UNITED STATES PATENT AND TRADEMARK OFFICE (USPTO)

AS

DESIGNATED (OR ELECTED) OFFICE

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List of abbreviations:

USPTO: United States Patent and Trademark Office (USPTO)
35 USC:¹ Title 35, United States Code, Patents
37 CFR:¹ Title 37, Code of Federal Regulations, Patents, Trademarks and Copyrights
AIA Leahy-Smith America Invents Act

¹ The number cited after the letters USC or CFR is the relevant section of the Patent Statute or of the Regulations, respectively.

(11 April 2019)
Designated
(or elected) Office

US
UNITED STATES PATENT AND
TRADEMARK OFFICE (USPTO)

Summary of requirements for entry into the national phase

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Requirement Details</th>
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<tbody>
<tr>
<td>Time limits applicable for entry into the national phase:</td>
<td>Under PCT Article 22(1): 30 months from the priority date&lt;br&gt;Under PCT Article 39(1)(a): 30 months from the priority date</td>
</tr>
<tr>
<td>Translation of international application required into:</td>
<td><strong>1</strong> English</td>
</tr>
</tbody>
</table>
| Required contents of the translation for entry into the national phase:   | Under PCT Article 22: Request, description, claims (if amended, both as originally filed and as amended, together with any statement under PCT Article 19), any text matter in the drawings, abstract<br>Under PCT Article 39(1): Request, description, claims, any text matter in the drawings, abstract (if any of those parts has been amended, both as originally filed and as amended by the annexes to the international preliminary report on patentability (Chapter II)) |<br>**2**
| Is a copy of the international application required?                       | The applicant is only required to send a copy of the international application if the national application is filed prior to the publication of the international application. This may be the case where the applicant expressly requests an earlier start of the national phase under PCT Article 23(2).<br>No copy is required if the international application was filed with the USPTO as receiving Office. A copy of amendments of the claims filed under PCT Article 19 with the International Bureau is required under the conditions indicated in the previous paragraph. |<br>**3**

1 Must be furnished within the time limit applicable under PCT Article 22 or 39(1). The requirement may still be complied with in response to a notice sent to the applicant, provided that a processing fee is paid for furnishing the translation later.

2 If the translation of the amendments is not furnished, the amendments are considered to be cancelled (37 CFR 1.495(d) and (e)).

3 Must be furnished within the time limit applicable under PCT Article 22 or 39(1).
### SUMMARY

<table>
<thead>
<tr>
<th>Designated Office</th>
<th>US</th>
<th>SUMMARY</th>
</tr>
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<tbody>
<tr>
<td>UNITED STATES PATENT AND TRADEMARK OFFICE (USPTO)</td>
<td>US</td>
<td>[Continued]</td>
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<table>
<thead>
<tr>
<th>National fee:4</th>
<th>Currency: US dollar (USD)</th>
</tr>
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<tbody>
<tr>
<td>Basic national fee:7</td>
<td>USD 300 (150) (75)</td>
</tr>
<tr>
<td>Search fee:8</td>
<td></td>
</tr>
<tr>
<td>- IPRP (Chapter II) prepared by the IPEA/US or the written opinion was prepared by the ISA/US, all claims presented satisfied provisions of PCT Article 33(1) to (4):</td>
<td>USD 0 (0) (0)</td>
</tr>
<tr>
<td>- International search fee paid to the USPTO as ISA:</td>
<td>USD 140 (70) (35)</td>
</tr>
<tr>
<td>- Search report has been prepared by an ISA other than the US and is provided or has been previously communicated by the IB to the USPTO:</td>
<td>USD 520 (260) (130)</td>
</tr>
<tr>
<td>- All other situations:</td>
<td>USD 660 (330) (165)</td>
</tr>
<tr>
<td>Examination fee:8</td>
<td></td>
</tr>
<tr>
<td>- IPRP (Chapter II) prepared by the IPEA/US or the written opinion was prepared by the ISA/US, all claims presented satisfied provisions of PCT Article 33(1) to (4):</td>
<td>USD 0 (0) (0)</td>
</tr>
<tr>
<td>- All other situations:</td>
<td>USD 760 (380) (190)</td>
</tr>
<tr>
<td>For every 50 sheets or fraction thereof of the specification and drawings that exceeds 100 sheets (excluding any sequence listing or computer program listing filed in an electronic medium):8</td>
<td>USD 400 (200) (100)</td>
</tr>
<tr>
<td>Additional fee for each claim in independent form in excess of three:8</td>
<td>USD 460 (230) (115)</td>
</tr>
<tr>
<td>Additional fee for each claim, independent or dependent, in excess of 20:8</td>
<td>USD 100 (50) (25)</td>
</tr>
<tr>
<td>In addition, if the application contains one or more multiple dependent claims, per application:8</td>
<td>USD 820 (410) (205)</td>
</tr>
<tr>
<td>Surcharge for paying any of the search fee, the examination fee, or filing the oath or declaration after the date of commencement of the national stage:8</td>
<td>USD 140 (70) (35)</td>
</tr>
<tr>
<td>Processing fee for filing English-language translation after the expiration of the time limit applicable under PCT Article 22 or 39(1):8</td>
<td>USD 140 (70) (35)</td>
</tr>
</tbody>
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[Continued on next page]

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4 The amounts of these fees change periodically. The United States Patent and Trademark Office or the current USPTO Fee Schedule at: https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule should be consulted for the applicable amounts.

5 The amount in parentheses is applicable in case of filing by a “small entity” (see paragraphs US. 19-21).

6 The amount in parentheses is applicable in case of filing by a “micro entity” (see paragraphs US. 19-21).

7 Must be paid within the time limit applicable under PCT Article 22 or 39(1).

8 If not paid with the basic national fee, the USPTO will invite the applicant to pay the fee within a time period fixed in the invitation.
### Designated (or elected) Office

**US**

**UNITED STATES PATENT AND TRADEMARK OFFICE (USPTO)**

[Continued]

<table>
<thead>
<tr>
<th>National fee (cont’d):</th>
<th>Small entity 10</th>
<th>Micro entity 11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seq.Listing filing fee:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>— submission of Seq.Listing of 300 MB to 800 MB</td>
<td>USD 1,000</td>
<td>(500)</td>
</tr>
<tr>
<td>— submission of Seq.Listing of more than 800 MB</td>
<td>USD 10,000</td>
<td>(5,000)</td>
</tr>
</tbody>
</table>

| Exemptions, reductions or refunds of the national fee: | Reductions of the national fees are indicated under the national fees listed above. |

<table>
<thead>
<tr>
<th>Special requirements of the Office (PCT Rule 51bis):</th>
<th>Oath or declaration of the inventor 12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Information disclosure statement is recommended. 13</td>
</tr>
<tr>
<td></td>
<td>Furnishing, where applicable, of a nucleotide and/or amino acid sequence listing in electronic form</td>
</tr>
</tbody>
</table>

| Who can act as agent? | Patent attorneys and patent agents registered to practice before the Office. A list of registered patent attorneys and agents may be obtained on the Internet at https://oedi.uspto.gov/OEDCI/ |

| Does the Office accept requests for restoration of the right of priority (PCT Rule 49ter.2)? | Yes, the Office applies the “unintentional” criterion to such requests |

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9 See footnote 4.
10 See footnote 5.
11 See footnote 6.
13 Should be filed within three months from performing the acts for entering the national phase (see 37 CFR 1.491).
THE PROCEDURE IN THE NATIONAL PHASE

US.01 APPLICANT. For US national phase applications having an international filing date on or after 16 September 2012, the applicant may be:

(a) the inventor(s); (b) the legal representative of a deceased or legally incapacitated inventor; (c) the assignee; (d) the obligated assignee (i.e., a person to whom the inventor is under an obligation to assign the invention); or (e) a person who otherwise shows proprietary interest in the application. For such applications, the person identified in the international stage as the applicant will normally be considered the applicant for the US national phase application, even if such applicant is not the inventor.

US.02 Where the applicant is a person who otherwise shows sufficient proprietary interest in the matter, such applicant must submit a petition including: the applicable fee, a showing that such person has sufficient proprietary interest in the matter, and a statement that making the application for patent by a person who otherwise shows sufficient proprietary interest in the matter on behalf of and as agent for the inventor is appropriate to preserve the rights of the parties.

US.03 INVENTORS. For US national phase applications with an international filing date prior to 16 September 2012, the inventor(s) is required to be the applicant(s) or, if an inventor is dead, insane, or otherwise legally incapacitated, such inventor’s legal representative. This is true even if the national phase documents are filed after 16 September 2012.

US.04 The inventorship of a US national phase application having an international filing date on or after 16 September 2012 is the inventor or joint inventors set forth in an application data sheet accompanying the initial national phase submission (see paragraph US.06). If the initial national phase submission for an application with an international filing date on or after 16 September 2012 is not accompanied by a proper application data sheet, OR if the national phase application has an international filing date prior to 16 September 2012, the inventorship is the inventor or joint inventors set forth in the international application, which includes any change effected under PCT Rule 92bis.

US.05 FORM FOR ENTERING THE NATIONAL PHASE. The USPTO has available a special form for the transmittal of the fees and documents required for entering the national phase (Form PTO-1390, see Annex US.III). Use of the Form PTO-1390 is strongly encouraged because the form clearly identifies the submission as a national phase entry filed under 35 USC 371, as required for proper processing (see paragraph US.11). In addition, the Form PTO-1390 provides applicants with a checklist of items generally required or potentially applicable to a national phase filing, as well as a mechanism to make specific requests that may be appropriate in a particular national phase application. For example, the Form PTO-1390 contains checkboxes to expressly request that national examination procedures begin immediately (see paragraph US.37), to instruct the USPTO not to enter amendments made in the international phase, and to assert small entity status (see paragraph US.20). Use of the Form PTO-1390 is not, however, required.
US.06 APPLICATION DATA SHEET (ADS). Together with the Form PTO-1390 discussed above, applicants are also strongly encouraged to submit an “application data sheet” (ADS). The ADS facilitates electronic capture of the bibliographic data by the USPTO, thus leading to more accurate data recording and quicker processing by eliminating the need to have this data manually extracted from the application documents. A guide to preparing an application data sheet can be found on the USPTO’s website at www.uspto.gov by clicking on “Patents” then “Patent Forms,” then the link for forms filed “On or After September 16, 2012” or “Before September 16, 2012” (depending on the international filing date of the application) and then the instructions link for either the Form AIA/14 (for applications filed on or after 16 September 2012) or the Form PTO/SB/14 (for applications filed before 16 September 2012). An application data sheet form for use where the international filing date is on or after 16 September 2012 (Form PTO/AIA/14) is attached as Annex US.IV. An application data sheet form for use where the international filing date is prior to 16 September 2012 (Form PTO/AIA/14) is attached as Annex US.V.

