

## G10 MUSICAL INSTRUMENTS; ACOUSTICS

### Notes

- (1) This class covers all sound-emitting devices, in general, whether or not they may be considered as being musical.
- (2) In this class, the following expression is used with the meaning indicated:
  - “musical instrument” does not exclude devices emitting a single sound signal.
- (3) The following Class Index is given in place of subclass indexes, to show the grouping of the elaborations belonging to different subclasses, under the following three fundamental types:
  - wind instruments;
  - string instruments;
  - percussion instruments,
 which relate clearly to the majority of instruments.
- (4) There are of course some instruments of which the principle of operation belongs less clearly to one of the three types mentioned in Note (3). They correspond to groups G10D 17/00 or G10K 7/00, G10K 9/00 or G10K 15/04, all the other groups normally finding a definite place.

### Class Index

#### ACOUSTICS; OPERATIONS ON SOUND WAVES

Speech analysis or synthesis;  
speech recognition ..... G10L

Methods or devices for transmission  
of sound or protection against  
sound, not otherwise provided for..... G10K 11/00, 13/00

Acoustics not otherwise provided  
for..... G10K 15/00

#### WIND INSTRUMENTS

General features; details,  
accessories ..... G10D 7/00; 9/00

Organs, harmoniums, or similar  
instruments ..... G10B 1/00, 3/00

Accordions, concertinas, or similar  
instruments; other types of  
instruments ..... G10D 11/00; 7/00

Whistles; sirens; horns..... G10K 5/00; 7/00;  
9/00

#### STRING INSTRUMENTS

General features; details,  
accessories ..... G10D 1/00; 3/00

Pianos, similar instruments; tools  
and methods for making or  
maintenance..... G10C 1/00, 3/00;  
9/00

Other types of instruments ..... G10D 1/00

#### PERCUSSION INSTRUMENTS

Bells, rattles, or similar instruments .....G10K 1/00, 3/00

Other instruments ..... G10D 13/00

#### OTHER PARTICULAR DEVICES: DEVICES USING UNDEFINED PRINCIPLES; COMBINATIONS OF INSTRUMENTS; MUSIC ACCESSORIES

Electrophonic musical instruments ..... G10H

Automatic musical instruments ..... G10F

Sirens; devices with vibrators .....G10K 7/00; 9/00

Combinations: of pianos with other  
instruments; of other instruments ..... G10C 5/00;  
G10D 15/00

Music accessories..... G10G

#### INSTRUMENTS NOT OTHERWISE

PROVIDED FOR ..... G10D 17/00

**G10B** **ORGANS; HARMONIUMS** (mouth organs or accordions G10D; aspects of automatic actuation G10F; combinations of microphones, pick-ups or amplifiers with musical instruments, electronic organs G10H)

#### **1/00** **General design of organs, harmoniums, or like wind-actuated musical instruments**

- 1/02 . of organs
- 1/04 . . electrically operated
- 1/06 . . fluid operated
- 1/08 . of harmoniums

#### **3/00** **Details of, or accessories for, organs, harmoniums, or the like**

- 3/02 . Blowers (compressors, blowers, per se F04)
- 3/04 . Reservoirs
- 3/06 . Valves; Sleeves

- 3/08 . Pipes, e.g. open pipe, reed pipe
- 3/10 . Actions, e.g. coupler
- 3/12 . Keys or keyboards; Manuals (keyboards for musical instruments in general G10C 3/12)
- 3/14 . Pedals or pedal boards
- 3/16 . Swell chambers; Accentuating means
- 3/18 . Tremolo-producing devices
- 3/20 . Transposing devices
- 3/22 . Details peculiar to electrically-operated organs, e.g. contacts therefor

**G10C PIANOS** (non-musical aspects of toy pianos A63H 5/00; aspects of automatic actuation G10F; combinations of microphones, pick-ups or amplifiers with musical instruments G10H)

