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"UNITED STATES PATENT LAWS."

Under this title the editor of London Engineering publishes in a recent number of that admirable periodical a rather lengthy criticism of the patent laws, or rather of the patent practice, of the United States. The article is given particular prominence by appearing in a journal which has always shown a most friendly spirit toward American institutions, and is remarkable in its tendency to create the impression that the "alien" inventor will receive unfair treatment at the hands of the United States Patent Office. The writer enumerates several alleged "disadvantages that aliens suffer in the United States," and his statements, while not always actually incorrect, are in many instances perversions of the truth (no doubt innocently made) calculated to create an unfriendly attitude of Englishmen toward the United States. We therefore take this opportunity of rectifying some assertions made by our London contemporary, and we hope that if his article has caused British inventors any disquietude, their apprehensions may be dispelled by the explanations we now submit.

One of the points urged by Engineering as showing partiality in the practice of the United States Patent Office is thus stated: "Let us assume there to be before the United States Patent Office two applications for patents for one and the same invention, viz., one by a British subject and one by an American citizen, also that the British subject was in reality the earlier inventor of the two, but had not given publicity to his invention before lodging his United States patent application; then a patent would be granted to the American citizen, not to the British subject. This is only one of the many disadvantages that aliens suffer in the United States."

We may state, without any reservation, that the citizenship of an applicant for a United States patent does not enter into the equation in any way, and that in this case an American citizen does not enjoy any special privileges simply because of his nationality. The natural inference from the above quotation is that the patent will issue without ado to the American citizen and that the "alien" will be unjustly deprived of his rights. Of course this is entirely untrue. In the event above stated interference proceedings would be instituted and the respective parties would be called upon to establish the priority of invention. It is true that, when an invention is made abroad, it may be difficult for the inventor in interference proceedings to adduce such evidence as will be considered competent by the United States Patent Office and by the United States courts. This matter of evidence is dependent entirely upon the residence of the parties and the jurisdiction of the tribunals before whom they appear, and has nothing whatever to do with the citizenship of the parties. So far from this practice working an injustice, the proposition quoted above might be reversed and an American citizen residing abroad, although the prior inventor, might not be able to establish his position as against the British subject resident here, had he filed his application for a patent simultaneously, in which case the patent would issue to the "alien" residing in this country. This conclusion will no doubt startle our contemporary, but it is true, nevertheless. The article goes on to speak of the unfair practice in the case of caveats, which cannot be registered by aliens. Without touching upon the motive which governed when this practice was instituted, the criticism is of insignificant importance, owing to the prejudice which exists among leading attorneys against the general practice of filing caveats. It is difficult to conceive of a case in which a non-resident would in any event derive any benefit from filing a caveat. It should be borne in mind that it offers no "protection" as such, but simply entitles the caveator to notice of the filing of a similar application.

In discussing the merits of the International Convention, the writer goes on to say: "Furthermore, it is of interest to note that unpatented and unpublished inventions existing in foreign countries are not presumed to be known in the United States, and, therefore, as the first to convey to the public any knowledge of the invention, a person who independently, though subsequently, invents and patents the same thing there, would seem to be regarded as the first inventor within the true meaning and intent of the law." This certainly is quite proper. The whole spirit of our patent system is to discourage delay and neglect in the introduction of inventions. If a party has been guilty of laches or negligence in the patenting or publication of his invention, he must suffer the consequences.

It seems rather strange that such criticisms should proceed from Great Britain, whose attitude toward the true inventor, and particularly the true foreign inventor, is certainly anything but liberal. An American who has unwittingly allowed his United States patent to issue before filing his British patent, unless he still has time to avail himself of the provision of the International Convention (seven months), forfeits the right of procuring in the United Kingdom a valid patent. The Englishman, on the contrary, may have patented his invention in England and may have been enjoying the fruits of his invention for many years and may still apply for and obtain a perfectly valid United States patent. He is allowed, in other words, to test the practicability and the value of his invention before being compelled to file his application here. Not so, however, with the American inventor. He is compelled to take out his British patent when, perhaps, his invention is still in an experimental stage, and certainly before its merits and practicability have been tested. Furthermore, in England a patent will be issued to him who first imports the invention into the United Kingdom, irrespective of the fact of his being the true inventor or not. This opens the way to many irregularities, and the real inventor can readily be deprived of the fruits of his discovery.