US.07 In an application with an international filing date on or after 16 September 2012, an application data sheet is required to postpone submission of the required oath or declaration of the inventors (see paragraph US.26, below).

US.08 CORRESPONDENCE. It is preferable to file the required national phase items online using the EFS-Web system. EFS-Web is a PDF-based application information system that provides USPTO customers the ability to electronically file a variety of patent application documents in portable document format (PDF) directly to the USPTO, including those associated with US national phase entries under 35 USC 371. It is recommended that applicants continue to use the Form PTO-1390 when electronically filing documents for entry into the US national phase under 35 USC 371 (see paragraph US.05). ASCII text files (.TXT) may be used for submitting sequence listings, large tables, or computer program listing appendices. However, there is a file size limit of 100 MB per text file submission, which must be uploaded separately from other types of files. Sequence listing files that exceed 100 MB can be submitted on compact disc in accordance with 37 CFR 1.52(e) on the same day by using Priority Mail Express® from the USPS in accordance with 37 CFR 1.10, or hand delivery, in order to secure the same filing date for all parts of the application. Alternatively, a user may submit the application on paper and include the electronic copy of the sequence listing text file on compact disc in accordance with 37 CFR 1.52(e). Additionally, there is a file size limit of 25 MB per PDF file, but up to 60 documents of this size may be submitted in a single electronic package. Color drawings and photographs/drawings with varying degrees of black/white/grey scale may not be submitted via the EFS-Web.

US.09 More information regarding the electronic filing of US patent applications may be obtained at www.uspto.gov/ebc/efs_help.html. The EFS-Web may be accessed directly at the following web address: https://sporal.uspto.gov/secure/portal/efs. Full technical support is available through the Patent Electronic Business Center (EBC) at (1-866) 217 91 97 from 6 a.m. to 12 Midnight Eastern Time, Monday – Friday (except federal holidays). EBC may be emailed anytime at ebc@uspto.gov.

US.10 National phase documents may also be submitted by mail addressed to: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, USA. If the applicant has received a “Notification of Acceptance of Application Under 35 USC 371 and 37 CFR 1.495,” the reference to “Mail Stop PCT” should be deleted. If a US application number (e.g., 15/123,456) has been assigned, it should be indicated on the documents. If a US application number has not yet been assigned, the correspondence should state the name of the applicant, the international filing date, the international application number and the title of the invention. It is important to note that a copy of the international application used to enter the national phase and/or payment of the required basic national fee may NOT be submitted by facsimile.
US.11 The USPTO requires that documents submitted by the applicant be clearly identified as being for entry into the national phase under the PCT. The identification requirement is usually complied with if the Form PTO-1390 for entering the national phase referred to in paragraph US.05 above and reproduced in Annex US.III is used. The identification of the international application, in the declaration or oath of the inventor (see paragraph US.23) or otherwise, as a prior filed application for priority purposes is not considered to be a sufficient indication of an intention to enter the national phase under the PCT. In accordance with 37 CFR 1.495(g), an initial application submission filed on or after 16 September 2012 that contains conflicting indications as between a new US national patent application under 35 USC 111(a) and a submission to enter the national phase under 35 USC 371 will be treated by the USPTO as a submission to enter the national phase under 35 USC 371. However, an initial application submission filed prior to 16 September 2012 that contains conflicting indications will be treated as a new US national patent application under 35 USC 111(a).

US.12 TRANSLATION (LATE FURNISHING OF). If the applicant pays the basic national fee and a copy of the international application is received within the applicable time limit for national phase entry, but a translation of the international application has not been furnished by the applicant or is incomplete, a notice is sent to the applicant which sets a time period for furnishing the translation. The applicant can then furnish the translation provided that a processing fee is paid. The amount of the processing fee is indicated in Annex US.I. The time period set in the notice will be two months from the date of the notice or 32 months from the priority date, whichever is later. The time period set in the notice may be extended as provided for in 37 CFR 1.136(a) (see paragraph US.43(i), below). Where amendments to the claims have been filed with the International Bureau under Article 19 and the applicant fails to furnish a translation or copy (see the Summary) of such amendments to the claims within the time limit for national phase entry, the amendments to the claims are considered to have been cancelled. A translation of any annex to the International Preliminary Examination Report must be furnished prior to the expiration of the applicable time limit under PCT Article 39(1). However, a translation of the annex may be provided during any time period set under 37 CFR 1.495(c) to furnish a translation of the international application, the inventor’s oath or declaration, the search fee, the examination fee, and/or the application size fee. If a translation of the annex is not timely filed, the amendments contained in the annex will be considered to be cancelled. However, such amendments may be reintroduced at a later stage (see paragraph US.33).

US.13 TRANSLATION (CORRECTION). Errors in the translation of the international application can be corrected with reference to the text of the international application as filed (see National Phase, paragraphs 6.002 and 6.003). If the translation furnished to the USPTO was incomplete, see the preceding paragraph.

US.14 PAYMENT OF NATIONAL FEE. The basic national fee must be paid within the time limit for entry into the national phase (see PCT Article 22(1) or 39(1)(a)) which is 30 months after the priority date. This time limit may not be extended. If the basic national fee is not paid within the applicable time period, the application becomes abandoned as to the United States. An authorization to charge the basic national fee to a deposit account, credit card or any other means may NOT be submitted by facsimile.

US.15 SEARCH FEE. If the applicant pays the basic national fee and a copy of the international application has been received within the time limit for national phase entry, but the search fee has not been paid, a notice is sent to the applicant which sets a time period for furnishing the search fee. The applicant can then furnish the search fee provided a surcharge fee is paid. The amounts of the search fee and the surcharge are provided in Annex US.I. The period set in the notice is extendable as provided in 37 CFR 1.136(a) (see paragraph US.43(i)).

US.16 EXAMINATION FEE. If the applicant pays the basic national fee and a copy of the international application has been received within the time limit for national phase entry, but the examination fee has not been paid, a notice is sent to the applicant which sets a time period for furnishing the examination fee. The applicant can then furnish the examination fee provided a surcharge fee is paid. The amounts of the examination fee and the surcharge are provided in Annex US.I. The period set in the notice is extendable as provided in 37 CFR 1.136(a) (see paragraph US.43(i)).
US.17 APPLICATION SIZE FEE. For any US national phase application or national application, where the specification and drawings exceed 100 sheets of paper, for each additional 50 sheets, or fraction thereof, an application size fee will apply. For a US national phase application, the application size fee is calculated on the basis of the number of sheets of description, claims, drawings, and abstract in the published international application, without regard to the language of the publication. The amount of the fee is in Annex US.I.

US.18 ADDITIONAL CLAIMS FEE. The number of additional claims for fee purposes must be computed on the basis of the claims valid at the beginning of the national phase (that is, where amendments have been filed, the claims as amended under PCT Article 19 or PCT Rule 66.1, 66.3 and 66.4 or the claims as amended in a preliminary amendment submitted in compliance with the applicable US regulations by the applicant upon entering the national phase under PCT Article 28 or 41). Where the applicant fails to pay the correct amount of the additional claims fee, the USPTO will invite him to pay the missing amount at the current fee amount.

US.19 FEE REDUCTION FOR “SMALL ENTITY” OR “MICRO ENTITY.” Applicants having a “small entity” or “micro entity” status are entitled to a reduction of 50% or 75%, respectively, in certain fees.

US.20 “Small entity” status can be established by a single written assertion of entitlement to “small entity” status without use of a specialized form. “Small entity” status may also be established by checking the box provided on the application data sheet discussed in paragraph US.06 or the Form PTO-1390 for entering the national phase discussed in paragraph US.05, or by payment of the exact basic national fee for a small entity. For a US national phase application with an international filing date prior to 16 September 2012, parties who may assert “small entity” status include a registered practitioner, one of the inventors, or a partial assignee (an assignee assertion of small entity status must be filed by a 37 CFR 1.33(b) party). For a US national phase application with an international filing date on or after 16 September 2012, parties who may assert “small entity” status include the applicant, a patent practitioner of record or a practitioner acting in a representative capacity, the inventor or a joint inventor (if the inventor is an applicant), or the assignee. Assertion of small entity status requires a determination of entitlement to that status.

US.21 “Micro entity” status can be established under either the “gross income” or “institution of higher education” basis. Under either basis, an application must also satisfy the requirements for “small entity” status. Unlike “small entity” status, “micro entity” status cannot be established by a simple statement alleging entitlement to “micro entity” status, by checking the box provided on the application data sheet or the Form PTO-1390 for entering the national phase, or by payment of the exact basic national fee. Rather, a certification of entitlement to “micro entity” status must be submitted. The USPTO provides Forms PTO/SB/15A and PTO/SB/15B for use in certifying “micro entity” status. These forms are available on the USPTO Web site at www.uspto.gov/forms; copies of the certification forms are also in Annex US.VI and US.VII. The certification of “micro entity” status must be executed by a party authorized under 37 CFR 1.33(b). It should be noted that a registered practitioner is required to sign the certification for any applicant that is a corporation or organization; an officer of an assignee corporate applicant, for example, is not authorized to sign the certificate of “micro entity” status.

US.22 FEES (MANNER OF PAYMENT). The manner of payment of the fees indicated in the Summary and in this Chapter is outlined in Annex US.I. A copy of a Credit Card Payment Form (Form PTO-2038) and the instructions thereto is attached as Annex US.II. It should be noted that an authorization to charge the basic national fee to a deposit account, credit card or any other means may NOT be submitted by facsimile.
US.23 **OATH OR DECLARATION OF THE INVENTOR.** As a result of changes implemented by the America Invents Act (AIA), the requirements for the oath or declaration of the inventor depend on whether an application was filed before or after 16 September 2012. A sample of an appropriate declaration for use in applications with an international filing date on or after 16 September 2012 is provided in Annex US.VIII. A sample of an appropriate declaration for use in applications with an international filing date before 16 September 2012 is provided in Annex US.IX. In addition, Box No. VIII(iv) of the PCT request form (PCT/RO/101) contains a “DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America).” The declaration contained in Box No. VIII(iv) of the PCT request form (PCT/RO/101) was updated in the 16 September 2012 revision of the PCT request form (PCT/RO/101) to comply with the revised US law. Accordingly, the “DECLARATION: INVENTORSHIP (only for the purposes of the designation of the United States of America)” contained in previous versions of the PCT request form (PCT/RO/101) does not comply with current US law and will not be accepted by the USPTO with respect to applications with an international filing date on or after 16 September 2012.

