

HANDBOOK OF CLASSIFICATION



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Handbook of Classification

Table of Contents

INTRODUCTION, 1

I. ORGANIZATION OF INFORMATION, 3

A. Bases of Classification, 3

1. Industry or Use, 3
2. Proximate Function, 3
3. Effect or Product, 4
4. Structure, 4
5. Multiple Aspect Schedules, 4

B. U.S. Patent Classification System Organization, 5

II. PATENT DOCUMENT ANALYSIS FOR PLACEMENT INTO SYSTEM (CLAIMED DISCLOSURE), 9

III. DETERMINATION OF A CLASS FOR ORIGINAL CLASSIFICATION OR ASSIGNMENT FOR EXAMINATION, 11

A. Original Placement Between Classes, 11

1. Selection of the Most Comprehensive Claim, 12
2. Selection Among Categories of Subject Matter, 14
3. Selection Among Superiority of Types of Subject Matter, 15
4. Selection Among Classes in “Related Subject” Listing (Last Resort Only), 15
5. Exceptions, 15

IV. SELECTION OF LOCUS FOR PLACEMENT, 17

A. Selecting a Class, 17

1. Index to the U.S. Patent Classification System, 17
2. Classes Within the U.S. Classification System Arranged by Related Subject, 17
3. Alphabetic or Numeric Listing of Classes, 17
4. Subclass Titles, 17
5. Electronic Tools, 18
6. Exceptions and Caveats, 18

B. Selecting a Subclass Within a Class, 19

1. Schedule Order, 21
2. Inclusive Nature of Subclasses, 22

Handbook of Classification

3. Additional Types of Art Collections, 25
4. General Methodology, 28
5. Combination-Subcombination Rule, 29
6. Genus-Species Rule, 29
7. Placement of Markush Type Claims, 31
8. Classification of Combinatorial Libraries, 31
9. Mixed Array (Genus-Species and Combination-Subcombination), 32
10. Placement Within Alpha Arrays, 33

V. ORIGINALS VS. CROSS-REFERENCES, 35

A. Mandatory Classifications, 35

B. Discretionary Classifications, 35

1. Cross-References to Any Part of System, 35
2. Cross-Referenced Subject Matter Should Fit Subclass Definition, 35
3. Techniques Used to Limit Cross-Referencing, 35

C. Body of Art, 37

VI. CLASSIFICATION OF DESIGN PATENTS, 39

A. Purpose, 39

B. Theory, 39

C. Design Patent Classes, 39

1. Organization of Design Classes, 40
2. Relationship to Utility Classes, 42

D. Definitions, 42

E. Hierarchy, 43

F. Unique Features of Design Patent Classification, 43

1. Exclusion Notes, 43
2. Search Notes, 43
3. Cross-Reference Art Collections and Digests, 44

G. Placement Rules for Design Patents, 44

H. Locarno International Classification of Designs, 45

Handbook of Classification

VII. CLASSIFICATION OF PLANT PATENTS, 47

A. Plant Classifications, 47

B. Classification Based on Coloration, 47

ADDENDUM, 49

Reclassification in Classes 518-585, 49

Appendix A, 51

STRUCTURE OF THE MODERN SCHEDULE, 51

Condition Response (Automatic Control), 53

Measuring and Testing, 54

Special "A", 54

Convertible, 54

Combined, 55

Plural "A", 55

Miscellaneous, 55

Handbook of Classification

INTRODUCTION

The USPC system provides for the storage and retrieval of every U.S. patent document. Therefore, in the aggregate, the system must be exhaustive of all patentable subject matter under patent laws. Although the system is primarily designed to assist patent examiners performing patentability searches, the system is used by a wide variety of other users, e.g., patent attorneys and agents, people involved in research and development, and the patrons of the Patent and Trademark Depository Library (PTDL) system.

The present USPC system reflects the uneven growth derived from the first general scheme created in 1900. Classification before 1900 closely paralleled economic groupings of the period with informal and arbitrary subdivisions to provide manageable size collections. Relationships among such patent collections, if they existed, were lost in the alphabetical ordering of titles assigned to each of the col-

lections. Search notes, class and subclass definitions, or schedule explanations either did not exist or, at most, were primitive.

While all of the present major groupings have been “revised” since 1900, each class reflects the theories of classification that existed at the time it was reclassified. The guidelines set forth below are generally applicable only for classes revised since 1940. The location of the “miscellaneous” subclass (if a class includes such a subclass) is an indicator of the age of that class. For example, if the “miscellaneous” subclass is placed in any location other than as the last subclass in the schedule, it can be assumed that the class was reclassified before 1940. For further information on the date that a class was established, see <http://ptoweb:8081/clsdate/index.html>.

Handbook of Classification

I. ORGANIZATION OF INFORMATION

A. Bases of Classification

A variety of rationales have been developed over the years to subdivide our classification files into searchable units. Collections of art based on each of the following rationales can be found in the U.S. Patent Classification system as it exists today. Thus, keep in mind the strengths and weaknesses of each rationale when conducting a search.

1. Industry or Use

This approach divides art on the basis of the industry employing the art or the use to which a device is put. It provides a unique collection wherein all relevant devices for a given technology are housed in one convenient location. Several original classes were created using this rationale and a number of these classes still exist today, e.g., Bee Culture, Butchering, etc.

A drawback of classifying in the above manner is that physically similar art is separated without a meaningful distinction. If the above classification process is used excessively, there is a greater chance of issuing two patents for the same idea. To illustrate, the 1872 classification system separated cooling devices on the basis of the product treated in these devices; e.g., beer or milk. These cooling de-

vices could well be analogous and both should be considered in performing any search for cooling devices, per se.

2. Proximate Function

To avoid fragmenting the art based on its industry or use, the U.S. Patent and Trademark Office uses the fundamental, direct, or necessary function as the principal basis of classification. Also, for brevity, the term “proximate” is substituted for the words fundamental, direct, or necessary. Therefore, “proximate” function means that similar processes or structures that achieve similar results by the application of similar natural laws to similar substances are considered to have the same fundamental utility and are grouped together. Our current system provides a single collecting area for all heat exchange devices; e.g., milk coolers, beer coolers, etc. Once collected into this single area, the art is further subdivided on features essential to heat exchange devices.

The term “utility” refers to (1) the function that a process, structure, or composition can perform; (2) the effect of a process, structure, or composition; or (3) the product that is produced by a process, structure, or composition. The proximate function, when used as a basis for classification, is generally applied to a process, structure, or composition for performing general operations in which a single

Handbook of Classification

causative characteristic can be identified and which requires essentially a single unitary act; e.g., agitating, cutting, heating, filtering, etc.

3. Effect or Product

This rationale collects art into industrial or trade groupings based on the result produced by the art. This result may be tangible (e.g., the product of a manufacturing process) or intangible (e.g., the communication of sound at a distance). In the mechanical and electrical fields, this method of grouping is generally reserved for complex processes or structures requiring successive manipulations involving plural acts; e.g., telephone system, shoemaking machine, etc. In the chemical fields, processes involving chemical reactions often are classified on the basis of the product produced.

4. Structure

Simple subject matter having no apparent functional characteristics is classified based on the structural configuration or physical makeup of the object. This situation rarely arises with respect to the creation of a large group or class in mechanical fields, but frequently occurs with respect to subdivisions within such group or class.

A chemical compound is always classified on the basis of structure, and a stock material is often classified on the basis of structure. The chemical structure of compounds and the components and arrangement of the compo-

nents of a stock material determine their classification, irrespective of the utility or utilities involved.

Since the properties of mixtures, or compositions, are not predictable to the same degree as are the properties of chemical compounds, utility is usually the primary basis for classification of mixtures. In the case of certain mixtures, however, such as colloids and alloys, the best classification seems to be on the basis of the components per se.

5. Multiple Aspect Schedules

Multiple aspect schedules are a recent development to the USPC that attempt to address the shortcomings associated with dividing art according to any single aspect, or basis. A multiple aspect schedule has subclasses that cover a single category of invention from two or more bases. For example, class 588 covers processes for making harmless toxic waste products. Subclasses 300-400 define these processes for making waste products harmless according to the process steps used, whereas subclasses 401-415 define the processes according to the material being made harmless. This sort of arrangement is particularly well suited to technologies where the inventive subject matter disclosed by the documents takes more than one form (e.g. structure, properties, etc.).

One of the distinguishing characteristics of multiple aspect schedules is that mandatory classification is required in each portion of the schedule covering the different aspects, although not every art area that requires manda-

Handbook of Classification

tory cross-referencing is part of a multiple aspect schedule. Mandatory cross-referencing will be indicated either in the definitions, or in the case of class 588 and newer instances of multiple aspect schedules, by a note in the class schedule.

B. U.S. Patent Classification System Organization

The following description is a brief overview of the USPC system. This description will acquaint you with terms and phrases used in the handbook. Many of these terms and phrases are explained in greater detail later in this handbook.

A fundamental principle of the USPC system is that each class, or part thereof, was created by:

- (1) analyzing the claimed disclosures of the U.S. patents,
- (2) creating various divisions and subdivisions on the basis of that analysis rather than by making a theoretical arrangement or ordering, and, finally,
- (3) classifying the patent documents into the arrangement.

In the USPC system, similar subject matter has been gathered in large groupings to create classes. Each class was then subdivided into smaller units called subclasses. The sequence or pattern arrangement of the subclasses within each class is indicated by the Class Schedule.

Each class and its subclasses, with the exception of alpha subclasses of the utility classes and some of the design classes, have a title and a definition. The title and definition of any subclass in a class schedule are further restricted (a) by the title and definition of the class and (b) by the title and definition of any subclass or subclasses under which they are indented.

The bulk of patent documents classified in the USPC system are U.S. patents. These classifications are designated as either “OR” (Original) or “XR” (Cross-Reference) classifications. The USPTO began publishing U.S. patent applications in March of 2001, and they too are classified in the USPC. These documents, referred to as PGPub documents as they are “Pre-Grant-Publications”, have a mandatory classification called a “Primary” classification and may additionally include “Secondary” classifications.

The OR classification is based on the claims in the patent. It is a mandatory classification assigned to a patent that has the same class as the class of the controlling claim. Only patents designated as Originals, and PGPub documents having Primary classifications in a subclass are used, in conjunction with the definition of the subclass, to define the “body of art” encompassed by the subclass.

A Cross-Reference classification is an additional classification added to a patent to a different subclass in the system. Refer to Sections V and VI in this handbook for more information on this subject.

Handbook of Classification

Every PGPub document must have one, and only one “Primary” classification. The Primary classification for a PGPub document is analogous to the OR classification of a patent.

PGPub documents are also be assigned “Secondary” classifications based on invention information, and on other information considered to be valuable for search. Assignment of secondary classifications based on invention information is mandatory, while secondary classifications based on non-inventive, but otherwise valuable, information are discretionary.

The USPC system also contains many foreign patent documents and non-patent literature references. The procedure for classifying foreign patent documents and non-patent literature in the system is simpler than the procedure for classifying U.S. patent documents. Total disclosure is generally used in classifying foreign patent documents and non-patent literature.

Also, after October 1, 1995, copies of foreign documents in the examiner files were no longer automatically reclassified during a USPC reclassification project. In some cases, the foreign documents associated with a reclassification project remain in the old US classifications, which are transformed into “Foreign Patent Art Collections.” These collections appear at the end of the class that includes the newly created U.S. subclasses.

Foreign Patent Art Collections are identified by their subclass numbers, which include the prefix “FOR,” followed by a 3-digit number.

Each Foreign Patent Art Collection contains, in parentheses at the end of the title, the subclass number in which the foreign patent documents were classified before the reclassification project.

