

Patents and Information[†]

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Patents are reflective of legal exclusionary rights as well as being valuable sources of technological innovative information and economic incentives. The role of Canadian patents in satisfying each of these three facets is discussed.

A patent is a document, issued by a Patent Office, which provides a description of an invention. Moreover, the patent creates a legal situation in which the patented invention can be exploited, i.e., made, used, or sold, only with the authorization of the patentee. A patent is thus a legal exclusive right. The right to exclude which is embodied in a patent is a bargain between the government granting the patent and the inventor. For his part, the inventor has to provide detailed knowledge of his invention. For making this invention public, the government, for its part, grants to the inventor the sole rights to what he has invented for a limited period of time.

But to information chemists, a patent is viewed as a publication which constitutes a source of information. Because of the incentive provided by the exclusionary rights granted by a patent, an inventor is encouraged to disclose his invention, i.e., to dispense information. If the invention is adequately disclosed in a patent, others can utilize the ideas contained in the patent document to develop further improvements or to find better or alternative ways of obtaining the same result. The publication of the invention in a patent may also prevent a duplication of effort. This, in turn, provides an unhindered exchange of information which could promote further advances.

Patents as a source of information provide a significant economic advantage to society. It is axiomatic that for an economy to grow there must be innovative persons in the society. But for these innovative persons to create innovations at a level up to their potential, they must be well informed. The society of which these individuals is a part must be able to produce, distribute, retrieve, and use knowledge efficiently. Patents as one source of innovative knowledge can thus provide a key to economic progress.

Generally a chemist/inventor has two roads to follow in disseminating information, and these roads are not necessarily mutually exclusive. Following the first road, he may write an article and publish the article in a scientific journal, firstly in order to gain prestige, and secondly because he feels that he has something of interest to report to his professional colleagues. Of the many articles published, very few describe major discoveries. The vast majority are reports of some novel extension of what was previously known—a small step forward. By the second road, he may seek to patent the invention and thereby incidentally ultimately publish his invention. Publication of the invention is, in fact, one essential feature of the patent system. Moreover, the publication merit of a patent is that a patent is concerned with a specific application of technology and is not directed merely to scientifically interesting information.

As in the case in many journal publications, many patents are directed to inventions of a modest character. However, the difference between the step forward in a journal publication and that of a patent is that a patent describes not only a novel

extension of what was previously known, but also that which was not obvious to a person of ordinary skill in the art. For this reason, the much smaller volume of the patent literature is a more fertile source of useful and innovative information for the creative chemist to mine than are journal articles.

Moreover, it is my view that the patent literature is essentially nonoverlapping with the other technical literature sources. I have not made any statistical study, and anyone with the necessary time and inclination can do so, but it is my empirical opinion that patents form an almost complete, self-perpetuating, continually updated, body of information. Patents should, therefore, serve a major information-dissemination role. The growth and success of such organizations as Derwent CPI, IFI Plenum's Claims, and INPADOC attest to the need to make this information more accessible.

I would suggest that information contained in patents is so useful that you should be encouraged to look to the patent literature more frequently. There are three significant advantages to a patent as a source of technical information which make it sometimes preferable to the larger bulk of scientific journal publications. Since I have more knowledge of the Canadian system, I will refer to it in respect of these advantages, and why it would sometimes be desirable for information chemists to refer to the Canadian patent system rather than elsewhere. The first advantage is derived from the classification and indexing system. In Canada, this system is a hierarchical system whereby the subject matter of invention is divided into several broad groupings, namely, mechanical, chemical, and electrical.

The Chemical Division is divided into five sections, namely, chemical consumer compositions, metallurgy and inorganic chemistry, carbon compounds and synthetic resins, organic chemistry, and industrial chemistry. These are further divided into about 50 classes. Each of these classes are further divided into subclasses. For example, class 400, directed to chemistry, carbon compounds, synthetic resins, mixtures, include some 100 subclasses, wherein synthetic resins are subcategorized as: ion exchange, reclaiming, and pore forming, and as mixtures with vulcanizable natural gums, carbohydrates, liquor, fats, fatty oils, fatty oil acids or salts, natural resins, waxes, solvents, fillers, and preservatives (see Figure 1).

This classification system in effect groups similar patents. It is possible in Canada to obtain a list of all patents in a class and subclass, and to have this list continuously updated weekly.

The second advantage is derived from the Abstract of the Disclosure. In Canada, the Abstract is intended to provide a synopsis of the invention. It provides the means for quickly determining the nature of the disclosure. It also indicates the use to which the invention is put, and the advance that has been made in the art. Accordingly, it is possible by reading the Abstract of the Disclosure to advance from the list of "similar" patents as groups in the same class and subclass, to a smaller group of patents and thus to narrow the field of search for the useful information which can be gleaned.