There is another way in which the patent laws are more favorable to the "alien" inventor than to the United States citizen. The latter in applying for a patent does not only make affidavit that he believes himself to be the original and first inventor, but the invention must not have been in public use in the United States for a period of more than two years prior to the date of filing the application. The "alien," however, may have had his invention in public use abroad for many years and he can still procure a perfectly valid patent in the United States.

The new law which has recently been enacted, and which comes into operation on January 1 next, provides that foreigners will be compelled to conform to the practice established by the International Convention, and file their applications within seven months of the date of filing the applications in the country of origin.

We believe in a broad minded attitude toward foreigners, and it is for the benefit of the country that the patent laws as regards foreigners should be liberally interpreted, but we believe that in the past, if we have erred at all, we have erred on the side of too great a liberality.

BISHOP POTTER ON LABOR AND MACHINERY.

The sensational element in the New York daily press has been putting into Bishop Potter's mouth words which he never uttered, the tenor of which would make out the reverend gentleman to be at once an advocate of strikes and strongly opposed to machinery on the ground that its introduction was prejudicial to the interests of the workingman. The offending articles were supposed to be reports of an address delivered at the annual dinner of the Church Association for the Advancement of the Interests of Labor. Bishop Potter has subsequently stated that the comments upon these subjects attributed to him are based wholly upon fictitious statements.

The point that was actually made was that the Church Association for the Advancement of the Interests of Labor should fulfill the office of mediator and conciliator, and it was shown that strikes were often the result of the workingman's sense of his isolation from the sympathy of his fellow men, and especially from the sympathy of those better placed in life than himself. These should strive to understand him, to be just to him, and to encourage him in a willingness to submit his claims to peaceful arbitration.

Bishop Potter denies that he had anything to say, on the whole, of any disadvantages to modern civilization that arise from the introduction of improved machinery. What he did point out was that, as most good things have their evil sides, one of these evils, in the case of machinery, was that it sometimes made a machine of the laborer. The instance quoted was that of a man whom he had watched at work in a factory, whose whole duty consisted of two movements of his hands—one to push a piece of metal under a hammer, the other to stamp it. But while there was nothing in this man's work to stimulate his mind or imagination, the case was not quoted as being typical of mechanical labor in general.

The fallacy of the old cry that labor is being hurt by machinery is plainly evident to the intelligence of the working classes, who have learnt long before this that for every trade that machinery has displaced it creates half a dozen new ones.

THE INVENTOR OF THE AUTOMATIC GUN.

The invention of the automatic gun has been universally attributed to Mr. Maxim for so long a time that it seems a little late in the day for the editor of the Admiralty and Horse Guards Gazette (Eng.) to undertake to prove that the credit of the invention belongs, not to Mr. Maxim, but to somebody else.

It seems that the present attack was prompted by a paper which was read by Mr. Maxim before the Royal United Service Institution on the subject of "Automatic Guns," in the course of which he exhibited his original model, which now forms part of the South Kensington Museum collection, and spoke of it as "the first apparatus ever made on this planet which would load and fire itself." The editor of the Admiralty and Horse Guards Gazette disputed Mr. Maxim's claim, and said that he should have made mention of the weapons invented by such men as Gatling, Gardner and Nordenfelt. Mr. Maxim made the obvious reply that the lecture was confined strictly to automatic guns, and that it would have been out of place to drag in the

names of any of the thousand and one guns that are non-automatic. This led the editor of the paper in question to write a series of bitter articles tending to show that Blakeley, Vavasour, Moncrieff and others had made automatic guns before Mr. Maxim took out his patent.