Subclass definitions are maintained for the Foreign Patent Art Collections that exactly correspond to those of the former classification schedule.

Some foreign patents continue to be filed in the examiner search files by IPC class.

E-subclasses are USPC subclasses that are equivalent in scope to classifications in the European Classification system, ECLA, on a one-to-one basis. These subclasses appear at the end of the USPC class schedules in which they exist (at the time of this writing, they exist only in class 257) and can be identified by their subclass numbers, which begin with the letter “E”.

E-subclasses represent a transitional harmonization effort by the USPTO to begin using ECLA classifications. The definitions of E-subclasses state which ECLA classification the E-subclass corresponds to. It may or may not provide a detailed description of the metes and bounds of the art encompassed by the subclass.

Handbook of Classification

The documents classified in E-subclasses should be reviewed to determine the subject matter encompassed by an E-subclass whenever the scope of the subclass cannot be determined from the title or its definition.

E-subclasses are similar to cross-reference art collections in that they cannot take original placements of U.S. patents or Primary classifications of PGPub documents.

At the time of their creation, E-subclasses are populated with documents from their equivalent ECLA classifications. Subsequently, U.S. patent documents are classified and maintained in E-subclasses by USPTO, while the classification and maintenance of non-JP foreign documents is performed by EPO. Foreign documents are regularly placed in the E-subclasses through the DOCDB data supplied to USPTO by the EPO.

An E-subclass title ending with the expression “(EPO)” indicates that documents classified by the EPO have been and are regularly placed in the subclass. An E-subclass title may also include a “(JPO)” suffix which indicates the subclass has JP documents placed by the JPO. This would typically be done for E-subclasses corresponding to IPC level classifications. Even though an E-subclass may not have documents placed by JPO, it should be remembered that EPO has placed many JP documents into ECLA that are classified in the E-subclasses.

In rare instances, an E-subclass may have no “(EPO)” or “(JPO)” suffix on its title. This

indicates the subclass was created solely by USPTO and that there is no equivalent ECLA classification. These E-subclasses are not regularly populated with foreign art from the EPO or JPO. In order to review foreign patent documents pertinent to the subject matter provided for by these E-subclasses, one must review the documents classified in the parent subclass that does provide for them. When a mandatory classification for a U.S. document is placed in a subclass whose title begins with a parenthesized “(E)”, at least one cross-reference classification is normally assigned to an E-subclass at the end of the class schedule. Mandatory classification include OR and Primary classifications, as well as any mandatory XR and Secondary classifications.

Other subclasses, besides E-subclasses, have been harmonized with classification places in other classification systems. The definitions of these harmonized subclasses indicate how and to which systems they concord. A clue that a subclass is a harmonized subclass, when viewing the class schedule, is the “(EPO)” or “(JPO)” suffix appended to the title of the subclass. As with the E-subclasses, this suffix indicates that foreign documents from the concurring subclass in the indicated patent office are regularly classified therein. Whenever the USPC is in need of reclassification, foreign classification systems are consulted to see if they already provide the necessary art breakdowns sufficient for USPTO purposes, in order to take advantage of the foreign documents already classified there. As the USPTO works more closely with its EPO and JPO Trilateral Partners to share reclassification

Handbook of Classification

tion resources, the number of harmonized subclasses in the USPC class schedules will greatly increase.

II. PATENT DOCUMENT ANALYSIS FOR PLACEMENT INTO SYSTEM (CLAIMED DISCLOSURE)

Currently, U.S. patents are the most common documents in the U. S. Patent Classification System.. However, eventually, published pre-grant applications, or PGPub documents, will replace patents as the most common document type. Now, let's look at how patents are classified.

The disclosures of patents are usually multifaceted, and such disclosures are susceptible to varied analyses. To ensure uniform classification of patent documents and to provide for "infringement" type searches, the claimed subject matter interpreted in light of the total disclosure contained in a patent, i.e. the "claimed disclosure", has been selected as the primary informational content of the patent that receives "mandatory classifications". This narrows down to manageable proportions the subjective judgments that must be made relative to the uniform placement of patents.

Inasmuch as the total disclosure of a patent may include unclaimed subject matter having potential search value, adequate provision is made for classifying unclaimed subject matter in the system using "discretionary classifications" (see Section V, below). It must be emphasized that not every item of information included in every patent can or should be classified. Generally, only unclaimed subject matter characterized as (1) new, (2) uniquely set

forth to facilitate recognition, (3) particularly illustrative of significant details or relationships, or (4) providing helpful background or explanatory material, is considered important enough to warrant classification. The type of subject matter examiners wish to have classified into their art on a discretionary basis may vary by class.

This being said, the first step in the process for determining (a) the proper classification of an application for examination, (b) a proper field of search, or (c) the required or "mandatory" classification(s) for an issuing patent grant is to determine precisely what is being claimed.

Each claim in an application or patent must be reviewed to determine which elements or sub-combinations are embraced by that claim. The details of claim analysis exceed the scope of this document. See MPEP § 2111 - § 2116.01 for case law pertinent to claim analysis. Dependent claims add additional sub-combinations or elements to the organization claimed in its parent claim. Whereas each claimed invention "as a whole" is treated as invention information for classification purposes, meaning the entirety of all the elements recited in a claim must be classified as a single invention (mandatory classification), some subcombinations of a claim, not separately

Handbook of Classification

claimed, may also constitute invention information. In these cases, the inventive subcombination that is not separately claimed should receive a mandatory classification indicating the classification relates to invention information.

PGPub documents are classified in the same manner that patent documents are classified. The Primary classification in a PGPub document is assigned in the same manner as is the

OR classification of a patent document and the Secondary classifications of a PGPub document are assigned in the same manner as are the XR classifications of a patent document.

III. DETERMINATION OF A CLASS FOR ORIGINAL CLASSIFICATION OR ASSIGNMENT FOR EXAMINATION

When the content of each claim has been analyzed, it may be found that the patent or application includes two or more claims that are drawn to diverse subject matter (i.e., they are classifiable in different classes). Occasionally, there will be claims in a patent or application that individually cover multiple inventions classified in different classes.

For search and retrieval purposes, merely classifying these documents in each class would suffice. However, for both administrative and legal purposes within the USPTO (e.g., ensuring the examination of patent applications by the best qualified examiner on the subject matter, restricting patent applications to properly related inventions, interference or infringement searches, etc.), there is a need to designate for U.S. patents an Original, or “OR” classification. All other classifications are designated as cross-references. The following sections describe the methods used for determining which claimed invention controls the “Original” classification in patents or applications having multiple claimed inventions classified in different classes. The class of the Primary classification of a PGPub document is selected in the same manner.

Every utility patent grant and PGPub pre-grant publication must be assigned their re-

spective OR or Primary classifications in a utility class that can accept OR and Primary classifications. This means that OR and Primary classifications may not be assigned to Design classes or to cross-reference art collection classes. Plant patents and plant PGPub documents must have their OR and Primary classifications assigned to the plant class (PLT). Design patents (there are no Design PGPub documents) must have their OR classifications assigned to a Design class.

A. Original Placement Between Classes

The process for selecting which claimed invention will represent the original classification or assignment designation is effected by considering, in turn, the factors listed below:

Selection of the most comprehensive claim;

Selection among categories of subject matter when claims are *equally* comprehensive, or when the most comprehensive claim cannot be determined;

Selection among superiority of types of subject matter;

Handbook of Classification

Selection among generic classes and species classes thereunder; and

Selection among classes in “related subject” listing.

1. Selection of the Most Comprehensive Claim

The claimed disclosure setting forth the most comprehensive organization (for example, a claim to a combination as compared to a claim to a subcombination or element of that combination) will control placement of a patent or application among classes. This is illustrated by comparing the following two claims (which not only differ in comprehensiveness, but also are directed to different categories of subject matter) each of which define subject matter properly classified in a different class:

Claim 1

A laminated sheet comprising two panels of aluminum bonded with an intermediate layer of a binder, said binder comprising an elastic, self-vulcanizing rubber-like cement, the adjacent faces of the panels being roughened in a cross-hatched pattern to facilitate adhesion of the cement, two opposite edges of the sheet being notched with corresponding, interfitting dovetail cutout portions to facilitate securing the edges one to the other.

Claim 2

A process comprising scoring the faces of two aluminum panels in a cross-hatched pattern, applying a binder to the scored

faces, pressing the coated faces together to secure the panels and forming a sandwich and then bending the sandwich and securing the opposite edges to each other to form a tube.

Explanation

Claim 1 encompasses a product comprising a laminated sheet. Claim 2 encompasses a process of making such a sheet, but includes the additional steps of bending the sheet and securing the edges to form a tube. Process Claim 2 thus contains a greater extent of subject matter than does Claim 1 and is therefore more comprehensive. Assuming that separate classes provided for the subject matter in Claim 1 and 2, respectively, a patent with these two claims should be placed as an original in the class providing for the subject matter of Claim 2.

Please note that mere details of a subcombination, as a rule, do not generally increase the comprehensiveness of a claim. Thus, Claim 1 above would not become more comprehensive than Claim 2 if Claim 1 were amended merely to recite the details of the nature of the binder composition.

In order to determine which of two claimed inventions is more comprehensive, the two inventions must be related to each other in some way. It is impossible to determine the relative comprehensiveness between two claimed inventions that are *distinct* (see MPEP 802.01). For example, a lawn chair and a nuclear submarine are distinct inventions, and the test of which is more comprehensive cannot be used to compare

Handbook of Classification

them when separately claimed. For similar reasons, two claimed processes that produce distinct articles also have no relative comprehensiveness between them.

Testing for relative comprehensiveness between two process claims is very simple when the two claims include process steps from the same overall process. The claimed process that includes steps further along in the process is always the more comprehensive claim. It matters not where in the process a claim starts – relative comprehensiveness is dependant in these situations only on where in the process the claim ends. For example, a document disclosing the invention of baking a cake, icing the cake, then packaging the cake may have the following claims:

Claim 1

A process for making a cake comprising mixing together eggs, sugar, and flour, pouring the mixture into a pan, then placing the pan into a 400 degree oven and baking for twenty minutes.

Claim 2

A process for making a cake comprising taking a cake and spreading icing substantially all over the surface.

Claim 3

A process comprising taking a cake and placing it into a carton, then closing the carton.

Explanation

Each of these three claims covers a different portion of the disclosed invention of making a cake and packaging it. Therefore, comprehensiveness may be determined between them. Clearly, claim 2 is more comprehensive than claim 1, since the end product of claim 1 is simply a cake, whereas the end product of claim 2 is an iced cake. Claim 3 is more comprehensive than claim 2 because the end product of claim 2 is an iced cake, whereas the end product of claim 3 is a cake that has been packaged. Therefore, claim 3 would be the controlling claim and whichever class claim 3 was classified in would be the class of the Original classification.

It is possible, and often necessary, to determine the relative comprehensiveness between a product and a process for making the product, or between an apparatus for making a product and the process for making the product, etc. Assuming that the claimed inventions are somehow related and are not distinct, it is possible to make these comparisons, usually by expressing the resultant of the claim in a common form. For example, one cannot directly compare a process for making “A” to an apparatus for making “A”. When comparing a process for making “A” to an apparatus for making “A”, one can simplify the comparison by comparing the product made by the claimed process to the product made by the claimed apparatus. Then, the explanation is reduced to simply comparing the relative comprehensiveness of two products. For example:

Handbook of Classification

Claim 1

A process for making a steel statue comprising melting a sufficient quantity of steel, pouring the molten steel into a mold of a statue, allowing the mold to cool for two hours, then removing the statue from the mold.

Claim 2

An apparatus for making a steel statue comprising a painting station, a conveyor belt configured to deliver steel statues sequentially to said painting station, a paint sprayer operatively connected to a paint supply, said paint sprayer configured to paint the statues delivered to said painting station.

