

PATENTS.

Patents concern exclusive rights, but must be distinguished from offensive monopolies in that properly granted they take nothing from the public which the public already enjoys.

Every country in Europe and America, every English colony, and Japan, has a patent system of its own, and just now China is establishing one. It is the requirement of each of them that a patent shall issue only for a new invention or discovery, and that if issued for what is old it shall be voidable, either wholly or as to what is old.

Various definitions and limitations are given to this requirement of patentable novelty; sometimes it is enough that the invention is new in the country where the patent issues, as in England. With us it must be new altogether and must not have been patented in any other country prior to the invention, must not have been described in any printed publication prior to the invention, nor must it have been in use in this country more than two years prior to the application for a patent.

Many restrictions have in former times been put upon the grant of patents. The government fees were formerly high in England and were, until the close of the war, very high in the Transvaal, but in May last were reduced from a total of £477 to £54 10s. In some countries the patentee is required to pay an annual tax or a tax after the fourth year, or he is obliged to work his patent or not to import the patented article, or he may not refuse to license on reasonable terms, and for any of these acts or omissions he may forfeit his patent altogether, or be compelled to license.

There is a tendency, however, to simplify the system. There is no compulsory working law in either England or the United States. The present Swiss law contains no such provision, recently Jamaica followed in this advance and Austria has replaced a stringent law with a more lenient one.

At the Congress of the International Association for the Protection of Industrial Property held in Vienna in 1897, this resolution was unanimously passed:

“The Congress is of opinion that it will in future be necessary to give up the principle of compulsory working.”

All these provisions tending to embarrass the patentee and to throw doubt upon his property ought in principle to go out. In the simplest way, at the most reasonable expense, in the plainest terms, he should have a patent in which the elements of doubt are reduced to a minimum. Give him a valid patent if he be given any, and let the administrative resources of the government be employed to settle everything in advance of the grant that can thus be settled, divesting it of all restrictions tending to embarrass the general use of the invention or the enlistment of capital in the industry to which it appertains, that the patentee may embody his thought in wood and iron, adapting and perfecting it in service tests, and in the severer tests of uninterrupted commercial use, rounding it out with still other inventions, that in the end the public may come into an ample and improved estate.

These restrictions are all within legislative control, except the main questions of invention and novelty, essentially judicial questions; and with whatsoever care the patent may originally be granted the reality of invention and the question of novelty, if contested, remain to be settled by judicial inquiry and decision as between the inventor and his opponent upon the facts of the case as they may arise.

In our system the Patent Office determines for itself, presumptively, not finally, as quasi judicial magistrates, in each case as it is presented, whether invention is present, and if so whether the invention has ever been patented or described in any printed publication prior to the date of the application for the proposed patent, and in case such prior patent or publication is found, it ascertains *ex parte* and by the inventor's affidavit when his actual invention took place and whether it antedates the patent or printed publication cited against it. In certain cases it goes further to decide priority on proofs.

In England the Patent Office does not make this inquiry as to novelty, but leaves that matter to the investigation of the applicant himself, under professional advice, with the responsibility upon him of taking a patent which the courts upon a contest will not declare void.

Each system has its advantages, and the difficulty of administering the Office has led some to the conclusion that it is not appropriate that any administrative office should undertake this work.

The argument is that mistakes will be made, that an Examiner will treat his cases on paper without knowledge of the art, and that meritorious inventors, especially if not able to employ competent

counsel, or if their own conceptions of their inventions are inadequate, will be deprived of their reward. But this, on critical examination, is seen to be no solution at all of the difficulty. There is no middle ground, patents must be granted with knowledge or else as a leap in the dark. They must be withheld where the public already has the revelation, or else the industries will be harrassed by countless voidable patents that it were worse than folly to grant, both because the mistaken inventor is misled and the public, as we shall presently see, defrauded.

It is a question of organization and resources, and is not a futile or impossible task, though difficult to decide when the applicant is justly entitled to a patent and when it is just to withhold the grant. It is as unphilosophical to postpone the decision expecting that the air will clear itself, as to dodge it altogether, for, after all, only one per cent of all the patents granted are ever contested in the courts; and of the contests instituted many fail. The disposition is to respect patents.

