14. The lock system of claim 1, wherein said controller stores at least one authorized facial image.
15. The lock system of claim 14, wherein said controller compares said at least one authorized facial image with a facial image taken by said camera and operates said lock based on said comparison.
16. The lock system of claim 15, wherein said controller operates said lock from a locked to an unlocked position or vice versa.
17. The lock system of claim 1, further comprising a power source.
18. The lock system of claim 17, wherein said power source comprises at least one of a solar cell, a battery or a main power grid.

**Alternative 3:**

1. A lock system comprising:
   - at least one processor; and
   - memory storing instructions that when executed by the at least one processor, cause the at least one processor to perform operations comprising:
     - receiving at a controller a facial image of a user;
     - comparing said facial image of the user with at least one authorized facial image; and
     - operating a lock from a locked position to an unlocked position or vice versa, based on the comparison between said facial image of the user and said at least one authorized facial image.

**Alternative 4:**

1. A computer-readable storage medium storing instructions that when executed by a processor causes the processor to perform a method for actuating a lock, the method comprising:
   - receiving at a controller a facial image of a user;
   - comparing said facial image of the user with at least one authorized facial image; and
   - operating a lock from a locked position to an unlocked position or vice versa, based on the comparison between said facial image of the user and said at least one authorized facial image.

**Alternative 5:**

1. A data processing system comprising means for:
   - receiving a facial image of a user;
   - comparing said facial image of the user with at least one authorized facial image; and
   - operating a lock from a locked position to an unlocked position or vice versa, based on the comparison between said facial image of the user and said at least one authorized facial image.

2. The data processing system of claim 1, wherein said lock is a door lock.
3. The data processing system of claim 1, wherein said facial image of the user is obtained by a camera.
4. The data processing system of claim 1, wherein said at least one authorized facial image is stored on a server.
5. The data processing system of claim 4, wherein said server is located at a remote location.
6. The data processing system of claim 4, wherein said at least one authorized facial image is compared with the facial image of the user by said server.
7. The data processing system of claim 6, wherein said server instructs a controller to operate said lock based on the comparison.
8. The data processing system of claim 1, wherein said at least one authorized facial image is stored on a controller.
9. The data processing system of claim 8, wherein said at least one authorized facial image is compared with the facial image of the user by said controller.
10. The data processing system of claim 9, wherein said controller operates said lock based on the comparison.

### 5.4.2 Exercise 2: Wearable device

The following set of claims are proposed:

**Method claims**

**Alternative 1:**

1. A method of activating and deactivating a sound generator of a wearable device, said method comprising the steps of:
   - determining movement patterns of a wearable device based on motion signals provided by a motion sensor of said wearable device, said movement patterns indicate whether a wearer of said wearable device is asleep or awake; and
   - activating a sound generator when said movement patterns indicate the wearer is awake and deactivating said sound generator when said movement patterns indicate the wearer is asleep.

2. The method of claim 1, wherein said sound generator is activated every hour.
3. The method of claim 1, wherein said movement patterns are determined from a frequency, a direction and a movement intensity of the wearable device.
4. The method of claim 3, wherein said sound generator is a chime.
5. The method of claim 1, wherein said movement patterns are determined by a machine learning module.
6. The method of claim 1, wherein said sound generator is activated every hour.

**Alternative 2:**

1. A computer-implemented method for activating and deactivating a sound generator of a wearable device including a motion sensor, the method comprising the steps of:
   - obtaining motion signals from a motion sensor of a wearable device;
   - analyzing said motion signals to determine motion patterns of the wearable device; and
   - activating a sound generator when said motion patterns indicate that a wearer of the wearable device is awake and deactivating said sound generator when said motion patterns indicate that a wearer of the wearable device is asleep.

2. The method of claim 1, wherein said sound generator is activated every hour.
3. The method of claim 1, wherein said motion signals comprise a frequency, a direction and a movement intensity of the wearable device.
4. The method of claim 1, wherein said motion signals are analyzed by a machine learning module to determine said movement patterns.
5. The method of claim 3, wherein said frequency, said direction, and said movement intensity of the wearable device are analyzed by a machine learning module to determine said movement patterns.
6. The method of claim 1, wherein said sound generator is a chime.

**Apparatus/product claims**

**Alternative 1:**

1. A wearable device, comprising:
   - a motion sensor that produces motion signals corresponding to movement characteristics of a wearable device;
   - a sound generator; and
   - a controller connected to said motion sensor and to said sound generator, said controller determines whether a wearer of the wearable device is asleep or awake using said motion signals and activates the sound generator when the wearer is awake and deactivates said sound generator when the wearer is asleep.

2. The wearable device of claim 1, wherein said sound generator is activated every hour.
3. The wearable device of claim 1, wherein the movement characteristics of the wearable device comprise a frequency, a direction and a movement intensity of the wearable device.
4. The wearable device of claim 1, wherein the motion signals are analyzed by a machine learning module on said controller to determine movement patterns indicating whether the wearer of the wearable device is asleep or awake.
5. The wearable device of claim 1, wherein said sound generator is a chime.

**Alternative 2:**

1. A wearable device, comprising:
   - a motion sensor that produces motion signals corresponding to movement characteristics of said wearable device;
   - a sound generator; and
   - a controller connected to said motion sensor and to said sound generator, said controller configured to:
     - obtain said motion signals;
     - analyze said motion signals to determine whether a wearer of the wearable device is asleep or awake; and
     - activate the sound generator when the wearer is awake and deactivate said sound generator when the wearer is asleep.

2. The wearable device of claim 1, wherein said sound generator is activated every hour.
3. The wearable device of claim 1, wherein the movement characteristics of the wearable device comprise a frequency, a direction and a movement intensity of the wearable device.
4. The wearable device of claim 1, wherein the motion signals are analyzed by a machine learning module on said controller to determine movement patterns indicating whether the wearer of the wearable device is asleep or awake.
5. The wearable device of claim 1, wherein said sound generator is a chime.

**Alternative 3:**

1. A wearable device, comprising:
   - a motion sensor that produces motion signals corresponding to movement characteristics of said wearable device;
   - a sound generator; and
   - a controller connected to said motion sensor and to said sound generator, said controller comprising a processor configured to perform the steps of:
     - obtaining motion signals from said motion sensor;
     - analyzing said motion signals to determine whether a wearer of the wearable device is asleep or awake; and
     - activating the sound generator when the wearer is awake and deactivating said sound generator when the wearer is asleep.

2. The wearable device of claim 1, wherein said sound generator is activated every hour.
3. The wearable device of claim 1, wherein the movement characteristics of the wearable device comprise a frequency, a direction and a movement intensity of the wearable device.
4. The wearable device of claim 1, wherein the motion signals are analyzed by a machine learning module on said processor to determine movement patterns indicating whether the wearer of the wearable device is asleep or awake.
5. The wearable device of claim 1, wherein said sound generator is a chime.

**Alternative 4:**

1. A wearable device comprising:
   - at least one processor; and
   - memory storing instructions that when executed by the at least one processor, cause the at least one processor to perform operations comprising:
     - obtaining motion signals from a motion sensor of a wearable device;
     - analyzing said motion signals to determine whether a wearer of the wearable device is asleep or awake; and
     - activating a sound generator when the wearer is awake and deactivating said sound generator when the wearer is asleep.

