<us-patent-grant>: The <us-patent-grant> element is mandatory and will occur one time identifying the beginning of a patent document. This root element contains within it all elements, content, and references to external entities that constitute the document. <?xml version="1.0" encoding="UTF-8"?> <!DOCTYPE us-patent-grant SYSTEM "us-patent-grant-v42-2006-08-23.dtd" [ ]> Reference Document Type Definition for United States Patent Grant Publications: http://www.uspto.gov/products/xml-resources.jsp. Also refer to Section B of this manual for printed copies of the following: DTD v4.2, dated August 23, 2006, United States Patent Grant Publications, Processing Instructions. USPTO-modified version of WIPO Standard ST. 36 – Recommendation for the Processing of Patent Information using XML (Extensible Markup Language) – International Common Elements (ICE): http://www.wipo.int/export/sites/www/standards/en/pdf/03-36-01.pdf
Refer to Table 1 for Definition of material enclosed in {- -and - - } throughout the documentation and the Legend of Near and Fear Designer Symbols appearing in the DTD (Document Type Definition) for United States Patent Grant Publications.
<us-patent-grant lang="EN" dtd-version="v4.2 2006-08-23" file="USNNNNNNN-YYYYMMDD.XML" status="PRODUCTION" id="us-patent-grant" country="US" date-produced="YYYYMMDD" date-publ="YYYYMMDD"> NOTE: file="USNNNNNNN-YYYYMMDD identifies a 7-position number of the patent grant preceded by the 2-position constant "US" and followed a 1-position constant "-"and the 8-position year, month and day identifying the publication date of the patent grant. date-produced="YYYYMMDD" identifies the creation date of this XML document and date-publ=YYYYMMDD is the 8-position year, month and day identifying the publication date of the document. The <us-patent-grant> element includes the following data elements and terminated, at the end of a completed document by the </us-patent-grant> end tag.

{- - <us-bibliographic-data-grant>, <abstract>, <description>, <doc-page>, <drawings>,

<sequence-list-doc>, <table-external-doc>, <us-chemistry>, <us-math>, <claims> - -}

NOTE: UTF-8 (8-bit UCS/Unicode Transformation Format) is a variable-length character encoding for Unicode. It is able to represent any character in the Unicode standard. Throughout an XML patent document special characters are present using the UTF-8 character encoding scheme. Also, Private Use Character Entities will be replaced with a <img> tag that will reference an external Image file.

Reference Table 7 - UTF-8 Character Encoding Table and Private Use Character Entities

NOTE: Processing instructions can be present and are used to pass information to applications in a way that escapes XML rules. Their appearance is not noted by schema or DTD processors.

Reference Table 8 - Processing instructions

<us-bibliographic-data-grant>: The <us-bibliographic-data-grant> element is mandatory and will occur one time within the <us-patent-grant> element. The <us-bibliographic-data-grant> element contains the following data-grant> bibliographic information, that is present on the front page of a patent grant, and terminated by the </us-bibliographic-data-grant> end tag.

{- - <!ELEMENT us-bibliographic-data-grant (publication-reference, us-sir-flag?, application-reference, us-application-series-code, priority-claims?, us-issued-on-continued-prosecution-application?, rule-47-flag?, us-term-of-grant?, classifications-ipcr?, classifications-cpc?, classification-locarno?, classification-national?, invention-title, us-botanic?, us-references-cited?, number-of-claims?, us-exemplary-claim*, us-field-ofclassification-search?, figures?, us-microform-quantity?, us-related-documents?, us-parties, assignees?, examiners?, pct-or-regional-filing-data?, pct-or-regional-publishing-data?, patent-family?, bio-deposit?, text*)> - -} <publication-reference>: The <publication-reference> element is mandatory and will occur one time within the reference> <us-bibliographic-data-grant> element and contain the following publication reference information and terminated by the </publication-reference> end tag. {- - <!element publication-reference (document-id)> - -}. <document-id>: This <document-id> element is mandatory and will occur one time within the <publication-reference> element. The contents of this <document–id> element will be a <country>, a <doc-number>, a <kind>, a <date>, and terminated by the </document-id> end tag. <country>: This <country> element is mandatory and will occur one time within the <document-id> element of the <publication-reference> element and contain the ST. 3 2-position country code “US” identifying United States as the publishing country of the patent grant and terminated by the </country> end tag. </country>. <doc-number>: This <doc-number> element is mandatory and will occur one time within the <document-id> element of the <publication-reference> element and contain the 8-position document patent number and terminated by the </document-id> end tag. Reference Table 2 – Appearance of U.S. Patent Grant Patent Numbers. </doc-number> <kind>: This <kind> element is mandatory and will occur one time within the <document-id> element of the <publication-reference> element and contain the 2-position kind code and terminated by the </kind> end tag. Reference Table 3A - U.S. Patent Grants and Patent Published Applications – Kind Codes (2-position) </kind>. <date>: This <date> element is mandatory and will occur one time within the <document-id> element of the <publication-reference> element and contain the 8-position (YYYYMMDD) publication date of the document and terminated by the </date> end tag. </date> </document-id> </publication-reference>. <us-sir-flag> : The <us-sir-flag> element will be present for a SIR document and will occur one time within the text= <us-bibliographic-data-grant> element and terminated by the /> end tag. {- - <!ELEMENT us-sir-flag EMPTY> {- - <!ATTLIST us-sir-flag sir-text CDATA #FIXED 'A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration reference 35 U.S.C.157.' > - -} Note: The Statutory Invention Registration (SIR) flag will contain the sir-text attribute as it appears on the front page of the patent grant publication. Example of a <us-sir-flag> element: <us-sir-flag sir-text= “A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C.157."/> /><application-reference> Note: The appropriate application reference tag identifying the application type will be present here. The <application-reference> element is mandatory and will occur one time within the <us-bibliographic-data-grant> element and contain the following application reference information and terminated by the </application-reference> end tag. Note: The following are the possible application reference tags identifying the application type: <application-reference appl-type="design">, <application-reference appl-type="plant">,

<application-reference appl-type="reissue">, <application-reference appl-type="sir">, <application-reference appl-type="utility">. {- - <!ELEMENT application-reference (document-id)> - -} <document-id> This <document-id> element is mandatory and will occur one time within the <application-reference> element. The contents of this <document–id> element will be a <country>, a <doc-number>, a <date>, and terminated by the </document-id> end tag. <country>: This <country> element is mandatory and will occur one time within the <document-id> element of the <application-reference> element and contain the ST. 3 2-position country code of “US” identifying United States as the country where the application was filed and terminated by the </country> end tag </country>. <doc-number>: This <doc-number> element is mandatory and will occur one time within the <document-id> element of the <application-reference> element and contain the 8-position numeric document application number and terminated by the </doc-number> end-tag. Note: Positions 1 and 2 of this application number will contain the Series Code. Reference Table 4 - U.S. Application Series Codes. </doc-number>. <date>: This <date> element is mandatory and will occur one time within the <document-id> element of the <application-reference> element and contain the 8-position (YYYYMMDD) filing date of the application and terminated by the </date> end tag. </date> </document-id> </application-reference>. <us-application-series-code>: The <us-application-series-code> element is mandatory, for applications filed in the US, and will occur series-code> one time within the <us-bibliographic-data-grant> element and contain a 2-position application series code and terminated by the </us-application-series-code> end tag. {- -<!ELEMENT us-application-series-code (#PCDATA)> - -}. Reference Table 4 - U.S. Application Series Codes. </us-application-series-code> <priority-claims> <priority-claim> Note: The appropriate priority-claim tag identifying the priority sequence and kind will be present here. The <priority-claim> element is optional and may occur multiple times (once for each priority being claimed) within the <priority-claims> element. Each <priority-claim> element is terminated by the <priority-claim> end tag. Note: The following are priority claim tags identifying the priority sequence and the priority kind <priority-claim sequence="01" kind="national">, <priority-claim sequence="01" kind="regional">, <priority-claim sequence="01" kind="international"> {- - <!ELEMENT priority-claim (country , doc-number? , date , office-of-filing? , (priority-doc-requested | priority-doc-attached)?) > - -}. <country>: This <country> element is mandatory and will occur one time within each <priority-claim> element and contain the ST. 3 2-position country code of the country or international organization where the priority is being claimed and terminated by the </country> end tag. Reference STANDARD ST. 3 – Recommended Standard on Two-Letter Codes for the Representation of States, Other Entities and Intergovernmental Organizations: http://www.wipo.int/standards/en/pdf/03-03-01.pdf. </country>. <doc-number>: This <doc-number> element is mandatory and will occur one time within each <priority-claim> element and contain the document application number of the issuing country or international organization and terminated by the </doc-number> end-tag. Reference WIPO Standard ST. 10/C – Presentation of Bibliographic Data Components Presentation of Application Numbers: Table I – Countries or Organizations Having Annual Series of Application Numbers. Table II– Countries or Organizations Having Other than Annual Numbering Systems
http://www.wipo.int/export/sites/www/standards/en/pdf/07-02-01.pdf
</doc-number>. <date>: This <date> element is mandatory and will occur one time within each <priority-claim> element and contain the 8-position (YYYYMMDD) filing date of the application being claimed and terminated by the </date> end tag. </date></priority-claim></priority-claims>. <us-issued-on-continued-prosecution-application>: Effective July 2007, the <us-issued-on-continued-prosecution-application> element is present within continued-the prosecution<us-bibliographic-data-grant> element when the US Application Filing Date or the PCT Application

application Filing Date is prior to June 8, 1995 and terminated by the /> end tag. {- -<!ELEMENT us-issued-on-continued-prosecution-application EMPTY> - -} {- - <!ATTLIST us-issued-on-continued-prosecution-application grant-cpa-text CDATA #FIXED 'This patent issued on a continued prosecution application (CPA) filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provision of 35 U.S.C. 154(a)(2).' > - -}. Example – Patent 07875063, granted 20110125: <us-issued-on-continued-prosecution-application grant-cpa-text="This patent issued on a continued prosecution application (CPA) filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provision of 35 U.S.C. 154(a)(2)."/> /> <rule-47-flag>: When this <rule-47-flag> tag is present within the <us-bibliographic-data-grant> element it signifies that the application was filed under Rule 47, indicating the applicant(s) refused to execute the application or could not be found. {- - <!ELEMENT rule-47-flag EMPTY> - -}. <us-term-of-grant>: The <us-term-of-grant> element is optional and may occur one time within the <us-bibliographic-data-grant> element and can contain the following <us-term-extension> and/or <length-of-grant> and/or <disclaimer> information and terminated by the <us-term-of-grant> end tag. {- - <!ELEMENT us-term-of-grant (text | length-of-grant | us-term-extension | disclaimer | lapse-of-patent)+> - -}. <us-term-extension>: The <us-term-extension> element is optional and may occur one time within the <us-term-of-grant> and terminated by the </us-term-extension> end tag. The presence of this element indicates that the term of the patent has been extended under 35 USC 154(b). The content will be a numeric value identifying the number of days of the extension. </us-term-extension>. <length-of-grant>: The <length-of-grant> element will be present for Design Patents and will occur one time within the <us-term-of-grant> element and terminated by the </length-of-grant> end tag. The content will be the numeric value “14” indicating 14 years as the length of a Design patent. </length-of-grant>. <disclaimer>: The <disclaimer> element is optional and may occur one time within the <us-term-of-grant> and terminated by the </disclaimer> end tag. The presence of this element indicates that this granted patent is subject to a terminal disclaimer. When the <disclaimer> element is present, the <text> element and its terminating </text> end tag must also be present. The <text> element will contain the constant as shown indicating the terminal disclaimer. <text>: This patent is subject to a terminal disclaimer. </text></disclaimer></us-term-of-grant>. <classifications-ipcr>: The <classifications-ipcr> element is optional and may occur one time within the <us-bibliographic-data-grant> element and contain the International Patent Classification Reform information and terminated by the </classifications-ipcr> end tag. Note: Multiple IPCR classifications, <classification-ipcr> through </classification-ipcr>, can be present within the <classifications-ipcr> element. Reference Table 5 - Reformed IPC - Patent Published Applications and Patent Grants (International Common Elements – ICE) on or after January 2006: <classification-ipcr>: The <classification-ipcr> element is optional and may occur one or more times within the ipcr> <classifications-ipcr> element. The element contains an IPCR classification information and terminated by the </classification-ipcr> end tag. {- - <!ELEMENT classification-ipcr (ipc-version-indicator , classification-level? , section , class , subclass , main-group? , subgroup? , symbol-position? , classification-value? , action date? , generating-office? , classification-status? , classification-data-source?)> - -} {- -< !ELEMENT classification-ipc (edition , main-classification , further-classification* , (additional-info | linked-indexing-code-group | unlinked-indexing-code)* , text?)> - -} <ipc-version-indicator>: The <ipc-version-indicator> element will occur one time within each <classification-ipcr> element and indicator> contain an 8-position numeric date in the format YYYYMMDD and terminated by a <ipc-version-indicator> end tag. Example: <ipc-version-indicator><date>YYYYMMDD</date></ipc-version-indicator> <date> </date> </ipc-version-indicator>. <classification-level>: The <classification-level> element will occur one time within each <classification-ipcr> element and contain a 1-

position alphabetic (uppercase) constant “A” defining “advanced level” and terminated by a </classification-level> end tag. </classification-level>. <section>: The <section> element will occur one time within each <classification-ipcr> element and contain a 1position alphabetic (uppercase) – possible value can be “A through H” and terminated by a </section> end tag. </section>. <class>: The <class> element will occur one time within each <classification-ipcr> element and contain a -2position numeric class-type attribute and terminated by a </class> end tag. </class> <subclass>: The <subclass> element will occur one time within each <classification-ipcr> element and contain a 1-position alphabetic (uppercase) – possible value can be “A through Z” and terminated by a </subclass> end tag. </subclass> <main-group>: The <main-group> element will occur one time within each <classification-ipcr> element and contain a 1 to 4 positions numeric and terminated by a </main-group> end tag. </main-group> <subgroup>: The <subgroup> element will occur one time within each <classification-ipcr> element and contain a 2 to 6 positions numeric and terminated by a </subgroup> end tag. </subgroup> <symbol-position>: The <symbol-position> element will occur one time within each <classification-ipcr> element and contain 1-position alphabetic (uppercase) – “F” defining “first” for the sole or first “invention information” IPC, or “L” defining “later” for any second and succeeding “invention information” IPC and for any “non-invention information” IPC. And, terminated by a </symbol-position> end tag. </symbol-position> <classification-value> The <classification-value> element will occur one time within each <classification-ipcr> element and contain a 1-position alphabetic (uppercase) – “I” defining “invention information” or “N” defining “non-invention information”. And, terminated by a <</classification-value> end tag. </classification-value> <action-date>: The <action-date> element will occur one time within each <classification-ipcr> element and contain an 8-position numeric date in the format YYYYMMDD. This date will be issue date of the patent grant. And, terminated by a </action-date> end tag. Example: <action-date><date>YYYYMMDD</date></action-date> <date> </date> </action-date> <generating-office>: The <generating-office> element will occur one time within each <classification-ipcr> element and contain a 2-position alphabetic (uppercase) country code identifying the generating Intellectual Property Office and terminated by a </generating-office> end tag. <country>: <country>US</country> identifying United States as the generating Intellectual Property Office of this patent being granted. </country> </generating-office> <classification-status>: The <classification-status> element will occur one time within each <classification-ipcr> element and contain a 1-position alphabetic (uppercase) – “B” defining “Basic or Original” and terminated by a </classification-status> end tag. </classification-status> <classification-data-source>: The <classification-data-source> element will occur one time within each <classification-ipcr> element and contain a 1-position alphabetic (uppercase) – “H” defining “Human-Generated”, a future source can be “M” defining “Machine-Generated” and “G” defining “Generated via Software”. And, terminated by a </classification-data-source> end tag. </classificationdata-source> </classification-ipcr> </classifications-ipcr> <classifications-cpc>: The <classifications-cpc> element is optional and will occur one time within the <us-bibliographicdata-grant> element and contain the main-cpc (classification-cpc), a further-cpc element with one or more classification-cpc element and a combination-set with one or more classification-cpc element. And terminated by the </classifications-cpc> end tag. <!ELEMENT classifications-cpc (main-cpc, further-cpc?)> <!ATTLIST classifications-cpc id ID #IMPLIED > <main-cpc>: The <main-cpc> element is mandatory and will occur one time within the <classifications-cpc> element and contain the Main CPC Classification and terminated by the </main-cpc> end tag. <!ELEMENT main-cpc (classification-cpc)> <!ATTLIST main-cpc id ID #IMPLIED > <classification-cpc>: <!ELEMENT classification-cpc (cpc-version-indicator, section, class, subclass, main-group, subgroup, symbol-position, classification-value, action-date,