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|---|--|
| <p><b>1/00 General design of pianos or like stringed musical instruments with keyboard</b></p> <p>1/02 . of upright pianofortes</p> <p>1/04 . of grand pianofortes</p> <p>1/06 . of cembaloes, spinets, or similar stringed instruments</p> <p><b>3/00 Details of, or accessories for, pianos or the like</b></p> <p>3/02 . Cases</p> <p>3/04 . Frames; Bridges; Bars</p> <p>3/06 . Resonating means, e.g. resonant strings, soundboards; Fastenings of the resonating means</p> <p>3/08 . Arrangements of strings</p> <p>3/10 . Tuning pins or straining devices</p> <p>3/12 . Keyboards; Keys</p> <p>3/14 . . for actuation by the feet</p> <p>3/16 . Actions</p> | <p>3/18 . . Hammers</p> <p>3/20 . . involving the use of hydraulic, pneumatic, or electromagnetic means</p> <p>3/22 . . for grand pianofortes</p> <p>3/24 . . for reciprocating of tremolo</p> <p>3/26 . Pedals or pedal mechanisms for half-blow or similar sound-modifying</p> <p>3/28 . Transposing devices</p> <p>3/30 . Couplers, e.g. for playing octaves</p> <p><b>5/00 Combinations of pianos with other musical instruments, e.g. with bells, with xylophone</b></p> <p><b>9/00 Special tools or methods for the manufacture or maintenance of pianos</b></p> |
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**G10D MUSICAL INSTRUMENTS NOT OTHERWISE PROVIDED FOR** (aspects of automatic actuation G10F; combinations of microphones, pick-ups or amplifiers with musical instruments G10H; sound-producing devices not regarded as musical instruments or parts thereof G10K)

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|---|---|
| <p><b>1/00 General design of stringed musical instruments</b><br/>(pianos or similar instruments with keyboard G10C)</p> <p>1/02 . of violins, violas, violoncellos, basses</p> <p>1/04 . of harps, lyres</p> <p>1/06 . of mandolins</p> <p>1/08 . of guitars</p> <p>1/10 . of banjos</p> <p>1/12 . of zithers, e.g. autoharp</p> <p><b>3/00 Details of, or accessories for, stringed musical instruments</b></p> <p>3/02 . Resonating means, horns, or diaphragms</p> <p>3/04 . Bridges, mutes, or capo-tastos</p> <p>3/06 . Fingerboards</p> <p>3/08 . . in the form of keyboards (keyboards for musical instruments in general G10C 3/12)</p> <p>3/10 . Strings</p> <p>3/12 . Anchoring devices for strings, e.g. tail piece, hitchpin</p> <p>3/14 . Tuning devices, e.g. pegs, pins, friction discs</p> <p>3/16 . Bows; Guides for bows; Plectra or like playing means</p> <p>3/18 . Chin-rests, hand-rests or guards as part of the instruments (separate auxiliary devices or supports G10G)</p> <p><b>7/00 General design of wind-actuated musical instruments</b><br/>(accordions G10D 11/00; organs, harmoniums G10B; whistles G10K)</p> <p>7/02 . of the type wherein an air current is directed against a ramp edge, e.g. flute, recorder</p> <p>7/04 . . Ocarinas</p> | <p>7/06 . of the type with a beating reed (Rohrblatt) or reeds, e.g. oboe, clarinet, bassoon, bagpipe</p> <p>7/08 . . Saxophones</p> <p>7/10 . of the type with a cupped mouthpiece, e.g. cornet, orchestral trumpet, trombone</p> <p>7/12 . of the type with free reeds (Zunge), e.g. mouth-organ, trumpet for children</p> <p><b>9/00 Details of, or accessories for, wind-actuated musical instruments</b></p> <p>9/02 . Mouthpieces; Reeds</p> <p>9/04 . Valves; Valve controls</p> <p>9/06 . Mutes</p> <p><b>11/00 Accordions, concertinas, or the like; Keyboards therefor</b> (keyboards for musical instruments in general G10C 3/12)</p> <p>11/02 . Actions</p> <p><b>13/00 Percussive musical instruments</b></p> <p>13/02 . Drums; Tambourines</p> <p>13/04 . Timpani</p> <p>13/06 . Castanets, cymbals, triangles, or other single-toned percussive musical instruments (bells G10K)</p> <p>13/08 . Multi-toned musical instruments, with sonorous bars, blocks, forks, gongs, plates, rods, or teeth</p> <p><b>15/00 Combinations of different musical instruments</b><br/>(combinations with pianos G10C)</p> <p><b>17/00 Musical instruments not provided for in any other group of this subclass, e.g. Aeolian harp, singing-flame musical instrument</b></p> |
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**G10F AUTOMATIC MUSICAL INSTRUMENTS** (non-musical aspects of toy instruments A63H 5/00; sound-recording or reproducing G11B; associated working with recording or reproducing apparatus G11B 31/02)

**Note**

This subclass does not cover aspects of musical instruments which are independent of the automatic actuation, which are covered by subclass G10B, G10C or G10D.