2. The wearable device of claim 1, wherein said sound generator is activated every hour.
3. The wearable device of claim 1, wherein the motion signals correspond to movement characteristics of said wearable device.
4. The wearable device of claim 3, wherein the movement characteristics of the wearable device comprise a frequency, a direction and a movement intensity of the wearable device.
5. The wearable device of claim 1, wherein the motion signals are analyzed by a machine learning module on said at least one processor to determine movement patterns indicating whether the wearer of the wearable device is asleep or awake.
6. The wearable device of claim 1, wherein said sound generator is a chime.

**Alternative 5:**

1. A computer-readable storage medium storing instructions that when executed by a processor causes the processor to perform a method for activating and deactivating a sound generator of a wearable device including a motion sensor, the method comprising:
   - obtaining motion signals from a motion sensor of a wearable device;
   - analyzing said motion signals to determine whether a wearer of the wearable device is asleep or awake; and
   - activating a sound generator when the wearer is awake and deactivating said sound generator when the wearer is asleep.

2. The computer-readable storage medium of claim 1, wherein said sound generator is activated every hour.
3. The computer-readable storage medium of claim 1, wherein the motion signals correspond to movement characteristics of said wearable device.
4. The computer-readable storage medium of claim 3, wherein the movement characteristics of the wearable device comprise a frequency, a direction and a movement intensity of the wearable device.

5. The computer-readable storage medium of claim 1, wherein the motion signals are analyzed by a machine learning module on said processor to determine movement patterns indicating whether the wearer of the wearable device is asleep or awake.
6. The wearable device of claim 1, wherein said sound generator is a chime.

### 5.4.3 Exercise 3: Human language translation app

First of all, it is important to note that a smartphone can be considered a computer to the extent that it includes at least processing means, storage means, memory means and I/O means and that it manages data the same way a general-purpose computer would. This is an explanation that must be disclosed in the specification.

There are two main differences between the invention and the prior art: 1) the invention's input data comes from input speech for a speech-to-text/speech translation rather than coming from input text for a text-to-text/speech translation, and 2) the output language is selected prior to speaking, providing the real-time feature of the invention. Moreover, since the speech-to-text/speech translation would still be carried out regardless of the output language being selected before or after receiving the input speech, we have drafted the independent claims without the step of selecting the output language prior to speaking. However, this limitation can be added to the independent claim later during prosecution if needed.

**Alternative 1:**

1. A method for real-time human language translation, the method comprising the steps of:
   - receiving input speech data at a processor in an input language;
   - determining said input language from said input speech data; and
   - generating a translation of said input speech data into an output language.

2. The method of claim 1, wherein speech of said input speech data is received on an audio receiver.
3. The method of claim 2, wherein said audio receiver is a microphone.
4. The method of claim 1, wherein said output language is selected by a user.
5. The method of claim 4, wherein said selection by the user is made prior to receiving said input speech data.
6. The method of claim 1, wherein said translation is indicated to a user in at least one of an audible form or a visual form.
7. The method of claim 6, wherein said audible form is indicated to said user through a wireless medium.
8. The method of claim 7, wherein said wireless medium comprises a Bluetooth connection.
9. The method of claim 1, wherein said input speech data is received on a mobile device.
10. The method of claim 6, wherein said visual form is indicated to said user in a display.
11. The method of claim 6, wherein said audible form is indicated to said user through a speaker.
12. The method of claim 10, wherein said display is part of a mobile device.
13. The method of claim 11, wherein said speaker is part of a mobile device.
14. The method of claim 1, wherein said input speech data and said translation are stored on storage means.
15. The method of claim 14, wherein said storage means is part of a mobile device.
16. The method of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at the processor.
17. The method of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at a remote server.

**Alternative 2:**

1. A computer-implemented method for real-time human language translation, the method comprising the steps of:
   - receiving input speech data at a processor in an input language;
   - determining said input language from said input speech data; and
   - generating a translation of said input speech data into an output language.

2. The computer-implemented method of claim 1, wherein speech of said input speech data is received on an audio receiver.
3. The computer-implemented method of claim 2, wherein said audio receiver is a microphone.

4. The computer-implemented method of claim 1, wherein said output language is selected by a user.
5. The computer-implemented method of claim 4, wherein said selection by the user is made prior to receiving said input speech data.
6. The computer-implemented method of claim 1, wherein said translation is indicated to a user in at least one of an audible form or a visual form.
7. The computer-implemented method of claim 6, wherein said audible form is indicated to said user through a wireless medium.
8. The computer-implemented method of claim 7, wherein said wireless medium comprises a Bluetooth connection.
9. The computer-implemented method of claim 1, wherein said input speech data is received on a mobile device.
10. The computer-implemented method of claim 6, wherein said visual form is indicated to said user in a display.
11. The computer-implemented method of claim 6, wherein said audible form is indicated to said user through a speaker.
12. The computer-implemented method of claim 10, wherein said display is part of a mobile device.
13. The computer-implemented method of claim 11, wherein said speaker is part of a mobile device.
14. The computer-implemented method of claim 1, wherein said input speech data and said translation are stored on storage means.
15. The computer-implemented method of claim 14, wherein said storage means is part of a mobile device.
16. The computer-implemented method of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at the processor.
17. The computer-implemented method of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at a remote server.

**Product/system claims**

**Alternative 1**

1. One or more computer-readable storage media storing instructions for real-time human language translation that when executed instruct a processor to perform acts comprising:
   - receiving input speech data at a processor in an input language;
   - determining said input language from said input speech data; and
   - generating a translation of said input speech data into an output language.

2. The computer-readable storage media of claim 1, wherein speech of said input speech data is received on an audio receiver.
3. The computer-readable storage media of claim 2, wherein said audio receiver is a microphone.
4. The computer-readable storage media of claim 1, wherein said output language is selected by a user.
5. The computer-readable storage media of claim 4, wherein said selection by the user is made prior to receiving said input speech data.
6. The computer-readable storage media of claim 1, wherein said translation is indicated to a user in at least one of an audible form or a visual form.
7. The computer-readable storage media of claim 6, wherein said audible form is indicated to said user through a wireless medium.
8. The computer-readable storage media of claim 7, wherein said wireless medium comprises a Bluetooth connection.
9. The computer-readable storage media of claim 1, wherein said input speech data is received on a mobile device.
10. The computer-readable storage media of claim 6, wherein said visual form is indicated to said user in a display.
11. The computer-readable storage media of claim 6, wherein said audible form is indicated to said user through a speaker.

12. The computer-readable storage media of claim 10, wherein said display is part of a mobile device.
13. The computer-readable storage media of claim 11, wherein said speaker is part of a mobile device.
14. The computer-readable storage media of claim 1, wherein said input speech data and said translation are stored on storage means.
15. The computer-readable storage media of claim 14, wherein said storage means is part of a mobile device.
16. The computer-readable storage media of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at the processor.
17. The computer-readable storage media of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at a remote server.

**Alternative 2:**

1. A system for real-time human language translation, the system comprising:
   - at least one processor; and
   - memory storing instructions that when executed by the at least one processor, cause the at least one processor to perform operations comprising:
     - receiving input speech data at said at least one processor in an input language;
     - determining said input language from said input speech data; and
     - generating a translation of said input speech data into an output language.