generating-office, classification-status?, classification-data-source?, scheme-origination-code?)> <!ATTLIST classification-cpc id ID #IMPLIED sequence CDATA #IMPLIED <cpc-version-indicator>: The <cpc-version-indicator> element will occur one time within the <main-cpc> element and contain an 8-position numeric date in the format YYYYMMDD identifying the classification publication date and terminated by a </cpc-version-indicator> end tag. Example: <cpc-version-indicator><date>YYYYMMDD</date></cpc-version-indicator> <date> </date> </cpc-version-indicator> <section>: The <section> element will occur one time within the <main-cpc> element and contain a 1-position alphabetic (uppercase) – possible value can be “A through H” and terminated by a </section> end tag. The section is the highest hierarchical level within the classification scheme and as such it represents the whole body of knowledge which may be regarded as proper to the field of Classification. </section> <class>: The <class> element will occur one time within the <main-cpc> element and contain a -2-position numeric class-type attribute and terminated by a </class> end tag. The code denotes the second level subdivision of the classification scheme and as such it is a further breakdown of the section's broad technical fields into high level subject matter. </class> <subclass>: The <subclass> element will occur one time within <main-cpc> element and contain a 1-position alphabetic (uppercase) – possible value can be “A through Z” and terminated by a </subclass> end tag. The code denotes the third level subdivision of the classification scheme and as such it is a further breakdown of subject matter into more novel subject matter. </subclass> <main-group>: The <main-group> element will occur one time within the <main-cpc> element and contain a 1 to 4 positions numeric and terminated by a </main-group> end tag.
The code denotes the fourth level subdivision of the classification scheme and as such is a further breakdown of the novel subject matter. </main-group> <subgroup> The <subgroup> element will occur one time within the <main-cpc> element and contain a 2 to 6 positions numeric and terminated by a </subgroup> end tag. The code denotes the fifth level subdivision of the classification scheme and as such is a further breakdown of the novel subject matter. </subgroup> <symbol-position>: The <symbol-position> element will occur one time within the <main-cpc> element and contain 1-position alphabetic (uppercase) – “F” defining “first” for the sole or first “invention information” CPC, or “L” defining “later” for any second and succeeding “invention information” CPC and for any “non-invention information” CPC. And, terminated by a </symbol-position> end tag. The code that specifies the position of the classification symbol. </symbol-position> <classification-value>: The <classification-value> element will occur one time within the <main-cpc> element and contain a 1-position alphabetic (uppercase) – “I” defining “invention information” or “N” defining “non-invention information”. And, terminated by a </classification-value> end tag. The code that distinguishes between invention information (invention) and other information (non-invention/additional), when describing a classification symbol on a document. </classification-value> <action-date>: The <action-date> element will occur one time within the <main-cpc> element and contain an 8-position numeric date in the format YYYYMMDD. This date will be issue date of the patent grant. And, terminated by a </action-date> end tag. Example: <action-date><date>YYYYMMDD</date></action-date> <date> </date> </action-date> <generating-office>: The <generating-office> element will occur one time within the <main-cpc> element and contain a 2-position alphabetic (uppercase) country code identifying the generating Intellectual Property Office and terminated by a </generating-office> end tag. <country>: <country>US</country> identifying United States as the generating Intellectual Property Office of this patent being granted. </country> </generating-office> <classification-status>: The <classification-status> element will occur one time within the <main-cpc> element and contain a 1-position alphabetic (uppercase) – “B” defining “Basic or Original” and terminated by a </classification-status> end tag. The code that distinguishes

between invention information (invention) and other information (non-invention/additional), when describing a classification symbol on a document. </classification-status> <classification-data-source>: The <classification-data-source> element will occur one time within the <main-cpc> element and contain a 1-position alphabetic (uppercase) – “H” defining “Human-Generated”, a future source can be “M” defining “Machine-Generated” and “G” defining “Generated via Software”. And, terminated by a </classification-data-source> end tag. The code that describes the source of the allocation of the symbol to the patent document. </classification-data-source> <scheme-organization-code>: The <scheme-organization-code> element will occur one time within the <main-cpc> element and contain a 1-position alphabetic code denoting which patent classification scheme the symbol originates from. And, terminated by a </scheme-organization-code> end tag. </scheme-organization-code> </classification-cpc> </main-cpc> <further-cpc:> The <further-cpc> element is optional and will one or more classification-cpc element and an optional combination-set with one or more classification-cpc element. And terminated by the </further-cpc> end tag. <!ELEMENT further-cpc (classification-cpc*, combination-set*)> <!ATTLIST further-cpc id ID #IMPLIED > <classification-cpc>: <!ELEMENT classification-cpc (cpc-version-indicator, section, class, subclass, main-group, subgroup, symbol-position, classification-value, action-date, generating-office, classification-status?, classification-data-source?, scheme-origination-code?)> <!ATTLIST classification-cpc id ID #IMPLIED sequence CDATA #IMPLIED <cpc-version-indicator>: The <cpc-version-indicator> element will occur one time within each <further-cpc> element and contain an 8-position numeric date in the format YYYYMMDD and terminated by a </cpc-version-indicator> end tag. Example: <cpc-version-indicator><date>YYYYMMDD</date></cpc-version-indicator> <date> </date> </cpc-version-indicator> <section>: The <section> element will occur one time within each <further-cpc> element and contain a 1-position alphabetic (uppercase) – possible value can be “A through H” and terminated by a </section> end tag. The section is the highest hierarchical level within the classification scheme and as such it represents the whole body of knowledge which may be regarded as proper to the field of Classification. </section> <class>: The <class> element will occur one time within each <further-cpc> element and contain a -2-position numeric class-type attribute and terminated by a </class> end tag. The code denotes the second level subdivision of the classification scheme and as such it is a further breakdown of the section's broad technical fields into high level subject matter. </class> <subclass>: The <subclass> element will occur one time within each <further-cpc> element and contain a 1-position alphabetic (uppercase) – possible value can be “A through Z” and terminated by a </subclass> end tag. The code denotes the third level subdivision of the classification scheme and as such it is a further breakdown of subject matter into more novel subject matter. </subclass> <main-group>: The <main-group> element will occur one time within each <further-cpc> element and contain a 1 to 4 positions numeric and terminated by a </main-group> end tag. The code denotes the fourth level subdivision of the classification scheme and as such is a further breakdown of the novel subject matter. </main-group> <subgroup>: The <subgroup> element will occur one time within each <further-cpc> element and contain a 2 to 6 positions numeric and terminated by a </subgroup> end tag. The code denotes the fifth level subdivision of the classification scheme and as such is a further breakdown of the novel subject matter. </subgroup> <symbol-position>: The <symbol-position> element will occur one time within each <further-cpc> element and contain 1-position alphabetic (uppercase) – “F” defining “first” for the sole or first “invention information” CPC, or “L” defining “later” for any second and succeeding “invention information” CPC and for any “non-invention information” CPC. And, terminated by a </symbol-position> end tag. The code that specifies the position of the classification symbol. </symbol-position> <classification-value>: The

<classification-value> element will occur one time within each <further-cpc> element and contain a 1-position alphabetic (uppercase) – "I" defining "invention information" or "N" defining "non-invention information". And, terminated by a </classification-value> end tag. The code that distinguishes between invention information (invention) and other information (non-invention/additional), when describing a classification symbol on a document. </classification-value> <action-date>: The <action-date> element will occur one time within each <further-cpc> element and contain an 8-position numeric date in the format YYYYMMDD. This date will be issue date of the patent grant. And, terminated by a </action-date> end tag. Example: <action-date><date>YYYYMMDD</date></action-date> <date> </date> </action-date> <generating-office>: The <generating-office> element will occur one time within each <further-cpc> element and contain a 2-position alphabetic (uppercase) country code identifying the generating Intellectual Property Office and terminated by a </generating-office> end tag. <country>: <country>US</country> identifying United States as the generating Intellectual Property Office of this patent being granted. </country> </generating-office> <classification-status>: The <classification-status> element will occur one time within each <further-cpc> element and contain a 1-position alphabetic (uppercase) – "B" defining "Basic or Original" and terminated by a </classification-status> end tag. The code that distinguishes between invention information (invention) and other information (non-invention/additional), when describing a classification symbol on a document. </classification-status> <classification-data-source>: The <classification-data-source> element will occur one time within each <further-cpc> element and contain a 1-position alphabetic (uppercase) – "H" defining "Human-Generated", a future source can be "M" defining "Machine-Generated" and "G" defining "Generated via Software". And, terminated by a </classification-data-source> end tag. The code that describes the source of the allocation of the symbol to the patent document. </classification-data-source> <scheme-organization-code>: The <scheme-organization-code> element will occur one time within the <further-cpc> element and contain a 1-position alphabetic code denoting which patent classification scheme the symbol originates from. And, terminated by a </scheme-organization-code> end tag. </scheme-organization-code> </classification-cpc> <combination-set>: <!ELEMENT combination-set (group-number, combination-rank+)> <!ATTLIST combination-set id ID #IMPLIED > <!ELEMENT combination-rank (rank-number, classification-cpc)> <!ATTLIST combination-rank id ID #IMPLIED > <!-- The sequential number that is used to identify the rank of a Symbol in a grouping of Combination Symbols allocated to a Family. --> <!ELEMENT rank-number (#PCDATA)>. A combination set is a group of CPC symbols that have one base class and one or more subsequent ranked symbols that are linked together to convey special classification information. <group-number>: The <group-number> element will occur one time within each <combination-set> element and contain a numeric value that is used to identify a group of symbols, when allocating a combination set of symbols to a patent document. And, terminated by a </group-number> end tag. </group-number> <combination-rank>: The <combination-rank> element will occur one time within each <combination-set> element and contain a sequential number that is used to identify the rank of a symbol within a combination set. (Order of the symbols is important). And, terminated by a </combination-rank> end tag. <rank-number>: The <rank-number>element will occur one time within each <combination-rank> element and contain a numeric value and terminated by a </rank-number> end tag. </rank-number> <classification-cpc>: <!ELEMENT classification-cpc (cpc-version-indicator, section, class, subclass, main-group, subgroup, symbol-position, classification-value, action-date, generating-office, classification-status?, classification-data-source?, scheme-origination-code?)> <!ATTLIST classification-cpc id ID #IMPLIED sequence CDATA #IMPLIED

<cpc-version-indicator>: The <cpc-version-indicator> element will occur one time within each <combination-rank> element and contain an 8-position numeric date in the format YYYYMMDD and terminated by a </cpc-version-indicator> end tag. Example: <cpc-version-indicator><date>YYYYMMDD</date></cpc-version-indicator> <date> </date> </cpc-version-indicator> <section>: The <section> element will occur one time within each <combination-rank> element and contain a 1position alphabetic (uppercase) – possible value can be “A through H” and terminated by a </section> end tag. The section is the highest hierarchical level within the classification scheme and as such it represents the whole body of knowledge which may be regarded as proper to the field of Classification. </section> <class>: The <class> element will occur one time within each <combination-rank> element and contain a -2position numeric class-type attribute and terminated by a </class> end tag. The code denotes the second level subdivision of the classification scheme and as such it is a further breakdown of the section's broad technical fields into high level subject matter. </class> <subclass>: The <subclass> element will occur one time within each <combination-rank> element and contain a 1-position alphabetic (uppercase) – possible value can be “A through Z” and terminated by a </subclass> end tag. The code denotes the third level subdivision of the classification scheme and as such it is a further breakdown of subject matter into more novel subject matter. </subclass> <main-group>: The <main-group> element will occur one time within each <combination-rank> element and contain a 1 to 4 positions numeric and terminated by a </main-group> end tag. The code denotes the fourth level subdivision of the classification scheme and as such is a further breakdown of the novel subject matter. </main-group> <subgroup>: The <subgroup> element will occur one time within each <combination-rank> element and contain a 2 to 6 positions numeric and terminated by a </subgroup> end tag. The code denotes the fifth level subdivision of the classification scheme and as such is a further breakdown of the novel subject matter. </subgroup> <symbol-position>: The <symbol-position> element will occur one time within each <combination-rank> element and contain 1-position alphabetic (uppercase) – “F” defining “first” for the sole or first “invention information” CPC, or “L” defining “later” for any second and succeeding “invention information” CPC and for any “non-invention information” CPC. And, terminated by a </symbol-position> end tag. The code that specifies the position of the classification symbol. </symbol-position> <classification-value>: The <classification-value> element will occur one time within each <combination-rank> element and contain a 1-position alphabetic (uppercase) – “I” defining “invention information” or “N” defining “non-invention information”. And, terminated by a </classification-value> end tag.
The code that distinguishes between invention information (invention) and other information (non-invention/additional), when describing a classification symbol on a document. </classification-value> <action-date>: The <action-date> element will occur one time within each <combination-rank> element and contain an 8-position numeric date in the format YYYYMMDD. This date will be issue date of the patent grant. And, terminated by a </action-date> end tag. Example: <action-date><date>YYYYMMDD</date></action-date> <date> </date> </action-date> <generating-office>: The <generating-office> element will occur one time within each <combination-rank> element and contain a 2-position alphabetic (uppercase) country code identifying the generating Intellectual Property Office and terminated by a </generating-office> end tag. <country>: <country>US</country> identifying United States as the generating Intellectual Property Office of this patent being granted. </country> </generating-office> <classification-status>: The <classification-status> element will occur one time within each <combination-rank> element and contain a 1-position alphabetic (uppercase) – “B” defining “Basic or Original” and terminated by a </classification-status> end tag. The code that distinguishes between invention information (invention) and other information

(non-invention/additional), when describing a classification symbol on a document. </classification-status> <classification-data-source>: The <classification-data-source> element will occur one time within each <combination-rank> element and contain a 1-position alphabetic (uppercase) – “H” defining “Human-Generated”, a future source can be “M” defining “Machine-Generated” and “G” defining “Generated via Software”. And, terminated by a </classification-data-source> end tag. The code that describes the source of the allocation of the symbol to the patent document. </classification-data-source> <scheme-organization-code>: The <scheme-organization-code> element will occur one time within the <combination-rank> element and contain a 1-position alphabetic code denoting which patent classification scheme the symbol originates from. And, terminated by a </scheme-organization-code> end tag. </scheme-organization-code> </classification-cpc> <combination-rank> </combination-set> </further-cpc> </classifications-cpc> <classification-locarno>: The <classification-locarno> element is optional and will occur one time within the <us-bibliographic-locarno-data-grant> element, for a Design Patent, and terminated by the </classification-locarno> end tag. {- - <!ELEMENT classification-locarno (edition , main-classification , further-classification* , text?)> - -}
<edition>: This <edition> element is mandatory and will occur one time within the <classification-locarno> element and contain the 1-position numeric edition and terminated by the </edition> end tag. Edition: 1, Filing Dates: October 4, 1971 through February 2, 1979; Edition: 2, Filing Dates: February 3, 1979 through June 28, 1981; Edition: 3, Filing Dates: June 29, 1981 through December 27, 1983; Edition: 4, Filing Dates: January 3, 1984 through December 27, 1988; Edition: 5, Filing Dates: January 3, 1989 through December 28, 1993; Edition 6, Filing Dates: January 4, 1994 through December 29, 1998; Edition: 7, Filing Dates: January 5, 1999 through December 30, 2003; Edition: 8, Filing Dates: January 6, 2004 through December 30, 2008; Edition: 9, Filing Dates: January 6, 2009 through Current. </edition>
<main- classification>: This <main-classification> element is mandatory for a Design Patent Locarno Classification and will occur one time within the <classification-locarno> element and terminated by the </main-classification> end tag. The content will be as follows: "Class" – 2-positions numeric, right justified, leading zeros. "Subclass" – 2-positions numeric, right justified, leading zeros. </main-classification> </classification-locarno> <classification-national>: This <classification-national> element is optional and will occur one time within the <us-bibliographic-data-grant> element, identifying the original US classification (main-classification) and cross references (further-classifications). The <classification-national> element is terminated by the </classification-national> end tag. {- -<!ELEMENT classification-national (country, edition? , main-classification , further-classification* , (additional-info | linked-indexing-code-group | unlinked-indexing-code)* , text?) > - -} <country>: This <country> element is mandatory and will occur one time within the <classification-national> element and contain the ST. 3 2-position country code “US” identifying United States as the <classification-national> country and terminated by the </country> end tag. </country> <main-classification>: This <main-classification> element is mandatory and will occur one time within the <classification-national> element, identifying the original US Classification and terminated by the </<main-classification> end tag. {- - <!ELEMENT main-classification (#PCDATA)> - -} Reference Table 6 - U.S. Patent Classifications for the appearance of a <main-classification> </main-classification>
<further- classification>: This <further-classification> element is optional and may occur zero or more times within the <classification-national> element, identifying a US Classification Cross Reference. Each <further-classification> element is terminated by the </<further-classification> end tag. {- - <!ELEMENT further-classification (#PCDATA)> - -} Reference Table 6 - U.S. Patent Classifications for the appearance of a <further-classification> </further-classification> </classification-national> <invention-title>: An <invention-title> element is mandatory and will