There is a general tendency to expand the examination system. Germany and Sweden have adopted it. It has been in effect in the United States since 1836, and there is no recognized body of opinion against it. The movement is always toward perfecting the examination so as to unearth all prior attempts in the same direction, and grant none but valid patents.

In England in the case of *Savage v. Harris*, 13 R. P. C., p. 371, Lord Justice Kay referred to the necessity of some form of examination on the question of novelty.

In May, 1900, the Board of Trade in London appointed a committee to inquire whether any or what additional power should be given to the English Patent Office to control, or limit the issue of letters patent in respect of inventions which were old or which had been previously patented, and upon an examination of specifications accepted during the first week in June in each of the three years, 1897, 1898, 1899, an examination afterward carried back to the year 1877, it was found that 42 per cent of the specifications had been anticipated either in whole or in part; that is, that nearly half of all the patents issued in England were invasions of common right and evil in their effect.

There resulted a bill to amend the law with reference to applications for patents so as to provide for an investigation for the purpose of ascertaining whether the invention has been wholly or in part claimed or described in any specification (other than a pro-

ional specification not followed by a complete specification,) published before the date of the application and within fifty years.

This bill has passed its second reading and it is predicted that it will pass its third reading this month and become the law of England. Thus to change to the examination system implies a revolution in the British Patent Office and the slow gathering and classification of all British patents not only, but all foreign patents, all scientific books relating to the industrial arts, all publications in any language, and the organization of a corps of examiners who shall be competent to handle this material. There are now over seven hundred thousand American patents, over a million foreign patents, and many thousand books and publications in English and in foreign languages. Merely to assemble the material is a work of difficulty and of vast expense, but to classify it so as to make it manageable and accessible, so that all that is in print on a given subject may be quickly found, is a growth, the discriminating labor of a large corps of experts working through many years.

Nowhere is there yet this complete or completely classified material, but the ideal is more nearly attained in the United States Patent Office than anywhere else in the world, and through reclassification and more perfect classification now going on, the Office is slowly perfecting the instruments with which it works. Its scientific corps is fitted by endowment, education and long experience to know the eight thousand sub-classes into which the industrial arts are for convenience divided, each Examiner trained and versed in a few related groups or subjects.

The Patent Office is thus not only a slow growth but a highly specialized organism, as impossible to create in a moment as a university. Nor is the reward which the system confers upon the inventor confined to citizens of the United States,—any person in any country of the earth, civilized or uncivilized, whether the like privileges are in reciprocity accorded to American citizens or not, may obtain a United States patent, fully covering and protecting his invention for seventeen years and securing to him the exclusive right to make, use, sell or practice the same in the United States. And of the 27,292 United States patents issued in the year 1901, 3,402 were issued to inhabitants of foreign countries, including Algeria, Brazil, China, Egypt, India, Java, Peru, Roumania, Turkey and a score of others.

All countries having a patent system grant patents to citizens of any other country. Thus the applied sciences furnish the first

and most important example of universal brotherhood, of progress without regard to international frontiers.

A patent does not confer upon the inventor or discoverer his right to enjoy and practice his own invention. He has that by natural right by virtue of his invention or discovery. But the moment he begins the enjoyment or practice of it, he is open to observation; his achievement being an intellectual product needs only to be known to be available to others.

Here the patent system comes to his aid and upon his application for a patent, after an examination showing that nobody else in the world has patented it before, or published it before his invention was made, or that it was not known or used by others in this country, he obtains his patent, but for which the thing patented would be open to the use of any one who knew how to contrive, manufacture and use his invention.