Explanation

Claim 1 and claim 2 are related as process and apparatus for making a steel statue. While it is clear that the process claim starts off earlier in the process than claim 2, since it melts the steel and casts it in a mold, the final product of the process claim is simply a cast statue. While the apparatus claim does not start in the process as early as the process claim does, the final product of the product of the apparatus claim is a statue that has been coated with paint. The painted statue is more comprehensive than one that has not yet been painted, so claim 2 is more comprehensive than claim 1 and controls the class of the original classification.

If the final products of the process and apparatus claims from the previous example

had been equally comprehensive, then the controlling claim could not have been determined by relative comprehensiveness, and the next section would be used instead.

2. Selection Among Categories of Subject Matter

When a patent document includes separate claims to two or more different categories of subject matter and none of the claims is more comprehensive than the other(s) or if greater comprehensiveness cannot be determined, the Original is classified in the class providing for the claimed category that appears highest in the following list:

- (1) Process (of using product 2, e.g., using a fuel or radio transmitter)
- (2) Product (of manufacture, e.g., a fuel or radio transmitter)
- (3) Process (of making product 2)
- (4) Apparatus (to perform 3 or to make 2, e.g., machine, tool, etc.)
- (5) Materials (used in 3 to make 2)

For example, when considering claims to a radio transmitter (category 2) and to a process of manufacturing the same (category 3), the claim to the transmitter would control class assignment. Similarly, a claim to a process of using the transmitter (category 1) would control over a claim to the transmitter or process of making it.

Handbook of Classification

Modern patent classification schedules often separate categories of related subject matter into different classes or, if several categories are included in the same class, put them in different groups of subclasses. In the latter case, the priority given above is frequently used to determine order of subclass groupings. For situations where all claims are provided for in the same class, see Section V, B, below, to determine placement in the proper subclass.

3. Selection Among Superiority of Types of Subject Matter

When placement of the Original cannot be determined from considerations of (a) comprehensiveness or (b) categories of subject matter, placement is next determined by considering the highest category below that provides for claimed subject matter.

- (1) Relating to maintenance or preservation of life
- (2) Chemical subject matter
- (3) Electrical subject matter
- (4) Mechanical subject matter
 - (a) Dynamic (relates to moving things or combinations of relatively moving parts)
 - (b) Static (stationary things or parts non-moveably related)

4. Selection Among Classes in "Related Subject" Listing (Last Resort Only)

The number of a class generally has *no* significance insofar as superiority of one class relative to another. The class number is merely an arbitrary mark of identification. Nor is the class listing in the "Classes Arranged in Alphabetical Order" in *the Manual of Classification* an order of superiority. The title of a class is an accident of language and varies from one language to another.

However, a theoretical organization of the applied sciences into three major areas is published in the front of the *Manual of Classification*, Section I, titled "Patent Office Classes Arranged by Related Subjects." Within each of the areas the classes have been listed in a hierarchy suggesting an order of superiority.

Where the other bases for selection discussed above cannot be applied, a controlling claim is selected according to this listing. The controlling claim is identified as the one having subject matter provided for by the class that appears highest in such listings.

5. Exceptions

- (a) Where *special agreements* between Groups are in effect, such as for high-temperature superconductivity applications and for certain biotechnology areas, these agreements override all other considerations.

Handbook of Classification

- (b) Where the *historical placement* of patents having particular claimed disclosure has been contrary to written definitions and notes, the historical placement overrides all other considerations, except the special agreements mentioned above, and controls placement of like subject matter until corrective reclassification is effected.
- (c) *Classification definitions* (particularly the search notes and lines with other classes) must be read for possible exceptions to the selection procedures discussed in 1–5

above, inasmuch as disclosures in a given area of technology may have required deviation from these procedures. Any deviation will be mentioned, and explained, in a modern class definition.

The procedures outlined above presume that the person reviewing the claims knows the class in which each claimed invention is classified. The following Section offers suggestions on how to determine which classification is most appropriate for any claimed invention where the class is not known.

IV. SELECTION OF LOCUS FOR PLACEMENT

The following sections relate to determining an appropriate classification for subject matter when classification of the subject matter is unknown. These suggestions should be applied to *each* claimed invention, as well as to any other subject matter being classified for which the classification is unknown. The principles and methods discussed in these sections apply equally to the classification of both U.S. PGPub documents and patents.

A. Selecting a Class

1. Index to the U.S. Patent Classification System

Reference to the *Index to the U.S. Patent Classification System* by patent title, a key word of the title, a synonym thereof, or any other descriptor of the claimed disclosure should provide one or more clues to particular classes (and often subclasses) relating to the subject matter involved. Caution should be used with respect to the subclass(es) indicated under any heading (see Section IV, B).

2. Classes Within the U.S. Classification System Arranged by Related Subject

Reference to “Classes Within the U.S. Classification System Arranged by Related Subjects” (found on the USPTO Web site at <http://www.uspto.gov/web/offices/opc/>, under “Documents and Reports Related to the Man-

ual of Classification”) is often the best method of making an initial determination of the pertinent class(es).

3. Alphabetic or Numeric Listing of Classes

Reference to the alphabetical or numerical listings of class titles (found on the USPTO Web site at <http://www.uspto.gov/web/offices/opc/>, under “Documents and Reports Related to the Manual of Classification”) may provide the necessary clue to the proper class.

4. Subclass Titles

A quick scan of the subclass titles in a class suggested by suggestions of paragraphs 1-3 above is often very helpful in a first approximation of the pertinence of such a class to the subject matter being considered.

In every case, the definition of the indicated class must be checked to verify the propriety of the proposed class selection. This selection requires that a class, as defined and further explained in the class notes, encompass claimed disclosure to the exclusion of other classes. Usually, the definition and notes of a class indicate other classes in which provision is made for related subject matter and also set the lines of demarcation between and among such related subject matter. It should not be

Handbook of Classification

necessary to squeeze or “shoehorn” a patent disclosure to make it fit a particular class definition.

5. Electronic Tools

U.S. patent documents are searchable from many different locations, including the USPTO Internet web site (<http://www.uspto.gov/patft/index.html>).

When the classification of a particular concept is unknown, it may often be “discovered” by looking at the classifications of patent documents claiming similar subject matter. This is usually accomplished by performing a “text search” of the U.S. patent document database using appropriate terminology in the search query to describe the concepts being sought. By analyzing the classifications of documents from the result set claiming similar subject matter, a list of possible classifications can be assembled. The class definitions for each of the possible classes should be consulted before making a decision which class best covers the subject matter.

6. Exceptions and Caveats

- (a) Unless the definitions specify otherwise, a claim to an article of manufacture (a box for Class 229) distinguished *solely* by the composition or stock material from which it is made (a particular form of corrugated paper for Class 428) is placed in the appropriate composition or stock material class contrary to the selection procedure set out above.
- (b) A single claim to a hybrid of categories (such as a product defined only by a process for its preparation) is occasionally encountered in a patent or application. Under these circumstances, an application may be assigned to the proper process class for *purposes of examination*. If allowed, the claim should be classified in the proper product class and a cross-reference may be placed in the process class where the application was examined.
- (c) Notes for the class definition of the class providing for a combination should be read for possible exception where the claimed disclosure is to a “nominal” combination. A nominal, or named, combination refers to a combination wherein one or more of the parts or steps thereof are recited so broadly, and without details, as to constitute a mere identification rather than a description of each part or step.
- (d) Frequently an application is received that claims too much for placement in either an element or a subcombination class but does not claim enough subject matter to clearly meet the requirements of a combination class. In these instances, assignment is generally made to the class providing for the larger organization, i.e., the combination class, instead of assigning it down to the lesser organization, i.e., the element or subcombination class.
- (e) As mentioned above, where the historical placement of patents having a particular claimed disclosure has been contrary to written definitions and notes, this over-

Handbook of Classification

rides all other considerations and controls placement of like subject matter until such time as corrective reclassification is effected.

B. Selecting a Subclass Within a Class

After determining the most appropriate class in which a particular claimed invention is classified, the next step is to determine the appropriate subclass. It should be noted that some claims, particularly Markush claims to chemical compounds and compositions, may encompass more than one separately classifiable invention, and thus require more than one mandatory classification.

The following procedure is used to select the subclass(es) applicable to each invention in a patent document. A separate, mandatory classification is required for each claim that is classifiable in a different subclass. Likewise, each claim in an application should be considered separately to determine all classification locations.

Before beginning a discussion on subclass selection, the meanings of certain terms and phrases need explanation. The following schedule is a hypothetical system to sort and classify scrap in a junkyard. It will be used to help define those terms and phrases.

Handbook of Classification

- 1 COMBINED BAR, LINK AND BALL
- 2 COMBINED BAR AND LINK
- 3 COMBINED BAR AND BALL
- 4 COMBINED LINK AND BALL
- 5 CHAIN
 - 21 . With end fastener
 - 22 . With flaccid cover
 - 23 .. Removable
- 6 BAR
- 7 LINK
- 8 BALL
 - 9 . Hollow
 - 10 .. Perforated
 - 11 .. Grooved
 - 12 . Perforated
 - 13 . Grooved
 - 14 . Mineral
 - 15 .. Metallic
 - 16 ... Aluminum
 - 17 ... Zinc
 - 18 . Rubber
 - 19 . Ivory
- 20 MISCELLANEOUS

Handbook of Classification

The above schedule is similar to an outline used to write a term paper or the like. Each indented heading (subclass) further qualifies the heading (subclass) under which it is indented and, consequently, must be read as including all of the limitations of the superior, or “parent” heading (subclass). For example, subclass 10 is read as a perforated hollow ball and will only accept items having at least these attributes. The qualifier “at least” is used deliberately. The reasons for this qualification are explained below.

Subclass titles that do not have a dot imposed between the title and numeric designator for the subclass are referred to as a “Main Line” or “First Line” subclasses, e.g., subclasses 1, 2, 3, 4, 5, etc. Indented subclasses are referred to by their level of indentation. Subclasses indented one level below a “Main Line” subclass are referred to as “Second Line” subclasses, e.g., subclasses 21, 22, and 9, in the above example. Subclasses indented one level below a “Second Line” subclass are referred to as “Third Line” subclasses, e.g., subclasses 23, 10, and so forth. All subclasses indented under a superior concept are generally referred to as that concept’s “indents.”

Subclasses positioned at the same level of indentation and sharing the same parent subclass are referred to as “coordinate” with each other, and are called “coordinate subclasses”. Thus, subclasses 21 and 22 are coordinate with respect to each other. Subclasses 22 and 9 are not coordinate, even though they are both “Second Line” subclasses, since they do not have the same parent subclass. All “First

Line” subclasses are coordinate with respect to each other since nothing can be superior to a “First Line” subclass.

1. Schedule Order

The order in which a subclass appears in the schedule establishes the order of superiority among the concepts provided for in the schedule. The number assigned to a subclass has no importance other than to provide an identifier for the subclass.

In a modern schedule, coordinate subclasses are arranged from top-to-bottom in order of decreasing complexity and comprehensiveness. The above schedule example shows this type of arrangement. The organization of a bar, plus a link and a ball (i.e., subclass 1, which is the largest assemblage of elements) appears higher in the schedule than the lesser assemblages of a bar plus a link, or a bar plus a ball or a link plus a ball. The simplest elements (e.g., bars, links, and balls) are found even lower.

The modern schedule is also usually characterized by the placement of a “MISCELLANEOUS” subclass at the end of the schedule (see subclass 20 in the previous example). Also, it frequently has a “COMBINED” subclass located about midway down the schedule’s length.