<p><b>1/00 Automatic musical instruments</b></p> <p>1/02 . Pianofortes with keyboard</p> <p>1/04 . Pianofortes which have no keyboard</p> <p>1/06 . Musical boxes with plucked teeth, blades, or the like (combinations with other articles, <u>see</u> the relevant classes for the articles)</p> <p>1/08 . Percussive musical instruments</p> <p>1/10 . . Carillons</p> <p>1/12 . Wind-actuated instruments</p> <p>1/14 . . Barrel-organs</p> <p>1/16 . Stringed musical instruments (pianofortes G10F 1/02, G10F 1/04)</p> <p>1/18 . . to be played by a bow</p>	<p>1/20 . . to be plucked</p> <p>1/22 . Combinations of two or more instruments</p> <p><b>3/00 Independent players for keyboard instruments</b></p> <p><b>5/00 Details of, or accessories for, automatic musical instruments</b></p> <p>5/02 . Actions</p> <p>5/04 . Tune barrels, sheets, rollers, spools, or the like</p> <p>5/06 . . Driving or setting of tune barrels, discs, or the like; Winding, rewinding, or guiding of tune sheets or the like (handling webs or sheets in general B65H)</p>
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**G10G AIDS FOR MUSIC** (metronomes G04F 5/02; teaching music G09B 15/00)

<p><b>1/00 Means for the representation of music</b></p> <p>1/02 . Chord or note indicators, fixed or adjustable, for keyboards or fingerboards</p> <p>1/04 . Transposing; Transcribing</p> <p><b>3/00 Recording music in notation form, e.g. recording the mechanical operation of a musical instrument</b></p> <p>3/02 . using mechanical means only</p> <p>3/04 . using electrical means</p>	<p><b>5/00 Supports for musical instruments</b></p> <p><b>7/00 Other auxiliary devices, e.g. separate holder for resin, strings, conductors' batons</b></p> <p>7/02 . Tuning forks or like devices</p>
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**G10H ELECTROPHONIC MUSICAL INSTRUMENTS** (electronic circuits in general H03)

**Note**

This subclass covers musical instruments in which individual notes are constituted as electric oscillations under the control of a performer and the oscillations are converted to sound-vibrations by a loud-speaker or equivalent instrument.

<p><b>1/00 Details of electrophonic musical instruments</b> (keyboards applicable also to other musical instruments G10B, G10C; arrangements for producing a reverberation or echo sound G10K 15/08) [5]</p> <p>1/02 . Means for controlling the tone frequencies, e.g. attack, decay; Means for producing special musical effects, e.g. vibrato, glissando</p> <p>1/04 . . by additional modulation</p> <p>1/043 . . . Continuous modulation [3]</p> <p>1/045 . . . . by electromechanical means [3]</p> <p>1/047 . . . . by acousto-mechanical means, e.g. rotating speakers or sound deflectors [3]</p> <p>1/053 . . . . during execution only [3]</p> <p>1/055 . . . . by switches with variable impedance elements [3]</p> <p>1/057 . . . . by envelope-forming circuits [3]</p>	<p>1/06 . . Circuits for establishing the harmonic content of tones</p> <p>1/08 . . . by combining tones (G10H 1/14, G10H 1/16 take precedence; chord G10H 1/38; speech analysis or synthesis, G10L) [3]</p> <p>1/10 . . . . for obtaining chorus, celeste or ensemble effects (continuous modulation G10H 1/043) [3]</p> <p>1/12 . . . by filtering complex wave forme (G10H 1/14, G10H 1/16 take precedence) [3]</p> <p>1/14 . . . during execution (modulation during execution G10H 1/053) [3]</p> <p>1/16 . . . by non-linear elements (G10H 1/14 takes precedence; generation of non-sinusoidal basic tones G10H 5/10) [3]</p> <p>1/18 . Selecting circuits [3]</p> <p>1/20 . . for transposition [3]</p>
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## G10H – G10K