Mr. Maxim, in a very characteristic and effective reply, points out that the merit of his invention is proved by the fact that it very soon took the place of all other machine guns, driving them out of the field. It was so superior to the hand-operated guns that it was adopted by nations which, up to that time, had not admitted a machine gun into the service. "If the automatic system was so well known," Mr. Maxim pertinently asks, "why was it not taken up before? . . . Why did all Europe wait for a 'Yankee' to come to Europe and make an automatic gun for them?" An investigation of the patents quoted by the Admiralty and Horse Guards Gazette showed that the greater part of them did not relate to anything that could be twisted into meaning an automatic gun.

Mr. Maxim draws a parallel between this attempt to discredit him as an inventor and the attack on Mr. Bessemer in connection with the Kelly patents for making steel, and we think his contention is a sound one. We deprecated the course taken by Mr. Weeks in the Bessemer-Kelly matter as not being justified by the facts and as causing unnecessary annoyance to a distinguished inventor and great benefactor of the race. So, too, in the present controversy we think the editor of the paper in question has entirely failed to make good his point, and has sought in vain to cast a shadow upon the title of Mr. Maxim to be the originator of the type of gun which bears his name.

THE BERLINER TELEPHONE TRANSMITTER PATENT SUSTAINED.

The decision of the United States Supreme Court on May 10, 1897, sustaining the decision of the United States Court of Appeals, rendered May 18, 1895, and which, in turn, was a reversal of a decision given in favor of annuling the Berliner (November 17, 1891) microphone patent by Judge Carpenter, of the United States Circuit Court in the District of Massachusetts, on December 18, 1894, will, without doubt, interest all users and manufacturers of telephones, and in some degree confirm the popular belief that the issue of the patent was purposely delayed to aid the extension of the monopoly in the telephone business so long enjoyed by the American Bell Telephone Company.

The record of the several decisions regarding this patent will be found in previous issues of the SCIENTIFIC AMERICAN as far back as 1893, when the suit to annul the patent was begun by United States Attorney General Harmon. The facts in the history of the case are that the application for the patent entitled a "Combined Telegraph and Telephone" was filed on June 4, 1877. The claims are said to be generic, covering the microphone and the art of microphony. Three years later, in September, 1880, Berliner filed a second application for a patent on apparently the same invention, under the title of an "Electric Telephone," which was claimed to be a division of the first or original application. Two months later this patent was issued, November 2, 1880. Subsequently the board of examiners-in-chief decided that the 1880 patent was for an invention distinct from the patent of 1891, and also that the additional new matter put into the first application was allowable. The claims of the 1880 patent describe an apparatus for reproducing sound by means of a varying electric current passing between two electrodes in contact. The patent expires November 2, 1897.

Some time prior to 1880 Berliner assigned his rights in both applications to the American Bell Telephone Company, and later, discovering the advantage of the carbon transmitter, amended the 1877 application by erasing the entire specification and drawings and substituting another drawing and specification, with new claims more in accordance with the state of the art as it was then understood. The drawing resembled identically that in the patent of November 2, 1880.

In 1882 Berliner claimed that a patent was to be allowed on the amended application, but, in consequence of a rejection, somewhat unexpectedly, of all the claims and subsequent appeals, a further delay was incurred.

Then, again, subsequent interference proceedings ensued, appearing perfectly proper and legitimate on their face, but in reality were fathered on both sides by the telephone company, enabling the latter by the usual methods of agreement or understanding between opposing counsel to delay a final decision until such time as they desired it to be made. This was in November, 1891, just after the United States Supreme Court decided adversely the claims of Drawbaugh.

It is interesting to note that the claims allowed in the 1891 patent described an electric telephone transmitter in which the sound waves vary the pressure between electrodes in constant contact, and thereby vary the resistance in a constant electric circuit, to accord with vibrations of a diaphragm plate.