2. The system of claim 1, wherein speech of said input speech data is received on an audio receiver.
3. The system of claim 2, wherein said audio receiver is a microphone.
4. The system of claim 1, wherein said output language is selected by a user.
5. The system of claim 4, wherein said selection by the user is made prior to receiving said input speech data.
6. The system of claim 1, wherein said translation is indicated to a user in at least one of an audible form or a visual form.
7. The system of claim 6, wherein said audible form is indicated to said user through a wireless medium.
8. The system of claim 7, wherein said wireless medium comprises a Bluetooth connection.
9. The system of claim 1, wherein said input speech data is received on a mobile device.
10. The system of claim 6, wherein said visual form is indicated to said user in a display.
11. The system of claim 6, wherein said audible form is indicated to said user through a speaker.
12. The system of claim 10, wherein said display is part of a mobile device.
13. The system of claim 11, wherein said speaker is part of a mobile device.
14. The system of claim 1, wherein said input speech data and said translation are stored on storage means.
15. The system of claim 14, wherein said storage means is part of a mobile device.
16. The system of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at the at least one processor.
17. The system of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at a remote server.

**Alternative 3:**

1. A computer program product comprising computer-readable instructions encoded on a storage device, the instructions configured to cause one or more processors to:
   - receive input speech data at a processor in an input language;
   - determine said input language from said input speech data; and
   - generate a translation of said input speech data into an output language.

2. The computer program product of claim 1, wherein speech of said input speech data is received on an audio receiver.
3. The computer program product of claim 2, wherein said audio receiver is a microphone.
4. The computer program product of claim 1, wherein said output language is selected by a user.
5. The computer program product of claim 4, wherein said selection by the user is made prior to receiving said input speech data.

6. The computer program product of claim 1, wherein said translation is indicated to a user in at least one of an audible form or a visual form.
7. The computer program product of claim 6, wherein said audible form is indicated to said user through a wireless medium.
8. The computer program product of claim 7, wherein said wireless medium comprises a Bluetooth connection.
9. The computer program product of claim 1, wherein said input speech data is received on a mobile device.
10. The computer program product of claim 6, wherein said visual form is indicated to said user in a display.
11. The computer program product of claim 6, wherein said audible form is indicated to said user through a speaker.
12. The computer program product of claim 10, wherein said display is part of a mobile device.
13. The computer program product of claim 11, wherein said speaker is part of a mobile device.
14. The computer program product of claim 1, wherein said input speech data and said translation are stored on storage means.
15. The computer program product of claim 14, wherein said storage means is part of a mobile device.
16. The computer program product of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at the one or more processors.
17. The computer program product of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at a remote server.

**Alternative 4:**

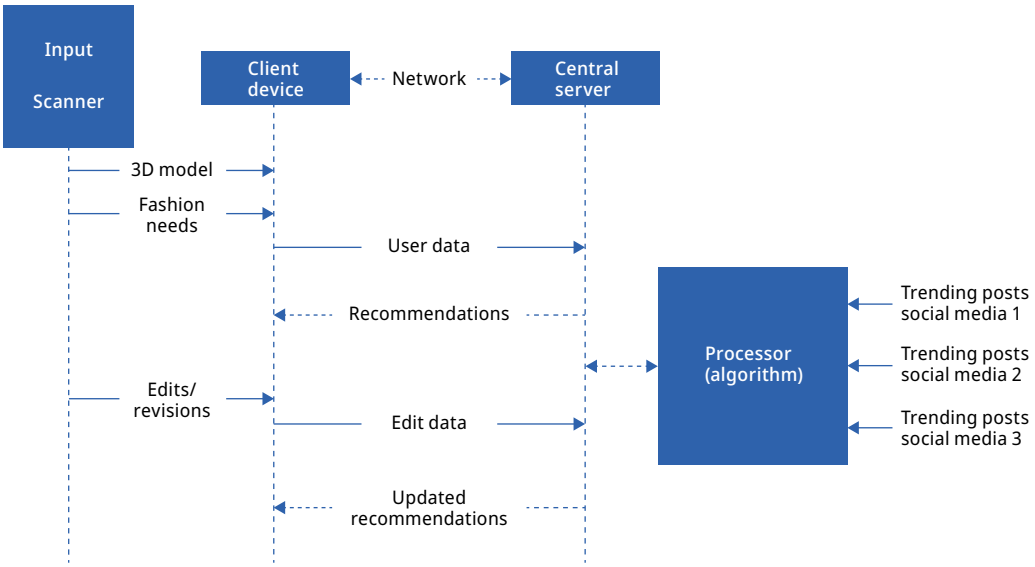
1. A data processing system comprising means for:
   - receiving input speech data at a processor in an input language;
   - determining said input language from said input speech data; and
   - generating a translation of said input speech data into an output language.

2. The data processing system of claim 1, wherein speech of said input speech data is received on an audio receiver.
3. The data processing system of claim 2, wherein said audio receiver is a microphone.
4. The data processing system of claim 1, wherein said output language is selected by a user.
5. The data processing system of claim 4, wherein said selection by the user is made prior to receiving said input speech data.
6. The data processing system of claim 1, wherein said translation is indicated to a user in at least one of an audible form or a visual form.
7. The data processing system of claim 6, wherein said audible form is indicated to said user through a wireless medium.
8. The data processing system of claim 7, wherein said wireless medium comprises a Bluetooth connection.
9. The data processing system of claim 1, wherein said input speech data is received on a mobile device.
10. The data processing system of claim 6, wherein said visual form is indicated to said user in a display.
11. The data processing system of claim 6, wherein said audible form is indicated to said user through a speaker.
12. The data processing system of claim 10, wherein said display is part of a mobile device.
13. The data processing system of claim 11, wherein said speaker is part of a mobile device.
14. The data processing system of claim 1, wherein said input speech data and said translation are stored on storage means.
15. The data processing system of claim 14, wherein said storage means is part of a mobile device.
16. The data processing system of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at the processor.
17. The data processing system of claim 1, wherein at least one of the step of determining said input language and the step of generating the translation is carried out at a remote server.

## 5.4.4 Exercise 4: Fashion selection device

When drafting claims for an invention implemented on a client-server environment, it is recommended to use a sequence diagram to understand the flow of data between the client and the server. One such diagram is being proposed for this exercise.

**Sequence diagram: client-server**




**Method claims (server side)**

**Alternative 1:**

1. A method for providing fashion recommendations to a human user, the method comprising the steps of:
   - receiving at a server user data including a digital model representation of a human user and fashion requirements of said human user;
   - generating fashion recommendations to said human user based on said user data and established fashion trends; and
   - transmitting to a client device fashion recommendations data including the fashion recommendations to said human user.

2. The method of claim 1, further comprising the step of receiving from said client device edit data including changes to said fashion recommendations.
3. The method of claim 2, further comprising the step of generating updated fashion recommendations to said human user based on said edit data and said established fashion trends.
4. The method of claim 3, further comprising the step of transmitting to said client device updated fashion recommendations data including the updated fashion recommendations.
5. The method of claim 1, wherein the step of generating fashion recommendations to said human user comprises:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.
6. The method of claim 3, wherein the step of generating updated fashion recommendations to said human user comprises:
   - analyzing posts on at least one social media platform to establish fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said established fashion trends.
7. The method of claims 1, 3, 5 or 6, wherein said fashion trends are established at least twice.
8. The method of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The method of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size and color.

