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Patent Searches: Step-by-Step

by Brian Pennington

Until recently, the ability to study and research patents was an arcane art practiced by lawyers and scholars who had to travel to a designated patent library to begin arduous research. Today, with the widespread use of the Internet and the automation of the United States Patent Office records, as well as a number of other sources, anyone can research patents. If you are willing to spend a little time learning about the patent system and the sometimes not-so-logical way patents are categorized and archived, you too will be well on your way to the fascinating world of the inventor. In this article you'll find some of the basic strategies you'll need to begin your patent searches on the Web.

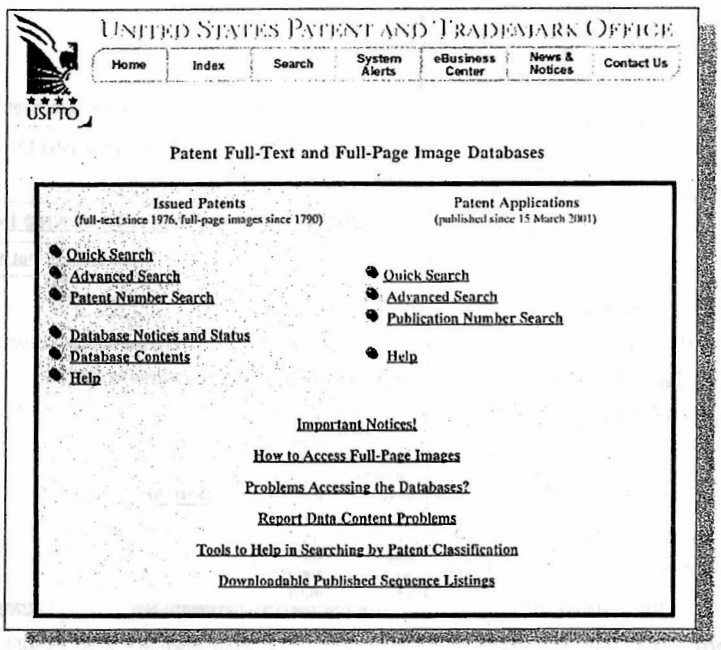


Figure 1. The U. S. Patent Office Website index page: www.uspto.gov/patft/index.html. A good place to begin your patent search is to click on "help."

Before you begin, it might be useful to have a basic review of the major types of patents encountered in researching. There are others types of patents, but listed below are the most commonly found patents and those of most interest to the historical researcher. One other important point is that there was a fire in the Patent Office in 1836, which destroyed its records and affected patent numbering, as we will discuss.

Types of Patents

Utility Patents. Utility patents are generally given for new or improved processes such as forging or for particular items or equipment such as a threshing machine. These patents encompass three areas: mechanical, electrical, and chemical, and were originally awarded for fourteen years. Later in 1861, the time was increased to seventeen years, and now, as of 1995, it is twenty years. The first utility patent (meaning post-fire), patent no. 1, was issued on 13 July 1836 for "Traction Wheels."

Design Patents. These patents are given for the aesthetic look of an invention and typically are good for fourteen years. The patents are given on the basis of the uniqueness of appearance, such as the famous Panther Head saw, D11603.

X- Patents. This designation refers to patents originally assigned before 1836; the records were lost in the Patent Office fire. Prior to the fire and the subsequent patent act, patents had not been assigned numbers. After the fire the Patent Office solicited the old patents from the inventors or the assignors, and as best as it could, the Patent Office determined where the patents fell and assigned each its respective number. Reportedly, there were fractional patent numbers issued when there was not enough room to include all the patents that fell on that date. Often the patent record is incomplete for X-patents with only one of the pages available. A patent for a metallic body plane, X4859, for example, has the drawings but is missing the patent text; a "Missing Page Temporary Notice" is found in place of the missing pages.

Reissued Patents. When there is a need to correct errors or omissions on patents that have already been issued, the Patent Office assigns a reissued patent. The reissued patent does not add time to the original patent protection period. The patent also references in the heading the patent that is being corrected. For example, RE5454, "Improvement in Bag Machines against Mr. Heard's original patent, 43772." Reissued patents will appear for both utility and design patents, although a design reissue will start with RD, followed by the number.

Additional Improvements. Also of note, and infrequently encountered, are the Additional Improvement

patents. Designated AI, these patents were issued from 1836-1861 and allowed the original inventor to patent improvements on his patent.