The “COMBINED” and “MISCELLANEOUS” subclasses are similar in character. The “COMBINED” subclass acts as a miscellane-

Handbook of Classification

ous collecting point for the basic subject matter of the class combined with subject matter provided for in another class when such combinations are not specifically provided for higher in the schedule. The “MISCELLANEOUS” subclass collects all subject matter properly placed below “COMBINED,” for which no specific subclass is provided.

See Appendix A for further discussion of the details of a modern schedule.

As noted earlier, the classification system as it exists today was created in the last 100 years. Vestiges of older systems still exist in the system and it is important to distinguish the older classes from the modern classes since the classes were created using a different theory of schedule structure and art placement. When using the older classes, adjust search and placement strategies accordingly.

In older classes, the “MISCELLANEOUS” subclass almost always appears as the first subclass in the schedule array. In this position, the “MISCELLANEOUS” subclass assumes the function of both the “COMBINED” subclass and the “MISCELLANEOUS” subclass in the modern schedule. It is a residual classification place for all subject matter covered by the class definition, but not provided for by any main line subclasses in the class. It therefore accepts unprovided for combinations of the basic subject matter of the class and structure provided for in other classes, unprovided for basic subject matter, and unprovided for subcombinations or elements found in the class. When classifying a document in one of

these older classes, visually scan the main lines below “MISCELLANEOUS” to see if any provide for the subject matter in question. If no subclass is found, placement in “MISCELLANEOUS” is proper.

2. Inclusive Nature of Subclasses

A second important characteristic exhibited by the classification schedules is the inclusive nature of subclasses. This means that a subclass is proper for any claimed disclosure that *at least* recites the subject matter provided for in the subclass.

Thus, in addition to providing a home for claims exclusively directed to the provided for subject matter, a subclass also accepts all combinations employing the provided for subject matter as a subcombination thereof, provided the combinations are otherwise proper for the class and do not find a home higher in the schedule. A subclass also provides for multiples of the concept unless a subclass is provided higher in the schedule for the multiples.

Given the concepts of hierarchy and the inclusive nature of subclasses, the modern classification schedules can be viewed as a series of sieves or strainers located one above another (see **Illustration A** on the next page). Those sieves that are located higher in the array have larger diameter apertures, so they strain out only the largest particles that is, the largest organization of claimed elements. Moving down through the series, the aperture size decreases, consequently trapping smaller sized organizations. This process continues all

Handbook of Classification

organizations. This process continues all the way down the series to the bottom, i.e., the “MISCELLANEOUS” subclass, which traps whatever was not caught above.

If material is dropped into the top of the sieve array, it passes through the array until an aperture is reached that blocks further passage of the material. So it is with a modern classification schedule. When placing or retrieving

(i.e., searching) a concept using a schedule, start with the first subclass in the class and proceed to move down through the “First Line” subclasses until one is found that will accept any claimed subject matter. This subclass exhausts the claimed subject matter and all concepts employing this subject matter. No lower “First Line” subclasses should have to be looked at in the schedule for this subject matter.

Handbook of Classification

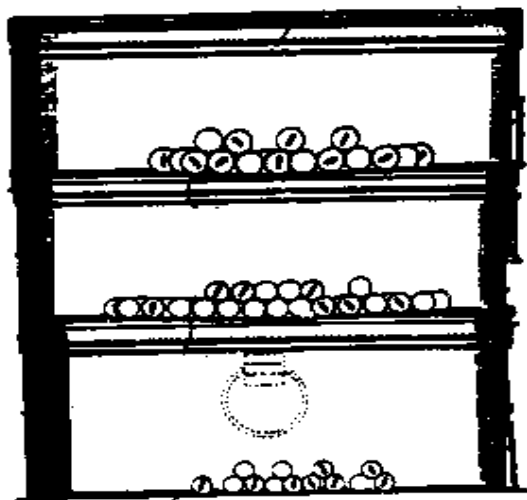
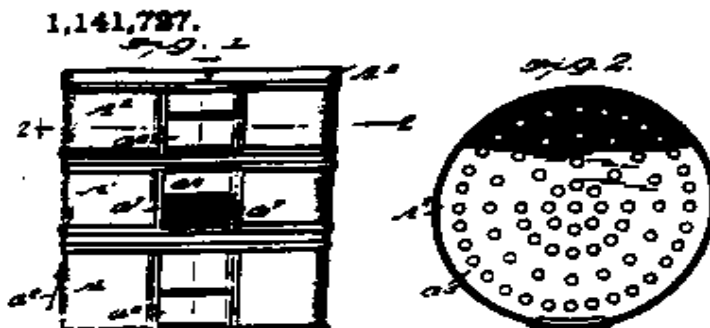


Illustration A

Handbook of Classification

Since subclasses are inclusive, once an appropriate subclass is selected, it may be necessary to consider subclasses located higher in the schedule than the one selected. To illustrate, refer to the junkyard schedule given as an example in the Section above. Suppose, sorting through a pile of junk, a bar is discovered and a decision must be made about which bin to store the bar in. Consulting the schedule, starting at the top and scanning down, it is noted that subclass 1 provides for bars, but the bars must be combined with other elements, i.e., links and balls. Unless at least all three are present, classification in bin 1 is not proper.

If there is only a bar itself, then subclass 1 is not the proper placement for the bar. Subclasses 2 and 3 also provide for a bar. As noted above, the bar is combined with some other feature, i.e., a link in one case and a ball in the other. The first subclass that accepts a bar by itself is subclass 6. Accordingly, you would assign the bar to bin 6.

Now, suppose after a few months, someone comes in looking for a novel bar. It is known from previous experience that bars, per se, are in bin 6 and that in the classification system the subclasses or bins are exhaustive of their subject matter. Consequently, if the junk has been properly sorted, there is no need to look in any bin number that appears lower in the schedule than bin 6.

What about higher subclasses? Well, subclasses 1, 2, and 3 all include bars as part of their organization. To ensure that all bars have

been seen, look into those bins also.

Finally, once a subclass is selected, all of its indents (if there are any) must be investigated to be sure that one of them does not provide more fully for the subject matter under investigation. The processes to be used are discussed below under the heading of "General Methodology." Also, it is imperative to read the subclass definition and any notes attached to it to be sure that no exception is made to the general rule of the inclusive nature of subclasses. Such exceptions do occur and care must be taken to avoid wasting time and effort.

3. Additional Types of Art Collections

a. Digest

A digest is an undefined collection of cross-referenced documents based on a concept that may or may not be related to the subject matter covered by the class. OR, mandatory cross-reference (invention information), and Primary classifications may not be assigned to digest subclasses, although documents should receive discretionary cross-references to appropriate digests whenever possible. Digests are listed in numerical sequence at the end of the class schedule. No superiority may be presumed between a digest and any other subclasses, except between a digest and other digests in the same subclass array.

b. Cross-Reference Art Collection

Cross-reference art collections differ from digests in that they have definitions. As with

Handbook of Classification

digests, cross-reference art collections cannot accept OR or Primary classifications. Unless it is a “harmonized” cross-reference art collection it cannot have mandatory cross-references assigned to it. Mandatory (invention information) cross-references should be assigned to “harmonized” cross-reference art collections whenever possible. Harmonized cross-reference art collections appear with either an “(EPO)” or “(JPO)” or both at the end of their titles. E-subclasses are examples of harmonized subclasses. The definition of a harmonized cross-reference art collection will indicate that the subclass has a one-to-one relationship with a classification in another classification system (e.g. ECLA or FI). In general, documents should receive discretionary cross-references to appropriate cross-reference art collections whenever possible. No superiority is presumed between cross-reference art collections and any other subclasses except those cross-reference art collections in the same subclass array. Cross-reference art collections are usually listed in numerical sequence at the end of the class. In most classes, subclass numbers 900 - 999 are reserved for cross-reference art collections.

c. Alpha Subclasses

Over the years, alpha subclasses (previously called “unofficial” subclasses) have been created to facilitate searches within the arts under their jurisdiction. In this process, a grouping of patents is selected from an existing numeric subclass and then collected in a new indented subclass with an alpha designation following the numeric designation. Since the original subclass no longer has all the patents

officially classified therein, it is given the alpha designation “R” (indicating residual). There are no definitions for alpha subclasses, although alpha subclasses may be converted to regular defined subclasses at a later date. All types of classifications, including OR and Primary classifications may be assigned to alpha subclasses.

d. E-subclasses

Between 1979 and 1995, the USPTO regularly classified newly published foreign patent documents into the USPC. In an effort to address the lack of recently classified foreign documents in USPC and to advance the prospect of harmonization between USPC and ECLA, E-subclasses were created. E-subclasses are USPC subclasses that correspond in scope to a classification in the European Classification (ECLA) system on a one-for-one basis, that is, they are “harmonized” subclasses. They appear near the end of schedules for the classes they exist in, and like Cross-Reference Art Collections, cannot accept “OR” or Primary classifications.

E-subclasses are identified by their subclass numbers, which begin with the letter “E”, and are followed by up to five numerical digits, for example, E29.122, E31.67. The definition of each E-subclass identifies the ECLA classification the E-subclass corresponds to and may additionally contain a statement regarding the basic subject matter of the subclass. For those that do not, documents classified in the E-subclasses should be reviewed to determine their scopes, since the scope of the E-subclass may not be the same as that of the

Handbook of Classification

USPC class in which it exists. Not only do E-subclasses present an alternative search to the art presented by other USPC subclasses, they generally contain complete and up-to-date classifications of foreign documents as classified by the European Patent Office (EPO). For example, if the title of an E-subclass ends with the suffix “(EPO)”, then the subclasses are regularly updated with foreign documents classified by the EPO. If the E-subclass title ends with the suffix “(JPO)”, the subclass is regularly updated with documents classified by the Japanese Patent Office (JPO). An E-subclass having both suffixes indicates it is regularly updated with foreign documents classified by both offices. An E-subclass that has no ECLA equivalent (typically created as a breakdown of some other E-subclass that does) has no such suffix and does not include foreign office classified documents. The parent subclass providing for the foreign documents must be searched to obtain them.

Some primary subclasses, i.e., regular numbered and alpha subclasses, have titles that begin with a parenthesized “(E)”. This indicates that the subject matter of these subclasses correspond to that of some E-subclasses in the class. Whenever a mandatory classification (i.e., an OR for a patent or a Primary for a PGPub document) is placed into one of these subclasses, usually at least one cross-reference should be placed in an E-subclass in the class. The classifications placed on U.S. documents in E-subclasses are reported to the EPO. EPO reports to the United States the foreign documents they classify in the corresponding ECLA. In this manner, each office shares the work of classi-

fying the world’s documents into a common classification scheme. Of course, a discretionary classification of any U.S. patent document can be placed in an E-subclass anytime.

For answers to specific questions concerning E-subclasses, send your questions to: E-Subclasses@uspto.gov.

e. FOR subclasses

In October 1995, USPTO stopped classifying new foreign documents into the USPC. At the same time, the routine reclassification of foreign documents as part of reclassification projects was also halted. Reclassification of foreign patent documents is now only performed on a limited basis. For those subclasses being reclassified where the cost of reclassifying foreign documents cannot be justified, the foreign documents are kept together in collections corresponding to the old, abolished USPC classifications. This preserves the intellectual effort used to create the original collections. When USPC subclasses are reclassified and their foreign documents are not, “FOR” subclasses are created to keep the foreign art collections intact.