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| 1/22        | . . . for suppressing tones; Preference networks [3]   | 3/24        | . . . incorporating feedback means, e.g. acoustic [3]  |
| 1/24        | . . . for selecting plural preset register stops [3]   | 3/26        | . . . using electric feedback [3]  |
| 1/26        | . . . for automatically producing a series of tones [3]  | <b>5/00</b> | <b>Instruments in which the tones are generated by means of electronic generators (G10H 7/00 takes precedence) [3]</b>   |
| 1/28        | . . . to produce arpeggios [3]   | 5/02        | . . . using generation of basic tones  |
| 1/30        | . . . to reiteratively sound two tones [3]   | 5/04        | . . . with semiconductor devices as active elements (G10H 5/10, G10H 5/12 take precedence)   |
| 1/32        | . Constructional details [3]   | 5/06        | . . . tones generated by frequency multiplication or division of a basic tone  |
| 1/34        | . . . Switch arrangements, e.g. keyboards or mechanical switches peculiar to electrophonic musical instruments (keyboards applicable also to other musical instruments G10B, G10C) [3]   | 5/07        | . . . resulting in complex waveforms [3]   |
| 1/36        | . Accompaniment arrangements [3]   | 5/08        | . . . tones generated by heterodyning  |
| 1/38        | . . . Chord [3]  | 5/10        | . using generation of non-sinusoidal basic tones, e.g. sawtooth  |
| 1/40        | . . . Rhythm (metronomes G04F 5/02) [3]  | 5/12        | . . . using semiconductor devices as active elements   |
| 1/42        | . . . comprising tone forming circuits [3]   | 5/14        | . using electromechanical resonator, e.g. quartz crystal, as frequency-determining element [3]   |
| 1/44        | . Tuning means [3]   | 5/16        | . using cathode ray tube [3]   |
| 1/46        | . Volume control [3]   | <b>7/00</b> | <b>Instruments in which the tones are synthesised from a data store, e.g. computer organs (synthesis of acoustic waves not specific to musical instruments G10K 15/02, G10L) [3,5]</b> |
| <b>3/00</b> | <b>Instruments in which the tones are generated by electromechanical means</b>   | 7/02        | . in which amplitudes at successive sample points of a tone waveform are stored in one or more memories [5]  |
| 3/02        | . using mechanical interrupters  | 7/04        | . . . in which amplitudes are read at varying rates, e.g. according to pitch [5]   |
| 3/03        | . using pick-up means for reading recorded waves, e.g. on rotating discs [3]   | 7/06        | . . . in which amplitudes are read at a fixed rate, the read-out address varying stepwise by a given value, e.g. according to pitch [5]  |
| 3/06        | . . . using photoelectric pick-up means  | 7/08        | . by calculating functions or polynomial approximations to evaluate amplitudes at successive sample points of a tone waveform [5]  |
| 3/08        | . . . using inductive pick-up means  | 7/10        | . . . using coefficients or parameters stored in a memory, e.g. Fourier coefficients (G10H 7/12 takes precedence) [5]  |
| 3/09        | . . . using tapes or wires [3]   | 7/12        | . . . by means of a recursive algorithm using one or more sets of parameters stored in a memory and the calculated amplitudes of one or more preceding sample points [5]               |
| 3/10        | . . . using capacitive pick-up means   |             |  |
| 3/12        | . using mechanical resonant generators, e.g. strings or percussive instruments, the tones of which are picked up by electromechanical transducers, the electrical signals being further manipulated or amplified and subsequently converted to sound by a loudspeaker or equivalent instrument [3] |             |  |
| 3/14        | . . . using mechanically actuated vibrators with pick-up means (G10H 3/24 takes precedence) [3]  |             |  |
| 3/16        | . . . using a reed [3]   |             |  |
| 3/18        | . . . using a string, e.g. electric guitar [3]   |             |  |
| 3/20        | . . . using a tuning fork, rod or tube [3]   |             |  |
| 3/22        | . . . using electromechanically actuated vibrators with pick-up means (G10H 3/24 takes precedence) [3]   |             |  |