US.24 For applications with an international filing date on or after 16 September 2012, a “substitute statement” may be submitted in lieu of an oath or declaration of the inventors if the inventor is deceased, is under a legal incapacity, has refused to execute the oath or declaration, or cannot be found or reached after diligent effort (a sample “substitute statement” form is provided in Annex US.X).

US.25 For applications with an international filing date before 16 September 2012, if the applicant pays the basic national fee and a copy of the international application is received within the time limit for entry into the national phase, but an oath or declaration of the inventor is not furnished, a notice shall be sent to the applicant which sets a time period for furnishing the oath or declaration. The applicant can then furnish the oath or declaration provided that a surcharge is paid. The amount of the surcharge is indicated in Annex US.I. The time period set in the notice will be two months from the date of the notice or 32 months from priority date, whichever is later. The time period set in the notice is extendable as provided for in 37 CFR 1.136 (a) (see paragraph US.43(i)).

US.26 For applications with an international filing date on or after 16 September 2012, the submission of an “application data sheet” (see paragraph US.06) identifying each inventor and providing each inventor’s residence and mailing address will permit the applicant to postpone submission of the oath or declaration of the inventor (or substitute statement, if applicable) until the application is otherwise in condition for allowance. In such cases, the USPTO will issue a Notification Of Acceptance (Form PCT/DO/EO/903) and refer the application for publication and examination; however, the Notification Of Acceptance (Form PCT/DO/EO/903) will indicate that the oath or declaration requirement has not yet been satisfied.

US.27 **POWER OF ATTORNEY.** No representation of the applicant by an attorney or agent is required, but where an attorney or agent is to represent an applicant, a power of attorney signed by the applicant/inventor to an attorney or agent registered to practice before the USPTO is required. Sample power of attorney forms for use in an application with an international filing date on or after 16 September 2012 (Forms PTO/AIA/80 and 81) are in Annexes US.XI and US.XII. A sample power of attorney form for use in an application with an international filing date prior to 16 September 2012 (Form PTO/SB/81) is in Annex US.XIII. It is highly advisable to be represented by an attorney or agent.
INFORMATION DISCLOSURE STATEMENT. The applicant must (to be prudent) file with the USPTO, not later than three months from the date of entry of the national phase, an information disclosure statement. Such statement must disclose all information of which the applicant, or any other person substantively involved with the preparation of the application or its prosecution, is aware which is material to the patentability of the invention. Such information is material to patentability when it is not cumulative to information already of record in the application, and (1) it establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or (2) it refutes, or is inconsistent with, a position the applicant takes in (i) opposing an argument of unpatentability relied upon by the Office, or (ii) asserting an argument of patentability. A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable by the preponderance of evidence, burden of proof standard, giving each term in the claim its broadest reasonable construction consistent with the description, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

The information disclosure statement must include:

(1) a listing (preferably on Forms PTO/SB/08a and 08b, see Annex US.XIV) of patents, applications, publications or other information. US patents and US patent applications must be listed in a section separately from citations of other documents. Each page of the listing must include:

(i) the application number of the application in which the information disclosure statement is being submitted;

(ii) a column that provides a space, next to each document to be considered, for the examiner’s initials;

(iii) a heading that clearly indicates that the list is an information disclosure statement;

(2) a copy of each listed item except for US patents and US patent application publications;

(3) for each item listed which is not in the English language, a concise explanation of its relevance.

Applicants may also file an information disclosure statement via the Office’s electronic filing system (EFS-Web) by (1) entering the references’ citation information in a fillable electronic form equivalent to the revised Forms PTO/SB/08a and 08b by using EFS-Web software; and (2) transmitting the fillable electronic form data to the Office via EFS-Web.

Note, however, that the examiner will consider the documents cited in the international search report in a PCT national phase application when the Form US/DO/EO/903 (which is sent to notify the applicant after he has entered the national phase of the acceptance of the international application under 35 USC 371) indicates that both the international search report and the copies of the prior art documents are present in the national stage file. In such a case, the examiner will consider the documents from the international search report and indicate by a statement in the first Office action that the information has been considered. There is no requirement that the examiner list the documents on a Notice of References Cited (Form PTO-892). In order to have these prior art documents printed on any resulting patent, the applicant must provide a separate listing (preferably on Forms PTO/SB/08a and 08b). If Form PCT/DO/EO/903 does not indicate that both the international search report and copies of the prior art documents are present in the national stage file, the applicant must follow the procedures set forth in 37 CFR 1.97 and 1.98 (concerning the filing and content of information disclosure statements), as outlined above, in order to ensure that the examiner considers the documents cited in the international search report.
AMENDMENT OF THE APPLICATION; TIME LIMITS. The applicant may make the following amendments, provided no new matter is introduced in the disclosure of the invention:

(i) before the final decision of the USPTO to grant or to reject the patent, the applicant may file amendments to the description, claims and drawing(s) of his own volition or when specifically required by the examiner:

(ii) after the final decision, amendments may be made only by cancelling claims or complying with any requirement of form which has been made by the examiner, or by presenting rejected claims in better form for reconsideration on appeal.

For the manner of making amendments and the required format, see the applicable US regulations, in particular 37 CFR 1.121 and 1.125. One of the requirements for effectively amending claims in a national phase application is a complete listing of all claims ever presented, including the text of all pending and withdrawn claims. The status of every claim in such listing must be indicated after its claim number by one of the following identifiers in a parenthetical expression: (Original), (Currently Amended), (Canceled), (Withdrawn), (Previously Presented), (New), and (Not Entered). All “currently amended” claims must include markings to indicate the changes made relative to the immediate prior version of the claims: underlining to indicate additions, strike-through or double brackets for deletions (see 37 CFR 1.121(c) for further details regarding the format of claim amendments). Applicants should note that, in an amendment to the claims filed in a national phase application, the status identifier “original” must be used for claims that had been presented on the international filing date and not modified or canceled. The status identifier “previously presented” must be used in any amendment submitted during the national phase for any claims added or modified under PCT Articles 19 or 34 in the international phase that were subsequently entered in the national phase. The status identifier “canceled” must be used in any amendment submitted during the national phase for any claims canceled under an Article 19 or 34 amendment in the international phase and subsequently entered in the national phase.

Example 1: Original claims 1-10; Article 19/34 filed with claims 1-20 listed on the replacement sheet wherein claims 1-10 were unchanged and claims 11-20 were added; the status of the claims prior to any further amendment under 37 CFR 1.121 would be as follows: claims 1-10 as “original” and claims 11-20 as “previously presented.”

Example 2: Original claims 1-10; Article 19/34 filed with claims 1-9 listed on the replacement sheet wherein claims 1-9 were unchanged and claim 10 was cancelled; the status of the claims prior to any further amendment under 37 CFR 1.121 would be as follows: claims 1-9 as “original” and claim 10 as “canceled.”

Example 3: Original claims 1-10; Article 19/34 filed with claims 1-9 listed on the replacement sheet wherein claim 1 was unchanged, claim 2 was cancelled and claims 3-10 were renumbered as claims 2-9; the status of the claims prior to any further amendment under 37 CFR 1.121 would be as follows: claim 1 as “original,”, claims 2-9 as “previously presented” and claim 10 as “canceled.”
Example 4: Original claims 1-10; Article 19/34 filed with claims 1-10 listed on the replacement sheet wherein claims 1 and 3-10 were unchanged and claim 2 was cancelled; the status of the claims prior to any further amendment under 37 CFR 1.121 would be as follows: claims 1 and 3-10 as “original” and claim 2 as “cancelled.”

Proposed amendments that are not submitted in compliance with the applicable regulations will not be entered. For example, the submission with the national phase documents of a revised set of claims, absent a preliminary amendment to the claims in compliance with 37 CFR 1.121(c), will not be effective to amend the claims of record in the application.

US.35 FEE FOR GRANT. A patent issue fee and any required publication fee must be paid within a nonextendable period of three months after the mailing of a written notice of allowance. The amount of the said fee is indicated in Annex US.I.

US.36 MAINTENANCE FEES. After a patent has been issued, a fee must be paid for maintaining the patent in force beyond four years after grant. The first such fee is due by three years and six months after issue of the patent. Where the applicant fails to pay within that time limit, he may receive an invitation to pay from the USPTO. Lack of receipt of such an invitation will not be accepted as an excuse for non-payment of the maintenance fee. Payment can then still be made together with a surcharge within the six months following the due date. The amount of the maintenance fees, of the surcharge, and their due dates are indicated in Annex US.I.

US.37 EARLY START OF NATIONAL PHASE BEFORE THE USPTO. If the applicant desires the examination by the USPTO of his application to start earlier than the expiration of the time limit for entry into the national phase, he must file in writing an express request therefor and submit the basic national fee, a copy of the international application, a translation of the international application (if required) and an oath or declaration of the inventor. The express request may be accomplished, for example, by checking the appropriate box on the Form PTO-1390 for entry into the national phase referred to in paragraph US.05 and reproduced in Annex US.III.

US.38 The mechanism for deferring submission of the oath or declaration of the inventor by filing an “application data sheet” (see paragraph US.26) is not applicable where the applicant requests early examination by the USPTO. Such early examination of the application requires submission of the oath or declaration (or the substitute statement, if applicable).

US.39 CONTINUATION, CONTINUATION-IN-PART OR DIVISIONAL. The applicant may—instead of entering the national phase—file a continuation, continuation-in-part or divisional of the international application (hereinafter referred to as “the continuing application”), provided the international application designates the US and is not (considered) withdrawn or abandoned at the time of filing the continuing application. An international application is considered abandoned after the expiration of the time limit for entry into the national phase, which is 30 months after the priority date, if a copy of the international application and the basic national fee have not been received in the USPTO. When the basic national fee has been paid and a copy of the international application has been communicated by the International Bureau within the time limit for entry into the national phase, but no proper English translation, or oath or declaration has been received, a notice will be sent to the applicant to furnish a proper translation and/or an oath or declaration of the inventor which complies with 37 CFR 1.497(a) and (b). If the applicant does not properly respond to the notice within the time period set by the USPTO, the international application will become abandoned.
US.40  Basically, the normal procedure for filing continuing applications applies. The applicant must submit an application data sheet (see paragraph US.06) claiming the benefit of the international filing date of the international application designating the US. The reference to the international application in the application data sheet must identify the international application by international application number and international filing date, and it must indicate the relationship of the applications (i.e., continuation, continuation-in-part, or divisional). This reference to the international application must be submitted during the pendency of the continuing application, and within the later of four months from the actual filing date of the continuing application or sixteen months from the filing date of the international application. This time limit is not extendable. The USPTO may require the filing of a certified copy of the international application together with a translation thereof into English where it was filed in another language. The continuing application may be filed in a language other than English, provided a translation into English is furnished together with a surcharge (see Annex US.I) within the time period fixed by the USPTO in an invitation. Where, at the time of filing the continuing application, the basic filing fee has not been paid or the oath or declaration of the inventor has not been furnished, the requirement may still be complied with against payment of a surcharge within the time period fixed by the USPTO in an invitation. Use of the Form PTO-1390 reproduced in Annex US.III is not appropriate for the filing of a continuing application.