occur one time within the <us-bibliographic-data-grant> element and terminated by the </invention-title> end tag. {- - <!ELEMENT invention-title (#PCDATA | b | i | u | sup | sub)*> and will include the attribute id. - -}. The invention-title attribute "id" is unique and cryptic and populated with the node value of the element invention-title and referenced within the structure of the xml instance. Reference: 37 CFR 1.72(a) - "The title of the invention may not exceed 500 characters in length and must be as short and specific as possible." Example of an invention title: <invention-title id="d0e71">Liquid crystal display panel</invention-title> </invention-title> <us-botanic>: This <us-botanic> element will be present for a Plant Patent and occur one time within the <us-bibliographic-data-grant> and terminated by the <us-botanic> end-tag. The contents of the <us-botanic> element will be the <latin-name> and the <variety>. {- -<!--Plant patent botanical information.--> - -} {- -<!ELEMENT us-botanic (latin-name , variety)> - -} Example: <us-botanic> <latin-name>Prunus persica</latin-name> <variety>Juliepretty</variety> </us-botanic> <latin-name> </latin-name> <variety> </variety> </us-botanic> <us-references-cited>: This <us-references-cited> element is mandatory and will occur one time within the <us-bibliographic-data-grant> element and terminated by the </reference-cited> end tag. The sequence of References Cited will be as follows: U.S. Patent Documents (required). Note: References cited will not be present for a US Plant Patent. Foreign Patent Documents (optional). Other Publications (optional). {- - <!ELEMENT us-references-cited (text | (us-citation+ , date-search-completed? , date-search-report-mailed? , place-of-search? , search-report-publication? , searcher?))> }.<us-citation>: The <us-citation> element is mandatory and will occur one or more times, within the <us-references-cited> element and terminated by the </us-citation> end tag. Each <us-citation> element identifies a reference that is cited by the patent grant. A citation can be a US or foreign patent citation (patcit) or a non-patent literature citation (nplcit). {- - <!ELEMENT us-citation ((patcit | nplcit) , corresponding-docs* , rel-passage* , category* , rel-claims* , classification-ipc? , classifications-ipcr? , classifications-cpc?, classification-national?)> - -} <patcit>: The <patcit> element is optional and, when present, will occur one time within a <us-citation> element identifying the citation sequence. The <patcit> is mandatory when the citation for a reference cited is a U.S. Patent Document or a Foreign Patent Document. The <patcit> will not be present when Other Publications are cited. {- - <!ELEMENT patcit (text | (document-id , rel-passage*))> - -} {- - <!ATTLIST patcit id ID #IMPLIED num CDATA #IMPLIED dnum CDATA #IMPLIED dnum-type CDATA #IMPLIED file CDATA #IMPLIED url CDATA #IMPLIED > - -} Note: The appearance will be <patcit num=”nnnnn”> where “nnnnn” will contain a numeric value (sequence number), right justified with leading zeros. Example: <patcit num=”00001”> Example – US patent document citation <patcit> from Patent Grant 7,642,344: <us-citation> <patcit num="00001"> <document-id> <country>US</country> <doc-number>4650750</doc-number> <kind>A</kind> <name>Giese</name> <date>19870300</date> </document-id> </patcit> <category>cited by other</category> <classification-national><country>US</country> <main-classification>435 7</main-classification> </classification-national> </us-citation>. Example – foreign patent document citation <patcit> from Patent Grant 7,642,344: <us-citation> <patcit num="00059"> <document-id> <country>CA</country> <doc-number>2062454</doc-number> <kind>A1</kind> <date>19920900</date> </document-id> </patcit> <category>cited by other</category> </us-citation> <document-id>: This <document-id> element is optional and, when present, will occur one time within a <us-citation> element. This <document-id> is mandatory when the citation for a reference cited is a U.S. Patent Document or a Foreign Patent Document. This <document-id> will not be present when Other Publications are cited. When present, this <document-id> element will occur one time within each <us-citation> of <us-

references-cited>. The contents of this <document–id> element will be a <country>, a <doc-number>, a <kind>, a <name>, a <date>, and terminated by the </document-id> end tag. <country>: This <country> element is optional and, when present, will occur one time within a <us-citation> element. This <country> is mandatory when the citation for a reference cited is a U.S. Patent Document or a Foreign Patent Document. This <country> will not be present when Other Publications are cited. When present, the <country> element will occur one time within this <document-id> element and contain the 2-position country code of the country publishing the document and terminated by the </country> end tag. Reference STANDARD ST. 3 – Recommended Standard on Two-Letter Codes for the Representation of States, Other Entities and Intergovernmental Organizations: http://www.wipo.int/standards/en/pdf/03-03-01.pdf </country> <doc-number>: This <doc-number> element is optional and, when present, will occur one time within a <us-citation> element and terminated by the </doc-number> end-tag. This <doc-number> is mandatory when the citation for a reference cited is a U.S. Patent Document or a Foreign Patent Document. The <doc-number> will not be present when Other Publications are cited. Note: The content of the <doc-number>, for US documents, will appear as an alphanumeric field without punctuation, slashes "/" or spaces. The content of the <doc-number>, for foreign documents, will appear as they appear in the printed published document. </doc-number> <kind>: This <kind> element is optional and, when present, will occur one time within the <document-id> element and terminated by the </kind> end-tag. This <kind> is mandatory when the reference cited is a U.S. Patent Document. This <kind> will not be present when Foreign Patent Documents or Other Publications are cited. Reference Table 3A - U.S. Patent Grants and Patent Published Applications – Kind Codes (2-position) when the reference cited US Patent Grant was issued on or after January 2, 2001. Reference Table 3B - U.S. Patent Grants and Patent Published Applications – Kind Codes (1-position) when the reference cited US Patent Grant was issued on or prior to December 26, 2000. </kind> <name>: This <name> element is optional and, when present, will occur one time within this <document-id> element and terminated by the </name> end-tag. This <name> is mandatory when the citation of the reference cited is a U.S. Patent Document. This <name> will not be present when a Foreign Patent Document or other Publications are cited. When present, the <name> element will contain the surname of the inventor or when multiple inventors are present it will contain the surname of the first inventor followed by "et al." </name> <date>: This <date> element is optional and, when present, will occur one time within this <document-id> element and terminated by the </date> end tag. This <date> is mandatory when the citation for a reference cited is a U.S. Patent Document or a Foreign Patent Document. This <date> will not be present when Other Publications are cited. When present, the <date> element will contain the 8-position (YYYYMMDD) publication date of the document. Note: The 2-position DD of this reference cited <date>, for U.S. Patent Documents and Foreign Patent Documents, will be contain zeros. </date> </document-id> </patcit> <nplcit>: The <npicit> element is optional and, when present, will occur one time within a <us-citation> element identifying the citation sequence. This <npicit> is mandatory when the citation for a reference cited is "non-patent literature" appearing as Other Publications. This <npicit> will not be present when U.S. Patent Documents or a Foreign Patent Documents are cited. {- - <!ELEMENT nplcit (text | article | book | online | othercit)> - -} {- - <!ATTLIST nplcit id ID #IMPLIED num CDATA #IMPLIED lang CDATA #IMPLIED file CDATA #IMPLIED npl-type CDATA #IMPLIED medium CDATA #IMPLIED url CDATA #IMPLIED - -} Note: The appearance will be <nplcit num="nnnnn"> where "nnnnn" will contain a numeric value (sequence number), right justified with leading zeros. Example: <nplcit num="00001"> Example of a non-patent literature citation <nplcit> from Patent Grant 7,642,344:

<us-citation> <nplcit num="00139"> <othercit>Zablocki et al., “Potent in Vitro and in Vivo Inhibitors of Platelet Aggregation Based Upon the Arg-Gly-Asp Sequence of Fibrinogen. (Aminobenzamidino)succinyl (ABAS) Series of Orally Active Fibrinogen Receptor Antagonists,” J. Med. Chem. 38:2378-2394, 1995.</othercit> </nplcit> <category>cited by other</category> </us-citation> <othercit>: The <othercit> element is optional and, when present, will occur one time within a <us-citation> element. The <othercit> is mandatory when the citation for a reference cited is “non-patent literature” appearing as Other Publications and contain free form text of “non-patent literature” being cited. The <othercit> will not be used for citing U.S. Patent Documents or Foreign Patent Documents. The <othercit> element is terminated by the </othercit> end tag. {- - ELEMENT othercit (#PCDATA | b | i | o | u | sup | sub)*> - -} </othercit> </npicit> <category>: The <category> element is mandatory and will occur one time within each <us-citation> element and terminated by the </category> end tag. Each <category> element will contain one of the following 2 phases: “cited by examiner”, “cited by applicant”, or “cited by third party” </category> <classification-cpc-text>: This <classification-cpc-text> element is mandatory for a US citation and will occur one time within the <us-citation>, <patcit> element, identifying the Classification CPC referenced. Each <classification-cpc-text> element is terminated by the </classification-cpc-text> end tag. <!-- Unstructured classification cpc data--> <!ELEMENT classification-cpc-text (#PCDATA)> <!ATTLIST classification-cpc-text id ID #IMPLIED. Reference Table 6A – Cooperative Patent Classification (CPC) for the content of a <classification-cpc-text>. An example of a <classification-cpc-text> within one patent document. <classification-cpc-text>E01H 1/04</classification-cpc-text> </classification-cpc-text> <classification-national>: This <classification-national> element is optional for a US citation and will occur one time within the <us-citation>, <patcit> element, identifying the US classification referenced. Each <classification-national> element is terminated by the </classification-national> end tag. <country> The <country> element is mandatory and will occur one time within each <classification-national> element of a citation and contain the ST. 3 2-position country code “US” identifying United States as the publishing country of the document being cited and terminated by the </country> end tag. </country> <main-classification>: This <main-classification> element, identifying a US classification(s) referenced within the citation, is mandatory and will occur one time and terminated by the </main-classification> end tag. Reference Table 6 - U.S. Patent Classifications for the appearance of a <main-classification></main-classification></classification-national></us-citation> </us-references-cited> <number-of-claims>: The <number-of-claims> element is mandatory, except for Design Patents, and will occur one time within the <us-bibliographic-data-grant> element and terminated by the </number-of-claims> end tag. This element refers to the total number of claims in the patent grant. {- - <!ELEMENT number-of-claims (#PCDATA)> - -}. Example: <number-of- claims>13</number-of-claims> </number-of-claims> <us-exemplary-claim>: The <us-exemplary-claim> element is mandatory, except for Design Patents, and will occur one (1) TO five (5) times within the <us-bibliographic-data-grant> element and each occurrence terminated by the </us-exemplary-claim> end tag. The <us-exemplary-claim> element refers to the broadest claim(s) as designed by the examiner and is published in the Official Gazette. Note: A maximum of five (5) claims can be designated as exemplary claims with only the first one always published in the Official Gazette. {- -<!ELEMENT us-exemplary-claim (#PCDATA)> - -}. Example of a single exemplary claim in a patent grant: <us-exemplary-claim>1<us-exemplary-claim> Example of a multiple exemplary claims in a patent grant (7,640,703): <us-exemplary-claim>13</us-exemplary-claim> <us-exemplary-claim>18</us-exemplary-claim> </us-exemplary-claim> <us-field-of-classification-search>: The <us-field-of-classification-search> element is mandatory and will occur one time within the <us-bibliographic-data-grant>

element and terminated by the </us-field-of-classification-search> end tag. The content of this <us-field-of-classification-search> element can be classification-national references within the field of search and/or classifications-ipcr references within the field of search.
{- - <!ELEMENT us-field-of-classification-search (us-classifications-ipcr | classificationnational| classifications-cpc)+> - -} <classification-cpc-text>: This <classification-cpc-text> element is mandatory for a US citation and will occur one or more times within the <us-field-of-classification-search>. Each <classification-cpc-text> element is terminated by the </classification-cpc-text> end tag. Reference Table 6A – Cooperative Patent Classification (CPC) for the content of a <classification-cpc-text>. An example of a <classification-cpc-text>within one patent document. <classification-cpc-text>E01H 1/04</classification-cpc-text> </classification-cpc-text> <classification-national>: This <classification-national> element is optional and will occur one or more times within the <us-field-of-classification-search> element, identifying the US classification(s) referenced within the <us-field-of-classification-search>. Each <classification-national> element is terminated by the </classification-national> end tag. <country>: This <country> element is mandatory and will occur one time within each <classification-national> element and contain the 2-position country code “US” identifying the country publishing the document being referenced and terminated by the </country> end tag. </country> <main-classification>: This <main-classification> element, identifying a US classification(s) referenced within the <us-field-of-classification-search> element, is mandatory and will occur one time and terminated by the </main-classification> end tag. Reference Table 6 - U.S. Patent Classifications for the appearance of a <main-classification> </main-classification> <additional-info>: The <additional-info> element, is optional and can occur one time identifying an unstructured US classification referenced within the <us-field-of-classification-search> element, and terminated by the </additional-info> end tag. An unstructured US classification would identify a sub-class as a range as defined in the example below: <main-classification> 2247-250</main-classification> <additional-info>unstructured</additional-info> Reference Table 6 - U.S. Patent Classifications for the appearance of a <main-classification> </additional-info> </classification-national> <us-classifications-ipcr>: This <us-classifications-ipcr> element is optional and may occur one or more times within the <us-field-of-classification-search> element and contain International Patent Classification Reform information. Each<us-classifications-ipcr> is terminated by the </classifications-ipcr> end tag. An example of multiple <us-classifications-ipcr> within one patent document. <us-classifications-ipcr>E01H 1/04</us-classifications-ipcr> <us-classifications-ipcr>E01H 1/08</us-classifications-ipcr> <ipc-version-indicator>: The <ipc-version-indicator> element will occur one time within each <classification-ipcr> element and contain an 8-position numeric date in the format YYYYMMDD and terminated by a <ipc-version-indicator> end tag. Example: <ipc-version-indicator><date>YYYYMMDD</date></ipc-version-indicator><date> </date> </ipc-version-indicator> <classification-level>: The <classification-level> element will occur one time within each <classification-ipcr> element and contain a 1-position alphabetic (uppercase) constant “A” defining “advanced level” and terminated by a <ipc-version-indicator> end tag. </classification-level> <section>: The <section> element will occur one time within each <classification-ipcr> element and contain a 1-position alphabetic (uppercase) – possible value can be “A through H” and terminated by a </section> end tag. </section> <class>: The <class> element will occur one time within each <classification-ipcr> element and contain a -2-position numeric class-type attribute and terminated by a </class> end tag. </class> <subclass>: The <subclass> element will occur one time within each <classification-ipcr> element and contain a 1-position alphabetic (uppercase) – possible value can be “A through Z” and terminated by a </subclass> end tag. </subclass> <main-group>: The <main-group> element will occur one time within each

<classification-ipcr> element and contain a 1 to 4 positions numeric and terminated by a </main-group> end tag. </main-group> <subgroup>: The <subgroup> element will occur one time within each <classification-ipcr> element and contain a 2 to 6 positions numeric and terminated by a </subgroup> end tag. <subgroup> <symbol-position>: The <symbol-position> element will occur one time within each <classification-ipcr> element and contain 1-position alphabetic (uppercase) – “F” defining “first” for the sole or first “invention information” IPC, or “L” defining “later” for any second and succeeding “invention information” IPC and for any “non-invention information” IPC. And, terminated by a </symbol-position> end tag. </symbol-position> <classification-value>: The <classification-value> element will occur one time within each <classification-ipcr> element and contain 1-position alphabetic (uppercase) – “I” defining “invention information” or “N” defining “non-invention information”. And, terminated by a </classification-value> end tag. </classification-value> <action-date>: The <action-date> element will occur one time within each <classification-ipcr> element and contain the date of publication for patent published applications and the issue date for patent grants. And, terminated by a </action-date> end tag. <date>: This <date> element is mandatory and will occur one time within the <classification-ipcr> element and contain the 8-position (YYYYMMDD) <action-date> and terminated by the </date> end tag. </date> </action-date> <generating-office>: The <generating-office> element will occur one time within each <classification-ipcr> element and contain a 2-position alphabetic (uppercase) country code identifying the generating Intellectual Property Office and terminated by a </generating-office> end tag. <country>: This <country> element is mandatory and will occur one time within each <classification-ipcr> element and contain the ST. 3 2-position country code of the country or international organization where the priority is being claimed and terminated by the </country> end tag. Reference STANDARD ST. 3 – Recommended Standard on Two-Letter Codes for the Representation of States, Other Entities and Intergovernmental Organizations: http://www.wipo.int/standards/en/pdf/03-03-01.pdf </country> </generating-office> <classification-status>: The <classification-status> element will occur one time within each <classification-ipcr> element and contain a 1-position alphabetic (uppercase) – “B” defining “Basic or Original” and terminated by a </classification-status> end tag. </classification-status> <classification-data-source>: The <classification-data-source> element will occur one time within each <classification-ipcr> element and contain a 1-position alphabetic (uppercase) – “H” defining “Human-Generated”, a future source can be “M” defining “Machine-Generated” and “G” defining “Generated via Software”. And, terminated by a </classification-data-source> end tag. </classification-data-source> </us-classifications-ipcr> </us-field-of-classification-search>. <figures>: The <figures> element is optional and will occur one time within the <us-bibliographic-data-grant> element and terminated with the </figures> end tag. The element uses the number-of-drawing-sheets, number-of-figures. {- - <!ELEMENT figures (number-of-drawing-sheets? , number-of-figures? , figure-to-publish?)> - -} <number-of-drawings-sheets> </number-of-drawings-sheets> <number-of-figures>: The <number-of-figures> element is optional and may occur one time within the <figures> element and terminated with the </number-of-figures> end tag. The element refers to the number of figures. {- - <!ELEMENT number-of-figures (#PCDATA)> - -} </number-of-figures> </figures> <us-related-documents>: The <us-related-documents> element is optional and may occur one or more times within the <us-bibliographic-data-grant> element and terminated by the </us-related-documents> end tag. The element uses patent grant and application information such as; addition, division, continuation, continuation-in-part, continuing-reissue, reissue, reexamination, substitution, us-provisional-application, correction and related-publication. {- - <!ELEMENT us-related-documents (addition | division | continuation | continuation-in-part | continuing-reissue | reissue | us-divisional-reissue | reexamination | us-reexamination-reissue-merger | substitution | us-