**Alternative 2:**

1. A computer-implemented method for providing fashion recommendations to a human user, the method comprising the steps of:
   - receiving at a server user data including a digital model representation of a human user and fashion requirements of said human user;
   - generating fashion recommendations to said human user based on said user data and established fashion trends; and
   - transmitting to a client device fashion recommendations data including the fashion recommendations to said human user.

2. The computer-implemented method of claim 1, further comprising the step of receiving from said client device edit data including changes to said fashion recommendations.
3. The computer-implemented method of claim 2, further comprising the step of generating updated fashion recommendations to said human user based on said edit data and said established fashion trends.
4. The computer-implemented method of claim 3, further comprising the step of transmitting to said client device updated fashion recommendations data including the updated fashion recommendations.
5. The computer-implemented method of claim 1, wherein the step of generating fashion recommendations to said human user comprises:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The computer-implemented method of claim 3, wherein the step of generating updated fashion recommendations to said human user comprises:
   - analyzing posts on at least one social media platform to establish fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said established fashion trends.

7. The computer-implemented method of claims 1, 3, 5 or 6, wherein said fashion trends are established at least twice.
8. The computer-implemented method of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The computer-implemented method of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.

**Product/system claims**

**Alternative 1:**

1. One or more computer-readable storage media storing instructions for providing fashion recommendations to a human user that when executed instruct a processor to perform acts comprising:
   - receiving at a server user data including a digital model representation of a human user and fashion requirements of said human user;
   - generating fashion recommendations to said human user based on said user data and established fashion trends; and
   - transmitting to a client device fashion recommendations data including the fashion recommendations to said human user.

2. The one or more computer-readable storage media of claim 1, wherein said processor further performs the act of receiving from said client device edit data including changes to said fashion recommendations.
3. The one or more computer-readable storage media of claim 2, wherein said processor further performs the act of generating updated fashion recommendations to said human user based on said edit data and said established fashion trends.
4. The one or more computer-readable storage media of claim 3, wherein said processor further performs the act of transmitting to said client device updated fashion recommendations data including the updated fashion recommendations.

5. The one or more computer-readable storage media of claim 1, wherein the act of generating fashion recommendations to said human user comprises:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The one or more computer-readable storage media of claim 3, wherein the act of generating updated fashion recommendations to said human user comprises:
   - analyzing posts on at least one social media platform to establish said fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said established fashion trends.

7. The one or more computer-readable storage media of claims 1, 3, 5 or 6, wherein said fashion trends are established at least twice.
8. The one or more computer-readable storage media of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The one or more computer-readable storage media of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.

**Alternative 2:**

1. A system providing fashion recommendations to a human user, the system comprising:
   - at least one processor; and
   - memory storing instructions that when executed by the at least one processor, cause the at least one processor to perform operations comprising:
     - receiving at a server user data including a digital model representation of a human user and fashion requirements of said human user;
     - generating fashion recommendations to said human user based on said user data and established fashion trends; and
     - transmitting to a client device fashion recommendations data including the fashion recommendations to said human user.

2. The system of claim 1, wherein said at least one processor further performs the operation of receiving from said client device edit data including changes to said fashion recommendations.
3. The system of claim 2, wherein said processor further performs the operation of generating updated fashion recommendations to said human user based on said edit data and said established fashion trends.
4. The system of claim 3, wherein said processor further performs the operation of transmitting to said client device updated fashion recommendations data including the updated fashion recommendations.
5. The system of claim 1, wherein the operation of generating fashion recommendations to said human user comprises:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The system of claim 3, wherein the operation of generating updated fashion recommendations to said human user comprises:
   - analyzing posts on at least one social media platform to establish said fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said established fashion trends.

7. The system of claims 1, 3, 5 or 6, wherein said fashion trends are established at least twice.
8. The system of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The system of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.

**Alternative 3:**

1. A computer program product comprising computer-readable instructions encoded on a storage device, the instructions configured to cause one or more processors to:
   - receive at a server user data including a digital model representation of a human user and fashion requirements of said human user;
   - generate fashion recommendations to said human user based on said user data and established fashion trends; and
   - transmit to a client device fashion recommendations data including the fashion recommendations to said human user.

2. The computer program product of claim 1, wherein said one or more processors further receives from said client device edit data including changes to said fashion recommendations.
3. The computer program product of claim 2, wherein said one or more processors further generates updated fashion recommendations to said human user based on said edit data and said established fashion trends.
4. The computer program product of claim 3, wherein said one or more processors further transmits to said client device updated fashion recommendations data including the updated fashion recommendations.
5. The computer program product of claim 1, wherein the fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The computer program product of claim 3, wherein the updated fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish said fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said established fashion trends.

7. The computer program product of claims 1, 3, 5 or 6, wherein said fashion trends are established at least twice.
8. The computer program product of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The computer program product of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.

**Alternative 4:**

1. A data processing system comprising means for:
   - receiving at a server user data including a digital model representation of a human user and fashion requirements of said human user;
   - generating fashion recommendations to said human user based on said user data and established fashion trends; and
   - transmitting to a client device fashion recommendations data including the fashion recommendations to said human user.

2. The data processing system of claim 1, further comprising receiving from said client device edit data including changes to said fashion recommendations.
3. The data processing system of claim 2, further comprising generating updated fashion recommendations to said human user based on said edit data and said established fashion trends.
4. The data processing system of claim 3, further comprising transmitting to said client device updated fashion recommendations data including the updated fashion recommendations.
5. The data processing system of claim 1, wherein generating fashion recommendations to said human user comprises:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The data processing system of claim 3, wherein generating updated fashion recommendations to said human user comprises:
   - analyzing posts on at least one social media platform to establish said fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said established fashion trends.

7. The data processing system of claims 1, 3, 5 or 6, wherein said fashion trends are established at least twice.
8. The data processing system of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The data processing system of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.

**Method claims (client side)**

**Alternative 1:**

1. A method for receiving fashion recommendations to a human user, the method comprising the steps of:
   - transmitting from a client device user data including a digital model representation of a human user and fashion requirements of said human user; and
   - receiving from a server fashion recommendations data including fashion recommendations based on said user data and established fashion trends.

2. The method of claim 1, further comprising the step of displaying said fashion recommendations to said human user.
3. The method of claim 1, further comprising the step of transmitting to said server edit data including changes to said fashion recommendations.
4. The method of claim 3, further comprising the step of receiving from said server updated fashion recommendations data including updated fashion recommendations based on said edit data and said established fashion trends.
5. The method of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The method of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.
   - the method of claims 1, 4, 5 or 6, wherein said fashion trends are established at least twice.

7. The method of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
8. The method of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
9. The method of claim 4, further comprising the step of displaying said updated fashion recommendations to said human user.

**Alternative 2:**

1. A computer-implemented method for receiving fashion recommendations to a human user, the method comprising the steps of:
   - transmitting from a client device user data including a digital model representation of a human user and fashion requirements of said human user; and
   - receiving from a server fashion recommendations data including fashion recommendations based on said user data and established fashion trends.