US.41  REVIEW UNDER ARTICLE 25 OF THE PCT. The applicable procedure is outlined in paragraphs 6.018 to 6.021 of the National Phase. If, upon review under PCT Article 25, the USPTO finds no error or omission on the part of the receiving Office or the International Bureau, a petition may be taken to the Commissioner of the USPTO, which must contain a statement of the facts involved and the point or points to be reviewed and the action requested. The fee for petition indicated in Annex US.I must be paid at the same time. Any such petition not filed within two months from the action complained of may be dismissed as untimely.

US.42  EXCUSE OF DELAYS IN MEETING TIME LIMITS. An application abandoned for failure to comply with a time limit during the international phase or for failure to prosecute within a statutory time period before the USPTO, may be revived as a pending application if it is shown to the satisfaction of the USPTO that the delay was unintentional. Any petition to revive an abandoned application must be filed in writing and be accompanied by a petition fee, the amount of which is indicated in Annex US.I, by a proper response to the failed action unless such response has been previously submitted and by a statement indicating that the entire delay was unintentional. The USPTO has provided Form PTO/SB/64/PCT (see Annex US.XVI) for use as a petition to revive an unintentionally abandoned international application (use of the form is optional).

US.43  The US rules provide for two distinct procedures to extend the period for action or response in particular situations (the procedure which is available for use in a particular situation will depend upon the circumstances):

(i) 37 CFR 1.136(a) permits an applicant, against payment of an extension fee (see Annex US.I), to file a petition for extension of time up to five months after the end of the time period set to take action except (1) where excluded, (2) in interference proceedings, (3) where the applicant has been notified otherwise in an Office action or (4) where no further time is available under a set statutory period. The petition and fee can be filed prior to or with or after the response, but the fee must be paid within the time extended. The filing of the petition and fee will extend the time period to take action up to five months dependent on the amount of the fee paid except in those circumstances noted above. The time limit to furnish the basic national fee and a copy of the international application under 37 CFR 1.495 may not be extended.

(ii) After entry into the national phase, 37 CFR 1.136(b) provides for petitions for extensions of time of shortened statutory or non-statutory time periods upon a showing of sufficient cause when the procedure of 37 CFR 1.136(a) is not available and if additional time is still available under a shortened statutory period or if no statutory period applies.

Although the petition and fee procedure of 37 CFR 1.136(a) will normally be available within five months after a set period for response has expired, an extension request for cause under 37 CFR 1.136(b) must be filed during the set period for response. The amount of the petition fee is indicated in Annex US.I.
**US.44 RECORDING OF ASSIGNMENT DOCUMENTS.** The USPTO will record assignments relating to international patent applications which designate the US. The assignment must identify the application by the international application number. Each document submitted for recording must be accompanied by a cover sheet referring to the international application. A sample recordation form cover sheet is contained in Annex US.XV. Each cover sheet must contain:

1) the name of the party conveying the interest;
2) the name and address of the party receiving the interest;
3) a description of the interest conveyed or transaction to be recorded;
4) the application number;
5) the name and address of the party to whom correspondence concerning the request to record the document should be mailed;
6) the number of applications, patents or registrations identified in the cover sheet and the total fee;
7) the date the document was executed;
8) a statement by the party submitting the document that to the best of the person’s knowledge and belief, the information contained on the cover sheet is true and correct and any copy submitted is a true copy of the original document; and
9) the signature of the party submitting the document.

**US.45 Assignments may be filed electronically via the Electronic Patent Assignment System (EPAS).** EPAS may be accessed directly at the following web address: http://epas.uspto.gov. General information about the electronic filing of assignments may be obtained from the Assignment Services Division Customer Service Desk at (1-571) 272-3350 during regular business hours or via e-mail directed to EPAS@uspto.gov. Applicants should note that assignments may NOT be filed via the EFS-Web electronic filing system.

**US.46 PUBLICATION OF APPLICATIONS.** Each international application in compliance with 35 USC 371 and continuing application (see paragraph US.39) from an international application will be published promptly after the expiration of eighteen months from the earliest filing date for which a benefit is sought, unless the application (1) is no longer pending; (2) is subject to national security provisions; (3) has issued as a patent; or (4) was filed with a nonpublication request in compliance with 37 CFR 1.213(a). (A nonpublication request may not be filed if the international application designated any States in addition to or other than the United States of America.) The publication fee (see Annex US.I) must be paid before the patent will be granted. If the application is not published under this section, the publication fee (if paid) will be refunded.

**US.47 PROVISIONAL RIGHTS.** 35 USC 154(d) provides for provisional rights based on international applications. A patent will include the right to obtain a reasonable royalty from any person who partakes of any of the actions listed in 35 USC 154(d)(1) during the period commencing on the date of the publication under PCT Article 21(2)(a) of the international application designating the US, if the publication is in English, or if the publication is in a language other than English, on the date the USPTO receives a translation of the publication in the English language, and ending on the date the patent is issued. The submission of the international publication or an English language translation of the international application pursuant to 35 USC 154(d)(4) must clearly identify the international application to which it pertains (37 CFR 1.5(a)) and, unless it is being submitted pursuant to 37 CFR 1.495, be clearly identified as a submission pursuant to 35 USC 154(d)(4). Otherwise, the submission will be treated as a filing under 35 USC 111(a). Such submissions should be marked “Mail Stop PCT.” The right to obtain a reasonable royalty is not available unless the invention as claimed in the patent is substantially identical to the invention claimed in the published international application.

**US.48 FORMS.** All forms are available online at: www.uspto.gov/forms.
## Fees

(Currency: US dollar)

### National fee

<table>
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<tr>
<th>Description</th>
<th>Basic National Fee (37 CFR 1.492(a))</th>
<th>Search Fee (37 CFR 1.492(b))</th>
<th>Examination Fee (37 CFR 1.492(c))</th>
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<td>— IPRP (Chapter II) prepared by the IPEA/US or the written opinion was prepared by the ISA/US, all claims presented satisfied provisions of PCT Article 33(1) to (4)</td>
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</table>

| Additional Claims Fee, where there are more than 3 claims in independent form, for each independent claim in excess of 3 (37 CFR 1.492(d)) | 460 (230) (115) | 820 (410) (205) |
| A multiple dependent claim fee, where the application contains one or more multiple dependent claim(s), per application (37 CFR 1.492(f)) | 100 (50) (25) | 820 (410) (205) |

For every 50 sheets or fraction thereof of the specification and drawings that exceeds 100 sheets (excluding any sequence listing or computer program listing filed in an electronic medium) (37 CFR 1.492(j))

### Reductions of the National Fee

Reductions of the national fee are indicated under the national fees listed above.

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1. The amounts of these fees change periodically. The United States Patent and Trademark Office or the current USPTO Fee Schedule at: [https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule](https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule) should be consulted for the applicable amounts.

2. A national fee calculation sheet appears in Annex US.III.

3. The amount in parentheses is applicable in case of filing by a “small entity.” “Small entity” status can be established by a simple written assertion of entitlement to “small entity” status, or by payment of the exact amount of the “small entity” basic national fee as set forth in 37 CFR 1.492(a) (see 37 CFR 1.27, paragraph US.14 and Annex US.VI).

4. The amount in parentheses is applicable in case of filing by a “micro entity”. For further details on the establishment of “micro entity” status, see page 75033 at: [www.uspto.gov/aia_implementation/77fr75019.pdf](https://www.uspto.gov/aia_implementation/77fr75019.pdf).
### Other fees

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<td>Reissue issue fee <em>(37 CFR 1.18(a)(1))</em></td>
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### Maintenance fees:

- for maintaining patent in force beyond four years (due by three years and six months after grant) *(37 CFR 1.20(e))* 1,600 (800) (400)
- for maintaining patent in force beyond eight years (due seven years and six months after grant) *(37 CFR 1.20(f))* 3,600 (1,800) (900)
- for maintaining patent in force beyond 12 years (due by 11 years and six months after grant) *(37 CFR 1.20(g))* 7,400 (3,700) (1,850)

### Mega-Sequence Listing filing fee:

- submission of sequence listing of 300 MB to 800 MB *(37 CFR 1.21(o)(1))* 1,000 500 250
- submission of sequence listing of more than 800 MB *(37 CFR 1.21(o)(2))* 10,000 5,000 2,500

### Patent application processing fees

Extension fee for response pursuant to *(37 CFR 1.136(a))*:

- within first month *(37 CFR 1.17(a)(1))* 200 (100) (50)
- within second month *(37 CFR 1.17(a)(2))* 600 (300) (150)
- within third month *(37 CFR 1.17(a)(3))* 1,400 (700) (350)
- within fourth month *(37 CFR 1.17(a)(4))* 2,200 (1,100) (550)
- within fifth month *(37 CFR 1.17(a)(5))* 3,000 (1,500) (750)

Submission of information disclosure statement pursuant to *(37 CFR 1.97(c) and (d))* *(37 CFR 1.17(p))* 240 (120) (60)

### For filing a petition to the Commissioner

Petition fee:

- for restoration of the right of priority to a prior foreign application under *(37 CFR 1.55(c)) (37 CFR 1.17(m))* 2,000 (1,000) (500)
- for acceptance of an unintentionally delayed claim for priority to a prior foreign application under *(37 CFR 1.55(e)) (37 CFR 1.17(m))* 2,000 (1,000) (500)
- for acceptance of a certified copy of a foreign priority application submitted after the expiration of the applicable time period under *(37 CFR 1.55(f)) (37 CFR 1.17(g))* 200 (100) (50)
- for restoration of the right of priority to a prior-filed US provisional application under *(37 CFR 1.78(b)) (37 CFR 1.17(m))* 2,000 (1,000) (500)
- for acceptance of an unintentionally delayed claim for the benefit of a prior-filed US provisional application under *(37 CFR 1.78(c)) (37 CFR 1.17(m))* 2,000 (1,000) (500)
- for acceptance of an unintentionally delayed claim for the benefit of a prior-filed US non-provisional application or international application under *(37 CFR 1.78(e)) (37 CFR 1.17(m))* 2,000 (1,000) (500)
- for revival of an unintentionally abandoned application under *(37 CFR 1.137(a)) (37 CFR 1.17(m))* 2,000 (1,000) (500)
- for decisions on questions not specifically provided for *(37 CFR 1.182) (37 CFR 1.17(f))* 400 (200) (100)

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5 See footnote 3.
6 See footnote 4.
7 Maintenance fees are payable for international applications filed on or after 12 December 1980. Check the current USPTO Fee Schedule at [https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule](https://www.uspto.gov/learning-and-resources/fees-and-payment/uspto-fee-schedule) for current amounts of the maintenance fees at the time payment is due.
How can payment of fees be effected?