Beginning Your On-line Search

Once you have arrived at the United States Patent Office (USPTO) Website index page for patent full-text and full-page image databases (<www.uspto.gov/patft/index.html> see Figure 1), your first stop should be the help page. You can click on the "help" button or go to <www.uspto.gov/patft/help.htm> (Figure 2). If you are a first time user, it's a good idea to spend some time reviewing some of the topics on this page. You should especially take the time to visit the frequently asked questions (FAQ) area, which you can access from the help page or go to <www.uspto.gov/patft/helpfaq.htm>. Reviewing the FAQ may save you time during your search.

There are two important points to remember before you begin. First, all patents are classified according to a Patent Office list called the Current Classification List or CCL. Most patents also are assigned a subclass and are given more than one class and subclass. Second, only patents issued after 1976 are full-text, which means you can search them by all of the key elements of the patent such as date of issue, name of item, inventor or location, and others as well.

Searching for older, pre-1976 patents, however, presents several challenges. First, because these patents are stored as scanned images, not text documents, you are limited to searching either by the patent number or by the patent's CCL. You cannot search by date, name of the item, inventor, or location; you will be reminded of this fact on most of the pages as you search.

Because pre-1976 patents are scanned images, in order to view them on your computer, you must download a TIFF viewer. TIFF is the type of image used for the scanned picture and text; the viewer is available as a free download from several sites. Either click on "How to Access Full-page Images" (one of the options on the index page, Figure 1) or go to <http://www.uspto.gov/patft/images.htm>, which provides system requirements and known free download sites of TIFF viewers. This site also includes instructions on how to print images and the length of time that an image you bookmark will remain available (usually only two hours).

Once you have downloaded and installed the TIFF viewer, you are ready to begin your search, so return to the "Patent Full-Text and Full-Page Image Databases" index page (Figure 1). (The best way is to use your "back" button or go to <www.uspto.gov/patft/index.html>.)

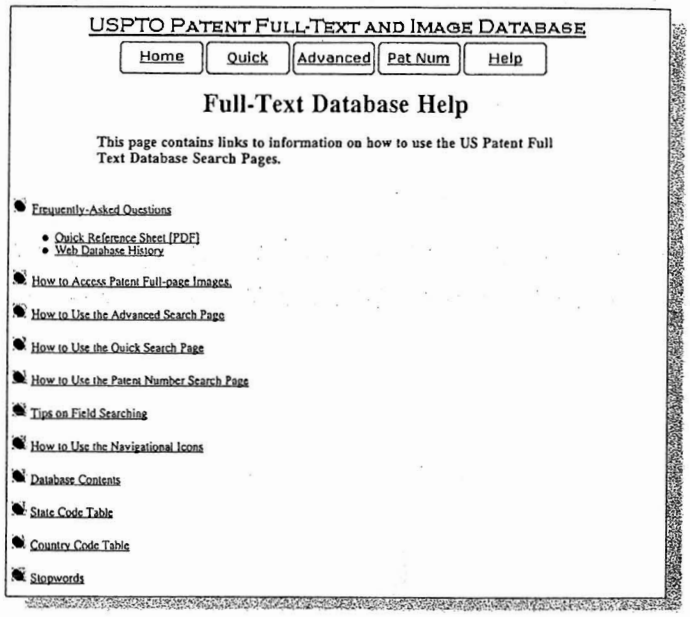


Figure 2. The help page. You can access the frequently asked questions (FAQ) area from this page.

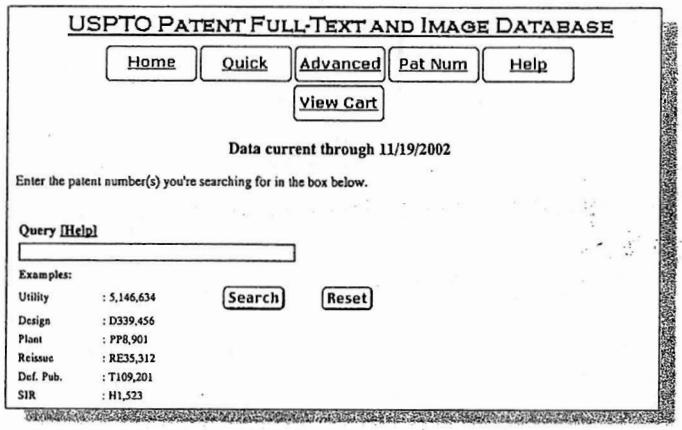


Figure 3. The patent number search page.