**G10K SOUND-PRODUCING DEVICES** (sound-producing toys A63H 5/00; musical instruments or parts thereof, see the relevant subclass, e.g. G10D); **ACOUSTICS NOT OTHERWISE PROVIDED FOR** (fluid oscillators or pulse generators for fluid-pressure systems F15B 21/12; systems using the reflection or reradiation of acoustic waves G01S 15/00; generating seismic energy G01V 1/02; signalling or calling arrangements, alarm arrangements G08B; piezo-electric, electrostrictive or magnetostrictive elements in general H01L 41/00; transmission systems using infrasonic, sonic, or ultrasonic waves H04B 11/00; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R) [6]

### Notes

- (1) This subclass covers arrangements for generating mechanical vibrations in fluids. [6]
- (2) This subclass covers also the production of sounds which may not be audible to human beings but which are audible to animals.
- (3) In this subclass, the following terms are used with the meanings indicated: [6]
  - “acoustics” and “sound” cover the technical field dealing with mechanical vibrations at all infrasonic-, sonic- and ultrasonic frequencies. However, generation or transmission of mechanical waves, in general, is covered by subclass B06B, subject to the exception specified in Note (1) above. [6]

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|-------------|--|-------|---|
| <b>1/00</b> | <b>Devices in which sound is produced by striking a resonating body, e.g. bell, chimes, gong</b> (combinations with clocks or watches G04B, G04C; carillons G10F 1/10) | 1/062 | . . . electrically operated                           |
| 1/06        | . the resonating device having the shape of a bell, plate, rod, or tube (bells for towers G10K 1/28)   | 1/063 | . . . the sounding member being a bell                |
|             |  | 1/064 | . . . . Operating or striking mechanisms therefor     |
|             |  | 1/065 | . . . . . for timed or repeated operation             |
|             |  | 1/066 | . . . the sounding member being a tube, plate, or rod |
|             |  | 1/067 | . . . . Operating or striking mechanisms therefor     |

- 1/068 . . . hydraulically operated; pneumatically operated
- 1/07 . . . mechanically operated; Hand bells; Bells for animals
- 1/071 . . . Hand bells; Bells for animals
- 1/072 . . . Operating or striking mechanisms therefor
- 1/074 . . . . with rotary clappers or shells
- 1/076 . . . . for timed or repeated operation
- 1/08 . . . Details or accessories of general applicability
- 1/10 . . . Sounding members; Mounting thereof; Clappers or other strikers
- 1/26 . . . Mountings; Casings
- 1/28 . . . Bells for towers or the like
- 1/30 . . . Details or accessories
- 1/32 . . . Sounding members; Clappers or other strikers
- 1/34 . . . Operating mechanisms
- 1/36 . . . Means for silencing or damping (means or arrangements for avoiding or reducing out-of-balance forces due to motion F16F 15/00)
- 1/38 . . . Supports; Mountings
- 3/00 Rattles or like noise-producing devices**
- 5/00 Whistles**
- 5/02 . . Ultrasonic whistles [3]
- 7/00 Sirens**
- 7/02 . . in which the sound-producing member is rotated manually or by a motor (G10K 7/06 takes precedence)
- 7/04 . . . by an electric motor
- 7/06 . . in which the sound-producing member is driven by a fluid, e.g. by a compressed gas
- 9/00 Devices in which sound is produced by vibrating a diaphragm or analogous element, e.g. fog horn, vehicle hooter, buzzer** (loudspeakers or like acoustic electromechanical transducers H04R)
- 9/02 . . driven by gas, e.g. suction operated
- 9/04 . . . by compressed gases, e.g. compressed air
- 9/06 . . . produced by detonation
- 9/08 . . driven by water or other liquids
- 9/10 . . driven by mechanical means only
- 9/12 . . electrically operated

**Note**

This group does not cover the construction of, or circuits for, broadband-transducers such as loudspeakers or microphones, which are covered by subclass H04R. [6]