Foreign art collections are found near the ends of the USPC classes in which they exist. They accept for classification only foreign patent documents and non-patent literature and can be identified by their subclass numbers that begin with “FOR”, for example, FOR126. Typically, FOR100 is the lowest numbered foreign art collection. At the end of each foreign art collection title, in parentheses, is the subclass identifier of the abolished USPC sub-

Handbook of Classification

subclass from which it came. The definitions of foreign art collections correspond to the definitions of the old abolished USPC subclasses from which the foreign art collections are derived. No superiority among foreign art collections should be assumed, except between those descended from a common ancestor. The reason for this is that a portion higher in a USPC class schedule may be reclassified after a lower portion of the schedule, and later created FOR subclasses are arranged after earlier created FOR subclasses.

Each utility class in the USPC has a special FOR subclass called "FOR000". These FOR subclasses do not contain foreign patent documents from abolished USPC subclasses. These special subclasses were created as "class level" subclasses for machine placement of foreign patent documents into the USPC. It was found from experimentation that a computer could generally determine with good accuracy which USPC class a foreign document ought to be classified into but not which subclass. The FOR000 subclasses solved that dilemma by giving a computer a place to classify foreign documents at the class level by placing them into the FOR000 subclasses when a more suitable subclass could not be determined.

4. General Methodology

(a) To reiterate, once the proper class has been identified, it is necessary to select the proper subclass by scanning down the class schedule from the first appearing subclass toward the last. Only First Line

subclasses (all fully capitalized titles) are considered on the initial scan. Each First Line subclass is evaluated (title checked against the definition, if necessary) until a First Line subclass is reached that provides for that *claimed* disclosure. When a First Line subclass cannot be selected using the *claimed* disclosure, the claim is classified in the "MISCELLANEOUS" subclass even if a subclass can be selected using the total or unclaimed disclosure.

- (b) *Classifying by claimed invention.* Once a Main Line subclass has been selected that can accept the claimed disclosure, all Second Line (or one-dot) coordinate subclasses indented under it must in turn be scanned and evaluated individually to determine the first or highest in the class schedule, if any, which provides more specifically for the *claimed* disclosure. See "Placement Within Alpha Arrays," below.
- (c) If such an indented, Second Line subclass itself has coordinate indented subclasses, repeat the above process until the ultimate indented subclass is reached that provides for the *claimed* disclosure.
- (d) The Original classification (or Primary classification of a PGPub document) is assigned to the mandatory classification that is highest in the class schedule of the class determined by the controlling claim.

Handbook of Classification

5. Combination-Subcombination Rule

The following fragment of a schedule is used to illustrate a typical combination-subcombination relationship among subclasses.

253 ROLLING MEANS TO FORM SHEET OR STRIP

255 . With corrugating means

254 . With treating means

256 . Roll co-acting with planar platen

257 . . Reciprocating platen

Here, the First Line subclass (253) is a subcombination of subclasses indented thereunder. That is, subclasses 255 - 257 explicitly cover greater combinations of subject matter than the parent subclass 253. But subclass 253 is also inclusive of its own subject matter in combination with other subject matter not provided for in subclasses 255 - 257.

A patent that is otherwise proper for subclass 253, by the procedures relating to *claimed* disclosure set out above in V, B, 4 (a-c) above, would in fact be placed in one of the indented subclasses 254 - 257 if the *total* disclosure included limitations of the indented subclasses. For example, a patent *claiming* a roll mill for strip forming and also *disclosing* means to corrugate said strip would be placed in subclass 255.

When further disclosure meets the term of an indented subclass such as 256 and also the still further indented subclass 257, the patent is placed in the appropriate ultimate indented subclass.

In addition, when further disclosure meets the terms of two or more indented subclasses that are coordinate with each other (as 255 and 256), the patent is placed in the first of said coordinate subclasses.

A patent having a claim to subject matter of subclass 253 and a disclosure for subclass 256, but also including a claim to a combination not provided for under subclass 253, is placed in subclass 256 regardless of the presence of the claim to the unprovided for combination. Therefore, a combination not provided for or subcombinations encompassed by the subclass 253 title and the definition must be searched in the parent subclass (253) and *all* indented subclasses under the parent (255 - 257). However, a search to a combination provided for by an indented subclass is limited to that subclass, and the preceding coordinate subclasses. In practice, a discretionary cross-reference is placed in the parent (or subcombination) subclass when the patent contains a claim to an unprovided for combination, particularly where the number of indented (or combination) subclasses is excessively large.

6. Genus-Species Rule

The genus-species rule assumes that each species subclass is mutually exclusive of all other species encompassed by their generic subclass. Therefore, in many class schedules exhibiting a genus-species relationship, a variant to the above combination-subcombination rule is followed.

Handbook of Classification

In a genus-species subclass array when plural species are indented under the generic subclass, placement is on the basis of total disclosure where only generic claims appear in a patent having disclosed species. A patent having genus claims only, but disclosing only species provided for by indents, is placed in the first appearing disclosed species subclass.

A patent having genus claims only and a disclosure to an unprovided for species is placed in the generic subclass; the generic subclass is the first appearing subclass that can take the unprovided for species.

For example, in the following subclass array:

- 1 Generic subclass (SPRING, e.g., Torsion, etc.)
- 2 . Subclass species A (Coil)
- 3 . Subclass species B (Leaf)

(a) If a generic claim only is present with disclosure of species A and B, place the patent as an OR in subclass 2 (and XR it to subclass 3).

(b) If a generic claim only is present with disclosures of species A and C (Torsion spring), place the patent as an OR in the generic subclass 1 (and XR it to subclass 2).

Stated generally, where, in addition to the generic claim, there is a claim to a provided for

species, the patent is placed as an OR in that species subclass unless there is also a claim to an unprovided for species. In this latter case the patent is placed in the generic subclass.

For example, in the subclass array above:

(c) If a generic claim as well as a claim to species A and a disclosure to species C is present, place the patent as an OR in subclass 2 (and XR it to generic subclass 1).

(d) If a claim to species C is present as well as a claim to species A, place the patent as an OR in generic subclass 1 (and XR it to subclass 2).

In all of the above instances, place XRs in the appropriate subclasses. Thus, for a generic classification to be accurate, it must include the genus subclass and all indented species; a review of a provided for species need be made in only that species subclass; and a review of an unprovided for species need be made only in the generic subclass. You must be aware, however, of the presence of species that are not mutually exclusive. In the example used above, assume the presence of a third indented species subclass entitled "Plastic" and located above subclasses 2 and 3. Since any of the other species (i.e., torsion, coil, or leaf) could also be formed from a plastic material, none are mutually exclusive with respect to the "Plastic" species. Therefore, classification of a patent for either the torsion coil or leaf spring should include the subclass entitled "Plastic." One final note: if the "Plastic" spring subclass were located at the bottom of the array, classification for a coil or a leaf

Handbook of Classification

spring would be confined to subclasses 2 and 3, respectively. This is due to subclass schedule hierarchy, and the exhaustive nature of subclasses, which was explained in this section, above.

7. Placement of Markush Type Claims

In chemical compound and composition cases, when there is a generic claim classifiable in a number of different classifications, the OR is placed as described above on the basis of the claimed species, or on the basis of the disclosed species if no species claims have been presented. In such cases, however, *all* classifications encompassed by the generic claim are mandatory.

In some chemical applications or patents, as sanctioned by Ex parte Markush, 1925 C.D. 126, a “genus” claim may be set forth as a group consisting of certain specified materials, when there is available no commonly accepted generic expression commensurate in scope with the materials recited (see MPEP 706.03(y)). An application or a patent may thus have a Markush “genus” claim with or without other claims to the specified materials, per se, and such specified materials being “species” of the Markush “genus.” The same principles set forth above, with respect to genus-species array, govern the placement of applications or patents with Markush type claims. For example, given the following subclass array:

- 1 Generic subclass (organic compound)
- 2 . Species subclass (A) - ester

3 . Species subclass (B) – alcohol

- (a) When a Markush group is disclosed, but only claimed as “species A (ester)” and “species B (alcohol),” place the document as an “Original” in subclass 2 and XR it to species B in subclass 3.
- (b) When a Markush group is claimed as “consisting of A (ester), B (alcohol), and C (ether),” place the original in generic subclass 1 and XR it to species subclasses 2 and 3. The individual members of the Markush group are treated independently and the member C is provided for only in the generic subclass 1.
- (c) When a Markush group is claimed as “consisting of A (ester), B (alcohol), and C (ether),” and there is also a claim to A (ester), per se, the original classification is to species subclass 2 with an XR to generic subclass 1 and to species subclass 3. That is, a patent having a claim to a Markush group is placed as an original in the genus subclass only when individual species are not claimed. The classification of the claimed species controls placement of the original.

8. Classification of Combinatorial Libraries

Some patent documents in the chemical arts include claims to a “combinatorial library”, per se, which must be classified in the USPC. These claims are directed to compositions

Handbook of Classification

generally comprising several generic constituents, typically organic substances. Unlike Markush claims, claims to combinatorial libraries do not require a mandatory classification for each fully disclosed species upon which a claimed generic component in a combinatorial library reads. Instead, mandatory classifications are assigned to the document corresponding to the classification of each *disclosed* generic constituent. As with all patent documents, the class of the OR or Primary classification of a document containing a combinatorial library claim is determined by the controlling claim (see section IV A). If the controlling claim is a claim to a combinatorial library, per se, then the class of the OR or Primary classification is in the most superior class among those classes in which the disclosed generic constituents are classified. There may be information disclosed in documents claiming combinatorial libraries suitable for discretionary classifications. If such information is disclosed clearly enough to be useful in search, and a Technology Center has indicated its preference for seeing such subject matter classified, then appropriate discretionary cross-references should be assigned to the document.

9. Mixed Array (Genus-Species and Combination-Subcombination)

A subclass schedule that includes both combination subclasses and species subclasses indented under a common genus-subcombination subclass is categorized as a mixed array (see the list below).

- 1 SPRING (subcombination of a mechanism)
- 2 . Coil (species A of spring)
- 3 . Leaf (species B of spring)
4. With Indicator (combination)
5. With Lubricating Means (combination)

The following rules of placement have been used for mixed arrays:

- (a) When a combination or subcombination is claimed which includes a coil spring (A), place the OR in subclass 2. No XR is needed since by schedule superiority all subject matter, including A, should be in subclass 2.
- (b) When one claim includes a coil spring, plus an indicating means and a second claim includes a torsion spring (an unprovided for species) plus an indicating means, place the OR in subclass 2 with an XR to subclass 4. All coil springs and combinations claiming a coil spring are in subclass 2 and all combinations, including an indicating means, not provided for in the preceding subclasses, are in subclass 4.
- (c) When one claim is to a coil spring plus an indicating means and a second claim is to a torsion spring, per se, place the OR in the generic subclass 1, the subclass accepting an unprovided for species, with an XR to subclass 2.
- (d) When one claim is to a coil spring plus an indicating means and a second claim is to a torsion spring plus an unprovided for element Z, place the OR in subclass 1

Handbook of Classification

with an XR to subclass 2 as in (c) above.

10. Placement Within Alpha Arrays

Alpha subclasses are primary subclasses that can accept mandatory (i.e., OR, mandatory XR, Primary, and mandatory Secondary classifications) as well as discretionary classifications. In the past, indented alpha subclasses were located directly under the subclass from which they were taken (i.e., classifying a directly under the residual or "R" subclass). This often caused confusion in properly document. To help avoid this confusion, all indented alpha subclasses were relocated to their proper position in the schedule hierarchy (i.e., immediately above the next subclass having an indent level less than or equal to the "R" subclass from which they were taken). Patent placement in indented alpha subclasses now follows all normal rules of placement for subclasses.

In the sample alpha array below, indented alpha subclass 273N was created from subclass 273R. If, after considering each two dot indented subclass under subclass 273R (i.e., subclasses 274, 276, 277, 278, 279, 281R, and 284.1), a proper classification has still not been found, then alpha subclass 273N should be considered.