provisional-application | utility-model-basis | correction | related-publication)+> - -} <related-publication>: The <related-publication> element is optional and will occur one or more times within the <us-related-documents> and terminated by the </related-publication> end tag. The element refers to a previously published document concerning the same application. {- - <!ELEMENT related-publication (#PCDATA | document-id)*> - -} Example: Related Publication for Patent Grant 7,642,599: <us-related-documents>
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<related-publication> <document-id> <country>US</country> <doc-number>20060097256</doc-number> <kind>A1</kind> <date>20060511</date> </document-id> </related-publication>
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</us-related-documents> <document-id>: This <document-id> element is mandatory and will occur one time within the <related-publication> element. The contents of this <document–id> element will be a <country>, a <doc-number>, a <kind>, a <date>, and terminated by the </document-id> end tag. <country>: This <country> element is mandatory and will occur one time within this <document-id> element and contain the ST.3 2-position country code “US” identifying United States as the publishing country of the related publication and terminated by the </country> end tag. </country> <doc-number>: This <doc-number> element is mandatory and will occur one time within this <document-id> element and contain the related document number and terminated by the </document-id> end tag. Note: The content of the <doc-number>, for US documents, will appear as an alphanumeric field without punctuation, slashes “/” or spaces. </doc-number> <kind>: This <kind> element is optional and will occur one time within this <document-id> element and contain the 2-position kind code and terminated by the </kind> end tag. Reference Table 3 - U.S. Patent Grants and Patent Published Applications – Kind Codes </kind> <date>: This <date> element is optional and will occur one time within the <document-id> element and contain the 8-position (YYYYMMDD) publication date of the related document and terminated by the </date> end tag. </date> </document-id> </related-publication> <us-provisional-application>: The <us-provisional-application> element is optional and will occur one or more times within the <us-related-documents> and terminated by the </us-provisional-application> end tag. The <us-provisional-application> element uses the document-id element and refers to a provisional application(s) that was previously filed for this document being granted. {- - <!ELEMENT us-provisional-application (document-id, us-provisional-application-status?)> - -}. Example: Provisional Application(s) for Patent Grant 7,640,651: <us-related-documents>
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<us-provisional-application> <document-id> <country>US</country> <doc-number>60533948</doc-number> <kind>00</kind> <date>20031231</date> </document-id> </us-provisional-application> <us-provisional-application> <document-id> <country>US</country> <doc-number>60574737</doc-number> <kind>00</kind> <date>20040526</date> </document-id> </us-provisional-application>
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</us-related-documents> <document-id>: This <document-id> element is mandatory and will occur one time within the <us-provisional-application> element. The contents of this <document–id> element will be a <country>, a <doc-number>, a <kind>, a <date>, and terminated by the </document-id> end tag. <country>: The <country> element is mandatory and will occur one time within this <document-id> element and contain the ST.3 2-position country code “US” identifying United States as the issuing country of the provisional application and terminated by the </country> end tag. </country> <doc-number>: This <doc-number> element is mandatory and will occur one time within this <document-id> element and contain the provisional application document number and terminated by the </document-id> end tag. Note: The content of the <doc-number> for a provisional application will appear as an 8-position numeric field without punctuation, slashes “/” or spaces. Position-1 and position-2 will contain “60” identifying a provisional application. </doc-number> <kind>: This <kind> element is mandatory and will occur one time within the <document-id> element and for a provisional application document will contain the 2-position kind code”00” and terminated by the </kind> end tag. </kind> <date>: The <date> element is mandatory and will occur one time within this <document-id> element and contain the 8-position (YYYYMMDD) provisional application filing date of the document and terminated by the </date> end tag. </date> </document-id> </us-provisional-application> <division>: The <division> element is optional and will occur one time for a <relation> element of the <us-related-documents> element and terminated with the </division> end tag. The <division> element, when present, uses the <relation> element to refer to an earlier application from which the present document has been divided out. {- - <!ELEMENT division (relation)> - -} {- - <!ELEMENT relation (parent-doc , child-doc)> - -} Example: division for Patent Grant 7,642,599: <us-related-documents> <division> <relation> <parent-doc> <document-id> <country>US</country> <doc-number>09578895</doc-number> <kind>00</kind> <date>20000526</date> </document-id> <parent-status>ABANDONED</parent-status></parent-doc> <child-doc> <document-id> <country>US</country> <doc-number>11258933</doc-number> </document-id> </child-doc> </relation> </division>

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</us-related-documents> <continuation>: The <continuation> element is optional and will occur one time for a <relation> element of the <us-related-documents> element and terminated with the </continuation> end tag. The <continuation> element, when present, uses the <relation> element to refer to an earlier application from which the present document is a continuation. {- - <!ELEMENT continuation (relation)> - -} {- - <!ELEMENT relation (parent-doc , child-doc)> - -}. Example: <continuation> <relation> <parent-doc> <document-id> <country>US</country> <doc-number>10622182</doc-number> <kind>00</kind> <date>20030716</date> </document-id> <parent-grant-document> <document-id> <country>US</country> <doc-number>7247434</doc-number> <kind>A </kind> </document-id> </parent-grant-document> </parent-doc> <child-doc> <document-id> <country>US</country> <doc-number>11821531</doc-number> </document-id> </child-doc> </relation> </continuation> <continuation-in-part>: The <continuation-in-part> element is optional and will occur one time for a <relation> element of the <us-related-documents> element and terminated with the </continuation-in-part> end tag. The <continuation-in-part> element, when present, uses the <relation> element to refer to an earlier application from which the present document is a continuation-in-part. {- - <!ELEMENT continuation-in-part (relation)> - -} {- - <!ELEMENT relation

(parent-doc , child-doc)> - -}. Example: <continuation-in-part> <relation> <parent-doc> <document-id> <country>US</country> <doc-number>08786835</doc-number> <kind>00</kind> <date>19970122</date> </document-id> <parent-status>ABANDONED</parent-status> </parent-doc> <child-doc> <document-id> <country>US</country> <doc-number>08898180</doc-number> </document-id> </child-doc> </relation> </continuation-in-part> <reissue>: The <reissue> element is optional and will occur one time for a <relation> element of the <us-related-documents> element and terminated with the </reissue> end tag. The <reissue> element, when present, uses the <relation> element to refer to the document being reissued. {- -<!ELEMENT reissue (relation)> - -} {- -<!ELEMENT relation (parent-doc , child-doc)> - -} Example: <reissue> <relation> <parent-doc> <document-id> <country>US</country> <doc-number>09247297</doc-number> <kind>00</kind> <date>19990210</date> </document-id> <parent-status>GRANTED</parent-status> <parent-grant-document> <document-id> <country>US</country> <doc-number>06674549</doc-number> <kind>00</kind> <date>20040106</date> </document-id> </parent-grant-document> </parent-doc> <child-doc> <document-id> <country>US</country> <doc-number>11327831</doc-number> </document-id> </child-doc> </relation> </reissue> <relation>: This <relation> element is mandatory and must occur one or more times within the <us-related-document> element and terminated by the </relation> end tag. The element contains the child-doc and parent-doc elements. {- - <!ELEMENT relation (parent-doc , child-doc)> - -} {- - <!ELEMENT us-relation (parent-doc , child-doc+)> - -}{- -<!ELEMENT utility-model-basis (relation)> - -} <parent-doc>: The <parent-doc> element is mandatory and will occur one time within the <relation> element for the <addition> element, the <division>, element and terminated by the </parent-doc> end tag. The element contains document-id, parent-status, parent-grant-document, and parent-pct-document elements and refers to a parent document. {- - <!ELEMENT parent-doc (document-id , parent-status? , parent-grant-document? , parent-pct-document?)> - -} {- - <!ELEMENT parent-status (#PCDATA) - -} {- - <!ELEMENT parent-grant-document (document-id)> - -} {- - <!ELEMENT parent-pct-document (document-id)> - -}. Examples of a <parent-doc> element, parent-status; <parent-status>PENDING</parent-status> <parent-status>ABANDONED</parent-status>; <parent-status>GRANTED</parent-status> Example of a <parent-doc> element, parent-grant-document: <parent-doc> </document-id> <document-id> </parent-grant-document> <country>US</country> </parent-doc> <doc-number>10692632</doc-number> <kind>00</kind> NOTE: “00” is present as a kind code when <date>20031024</date> code is available. </document-id> <parent-grant-document> <document-id> <country>US</country> <doc-number>6958804</doc-number> <kind>A </kind> </document-id> </parent-grant-document> </parent-doc> Example of a <parent-doc> element, parent-pct-document: <parent-pct-document> <document-id> <country>WO</country> <doc-number>PCT/JP2005/003817</doc-number> <date>20050228</date> </document-id> </parent-pct-document> <document-id>: This <document-id> element is mandatory and will occur one time within the <parent-doc> element. The contents of this <document–id> element will be a <country>, a <doc-number>, and terminated the </document-id> end tag. <country>: This <country> element is mandatory and will occur one time within the <parent-doc> element and contain the 2-position country code “US” identifying the country publishing the document and terminated by the </country> end tag. </country> <doc-number>: This <doc-number> element is mandatory and will occur one time within the <parent-doc> element and contain the document number of the <parent-doc> and terminated by the </doc-number> end-tag. Note: The content of the <doc-number> for a provisional application will appear as an 8-position numeric field without punctuation, slashes “/” or spaces. Position-1 and position-2 will contain “60” identifying a provisional application. <kind>: This <kind> element is mandatory and

will occur one time within the <document-id> element and for a parent document will contain the 2-position kind code”00” and terminated by the </kind> end tag. </kind> <date>: This <date> element is mandatory and will occur one time within this <document-id> element and terminated by the </date> end tag. This <date> element will contain the 8-position (YYYYMMDD) publication date of the parent document. </date> </document-id> <parent-status>: The <parent-status> element is optional and will occur one time within the <parent-doc> element and terminated by the </parent-status> end tag. The element refers to the status of the parent document. Possible values of the <parent-status> are: ABANDONED, GRANTED and PENDING. </parent-status> <parent-grant-document>: The <parent-grant-document> element is optional and will occur one time within the <parent-doc> element and be terminated by the </parent-grant-document> end tag. The element indicates if the parent document was granted. </parent-grant-document> <parent-pct-document>: The <parent-pct-document> element is mandatory and will occur one within the <parent-doc> element and be terminated by the </parent-pct-document> end tag. </parent-pct-document> </parent-doc> <child-doc>: This <child-doc> element is mandatory and will occur one time within the <relation> element and terminated by the </child-doc> end tag. The element contains the document-id element and refers to child document. {- - <!ELEMENT child-doc (document-id)> - -} Example of a <child-doc> element: <child-doc> <document-id> <country>US</country> <doc-number>29296581</doc-number> </document-id> </child-doc> <document-id>: This <document-id> element is mandatory and will occur one time within the <child-doc> element. The contents of this <document–id> element will be a <country>, a <doc-number>, and terminated the </document-id> end tag. <country>: This <country> element is mandatory and will occur one time within the <child-doc> element and contain the 2-position country code “US” identifying the country publishing the document and terminated by the </country> end tag. </country> <doc-number>: This <doc-number> element is mandatory and will occur one time within the <child-doc> element and contain the document number of the <child-doc> and terminated by the </doc-number> end-tag. NOTE: The content of the <doc-number> for a provisional application will appear as an 8-position numeric field without punctuation, slashes “/” or spaces. Position-1 and position-2 will contain “60” identifying a provisional application. </doc-number> </document-id> </child-doc> </relation> </addition> </division> </continuation> </continuation-in-part></continuing-reissue> </reissue> </relation> </us-related-documents> <us-parties>: The <us-parties> element is mandatory and will occur one time within the <us-bibliographic-data-grant> element and terminated by the </us-parties> end tag. The element uses applicants, inventors and agents elements and refers to parties to the granted patent. {- - <!ELEMENT us-parties (us-applicants, inventors, agents?)> - -} <us-applicants>: The <applicants> element is mandatory and will occur one time within the <us-parties> element and terminated by the </us-applicants> end tag. {- - <!ELEMENT us-applicants (us-applicant+)> - -} <us-applicant>: The <applicant> element is mandatory and may occur one or more times within the <applicants> element and terminated by the</applicant> end tag. {- - <!--(US: applicant is always the inventor. Use "applicant" with applicant type attribute of "applicant-inventor.")--> <!ELEMENT us-applicant (addressbook+, residence, us-rights*, designated-states? , designated-states-as-inventor?)> <!ATTLIST us-applicant sequence CDATA #REQUIRED app-type (applicant | applicant-inventor) #REQUIRED designation (all | all-except-us | | us-only | as-indicated) #REQUIRED applicant-authority-category (inventor | legal-representative | party-of-interest | obligated-assignee | assignee) #IMPLIED - -} The following are examples of the us-applicant tag from one patent grant: <us-applicant sequence=”001” app-type=”applicant-inventor” designation=”us-only” applicant-authority-category=”inventor”> <us-applicant sequence=”002” app-type=”applicant-inventor” designation=”us-only” applicant-authority-

category=”legal-representative”> <us-applicant sequence=”003” app-type=”applicant-inventor” designation=”us-only” applicant-authority-category=”party-of-interest”> <us-parties> <us-applicants> <us-applicant sequence="001" app-type="applicant-inventor" designation="us-only" applicant-authority-category=”inventor”> <addressbook> <last-name>Anderson</last-name> <first-name>Patricia Ann</first-name> <address> <street>1467 Elmwood Ct.</street> <city>Chula Vista</city> <state>CA</state> <postcode>91915</postcode> <country>US</country> </address> </addressbook> <residence> <country>US</country> </residence> </us-applicant> </us-applicants> </us-parties> <addressbook>: This <addressbook> element is mandatory and will occur one time within the <applicant> element and terminated by the </addressbook> end tag. {- - <!--ADDRESSBOOK GROUP: Holds name and contact information for individuals/organizations. {- - <!ELEMENT addressbook ((%name_group; , address , phone* , fax* , email* , url* , ead* , dtext?) | text)> - -} Example of an addressbook used within an app-type="applicant-inventor": <last-name> </last-name> <first-name> </first-name> <address> <city> </city> <state> </state> <country> </country> </address> </addressbook> <residence>: The <residence> element is mandatory and will occur one time within the <applicant> element and terminated by the </residence> end tag. The element contains the country of residence. <country>: This <country> element is mandatory and will occur one time within the <residence> element and contain the 2-position country code identifying the residence of the applicant and terminated by the </country> end tag. Reference STANDARD ST. 3 – Recommended Standard on Two-Letter Codes for the Representation of States, Other Entities and Intergovernmental Organizations: http://www.wipo.int/standards/en/pdf/03-03-01.pdf </country> </residence> <us-rights>: The <us-rights> element is optional and may occur one within the <applicant> element and terminated with the </us-rights> end tag. The element contains the us-rights to-dead-inventor and kind attributes. The element refers to a person who is the successor to the rights of an inventor who is deceased, insane, or legally incapacitated. <!--This person is successor to the rights of an inventor who is deceased, insane, or legally incapacitated.--> {- - <!ELEMENT us-rights (#PCDATA)> - -} {- - <!ATTLIST us-rights to-dead-inventor CDATA #REQUIRED kind (heir | heiress | executor | executrix | estate | legal-representative | administrator | administratrix | legal-representatives | heirs | executors | legal-heirs) #REQUIRED > - -} Note: The <us-rights> element will no longer be present effective with the patent grant issue of August 25, 2009. Example: Patent 7,167,340 granted January 23, 2007 us-rights to-dead-inventor. <usapplicant sequence="007" app-type="applicant" designation="us-only"> <addressbook> <last-name>Ikegami</last-name> <first-name>Hiromi</first-name> <address> <city>Niigata-ken</city> <country>JP</country> </address> </addressbook> <residence> <country>JP</country> </residence> <us-rights to-dead-inventor="applicant" kind="legal-representative"/> </applicant> </us-rights> </us-applicant> </us-applicants> <inventors>: {- - <!ELEMENT inventors (inventor | deceased-inventor)+> - -} <inventor>: {- - <!ELEMENT inventor (addressbook+ , designated-states?)> - -} <addressbook></addressbook> <deceased-inventor>: {- - <!ELEMENT deceased-inventor (%name_group;)> - -} {- - <!ELEMENT us-deceased-inventor (addressbook)> - -} {- - <!ATTLIST us-deceased-inventor sequence CDATA #REQUIRED > - -} Example: Patent 7,167,340 granted January 23, 2007 <inventors> deceased-inventor <us-parties> <applicants> <applicant sequence="001" app-type="applicant-inventor" designation="us-only">
.
.
</applicant> <applicant sequence="007" app-type="applicant" designation="us-only">
.