- 9/122 . . . using piezo-electric driving means [6]
- 9/125 . . . . with a plurality of active elements [6]
- 9/128 . . . using magnetostrictive driving means [6]
- 9/13 . . . using electromagnetic driving means [3]
- 9/15 . . . . Self-interrupting arrangements [3]
- 9/16 . . . with means for generating the current by muscle power
- 9/18 . . Details, e.g. bulb, pump, piston, switch, casing
- 9/20 . . . Sounding members
- 9/22 . . . Mountings; Casings

- 11/00 Methods or devices for transmitting, conducting or directing sound in general; Methods or devices for protecting against, or for damping, noise or other acoustic waves in general** (sound insulation for vehicles B60R 13/08; sound insulation for aircraft B64C 1/40; sound insulating materials, see the relevant places, e.g. C04B 26/00 to C04B 38/00; reduction of noise on permanent way E01B 19/00; absorption of air-transmitted noise from road or railway traffic E01F 8/00; noise insulation, absorption or reflection in buildings E04B 1/74; room acoustics E04B 1/99; sound insulation in floors E04F 15/20; gas-flow silencers or exhaust apparatus for machines or engines in general, for internal-combustion engines F01N; intake silencers for internal-combustion engines F02M 35/00; suppression of undesired vibrations F16F 7/00 to F16F 15/00; preventing noise in valves F16K 47/02; noise absorbers in pipes F16L 55/02; arrangements for suppressing noise in direct-contact trickle coolers F28C 1/10; silencers for weapons F41)
- 11/02 . . Mechanical acoustic impedances; Impedance matching, e.g. by horns; Acoustic resonators [3]
- 11/04 . . . Acoustic filters [3]
- 11/08 . . Non-electric sound-amplifying devices, e.g. non-electric megaphones (amplifying by horns G10K 11/02; amplifying by focusing G10K 11/26)
- 11/16 . . Methods or devices for protecting against, or damping of, acoustic waves, e.g. sound (G10K 11/36 takes precedence) [3]

**Note**

This group does not cover protecting against, or damping of, acoustic waves adapted for particular applications, which are covered by the subclasses for these applications, provided that there is a specific provision for this aspect. [6]

- 11/162 . . . Selection of materials [6]
- 11/165 . . . . Particles in a matrix [6]
- 11/168 . . . . Plural layers of different materials, e.g. sandwiches [6]

**Note**

When classifying in this group, classification is also made in subclass B32B, in so far as any layered product is concerned. [6]

- 11/172 . . . using resonance effects [6]
- 11/175 . . . using interference effects; Masking sound [6]
- 11/178 . . . . by electro-acoustically regenerating the original acoustic waves in anti-phase [6]
- 11/18 . . Methods or devices for transmitting, conducting or directing sound (G10K 11/02, G10K 11/36 take precedence; medical stethoscopes A61B 7/02) [3]
- 11/20 . . . Reflecting arrangements (G10K 11/28 takes precedence) [3]
- 11/22 . . . for conducting sound through hollow pipes, e.g. speaking tubes [3]
- 11/24 . . . for conducting sound through solid bodies, e.g. wire [3]
- 11/26 . . . Sound-focusing or directing, e.g. scanning [3]
- 11/28 . . . . using reflection, e.g. parabolic reflector [3]
- 11/30 . . . . using refraction, e.g. acoustic lenses [3]
- 11/32 . . . . characterised by shape of the source [3]
- 11/34 . . . . using electrical steering of transducer arrays, e.g. beam steering [3]

**G10K – G10L**

- 11/35 . . . using mechanical steering of transducers [6]
- 11/36 . Devices for manipulating acoustic surface waves (electro-acoustic amplifiers H03F 13/00; networks comprising electro-acoustic elements H03H 9/00) [3]
- 13/00 Cones, diaphragms, or the like, for emitting or receiving sound in general** (for electromechanical transducers H04R 7/00)
- 15/00 Acoustics not otherwise provided for** [4]
  - 15/02 . Synthesis of acoustic waves (synthesis of speech G10L 13/00) [4]
- 15/04 . Sound-producing devices (G10K 15/02 takes precedence) [4]
  - 15/06 . . using electric discharge [4]
  - 15/08 . Arrangements for producing a reverberation or echo sound [5]
    - 15/10 . . using time-delay networks comprising electromechanical or electro-acoustic devices [5]
    - 15/12 . . using electronic time-delay networks [5]