All payments must be made in US dollars.

Any payment may be effected by:

— United States Postal Service money order (37 CFR 1.23)
— check (37 CFR 1.23)
— USPTO deposit account (37 CFR 1.25)
— credit card (37 CFR 1.23(b)).

Money orders and checks must be payable in United States dollars to the “Director of the U.S. Patent and Trademark Office.” Remittance from foreign countries must be payable and immediately negotiable in the United States of America for the full amount of the fee required. All payments must indicate the complete application number, the name of applicant and the type of fee being paid.

Payment for all fees may be made using one of the following credit cards: MasterCard, VISA, American Express and Discover. Payment using a debit card or check card will not be accepted. Applicants making payments by credit card should use form PTO-2038 contained in this Annex. Blanket authorizations of payments to credit cards will not be accepted. The fee amount must be specified. Credit card authorization may be used only one time. Subsequent charges will require a new authorization. ADVISORY: If filing by EFS-Web, do NOT attach the PTO-2038 form as a PDF along with your EFS-Web submission. Please be advised that this is not recommended and by doing so your credit card information may be displayed via PAIR. To protect your information, it is recommended paying fees online by using the electronic payment method. The PTO-2038 should only be mailed or faxed to the USPTO. The PTO-2038 may not be faxed to the USPTO when paying the basic national fee.

For information concerning electronic transfer of funds to the USPTO, please contact Jusu Jallah, Office of Finance at (571) 272-7473 or (571) 272-6500; fax (571) 273-7473. Applicants choosing to pay by electronic transfer should insure that the full amount of the fee due is received by the USPTO. There is a danger of loss of rights if bank charges are deducted.

Additional information regarding acceptable methods for paying fees to the USPTO can be found at: https://www.uspto.gov/learning-and-resources/fees-and-payment/accepted-payment-methods.
United States Patent and Trademark Office

Instructions for Completing the Credit Card Payment Form

Credit Card Information

- Enter all credit card information including the payment amount to be charged to your credit card and remember to sign the form. The United States Patent and Trademark Office (USPTO) cannot process credit card payments without an authorized signature. An s-signature on credit card payment forms is not allowed under 37 CFR 1.4(e).

- The USPTO does not accept a general authorization to charge any payment deficiency or any additional fees to a credit card.

- The USPTO does not accept debit cards or check cards that require use of a personal identification number as a method of payment.

Credit Card Billing Address

- Address information is required for credit card payment as a means of verification. Failure to complete the address information, including zip/postal code, may result in the payment not being accepted by your credit card institution.

Request and Payment Information

- Provide a description of your request based on the payment amount. For example, indicate the item as “basic filing fee” (patent) or “first maintenance fee” (patent maintenance fee) or “application for registration” (trademark) or “certified copy of a patent” (other fee).

- Indicate the nature of your request by the type of fee you wish to pay: Patent Fee, Patent Maintenance Fee, Trademark Fee or Other Fee. Complete information for each type of fee as applicable to identify the nature of your request. Indicate only one type of fee per form.

- If you are requesting and paying a fee based on a previously filed patent or trademark application, indicate the application/serial number, patent number or registration number that is associated with your request. “Other Fee” is used to request copies of patent and trademark documents, certified copies, assignments, and other information products.

- IDON numbers are assigned by the USPTO for customers ordering patent and trademark information and products specified as “Other Fee” on the order form. If you have been assigned an IDON number from a previous customer order, include it with your request.

- For more information on USPTO fees and amounts, refer to the current fee schedule at www.uspto.gov. To request a copy by mail, call the USPTO Contact Center at (800) 786-9199 or (571) 272-1000. Information on mailing addresses is also available at www.uspto.gov.

Protect Your Credit Card Information

- The USPTO strongly recommends using this form for credit card payments submitted by mail, facsimile, or by hand-delivery. To protect your credit card information use only this form and do not include credit card information on any other form or document.

- To protect your credit card information, do not submit this form electronically through “EFS-Web” or any other USPTO Web site. Credit card information for electronic credit card payments should be entered exclusively on the USPTO Web site providing electronic payment capability.
United States Patent and Trademark Office

Instructions for Completing the Credit Card Payment Form

This Credit Card Payment Form (PTO-2038) is approved for use through 03/31/2021 under OMB Control Number 0651-0043. This collection of information is required by 15 U.S.C. § 1113 or 35 U.S.C. § 41 and 37 CFR 1.16-1.28, 1.492, or 2.6-2.7. The information must be provided by a member of the public if he or she chooses to pay a USPTO fee by credit card. This information is also used by the USPTO to charge the appropriate fee amount to the appropriate credit card account. This collection is estimated to take two minutes to complete, including gathering and preparing information and submitting the Credit Card Payment Form (PTO-2038) to the USPTO. Time will vary depending upon the individual case. Please send any comments on the amount of time required to complete this form and/or suggestions for reducing the time burden to the Chief Information Officer, USPTO, PO Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. PLEASE REFER TO THE USPTO WEB SITE FOR THE CORRECT MAILING ADDRESS.

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with the request for information solicited on the Credit Card Payment Form (PTO-2038). Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the authority for the collection of this information is 15 U.S.C. § 1113 or 35 U.S.C. § 41 and 37 CFR 1.16-1.28, 1.492, or 2.6-2.7; (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the USPTO is to charge the appropriate fee amount to the appropriate credit card account. If you do not furnish the requested information, the USPTO may not be able to charge the fee to the credit card or the credit card institution may refuse to accept the charge, either of which will result in the fee being treated as not having been paid.

The information provided by you in this form will be subject to the following routine uses:

(1) The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. § 552) and the Privacy Act (5 U.S.C. § 552(a)). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.

(2) A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

(3) A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual when the individual has requested assistance from the Member with respect to the subject matter of the record.

(4) A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform the contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. § 552a(m).

(5) A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services Administration (GSA), or his designee, during an inspection of records conducted by GSA as part of that agency’s responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. § 2904 and § 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
Credit Card Payment Form

(Do not submit this form electronically via EFS-Web)
Please Read Instructions before Completing this Form

Credit Card Information

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<th>Credit Card Type:</th>
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<th>☐ American Express</th>
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<td>Name as it Appears on Credit Card:</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Payment Amount (US Dollars):</td>
<td>$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cardholder Signature:</td>
<td></td>
<td></td>
<td>Date (mm/dd/yyyy):</td>
<td></td>
</tr>
</tbody>
</table>

The USPTO does not accept an s-signature (37 CFR 1.4(e)) on credit card payment forms.

Refund Policy: The USPTO may refund a fee paid by mistake or in excess of that required. A change of purpose after the payment of a fee will not entitle a party to a refund of such fee. The USPTO will not refund amounts of $25.00 or less unless a refund is specifically requested and will not notify the payor of such amounts (37 CFR 1.26). Refund of a fee paid by credit card will be issued as a credit to the credit card account to which the fee was charged.

Maximum Daily Limit: There is a $24,999.99 daily limit per credit card account effective June 1, 2015. There is no daily limit for debit cards.

Credit Card Billing Address

| Street Address 1: |        |              |                    |            |
| Street Address 2: |        |              |                    |            |
| City:             |        |              |                    |            |
| State/Province:   |        |              | Zip/Postal Code:   |            |
| Country:          |        |              |                    |            |
| Daytime Phone #:  |        |              | Fax #:             |            |

Request and Payment Information

| Description of Request and Payment Information: |        |              |                    |            |
| ☐ Patent Fee | ☐ Patent Maintenance Fee | ☐ Trademark Fee | ☐ Other Fee |
| Attorney Docket No. | | Identify or Describe Mark | |

If the cardholder includes a credit card number on any form or document other than the Credit Card Payment Form or submits this form electronically via EFS-Web, the United States Patent and Trademark Office will not be liable in the event that the credit card number becomes public knowledge.

(31 May 2018)
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A SUBMISSION UNDER 35 U.S.C. 371

Title of Invention

First Named Inventor

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information.

1. [ ] This is an express request to begin national examination procedures (35 U.S.C. 371(f)). NOTE: The express request under 35 U.S.C. 371(f) will not be effective unless the requirements under 35 U.S.C. 371(c)(1), (2), and (4) for payment of the basic national fee, copy of the International Application and English translation thereof (if required), and the oath or declaration of the inventor(s) have been received.

2. [ ] A copy of the International Application (35 U.S.C. 371(c)(2)) is attached hereto (not required if the International Application was previously communicated by the International Bureau or was filed in the United States Receiving Office (RO/US)).

   a. [ ] is attached hereto.
   b. [ ] has been previously submitted under 35 U.S.C. 154(d)(4).

4. [ ] An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4))
   a. [ ] is attached.
   b. [ ] was previously filed in the international phase under PCT Rule 4.17(iv).

Items 5 to 8 below concern amendments made in the international phase.

PCT Article 19 and 34 amendments

5. [ ] Amendments to the claims under PCT Article 19 are attached (not required if communicated by the International Bureau) (35 U.S.C. 371(c)(3)).

6. [ ] English translation of the PCT Article 19 amendment is attached (35 U.S.C. 371(c)(3)).

7. [ ] English translation of annexes (Article 19 and/or 34 amendments only) of the International Preliminary Examination Report is attached (35 U.S.C. 371(c)(5)).

Cancellation of amendments made in the international phase

8a. [ ] Do not enter the amendment made in the international phase under PCT Article 19.

8b. [ ] Do not enter the amendment made in the international phase under PCT Article 34.

NOTE: A proper amendment made in English under Article 19 or 34 will be entered in the U.S. national phase application absent a clear instruction from applicant not to enter the amendment(s).

The following items 9 to 17 concern a document(s) or information included.


10. [ ] A preliminary amendment.

11. [ ] An Application Data Sheet under 37 CFR 1.76.

12. [ ] A substitute specification. NOTE: A substitute specification cannot include claims. See 37 CFR 1.125(b).

13. [ ] A power of attorney and/or change of address letter.

14. [ ] A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.3 and 37 CFR 1.821-1.825 (not required if sequence listing in text format was indicated on the PCT Request as part of the International Application and the sequence listing was published as part of the international application).