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<us-rights to-dead-inventor="applicant" kind="legal-representative"/> </applicant> </applicants> <inventors> <deceased-inventor sequence="007"> <last-name>Ikegami</last-name> <first-name>Masaki</first-name> </deceased-inventor> </inventors> </us-parties> <us-deceased-inventor sequence="007"> <addressbook> <last-name>Ikegami</last-name> <first-name>Masaki</first-name> <address> <city>Niigata-ken</city> <country>JP</country> </address> </addressbook> </us-deceased-inventor> </deceased-inventor> </inventor> </inventors>. Note: The <inventors>, <deceased-inventor> and <us-deceased-inventor> elements will no longer be present effective with the patent grant issue of August 25, 2009. <agents>: The <agents> element is mandatory and will occur one time within the <us-parties> element and terminated by the </agents> end tag. The element contains information regarding Agents or common representatives. {- - <!ELEMENT agents (customer-number | agent+)> - -} <agent>: The <agent> element is mandatory and will occur one or more times within the <agents> element and terminated by the </agent> end tag. The element contains the sequence and rep-type attributes and uses the addressbook element. {- - <!ELEMENT agent (addressbook+)> - -} {- - <!ATTLIST agent sequence CDATA #REQUIRED rep-type (agent | attorney | common-representative) #REQUIRED > <!--Information regarding Agents or common representatives.--> - -} The following is the content of an agent tag: <agent sequence=”01” rep-type=”attorney”> <addressbook>: This <addressbook> element is mandatory and will occur one time within the <agent> element and terminated by the </addressbook>end tag. Note: rep-type=”attorney” contains the following tags within the <addressbook>. The will be the <orgname> or <lastname> , (<firstname>. Also if a <country> is not provided “unknown” will be present. <orgname> </orgname> <last-name> </last-name> <first-name> </first-name> <address> <country> </country> </address> <orgname> </orgname> <last-name> </last-name> <first-name> </first-name> <address> <country> </country> </address> </addressbook> </agent> </agents> </us-parties> <assignees>: The <assignees> element is mandatory and will occur one time within the <us-bibliographic-data-grant> and terminated by the </assignees> end tag. {- - <!ELEMENT assignees (assignee+)> - -} {- - <!ELEMENT assignee (%name_group; | addressbook)> - -} <assignee> <addressbook> <orgname> </orgname> <role>: The <role> for US documents one of the following 2-position codes is present in the role element: 01 Unassigned, 02 United States company or corporation, 03 Foreign company or corporation, 04 United States individual, 05 Foreign individual, 06 U.S. Federal government, 07 Foreign government, 08 U.S. county government, 09 U.S. state government. Note: “1” in position-1 identifies partial owner. </role> <address> <city> </city> <country> </country> </address> </addressbook> </assignee> </assignees> <examiners>: The <examiners> element is mandatory and will occur one time within the <us-bibliographic-data-grant> and terminated by the </examiners> end tag. The <examiners> element is mandatory and will occur one time within the <us-bibliographic-data-grant> element and be terminated by the </examiners> end tag. The element uses the primary-examiner, and the assistant-examiner. {- -<!ELEMENT examiners (primary-examiner? , assistant-examiner? , authorized-officer?)> - -} <examiners> <primary-examiner> <l >Wu</last-name> <first-name>David</first-name> <department>1796</department> </primary-examiner> <assistant-examiner> <last-name>Lee</last-name> <first-name>Rip A.</first-name> </assistant-examiner> </examiners> <primary-examiner>: The <primary-examiner> element is mandatory and will occur one time within the <examiners> element and be terminated by the </primary-examiner> end tag. The element uses last-name, first-name and department. <last-name> </last-name> <first-name> </first-name> <department>: This <department> element is mandatory and will occur one time within the <primary-examiner> element and be terminated by

the </department> end tag. The department refers to the 4-position Technology Center. Reference the following USPTO web site that identifies all USPTO Technology Centers http://www.uspto.gov/about/contacts/phone_directory/pat_tech/index.jsp </department> </primary-examiner> <assistant-examiner>: The <assistant-examiner> element is optional and will occur one time within the <examiners> element and be terminated by the </assistant-examiner> end tag. The element uses last-name, first-name and department. <last-name> </last-name> <first-name> </first-name> </examiners> <pct-or-regional-filing-data>: The <pct-or-regional-filling-data> element is optional and will occur one time within the <us-bibliographic-data-grant> element and be terminated with </pct-or-regional-filling-data> end tag. The element refers to PCT or regional filling information and contains the document-id, and the us-371c124-date elements. {- - <!ELEMENT pct-or-regional-filing-data (document-id , us-371c124-date?)> - - } <pct-or-regional-filing-data> <document-id> <country>WO</country> <doc-number>PCT/EP99/03613</doc-number> <kind>00</kind> <date>19990525</date> </document-id> <us-371c124-date> <date>20001127</date> </us-371c124-date> </pct-or-regional-filing-data> <pct-or-regional-publishing-data> <document-id> <country>WO</country> <doc-number>WO99/61264</doc-number> <kind>A </kind> <date>19991202</date> </document-id> </pct-or-regional-publishing-data> <document-id>: This <document-id> element is mandatory and will occur one time within the <pct-or-regional-filling-data> element. The contents of this <document–id> element will be a <country>, a <doc-number>, a <date>, and terminated the </document-id> end tag. <country>: This <country> element is mandatory and will occur one time within the <document-id> element and contain the 2-position country code of the country where the PCT application was filed and terminated by the </country> end tag. Reference STANDARD ST. 3 – Recommended Standard on Two-Letter Codes for the Representation of States, Other Entities and Intergovernmental Organizations: http://www.wipo.int/standards/en/pdf/03-03-01.pdf </country> <doc-number>: This <doc-number> element is mandatory and will occur one time within the <document-id> element and contain the PCT document application number and terminated by the </doc-number> end-tag. </doc-number> <kind>: This <kind> element is mandatory and will occur one time within the <document-id> element and for PCT documents will contain the 2-position kind code”00” and terminated by the </kind> end tag. </kind> <date>: This <date> element is mandatory and will occur one time within the <document-id> element and contain the 8-position (YYYYMMDD) publication date of the PCT application and terminated by the </date> end tag. </date> </document-id> <us-371c124date>: This <us-371c124-date> element is mandatory and will occur one time within the <document-id> element and terminated with the </us-371c124-date> end tag. The content identifies the filing date of a U.S. National Stage Application. <date>: This <date> element is mandatory and will occur one time within the <document-id> element and contain the 8-position (YYYYMMDD) <us-371c124-date> of the application and terminated by the </date> end tag. </date> </us-371c124date> </pct-or-regional-filling-data> <pct-or-regional-publishing-data>: The <pct-or-regional-publishing-data> element is optional and will occur one time within the <us-bibliographic-data-grant> element and be terminated with </pct-or-regional-publishing -data> end tag. The element refers to PCT or regional filling information and contains the document-id, and the us-371c124-date elements. {- - <!ELEMENT pct-or-regional-publishing-data (document-id , gazette-reference?)> - -} <document-id:> This <document-id> element is mandatory and will occur one time within the <pct-or-regional-publishing-data> element. The contents of this <document–id> element will be a <country>, a <doc-number>, a <date>, and terminated the </document-id> end tag. <country>: This <country> element is mandatory and will occur one time within the <document-id> element and contain the 2-position country code of the country where the PCT application publication was filed and terminated by

the </country> end tag. Reference STANDARD ST. 3 – Recommended Standard on Two-Letter Codes for the Representation of States, Other Entities and Intergovernmental Organizations: http://www.wipo.int/standards/en/pdf/03-03-01.pdf </country> <doc-number>: This <doc-number> element is mandatory and will occur one time within the <document-id> element and contain the PCT document publication number and terminated by the </doc-number> end-tag </doc-number> <kind>: This <kind> element is optional and, when present, will occur one time within the <document-id> element and terminated by the </kind> end-tag. </kind> <date>: This <date> element is mandatory and will occur one time within the <document-id> element and contain the 8-position (YYYYMMDD) publication date of the PCT publication document and terminated by the </date> end tag. </date> </document-id> </pct-or-regional-publishing-data> </us-bibliographic-data-grant> <abstract id="abstract">: The <abstract> element is optional and will occur one time within the <us-patent-grant> element and be terminated by the </abstract> end tag. Note: An abstract is required for all types of U.S. patents except for design patents. {- - <!ELEMENT abstract (doc-page+ | (abst-problem , abst-solution) | p+)> - -} Abstract Example: <doc-number>H0002234</doc-number> <abstract id="abstract"> A process for preparing 2-difluoromethoxy-1,1,1,2-tetrafluoroethane (desflurane) comprising the following steps: <ul id="ul0001" list-style="none"> <li id="ul0001-0001" num="0000"> <ul id="ul0002" list-style="none"> <li id="ul0002-0001" num="0000">(a) providing a first mixture comprising desflurane and 2,2dichloro-1,1,1-trifluoroethane (R-123); <li id="ul0002-0002" num="0000">(b) adding water to the first mixture to form a second mixture; and <li id="ul0002-0003" num="0000">(c) fractionally distilling the second mixture to yield a desflurane product purer in R-123 than said the mixture.
 Also described is a purified desflurane product prepared by the process, and intermediate products comprising water added to a mixture of desflurane and R-123.   </abstract>. Abstract Example: <doc-number>PP020635</doc-number> <abstract id="abstract"> A new and distinct variety of Shrub rose plant is provided that forms in abundance on a substantially continuous basis attractive slightly fragrant semi-double blossoms that are yellow to cream-yellow in coloration. The buds are globular in shape. The vegetation is vigorous and a spreading growth habit is displayed. The disease resistance is above average for the class with respect to Black Spot, Powdery Mildew, and Rust. The plant is particularly well suited for providing attractive ornamentation in the landscape, and can be grown as a ground cover. </abstract>. Abstract Example: <doc-number>RE041069</doc-number> <abstract id="abstract"> Apparatus for acquiring an image utilizing serial transmission between the analog-to-digital converting means and the processing means (ASIC) is disclosed herein. The image acquiring system according to the preferred embodiment of the present invention includes the following devices. The image sensor converts an image to an electrical signal responding to a trigger signal. An amplifier amplifies the power of the electrical signal mentioned above, and the amplified electrical signal is of the analog format. The A/D converting device converts the amplified electrical signal from the analog format to the digital format responding to a reference voltage, wherein the A/D converting device outputs the digitized electrical signal in series. The processing device stores the digitized electrical signal in a memory, wherein the trigger signal is generated by the processing device responding to the digitized electrical signal. The reference voltage mentioned above is generated corresponding to a reference digit, wherein the reference digit is generated responding to the digitized electrical signal, the digitized electrical signal being transmitted to the processing means in series. </abstract> Abstract Example: <doc-number>07640870</doc-number> <abstract id="abstract"> A foldable table includes a table top having collapsible legs connected thereto. The table top includes a first table top section and a second table top

section. A first hinge assembly hingedly connecting the first table top section to the second table top section such that the table top can selectively move between a folded position and an unfolded position. A latch engages with the first hinge assembly so as to releasably lock the first hinge assembly when the table top is in the unfolded position. In alternative embodiments, portions of the table top sections can interlock when the table is in the unfolded position. A handle can project from between the table top sections when the table is in the folded position. </abstract>. Abstract Example: <doc-number>07642344</doc-number> <abstract id="abstract"> Methods and compounds, including compositions therefrom, are provided for determining the sequence of nucleic acid molecules. The methods permit the determination of multiple nucleic acid sequences simultaneously. The compounds are used as tags to generate tagged nucleic acid fragments which are complementary to a selected target nucleic acid molecule. Each tag is correlative with a particular nucleotide and, in a preferred embodiment, is detectable by mass spectrometry. Following separation of the tagged fragments by sequential length, the tags are cleaved from the tagged fragments. In a preferred embodiment, the tags are detected by mass spectrometry and the sequence of the nucleic acid molecule is determined therefrom. The individual steps of the methods can be used in automated format, e.g., by the incorporation into systems. </abstract>. Abstract Example: <doc-number>07642559</doc-number> <abstract id="abstract"> An object of the present invention is to provide an EL display device having a high operation performance and reliability. The switching TFT 201 formed within a pixel has a multi-gate structure, which is a structure which imposes an importance on reduction of OFF current value. Further, the current control TFT 202 has a channel width wider than that of the switching TFT to make a structure appropriate for flowing electric current. Moreover, the LDD region 33 of the current control TFT 202 is formed so as to overlap a portion of the gate electrode 35 to make a structure which imposes importance on prevention of hot carrier injection and reduction of OFF current value. </abstract> </abstract> <drawings id="DRAWINGS">: The <drawings> element is optional and is terminated by the </drawings> end tag. {- - <!ELEMENT drawings (doc-page+ | figure+)> - -} {- - <!ATTLIST drawings id ID #IMPLIED lang CDATA #IMPLIED status CDATA #IMPLIED > - -} {- - <!--A figure. (US: often equates to one drawing page that might contain multiple figures.)--> - -} {- - <!ELEMENT figure (img)> - -} {- - <!ATTLIST figure id ID #IMPLIED num CDATA #REQUIRED figure-labels CDATA #IMPLIED > - -} {- - <!ELEMENT img EMPTY> - -} {- - <!ATTLIST img id ID #IMPLIED he CDATA #REQUIRED wi CDATA #REQUIRED file CDATA #REQUIRED alt CDATA #IMPLIED img-content (drawing | photograph | character | dna | undefined | chem | table | math | program-listing | flowchart) 'drawing' img-format (jpg | tif | st33 | st35) #REQUIRED orientation (portrait | landscape) 'portrait' inline (yes | no) 'no' > - -} Drawings Example: <doc-number>07640870</doc-number> <drawings id="DRAWINGS"> <figure id="Fig-EMI-D00000" num="00000"> </figure> <figure id="Fig-EMI-D00001" num="00001"> <img id="EMI-D00001" he="192.02mm" wi="171.37mm" orientation="landscape" file="US07640870 20100105-D00001.TIF" alt="embedded image" img-content="drawing" img-format="tif"/ </figure> <figure id="Fig-EMI-D00002" num="00002"> <img id="EMI-D00002" he="256.79mm" wi="152.06mm" orientation="landscape" file="US07640870 20100105-D00002.TIF" alt="embedded image" img-content="drawing" img-format="tif"/</figure> <figure id="Fig-EMI-D00003" num="00003"> <img id="EMI-D00003" he="213.28mm" wi="149.61mm" orientation="landscape" file="US07640870 20100105-D00003.TIF" alt="embedded image" img-content="drawing" img-format="tif"/</figure>

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<figure id="Fig-EMI-D00020" num="00020"> </figure> <figure id="Fig-EMI-D00021" num="00021"> </figure><figure id="Fig-EMI-D00022" num="00022"> </figure> </drawings> </drawings> <description id="description">: The <description> element is mandatory and the description must disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Rule 5). {- - <!ELEMENT description (doc-page+ | (invention-title? , (technical-field | background-art | disclosure | description-of-drawings | best-mode | mode-for-invention | industrial-applicability | sequence-list-text | (heading* , p+)+)+))> - -} {- - <!ATTLIST description id ID #IMPLIED lang CDATA #IMPLIED status CDATA #IMPLIED> - -} Description Examples: <doc-number>07640870</doc-number> <description id="description"> <?RELAPP description="Other Patent Relations" end="lead"?> <heading id="h-0001" level="1">CROSS-REFERENCE TO RELATED APPLICATIONS</heading> The present application is a continuation-in-part of U.S. patent application Ser. No. 10/408,914, filed Apr. 8, 2003 now U.S. Pat. No. 7,096,799 which claims priority to and the benefit of U.S. Provisional Patent Application Ser. No. 60/371,486, filed on Apr. 9, 2002 and is a continuation-in-part of U.S. patent application Ser. No. 29/180,752, filed Apr. 29, 2003 now U.S. Pat. No. D489557 which applications are hereby incorporated by reference in their entirety. <?RELAPP description="Other Patent Relations" end="tail"?> <?BRFSUM description="Brief Summary" end="lead"?> <heading id="h-0002" level="1">BACKGROUND OF THE INVENTION</heading> The present invention is generally related to tables and, in particular, to foldable tables. <heading id="h-0003" level="1">Description of Related Art</heading> Many different types of tables are well known and used for a variety of different purposes. For example, conventional tables may include legs that are pivotally attached to the table top and the legs may be movable between a use position in which the legs extend outwardly from the table top and a storage position in which the legs are folded against the table top. Large, portable tables with folding legs are often referred to as “banquet tables” and these tables are often used in assembly halls, banquet halls, convention centers, hotels, schools, churches, and other locations where large groups of people meet. Because the tables are portable, the tables can be positioned in an assortment of different configurations and used in a variety of settings. When the tables are no longer needed, the tables can be moved or stored.
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 In yet another embodiment of the present invention, a retainer is mounted on a first one of the cross members. The retainer engages with the second cross member on the opposing end of the table top when the table top is moved into the folded position. The retainer helps to retain the table in the folded position so that the table does not

unintentionally unfold when the folded table is being carried, transported and/or stored. The retainer is configured to automatically engage with the opposing cross member so as to simplify the engagement process. Furthermore, the retainer is slidably mounted on the first cross member so as to simply the manufacturing process and eliminate the need for separate mechanical fasteners. These and other aspects, features and advantages of the present invention will become more fully apparent from the following detailed description of preferred embodiments and appended claims. <?BRFSUM description="Brief Summary" end="tail"?> <?brief-description-of-drawings description="Brief Description of Drawings" end="lead"?> <description-of-drawings> <heading id="h-0005" level="1">BRIEF DESCRIPTION OF THE DRAWINGS</heading> The appended drawings contain figures of preferred embodiments to further illustrate and clarify the above and other aspects, advantages and features of the present invention. It will be appreciated that these drawings depict only preferred embodiments of the invention and are not intended to limits its scope. The invention will be described and explained with additional specificity and detail through the use of the accompanying drawings in which: <figref idref="DRAWINGS">FIG. 1</figref> is a perspective view of a foldable table in accordance with one embodiment of the present invention, illustrating the legs in an extended position;

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<figref idref="DRAWINGS">FIG. 25</figref> is a perspective view of another embodiment of a table in a partially folded position; and <figref idref="DRAWINGS">FIG. 26</figref> is bottom view of the table shown in <figref idref="DRAWINGS">FIG. 25</figref>. </description-of-drawings> <?brief-description-of-drawings description="Brief Description of Drawings" end="tail"?> <?DETDESC description="Detailed Description" end="lead"?> <heading id="h-0006" level="1">DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS</heading> The present invention is generally directed towards foldable tables having one or more hinges. In one embodiment at least one of the hinges can be selectively locked when the table is in an unfolded position. The principles of the present invention, however, are not limited to tables. It will be understood that, in light of the present disclosure, the hinges and locking features disclosed herein can be successfully used in connection with other types of furniture and structures. Additionally, to assist in the description of the table, words such as top, bottom, front, rear, right and left are used to describe the accompanying figures. It will be appreciated, however, that the table can be located in a variety of desired positions— including various angles, sideways and even upside down. A detailed description of the table with hinge now follows.