**G10L SPEECH ANALYSIS OR SYNTHESIS; SPEECH RECOGNITION** (sound input/output for computers G06F 3/16; digital data processing methods or equipment specially adapted for handling natural language data G06F 17/20; teaching or communicating with the blind, deaf or mute G09B 21/00; telephonic communication H04M) [4]

- 11/00 Determination or detection of speech characteristics not restricted to a single one of groups G10L 15/00 to G10L 21/00** [7]
  - 11/02 . Detection of presence or absence of speech signals (switching of direction of transmission by voice frequency in two-way loud-speaking telephone systems H04M 9/10) [7]
  - 11/04 . Pitch determination of speech signals [7]
  - 11/06 . Discriminating between voiced and unvoiced parts of speech signals (G10L 11/04 takes precedence) [7]
- 13/00 Speech synthesis; Text to speech systems** (electro-phonetic musical instruments G10H) [7]
  - 13/02 . Methods for producing synthetic speech; Speech synthesisers [7]
  - 13/04 . . Details of speech synthesis systems, e.g. synthesiser structure, memory management [7]
  - 13/06 . Elementary speech units used in speech synthesisers; Concatenation rules [7]
  - 13/08 . Text analysis or generation of parameters for speech synthesis out of text, e.g. grapheme to phoneme translation, prosody generation, stress or intonation determination [7]
- 15/00 Speech recognition** (G10L 17/00 takes precedence) [7]
  - 15/02 . Feature extraction for speech recognition; Selection of recognition unit [7]
  - 15/04 . Segmentation or word limit detection [7]
  - 15/06 . Creation of reference templates; Training of speech recognition systems, e.g. adaptation to the characteristics of the speaker's voice (G10L 15/14 takes precedence) [7]
  - 15/08 . Speech classification or search (pattern recognition G06K 9/00) [7]
  - 15/10 . . using distance or distortion measures between unknown speech and reference templates [7]
  - 15/12 . . using dynamic programming techniques, e.g. Dynamic Time Warping (DTW) [7]
  - 15/14 . . using statistical models, e.g. Hidden Markov Models (HMM) (G10L 15/18 takes precedence) [7]
  - 15/16 . . using artificial neural networks [7]
  - 15/18 . . using natural language modelling [7]
- 15/20 . Speech recognition techniques specially adapted for robustness in adverse environments, e.g. in noise, of stress induced speech (G10L 21/02 takes precedence) [7]
  - 15/22 . Procedures used during a speech recognition process, e.g. man-machine dialog [7]
  - 15/24 . Speech recognition using non-acoustical features, e.g. position of the lips [7]
  - 15/26 . Speech to text systems (G10L 15/08 takes precedence) [7]
  - 15/28 . Constructional details of speech recognition systems [7]
- 17/00 Speaker identification or verification** [7]
- 19/00 Speech analysis-synthesis techniques for redundancy reduction, e.g. in vocoders; Coding or decoding of speech** [7]
  - 19/02 . using spectral analysis, e.g. transform vocoders, subband vocoders [7]
  - 19/04 . using predictive techniques [7]
  - 19/06 . . Determination or coding of the spectral characteristics, e.g. of the short term prediction coefficients [7]
  - 19/08 . . Determination or coding of the excitation function; Determination or coding of the long-term prediction parameters [7]
  - 19/10 . . . Determination or coding of a multipulse excitation [7]
  - 19/12 . . . Determination or coding of a code excitation, e.g. in code excited linear prediction (CELP) vocoders [7]
  - 19/14 . . Details not provided for in groups G10L 19/06 to G10L 19/12, e.g. gain coding, post filtering design, vocoder structure [7]
- 21/00 Processing of the speech signal to produce another audible or non-audible signal, e.g. visual, tactile, in order to modify its quality or its intelligibility** (G10L 19/00 takes precedence) [7]
  - 21/02 . Speech enhancement, e.g. noise reduction, echo cancellation (echo suppression in hand-free telephones H04M 9/08; hearing aids H04R 25/00) [7]
  - 21/04 . Time compression or expansion [7]
  - 21/06 . Transformation of speech into a non-audible representation, e.g. speech visualisation, speech processing for tactile aids (G10L 15/26 takes precedence) [7]