Searching Older Patents

The Patent Act of 1927 required that the patent number be placed on the item instead of just the patent date. If the patent number is available, then it is simply a matter of clicking on "Patent Number Search" on the index page (Figure 1), or go to <http://patft.uspto.gov/netahtml/srchnum.htm>, then enter the patent number into the query box and press the "search" button (Figure 3).

As was mentioned earlier, different types of patents use different letter prefixes. Utility patents use just the patent number; design patents begin with D; pre-1836 fire patents start with X; and reissued patents have the prefix RE; remember to add the prefix if necessary.

This search will indicate if the patent number is valid and will also provide all the CCLs associated with

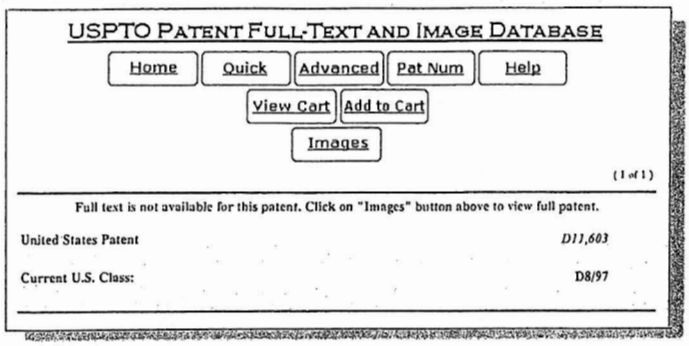


Figure 4. The results of the search for patent Design Patent D11,603. Note the message "Full text is not available for this patent. Click the "Images" button above to view full patent." At the bottom of the page is listed the class and subclass—D8/97.

that individual patent. Clicking on the patent number will send you back to the "Patent Full Text and Image Database" page and return the message "Full text is not available for this patent, " but simply click on the "images" button to view the full patent (Figure 4). This will bring you to the first page of the patent, but it will only be visible if you have downloaded the TIFF viewer. (Don't forget that once downloaded, you may also have to install the viewer onto your computer.) The first page you will see is the drawing page; typically, subsequent pages will have the text of the patent.

Pre-1927 Patents

Of course, many items you will be interested in are prior to 1927 when the Patent Office began requiring the placement of the patent number on the object. So you may have a date, but since the patent you are searching for is pre-1976, you cannot search by date, only by patent number or CCL. Or, you may have an item that is marked "patent pending." In these cases because you can't search by date, different methods must be used to identify the patent number so you can view it. It's a process that requires varying degrees of analysis, research, time, and sometimes just plain luck.

First, confirm that the patent date is a valid date. For most patents, the date will fall on the Tuesday of the week that the patent was issued. Early patents are an exception to this rule. According to Steve Reynolds, the "Tuesday Rule" did not go into effect until 27 May 1848 for utility patents; for reissues and extensions, Tuesday was not formalized until 1872. To confirm your date, check out <http://www.earth.com/calendar>, a perpetual calendar website.

If the day you are searching does not fall on a Tuesday, recheck your number. Is that an 8, or is it a 3? It is, however, possible that the date on an object will be marked clearly, but it is not a Tuesday. The are several reasons this may happen—the date was a mistake because the patenee thought the patent was going to be issued; it was an attempt to keep others from patenting an item; or the patenee used the application date as the patent date. In these cases, you'll have to use some other techniques to confirm that the item was ever issued a patent.

The simplest, but most time consuming, method is to type in patent numbers until you find your date and then continue to punch in patent numbers until yours is found. However, you can narrow your search a bit further. There are several on-line and printed sources that list the first patent issued for each year beginning in 1836. Thus, if you think that at least the year on your item is correct, you can determine all the patent numbers assigned during that year. There are two places to try: <http://www.biddingtons.com/content/patentchart.html> and the Patent Office date and patent number listing, which also includes some history, at <http://www.uspto.gov/web/offices/ac/ido/oeip/taf/issudate.pdf>.

But even this refinement can be tedious and there is a better way.

