

We suggest to those who take part in the discussion that they send us copies of their remarks, with the understanding that such portion thereof as the editor approves may be published in the SCIENTIFIC AMERICAN.

We will now give as briefly as possible some of our views, suggested by the enquiries above offered:

1. A patent is a private monopoly, which is a species of tyranny, an infringement of equal rights, and therefore untenable on the ground of justice. The invention by an individual of a new device by which his fellow men are benefited does not entitle him, by any process of natural right or natural justice, to be a monopolist over his fellows, in respect to such article. On the contrary, every man in every community is bound by the strongest natural obligations freely to contribute his best powers of mind and body to promote the common welfare. Patents are therefore granted upon the ground of expediency, not of justice.

2. For the purpose of encouraging or quickening the growth of the useful arts, and spreading among the people a practical knowledge thereof, so that all who desire may find employment and profit from the new forms of industry, articles or processes thus brought out, it has been found expedient to grant patents for a limited period. Patents should therefore be issued for every new and useful article, process, device or manufacture, and, obviously, should be granted only to the original and first discoverer.

3. The grant of a patent is simply the issue by the government of a stamped receipt or piece of paper certifying that the holder has deposited a proper description of his invention, which, if new and useful, entitles him to a special monopoly thereof during the term of the patent.

To give ocular importance to these documents, the ancient governmental custom was to write them on skins, attach great seals and ribbons thereto, and otherwise make an official fuss over the same. In England the skin and the big seal are still employed. The inventor, on filing his specification, receives the skin of a sheep, on which is printed a long rigmarole about "Victoria by the grace of God, Queen," etc. The document is signed by His Highness This, and My Lord That, and stamped with an immense seal of wax, one pound in weight, put up, for security, in a round tin box.

In this country we have, within a few years, abandoned the use of skins, high sounding words and other paraphernalia in connection with the issue of patents, but we contrive to make fuss over them in other ways.

The Commissioner of Patents must go through the formalities of an official examination as to the novelty of the invention, which consumes a deal of time and subjects the applicant to great inconvenience, delay and expense. This examination is of no real use, because, after all, it is the Court that decides whether the invention is new and useful.

The process of official preliminary examination at the Patent Office is attended with a variety of troubles, expenses and difficulties.

(a.) It involves the employment on the part of the government of a large number of officials, for whose support, and the materials they consume, the inventors, who are mostly poor persons, are heavily taxed.

(b.) It involves the employment of examiners to revise and correct the mistakes of assistant examiners; and of appeal boards, to revise and correct the mistakes of the examiners.

(c.) It involves the time and energies of the Commissioner of Patents, in the hearing of appeals from the appeal board, to revise and correct the decisions of such board.

(d.) It involves the time and labors of the District Court in hearing appeals from the decisions of the Commissioner of Patents, for the purpose of revising and correcting the decisions of the Commissioner.

(e.) It involves the employment, and support by the inventors, of an army of lawyers and agents, for the purpose of explaining law points to the Patent Office officials, pointing out to them the mistakes they have made in their examinations and decisions, obtaining the correction of such mistakes, putting in amendments to suit the whims of examiners, preparing, arguing and attending to appeals, etc.

(f.) In many cases, the applicant for a patent, unable by writing to explain away the objections brought by the Patent Office examiner, is obliged to travel in person from some distant part of the country to Washington, and then employ the help of a solicitor to assist the official in seeing and rectifying the official mistake.

(g.) Inventors are thus obliged to employ and support two distinct corps of helpers, in order to obtain a certificate for a patent, which, when obtained, is of uncertain value, because the Patent Office may subsequently grant another patent for the same thing to another party, or the Court, on trial of the patent, may decide that the invention lacks novelty, and that the Patent Office made a mistake in its official preliminary examination.

If any body doubts the worthlessness of Patent Office official examinations, let them read such decisions as that of Judge Blatchford in the refrigerator patent case, reported in the SCIENTIFIC AMERICAN of June 28, 1873. In that case, the Patent Office not only examined, but re-examined, and re-examined its re-examination, and decided each time that the device was new, putting the parties concerned to the greatest trouble and expense through a series of years, only to have it pointed out by the court, in the clearest manner, that the official Patent Office examinations were nothing but blunders.

For every case of this sort actually brought into court there are hundreds that are never made public because the worthlessness of the Patent Office examination is detected by the lawyer before the suit has progressed, and proceedings are not begun or, if commenced, are at once stopped.

(h.) In other cases, where the inventor is entitled to a patent, he is rejected by reason of the stupidity and incapacity of the official examiner; and on account of poverty, unable to pay the expenses of further prosecution, the applicant is compelled to abandon his attempt to procure a patent.