This doctrine was admirably stated by Mr. Justice Brewer in a late case in the Supreme Court of the United States, and in distinguishing between patents for inventions and patents or grants of the public domain to settlers, the learned judge used this language:

"It conveyed to Berliner, so far as respects rights in the instrument itself, nothing that he did not have theretofore. The only effect of it was to restrain others from manufacturing and using that which he invented. After his invention he could have kept the discovery secret to himself. He need not have disclosed it to any one. But in order to induce him to make that invention public, to give all a share in the benefits resulting from such invention, Congress, by its legislation, made in pursuance of the Constitution, has guaranteed to him an exclusive right to it for a limited time; and the purpose of the patent is to protect him in this monopoly, not to give him a use which, save for the patent, he did not have before, but only to separate to him an exclusive use. The government parted with nothing by the patent. It lost no property. Its possessions were not diminished. The patentee, so far as a personal use is concerned, received nothing which he did not have without the patent, and the monopoly which he did receive was only for a few years."

Thus the patent system not only concerns the world of ideas, induces the thinker to embody them in material form, but it gives to the ideas so embodied a commercial value, not by taking anything from the public which it already enjoyed, but by restricting the

public from entering into the enjoyment of the invention for a limited time while the inventor is turning this new thing to his own account for his reward in making it.

All men love to invent, many do, and many would without reference to the patent system. But here is an additional motive, breeding up a large class who otherwise would not feel the more abstract and ideal motive, but who nevertheless under the guise of working for themselves are working for mankind and for the progress of science. Under the system the inventor may work out his thought, disclose it to others, make his machine, exhibit his machine to others, test it, work it openly, publicly exhibit it for two years, and apply for a patent on it, unless he has abandoned his invention, reasonably sure that his patent will protect him in the exclusive use of it for a time, on condition that he fully and completely disclose his invention and the best means for working it, so that the public may know what not to do for seventeen years and what they may fully and freely do thereafter.

But if a patent should be granted upon a defective search, not disclosing what a fuller search would disclose, that another had anticipated the supposed invention, then all the harm results that is attributable to the grant of a monopoly by a prince to a court favorite.

It is inconceivable that as a permanent policy England should consent to issue patents without examination, since the system results in 42 defective and improper patents to every 58 that are granted for things which are actually new.

A monopoly of a known article, such as the grant by Elizabeth of the exclusive right to make starch or to make soap, would take away an ancient privilege belonging alike to all the people, would enhance the price, would be vicious in principle and of bad tendency. Such grants were one of the causes leading to a collision between Elizabeth and her Parliament, in which the Queen was, if not defeated, constrained to yield and to quash at a single blow every monopoly that she had granted. Nevertheless, thirty years afterward Charles I. revived these monopolies on an extended scale, though with only moderate profit to the Crown, and again soap was in the list, though mentioned by Pliny both as a medicinal and as a cleansing agent, though brought into general use by the Romans from Germany, some thinking that it was the veritable substance mentioned in Malachi III., 2, "For he is like a refiner's fire, and like fuller's sope."

When, therefore, a monopoly in soap making was granted to a corporation of soap boilers in London, a hundred years after it was an established trade in England and 2000 years after it was a recognized commodity in the ancient world, an encroachment on common right was done which tended to the opposite of all that the patent system ordinarily does for mankind, but the very thing that the patent system does when it makes a mistake.

But, on the other hand, the patent granted to Babbitt in 1870 as the discoverer of a *new* process of obtaining glycerine from soapmakers' spent lyes, thus utilizing a by-product that had gone to waste, is a matter of sound public policy and takes nothing from the public, not even to make up this reward. This patent was upon a process not greatly improved for twenty-four years until the process of distilling glycerine by the aid of reheated and expanded steam was devised in 1894.

Steel has been known from very early times, has long been in use in India, and is thought by some to have been known to the pyramid builders. But when in 1856 Sir Henry Bessemer revealed a new process by blowing air through molten pig iron in a converter, effecting the oxidation of the carbon and silicon which the pig contains, and finally restoring a calculated amount of carbon by the introduction of spiegeleisen, as suggested by Mushet, their patents thereon manifestly took nothing from the public, although they enabled them for the few years of the term of the patents to exclude others from employing the process, at the end of which the public could enter into the new estate without restriction of any kind.

And while these patents were in force, their operation was not to restrict the older processes, nor in any manner to hamper the continued making of puddled steel or open hearth steel.