Useful Web Sites

Biddington's	This site, **www.biddingtons.com/content/patentchart.html**, tells you the first patent issued each year beginning with 1836. If you know your item was patented in a certain year, then you can refine your search to only those patent numbers assigned during that year.
"Making of America"	This Cornell University site includes copies of *Scientific American*, which from 1846 to 1869 published awarded patents. This site allows you to search using a name for patents awarded for these years: **http://library5.library.cornell.edu/moa/moa_search.html**.
Perpetual Calendar	To confirm that a date on a object is a Tuesday, the day of the week most patents were issued, go to this site: **www.earth.com/calendar**.

Category & Subclass Query

A more sophisticated, and easier, approach is to use a category/subclass query to find the patent you are interested in. Patents are categorized into classes and within the classes, into subclasses. The classes give general categories such as: Boot and Shoe Making; Metalworking; Cutlery; and Harvesters. An on-line search by class can be conducted from the classification page. Either go to <http://www.uspto.gov/go/classification/index.htm> or go back to the index page (Figure 1) and click on "Tools to help in searching by patent classification," and you will be directed to the classification home page (Figure 5). There are several types of searches you can undertake from here.

If you don't know the class for your object, enter a keyword (for example, kitchen) in the query box on the right side of the page. This search will give you a list of classes that contain that keyword. Read through the list to see which category comes the closest to what you are looking for. You can also select "Class Schedule" from the left side of the page to view a list of all the classes. Be aware these lists are long will take a fair amount of time to download on most computers

For example, if you were interested in steel making, you would want to begin your search for the particular process by entering those keywords. Among your results would be "Class 148, Metal Treatment." You could then enter the class number on the left side and you will be given a list of subclasses. From there you can identify the exact process/method of interest.

If you are interested in saws and planes, you would go to Class 30 (cutlery) subclass 148 (bench plane) and a number of subclasses beginning with 166.3 to 525 for all types of saws and methods. Figure 6 shows just the first few results from this search.

As you become familiar with the process, you can conduct more sophisticated searches. Perhaps you have a general interest in a particular area or in researching a particular type of item. An excellent starting point is the advanced search page <patft.uspto.gov/netahtml/search-adv.htm>, or you can reach it by clicking on "Advanced" on the index page (Figure 1, <www.uspto.gov/patft/index.html>. From this page you can make a CCL query with just the class and a wild card (USPTO uses $) as the subclass. The search will return upwards of 40,000 patents. Enter a search string like "CCL/##/$," where ## represents the class and $ is the subclass wild card. Before conducting the search, select the date range in the select years block

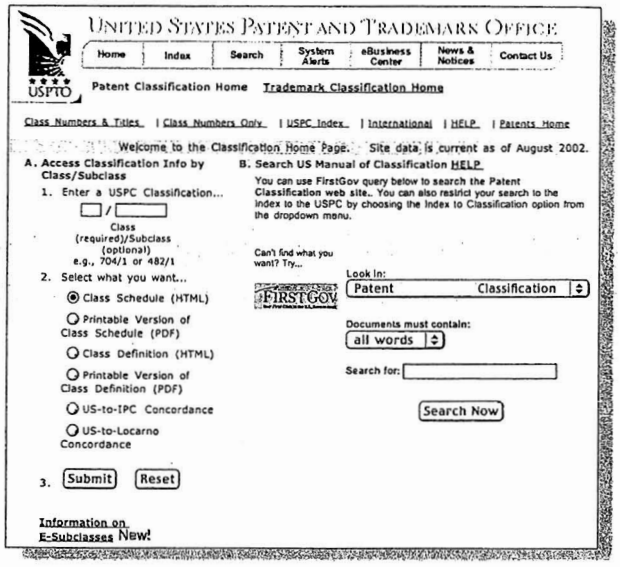


Figure 5. The classification page, <www.uspto.gov/go.classification/>. From here you can search the CCL data base by entering the class, class and subclass, or class, and a wild card, or you can enter a key word or words, such as "kitchen" or "cutlery." When you know the class or subclass, you can begin refining your search using other information you have such as the patent date.

(1790-1975 would be most commonly used).