In view of the foregoing considerations, we think that the grant of the patent should not depend on the preliminary official examination.

The Patent Office should be simply an office for the registration and issue of patents. The official examination should be simply clerical, the only requirements being that the specifications and drawings are executed in accordance with prescribed rules. This done, and the fees paid, a certificate of patent should be promptly issued to every applicant.

Let those who are foolish enough to pay fees for a patent on an old invention do so. The number will be small, and they will harm none but themselves.

The abolition of the official examination would simplify the business of issuing patents, greatly reduce the cost of obtaining them to those for whom alone they are intended, and would necessarily result in giving renewed development to useful improvements of every kind.

The official examination was formerly essential in the grant of a patent, for then only one copy of the patent existed, and all additional copies had to be made by the hands of scribes, just as the Bible was formerly copied and circulated. But the matter is now entirely changed and presents itself in a different aspect. The publication of the drawings and specifications of all patents, in the cheap, popular, and admirable style in which they are now issued by our government, renders the work of official preliminary examination at the Patent Office superfluous. The inventor may now readily supply himself, or get access to every patent ever issued, and so become his own examiner. His eye is always quicker to detect resemblances or differences than any official examiner can be, and he understands better than the official what ought or ought not to be claimed.

4. The idea generally prevails in Europe, and also to some extent in this country, that by the grant of a patent the government gives away to the inventor a valuable privilege, for which the receiver should pay high fees in money, or place himself under obligations to do certain other things, well nigh impossible. This, we think, is a false idea and should be discarded.

If there is any obligation conferred by either side, it is on the part of the inventor, who, for the paltry reward of a temporary patent, places the government in possession of his new invention, from which, in due time, by the spread of the improvement and the creation of new industries among the people, the government is strengthened, its taxable resources increased, and the wealth of the nation augmented.

The object of granting patents is to encourage men to study, experiment and find out new arts.

The introduction or manufacture of a newly discovered thing is a different kind of labor from that of invention.

The one is the exercise of mind upon matter. The other is simply the manipulation of matter into known forms.

Hence the patent should not be issued with any limitations as to manufacture, nor should new fees be demanded.

It should be clearly understood that the patent, when issued, is the exclusive property of the inventor, throughout its entire term, issued to him in reward for his discovery. It should be subject to no official interference, liable to no taxes. This is the only straightforward, equitable and satisfactory method. The attempt to make manufacturers out of inventors as they do in Canada, Austria, and other countries, by nullifying the patent if the inventor fails to manufacture under his patent within a specified time, is an utter failure. The only result is to defraud the original inventor out of the money he paid to procure the patent, besides robbing him of all his rights under the patent.

5. No distinction should be made between home and foreign applicants for patents. What we need, as a people, for the promotion of industry and the supply of constant employment for our teeming population, is the greatest possible variety of new and useful arts and industries. Let us have these arts and industries, no matter where their authors live, gladly granting the cheap price of a patent certificate for their procurement.

6. The influence of patents on manufacturing interests in this country has been beneficial in the highest degree.

In addition to the ordinary productions made by the common appliances, the fabrication of patented articles by means of these appliances has vastly contributed to the wealth and prosperity of our manufacturing interests. Think of the enormous number of men, with engines, wheels, lathes, hammers, and ordinary tools of every kind, now constantly employed in the fabrication of patented articles. Add to this the extraordinary number of patented tools that have been given to our manufacturing interests by means of patents, whereby human labor has been rendered more powerful, more effective, and more economical, and the sum total of benefit thus derived will be marvelous.

7. We only manufacture the SCIENTIFIC AMERICAN, which has now been published twenty-eight years. It has been so favorably affected by patents, and by the increased desire for scientific information which the studying out of improvements produces, that its regular issue has risen from one hundred and fifty copies per week to almost fifty thousand copies per week.

OLD PROBABILITIES, the modern clerk of the weather, is about to establish a station on Pike's Peak. We shall be likely to know what is going on in the upper regions, for the Peak is 11,497 feet above the level of the sea.

SCIENTIFIC AND PRACTICAL INFORMATION.

NEW CHLORIDES OF PROPYLENE.

M. Reoul states that, in addition to the ordinary chloride of propylene, $\text{CH}_3\text{—CH—Cl—CH}_2\text{Cl}$, and methyl-chloracetol, $\text{CH}_3\text{—CCl}_2\text{—CH}_3$, already known, there are two others, namely: Normal chloride of propylene, $\text{CH}_2\text{—Cl—CH}_2\text{—CH}_2\text{Cl}$, and chloro-propylol, $\text{CH}_3\text{—CH}_2\text{—CHCl}_2$.