2. The computer-implemented method of claim 1, further comprising the step of displaying said fashion recommendations to said human user.
3. The computer-implemented method of claim 1, further comprising the step of transmitting to said server edit data including changes to said fashion recommendations.
4. The computer-implemented method of claim 3, further comprising the step of receiving from said server updated fashion recommendations data including updated fashion recommendations based on said edit data and said established fashion trends.
5. The computer-implemented method of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The computer-implemented method of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

7. The computer-implemented method of claims 1, 4, 5 or 6, wherein said fashion trends are established at least twice.
8. The computer-implemented method of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The computer-implemented method of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
10. The computer-implemented method of claim 4, further comprising the step of displaying said updated fashion recommendations to said human user.

**Product/system claims**

**Alternative 1:**

1. One or more computer-readable storage media storing instructions for receiving fashion recommendations to a human user that when executed instruct a processor to perform acts comprising:
   - transmitting from a client device user data including a digital model representation of a human user and fashion requirements of said human user; and
   - receiving from a server fashion recommendations data including fashion recommendations based on said user data and established fashion trends.

2. The one or more computer-readable storage media of claim 1, further comprising the act of displaying said fashion recommendations to said human user.
3. The one or more computer-readable storage media of claim 1, further comprising the act of transmitting to said server edit data including changes to said fashion recommendations.
4. The one or more computer-readable storage media of claim 3, further comprising the act of receiving from said server updated fashion recommendations data including updated fashion recommendations based on said edit data and said established fashion trends.
5. The one or more computer-readable storage media of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The one or more computer-readable storage media of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

7. The one or more computer-readable storage media of claims 1, 4, 5 or 6, wherein said fashion trends are established at least twice.

8. The one or more computer-readable storage media of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The one or more computer-readable storage media of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
10. The one or more computer-readable storage media of claim 4, further comprising the act of displaying said updated fashion recommendations to said human user.

**Alternative 2:**

1. A system receiving fashion recommendations to a human user, the system comprising: at least one processor; and
   - memory storing instructions that when executed by the at least one processor, cause the at least one processor to perform operations comprising:
     - transmitting from a client device user data including a digital model representation of a human user and fashion requirements of said human user; and
     - receiving from a server fashion recommendations data including fashion recommendations based on said user data and established fashion trends.

2. The system of claim 1, further comprising the operation of displaying said fashion recommendations to said human user.
3. The system of claim 1, further comprising the operation of transmitting to said server edit data including changes to said fashion recommendations.
4. The system of claim 3, further comprising the operation of receiving from said server updated fashion recommendations data including updated fashion recommendations based on said edit data and said established fashion trends.
5. The system of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The system of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

7. The system of claims 1, 4, 5 or 6, wherein said fashion trends are established at least twice.
8. The system of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The system of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
10. The system of claim 4, further comprising the operation of displaying said updated fashion recommendations to said human user.

**Alternative 3:**

1. A computer program product comprising computer-readable instructions encoded on a storage device, the instructions configured to cause one or more processors to:
   - transmit from a client device user data including a digital model representation of a human user and fashion requirements of said human user; and
   - receive from a server fashion recommendations data including fashion recommendations based on said user data and established fashion trends.

2. The computer program product of claim 1, wherein said one or more processor further displays said fashion recommendations to said human user.
3. The computer program product of claim 1, wherein said one or more processors further transmits to said server edit data including changes to said fashion recommendations.
4. The computer program product of claim 3, wherein said one or more processors further receives from said server updated fashion recommendations data including updated fashion recommendations based on said edit data and said established fashion trends.

5. The computer program product of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The computer program product of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

7. The computer program product of claims 1, 4, 5 or 6, wherein said fashion trends are established at least twice.
8. The computer program product of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The computer program product of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
10. The computer program product of claim 4, wherein said one or more processor further displays said fashion recommendations to said human user.

**Alternative 4:**

1. A data processing system comprising means for:
   - transmitting from a client device user data including a digital model representation of a human user and fashion requirements of said human user; and
   - receiving from a server fashion recommendations data including fashion recommendations based on said user data and established fashion trends.

2. The data processing system of claim 1, further comprising displaying said fashion recommendations to said human user.
3. The data processing system of claim 1, further comprising transmitting to said server edit data including changes to said fashion recommendations.
4. The data processing system of claim 3, further comprising receiving from said server updated fashion recommendations data including updated fashion recommendations based on said edit data and said established fashion trends.
5. The data processing system of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

6. The data processing system of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

7. The data processing system of claims 1, 4, 5 or 6, wherein said fashion trends are established at least twice.
8. The data processing system of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
9. The data processing system of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
10. The data processing system of claim 4, further comprising displaying said updated fashion recommendations to said human user.

**Method claims (client + server)**

**Alternative 1:**

1. A method for providing fashion recommendations to a human user, the method comprising the steps of:
   - transmitting from a client device user data including a digital model representation of a human user and fashion requirements of said human user;
   - receiving at a server said user data and generating fashion recommendations to said human user based on said user data and established fashion trends;
   - transmitting from said server fashion recommendations data including the generated fashion recommendations to said human user; and
   - receiving at said client device said fashion recommendations data.

2. The method of claim 1, further comprising the step of displaying said fashion recommendations to said human user.
3. The method of claim 1, further comprising the step of transmitting from said client device edit data including changes to said fashion recommendations.
4. The method of claim 3, further comprising the step of receiving at the server said edit data and generating updated fashion recommendations to said human user based on said edit data and said established fashion trends.
5. The method of claim 4, further comprising the step of transmitting to said client device updated fashion recommendations data including the updated fashion recommendations.
6. The method of claim 5, further comprising the step of receiving from the server said updated fashion recommendations data.
7. The method of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

8. The method of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

9. The method of claims 1, 4, 7 or 8, wherein said fashion trends are established at least twice.
10. The method of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
11. The method of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
12. The method of claim 6, further comprising the step of displaying said updated fashion recommendations to said human user.

**Alternative 2:**

1. A computer-implemented method for receiving fashion recommendations to a human user, the method comprising the steps of:
   - transmitting from a client device user data including a digital model representation of a human user and fashion requirements of said human user;
   - receiving at a server said user data and generating fashion recommendations to said human user based on said user data and established fashion trends;
   - transmitting from said server fashion recommendations data including the generated fashion recommendations to said human user; and
   - receiving at said client device said fashion recommendations data.

2. The computer-implemented method of claim 1, further comprising the step of displaying said fashion recommendations to said human user.
3. The computer-implemented method of claim 1, further comprising the step of transmitting from said client device edit data including changes to said fashion recommendations.
4. The computer-implemented method of claim 3, further comprising the step of receiving at the server said edit data and generating updated fashion recommendations to said human user based on said edit data and said established fashion trends.

5. The computer-implemented method of claim 4, further comprising the step of transmitting to said client device updated fashion recommendations data including the updated fashion recommendations.
6. The computer-implemented method of claim 5, further comprising the step of receiving from the server said updated fashion recommendations data.
7. The computer-implemented method of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

8. The computer-implemented method of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

9. The computer-implemented method of claims 1, 4, 7 or 8, wherein said fashion trends are established at least twice.
10. The computer-implemented method of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
11. The computer-implemented method of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
12. The computer-implemented method of claim 6, further comprising the step of displaying said updated fashion recommendations to said human user.