The operation is so similar to that of the 1880 patent that there would seem to be good ground for contest in the future, on the assumption that one applicant cannot hold two patents for the same invention.

The grounds upon which the government asked to have the 1891 patent set aside were that the delay of fourteen years in the granting of the patent was fraudulent and due to corruption of the Patent Office officials by the owners of the application (the telephone company) or to collusion; and, second, that the patent of 1880 covered the same ground as the later patent of 1891.

Justices Gray and Brown took no part in the decision. Justice Harlan dissented, without giving an opinion. Justice Brewer delivered the opinion of the court, which was in part substantially as follows:

"Mr. Bell had invented the telephone, and, as that patent had expired, all the monopoly which attaches to it alone has ceased and the right to use it has become public property. But his apparatus was insufficient for public uses. Berliner's patent supplied the deficiency of existing patents, as he invented something by which, taken in connection with Edison's and Blake's inventions, Bell's undulating current could be made practically available for carrying on conversations at long distances. In other words, the telephone used to-day is not only that of Bell, but of Edison, Blake, and Berliner as well. Therefore, the right to use the Bell patent alone would be a barren one, extending the telephone patent to life of the Berliner patent.

"An application for patent cannot be considered and determined on the instant. Hence there could be no complaint on the mere fact of delay, though there might be of its excessiveness. But, it mattered not whether the delay be reasonable or unreasonable, if the applicant is not responsible for it. If the fault was that of the Patent Office, the applicant is not held blameworthy, and his legal rights are not affected. He cannot be punished on account of the delay or negligence of the tribunal before which he is presenting his suit.

"If there should be a new invention upon the expiration of the Berliner patent, the rights of its author could not be abridged to relieve the public. The inventor of the latest addition is entitled to full protection, and if the telephone company buys that invention, it is entitled to all the rights which the inventor had. The court dissents entirely from the views urged by counsel that the applicant for a patent is a quasi trustee for the public, but holds that an invention is the absolute property of its inventor. The government, in order to make its case, must establish affirmatively that the delay in the Patent Office was caused by the conduct of the applicant. It cannot rest on mere inferences, but must prove the wrong in such a manner as to satisfy the judgment before it can destroy that which its own agents have created. This requirement the government had failed to meet.

"There was no testimony as to any corruption of the officers of the department by the defendants, or any attempt at such corruption. So far, indeed, as was shown, there never was an intimation made to a single official that he could profit by a moment's delay. All thought of wrong, therefore, may be put aside."

Of the contention that a patent issued November 2, 1880, upon a division of the original application, covers the same invention as that covered by the patent in suit, and exhausted the power of the Commissioner as to that invention, he said "the patent of 1880 was for a receiver, while that of 1891 was for a transmitter. It was claimed that the two inventions were one, but the decision of the Patent Office was against this contention, and this judgment could not be reviewed in the present suit."

"Congress had established the Patent Office, and had thereby created a tribunal to pass upon all questions of novelty and utility, and had given to that office exclusive jurisdiction in the first instance, with specifications of circumstances under which they might be reviewed.

"It would seem that the government should be as firmly bound by the decision of its own tribunal as individuals. There might, he concluded, have been an error on the part of the officials as to the existence of power or a mistake in the instrument itself, sufficient to justify a decree canceling the patent. Also, the deviation of the proceedings between the application and the patent may be such as to justify the interposition of the court of equity; but it was not intended that the courts of the United States, sitting as courts of equity, could entertain jurisdiction of a suit by the United States to set aside a patent for an invention, on the ground of error of judgment on the part of the patent officials. Hence this question was not now open for consideration."

The conclusions of Justice Brewer were as follows:

"We hold in respect to a suit to set aside a patent for an invention that, as in cases brought to set aside patent for land, the government must establish the grounds of relief by testimony which is clear, convincing and satisfactory, and not upon a mere preponderance of testimony.