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Finally, depicted in <figref idref="DRAWINGS">FIGS. 25 and 26</figref> is an alternative embodiment of a table 412 wherein like elements are identified by like reference characters. Table 10 includes table top sections 256 and 258. However, in contrast to having the hinge assemblies connected to the frame, table 10 comprises hinge assemblies 414 that are connected directly to table top sections 256 and 258 at a distance spaced apart from frame 32. Although this invention has been described in

terms of certain preferred embodiments, other embodiments apparent to those of ordinary skill in the art are also within the scope of this invention. Accordingly, the scope of the invention is intended to be defined only by the claims which follow.</p> <?DETDESC description="Detailed Description" end="tail"?> </description> <claims id="claims">: The <claims> element is mandatory and contains the element <us-claim-statement>, <d>, <num> and <claim-text> and is terminated by the </claims> tag. Definition: Defines the matter for which protection is sought See PCT Rule 6: 6.1.a: 'the number of claims shall be reasonable in consideration of what is being claimed.' 6.1.b: 'if there are several claims, they shall be numbered consecutively in Arabic numerals, num 00001, num 00002, etc. The <claims id="claims"> tag is preceded by a <us-claim-statement>. {- - <!ELEMENT us-claim-statement (#PCDATA | b | i | o | u | sup | sub | smallcaps)*{- - <!ELEMENT claims (doc-page+ | claim+)> - -} {- - <!ATTLIST claims id ID #IMPLIED lang CDATA #IMPLIED claim-type CDATA #IMPLIED status CDATA #IMPLIED > - -} {- - <!ELEMENT claim (claim-text +)> - -} {- - <!ATTLIST claim id ID #IMPLIED num CDATA #REQUIRED claim-type CDATA #IMPLIED > - -} {- - <!ELEMENT claim-text (#PCDATA | claim-text | claim-ref | b | i | o | u | sup | sub | smallcaps | br | pre | crossref | figref | img | chemistry | maths | tables)*> - -} {- - <!--Reference to a claim.--> - -} <!ELEMENT claim-ref (#PCDATA)> - -} {- - <!ATTLIST claim-ref idref IDREFS #REQUIRED > - -} Claims Example: <doc-number>07640870</doc-number> <us-claim-statement>What is claimed is: </us-claim-statement> <claims id="claims"> <claim id="CLM-00001" num="00001"> <claim-text>1. A foldable table comprising: <claim-text>a table top comprising a first table top section and a second table top section, the first table top section and the second table top section being generally aligned in the same plane when the table top is in an unfolded position, the first table top section being positioned at least proximate the second table top section when the table top is in a folded position;</claim-text> <claim-text>a first hinge assembly hingedly connecting the first table top section to the second table top section such that the table top can selective move between the folded position and the unfolded position, the first hinge assembly comprising: <claim-text>a first bracket connected to the first table top section, the first bracket including a curved outer surface and a receiving portion;</claim-text> <claim-text>a second bracket connected to the second table top section, the second bracket including an elongated first arm and an elongated second arm; and</claim-text> <claim-text>a locking mechanism selectively locking the table top in the unfolded position, the locking mechanism including an elongated body disposed between the elongated first arm and the elongated second arm of the second bracket, the locking mechanism including a latch plate with an outer edge that engages the curved outer surface of the first bracket when the table top is moved between the folded and unfolded positions, the latch plate being disposed in the receiving portion when the locking mechanism locks the table top in the unfolded position; and</claim-text> </claim-text> <claim-text>one or more support assemblies connected to the table top, the support assemblies being movable between an extended position and a collapsed position relative to the table top.</claim-text> </claim-text> </claim> <claim id="CLM-00002" num="00002"> <claim-text>2. A foldable table as in <claim-ref idref="CLM-00001">claim 1</claim-ref>, further comprising a handle disposed in the elongated body of the locking mechanism, the handle being at least partially disposed between the elongated first arm and the elongated second arm of the second bracket.</claim-text> partially disposed between the inner portion of the first table top section and the inner portion of the second table top section when the table top is in the folded position.</claim-text> </claim>

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<claim id="CLM-00042" num="00042"> <claim-text>42. The table as in <claim-ref idref="CLM-00040">claim 40</claim-ref>, further comprising a handle mounted to the bottom surface of the first table top section and extending beyond the inside edge of the first table top section and the inside edge of the second table top section when the table top is in the folded position.</claim-text> </claim> <claim id="CLM-00043" num="00043"> <claim-text>43. The table as in <claim-ref idref="CLM-00040">claim 40</claim-ref>, further comprising a retainer that is sized and configured to retain the table in the folded position, the retainer comprising: <claim-text>a body including a opening that is sized and configured to receive a portion of a frame connected to the first table top section;</claim-text> <claim-text>a flange projecting outwardly from the body, the flange being sized and configured to engage a portion of the first table top section; and</claim-text> <claim-text>an outwardly extending portion that is sized and configured to receive a portion of a frame connected to the second table top section when the table is in the folded position.</claim-text> </claim-text> </claim> </claims> </us-patent-grant> Bolding of Text: The element is optional and may occur one multiple times within the tag and be terminated by the end tag.
 Line Break: The <br/> element is optional and may occur multiple times within the element and is an empty tag. Italic Formatting of Text. The element is optional and may occur one time within the element and be terminated by the end tag.   Paragraph: The element is optional and will occur one time within the start and end tag. The element contains the id and num attributes. {- - <!-- Paragraph --> - -} {- -<!ELEMENT p (#PCDATA | b | i | o | u | sup | sub | smallcaps | br | pre | dl | ul | ol | crossref | figref | patcit | nplcit | bio-deposit | img | chemistry | maths | tables | table-external-doc)*> - -} {- - <!ATTLIST p id ID #IMPLIED num CDATA #REQUIRED > - -} {- -Note: Attribute p id a unique paragraph id in the form “p-nnnn” – where nnnn is a numeric paragraph number with leading zeros. - -} {- -Note: Attribute num is a unique paragraph number in the form “nnnn” – where nnnn is a numeric number with leading zeros. - -} {- - <!ELEMENT para (#PCDATA | paraf | paral)*> - -} {- - <!--Cited paragraph, first.--> <!ELEMENT paraf (#PCDATA)> - -} {- - <!--Cited paragraph, last.--> <!ELEMENT paral (#PCDATA)> - -} <u> Underscore: The <u> element is optional and may occur one within the element and terminated by the </u> end tag. </u> _{Subscripted Text: The _{element is optional and may occur one time within the element and terminated by the} end tag.} <sup> Superscripted Text: The ^{element is optional and may occur one time within the element and terminated by the </sub> end tag.} <smallcaps> Small Capitals for Text: The <smallcaps> element is optional and may occur one time within the element and terminated by the </smallcaps> end tag. </smallcaps> Table 1 – Definition of material used throughout the documentation and the Legend of Near and Fear Designer Symbols appearing in the DTD (Document Type Definition) for United States Patent Grant Publications. Note: Information enclosed in {- -and - - } and the color of green identifies Elements and Attributes from the DTD “us-patent-grant-v4 .22006-08-23.dtd” as identified in WIPO Standard ST. 36 – International Common Elements and used/populated in U.S. Grant documents.
Element - A logical component of a document which either begins with a start-tag and ends with a matching end-tag, or consists only of an empty-element tag. The characters between the start-tag and end-tag are the element's content. An element can contain other elements, simple text or a mixture of both. Elements can also have attributes. Attribute – A markup construct consisting of a name/value pair that exists within a start-tag or empty-element tag. An XML attribute may be included with element ATTLIST declarations and must always appear within quotes. Elements and Attributes from the DTD that are underlined (Example: patent-family?) and in red identifies Elements from the DTD that are not used/populated in U.S. Grant

documents. Legend of Near and Fear Designer Symbols: Connectors Ordered connector----- Specifies that the attached sibling objects must occur in sequence within a document instance. Selection Connector-----Specifies that one (and only one) of the attached sibling objects is to appear within a document instance. Occurrence Indicators One (occurrence indicator-----The object is required; there must be one (and only one) occurrence of the object at this point in a document instance. Zero or one (occurrence indicator-----The object is optional, but if present, can appear only once. One or more (occurrence indicator-----The object must appear at least once and could appear any number of times. Zero or more (occurrence indicator-----The object may be omitted or may occur any number of times at this point in a document instance. Terminals Processable Character Data, or PCDATA; No Content, EMPTY; Tilde-----Indicates that the element has associated attributes; Indicates that the content model is the same as a previous element; Table 2 – Appearance of U.S. Patent Grant Patent Numbers
Design Patents – Position 1 – A constant “D” identifying the granted document as a Design Patent. Positions 2-8 – Seven-position numeric, right justified, with a leading zero.
SIR Patents – Position 1 – A constant “H” identifying the granted document as a Statutory Invention Registration (SIR). Positions 2-8 – Seven-position numeric, right justified, with a leading zero. Plant Patents – Positions 1-2 – A constant “PP” identifying the granted document as a Plant Patent. Positions 3-8 – Six-position numeric, right justified, with a leading zero.
Reissue Patents – Position 1-2 – A constant “RE” identifying the granted document as a Reissue Patent. Positions 3-8 – Six-position numeric, right justified, with a leading zero.
Utility Patents – Positions 1-8 – Eight-position numeric, right justified, with a leading zero.
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Table 3A - U.S. Patent Grants and Patent Published Applications – Kind Code (2-position)
Note: The following 2-position kind codes will be present in the XML <kind> tags of Patent Grant Data/XML (Red Book). These 2-positions kind codes will also be present on the printed documents with the following exceptions: Reissues will contain a single position “E”,
SIR documents will contain a single position “H”, and Designs will contain a single position “S”.
A1 - Utility Patent Grant issued prior to January 2, 2001.
A1 - Utility Patent Application published on or after January 2, 2001.
A2 - Second or subsequent publication of a Utility Patent Application.
A9 - Correction published Utility Patent Application.
Bn - Reexamination Certificate issued prior to January 2, 2001. NOTE: “n” represents a value 1 through 9. B1 - Utility Patent Grant (no published application) issued on or after January 2, 2001. B2 - Utility Patent Grant (with a published application) issued on or after January 2, 2001. Cn-Reexamination Certificate issued on or after January 2, 2001. NOTE: “n” represent a value 1 through 9 denoting the publication level. E1 - Reissue Patent Fn-Reexamination Certificate of a Reissue published prior to January 12, 2010. NOTE: “n” represents a value 1 through 9 denoting the publication level. H1 – Statutory Invention Registration (SIR) Patent Documents. Note: SIR documents began with the December 3, 1985 issue. I1 - “X” Patents issued from July 31, 1790 to July 13, 1836. I2 - “X” Reissue Patents issued from July 31, 1790 to July 13, 1836. I3 - Additional Improvements – Patents issued between 1838 and 1861. I4 - Defensive Publication – Documents issued from November 5, 1968 through May 5, 1987. I5 - Trial Voluntary Protest Program (TVPP) Patent Documents NP - Non-Patent Literature. P1 - Plant Patent Application published on or after January 2, 2001. P2 - Plant Patent Grant (no published application) issued on or after January 2, 2001. P3 - Plant Patent Grant (with a published application) issued on or after January 2, 2001. P4 - Second or subsequent publication of a Plant Patent Application. P9 - Correction publication of a Plant Patent Application. S1 - Design Patent; Note: 00 – Can be present for a PCT or Regional Filing Data. Table 3B - U.S. Patent
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Grants and Patent Published Applications – Kind Codes (1-position). Note: The following 1-position kind codes will be present in the XML <kind> tag within the <us-references-cited> element of Patent Grant Data/XML (Red Book) and Patent Grant Data/TIFF (Single-Page TIFF Images Yellow Book) for first publication of a patent document issued on or prior to December 26, 2000. A - Utility Patent Grant issued prior to January 2, 2001; B - Reexamination Certificate issued prior to January 2, 2001; E - Reissue Patent; H - Statutory Invention Registration (SIR) Patent Documents; P - Plant Patent Grant issued prior to January 2, 2001; S - Design Patent; T - Defensive Publication. Table 4 - U.S. Application Series Codes, Code: 02, Filing Dates: Filed prior to January 1, 1948; Code: 03, Filing Dates: January 1, 1948 through December 31, 1959; Code: 04, Filing Dates: January 1, 1960 through December 31, 1969; Code: 05, Filing Dates: January 1, 1970 through December 31, 1978; Code: 06, Filing Dates: January 1, 1979 through December 31, 1986; Code: 07, Filing Dates: January 1, 1987 through January 21, 1993; Code: 08, Filing Dates: January 22, 1993 through January 20, 1998; Code: 09, Filing Dates: January 21, 1998 through October 23, 2001; Code: 10, Filing Dates: October 24, 2001 through November 30, 2004; Code: 11, Filing Dates: December 1, 2004 through December 5, 2007; Code: 12, Filing Dates: December 6, 2007 through December 17, 2010; Code: 13, Filing Dates: December 17, 2010 through Current Design; Code: 07, Filing Dates: Filed prior to October 1, 1992; Code: 29, Filing Dates: Filed after October 1, 1992. Table 5 - Reformed IPC - Patent Published Applications and Patent Grants (International Common Elements – ICE) on or after January 2006: <ipc-version-indicator><date>: -8-position numeric date in the format YYYYMMDD. <classification-level>: -1-position alphabetic (uppercase) containing a constant "A" defining "advanced level". <section>: 1-position alphabetic (uppercase) - possible value can be "A through H". <class>: 2-position numeric. <subclass>: 1-position alphabetic (uppercase) - possible value can be "A through Z". <main-group>: 2 to 4 positions numeric. <subgroup>: 2 to 6 positions numeric. <symbol-position>: 1-position alphabetic (uppercase) - will contain "F" defining "first" for the sole or first "invention information" IPC, and will contain "L" defining "later" for any second and succeeding "invention information" IPC and for any "non-invention information" IPC. <classification-value>: 1-position alphabetic (uppercase) - will contain "I" defining "invention information" or will contain "N" defining "non-invention information". <action-date><date>: 8-position numeric date in the format YYYYMMDD - This date will be the date of publication for patent applications and the issue date for patent grants. <generating-office>: 2-position alphabetic (uppercase) - United States documents will contain "US". <classification-status>: 1-position alphabetic (uppercase) - will contain "B" defining "Basic or Original". <classification-data-source>: 1-position alphabetic (uppercase) - will contain "H" defining "Human-Generated". A future source can be "M" defining "Machine-Generated" and "G" defining "Generated via Software". EXAMPLE of Reformed IPC for Patent Published Applications and Patent Grants on or after January 2006: <classifications-ipcr> <classification-ipcr> <ipc-version-indicator><date>20060101</date> </ipc-version-indicator> <classification-level>A</classification-level> <section>B</section> <class>28</class><subclass>B</subclass> <main-group>5</main-group> <subgroup>00</subgroup> <symbol-position>F</symbol-position> <classification-value>I</classification-value> <action-date> <date>YYYYMMDD</date>. NOTE: The action date will be the date of publication for patent applications and the issue date for patent grants. </action-date> <generating-office> <country>US</country> </generating-office> <classification-status>B</classification-status> <classification-data-source>H</classification-data-source> </classification-ipcr> <classification-ipcr> <ipc-version-indicator> <date>20070401</date> </ipc-version-indicator> <classification-level>A</classification-level> <section>B</section> <class>28</class><subclass>B</subclass> <main-group>1</main-group> <subgroup>29</subgroup> <symbol-position>L</symbol-

position> <classification-value>I</classification-value> <action-date> <date>YYYYDDMM</date>. NOTE: The action date will be the date of publication for patent applications and the issue date for patent grants. </action-date> <generating-office> <country>US</country> </generating-office> <classification-status>B</classification-status> <classification-data-source>H</classification-data-source> </classification-ipcr> </classifications-ipcr>. Reformed IPC for the us-field-of-classification-search element in Patent Grants on or after January 2006: Please Note: The <us-field-of-classification-search> element will always be present. If the examiner did do a classification search, the element will contain one or more <classification-national> records and/or one <us-classifications-ipcr> record. If the examiner did not do a classification search, the element will contain a single <classification-national> record in which the content of the <main-classification> will be "None." A single <us-classifications-ipcr> record will be present for all of the IPCs in the Grant Red Book ICE <us-field-of-classification-search> element in U.S. Patent or SIR issuing on or after January 3, 2006. Please Note: This element requires the need for a content that permits ranges of IPCR classifications as recorded by the patent examiner. Thus <us-classifications-ipcr> has unstructured content, as does the <main-classification> of <classification-national>.
The <us-classifications-ipcr> Grant Red Book content will reflect the format present in the Patent Grant Yellow Book/IPC Field of Classification Search: In the <us-classifications-ipcr> record there will be a space between the subclass and the main group. Example: G06K 15/00. The main group will not contain leading zeros. The subgroup will show a minimum of two digits. No trailing zero will be present as the 3rd, 4th, 5th, or 6th digit of the subgroup. In an IPC range the separator will be a hyphen, and the IPC main group will be repeated after the hyphen. Example: G06K 15/10-15/40. If multiple IPCs are present, a semicolon and space will be present between IPCs. Example: G06K 15/00; B25C 1/14; G06K 15/10-15/40. EXAMPLE of Reformed IPC in Field of Search in Grant Red Book ICE for patents granted on or after January 2006: <us-field-of-classification-search> <us-classification-ipcr>G06K 15/00; B25C 1/14; G06K 15/10-15/40. </us-classification-ipcr> <classification-national> <country>US</country> <main-classification->24/326</main-classification> </classification-national> </us-field-of-classification-search>. Table 6 - U.S. Patent Classifications. Class – A 3-position alphanumeric field right justified with leading spaces. Design Patents – The first position will contain a “D”. Positions 2 and 3, right justified, with a leading space when required for a single digit class. Plant Patents – Positions 1-3 will contain a “PLT”. All Other Patents – Three alphanumeric positions, right justified, with leading spaces. Sub-Class – Three alphanumeric positions, right justified with leading spaces, and, if present, one to three positions to the right of the decimal point (assumed decimal in the Red Book XML), left justified. Note: An unstructured US classification would identify a sub-class as a range with the sub-class range being separated by a hyphen “-“. A digest entry as a sub-class would appear as follows: Three positions containing “DIG”, followed by one to three alphanumeric positions, left justified. Table 6A – Cooperative Patent Classification (CPC): <main-cpc> - Identifying Main Classification, <further-cpc> - Identifying a Further Classification, or <further-cpc> within the <combination-set>. <classification-cpc> <cpc-version-indicator>: 8-position numeric date in the format YYYYMMDD identifying the classification publication date. Note: The <ipc-version-indicator> date will not be present in a <classification-cpc-text> for <us-citation> or <us-field-of-classification-search>. <section>: 1-position alphabetic (uppercase) - possible value can be "A through H". The section is the highest hierarchical level within the classification scheme and as such it represents the whole body of knowledge which may be regarded as proper to the field of Classification. <class>: 2-position numeric. The code denotes the second level subdivision of the classification scheme and as such it is a further breakdown of the section's broad technical fields into high level