273R . Bituminous material or tarry residue containing
274 . . With sulfurizing or sulfonating agent

275 . . . With filler, dye or pigment
276 . . Rock asphalt
277 . . Bituminous emulsion
278 . . With solvent or dispersing medium
279 . . With flux
280 . . . With filler, dye or pigment
281R . . With filler, dye or pigment
282 . . . Fibrous containing
283 . . . Water containing
281N . . . Nitrogen containing
284.1 . . Phosphorus containing
273N . . Nitrogen containing
285 . Hydrocarbon containing

The user must be aware, however, that since no definitions exist for any of the indented alpha subclasses, the user may have to look at the patents in each indented alpha subclass as well as the parent residual ("R") subclass to determine what type of subject matter is classified there.

Classification in these areas should involve review all of the alpha subclasses as well as the residual R subclass to determine the most appropriate subclass.

11. Nonconformity in Practice

It is necessary to be on the alert for past diversity of practice respecting placement within a class based on disclosure. Thus, vary your placement techniques to compensate for such diversity. Nonconformity has nearly always been of the following type:

Handbook of Classification

In some cases, the combination-subcombination practice of carrying placement to an indented combination subclass has been extended unofficially to a genus-species subclass array. In such an instance, an unprovided for species, even when claimed, has been assigned to a subclass providing for an-

other species which has also been disclosed. This has often been done with no cross-reference back to the generic parent subclass. When such a condition is known or detected, an unprovided for species must be classified in the parent generic subclass as well as all species subclasses indented thereunder.

V. ORIGINALS VS. CROSS-REFERENCES

A. Mandatory Classifications

By determining the proper classification designation of each claim in a patent separately, and then assigning each separate classification designation to the patent document, the claimed subject matter will be retrievable through a classified search. Each such classification is designated as a mandatory classification. The Original classification (OR) is a mandatory classification selected from among all the mandatory classifications as being the highest in the schedule (superiority) of the class containing the controlling claim (see Section III, A, above). The remaining mandatory classifications are designated as mandatory cross-references (XR).

B. Discretionary Classifications

Each Technology Center generally has specific information that varies from class to class that they would like to see classified in the USPC, even when the information may not constitute invention information in a patent document. Because this information is useful for other, non-invention search purposes the cross-references assigned to documents based on this invention information must be designated as “discretionary” cross-references. A shorthand notation for a discretionary cross-reference of a US patent is “XD”. When the subject matter meets the needs of the Technology Center and is dis-

closed in sufficient detail and clarity to be used as a reference, the document should receive a discretionary cross-reference to the appropriate subclass based on the subject matter.

1. Cross-References to Any Part of System

Unfamiliar subject matter should not be ignored. If a specific composition, electrical circuit, joint support, etc., is disclosed in sufficient detail and clarity, and a Technology Center has indicated a desire to have this information classified, it should not be assumed that it is conventional or not useful merely because it is not claimed.

2. Cross-Referenced Subject Matter Should Fit Subclass Definition

Subject matter cross-referenced to a subclass should fit the definition of the subclass. When the subclass has no definition, for example in the case of a Digest, then the subject matter should reasonably fit the subject matter described by the title.

3. Techniques Used to Limit Cross-Referencing

In creating the USPC system, several techniques have been used to limit the need for

Handbook of Classification

discretionary cross-referencing. These consist of (1) proper positioning of subclasses in a class schedule and (2) search notes.

a. Cross-Referencing Between Classes

A search note in the class definition of each of related classes generally precludes the need for discretionary cross-referencing. However, as in all discretionary cross-referencing, there may be a time when it is desirable to cross-reference even if there is cross noting. For example, if a claim is classified in a combination class, it may be desirable to cross reference it to the subcombination class even if the locations are cross noted. A patent classified in a class providing for a subcombination (e.g., a machine tool chuck) should not necessarily be cross-referenced to a combination class (e.g., machine tool) solely on the basis of the subcombination.

b. Cross-Referencing Between Subclasses

The following general considerations apply to the placement of discretionary cross-references:

When two subclasses (either in the same or separate classes) contain subject matter related in structure or mode of operation but which are separated on different functional bases, the provision of a search note in each subclass referring to the other subclass generally precludes cross-referencing from either subclass to the other.

Two coordinate subclasses may have a combination-subcombination relationship with the subcombination subclass title consisting of the identical terminology of a portion of the combination subclass title or a subclass indented thereunder. If a search note is provided in the subcombination subclass indicating that the combination subclass or the subclass indented thereunder must be searched when conducting a search for the subcombination, then no cross-references are made from the combination subclass, or subclass indented thereunder, to the subcombination. However, a disclosure of a combination in a patent placed in the subcombination subclass may be cross-referenced if it is believed to be useful.

When two coordinate subclasses have a genus-species relationship (the species subclass appearing first in the schedule), generally no cross-reference of such species is made to the genus subclass.

When there are two subclasses, the first of which contains a great number of patents having disclosures directed to subject matter which could be cross-referenced to the second subclass but which fact is not evident from the titles of the subclasses, a search note is generally provided in the definition of the second subclass indicating that the first subclass must be searched and no patents are cross-referenced from the first subclass to the second subclass.

Handbook of Classification

Generally, no cross-reference is made within a class when the relative schedule position of the subclasses involved indicates that a search for the disclosure would include both subclasses.

In each of the above situations, it is quite common to find one or two cross-references, irrespective of the presence of a search note.

c. Cross-Referencing Between a Parent Subclass and Its Indents

The two most frequent types of relationship between a parent subclass and subclasses indented under it are (a) combination-subcombination and (b) genus-species.

- (1) In a subclass array including a parent subclass and indented subclasses of the type involving the combination-subcombination relationship—that is, where the indented subclass is directed to subject matter of the parent subclass combined with an additional feature or with a perfecting feature—a claim to the combination will be placed, as original, in the indented subclass directed to the first claimed feature. If the claim also recites an unprovided for additional feature or perfecting feature, the claim may, by discretion, be cross-referenced in the parent subclass.

- (2) In a subclass array including a parent subclass and indented subclasses of the type involving the genus-species relationship—i.e., where the parent subclass is directed to a genus and an indented subclass is directed to a species—a claim to the species provided for in the indent and to an unprovided for species is classified originally in the parent subclass and cross-referenced in the indented subclass.

d. Search Notes in a Subclass Do Not Preclude Cross-Referencing in Its Indents

A note in a first subclass may indicate that a second subclass should be searched in connection with a search for the subject matter of the first subclass. This does not preclude cross-referencing of a patent from the second subclass to a subclass indented under the first subclass and directed to a *specific variant* thereof.

C. Body of Art

Only U.S. patent grants classified with “original” (OR) classifications, and PGPub documents having Primary classifications in a subclass should be used for the purpose of resolving differences as to placement of a patent document.

Handbook of Classification

VI. CLASSIFICATION OF DESIGN PATENTS

A. Purpose

The Design classification schedule of the USPC system provides a structured organization for the body of U.S. Design patents. Since the claim of a Design Patent is directed to “an ornamental design” for “an article of manufacture” [35 USC 171], the Design patent schedule promotes efficient access to industrial designs that have been granted patent rights.

B. Theory

Classification of design patents is based on the concept of *function* or *intended use* of the industrial design disclosed and claimed in the Design patent. Industrial designs that have the same function are generally collected in the same Design class, even though individual designs may be used in different environments.

For example, patented designs for seating are classified in class D6, Furnishings, even though these designs may be used in the home, workplace, vehicles, etc. Industrial designs of the same function are further classified by specific functional feature, distinctive ornamental appearance, or form.

C. Design Patent Classes

U.S. Design patents are classified into 33 classes of subject matter:

U.S. DESIGN CLASSES

- D1 Edible Products
- D2 Apparel and Haberdashery
- D3 Travel Goods, Personal Belongings, and Storage or Carrying Articles
- D4 Brushware
- D5 Textile or Paper Yard Goods; Sheet Material
- D6 Furnishings
- D7 Equipment for Preparing or Serving Food or Drink Not Elsewhere Specified
- D8 Tools and Hardware
- D9 Packages and Containers for Goods
- D10 Measuring, Testing or Signaling Instruments
- D11 Jewelry, Symbolic Insignia, and Ornaments
- D12 Transportation
- D13 Equipment for Production, Distribution, or Transformation of Energy
- D14 Recording, Communication, or Information Retrieval Equipment
- D15 Machines Not Elsewhere Specified
- D16 Photography and Optical Equipment
- D17 Musical Instruments
- D18 Printing and Office Machinery
- D19 Office Supplies; Artists' and Teachers' Materials
- D20 Sales and Advertising Equipment
- D21 Games, Toys and Sports Goods
- D22 Arms, Pyrotechnics, Hunting and Fishing Equipment
- D23 Environmental Heating and Cooling, Fluid Handling and Sanitary Equipment

Handbook of Classification

- D24 Medical and Laboratory Equipment
- D25 Building Units and Construction Elements
- D26 Lighting
- D27 Tobacco and Smokers' Supplies
- D28 Cosmetic Products and Toilet Articles
- D29 Equipment for Safety, Protection and Rescue
- D30 Animal Husbandry
- D32 Washing, Cleaning or Drying Machines
- D34 Material or Article Handling Equipment
- D99 Miscellaneous

1. Organization of Design Classes

Each Design class is organized into subclasses to permit efficient searching for specific types of industrial designs.

A subclass is a collection of design patents found in a Design Class, which pertain to a particular function, a specific functional fea-

ture, or distinctive ornamental appearance or form.

For example, the subject matter in class D6, Furnishings, is classified by function into broad subclasses of similar types of furnishings—seating, work surfaces, storage, furniture parts and elements, etc. Because there are so many patented designs for the same general types of furnishings, this subject matter is further classified into subordinate or “indented” subclasses to promote efficient access to specific types of industrial designs.

As further illustration, there are too many Design patents for seating in Class D6 for efficient searching in a single subclass. Accordingly, an array of indented subclasses of various types of seating has been developed. These subclasses are as follows:

Handbook of Classification

CLASS D6 FURNISHINGS

- 334 . Seating Unit (7)
- 335 .. Combined or convertible (8)
- 336 ... With work surface or storage unit (9)
- 337 Plural facing seats
- 338 Work surface positioned at the front of seat
- 339 High chair for juvenile (10)
- 340 Straddle type
- 341 Asymmetrical attachment, e.g., offset art, etc.
- 342 Seat attached at front (11)
- 343 ... With apparel support, i.e., “Valet” (12)
- 344 .. Swinging or rocking
- 345 ... Simulative (13)
- 346 ... Plural facing seats
- 347 ... Suspended
- 348 ... Curved runner contacts floor
- 349 .. Hassock, ottoman, stool or bench, i.e. without armrest and backrest (14)
- 350 ... Stepped (15)
- 354 .. Straddle type, e.g. saddle, etc.
- 355 .. Backless
- 356 .. Vehicle type
- 357 .. Oppositely facing plural seats
- 358 .. Simulative (16)

Where a subordinate subclass contains a large number of industrial designs, this subject matter may be further classified into additional subordinate subclasses. For example, the classification of *Swinging or rocking* type seating (D6-344) has been expanded into an array of

subordinate subclasses according to functional type and by ornamental appearance or form in subclasses D6-345 through D6-348.

The numbers in parentheses refer to Search Notes found at the end of the Design schedule. For a detailed explanation, see Section F2, *Search Notes*, below.

Handbook of Classification

A search of the broad or general subclass and its indented subclasses is designed to be comprehensive and should include all pertinent designs for the subject matter specified in the subclass title.

Unique to Design patent subclass titles is the term “simulative.” This term is used to refer to Design patents that look like or *simulate* the appearance of another article either by the use of applied ornamentation or form.