15. [ ] Assignment papers (cover sheet and document(s)). Name of Assignee: __________________________

16. [ ] 37 CFR 3.73(c) Statement (when there is an Assignee).

This collection of information is required by 37 CFR 1.414 and 1.491-1.492. The information is required to obtain or retain a benefit by the public, which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 15 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.
The following fees have been submitted.

**CALCULATIONS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Fee</th>
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<tr>
<td>18. Basic national fee (37 CFR 1.492(a))</td>
<td>$300</td>
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<td>19. Examination fee (37 CFR 1.492(c))</td>
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</tr>
<tr>
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<td>$0</td>
</tr>
<tr>
<td>- All other situations</td>
<td>$760</td>
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<tr>
<td>20. Search fee (37 CFR 1.492(b))</td>
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<tr>
<td>- If the written opinion prepared by ISA/US or the international preliminary examination report prepared by IPEA/US indicates all claims satisfy provisions of PCT Article 33(1)-(4)</td>
<td>$0</td>
</tr>
<tr>
<td>- Search fee (37 CFR 1.445(a)(2)) has been paid on the international application to the USPTO as an International Searching Authority</td>
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</tr>
<tr>
<td>- International Search Report prepared by an ISA other than the US and provided to the Office or previously communicated to the US by the IB</td>
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<td>- All other situations</td>
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**TOTAL OF 18, 19, and 20 = $**

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<tr>
<td>Additional fee for specification and drawings filed in paper over 100 sheets (excluding sequence listing in compliance with 37 CFR 1.821(c) or (e) in an electronic medium or computer program listing in an electronic medium) (37 CFR 1.492(j)).</td>
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**Surcharge for furnishing any of the search fee, examination fee, or the oath or declaration after the date of commencement of the national stage (37 CFR 1.492(h)).**

**TOTAL OF ABOVE CALCULATIONS =**

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>Applicant asserts small entity status. See 37 CFR 1.27. Fees above are reduced by ½.</td>
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<tr>
<td>Applicant certifies micro entity status. See 37 CFR 1.29. Fees above are reduced by ¾.</td>
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<tr>
<td>Applicant must attach form PTO/SB/15A or B or equivalent.</td>
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</table>

**TOTAL NATIONAL FEE =**

**Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31).**

**TOTAL FEES ENCLOSED =**

(12 January 2018)
a. ☐ A check in the amount of $_____________________ to cover the above fees is enclosed.

b. ☐ Please charge my Deposit Account No. ___________________ in the amount of $____________________ to cover the above fees.

c. ☐ The Director is hereby authorized to charge additional fees which may be required, or credit any overpayment, to Deposit Account No. ___________________ as follows:

   i. ☐ any required fee.

   ii. ☐ any required fee except for excess claims fees required under 37 CFR 1.492(d) and (e) and multiple dependent claim fee required under 37 CFR 1.492(f).

d. ☐ Fees are to be charged to a credit card. **WARNING**: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038. The PTO-2038 should only be mailed or faxed to the USPTO. However, when paying the basic national fee, the PTO-2038 may NOT be faxed to the USPTO.

   ADVISORY: If filing by EFS-Web, do **NOT** attach the PTO-2038 form as a PDF along with your EFS-Web submission. Please be advised that this is **not** recommended and by doing so your **credit card information may be displayed via PAIR**. To protect your information, it is recommended to pay fees online by using the electronic payment method.

**NOTE**: Where an appropriate time limit under 37 CFR 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the International Application to pending status.

**Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications**

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013, and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

**NOTE 1**: By providing this statement under 37 CFR 1.55 or 1.78, **this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA**.

**NOTE 2**: A U.S. national stage application may not claim priority to the international application of which it is the national phase. The filing date of a U.S. national stage application is the international filing date. See 35 U.S.C. 363.

**Correspondence Address**

☐ The address associated with Customer Number: ___________________ OR ☐ Correspondence address below

**Signature**

<table>
<thead>
<tr>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address</td>
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<tr>
<td>Name (Print/Type)</td>
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[Page 3 of 3]
Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency’s responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

(12 January 2018)
### Application Data Sheet 37 CFR 1.76

<table>
<thead>
<tr>
<th>Title of Invention</th>
</tr>
</thead>
</table>

The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

### Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

### Inventor Information:

<table>
<thead>
<tr>
<th>Inventor 1</th>
</tr>
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<table>
<thead>
<tr>
<th>Prefix</th>
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<th>Residence Information (Select One)</th>
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- US Residency
- Non US Residency
- Active US Military Service

<table>
<thead>
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<th>City</th>
<th>State/Province</th>
<th>Country of Residence</th>
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Mailing Address of Inventor:

<table>
<thead>
<tr>
<th>Address 1</th>
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<table>
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<th>Address 2</th>
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<table>
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<th>City</th>
<th>State/Province</th>
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</table>

Postal Code: Country:

All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.

### Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.

For further information see 37 CFR 1.33(a).

☐ An Address is being provided for the correspondence Information of this application.

<table>
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<th>Customer Number</th>
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Email Address: Add Email | Remove Email

### Application Information:

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<th>Total Number of Drawing Sheets (if any)</th>
<th>Suggested Figure for Publication (if any)</th>
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</thead>
</table>
Application Data Sheet 37 CFR 1.76

| Title of Invention |

**Filing By Reference:**

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., “Domestic Benefit/National Stage Information” and “Foreign Priority Information”).

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

| Application number of the previously filed application | Filing date (YYYY-MM-DD) | Intellectual Property Authority or Country |

**Publication Information:**

- [ ] Request Early Publication (Fee required at time of Request 37 CFR 1.219)
- [ ] Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

**Representative Information:**

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

- Please Select One: ☐ Customer Number ☐ US Patent Practitioner ☐ Limited Recognition (37 CFR 11.9)

**Domestic Benefit/National Stage Information:**

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the “Application Number” field blank.

| Prior Application Status | Application Number | Continuity Type | Prior Application Number | Filing or 371(c) Date (YYYY-MM-DD) |

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.
Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

- Application Number
- Country
- Filing Date (YYYY-MM-DD)
- Access Code (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the Add button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.

NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.
Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant must opt-out of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is ONLY reviewed and processed with the INITIAL filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby grants the USPTO authority to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People’s Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby grants the USPTO authority to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO’s Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

   A. Applicant DOES NOT authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

   B. Applicant DOES NOT authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

   NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.
<table>
<thead>
<tr>
<th>Application Data Sheet 37 CFR 1.76</th>
<th>Attorney Docket Number</th>
<th>Application Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title of Invention</td>
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<td></td>
</tr>
</tbody>
</table>

### Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

#### Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an assignee under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

- **Assignee**
- **Legal Representative under 35 U.S.C. 117**
- **Joint Inventor**

If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:

Name of the Deceased or Legally Incapacitated Inventor:

If the Applicant is an Organization check here.

<table>
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<th>Prefix</th>
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<th>Middle Name</th>
<th>Family Name</th>
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#### Mailing Address Information For Applicant:

<table>
<thead>
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<td>Email Address</td>
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</tr>
</tbody>
</table>

Additional Applicant Data may be generated within this form by selecting the Add button.

### Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.
### Application Data Sheet 37 CFR 1.76

<table>
<thead>
<tr>
<th>Title of Invention</th>
</tr>
</thead>
</table>

#### Assignee 1

Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Assignee Information" section will appear on the patent application publication as an assignee. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.

If the Assignee or Non-Applicant Assignee is an Organization check here. □

<table>
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<tr>
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<th>Given Name</th>
<th>Middle Name</th>
<th>Family Name</th>
<th>Suffix</th>
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**Mailing Address Information For Assignee including Non-Applicant Assignee:**

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<thead>
<tr>
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<th>Address 2</th>
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<table>
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<th>Email Address</th>
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**Signature:**

**NOTE:** This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the “Authorization or Opt-Out of Authorization to Permit Access” section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet must be signed by a patent practitioner if one or more of the applicants is a juristic entity (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, all joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of all joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

<table>
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<th>Signature</th>
<th>Date (YYYY-MM-DD)</th>
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<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Registration Number</th>
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</table>

Additional Signature may be generated within this form by selecting the Add button.
This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

EFS Web 2.2.13

(5 April 2018)
Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 210(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.

2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.

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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).

6. A record in this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency’s responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.

7. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.

8. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.

### Secrecy Order 37 CFR 5.2
 Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2. (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

### Applicant Information:

<table>
<thead>
<tr>
<th>Applicant Authority</th>
<th>Prefix</th>
<th>Given Name</th>
<th>Middle Name</th>
<th>Family Name</th>
<th>Suffix</th>
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<tbody>
<tr>
<td>Inventor</td>
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<tr>
<td>Legal Representative under 35 U.S.C. 117</td>
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<td>Party of Interest under 35 U.S.C. 118</td>
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<th>Active US Military Service</th>
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</table>

### Mailing Address of Applicant:

<table>
<thead>
<tr>
<th>Address 1</th>
<th>Address 2</th>
<th>City</th>
<th>State/Province</th>
<th>Postal Code</th>
<th>Country</th>
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All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.

### Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).

Customer Number

Email Address

### Application Information:

Title of the Invention

Attorney Docket Number

Small Entity Status Claimed

Application Type

Subject Matter

Suggested Class (if any)

Sub Class (if any)

Suggested Technology Center (if any)

Total Number of Drawing Sheets (if any)

Suggested Figure for Publication (if any)
Request Not to Publish. I hereby request that the attached application not be published under 35 U.S. C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.

Please Select One:  
- Customer Number  
- US Patent Practitioner  
- Limited Recognition (37 CFR 11.9)

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.
**Application Data Sheet 37 CFR 1.76**

<table>
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<th>Application Number</th>
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**Title of Invention**

If the Assignee is an Organization check here. [ ]

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Email Address

Additional Assignee Data may be generated within this form by selecting the **Add** button.

**Signature:**

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.4(d) for the form of the signature.

<table>
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.
CERTIFICATION OF MICRO ENTITY STATUS
(GROSS INCOME BASIS)

Application Number or Control Number (if applicable): Patent Number (if applicable):
First Named Inventor: Title of Invention:

The applicant hereby certifies the following—

(1) SMALL ENTITY REQUIREMENT – The applicant qualifies as a small entity as defined in 37 CFR 1.27.

(2) APPLICATION FILING LIMIT – Neither the applicant nor the inventor nor a joint inventor has been named as the inventor or a joint inventor on more than four previously filed U.S. patent applications, excluding provisional applications and international applications under the Patent Cooperation Treaty (PCT) for which the basic national fee under 37 CFR 1.492(a) was not paid, and also excluding patent applications for which the applicant has assigned all ownership rights, or is obligated to assign all ownership rights, as a result of the applicant’s previous employment.