The third advantage is derived from the informal list of similar patents which are defined by the citations of patents

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CLASS 400 CHEMISTRY, CARBON COMPOUNDS,
SYNTHETIC RESINS, MIXTURES

Section C-5

Established: 7 Mar 57

1	SYNTHETIC RESINS		SYNTHETIC RESINS
2	Ion-Exchange		With Fats, Fatty Oil, Fatty Oil
3	Cation		Acids or Salts there
4	Reclaiming		(Excludes Esters and
5	Pore Forming		Amides)
5.5	From Latex or Aqueous		Polycarboxylic Acid Polyhydric
	Dispersions		Alcohol Reaction
6	Gas Evolving Agents		Products
7	With Vulcanizable Natural Gums	32	With Natural Resin
	(e.g. Rubber)	33	With Pigment, Filler or Dye
8	Rubber Halide Containing	34	Polymerized Unsaturated Com-
9	With Polymerized Unsaturated		pounds
	Compounds	35	Coumarone-Indene
10	Diolefins or Halodiolefins	36	Polymerized Unsaturated
11	With Protein or Derivatives		Hydrocarbon
12	Phenolic-Aldehyde Products	37	Diolefins or Cyclo-diolefins
13	Polycarboxylic Acid Poly-	38	With Natural Resin
	hydric Alcohol	39	Phenolic-Aldehyde Products
	Reaction Products	40	Polycarboxylic Acid Polyhydric
14	Polymerized Unsaturated		Alcohol Reaction
	Compounds		Products
15	With Carbohydrates and Der-	41	Polymerized Unsaturated
	ivatives		Compounds
16	Cellulose Ethers or Esters	42	With Wax, Bitumen or Fatty Still
	(incl. Cellulose		Residues
	Nitrate)	43	Polymerized Unsaturated
17	Phenolic-Aldehyde Products		Compounds
18	Amine-or Amide-Aldehyde	44	With Solvent, Flux, or Dispersing
	Products		Medium, e.g., Plastizers
19	Polycarboxylic Acids-Polyhy-	45	Water Containing
	dric Alcohol Reaction	46	Phenolic-Aldehyde Products
	Products	47	Amine-or-Amide Aldehyde
20	Polymerized Unsaturated		Products
	Compounds	48	Polymerized Unsaturated
21	With Phenolic Compounds		Compounds
22	With Amine-or Amide-Aldehyde	49	From Carboxylic Acids or
	Products		Esters
23	With Polymerized Unsaturated	50	From Halogen Compounds
	Compounds	51	From Hydrocarbons
24	With Lignin	52	From Polyene
25	With Fats, Fatty Oil, Fatty Oil	53	Organic Solvent, Dispersing Med-
	Acids, or Salts there		ium or Flux, Organic
	(Excludes Esters and		Fire Retardants
	Amides)	54	Terpenes or Derivatives
26	Phenolic-Aldehyde Products	55	Heterocyclic Compounds
27	With Natural Resin	56	Cyclic-O
28	Polycarboxylic Acid Polyhydric	57	Phosphorus Containing Compounds
	Alcohol Condensation	58	Sulphur Containing compound
	Products	59	Carboxylic Acids, Esters or
29	Amine or Amide Aldehyde		Salts
	Products	60	Ether-Alcohol Containing
30	Polycarboxylic Acid Polyhydric		Esters
	Alcohol Reaction	61	Polyhydric Alcohol Esters
	Products	62	Polycarboxylic Acid, Esters
31	With Polymerized Unsaturated		and Salts
	Compound	63	Oxo-or Oxy-Acids, Salts and
			Esters

Figure 1.

made by the Patent Examiner during the course of his examination of the patent application. Since patent examination in Canada includes a listing of all citations by Examiners in respect of the examination of corresponding patent applications in other countries, an examination of the "file history" of a Canadian patent can give a concise summary of prior art patents collated from other sources. These lists can be expanded backwards in time to the second, third, fourth, and so on generation by the citations listed against patents.

Searchers for relevant information can readily determine when the law of diminishing returns in this backward searching has been reached.

Since information retrieval from patents is only a backward-looking system, it is necessary to update the source forwardly at regular intervals.