For example, Class D1, Edible Products, contains an array of subclasses under the heading

of *Simulative* (see subclasses 107 - 115 below). These subclasses contain patented designs for edible food products that simulate the appearance of other articles. D1-113 contains edible food products that simulate vehicles or parts of vehicles, such as a “car” or a “vehicle wheel”. D1-107 contains patented designs for edible products that look like animals. Indented under this subclass is D1-108, which contains designs for edible food products that simulate the human body. Indented under D1-108 is D1-109 which contains patented designs for edible products which simulate a “[Human] Head or other appendage.”

D1 EDIBLE PRODUCTS

- 106 SIMULATIVE
- 107 . Animate
- 108 . . Humanoid
- 109 . . . Head or other appendage
- 110 . . Quadruped
- 111 . . Marine life
- 112 . . Heart shaped
- 113 . Vehicle or component thereof
- 114 . Alpha or numeric
- 115 . Plant life

2. Relationship to Utility Classes

There is *no relationship* between the titles and numerical designations used in Design schedules and those in Utility classes. A directory of Utility and Design titles and subject matter can be found in the *Index to the US Patent Classification System*.

D. Definitions

At present, there are no formal definitions for the terms used in the Design schedules. The meanings of the terms used in the Design class and subclass titles are based on the common dictionary definitions. Formal definitions for each design class and subclass are being developed and are published as they become available. When formal definitions

Handbook of Classification

are published, exclusion and search notes will no longer be necessary for Design Classes (see Sections F1 and F2 below.)

E. Hierarchy

The principle of hierarchy used to classify utility patents, as outlined in Section IV of this Handbook, also applies to the classification of Design patents. Design patents are placed as original documents (ORs) in the first Design class of pertinent subject matter and subsequently in the first pertinent subclass or indented subclass of the Design class. Design patents that have been placed in one class as an OR will appear in other Designor Utility subclasses only as supplemental or cross-reference (XR) documents.

For example, Design patents for airplanes are properly classified as ORs in Class D12, Transportation. However, if a particular airplane design is considered to be a useful reference that should be included with the collection of industrial designs for toy airplanes, an XR may be classified in one or more subclasses for toy airplanes in Class D21, Games, Toys, Exercise Equipment and Sports Goods. Conversely, if a Design patent for a toy airplane is believed to be pertinent or similar in appearance to designs for a genuine airplane, an XR may be classified in Class D12.

F. Unique Features of Design Patent Classification

1. Exclusion Notes

Exclusion Notes in Design classification are

used to clarify the subject matter in each Design class. Exclusion Notes may be found at the beginning of a Design class and must be considered when reviewing particular industrial design. Review of the Exclusion Notes will ensure that certain subject matter has not been classified in another Design class.

For example, in Class D18, Printing and Office Machinery, the Exclusion Notes state that ornamental designs for computers and data processing equipment are excluded and are classified in Class D14, Recording, Communication, or Information Retrieval Equipment, subclasses 300+.

Again, Exclusion Notes become unnecessary as formal definitions are published for Design Classes and Subclasses.

2. Search Notes

Design Classes also use Search Notes placed after some subclass titles and/or at the end of each Design class schedule. Search Notes are used to explain the subject matter found in a specific subclass.

For example, the subclass title of Class D6, subclass 334 is "Seating unit." A Search Note (3) has been added in parentheses immediately after the subclass title. This Note (3), found at the end of the D6 schedule, states "for leg, see subclass 495+," meaning that although the design patents in D6, subclass 334, and its indented subclasses may include ornamental designs that include disclosures of seating type legs, D6, subclass 495< and its indented subclasses contain additional designs for furniture legs.

Handbook of Classification

In some cases, a search note immediately following the subclass title further explains the subject matter in the subclass. For example:

349 . . Hassock, ottoman, stool or bench, i.e., without armrest and backrest (10)

The note “i.e., without armrest and backrest” further clarifies the nature of the subject matter classified in this particular subclass. Note (10) of this same subclass title is found at the end of the D6 schedule and explains: “For bench type seating with an armrest, see subclass 355. For straddle type seat, see subclass 354.”

3. Cross-Reference Art Collections and Digests

Cross-Reference Art Collections are collections of Design and Utility patents for subject matter that is not specifically provided for in a particular subclass. This subject matter is generally very diverse, broad in scope, and includes industrial designs that have multiple functions.

For example, at the end of the schedule for Class D3, Travel Goods, Personal Belongings, and Storage or Carrying Articles, Cross-Reference Art Collections are provided for Briefcase, Tool Box or Tackle Box and Cosmetic Case. There are no subclasses for this subject matter in the Design schedule since the scope of the subject matter is too diverse to be classified in a single subclass or array of subclasses. A review of these Cross-Reference Art Collections provides a perspec-

tive of the specified type of subject matter. Each document in the collection has an OR classification in the USPCS, which can be used to locate additional subject matter with a similar specific function or ornamental appearance.

Design Digests are informal collections of Design patents, Utility patents, and non-patent literature. Digests have been compiled as collections of industrial designs to provide a “shortcut” to a comprehensive review of a specific art. For example, for the convenience of searching tool handles, Class D8, Tools and Hardware, contains an array of Handle Digests with collections of different types of patented handles found throughout the Design and Utility patent schedules.

All patents in a Digest are classified as ORs in the appropriate Design and Utility classes. As with Utility patents, no Design patent may issue as an OR in Cross-Reference Art Collections or Digests.

G. Placement Rules for Design Patents

Design patents receive mandatory OR classifications just as utility patents do, and under some circumstances also receive mandatory cross-references. The pertinent Technology Center may indicate, on a class-by-class basis, subject matter they would like to have classified on a discretionary basis when it is clearly disclosed. There are no PGPub Design documents. The OR classification for a Design patent must be assigned to a Design Class,

Handbook of Classification

and in a primary subclass, not in a Digest or cross-reference art collection subclass (subclasses that can only accept discretionary classifications). Although a Design patent may be cross-referenced in a utility class, all such cross-references must be discretionary cross-references.

Design patents are classified as ORs in the first Design class that contains subject matter most pertinent to the subject matter claimed. Within the Design Class the patent is classified in the first pertinent subclass or indented subclass that describes the specific function, intended use, or ornamental features of the design claimed. If an OR does not meet the criteria of any particular subclass title, the OR is placed in the most appropriate general or broad subclass of the particular Design class.

When a Design patent includes more than one embodiment of an industrial design, the patent is classified as an OR according to the first embodiment shown in the drawing disclosure. Additional classifications are placed for the additional embodiments as mandatory XRs in the appropriate Design Class and subclass.

If the subject matter of any Design patent is considered pertinent to an additional subclass or subclasses, as determined by the Technology Center responsible for the Design classes, discretionary cross-references of the patent should be made in the appropriate USPC area.

If a Design patent claims a combined article, such as a clock radio, the patent is classified as an OR according to the Exclusion and

Search Notes or in the first pertinent Design class and subclass that provides for the subject matter claimed. In Design patent practice, mandatory cross-references are not required for combination subject matter.

H. Locarno International Classification of Designs

U.S. Design patents issued after May 6, 1997, are assigned a Locarno International Classification for Industrial Designs in addition to the U.S. classification. Dual classification is provided to improve access to U.S. Design patents in foreign search files that are based on the Locarno International Classification system, which is administered by the World Intellectual Property Office (WIPO).

The structure of the Locarno International Classification System for Industrial Designs is substantially parallel to that of the U.S. system. The Locarno system classifies industrial designs according to function in 34 classes, which contain substantially the same subject matter as their USPC counterparts. Accordingly, the subject matter found in U.S. class D1 or class D2, etc., will be substantially the same as that found in Locarno Class 01, Class 02, etc. The exception is Locarno Class 31-00, Machines and Appliances for Preparing Food or Drink not Elsewhere Specified. All of the material found in Locarno Class 31-00 is included in U.S. class D7, Equipment for Preparing or Serving Food or Drink Not Elsewhere Specified.

Handbook of Classification

The USPC system has many more Design subclasses than the Locarno system. For example, Class D21 has 540 subclasses. Locarno Class 21-00 has only 5 subclasses. The

larger number of subclasses available in the USPC provides improved access to patented industrial designs through more detailed designation of subclasses for subject matter.

VII. CLASSIFICATION OF PLANT PATENTS

The plant classification schedule in the United States Patent Classification system (USPC) provides a structured organization of patents for asexually propagated plants and other documents relevant to a plant patent search. There is one Plant class in the system with the designation PLT. Each subclass in Class PLT includes a definition to clarify the type of subject matter it covers. Plant patents are classified on the basis of:

Variety or type Coloration

In addition to plant patents, plant patent applications and plant PGPub documents are also classified in the schedule.

A. Plant Classifications

Every plant patent must receive a mandatory OR classification based on the variety or type of plant disclosed and claimed. The OR classification must be assigned in Class PLT. Plant patents, like Design patents, are statutorily limited to a single claim, so mandatory cross-referencing is not required, although discretionary cross-referencing is permitted. Discretionary cross-references are generally made within the plant class, though this is not strictly required. Plant applications and PGPub documents are classified based on the disclosed and claimed plant just like patents are, though PGPub documents are only required to have one mandatory classification and that is the Pri-

mary classification.

B. Classification Based on Coloration

Plant patents and applications include a color photograph of the new variety. After determining the proper main line subclass where the variety would be classified, one is required to successively select more indented subclasses for the claimed subject matter if they cover the subject matter being classified; the same process used when classifying utility patents in utility classes. In the plant class one is likely to encounter subclasses based on color. The definitions for colors specified in the titles of plant patent subclasses come from *Webster's New International Dictionary*, Second Ed., Unabridged, published by G.C. Merriam Co., Springfield, Mass. Each color definition refers to one or more plant patents so that the blossoms shown in individual plant patents comprise a kind of color chart to illustrate the words of the definitions.

The color designations apply to the color of the blossom or other relevant plant part (e.g., floral bracts in poinsettia plants, etc.) when it is newly open and in an unfaded condition, and not the color of a bud or full-blown blossom or plant part. The color designations stated in the specification are used to determine the placement of plant patents into color-based subclasses, except in cases where the color designations in the specification are less than fully descriptive. In that

Handbook of Classification

case, the patent is classified in accordance with the total disclosure of the specification and the indication of color as shown in the accompanying illustrations.

The effects lighting or brightness should be discounted when determining the true color of a blossom for purposes of classification. Also, the color at the base of the petal should be disregarded except where a two-tone or bicolor effect is quite obvious.

All the color designations refer to solid colors unless clearly indicated otherwise. Thus, considering the group of climbing roses, a striped or bicolor rose would not fit any of the indented subclasses but would be placed in the mainline subclass for climbing roses, subclass 109. In determining whether or not a blossom has a solid color, the appearance of the flower as a whole is the proper criterion. Minor flecks and gradations of color should be disregarded. However, both faces of all petals must be substantially the same color.

Handbook of Classification

ADDENDUM

Reclassification in Classes 518-585

Class 260, the class of organic chemistry, once contained the largest array of patent documents in the PTO. It was decided that this class needed to be reclassified because its concepts did not necessarily address new technology and several of its subclasses were too difficult to search because of their size.

Also, it was decided that a new format for reclassification should be adopted so that the results of reclassification projects could be used as soon as possible. In the past, a class was reclassified in its entirety; however, it is not practical to reclassify a large class like 260 in its entirety because it could take years before a newly created class and its subclasses could be published.