subject matter. <subclass>: 1-position alphabetic (uppercase) - possible value can be "A through Z". The code denotes the third level subdivision of the classification scheme and as such it is a further breakdown of subject matter into more novel subject matter. <main-group>: 2 to 4 positions numeric. The code denotes the fourth level subdivision of the classification scheme and as such is a further breakdown of the novel subject matter. <subgroup>: 2 to 6 positions numeric. The code denotes the fifth level subdivision of the classification scheme and as such is a further breakdown of the novel subject matter. <symbol-position>: 1-position alphabetic (uppercase) - will contain "F" defining "first" for the sole or first "invention information" IPC, and will contain "L" defining "later" for any second and succeeding "invention information" IPC and for any "non-invention information" IPC. The code that specifies the position of the classification symbol. <classification-value>: 1-position alphabetic (uppercase) - will contain "I" defining "invention information" or will contain "N" defining "non-invention information". The code that distinguishes between invention information (invention) and other information (non-invention/additional), when describing a classification symbol on a document. <action-date>: 8-position numeric date in the format YYYYMMDD. This date will be the date of publication for patent applications and the issue date for patent grants <generating-office>: 2-position alphabetic (uppercase) - United States documents will contain "US". <classification-status>: 1-position alphabetic (uppercase) will contain "B" defining "Basic or Original". The code that distinguishes between invention information (invention) and other information (non-invention/additional), when describing a classification symbol on a document <classification-data-source> - 1-position alphabetic (uppercase) - will contain "H" defining "Human-Generated". A future source can be "M" defining "Machine-Generated" and "G" defining "Generated via Software". The code that describes the source of the allocation of the symbol to the patent document. <scheme-organization-code>: 1-position alphabetic code denoting which patent classification scheme the symbol originates from. And, terminated by a </scheme-organization-code> end tag. Example of the Cooperative Patent Classification (CPC) in the <us-field-of-classification-search> and <us-citation> for patents granted on or after January 2013: <classification-cpc-text>H04M 2/02</classification-cpc-text> <classification-cpc-text>H04M 2/0202</classification-cpc-text>. Table 7 - UTF-8 Character Encoding Table and Private Use Character Entities. Unicode Character is “&#x21”, Displayed Character is “!”, Description is “exclamation point”. Unicode Character is “&#x23”, Displayed Character is “#”, Description is “number sign”. Unicode Character is “&#x25”, Displayed Character is “%”, Description is “percent sign”. Unicode Character is “&#x26”, Displayed Character is “&”, Description is “ampersand”. Unicode Character is “&#x27”, Displayed Character is “'”, Description is “apostrophe”. Unicode Character is “&#x2b”, Displayed Character is “+”, Description is “plus sign”, Unicode Character is “&#x3c”, Displayed Character is “<”, Description is “less than”. Unicode Character is “&#x3d”, Displayed Character is “=”, Description is “equal sign”. Unicode Character is “&#x3e”, Displayed Character is “>”, Description is “greater than”. Unicode Character is “&#x3f”, Displayed Character is “?”, Description is “question mark”. Unicode Character is “&#x40”, Displayed Character is “@”, Description is “at sign”. Unicode Character is “&#x5b”, Displayed Character is “[“, Description is “open bracket”. Unicode Character is “&#x5c”, Displayed Character is “\”, Description is “reverse solidus”. Unicode Character is “&#x5d”, Displayed Character is “]”, Description is “close bracket”. Unicode Character is “&#x5e”, Displayed Character is “^”, Description is “circumflex accent”. Unicode Character is “&#x60”, Displayed Character is “`”, Description is “grave”. Unicode Character is “&#x7b”, Displayed Character is “{“, Description is “open brace.” Unicode Character is “&#x7c”, Displayed Character is “|”, Description is “vertical bar”. Unicode Character is “&#x7d”, Displayed Character is “}”, Description is “close brace”. Unicode Character is “&#xa2”, Displayed Character is “¢”,

Description is “cent sign”. Unicode Character is “&#xa3”, Displayed Character is “£”, Description is “English pound”. Unicode Character is “&#xa4”, Displayed Character is “¤”, Description is “currency sign”. Unicode Character is “&#xa5”, Displayed Character is “¥”, Description is “yen”. Unicode Character is “&#xa6”, Displayed Character is “¦”, Description is “broken vertical bar”. Unicode Character is “&#xa7”, Displayed Character is “§", Description is “section symbol”. Unicode Character is “&#xa9”, Displayed Character is “©”, Description is “copyright symbol”. Unicode Character is “&#xae”, Displayed Character is “®”, Description is “registered trademark symbol”. Unicode Character is “&#xb0”, Displayed Character is “º”, Description is “degree”, Unicode Character is “&#xb1”, Displayed Character is “±”, Description is “plus or minus”. Unicode Character is “&#xb4”, Displayed Character is “´”, Description is “Acute accent”. Unicode Character is “&#xb6”, Displayed Character is “¶”, Description is “paragraph sign (pilcrow sign)”. Unicode Character is “&#xb7”, Displayed Character is “·”, Description is “multiplication dot”. Unicode Character is “&#xba”, Displayed Character is “º”, Description is “masculine ordinal indicator”. Unicode Character is “&#xbc”, Displayed Character is “¼”, Description is “fraction ¼”. Unicode Character is “&#xbd”, Displayed Character is “½”, Description is “fraction ½”. Unicode Character is “&#xbe”, Displayed Character is “¾”, Description is “fraction ¾”. Unicode Character is “&#xbf”, Displayed Character is “¿”, Description is “inverted question mark”. Unicode Character is “&#xc0”, Displayed Character is “À”, Description is “uppercase A with grave”. Unicode Character is “&#xc1”, Displayed Character is “Á”, Description is “uppercase A with acute”. Unicode Character is “&#xc2”, Displayed Character is “Â”, Description is “uppercase A with circumflex”. Unicode Character is “&#xc3”, Displayed Character is “Ã”, Description is “uppercase A with tilde”. Unicode Character is “&#xc4”, Displayed Character is “Ä”, Description is “uppercase A with umlaut (diaeresis)”. Unicode Character is “&#xc5”, Displayed Character is “Å”, Description is “uppercase A with ring”. Unicode Character is “&#xc6”, Displayed Character is “Æ”, Description is “Latin uppercase AE”. Unicode Character is “&#xc7”, Displayed Character is “Ç”, Description is “uppercase C with cedilla”. Unicode Character is “&#xc8”, Displayed Character is “È”, Description is “uppercase E with grave”. Unicode Character is “&#xc9”, Displayed Character is “É”, Description is “uppercase E with acute”. Unicode Character is “&#xca”, Displayed Character is “Ê”, Description is “uppercase E with circumflex”. Unicode Character is “&#xcb”, Displayed Character is “Ë”, Description is “uppercase E with umlaut (diaeresis)”. Unicode Character is “&#xcc”, Displayed Character is “Ì”, Description is “uppercase I with grave.” Unicode Character is “&#xcd”, Displayed Character is “Í”, Description is “uppercase I with acute”. Unicode Character is “&#xce”, Displayed Character is “Î”, Description is “uppercase I with circumflex”. Unicode Character is “&#xcf”, Displayed Character is “Ï”, Description is “uppercase I with umlaut (diaeresis)”. Unicode Character is “&#xd0”, Displayed Character is “Ð”, Description is “Latin uppercase ETH”. Unicode Character is “&#xd1”, Displayed Character is “Ñ”, Description is “uppercase N with tilde”. Unicode Character is “&#xd2”, Displayed Character is “Ò”, Description is “uppercase O with grave”. Unicode Character is “&#xd3”, Displayed Character is “Ó”, Description is “uppercase O with acute”. Unicode Character is “&#xd4”, Displayed Character is “Ô”, Description is “uppercase O with circumflex”. Unicode Character is “&#xd5”, Displayed Character is “Õ”, Description is “uppercase O with tilde”. Unicode Character is “&#xd6”, Displayed Character is “Ö”, Description is “uppercase O with with umlaut (diaeresis)”. Unicode Character is “&#xd7”, Displayed Character is “×”, Description is “multiplication sign”. Unicode Character is “&#xd8”, Displayed Character is “Ø”, Description is “uppercase O with slash/stroke”. Unicode Character is “&#xd9”, Displayed Character is “Ù”, Description is “uppercase U with grave”. Unicode Character is “&#xda”, Displayed Character is “Ú”, Description is “uppercase U with acute”. Unicode Character is “&#xdb”, Displayed Character is

“Ú”, Description is “uppercase O with circumflex”. Unicode Character is “&#xdc”, Displayed Character is “Ü”, Description is “uppercase U with with umlaut (diaeresis)”. Unicode Character is “&#xdd”, Displayed Character is “Ý”, Description is “uppercase Y with acute”. Unicode Character is “&#xde”, Displayed Character is “Þ”, Description is “uppercase THORN”. Unicode Character is “&#xdf”, Displayed Character is “ß”, Description is “Latin lowercase letter sharp S”. Unicode Character is “&#xe0”, Displayed Character is “à”, Description is “lowercase a with grave.” Unicode Character is “&#xe1”, Displayed Character is “á”, Description is “lowercase a with acute”. Unicode Character is “&#xe2”, Displayed Character is “â”, Description is “lowercase a with circumflex”. Unicode Character is “&#xe3”, Displayed Character is “ã”, Description is “lowercase a with tilde”. Unicode Character is “&#xe4”, Displayed Character is “ä”, Description is “lowercase a with umlaut (diaeresis)”. Unicode Character is “&#xe5”, Displayed Character is “å”, Description is “lowercase a with ring”. Unicode Character is “&#xe6”, Displayed Character is “æ”, Description is “Latin lowercase ae”. Unicode Character is “&#xe7”, Displayed Character is “ç”, Description is “lowercase c with cedilla”. Unicode Character is “&#xe8”, Displayed Character is “è”, Description is “lowercase e with grave”. Unicode Character is “&#xe9”, Displayed Character is “é”, Description is “lowercase e with acute”. Unicode Character is “&#xea”, Displayed Character is “ê”, Description is “lowercase e with circumflex”. Unicode Character is “&#xeb”, Displayed Character is “ë”, Description is “lowercase e with umlaut (diaeresis)”. Unicode Character is “&#xec”, Displayed Character is “ì”, Description is “lowercase I with grave”. Unicode Character is “&#xed”, Displayed Character is “í”, Description is “lowercase I with acute”. Unicode Character is “&#xee”, Displayed Character is “î”, Description is “lowercase I with circumflex”. Unicode Character is “&#xef”, Displayed Character is “ï”, Description is “lowercase I with umlaut (diaeresis)”. Unicode Character is “&#xf0”, Displayed Character is “ð”, Description is “Latin lowercase eth”. Unicode Character is “&#xf1”, Displayed Character is “ñ”, Description is “lowercase n with tilde”. Unicode Character is “&#xf2”, Displayed Character is “ò”, Description is “lowercase o with grave”. Unicode Character is “&#xf3”, Displayed Character is “ó”, Description is “lowercase o with acute”. Unicode Character is “&#xf4”, Displayed Character is “ô”, Description is “lowercase o with circumflex”. Unicode Character is “&#xf5”, Displayed Character is “õ”, Description is “lowercase o with tilde”. Unicode Character is “&#xf6”, Displayed Character is “ö”. Description is “lowercase o with umlaut (diaeresis)”. Unicode Character is “&#xf7”, Displayed Character is “÷”, Description is “division sign”. Unicode Character is “&#xf8”, Displayed Character is “ø”, Description is “lowercase o with slash/stroke”. Unicode Character is “&#xf9”, Displayed Character is “ù”, Description is “lowercase u with grave”. Unicode Character “&#xfa”, Displayed Character is “ú”, Description is “lowercase u with acute”. Unicode Character is “&#xfb”, Displayed Character is “û”, Description is “lowercase u with circumflex.” Unicode Character is “&#xfc”, Displayed Character is “ü”, Description is “lowercase u with umlaut (diaeresis)”. Unicode Character is “&#xfd”, Displayed Character is “ý”, Description is “lowercase y with acute”. Unicode Character is “&#xfe”, Displayed Character is “þ”, Description is “lowercase thorn”. Unicode Character is “&#xff”, Displayed Character is “ÿ”, Description is “lowercase y with umlaut (diaeresis)”. Unicode Character is “&#x100”, Displayed Character is “A”, Description is “uppercase A with macron”. Unicode Character is “&#x101”, Displayed Character is “a”, Description is “lowercase a with macron”. Unicode Character is “&#x106”, Displayed Character is “C”, Description is “uppercase C with acute”. Unicode Character is “&#x107”, Displayed Character is “c”, Description is “lowercase c with acute”. Unicode Character is “&#x108”, Displayed Character is “C”, Description is “uppercase C with circumflex”. Unicode Character is “&#x109”, Displayed Character is “c”, Description is “lowercase c with circumflex”. Unicode Character is “&#x10a”, Displayed Character is “C”, Description is “uppercase C with dot”. Unicode Character is “&#x10b”, Displayed Character is “c”, Description

is “lowercase c with dot”. Unicode Character is “&#x112”, Displayed Character is “E”, Description is “uppercase E with macron”. Unicode Character is “&#x113”, Displayed Character is “e”. Description is “lowercase e with macron.” Unicode Character is “&#x116”, Displayed Character is “E”, Description is “uppercase E with dot”. Unicode Character is “&#x117”, Displayed Character is “e”, Description is “lowercase e with dot”. Unicode Character is “&#x11c”, Displayed Character is “G”, Description is “uppercase G with circumflex”. Unicode Character is “&#x11d”, Displayed Character is “g”, Description is “lowercase g with circumflex”. Unicode Character is “&#x120”, Displayed Character is “G”, Description is “uppercase G with dot”. Unicode Character is “&#x121”, Displayed Character is “g”, Description is “lowercase g with dot”. Unicode Character is “&#x124”, Displayed Character is “H”, Description is “uppercase H with circumflex”. Unicode Character is “&#x125”, Displayed Character is “h”, Description is “lowercase h with circumflex”. Unicode Character is “&#x128”, Displayed Character is “I”, Description is “uppercase I with tilde”. Unicode Character is “&#x129”, Displayed Character is “i", Description is “lowercase I with tilde”. Unicode Character is “&#x12a”, Displayed Character is “I”, Description is “uppercase H with macron”. Unicode Character is “&#x12b”, Displayed Character is “i", Description is “lowercase I with macron”. Unicode Character is “&#x130”, Displayed Character is “I”, Description is “uppercase I with dot”. Unicode Character is “&#x134”, Displayed Character is “J”, Description is “uppercase J with circumflex”. Unicode Character is “&#x135”, Displayed Character is “j”, Description is “lowercase j with circumflex”. Unicode Character is “&#x139”, Displayed Character is “L”, Description is “uppercase L with acute”. Unicode Character is “&#x13a”, Displayed Character is “l”, Description is “Lowercase L with acute”. Unicode Character is “&#x142”, Displayed Character is “l”, Description is “lowercase L with slash/stroke”. Unicode Character is “&#x143”, Displayed Character is “N”, Description is “uppercase N with acute”. Unicode Character is “&#x144”, Displayed Character is “n”, Description is “lowercase n with acute”. Unicode Character is “&#x14c”, Displayed Character is “O”, Description is “uppercase O with acute”. Unicode Character is “&#x14d”, Displayed Character is “o”, Description is “lowercase o with macron”. Unicode Character is “&#x153”, Displayed Character is “oe”, Description is “lowercase ligature oe”. Unicode Character is “&#x154”, Displayed Character is “R”, Description is “uppercase R with acute”. Unicode Character is “&#x155”, Displayed Character is “r”, Description is “lowercase r with acute”. Unicode Character is “&#x15a”, Displayed Character is “S”, Description is “uppercase S with acute”. Unicode Character is “&#x15b”, Displayed Character is “s”, Description is “ lowercase s with acute”. Unicode Character is “&#x15c”, Displayed Character is “S”, Description is “uppercase S with circumflex”. Unicode Character is “&#x15d”, Displayed Character is “s”, Description is “lowercase s with circumflex”, Unicode Character is “&#x168”, Displayed Character is “U”, Description is “uppercase U with tilde”. Unicode Character is “&#x169”, Displayed Character is “u”, Description is “lowercase u with tilde”. Unicode Character is “&#x16a”, Displayed Character is “U”, Description is “uppercase U with macron”. Unicode Character is “&#x16b”, Displayed Character is “u”, Unicode Character is “lowercase u with macron”. Unicode Character is “&#x174”, Displayed Character is “W”, Description is “uppercase W with circumflex”. Unicode Character is “&#x175”, Displayed Character is “w”, Description is “lowercase w with circumflex”. Unicode Character is “&#x176”, Displayed Character is “Y”, Description is “uppercase Y with circumflex”. Unicode Character is “&#x177”, Displayed Character is “y”, Description is “lowercase y with circumflex”. Unicode Character is “&#x178”, Displayed Character is “Ÿ”, Description is “uppercase Y with umlaut (diaeresis)”. Unicode Character is “&#x179”, Displayed Character is “Z”, Description is “uppercase Z with acute”. Unicode Character is “&#x17a”, Displayed Character is “z”, Description is “lowercase y with acute”. Unicode Character is “&#x17b”, Displayed Character is “Z”, Description is “uppercase z