The result has been that steel from being a relatively rare material used for blades and tools, has become the material used in improvements in construction everywhere, itself bringing in a revolution in the works of man. Before Bessemer's process only 51,000 tons of steel were produced in the whole world in a year, costing on the average \$250 a ton. Now that much is produced in a single day, selling at perhaps \$30 a ton. America this year will make thirteen million tons of steel, or more, as Mr. Carnegie says, than all the rest of the world.

So it is of every invention, large or small, being new, and the new alone being covered, the patent takes nothing from the public and is wholly distinct from the odious monopolies which have

brought on contests and revolutions in many lands. But this distinction was not always recognized. Prior to the Revolution in France officers of the King broke up machines and destroyed products not made by licensed persons, and inventors were fined.

Having now shown the beneficent tendency of patents when well grounded in view of all the prior art, and how they may become no better than the odious monopolies of Elizabeth and Charles I. and the Bourbon Kings, when granted without anything new, and having shown that to grant patents without examination has resulted in England in the issue of 42 oppressive patents to 58 lawful ones, it amounts to a demonstration that the examination system must be installed wherever the patent system extends, and that in every country, more than eighty in all in the civilized world, where patents are granted, the same material must be collected that we have collected at Washington, that England is about to collect, that Germany and Sweden must provide, and that the equivalent scientific corps of hundreds of examiners must be organized into an effective body in every separate country, to work upon this material, first, to classify it, then to understand it, then to bring it to bear upon new applications as they are presented, thus manifolding scores of times the equipment and the work that is necessary for the grant of a single valid patent.

An American inventor who applies for a patent in England, after having obtained one at home, will have performed for him at the public expense the same search *through the same material* in order to grant an English patent that has already been made for him through the same material in order to apply for his patent here. If he should also apply for a German patent, the same search would be again repeated by the German officials over the same ground, and so it would be for Sweden, and so we may say it ought to be repeated in every other country where patents are granted. There is no escape from this except in co-operation between nations.

Having in our progress conceived the patent system as divested of many of its disfiguring features, we are now prepared to take one further but most important step in the perfection of the system, from which patents in several countries or in all countries may be granted upon one competent, exhaustive and thoroughly reliable search made in the one country where it can be made best, without burdensome expense, without delay or denial of justice.

Slight changes in the patent systems of the world would harmonize them to such a general regime. The innovation would be

startling, but it would violate no principle, nor would it be comparable to universal legislation for the world.

To centralize scientific work that is already four times manifolded and is destined to be greatly multiplied is not visionary, because the system ought to exist. There may be no other governmental function open to this treatment, unless observations of the weather may be, and yet other analogies are found. The Postal Union has established joint action in the matter of foreign mail, and seals, the Behring sea, Samoa, ocean cables, the open door, ships, missions, coaling stations, arbitration of international disputes, have been the subject of world legislation, or treaty.

We have a faint beginning in the International Convention concerning trade marks and industrial properties with its bureau at Berne in Switzerland maintained by many countries, including all the more important ones and our own, but its functions are limited to a few factors in the problem, and its equipment for the work here contemplated is inadequate.

The Hague Peace Tribunal, marking an epoch in civilization, placing Nicholas II. of Russia and De Bloch in the foremost rank of philanthropists was the product of intellectual forces making for a rationally organized world. But this tribunal is only occasionally in action to prevent international ruptures and settle disputes after they arise, somewhat as electrical apparatus was, for more than a generation after Franklin, used merely to ward off lightning.

But the universal patent office could not only do quicker and better what the separate patent offices now do, but it would act continuously and affirmatively upon human affairs to give a constant stimulus to genius in every country, to benefit mankind at large by expanding and improving the industrial arts, and to weave thousands of silken threads to bind the nations together in an elevated and rationally guided daily life.