(3) GROSS INCOME LIMIT ON APPLICANTS AND INVENTORS – Neither the applicant nor the inventor nor a joint inventor, in the calendar year preceding the calendar year in which the applicable fee is being paid, had a gross income, as defined in section 61(a) of the Internal Revenue Code of 1986 (26 U.S.C. 61(a)), exceeding the “Maximum Qualifying Gross Income” reported on the USPTO Web site at http://www.uspto.gov/patents/law/micro_entity.jsp which is equal to three times the median household income for that preceding calendar year, as most recently reported by the Bureau of the Census.

(4) GROSS INCOME LIMIT ON PARTIES WITH AN “OWNERSHIP INTEREST” – Neither the applicant nor the inventor nor a joint inventor has assigned, granted, or conveyed, nor is under an obligation by contract or law to assign, grant, or convey, a license or other ownership interest in the application concerned to an entity that, in the calendar year preceding the calendar year in which the applicable fee is being paid, had a gross income, as defined in section 61(a) of the Internal Revenue Code of 1986, exceeding the “Maximum Qualifying Gross Income” reported on the USPTO Web site at http://www.uspto.gov/patents/law/micro_entity.jsp which is equal to three times the median household income for that preceding calendar year, as most recently reported by the Bureau of the Census.

SIGNATURE by an authorized party set forth in 37 CFR 1.33(b)

Signature
Name
Date
Telephone
Registration No.

☐ There is more than one inventor and I am one of the inventors who are jointly identified as the applicant. The required additional certification form(s) signed by the other joint inventor(s) are included with this form.
Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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(2 February 2017)
CERTIFICATION OF MICRO ENTITY STATUS
(INSTITUTION OF HIGHER EDUCATION BASIS)

Application Number or Control Number (if applicable):  
Patent Number (if applicable):

First Named Inventor:  
Title of Invention:

CERTIFICATION ON THE BASIS OF EMPLOYMENT BY AN INSTITUTION OF HIGHER EDUCATION

The applicant hereby certifies the following—

The applicant qualifies as a small entity as defined in 37 CFR 1.27.

The applicant’s employer, from which the applicant obtains the majority of the applicant’s income, is an institution of higher education as defined in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

SIGNATURE by an authorized party set forth in 37 CFR 1.33(b)

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<tbody>
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</table>

☐ There is more than one inventor and I am one of the inventors who are jointly identified as the applicant. The required additional certification form(s) signed by the other joint inventor(s) are included with this form.

CERTIFICATION ON THE BASIS OF ASSIGNMENT OR OBLIGATION TO ASSIGN TO AN INSTITUTION OF HIGHER EDUCATION

The applicant hereby certifies the following—

The applicant qualifies as a small entity as defined in 37 CFR 1.27.

The applicant has assigned, granted, conveyed, or is under an obligation by contract or law, to assign, grant, or convey, a license or other ownership interest in the particular application to an institution of higher education as defined in section 101(a) of the Higher Education Act of 1965 (20 U.S.C. 1001(a)).

SIGNATURE by an authorized party set forth in 37 CFR 1.33(b)

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</table>

☐ There is more than one inventor and I am one of the inventors who are jointly identified as the applicant. The required additional certification form(s) signed by the other joint inventor(s) are included with this form.

NOTE: A signed copy of this “institution of higher education basis” micro entity certification form (PTO/SB/15B) filed together with a signed copy of the “gross income basis” micro entity certification form (PTO/SB/15A) will be taken to be a representation that any inventor or person applying for a patent as provided in 37 CFR 1.46 not qualifying on the “gross income basis” qualifies on the “institution of higher education basis.”
Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.
DECLARATION (37 CFR 1.63) FORUTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention

As the below named inventor, I hereby declare that:

This declaration is directed to: The attached application, or

[ ] United States application or PCT international application number ____________________

filed on ______________________________

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: ___________________________________________________ Date (Optional) :_______________________

Signature: ________________________________________________________________________________________

Note: An application data sheet (PTO/SB/14 or equivalent), including naming the entire inventive entity, must accompany this form or must have been previously filed. Use an additional PTO/AIA/01 form for each additional inventor.
Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
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3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
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9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.
I hereby declare that: (1) Each inventor’s residence, mailing address, and citizenship are as stated below next to their name; and (2) I believe the inventor(s) named below to be the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention titled:

```
(Title of the Invention)
```

I hereby state that I have reviewed and understand the contents of the above identified application, including the claims, as amended by any amendment specifically referred to above.

I hereby acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

### Claim of Foreign Priority Benefits

I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or (f), or 365(b) of any foreign application(s) for patent, inventor's or plant breeder's rights certificate(s), or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box any foreign application for patent, inventor's or plant breeder's rights certificate(s), or any PCT international application having a filing date before that of the application on which priority is claimed.

<table>
<thead>
<tr>
<th>Priority Foreign Application Number(s)</th>
<th>Country</th>
<th>Foreign Filing Date (MM/DD/YYYY)</th>
<th>Priority Not Claimed</th>
<th>Certified Copy Attached?</th>
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Additional foreign application number(s) are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.
DECLARATION — Utility or Design Patent Application

Direct all correspondence to: ☐ The address associated with Customer Number: ☐ OR ☐ Correspondence address below

Name
Address
City State Zip
Country Telephone Email

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issue thereon.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

NAME OF SOLE OR FIRST INVENTOR:

☐ A petition has been filed for this unsigned inventor

Given Name (first and middle [if any]) Family Name or Surname

Inventor’s Signature Date

Residence: City State Country

Mailing Address

City State Zip Country

☐ Additional inventors or a legal representative are being named on the supplemental sheet(s) PTO/SB/02A or 02LR attached hereto

[Page 2 of 2]
Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
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8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.
**SUBSTITUTE STATEMENT IN LIEU OF AN OATH OR DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (35 U.S.C. 115(d) AND 37 CFR 1.64)**

<table>
<thead>
<tr>
<th>Title of Invention</th>
</tr>
</thead>
</table>

This statement is directed to:
- [ ] The attached application,
- [ ] United States application or PCT international application number ____________________ filed on ___________________

**LEGAL NAME of inventor to whom this substitute statement applies:**

(E.g., Given Name (first and middle (if any)) and Family Name or Surname)

<table>
<thead>
<tr>
<th>Residence (except for a deceased or legally incapacitated inventor):</th>
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<tr>
<td>City</td>
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</table>

<table>
<thead>
<tr>
<th>Mailing Address (except for a deceased or legally incapacitated inventor):</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
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</table>

I believe the above-named inventor or joint inventor to be the original inventor or an original joint inventor of a claimed invention in the application.

The above-identified application was made or authorized to be made by me.

I hereby acknowledge that any willful false statement made in this statement is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

**Relationship to the inventor to whom this substitute statement applies:**

- [ ] Legal Representative (for deceased or legally incapacitated inventor only),
- [ ] Assignee,
- [ ] Person to whom the inventor is under an obligation to assign,
- [ ] Person who otherwise shows a sufficient proprietary interest in the matter (petition under 37 CFR 1.46 is required), or
- [ ] Joint Inventor.

This collection of information is required by 35 U.S.C. 115 and 37 CFR 1.63. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 1 minute to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.
SUBSTITUTE STATEMENT

Circumstances permitting execution of this substitute statement:

☐ Inventor is deceased,
☐ Inventor is under legal incapacity,
☐ Inventor cannot be found or reached after diligent effort, or
☐ Inventor has refused to execute the oath or declaration under 37 CFR 1.63.

If there are joint inventors, please check the appropriate box below:

☐ An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) naming the entire inventive entity has been
  or is currently submitted.

OR

☐ An application data sheet under 37 CFR 1.76 (PTO/AIA/14 or equivalent) has not been submitted. Thus, a Substitute
  Statement Supplemental Sheet (PTO/AIA/11 or equivalent) naming the entire inventive entity and providing inventor
  information is attached. See 37 CFR 1.64(b).

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may
contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers
(other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO
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PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

Name: __________________________ Date (Optional): __________________________

Signature: __________________________

APPLICANT NAME AND TITLE OF PERSON EXECUTING THIS SUBSTITUTE STATEMENT:

If the applicant is a juristic entity, list the applicant name and the title of the signee:

Applicant Name: __________________________

Title of Person Executing
This Substitute Statement: __________________________

The signee, whose title is supplied above, is authorized to act on behalf of the applicant.

Residence of the signee (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City: __________________________ State: __________________________ Country: __________________________

Mailing Address of the signee (unless provided in an application data sheet, PTO/AIA/14 or equivalent):

City: __________________________ State: __________________________ Zip: __________________________ Country: __________________________

Note: Use an additional PTO/AIA/02 form for each inventor who is deceased, legally incapacitated, cannot be found or reached
after diligent effort, or has refused to execute the oath or declaration under 37 CFR 1.63.

(31 May 2018)
Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

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1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.

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POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(c).

I hereby appoint:

☐ Practitioners associated with Customer Number:

OR

☐ Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

<table>
<thead>
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<th>Name</th>
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As attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(c).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(c) to:

☐ The address associated with Customer Number:

OR

☐ Firm or individual name

<table>
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Assignee name and address:

A copy of this form, together with a statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(c) may be completed by one of the practitioners appointed in this form, and must identify the application in which this Power of Attorney is to be filed.

Signature of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee.

Signature: Date:

Name: Telephone: Title:

This collection of information is required by 37 CFR 1.31, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public, which is to update (and by the USPTO to process) the file of a patent or reexamination proceeding. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 18 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9299 and select option 2.
Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
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POWER OF ATTORNEY TO ONE OR MORE OF THE JOINT INVENTORS AND CHANGE OF CORRESPONDENCE ADDRESS

Application Number
Filing Date
First Named Inventor
Art Unit
Examiner Name
Title

NOTE: This form may be filed by pro se inventors (i.e., prosecuting the application without a registered patent practitioner) who are identified as the Applicant in the above-identified application. For a Power of Attorney to one or more registered patent practitioners, see form PTO/AIA/82.

I hereby revoke all previous powers of attorney given in the above-identified application.

[ ] I hereby appoint the following joint inventor(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

Please recognize or change the correspondence address for the above-identified application to:

[ ] The address associated with Customer Number. (if applicable): [ ]
- To Request A Customer Number see form PTO/SB/124

OR

Individual Name
Address
City State Zip
Country
Telephone Email

I am the Inventor.

SIGNATURE of Inventor
Signature Date
Name Telephone

NOTE: Signatures of all the inventors are required. Submit multiple forms if more than one signature is required, see below*. See 37 CFR 1.4 for signature requirements and certifications.

[ ] Total of __________ forms are submitted.