with dot". Unicode Character is "&#x17c", Displayed Character is "ż", Description is "lowercase z with dot". Unicode Character is "&#x192", Displayed Character is "ƒ", Description is "function". Unicode Character is "&#x1f5", Displayed Character is ".", Description is "lowercase g with acute". Unicode Character is "&#x2dc", Displayed Character is "˜", Description is "difference (tilde)" Unicode Character is "&#x393", Displayed Character is "Γ", Description is "greek gamma – uppercase". Unicode Character is "&#x394", Displayed Character is "Δ", Description is "greek delta – uppercase (increment)". Unicode Character is "&#x395", Displayed Character is "Γ", Description is "greek epsilon – uppercase". Unicode Character is "&#x398", Displayed Character is "Θ", Description is "greek theta – uppercase". Unicode Character is "&#x39b", Displayed Character is "Λ", Description is "greek lamda – uppercase". Unicode Character is "&#x39e", Displayed Character is "Ξ", Description is "greek xi – uppercase". Unicode Character is "&#x3a0", Displayed Character is "Π", Description is "greek pi – uppercase". Unicode Character is "&#x3a3", Displayed Character is "Σ", Description is "greek sigma- uppercase". Unicode Character is "&#x3a5", Displayed Character is "Υ", Description is "greek upsilon – uppercase". Unicode Character is "&#x3a6", Displayed Character is "Φ", Description is "greek phi – uppercase". Unicode Character is "&#x3a8", Displayed Character is "Ψ", Description is "greek psi – uppercase". Unicode Character is "&#x3a9", Displayed Character is "Ω", Description is "greek omega – uppercase". Unicode Character is "&#x3b1", Displayed Character is "α", Description is "greek alpha – lowercase", Unicode Character is "&#x3b2", Displayed Character is "ß", Description is "greek beta". Unicode Character is "&#x3b3", Displayed Character is "γ", Description is "greek gamma – lowercase". Unicode Character is "&#x3b4", Displayed Character is "δ", Description is "greek delta – lowercase". Unicode Character is "&#x3b5", Displayed Character is "ε", Description is "greek epsilon – lowercase". Unicode Character is "&#x3b6", Displayed Character is "ζ", Description is "greek zeta – lowercase". Unicode Character is "&#x3b7", Displayed Character is "η", Description is "greek eta – lowercase". Unicode Character is "&#x3b8", Displayed Character is "θ", Description is "greek theta – lowercase". Unicode Character is "&#x3b9", Displayed Character is "ι", Description is "greek iota – lowercase". Unicode Character is "&#x3ba", Displayed Character is "κ", Description is "greek kappa – lowercase". Unicode Character is "&#x3bb", Displayed Character is "λ", Description is "greek lamda – lowercase". Unicode Character is "&#x3bc", Displayed Character is "μ", Description is "greek mu – lowercase". Unicode Character is "&#x3bd", Displayed Character is "ν", Description is "greek nu – lowercase". Unicode Character is "&#x3be", Displayed Character is "ξ", Description is "greek xi – lowercase". Unicode Character is "&#x3bf", Displayed Character is "ο", Description is "greek omicron – lowercase". Unicode Character is "&#x3c0", Displayed Character is "π", Description is "greek pi – lowercase". Unicode Character is "&#x3c1", Displayed Character is "ρ", Description is "greek rho – lowercase". Unicode Character is "&#x3c3", Displayed Character is "ς", Description is "greek sigma – lowercase". Unicode Character is "&#x3c4", Displayed Character is "τ", Description is "greek tau – lowercase". Unicode Character is "&#x3c5", Displayed Character is "υ", Description is "greek upsilon – lowercase". Unicode Character is "&#x3c6", Displayed Character is "φ", Description is "greek phi – lowercase". Unicode Character is "&#x3c7", Displayed Character is "χ", Description is "greek chi – lowercase". Unicode Character is "&#x3c8", Displayed Character is "ψ", Description is "greek psi – lowercase". Unicode Character is "&#x3c9", Displayed Character is "ω", Description is "greek omega – lowercase". Unicode Character is " ", Description is "en space". Unicode Character is " ", Description is "em space". Unicode Character is " ", Description is "thin space". Unicode Character is "&#x2013", Displayed Character is "–", Description is "en dash". Unicode Character is "&#x2014", Displayed Character is "—", Description is "em dash". Unicode Character is "&#x2018", Displayed Character is "‘",

Description is “single open quote”. Unicode Character is “&#x2019”, Displayed Character is “’”, Description is “single close quote”. Unicode Character is “&#x201c”, Displayed Character is “”“, Description is “double open quote”. Unicode Character is “&#x201d”, Displayed Character is “””, Description is “double close quote”. Unicode Character is “&#x2020”, Displayed Character is “†”, Description is “dagger”. Unicode Character is “&#x2021”, Displayed Character is “‡”, Description is “double dagger”. Unicode Character is “&#x2022”, Displayed Character is “•”, Description is “bullet”. Unicode Character is “&#x2025”, Displayed Character is “..”, Description is “Two dot leader”. Unicode Character is “&#x2030”, Displayed Character is “‰”, Description is “salinity”. Unicode Character is “&#x2032”, Displayed Character is “’”, Description is “prime”. Unicode Character is “&#x2033”, Description is “double prime”. Unicode Character is “&#x2111”, Description is “uppercase black-letter I (Fourier).” Unicode Character is “&#x2122”, Displayed Character is “™”, Description is “trademark”. Unicode Character is “&#x212b”, Displayed Character is “Å”, Description is “angstrom sign”. Unicode Character is “&#x2153”, Displayed Character = “1/3”, Description is “fraction 1/3”. Unicode Character is “&#x2154”, Displayed Character is “2/3”, Description is “fraction 2/3”. Unicode Character is “&#x2155”, Displayed Character is “1/5”, Description is “fraction 1/5”. Unicode Character is “&#x2156”, Displayed Character is “2/5”, Description is “fraction 2/5”. Unicode Character is “&#x2157”, Displayed Character is “3/5”, Description is “fraction 3/5”. Unicode Character is “&#x2158”, Displayed Character is “4/5”, Description is “fraction 4/5”. Unicode Character is “&#x2159”, Displayed Character is “1/6”, Description is “fraction 1/6”. Unicode Character is “&#x215a”, Displayed Character is “5/6”, Description is “fraction 5/6”. Unicode Character is “&#x215b”, Displayed Character is “1/8”, Description is “fraction 1/8”. Unicode Character is “&#x215c”, Displayed Character is “3/8”, Description is “fraction 3/8”. Unicode Character is “&#x215d”, Displayed Character is “5/8”, Description is “fraction 5/8”. Unicode Character is “&#x215e”, Displayed Character is “7/8”, Description is “fraction 7/8”. Unicode Character is “&#x2190”, Description is “arrow – left”, Unicode Character is “&#x2191”, Description is “arrow – up”. Unicode Character is “&#x2192”, Description is “arrow – right”. Unicode Character is “&#x2193”, Description is “arrow – down”. Unicode Character is “&#x2194”, Description is “reversible reaction”. Unicode Character is “&#x21c4”, Description is “reversible reaction”. Unicode Character is “&#x21d1”, Description is “upward double arrow”. Unicode Character is “&#x21d3”, Description is “downward double arrow”. Unicode Character is “&#x2200”, Description is “for all”. Unicode Character is “&#x2202”, Description is “differential”. Unicode Character is “&#x2203”, Description is “there exists”. Unicode Character is “&#x2205”, Displayed Character is “Ø”, Description is “bold slashed zero”. Unicode Character is “&#x2207”, Description is “gradient (NABLA)”. Unicode Character is “&#x2208”, Description is “element of”. Unicode Character is “&#x2209”, Description is “not an element of”. Unicode Character is “&#x2212”, Displayed Character is “-“, Description is “minus sign”. Unicode Character is “&#x2213”, Displayed Character is “±”, Description is “minus or plus”. Unicode Character is “&#x2218”, Description is “ring operator”. Unicode Character is “&#x221a”, Description is “square root”. Unicode Character is “&#x221d”, Description is “varies as (proportional)”. Unicode Character is “&#x221e”, Description is “infinity”. Unicode Character is “&#x2220”, Description is “angle”. Unicode Character is “&#x2225”, Description is “parallel to”. Unicode Character is “&#x2229”, Description is “and gate (intersection)”. Unicode Character is “&#x222a”, Description is “or gate (union)”, Unicode Character is “&#x222b”, Description is “integral”. Unicode Character is “&#x2234”, Description is “therefore”. Unicode Character is “&#x2235”, Description is “because”. Unicode Character is “&#x223c”, Displayed Character is “~”, Description is “difference (similar) (tilde operator)”. Unicode Character is “&#x2243”, Description is “perspective to (asymptotically equal to)”. Unicode Character is “&#x2245”, Description is “congruent (approximately equal to)”.

Unicode Character is “&#x2248”, Description is “almost equal to”. Unicode Character is “&#x2250”, Description is “approaches the limit”. Unicode Character is “&#x2260”, Description is “not equal”. Unicode Character is “&#x2261”, Description is “identical (equivalent) – (triple bond)”. Unicode Character is “&#x2262”, Description is “not identical (not equivalent)”. Unicode Character is “&#x2264”, Description is “less than or equal to”. Unicode Character is “&#x2265”, Description is “greater than or equal to”. Unicode Character is “&#x2266”, Description is “less than or equal to”. Unicode Character is “&#x2267”, Description is “greater than or equal to”. Unicode Character is “&#x226e”, Description is “not less than”. Unicode Character is “&#x226f”, Description is “not greater than”. Unicode Character is “&#x2272”, Description is “less than or approximately equal to”. Unicode Character is “&#x2273”, Description is “greater than or approximately equal to”. Unicode Character is “&#x2282”, Description is “OR, right (subset of)”. Unicode Character is “&#x2283”, Description is “OR, left (superset of)”. Unicode Character is “&#x2294”, Description is “hoarfrost (square cup)”. Unicode Character is “&#x2295”, Description is “positive earth (circled plus)”. Unicode Character is “&#x2296”, Description is “negative earth (circled minus)”. Unicode Character is “Unicode Character is “&#x2299”, Description is “circled dot operator”. Unicode Character is “&#x229a”, Description is “circled ring operator”. Unicode Character is “&#x22a5”, Description is “perpendicular (up tack)”. Unicode Character is “&#x22c4”, Description is “diamond operator”. Unicode Character is “&#x22c5”, Description is “solid dot operator”. Unicode Character is “&#x22c6”, Description is “star operator”. Unicode Character is “&#x2423”, Description is “hoarfrost (open box)”. Unicode Character is “&#x250c”, Description is “box drawings light down and right”, Unicode Character is “&#x2510”, Description is “box drawings light down and left”. Unicode Character is “&#x2514”, Description is “box drawings light up and right”. Unicode Character is “&#x2518”, Description is “box drawings light up and left”. Unicode Character is “&#x251c”, Description is “box drawings light vertical and right &#x2524”, Description is “box drawings light vertical and left”. Unicode Character is “&#x2550”, Description is “double bond - box drawing double horizontal”. Unicode Character is “&#x25a1”, Description is “quadrature (white square)”. Unicode Character is “&#x25aa”, Description is “black small square”. Unicode Character is “&#x25ad”, Description is “white rectangle”. Unicode Character is “&#x25b4”, Description is “black up-pointing triangle”. Unicode Character is “&#x25be”, Description is “black down-pointing triangle”. Unicode Character is “&#x25cb”, Description is “white circle”. Unicode Character is “&#x25ef”, Description is “large circle”. Unicode Character is “&#x2605”, Description is “black star”. Unicode Character is “&#x2640”, Description is “female symbol”. Unicode Character is “&#x2642”, Description is “male symbol”. Unicode Character is “&#x2666”, Description is “black diamond”. Unicode Character is “&#x266d”, Description is “music – flat”. Unicode Character is “&#x266e”, Description is “music – natural”, Unicode Character is “&#x266f”, Description is “music – sharp”. Unicode Character is “&#x2713”, Description is “check mark”. Unicode Character is “&#x203b”, Description is “reference mark”. Unicode Character is “&#x2104”, Description is “centre line symbol”. Unicode Character is “&#x210f”, Description is “Planck constant over two pi (h-slashed)”. Unicode Character is “&#x21c4”, Description is “reversible reaction”. Unicode Character is “&#x25ac”, Description is “black rectangle”. Unicode Character is “&#x25ae”, Description is “black vertical rectangle”. Unicode Character is “&#x25cf”, Description is “black circle”. Unicode Character is “&#x2665”, Description is “hearts”. Private Use Character Entities. The following 14 Private Use Character Entities will be replaced with a <img> tag that will reference an external Image file. WIPO Character Entities ” Dotbhalfcircle”, Description “dotted bottom half of a circle”. WIPO Character Entities ”Dotthalfcircle”, Description “dotted top half of a circle”. WIPO Character Entities ”Dotlhalfcircle”, Description “dotted left half of a circle”. WIPO Character Entities ”Dotrhalfcircle”, Description “dotted right half of a circle”. WIPO Character Entities ”Lhalfcircle”,

Description “left half of a circle”. WIPO Character Entities ”Quadbond”, Description “quad bond”. WIPO Character Entities ”Rhalfcircle”, Description “right half of a circle”. WIPO Character Entities ”Ovalhollow”, Description “oval hollow”. WIPO Character Entities ”Ovalsolid”, Description “oval solid”. WIPO Character Entities ”Linevertsplit”, Description “line verticle split”. WIPO Character Entities ”Parenopenst”, Description “parenthesis open strike through”. WIPO Character Entities ”Parenclosest”, Description “parenthesis close strike through”. WIPO Character Entities ”Brketopenst”, Description “bracket open strike through”. WIPO Character Entities ”Brketclosest”, Description “bracket close strike through”.
Table 8 - Processing instructions: Processing instructions are used to pass information to applications in a way that escapes XML rules. Their appearance is not noted by schema or DTD processors. When the U.S. Patent and Trademark Office went from WIPO Standard ST. 32: Recommendation for the Markup of Patent Documents using SGML (Standard Generalized Markup Language) to WIPO Standard ST. 36: Recommendation for the Processing of Patent Documents using XML (Extensible Markup Language) it introduced processing instructions to retain markup that existed as SGML tags in ST. 32 but were no longer present in ST. 36. The following processing instructions began with the January 2, 2007 patent grant issue in U.S. Patent Grant Data/XML (International Common Elements - ICE) v4.2 files. Note: Each processing instruction begins with <? and end with ?>. #1. The start and end Processing Instruction that identifies the Brief Summary content: <?BRFSUM description="Brief Summary" end="lead"?>
.
.
.
<?BRFSUM description="Brief Summary" end="tail"?> #2. The start and end Processing Instruction that identifies the Brief Description of Drawings content: <?brief-description-of-drawings description="Brief Description of Drawings" end="lead"?> . . . <?brief-description-of-drawings description="Brief Description of Drawings" end="tail"?> #3. The start and end Processing Instruction that identifies the Detailed Description content: <?DETDESC description="Detailed Description" end="lead"?> . ... <?DETDESC description="Detailed Description" end="tail"?> #4. The start and end Processing Instruction that identifies the Government Interest content: <?GOVINT description="Government Interest" end="lead"?> . . . <?GOVINT description=" Government Interest " end="tail"?> #5. The Processing Instruction used in those rare instances when a custom character or image is encountered in a content model that does not support images.Attributes: id - image identification; he - image height in mm (units included); wi - image width in mm (units included); file - image file name; alt - alternative description; img-content - image content type (drawing, character); img-format - image format type (always tif) .Examples: <?img id="CUSTOM-CHARACTER-00001" he="2.12mm" wi="2.46mm" file="US06759385-yyyymmdd-P00801.TIF" alt="custom character" img-content="character" img-format="tif" ?> <?img id="EMI-00001" he="301.84mm" wi="208.45mm" file="US06760683-yyyymmdd-P00001.TIF" alt="embedded image" img-content="drawing" img-format="tif" ?> #6. The start and end Processing Instruction that identifies an In-line Formula/Equation: <?in-line-formulae description="In-line Formulae" end="lead"?> . <?in-line-formulae description="In-line Formulae" end="tail"?> #7. The start and end Processing Instruction that identifies the url for the Publication Site for Issued and Published Sequences - PSIPS Lengthy Sequence Listings: <?PSIPSURL description="PSIPS url" end="tail"?> . <? PSIPSURL description="PSIPS url" end="lead"?> #8. The start and end Processing Instruction that identifies the Other Patent Relations: <?RELAPP description="Other Patent Relations" end="lead"?> =. . . <?RELAPP description="Other Patent Relations"

end="tail"?> #9. The start and end Processing Instruction that identifies deleted information in a Reissue Patent: <?delete-start id="DEL-S-00001" date="yyyymmdd" ?> deleted text <?delete-end id="DEL-S-00001" ?> #10. The start and end Processing Instruction that identifies inserted information in a Reissue Patent: <?insert-start id="INS-S-00001" date="yyyymmdd" ?> inserted text <?insert-end id="INS-S-00001" ?> #11. The standard XML declaration that is present in every patent grant XML instance: <?xml version="1.0" encoding="UTF-8"?>