In order to extract information from a patent, it is necessary to know what information, by law, must be provided in a patent disclosure. The following quotations from two important

judgments of the Canadian Courts show what the content of a Canadian patent disclosure must be:

"Two things must be described in the disclosure of a specification, one being the invention, and the other the operation or use of the invention as contemplated by the inventor, and with respect to each the description must be correct and full. The purpose underlying this requirement is that when the period of monopoly has expired the public will be able, having only the specification, to make the same successful use of the invention as the inventor could at the time of his application. The description must be correct; this means that it must be both clear and accurate. It must be free from avoidable obscurity or ambiguity and be as simple and distinct as the difficulty of description permits. It must not contain erroneous or misleading statements calculated to deceive or mislead the persons to whom the specification is addressed and render it difficult for them without trial and experiment to comprehend in what manner the invention is to be performed. It must not, for example, direct the use of alternative methods of putting it into effect if only one is practicable, even if persons skilled in the art would be likely to choose the practicable method. The description of the invention must also be full; this means that its ambit must be defined, for nothing that has not been described may be validly claimed. The description must also give all information that is necessary for successful operation or use of the invention, without leaving such result to the chance of successful experiment, and if warnings are required in order to avert failure such warnings must be given. Moreover, the inventor must act *uberrima fides* and give all information known to him that will enable the invention to be carried out to its best effect as contemplated by him.

The test of whether a specification is sufficient is whether persons skilled in the art, on reading the specification in the light of the common knowledge existing at its date and being willing to understand it, would be unerringly led to the invention and be enabled to put it to full use." *Minerals Separation v. Noranda* (1947) Ex. C.R. 306; (1950) S.C.R. 36; (1952) 69 R.P.C.81.

and

"The requirements of a sufficient specification are:

- (a) that the description must be both clear and accurate, containing a correct description of the invention as contemplated by the inventor, and of its operation or use as contemplated by the inventor;
- (b) that it must be free from avoidable obscurity or ambiguity and be as simple and distinct as the difficulty of description permits;
- (c) that it must not contain erroneous or misleading statements calculated to deceive or mislead the persons to whom the specification is addressed and render it difficult for them without trial and experiment to comprehend in what manner the invention is to be performed;
- (d) that it must not direct the use of alternative methods of putting it into effect if only one is practicable, even if persons skilled in the art would be likely to choose the practicable method;
- (e) that the description of the invention must be full, that is, its ambit must be defined, for nothing that has not been described may be validly claimed;
- (f) that the description must also give all information that is necessary for successful operation or use of the invention, without leaving such results to the chance of successful experiment; and if warnings are required in order to avert failure, such warnings must be given;
- (g) that the inventor must act *uberrima fides* and give all the information known to him that will enable the invention to be

carried out to its best effect as contemplated by him." *Traver Investments v. Union Carbide* (1965) 2 Ex. C.R. 126; 30 Fox Pat. C21; (1967) S.C.R. 196 Appeal Dismissed.

In other words, under Canadian patent law, the disclosure must describe the inventor's invention and the use which the inventor has in mind. The description is written for persons skilled in the art to which the invention relates. The disclosure must therefore correctly and fully describe the invention in terms which are understandable to such person. It should contain specific working examples. It must be written in such a way that a person skilled in the art can read the specification and starting from his own common general knowledge would be led directly to the invention and be able to put it into full use. It should not be written in such language as to make it difficult to understand. The operation of the invention should be evident to this person without undue experimentation.

If the patent disclosure satisfies these prerequisites and is full and informative, the incentive effect on knowledge production and innovative activity also provides a broad information output effect. The technological knowledge can, with the proper patent information dissemination system, be spread about. The new ideas thus propagated may lead to other ideas. Additional innovative changes from the original idea can be developed. As said before, resources in time and money need not be wasted in reinventing it.

Are these very noble objectives actually being achieved in practice? I feel that many inventors scan their proposed patent application with an eye less critical to accuracy than they would do for a technical paper directed to the same subject matter. Moreover, even if the chemist/inventor provides an exceptionally detailed and accurate description of the invention, that alone may not be sufficient. The full teachings of the patent disclosure may provide only a fraction of the know-how necessary to put the invention to work. Greater care must therefore be exercised in writing a patent specification because of this tendency for the information content of the patent to be incomplete.

Many patents contain so-called "paper examples". These are descriptions of procedures which have not actually been carried out but which should, by analogy with the other examples, be operative. This is an unwise procedure and a very dangerous pitfall. Another dangerous pitfall, in my view, is that of the inventor glossing over technical details in a patent specification with the rationalization that: these are legal matters and my patent attorney or patent agent know more about the legal terminology than I do. This reasoning is a mistake. I urge you to be very critical of the draft patent application prepared by your patent attorney or your patent agent. The patent attorney or patent agent is merely a surrogate extension of you. They are not creative—only discursive. You must critically review the patent specification before it is filed to be sure that the technical data are complete and accurate. Only then can you achieve two desirable ends of the patent system, namely: to give your patent a better chance of being held valid; and secondly to provide exceptionally useful innovative technical information.