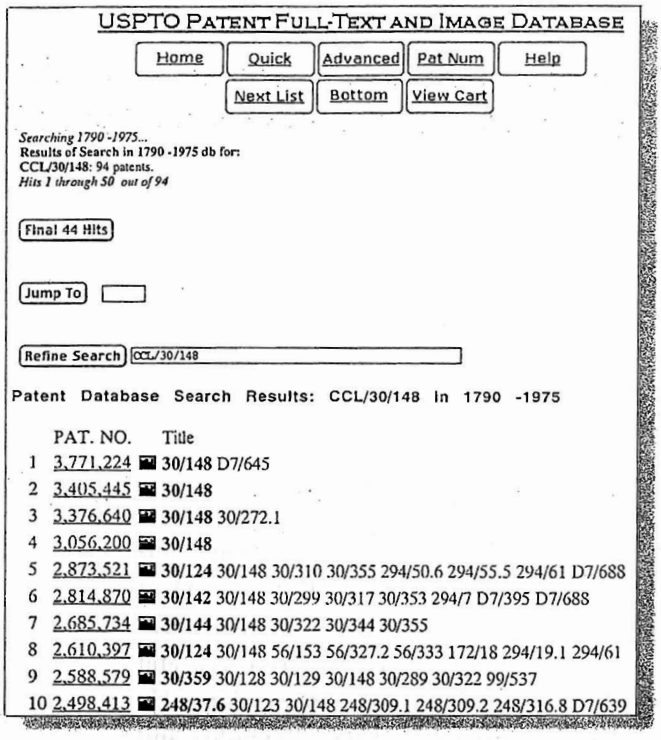
Using our metalworking example again, you would enter "CCL/148/$" and then would receive 16,997 individual patent numbers that the Patent Office has classified under this class. The results you receive will include the patents as well as single class/subclass returns. Some patents will have multiple 148 class returns with different subclasses, and even others will have both a 148 class as well as other completely different classes, as you can see in Figure 6.

Now, let's review the search process to this point. You have a pre-1926 item, which means you can only search for its patent by using the patent number or the CCL. Because the item is pre-1926, there is only a patent date on it—no number. You have determined its class and perhaps subclass; and you have come up with a list of patents in that class. You have also gone to the Biddington's site, so you know which range of patent numbers fall in your year. Now look through this list of patents from your CCL search and click only on those patents that fall within the patent number range for the year on your item. This search should allow you to find a patent in relatively few tries.

Advanced Search Techniques

Sometimes you don't have even these few bits of information, or you can't even determine what the class is. One approach you can use in this situation is to search post-1976 patents that are stored in full text to iden-

tify a possible class and subclass. Go to the advanced search page either by clicking on it from the index page or going to <http://patft.uspto.gov/netahtml/search-adv.htm>. Use the title search (TTL) and type in the type of item you are looking for to find a modern equivalent that will lead you to the class/subclass.



USPTO PATENT FULL-TEXT AND IMAGE DATABASE

Home | Quick | Advanced | Pat Num | Help

Next List | Bottom | View Cart

Searching 1790 -1975...
Results of Search in 1790 -1975 db for:
CCL/30/148: 94 patents.
Hits 1 through 50 out of 94