**Product/system claims**

Considering that both the client device (i.e., a computer) and the server include a computer-readable storage media and a processor, it is recommended to draft a claim for a system that comprises at least one computer-readable storage media and at least one processor.

**Alternative 1:**

1. One or more computer-readable storage media storing instructions for receiving fashion recommendations to a human user that when executed instruct at least one processor to perform acts comprising:
   - transmitting from a client device user data including a digital model representation of a human user and fashion requirements of said human user;
   - receiving at a server said user data and generating fashion recommendations to said human user based on said user data and established fashion trends;
   - transmitting from said server fashion recommendations data including the generated fashion recommendations to said human user; and
   - receiving at said client device said fashion recommendations data.

2. The one or more computer-readable storage media of claim 1, further comprising the act of displaying said fashion recommendations to said human user.
3. The one or more computer-readable storage media of claim 1, further comprising the act of transmitting from said client device edit data including changes to said fashion recommendations.
4. The one or more computer-readable storage media of claim 3, further comprising the act of receiving at the server said edit data and generating updated fashion recommendations to said human user based on said edit data and said established fashion trends.
5. The one or more computer-readable storage media of claim 4, further comprising the act of transmitting to said client device updated fashion recommendations data including the updated fashion recommendations.
6. The one or more computer-readable storage media of claim 5, further comprising the act of receiving from the server said updated fashion recommendations data.
7. The one or more computer-readable storage media of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

8. The one or more computer-readable storage media of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

9. The one or more computer-readable storage media of claims 1, 4, 7 or 8, wherein said fashion trends are established at least twice.
10. The one or more computer-readable storage media of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
11. The one or more computer-readable storage media of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
12. The one or more computer-readable storage media of claim 6, further comprising the act of displaying said updated fashion recommendations to said human user.

**Alternative 2:**

1. A system receiving fashion recommendations to a human user, the system comprising: at least one processor; and
   - at least one memory storing instructions that when executed by the at least one processor, cause the at least one processor to perform operations comprising:
     - transmitting from a client device user data including a digital model representation of a human user and fashion requirements of said human user;
     - receiving at a server said user data and generating fashion recommendations to said human user based on said user data and established fashion trends;
     - transmitting from said server fashion recommendations data including the generated fashion recommendations to said human user; and
     - receiving at said client device said fashion recommendations data.

2. The system of claim 1, further comprising the operation of displaying said fashion recommendations to said human user.
3. The system of claim 1, further comprising the operation of transmitting from said client device edit data including changes to said fashion recommendations.
4. The system of claim 3, further comprising the operation of receiving at the server said edit data and generating updated fashion recommendations to said human user based on said edit data and said established fashion trends.
5. The system of claim 4, further comprising the operation of transmitting to said client device updated fashion recommendations data including the updated fashion recommendations.
6. The system of claim 5, further comprising the operation of receiving from the server said updated fashion recommendations data.
7. The system of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

8. The system of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

9. The system of claims 1, 4, 7 or 8, wherein said fashion trends are established at least twice.
10. The system of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
11. The system of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
12. The system of claim 6, further comprising the operation of displaying said updated fashion recommendations to said human user.

**Alternative 3:**

1. A computer program product comprising computer-readable instructions encoded on at least one storage device, the instructions configured to cause one or more processors to:
   - transmit from a client device user data including a digital model representation of a human user and fashion requirements of said human user;
   - receive at a server said user data and generate fashion recommendations to said human user based on said user data and established fashion trends;
   - transmit from said server fashion recommendations data including the generated fashion recommendations to said human user; and
   - receive at said client device said fashion recommendations data.

2. The computer program product of claim 1, wherein the one or more processors further display said fashion recommendations to said human user.
3. The computer program product of claim 1, wherein the one or more processors further transmit from said client device edit data including changes to said fashion recommendations.
4. The computer program product of claim 3, wherein the one or more processors further receive at the server said edit data and generate updated fashion recommendations to said human user based on said edit data and said established fashion trends.
5. The computer program of claim 4, wherein the one or more processors further transmit to said client device updated fashion recommendations data including the updated fashion recommendations.
6. The computer program of claim 5, wherein the one or more processors further receive from the server said updated fashion recommendations data.
7. The computer program of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

8. The computer program of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

9. The computer program of claims 1, 4, 7 or 8, wherein said fashion trends are established at least twice.
10. The computer program of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
11. The computer program of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
12. The computer program product of claim 6, wherein the one or more processors further display said updated fashion recommendations to said human user.

**Alternative 4:**

1. A data processing system comprising means for:
   - transmitting from a client device user data including a digital model representation of a human user and fashion requirements of said human user;
   - receiving at a server said user data and generating fashion recommendations to said human user based on said user data and established fashion trends;
   - transmitting from said server fashion recommendations data including the generated fashion recommendations to said human user; and
   - receiving at said client device said fashion recommendations data.

2. The data processing system of claim 1, further displaying said fashion recommendations to said human user.
3. The data processing system of claim 1, further transmitting from said client device edit data including changes to said fashion recommendations.

4. The data processing system of claim 3, further receiving at the server said edit data and generating updated fashion recommendations to said human user based on said edit data and said established fashion trends.
5. The data processing system of claim 4, further transmitting to said client device updated fashion recommendations data including the updated fashion recommendations.
6. The data processing system of claim 5, further receiving from the server said updated fashion recommendations data.
7. The data processing system of claim 1, wherein said fashion recommendations to said human user are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the fashion recommendations for said human user based on said user data and said established fashion trends.

8. The data processing system of claim 4, wherein said updated fashion recommendations are generated by:
   - analyzing posts on at least one social media platform to establish the fashion trends; and
   - determining the updated fashion recommendations for said human user based on said edit data and said fashion trends.

9. The data processing system of claims 1, 4, 7 or 8, wherein said fashion trends are established at least twice.
10. The data processing system of claim 1, wherein said digital model representation of the human user is generated by a 3-D scanner.
11. The data processing system of claim 1, wherein said fashion requirements of the human user comprises at least one of clothing, shoes, size or color.
12. The data processing system of claim 6, further comprising displaying said updated fashion recommendations to said human user.

### 5.4.5 Exercise 5: Wireless computer mouse

Assuming that having sensors embedded within a flexible top surface of a mouse is a novel feature in the computer mouse industry, it would be advisable to draft a set of claims with at least one independent device claim directed to the mouse having the sensors-embedded top surface protecting the client against a third-party manufacturer that manufactures/sells the mouse having at least the touch-sensitive top surface. Then, a dependent claim can be drafted to include the additional control circuitry protecting the client against a third-party, such as a retail store, selling, for example, the complete mouse product.

**Device/product claims**

**Alternative 1:**

1. A user input device comprising:
   - a base; and
   - a flexible top surface provided above said base and having at least one sensor embedded within, wherein said at least one sensor is configured to sense contact of at least a portion of a hand of a user on said flexible top surface and generate contact signals.

2. The user input device of claim 1, wherein said at least one sensor is a pressure sensor.
3. The user input device of claim 1, wherein said contact signals are associated with at least one of:
   - the at least a portion of a hand contacting the flexible top surface;
   - a location where the at least a portion of a hand contacts the flexible top surface;
   - a pressure intensity that the at least a portion of a hand exerts on the flexible top surface; or
   - a duration that the at least a portion of a hand contacts the flexible top surface.