Consequently, the decision was made to segment Class 260 into a number of individual reclassification projects so that the results of these projects would be available for searches. Using this approach has resulted in the publication of several individual classes, within the range of Classes 518-585, to replace subclasses and concepts found in Class 260. Whenever subclasses are replaced in Class 260, the individual subclass areas are noted by a reference box in Class 260 to indicate the new search areas. Eventually, all of Class 260 will be reclassified and Class 260 will be abolished. Within the range of Classes 518-585, Classes 520-528 are considered the 520 series and Classes 532-570 are considered another series. Each of Classes 518-585 is considered an independent class under the Class 260 umbrella.

Within the newly established classes, the schedule hierarchy and placement superiority are indicated by the class number. For instance, Class 525 is superior to Class 528 and Class 544 is superior to Class 560. The class numbers merely indicate superiority of subject matter within the Class 260 family. Each class in the 520 Series and in the 532-570 series has been noted by upper case characters followed by a one-dot indent level with a carryover on the top of the manual page indicating the appropriate series i.e., 520, 532-570. The general rules of patent placement in Section IV, B, 1, of this handbook apply to the 520 and 532-570 series.

Handbook of Classification

Handbook of Classification

Appendix A

STRUCTURE OF THE MODERN SCHEDULE

Over the years, the USPTO has used many schemes to provide a framework that is uniform for the entire classification system as well as to provide schemes that optimize a class's usefulness.

A model is shown below that should be used in the creation of a new classification system; i.e., a class. However, this model is a theoretical standard and many deviations will be found in practice. The primary reason for these deviations is that all classes are built based upon a thorough review of the art to be contained in the new class. The structure of the class is dictated by the art itself. This review of the actual documents frequently causes modification of the theoretical model.

The specific arrangement of subclasses within a schedule will define that schedule's hierarchy as noted in the main portion of this handbook. The hierarchy will almost invariably arrange the subject matter with the most complicated and comprehensive material at the top of the schedule and the simpler material at a lower position in the schedule.

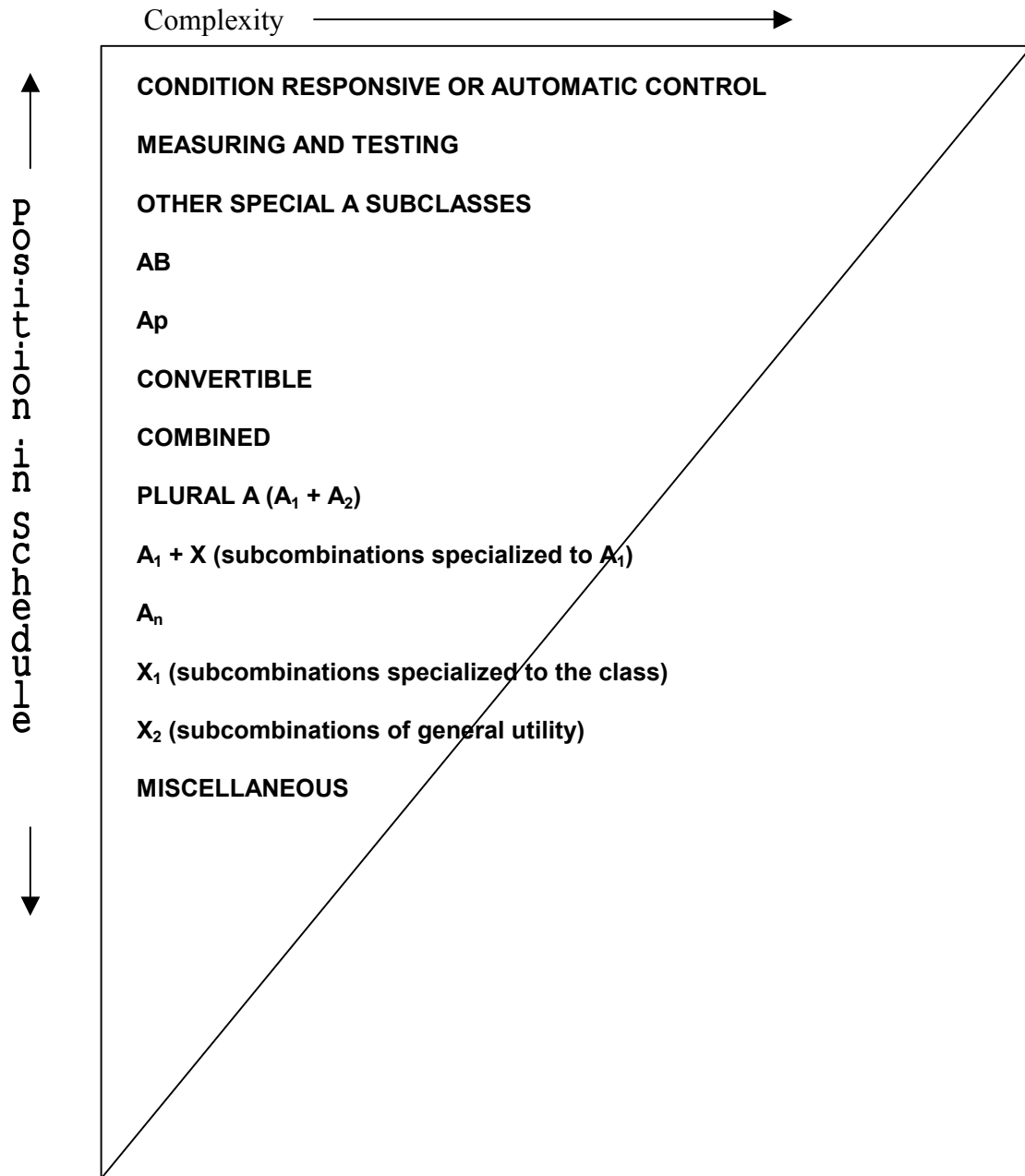
Further, all modern schedules exhibit exhaustive subclasses. This concept is discussed in depth in the main body of this handbook.

With these preliminary thoughts and reservations, a discussion about the preferred theoretical structure of the "Modern" class will now take place.

The "modern" class is often represented as an inverted right triangle.

Handbook of Classification

CLASS OF BASIC SUBJECT MATTER A



Handbook of Classification

As you can see in the above scheme, the subject matter is arranged from the most complicated (the top of the triangle) to the simplest (the bottom of the triangle). A, AB, Ap, and X are the four characters of subject matter in the above scheme. "A" represents the basic subject matter of the class, e.g., in a class of pumps.

"A" would be the types of pumps found in the class (e.g., jet pumps, reciprocating pumps, etc.);

"AB" represents the basic subject matter combined with subject matter having a different proximate function, effect, or product; that is, the subject matter of another class (e.g., a pump combined with and driven by a vehicle);

"Ap" represents the basic subject matter combined with a perfecting feature, i.e., some structure that enhances or improves the operation of basic subject matter device (e.g., an intercooler located between stages of a pump which improves the overall efficiency of the pump by carrying away unwanted heat generated during the pump's operation);

"X" represents the subcombinations of the basic subject matter or elements peculiar to or associated with the basic subject matter, when such subcombinations or elements are not specifically provided for in some other class (e.g., pump casings, etc.).

In addition to subclasses providing for the above noted material, modern schedules fre-

quently provide for the following additional concepts:

- (a) Condition Response (Automatic Control)
- (b) Measuring and Testing
- (c) Special "A"
- (d) Convertible
- (e) Combined
- (f) Plural "A"
- (g) Miscellaneous

A brief description of each of the above types of subclasses is given below.

Condition Response (Automatic Control)

Condition response is a broad concept that embraces the variant, Automatic Control, within its boundaries. Condition responsive subclasses are intended to provide a home for devices that include a means to sense a *randomly* occurring condition or change in condition that will effect a change in the operation of a device provided for in the class. This concept embraces devices as complicated as a milling machine with means to sense the position of a cutting head and acts to disable the machine if any misalignment is sensed. It also includes within its scope a device as simple as a pressure biased check valve, wherein the under surface of the valve seat senses fluid pressure which causes the valve to unseat when the pressure against the underside of the seat reaches a predetermined point.

"Automatic Control" is a more restrictive concept that includes means to sense a *randomly* occurring condition or change of

Handbook of Classification

conditions that operates on a *separate means* to effect control of an apparatus, e.g., the milling machine mentioned above. This concept requires a sensor, e.g., a slipper or feeler located adjacent to the system, which senses a condition or change in condition, e.g., tool misalignment. Once this condition is sensed, the sensing means operates on another device, e.g., a switch or valve, which controls a different medium to regulate the operation of the controlled device. There has been a tendency in recent years to move away from the title "Automatic Control" and to substitute the title similar to "Control Means Responsive to Sensed Condition."

Another concept closely allied to Automatic Control is *Programmed or Cyclic Control*. These devices frequently include sensors; however, the device employing the sensors merely performs repetitive operations. There is a basic "law of the machine" and the sensors are actuated in sequence to control the operation of the device based on that law. In other words, the condition sensed is predictable rather than random.

Also embraced by this concept are those devices that employ stored intelligence (e.g., magnetic tape) to control the operation of the machine in a prescribed, repetitive fashion.

These subclasses are generally grouped in the same area of the schedule and this area is generally located relatively high in the schedule.

Measuring and Testing

Many classes provide for their basic subject matter combined with some type of measuring or testing device. This represents a special type of "AB" combined subclass, but is no different in character than any other "AB" type subclass. In fact, its only distinction is its frequent occurrence.

Combined subclasses drawn to a class's basic subject matter combined with heating or cooling means or lubricating means are also frequently found in many modern classes.

Special "A"

It frequently happens that special collections of unique basic subject matter are provided for very high in the class schedule. These collections are of special search value and could get lost if they were positioned lower in the schedule. This collection will also appear above the "Combined" subclass even though they are not very complicated and are not drawn to combinations or basic subject matter plus perfecting feature. An example of one such collection is drawn to getter type pumps in Class 417.

Convertible

This subclass provides for devices that, while they are the basic subject matter of one class, are intended to be changed into the basic subject matter of another class by a rear-

Handbook of Classification

rangement of their parts. This concept also provides for the change of one type of device provided for in a given class into a different type of device also provided for in the same class by rearrangement of the parts of the device.

Combined

As previously noted in this handbook, “Combined” represents a dividing point in the schedule. Unless a note to the contrary appears, the subclass is exhaustive of all combinations, i.e., “AB” type and “Ap” type subclasses not provided for higher in the schedule.

Generally, all subclasses appearing below “Combined” will be drawn to either the basic subject matter of the class or to the subcombination and elements peculiar to or associated with that subject matter.

Therefore, a “Combined” subclass, in practice, is a “Miscellaneous” subclass for combinations not provided for elsewhere.

Plural “A”

Another type of collection that frequently appears in a modern schedule is one drawn to systems employing multiple devices provided for in the class. The multiple devices may be of the same type or they may be different types, e.g., two diaphragm pumps connected in series or a diaphragm pump and a reciprocating piston type arranged in the same fashion.

This subclass is usually positioned immediately below the “Combined” subclass.

Miscellaneous

In many modern schedules, the last subclass contained in the schedule is “Miscellaneous.”

This subclass is defined in extremely broad terms and is intended to be exhaustive of all subject matter admitted to the class but not provided for higher in the class. Each “Main Line” subclass is exhaustive for the material provided for in that main line; however, there will often be a residue of material that does not fit the existing “Main Lines.” If a “Combined” subclass exists in the schedule, only unprovided for basic subject matter and unprovided for subcombinations and elements will be found in “Miscellaneous.” It must be remembered that “Combined” is exhaustive of combinations of the basic subject matter and the subject matter of some other class.

In conclusion, the above model is a theoretical model, and many deviations will be found in practice, e.g., Classes 198 and 251 contain no “Combined” subclass even though they are modern classes. This omission was a conscious act of the Classifier involved and was dictated by the nature of the art embraced by the class.

One must always carefully review a schedule while using it to look for exceptions from this model.

Handbook of Classification