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## POWER OF ATTORNEY

### OR
**REVOCATION OF POWER OF ATTORNEY WITH A NEW POWER OF ATTORNEY AND CHANGE OF CORRESPONDENCE ADDRESS**

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### OR
**I hereby revoke all previous powers of attorney given in the above-identified application.**

- [ ] A Power of Attorney is submitted herewith.
- [ ] I hereby appoint Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

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<th>Practitioner(s) Name</th>
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- [ ] I hereby appoint Practitioner(s) named below as my/our attorney(s) or agent(s) to prosecute the application identified above, and to transact all business in the United States Patent and Trademark Office connected therewith:

**Please recognize or change the correspondence address for the above-identified application to:**

- [ ] The address associated with the above-mentioned Customer Number.
- [ ] The address associated with Customer Number:

**OR**

- [ ] Firm or Individual Name

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**I am the:**

- [ ] Applicant/Inventor.
- [ ] Assignee of record of the entire interest. See 37 CFR 3.71; Statement under 37 CFR 3.73(b) (Form PTO/SB/96) submitted herewith or filed on ____________.

**SIGNATURE of Applicant or Assignee of Record**

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**Title and Company**

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**NOTE:** Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

- [ ] Total of __________ forms are submitted.

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**SEND TO:** Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS.

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

(5 April 2018)
Privacy Act Statement

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The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
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(5 April 2018)
# INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Use as many sheets as necessary)

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1 EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.  
2 Applicant's unique citation designation number (optional).  
3 See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04.  
4 Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).  
5 For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.  
6 Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible.  
7 Applicant is to place a check mark here if English language Translation is attached.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.
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**INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

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**NON PATENT LITERATURE DOCUMENTS**

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<th>Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.</th>
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To the Director of the U.S. Patent and Trademark Office: Please record the attached documents or the new address(es) below.

1. Name of conveying party(ies)

2. Name and address of receiving party(ies)

3. Nature of conveyance/Execution Date(s):

   - Assignment
   - Merger
   - Security Agreement
   - Change of Name
   - Joint Research Agreement
   - Government Interest Assignment
   - Executive Order 9424, Confirmatory License
   - Other

4. Application or patent number(s):

   - A. Patent Application No.(s)
   - B. Patent No.(s)

5. Name and address to whom correspondence concerning document should be mailed:

6. Total number of applications and patents involved:

7. Total fee (37 CFR 1.21(h) & 3.41)

8. Payment Information

9. Signature:

(11 April 2019)
Guidelines for Completing Patents Cover Sheets (PTO-1595)

Cover Sheet information must be submitted with each document to be recorded. If the document to be recorded concerns both patents and trademarks separate patent and trademark cover sheets, including any attached pages for continuing information, must accompany the document. All pages of the cover sheet should be numbered consecutively, for example, if both a patent and trademark cover sheet is used, and information is continued on one additional page for both patents and trademarks, the pages of the cover sheet would be numbered from 1 to 4.

**Item 1. Name of Conveying Party(ies).**

Enter the full name of the party(ies) conveying the interest. If there is insufficient space, enter a check mark in the "Yes" box to indicate that additional information is attached. The name of the additional conveying party(ies) should be placed on an attached page clearly identified as a continuation of the information Item 1. Enter a check mark in the "No" box, if no information is contained on an attached page. If the document to be recorded is a joint research agreement, enter the name(s) of the party(ies) other than the owner of the patent or patent application as the conveying party(ies).

**Item 2. Name and Address of Receiving Party(ies).**

Enter the name and full address of the first party receiving the interest. If there is more than one party receiving the interest, enter a check mark in the "Yes" box to indicate that additional information is attached. Enter a check mark in the "No" box, if no information is contained on an attached page. If the document to be recorded is a joint research agreement, enter the name(s) of the patent or patent application owner(s) as the receiving party.

**Item 3. Nature of Conveyance/Execution Date(s).**

Enter the execution date(s) of the document. It is preferable to use the name of the month, or an abbreviation of that name, in order that confusion over dates is minimized. Place a check mark in the appropriate box describing the nature of the conveying document. If the "Other" box is checked, specify the nature of the conveyance.

**Item 4. Application Number(s) or Patent Number(s).**

Indicate the application number(s), and/or patent number(s) against which the document is to be recorded. National application numbers must include both the series code and a six-digit number (e.g., 07/123,456), and international application numbers must be complete (e.g., PCT/US91/12345).

Enter a check mark in the appropriate box: "Yes" or "No " if additional numbers appear on attached pages. Be sure to identify numbers included on attached pages as the continuation of Item 4. Also enter a check mark if this Assignment is being filed as an Oath/Declaration (37 CFR 1.63).

**Item 5. Name and Address of Party to whom correspondence concerning the document should be mailed.**

Enter the name and full address of the party to whom correspondence is to be mailed.

**Item 6. Total Applications and Patents involved.**

Enter the total number of applications and patents identified for recordation. Be sure to include all applications and patents identified on the cover sheet and on additional pages.

**Block 7. Total Fee Enclosed.**

Enter the total fee enclosed or authorized to be charged. A fee is required for each application and patent against which the document is recorded.

**Item 8. Payment Information.**

Enter the deposit account number and authorized user name to authorize charges.

**Item 9. Signature.**

Enter the name of the person submitting the document. The submitter must sign and date the cover sheet. Enter the total number of pages including the cover sheet, attachments, and document.

This collection of information is required by 35 USC 261 and 262 and 15 USC 1057 and 1060. The information is used by the public to submit (and by the USPTO to process) patent and trademark assignment requests. After the USPTO records the information, the records for patent and trademarks, assignments, and other associated documents can be inspected by the public. To view documents recorded under secrecy orders or documents recorded due to the interest of the federal government, a written authorization must be submitted. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the form to the USPTO. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Manager of the Assignment Division, USPTO, P.O. Box 1450, Alexandria, VA 22313-1450.

DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop Assignment Recordation Services, Director of the USPTO, P.O. Box 1450, Alexandria, VA 22313-1450.
Privacy Act Statement for Patent Assignment Recordation Form Cover Sheet

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with the above request for information. This collection of information is authorized by 35 U.S.C. 1, 2, 261 and E.O. 9424. This information will primarily be used by the USPTO for the recordation of assignments related to patents and patent applications. Submission of this information is voluntary but is required in order for the USPTO to record the requested assignment. If you do not provide the information required on the cover sheet, the assignment will not be recorded, and all documents will be returned to you.

After the information is recorded, the records and associated documents can be inspected by the public and are not confidential, except for documents that are sealed under secrecy orders or related to unpublished patent applications. Assignment records relating to unpublished patent applications are maintained in confidence in accordance with 35 U.S.C. 122. Records open to the public are searched by users for the purpose of determining ownership for other property rights with respect to patents and trademarks.

Routine uses of the information you provide may also include disclosure to appropriate Federal, state, local, or foreign agencies in support of their enforcement duties and statutory or regulatory missions, including investigating potential violations of law or contract and awarding contracts or other benefits; to a court, magistrate, or administrative tribunal in the course of presenting evidence; to members of Congress responding to requests for assistance from their constituents; to the Office of Management and Budget in connection with the review of private relief legislation; to the Department of Justice in connection with a Freedom of Information Act request; to a contractor in the performance of their duties; to the Office of Personnel Management for personnel studies; and to the General Services Administration (GSA) as part of their records management responsibilities under the authority of 44 U.S.C. 2904 and 2906. Such disclosure to GSA shall not be used to make determinations about individuals.
PETITION FOR REVIVAL OF AN INTERNATIONAL (PCT) APPLICATION FOR PATENT DESIGNATING THE U.S. ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)

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<tr>
<th>First named inventor:</th>
<th>Docket Number (Optional)</th>
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<tr>
<td>International (PCT) Application No.:</td>
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<td>Title:</td>
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**Attention:** International Patent Legal Administration

**Mail Stop PCT**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

The above-identified application became abandoned as to the United States because the fees and documents required by 35 U.S.C. 371(c) and 37 CFR 1.495 were not filed prior to the expiration of the time set in 37 CFR 1.495(b) or (c) (as applicable). The date of abandonment is the day after the date on which the 35 U.S.C. 371(c) requirements were due. See 37 CFR 1.495(c) and (h).

**APPLICANT HEREBY PETITIONS FOR REVIVAL OF THIS APPLICATION.**

NOTE: A grantable petition requires the following items:

1. **Petition fee**
   - Small entity fee $________ (37 CFR 1.17(m)). Applicant asserts small entity status. See 37 CFR 1.27.
   - Micro entity fee $________ (37 CFR 1.17(m)). Applicant certifies micro entity status. See 37 CFR 1.29.
   - Form PTO/SB/15A or B or equivalent must either be enclosed or have been submitted previously.
   - Undiscounted fee $________ (37 CFR 1.17(m)).

2. **Proper reply**
   - The proper reply (the missing requirement(s)) in the form of
     - __________ (identify the type of reply):
     - has been filed previously on ____________________________.
     - is enclosed herewith.

3. **Terminal disclaimer with disclaimer fee**
   - Since this international application has an international filing date on or after June 8, 1995, no terminal disclaimer is required.
   - A terminal disclaimer (and disclaimer fee (37 CFR 1.20(d)) of $________ for a small entity or $________ for other than a small entity) disclaiming the required period of time is enclosed herewith (see PTO/SB/63).

This collection of information is required by 37 CFR 1.137(a). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 1 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop PCT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

(12 January 2018)
PETITION FOR REVIVAL OF AN INTERNATIONAL (PCT) APPLICATION FOR PATENT DESIGNATING THE U.S. ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(a)

4. STATEMENT: The entire delay in filing the required reply from the due date for the required reply until the filing of a grantable petition under 37 CFR 1.137(a) was unintentional. [NOTE: The United States Patent and Trademark Office may require additional information if there is a question as to whether either the abandonment or the delay in filing a petition under 37 CFR 1.137(a) was unintentional (MPEP 711.03(c), subsections (III)(C) and (D)).]

WARNING:
Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

Signature

Date

Typed or Printed Name

Registration Number, if applicable

Address

Telephone Number

Address

Enclosures:

☐ Fee Payment
☐ Reply
☐ Terminal Disclaimer Form
☐ Additional sheet(s) containing statements establishing unintentional delay
☐ Other (please identify):

CERTIFICATE OF MAILING OR TRANSMISSION [37 CFR 1.8(a)]

I hereby certify that this correspondence is being:

☐ Deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop PCT, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450.

☐ Transmitted to the United States Patent and Trademark Office by EFS-Web, or by facsimile to (571) 273-8300, on the date shown below.

Date

Signature

Typed or printed name of person signing certificate

(12 January 2018)
Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency’s responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.