"We also hold that there is no evidence in the record—not the slightest—that there was any corruption or undue influence exercised by the officials of the telephone company to secure any delay in the Patent Office; that there is no evidence which justifies an inference that the delay was either at the instance or with the procurement or at the solicitation of the telephone company or its officials, and that whatever delay there was, was caused by the action of the officials of the Patent Office, for which the telephone company is not responsible.

"We hold, therefore, that there is an absolute failure to show any wrong on the part of the telephone company in this delay in the Patent Office; and as to the other grounds of attack, they are matters which, under the statute law, are open to every individual to set up in a suit brought against him by the holders of the patent, and that so far as these particular matters are concerned, they are not such as to justify the interference of a court of equity to set aside the patent.

"The decree of the court below is affirmed."

This is said to be the first case of an application by the government to annul a patent for an invention on the ground of fraud. The decision of the court in defining the difference between a patent of land and a patent on an invention is commendable, especially when it dissents from the view taken by the counsel for the government that an applicant for a patent is a quasi trustee for the public.

The court holds, on the contrary, that an invention is the absolute property of the inventor, emphasizing the intent of the patent law that a mental conception resulting in a perfected invention belongs strictly to the inventor. But as a compensation for its disclosure a patent is granted, wholly negative in character, since it gives the inventor nothing he did not have, but acts merely as a bar to the unauthorized use of his property by others.

The court left undetermined the question of the validity of the patent of 1891 as related to the prior patent of 1880 for apparently the same invention. Until this question has been adjudicated, the validity of the later, 1891, patent may be doubted. In the meantime, however, until such a contest is brought about, it may be supposed that the telephone company considers it has a monopoly of telephone transmitters until 1908, about thirty years after the date the original application was filed.

AN ADVANCE IN THE ELECTRICAL EQUIPMENT OF STEAM RAILROADS.

For several months past the directors of the New York, New Haven and Hartford Railroad have caused preparations to be made for the converting of an old steam railroad (a section of the New England Railroad) paralleling their tracks between the cities of New Britain and Hartford, Conn., a distance of some thirteen miles, into an electrically equipped road, with a view of testing practically the possibilities of electricity as a motive power in actual railroading.

At Berlin, Conn., located near one end of the road, has been built a mammoth power station, and on the roadbed, between the rails, a third iron rail, elevated about six or eight inches above the level of the roadbed, has been laid, supported on creosoted wood posts, the rail having the shape of an inverted V. Such construction does not interfere with the use of the road by the usual steam locomotives.

A preliminary official trial, in the presence of the president, Charles P. Clark, and directors of both roads, was made on May 10, Col. H. H. Heft, chief of the electric power department, having charge of the controlling switch, and the first trip was made from Berlin to New Britain, a distance of two and one-half miles, in six minutes, and then on to Hartford, the whole trip taking but eighteen minutes. The position of the car was readily maintained at an even headway between two trains drawn by locomotives, proving that it is possible to utilize both kinds of motive power on one track at the same time. The motorcar, of the open excursion type, weighed 32 tons and carried 70 persons, and was propelled by an electric motor of 125 horse power. The current was produced at the dynamo at a pressure of 660 volts. Six 110 volt incandescent lamps in series at the further end of the line, thirteen miles distant, burned brightly, showing that the electrical pressure was more than sufficient to move the train, and also how easily the current is carried that distance without supplementary feeder wires and with no appreciable loss by leakage.

The current is conveyed to the car motor from the third rail by a sliding iron shoe, and returns by way of the rails.

It is estimated the cost of equipping a road on this plan is about one-fifth that of a trolley line.

All stations have been fenced in and danger notices put up along the tracks to warn pedestrians and workmen. It is expected some time this month the trains will run regularly every twenty minutes between the two cities.

THE ETNA RAILWAY in Sicily, which will be completed in a few months, begins at Ripasto and terminates at Catania, is 72½ miles long, and nearly the whole distance is already opened.