As matters now stand, the inventor of a machine or product or the discoverer of a new process may have a patent in every country of the world having a patent system upon paying the fees, which are in the aggregate burdensome even when but few out of the many are taken. Yet nothing is done to make sure of the validity of the patent except the search on the question of novelty and the decision on the question of invention, neglecting for the moment mere matters of form. One search being as good as eighty, and two searches on the same subject being useless, there must be a practical way in which the United States can share with others the use of its accumulated material. Two countries can act together,

either by treaty or by passing the same law providing for joint action.

As the United States has been foremost in establishing the examination system and making use of the means by which valid patents may be granted and invalid patents withheld, it might fitly take the initiative in proposing joint action in the matter of patents, for example, with Canada our neighbor on the north, or with Mexico, or with the South American Republics, or with Spain, or with any country not likely on its own initiative to establish this costly machinery of its own, offering to investigate and pass upon the question of novelty and invention for every applicant whether desiring a patent in the United States alone, or in one or more or all of the foreign countries who should accept this offer of joint action and provide for carrying it out.

The rest would be the machinery for authenticating the patent by the signature of an accredited agent of such foreign country, or its present resident ambassador or minister.

Thus a patent issued by the resident ambassador at Washington countersigned by our Commissioner of Patents might by appropriate legislation be as valid and effectual in Mexico or Canada or Venezuela or Peru, supposing these countries united with us upon this plan, as though the patent were issued upon original proceedings in each of these countries.

The objections to this are easily seen, and they are many, but are not unanswerable,—the limits of this article do not permit of their discussion. But there is one all-conquering argument for such a patent system,—the progress of science and the useful arts throughout the world.

I am aware that able men contrast unfavorably the applied sciences and useful arts with the pursuit of pure science for its own sake, and among these Mr. Huxley observes that:

“The great steps in its progress have been made, are made, and will be made by men who seek knowledge simply because they crave for it. Nothing great in science has ever been done by men, whatever their powers, in whom the divine afflatus of the truth seeker was wanting. Men of moderate capacity have done great things because it animated them, and men of great natural gifts have failed, absolutely or relatively, because they lacked this one thing needful.”

And yet he disclaims any intention to cast a doubt upon the propriety of the course of action of those, as he says:

"Who follow science in the hope of finding wealth alongside truth, or even wealth alone."

But if, as he says, our epoch can produce achievements in physical science of greater moment than any other has shown, among these the doctrine concerning the molecular constitution of matter, the doctrine of the conservation of energy, and the doctrine of evolution, is it not because the industrial arts have expanded on such a scale that the elemental forces are contemplated in operation by the student of pure science in a way that doubles the grasp of the human mind upon their mysteries and their true nature.

Indeed, Mr. Huxley himself pronounces it a curious speculation to think what would have become of modern physical science if glass and alcohol had not been easily obtainable, and if microscopes, telescopes and delicate apparatus for determining weight and measure and for estimating time had not been under their command.

We may say, without detracting from the merit of the great invention, that Professor Pupin might not have discovered a method of reinforcing electric current for ocean telegraphy if the industrial arts had not furnished for his contemplation cables thousands of miles in length and electric lines without limit, embodying prior inventions.

Pasteur might not have advanced to the successful prevention of the disease of the silk-worm upon the mere theoretical conceptions of prior masters in pure science, nor indeed might the law of the conservation of energy have been discovered had not the friction of the moving parts in huge machines following the creation of the steam engine shown that heat is not a substance which a given mass can only contain in given quantity, but that two pieces of metal when rubbed together may produce an indefinite amount of heat. Huxley says that "learning how to handle gases led to the discovery of oxygen and to modern chemistry, and to the notion of the indestructibility of matter." It is a trite saying in the industrial world that installations must not wait for the removal of all difficulties or for perfection in advance. The electric lines in this country were built and successfully operated with apparatus which has, even in the short history of that art, been discarded years ago; in some instances the second equipment has likewise been discarded, as in turn the present may be expected to follow the same course with the advances now going on.

Applied science may not be the mother of pure science, but the two act and react reciprocally in such wise that neither could make its conquests without the other, and that system which has furnished motive to the common mind to engage in the study of problems leading to the progress of the world may be cleared of technical procedure, improved in its resources and extended with beneficence to such other lands as may be willing to accept its offices.

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