

Chapter Four

The Application of Citation Indexing to the Patent Literature

The *Patent Citation Index* section of *SCI* deserves a few separate words because it realizes only a part of what citation indexing can do to make the patent literature more useful.

The idea of producing a citation index of the patent literature dates back, as far as formal documentation is concerned, to 1949, when Arthur H. Seidel suggested, in the *Journal of the Patent Office Society*, establishing a card file of citation records (1). The file would contain a card for each issued patent, and the card would identify each subsequent issued patent that had cited the prior patent for one reason or another. Seidel's suggestion drew a formal endorsement from Harry C. Hart in a later issue of the *Journal of the Patent Office Society* (2). Besides endorsing the idea of a patent citation index, Hart revealed that he had suggested such a system two years earlier to the Patent Office, which had forwarded the suggestion, with expressed interest, to the publisher of *Shepard's Citations*. Not surprisingly, in view of the role *Shepard's Citations* has played in the law literature, Hart and Seidel were both patent attorneys. Unfortunately nothing came of either of their suggestions.

The first citation index to the patent literature was published in the 1964 edition of *SCI* (3). It was different from the current version of the *Patent Citation Index* in terms of its source-document coverage. It listed not only the references to patents that appeared in the journal literature (which is the extent of the source literature covered by the current *Patent Citation Index*), but also the references that appeared in patents that were issued during the indexed year. Source patents were identified in the *Patent Citation Index* by number and the name of the inventor. A complete bibliographic description, including all inventors, assignees, patent title, classification number, date of issue, and number of references in the patent, was available in the *Source Index* under the name of the principal inventor. This information gave the searcher a sound basis for deciding whether the search should be continued by

examining the abstract of the patent's principal claim in the *Official Gazette*, looking up its abstract in *Chemical Abstracts*, or obtaining a copy of the patent itself.

This index came close to exploiting the full power of citation indexing for conducting searches of the patent literature. Its primary shortcoming was that its coverage of the references in the source patents was a bit less than complete. There are two kinds of references in patents: those occasionally provided by the inventor in the text of the application and disclosure and those provided by the patent examiner at the end of the patent. Those provided by the examiner constitute a large majority of the references, and they were the ones picked up by the early *SCI Patent Citation Index*. It was economically impractical to pick up the inventor's references because of the cost of extracting them from the text of the specification.

NATURE OF THE REFERENCES

The nature of the examiner's references makes an important contribution to the effectiveness of a citation index of the patent literature (4). They are generated as part of the search for prior-art that can be grounds for disallowing a claim, restricting the scope of the application, or supporting a legal point. The examiner's prior-art search is conducted within both legal and technological frameworks and is based not only on what is literally stated in the disclosure but also on what is implied. In other words, judgments of what constitutes anticipatory prior-art often are highly interpretive. For all these reasons, the scope of the prior-art search is, more often than not, quite broad, delving into a variety of subclasses, plus the examiner's own files and personal knowledge. Such a search produces references that index the patent in a way that an indexer could not and permit the citation index to reach across subclasses of the patent literature in the same way that it reaches across disciplines and specialties in the journal literature. In other words, a patent citation index can bring together patents that are unrelated in terms of their principal subject matter.

One example makes the point clear: a patent granted to Schoeller in 1934 on "Wetting and Dispersing Agents for Use in the Textile Industries" was classified under 260-458, carbocyclic or acyclic-carbon compounds, which are acyclic sulfuric acid esters. It was subsequently cross-referenced to a multitude of subclasses. The *CA* abstract for the patent was indexed under "dispersing agents" and "wetting agents." There was no organic compound indexing.