4. The user input device of claim 1, further comprising a control circuit coupled to said at least one sensor.
5. The user input device of claim 4, wherein said control circuit is configured to receive from said at least one sensor the contact signals.

6. The user input device of claim 5, wherein the control circuit is configured to analyze said contact signals and to generate output control signals corresponding to a behavior of a pointer on a display.
7. The user input device of claim 1, wherein said base is adapted to stay stationary with respect to a surface during use of the user input device.
8. The user input device of claim 4, further comprising a transceiver coupled to said control circuit.
9. The user input device of claim 8, wherein said transceiver is a wired transceiver.
10. The user input device of claim 8, wherein said transceiver is a wireless transceiver.
11. The user input device of claim 8, wherein said transceiver is a Bluetooth transceiver.
12. The user input device of claim 6, wherein said output control signals are transmitted to an external device.
13. The user input device of claim 1, further comprising a power source.
14. The user input device of claim 13, wherein said power source is configured to power said at least one of at least one sensor.
15. The user input device of claim 4, further comprising a power source configured to power said control circuit.
16. The user input device of claim 8, further comprising a power source configured to power said transceiver.
17. The user input device of claim 12, wherein said external device comprises a computer.
18. The user input device of claim 1, wherein said flexible top surface is made of foam rubber.
19. The user input device of claim 1, wherein the flexible top surface is a top surface of a computer mouse.

**Alternative 2:**

1. A user input device comprising:
   - a flexible top surface having at least one sensor embedded within, wherein said at least one sensor is configured to sense contact of at least a portion of a hand of a user on said flexible top surface and generate contact signals; and
   - at least one processor configured to:
     - receive the contact signals from said at least one sensor;
     - analyze said contact signals and generate output control signals corresponding to a behavior of a pointer on a display; and
     - transmit said output control signals to an external device.

2. The user input device of claim 1, further comprising a base below said flexible top surface and being configured to stay stationary with respect to a surface during use of the user input device.
3. The user input device of claim 1, wherein said at least one sensor is a pressure sensor.
4. The user input device of claim 1, wherein said contact signals are associated to at least one of:
   - the at least a portion of a hand contacting the flexible top surface;
   - a location where the at least a portion of a hand contacts the flexible top surface;
   - a pressure intensity that the at least a portion of a hand exerts on the flexible top surface; or
   - a duration that the at least a portion of a hand contacts the flexible top surface.

5. The user input device of claim 1, further comprising a transceiver coupled to said at least one processor.
6. The user input device of claim 5, wherein said transceiver is a wired transceiver.
7. The user input device of claim 5, wherein said transceiver is a wireless transceiver.
8. The user input device of claim 5, wherein said transceiver is a Bluetooth transceiver.
9. The user input device of claim 5, wherein said at least one processor is further configured to transmit said output control signals to the external device through said transceiver.
10. The user input device of claim 1, further comprising a power source.
11. The user input device of claim 10, wherein said power source is configured to power said at least one sensor.
12. The user input device of claim 10, wherein said power source is configured to power said at least one processor.
13. The user input device of claim 5, further comprising a power source configured to power said transceiver.

14. The user input device of claim 1, wherein said external device comprises a computer.
15. The user input device of claim 1, wherein said flexible top surface is made of foam rubber.
16. The user input device of claim 1, wherein the at least one processor is further configured to analyze historical data of previously received control signals to predict future output control signals.
17. The user input device of claim 1, wherein the flexible top surface is a top surface of a computer mouse.

**Alternative 3:**

1. One or more computer-readable storage media storing instructions for controlling a pointer on a display that when executed instruct a processor to perform acts comprising:
   - receiving contact signals from at least one sensor embedded within a flexible top surface of a user input device;
   - analyzing said contact signals and generating output control signals corresponding to a behavior of a pointer on a display; and
   - transmitting said output control signals to an external device.

2. The one or more computer-readable storage media of claim 1, wherein said at least one sensor is configured to sense contact of at least a portion of a hand of a user on said flexible top surface and generate contact signals.
3. The one or more computer-readable storage media of claim 1, further comprising a base below said flexible top surface and being configured to stay stationary with respect to a surface during use of the user input device.
4. The one or more computer-readable storage media of claim 1, wherein said at least one sensor is a pressure sensor.
5. The one or more computer-readable storage media of claim 1, wherein said contact signals are associated to at least one of:
   - the at least a portion of a hand contacting the flexible top surface;
   - a location where the at least a portion of a hand contacts the flexible top surface;
   - a pressure intensity that the at least a portion of a hand exerts on the flexible top surface; or
   - a duration that the at least a portion of a hand contacts the flexible top surface.

6. The one or more computer-readable storage media of claim 1, further comprising a transceiver coupled to said processor.
7. The one or more computer-readable storage media of claim 6, wherein said transceiver is a wired transceiver.
8. The one or more computer-readable storage media of claim 6, wherein said transceiver is a wireless transceiver.
9. The one or more computer-readable storage media of claim 6, wherein said transceiver is a Bluetooth transceiver.
10. The one or more computer-readable storage media of claim 6, wherein said at least one processor is further configured to transmit said output control signals to the external device through said transceiver.
11. The one or more computer-readable storage media of claim 1, further comprising a power source.
12. The one or more computer-readable storage media of claim 11, wherein said power source is configured to power said at least one sensor.
13. The one or more computer-readable storage media of claim 11, wherein said power source is configured to power said processor.
14. The one or more computer-readable storage media of claim 6, further comprising a power source configured to power said transceiver.
15. The one or more computer-readable storage media of claim 1, wherein said external device comprises a computer.
16. The one or more computer-readable storage media of claim 1, wherein said flexible top surface is made of foam rubber.
17. The one or more computer-readable storage media of claim 1, wherein the processor further performs the act of analyzing historical data of previously received control signals to predict future output control signals.
18. The one or more computer-readable storage media of claim 1, wherein the user input device is a computer mouse.

**Alternative 4:**

1. A computer program product comprising computer-readable instructions encoded on a storage device, the instructions configured to cause one or more processors to:
   - receive contact signals from at least one sensor embedded within a flexible top surface of a user input device;
   - analyze said contact signals and generate output control signals corresponding to a behavior of a pointer on a display; and
   - transmit said output control signals to an external device.

2. The computer program product of claim 1, wherein said at least one sensor is configured to sense contact of at least a portion of a hand of a user on said flexible top surface and generate contact signals.
3. The computer program product of claim 1, further comprising a base below said flexible top surface and being configured to stay stationary with respect to a surface during use of the user input device.
4. The computer program product of claim 1, wherein said at least one sensor is a pressure sensor.
5. The computer program product of claim 1, wherein said contact signals are associated to at least one of:
   - the at least a portion of a hand contacting the flexible top surface;
   - a location where the at least a portion of a hand contacts the flexible top surface;
   - a pressure intensity that the at least a portion of a hand exerts on the flexible top surface; or
   - a duration that the at least a portion of a hand contacts the flexible top surface.