Final 44 Hits

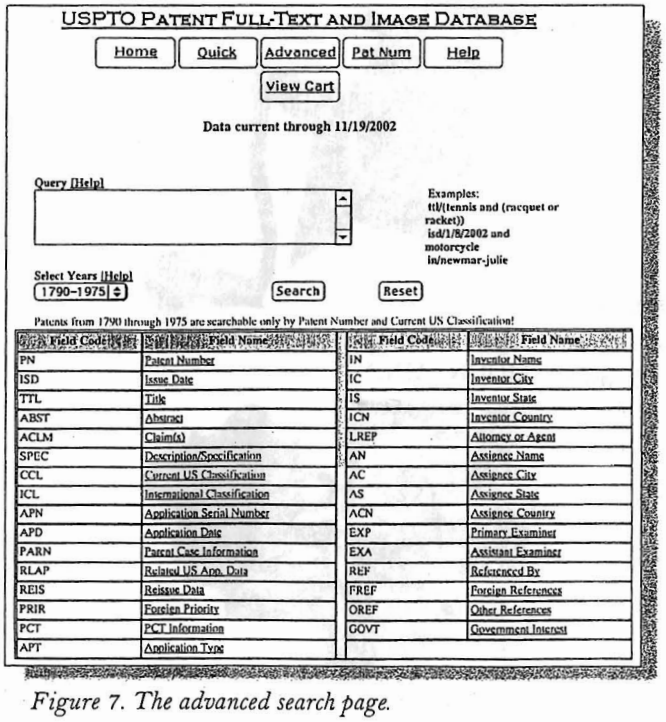
Jump To

Refine Search CCL/30/148

Patent Database Search Results: CCL/30/148 In 1790 -1975

	PAT. NO.	Title
1	3,771,224	**30/148** D7/645
2	3,405,445	**30/148**
3	3,376,640	**30/148** 30/272.1
4	3,056,200	**30/148**
5	2,873,521	**30/124** 30/148 30/310 30/355 294/50.6 294/55.5 294/61 D7/688
6	2,814,870	**30/142** 30/148 30/299 30/317 30/353 294/7 D7/395 D7/688
7	2,685,734	**30/144** 30/148 30/322 30/344 30/355
8	2,610,397	**30/124** 30/148 56/153 56/327.2 56/333 172/18 294/19.1 294/61
9	2,588,579	**30/359** 30/128 30/129 30/148 30/289 30/322 99/537
10	2,498,413	**248/37.6** 30/123 30/148 248/309.1 248/309.2 248/316.8 D7/639

Figure 6. The first ten results out of ninety-four of the search for "Class 30/Subclass 148." If you know the year your item was patented and its class and subclass, you can go to the Biddington's site to determine which patent numbers were assigned in that year. Then you can sort through a list of results such as this for your patent. Note that the results show not only the "Class 30/Subclass 148," but all the other classifications for the patents.



USPTO PATENT FULL-TEXT AND IMAGE DATABASE

Home | Quick | Advanced | Pat Num | Help

View Cart

Data current through 11/19/2002

Query [Help]

Examples:
ttl/(tennis and (racquet or racket))
isd/1/8/2002 and motorcycle
in/newmar-julie

Select Years [Help] 1790-1975

Search | Reset

Patents from 1790 through 1975 are searchable only by Patent Number and Current US Classification!

Field Code	Field Name	Field Code	Field Name
PN	Patent Number	IN	Inventor Name
ISD	Issue Date	IC	Inventor City
TTL	Title	IS	Inventor State
ABST	Abstract	ICN	Inventor Country
ACLM	Claim(s)	LREP	Attorney or Agent
SPEC	Description/Specification	AN	Assignee Name
CCL	Current US Classification	AC	Assignee City
ICL	International Classification	AS	Assignee State
APN	Application Serial Number	ACN	Assignee Country
APD	Application Date	EXP	Primary Examiner
PARN	Parent Case Information	EXA	Assistant Examiner
RLAP	Related US App. Data	REF	Referenced By
REIS	Reissue Data	FREF	Foreign References
PRIR	Foreign Priority	OREF	Other References
PCT	PCT Information	GOVT	Government Interest
APT	Application Type		

Figure 7. The advanced search page.

For example: I own a linoleum plane. At least that is what I called it. It holds a linoleum cutter and has a front and rear handle like a plane. It says Armstrong's Linoleum on the handle and has a patent date of 17 December 1925, which is just a little early to have the patent number included on it. A quick check reveals that 17 December 1925 is not a Tuesday, but a Thursday, and therefore not a valid patent date.

Checking the patent index and using the keyword "linoleum" in the classification search, I found a class/subclass only for making linoleum, not cutting linoleum. Perhaps, I thought, might it be "Class 30 "—cutlery? Using the full text search, I entered "TTL/linoleum," searched for all dates, and got six modern patent returns with linoleum in the title and several dealing with cutting. I selected patent no. 4,648,181. This patent is categorized under three CCLs: 30/293; 30/287; 30/294. Since the main function of my tool would, like the modern patent, also fall under "Class 30" cutlery (cutting), I can assume that an older linoleum cutter will have the same classification as the modern patent.

Since the patent date is invalid I assume that it must be 23 December 1925, the next Tuesday or later. Using Biddington's patent date listing, I identified a reasonable range of patent numbers 1,567,000 to 1,654,500, with dates from the end of 1925 through the end of 1927.

A search of CCL/30/293 revealed fourteen potential patents. Working from earliest to latest, the sixth patent I looked at was my linoleum plane, described as "Linoleum Cutter" patented on 15 June 1926 and assigned (owned) by the Armstrong Cork Company of Lancaster, Pennsylvania.

Another technique is to use full-text patents to identify previously cited inventors. In some cases the citations go back to the 1800s. Go again to the advanced search page (Figure 7 or <patft.uspto.gov/netahtml/search-adv.htm>) and click on "referenced by" field or enter "REF/Name of Inventor" in the query box. This search will provide previously cited patents that are required on applications to show the examiner that the application is unique. The search results in a list and when a patent is selected, the first page will have references to prior patents including the patent number (as a link), the month and year, the inventor, and the CCL.