The first granted patent that cited Schoeller's work was issued to Lerner in 1948 on "condensation products of cholesteryl esters with polyethylene glycol & process for producing same." The principal class to which this patent was assigned was 260-397.2, which covers sterols (including vitamin D). Neither of these classes, nor any of the numerous subclasses to which the patent also was assigned, corresponded to any of the classifications in which the Schoeller patent was placed. Though it was not possible to determine all the categories under which the Lerner patent was indexed by *CA*, it was found to be indexed under "cholesterol esters" and "glycols, polyethylen." It was not indexed under "sterols."

The next patent to cite the Schoeller patent was issued, also in 1948, to Brown.

The Brown patent was on "waxy polyol ether-esters." Its principal class is 260-234, carbohydrate esters. It was cross-referenced to 260-210 and 260-410.6. Subclass 210 is glycosides, which is not applicable to either the Schoeller or the Lerner patent. Subclass 410.6 covers "synthetically produced higher fatty esters with acyclic polyoxy alcohols" and is applicable to the Schoeller patent, but not the one issued to Lerner. The Brown patent was extensively indexed in *CA* under "waxes," "ethers," "esters," "polyol," "hydroxy compounds," "palmitic acid," "stearic acid," "glycerol," "sorbitol," "mannitol," "D-glucose," "ethylene oxide," "propylene oxide," "lubricants," "cosmetics," "yarns," "sizes," "polishing materials," "coatings," and a number of organic compound headings.

The purpose of the example is not to criticize the Patent Office classification assignments or *CA* indexing, but merely to demonstrate how the scope of the prior-art searches performed by the patent examiners enables a citation index to bring together patents that are apparently unrelated by identifying relationships at a deeper level than the principal subject matter. By examining the wrappers of the patents in the example, we were able to identify the nature of the relationship in that particular case. The records of the Lerner patent show that the examiner did not find the Schoeller patent in the search of the patent file because he did not search any of the classes to which it was assigned. He found it in his own files or his memory or elsewhere. But he found it, and wrote, as a result, "Schoeller describes condensation of various acids, including stearic acid and its ester, with polyethylene glycols."

The examiner of the Brown patent stated in the wrapper, "Schoeller discloses the reaction of a carboxylic acid and diethylene glycol and ethylene oxide. There is no invention in substituting a trihydric alcohol, or a similar polyol, in place of the dihydric alcohol."

These comments show that the relationship between the three patents, then, is the condensation of acids with polyethylene glycols.

RELEVANCY AND UTILITY

The key question, of course, is whether the relationships identified by the citation index make the citing patent, which is the one retrieved, relevant to the interests of the searcher. There are no categorical answers to this question. There is not even an objective measure of relevancy. What one person considers relevant is dismissed by another as being irrelevant. Certainly, inventors and patent examiners have a difficult time agreeing on what is relevant.

The question is best answered by saying simply that a citation index of the patent literature identifies relationships between patents that are not identified any other way, and that these relationships permit the rapid retrieval of information that is relevant to the search a significant percentage of the time. Certainly there is no more useful tool for determining whether the technology disclosed in a particular patent has been modified, improved, or utilized in any way.

It is unfortunate that the Patent Office management has not followed up on any of the citation-index proposals that have been made to them. A citation index for the

exclusive use of their examiners probably could be justified on a strict cost-benefit basis just by including all the references from the abandoned applications, which are never classified. The references to the patents that led to the decisions of abandonment represent an important store of information that probably would greatly reduce the number and the length of searches that the examiners must conduct.

As with most innovations, the initiative for developing a comprehensive citation index to the patent literature probably will come from private industry. ISI was forced to drop patents from its source coverage in 1966 because of the economic pressures involved in making *SCI* a comprehensive index to the journal literature. But that does not necessarily mean that we will not try again. In the meantime, a service called Search Check began offering, in 1976, citation searches of a patent file structured around the examiner references on all patents issued since 1947. So the idea of a comprehensive citation index to the patent literature, after lying dormant for a number of years, is once again showing signs of life. Maybe this time the circumstances will be more favorable to its evolution into the type of useful role such an index is capable of playing in managing the patent literature.

REFERENCES

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