6. The computer program product of claim 1, further comprising a transceiver coupled to said processor.
7. The computer program product of claim 6, wherein said transceiver is a wired transceiver.
8. The computer program product of claim 6, wherein said transceiver is a wireless transceiver.
9. The computer program product of claim 6, wherein said transceiver is a Bluetooth transceiver.
10. The computer program product of claim 6, wherein said at least one processor is further configured to transmit said output control signals to the external device through said transceiver.
11. The computer program product of claim 1, further comprising a power source.
12. The computer program product of claim 11, wherein said power source is configured to power said at least one sensor.
13. The computer program product of claim 11, wherein said power source is configured to power said processor.
14. The computer program product of claim 6, further comprising a power source configured to power said transceiver.
15. The computer program product of claim 1, wherein said external device comprises a computer.
16. The computer program product of claim 1, wherein said flexible top surface is made of foam rubber.
17. The computer program product of claim 1, wherein the processor further performs the act of analyzing historical data of previously received control signals to predict future output control signals.
18. The computer program product of claim 1, wherein the user input device is a computer mouse.

**Alternative 5:**

1. A data processing system comprising means for:
   - receiving contact signals from at least one sensor embedded within a flexible top surface of a user input device;
   - analyzing said contact signals and generating output control signals corresponding to a behavior of a pointer on a display; and
   - transmitting said output control signals to an external device.

2. The data processing system of claim 1, wherein said at least one sensor is configured to sense contact of at least a portion of a hand of a user on said flexible top surface and generate contact signals.
3. The data processing system of claim 1, further comprising a base below said flexible top surface and being configured to stay stationary with respect to a surface during use of the user input device.
4. The data processing system of claim 1, wherein said at least one sensor is a pressure sensor.
5. The data processing system of claim 1, wherein said contact signals are associated to at least one of:
   - the at least a portion of a hand contacting the flexible top surface;
   - a location where the at least a portion of a hand contacts the flexible top surface;
   - a pressure intensity that the at least a portion of a hand exerts on the flexible top surface; or
   - a duration that the at least a portion of a hand contacts the flexible top surface.

6. The data processing system of claim 1, further comprising a transceiver coupled to said processor.
7. The data processing system of claim 6, wherein said transceiver is a wired transceiver.
8. The data processing system of claim 6, wherein said transceiver is a wireless transceiver.
9. The data processing system of claim 6, wherein said transceiver is a Bluetooth transceiver.
10. The data processing system of claim 6, wherein said at least one processor is further configured to transmit said output control signals to the external device through said transceiver.
11. The data processing system of claim 1, further comprising a power source.
12. The data processing system of claim 11, wherein said power source is configured to power said at least one sensor.
13. The data processing system of claim 11, wherein said power source is configured to power said processor.
14. The data processing system of claim 6, further comprising a power source configured to power said transceiver.
15. The data processing system of claim 1, wherein said external device comprises a computer.
16. The data processing system of claim 1, wherein said flexible top surface is made of foam rubber.
17. The data processing system of claim 1, wherein the processor further performs the act of analyzing historical data of previously received control signals to predict future output control signals.
18. The data processing system of claim 1, wherein the user input device is a computer mouse.

**Method claims**

**Alternative 1:**

1. A method for controlling a pointer on a display, the method comprising the steps of:
   - receiving contact signals from at least one sensor embedded within a flexible top surface of a user input device;
   - analyzing said contact signals and generating output control signals corresponding to a behavior of a pointer on a display; and
   - transmitting said output control signals to an external device.

2. The method of claim 1, wherein said at least one sensor is configured to sense contact of at least a portion of a hand of a user on said flexible top surface and generate contact signals.
3. The method of claim 1, further comprising a base below said flexible top surface and being configured to stay stationary with respect to a surface during use of the user input device.
4. The method of claim 1, wherein said at least one sensor is a pressure sensor.
5. The method of claim 1, wherein said contact signals are associated to at least one of:
   - the at least a portion of a hand contacting the flexible top surface;
   - a location where the at least a portion of a hand contacts the flexible top surface;
   - a pressure intensity that the at least a portion of a hand exerts on the flexible top surface; or
   - a duration that the at least a portion of a hand contacts the flexible top surface.

6. The method of claim 1, further comprising a transceiver coupled to said processor.
7. The method of claim 6, wherein said transceiver is a wired transceiver.
8. The method of claim 6, wherein said transceiver is a wireless transceiver.
9. The method of claim 6, wherein said transceiver is a Bluetooth transceiver.
10. The method of claim 6, wherein said at least one processor is further configured to transmit said output control signals to the external device through said transceiver.
11. The method of claim 1, further comprising a power source.
12. The method of claim 11, wherein said power source is configured to power said at least one sensor.
13. The method of claim 11, wherein said power source is configured to power said processor.
14. The method of claim 6, further comprising a power source configured to power said transceiver.
15. The method of claim 1, wherein said external device comprises a computer.
16. The method of claim 1, wherein said flexible top surface is made of foam rubber.
17. The method of claim 1, further comprising analyzing historical data of previously received control signals to predict future output control signals.
18. The method of claim 1, wherein the user input device is a computer mouse.

**Alternative 2:**

1. A computer-implemented method for controlling a pointer on a display, the computer-implemented method comprising the steps of:
   - receiving contact signals from at least one sensor embedded within a flexible top surface of a user input device;
   - analyzing said contact signals and generating output control signals corresponding to a behavior of a pointer on a display; and
   - transmitting said output control signals to an external device.

2. The computer-implemented method of claim 1, wherein said at least one sensor is configured to sense contact of at least a portion of a hand of a user on said flexible top surface and generate contact signals.
3. The computer-implemented method of claim 1, further comprising a base below said flexible top surface and being configured to stay stationary with respect to a surface during use of the user input device.
4. The computer-implemented method of claim 1, wherein said at least one sensor is a pressure sensor.
5. The computer-implemented method of claim 1, wherein said contact signals are associated to at least one of:
   - the at least a portion of a hand contacting the flexible top surface;
   - a location where the at least a portion of a hand contacts the flexible top surface;
   - a pressure intensity that the at least a portion of a hand exerts on the flexible top surface; or
   - a duration that the at least a portion of a hand contacts the flexible top surface.

6. The computer-implemented method of claim 1, further comprising a transceiver coupled to said processor.
7. The computer-implemented method of claim 6, wherein said transceiver is a wired transceiver.
8. The computer-implemented method of claim 6, wherein said transceiver is a wireless transceiver.
9. The computer-implemented method of claim 6, wherein said transceiver is a Bluetooth transceiver.
10. The computer-implemented method of claim 6, wherein said at least one processor is further configured to transmit said output control signals to the external device through said transceiver.
11. The computer-implemented method of claim 1, further comprising a power source.
12. The computer-implemented method of claim 11, wherein said power source is configured to power said at least one sensor.
13. The computer-implemented method of claim 11, wherein said power source is configured to power said processor.
14. The computer-implemented method of claim 6, further comprising a power source configured to power said transceiver.
15. The computer-implemented method of claim 1, wherein said external device comprises a computer.
16. The computer-implemented method of claim 1, wherein said flexible top surface is made of foam rubber.
17. The computer-implemented method of claim 1, further comprising analyzing historical data of previously received control signals to predict future output control signals.
18. The computer-implemented method of claim 1, wherein the user input device is a computer mouse.

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