Are you interested in finding out the 1912 patent

date on Disston levels? Input "REF/Disston" and you will find four level patents assigned to Disston in the references. Select one of the four level patents returned—D43191. This design patent is for the ornamental design of the level, namely the fluted finger grips.

One more method to help winnow through the large number of patent numbers that can be returned is to use a reference book that has some patent numbers in it, such as the *Stanley Value Guide* or *The Directory of American Tool Makers*. Look up a patent number for the type of item you are interested in and submit the query. Whenever you search by patent number, you will also be shown the CCL or CCLs that the Patent Office has assigned to it. The categories do not always seem to make sense, but multiple CCLs on a patent help you look into other CCLs that might be of interest. Again, knowledge of the patent numbers issued by year quickly helps find the desired patent.

Another good source is Cornell University' "Making of America" website, <http://library5.library.cornell.edu/moa/moa_search.html>. This site provides scanned pages of several outstanding early patent number resources, especially the issues of *Scientific American*. From 1846 to 1869, the magazine published awarded patents and heavily advertised to inventors to use the *Scientific American* patent attorneys. This site allows you to search using a name for patents awarded during this time.

You'll also notice that on a given day, patents were awarded alphabetically by the inventor's last name. If you are interested in a particular inventor and have found one patent, check the patents before and after. You may find other patents he was awarded. The alphabetical rule holds true for later patents, however, instead of A to Z in order, there will be groups of patents with repeating A to Z series.

So, now you have the tools and some basic knowledge to research patents and find out who made that whatisit you have, as well as what it really is. It will still take some work on your part to develop proficiency, but with a little perseverance and some common sense, you'll be surfing through patents with the best of them.

Author

Brian Pennington is a career Army officer and a member of EAIA and MWTCA. I am also a founding member, along with Jeff Joslin, of DATAMP (Directory of American Tool and Machinery Patents), an on-line database resource of patents. His collecting, research, and hobbies include rules,handsaws, and tool making. He would like to thank especially Steve Reynolds and Ralph Brendler for tips and encouragement in expanding his knowledge and confidence.

Whatsits

Ted Wells of Somerset, England, sent this Whatsits. He notes that the object is marked "Made by White Mountain" (Figure 1) and is made of cast iron. The only other marks are "PAT 2.13.1894 & PAT AP'D FOR" (Figure 2). Ted also sent along a top view (Figure 3). As can be noted in the photographs, the item can be mounted on a bench or table. Ted adds, "If a cherry is placed on the hole, when the handle is turned it throws the cherry off."

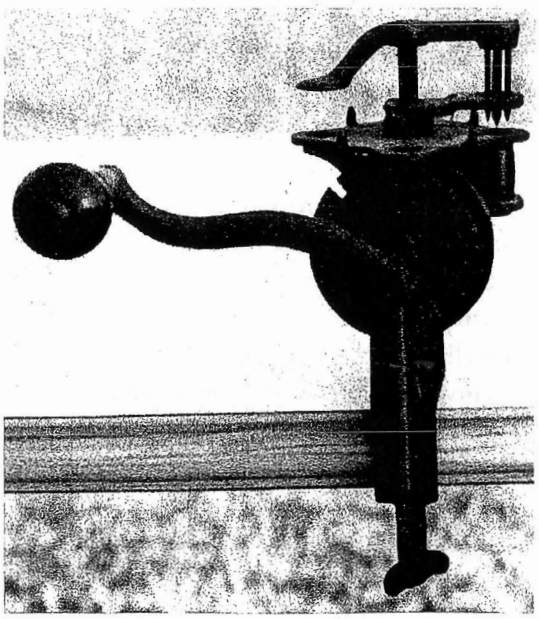


Figure 2. Note mark on plate behind handle.

Figure 1. The object is marked "WHITE MOUNTAIN."

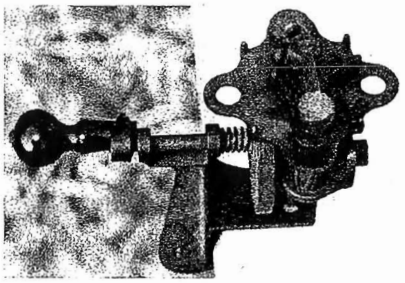


Figure 3. Top view.