PERILS OF SURGEONS WHILE OPERATING.

The *Bordeaux Medical* states that Dr. Marc Girard, an eminent surgeon of that city, has lately died from a prick of a pin. He was operating upon the shoulder of a patient for a wound in which mortification had set in, and in placing the last sutures he accidentally scratched his finger. The effects appeared trivial, and the hurt soon apparently healed, but shortly after again inflamed, the poison extending through the body, and a lingering death was the result. M. Declat states positively that there is no necessity for any ill effects as above being caused by inoculation of the blood of either a diseased patient or the cadaver, when so simple and sure an agent as carbolic acid will promptly and almost infallibly arrest them.

STEEL LOCOMOTIVE BOILER.

Engineering of recent date contains the following items regarding a new steel locomotive boiler, made at the Crewe works of the London and Northwestern Railway, from the designs of Mr. F. W. Webb. It is of the ordinary type and the barrel is made telescopic, the mean inside diameter being 3 feet 11 inches and the plates $\frac{1}{2}$ inch thick. The most noticeable peculiarity is the system of fire box construction, which consists of forming the front, back, and sides of one plate. A portion is cut out of the front and the plate is flanged back to receive the tube plate. The ends of the plate are made in a jump joint under the tube plate and secured by a welt on the outside. The plate forming the top of the fire box is flanged down on three sides, and is riveted to the side and back of the box and to the tube plate. In order to insure a good joint around the tube plate, a copper calking strip is introduced between the flanges, so that the joint can at any time be repaired from the inside of the fire box. A $\frac{5}{8}$ inch plate is used for the body of the box, and a strong plate, $\frac{3}{4}$ inch thick, for the tubes. The dome is formed of one piece flanged at the bottom. The cover is made from a flat steel plate $\frac{3}{4}$ inch thick, and is stamped under a steam hammer into the required shape, the stamping being done by two blows of the hammer. There are 178 tubes of steel, $1\frac{1}{2}$ inches outside diameter. The tensile strength of the plates employed does not exceed 32 tons to the square inch, and they will stretch 25 per cent before breaking. The boiler was subject to a test, by hydraulic pressure, of 200 lbs. per square inch before leaving the works.

CLEANING GUNS WITH PETROLEUM.

Greasing a weapon with fats and oils does not entirely protect it from rust; the so-called drying oils get gummy and resinous, while the non-drying oils become rancid; and by exposure to the action of the atmosphere, acids are formed, and these attack the iron. These are some of the reasons why petroleum is to be preferred for this purpose. Petroleum, is as great an enemy to water as are the fatty oils; and hence, when a gun barrel is covered with a thin film of petroleum it keeps the water away from the metal which forms the barrel; the water which rests upon this film of petroleum evaporates, but the oil does not, and hence no rust can be formed. It is very essential, however, that the petroleum or kerosene employed be perfectly pure, for impure oil, such as is often met with in commerce, attacks the metal. Care must also be taken not to allow it to come in contact with the polished stock, as it is able to dissolve the varnish.

The gun is cleaned as follows: Each rifleman carries a tin flask of pure kerosene and a round brush, of stiff hogs' bristles, which fits the barrel of the gun. The brush is screwed to the ramrod. The gunner also carries some dry hemp or tow. When about to clean a gun, some tow is wrapped about the rod and enough petroleum poured upon it to thoroughly moisten it; it is then pushed in a rotary manner through the barrel and back a dozen times, and the hemp taken out and unrolled, and the upper and lower ends of the barrel rubbed with the clean part, after which it is thrown away. This removes the coarser portion of the dirt. The brush is then moistened thoroughly with petroleum and twisted into the barrel, running it back and forth at least a dozen times, thus loosening the dirt that is more firmly attached to it. The first operation is now repeated, except that the hemp or tow on the rod is left dry, and the rubbing with this must be continued in all directions as long as it comes out soiled. The use of wire brushes is objectionable for cleaning guns, as the numerous little steel points cut into the tube. Only soft tow, hemp, woolen rags, or the like, should be used, as the petroleum dissolves off the dirt sufficiently.

PURIFICATION OF LUBRICATING OIL THAT HAS BEEN USED.

We find the following details of a practical method for regenerating lubricating oils given in an Austrian paper: A wooden tub holding 63 quarts has a faucet inserted close to the bottom and another about 4 inches farther up the side. In this apparatus is placed 7 quarts of boiling water, in which are then dissolved $4\frac{1}{2}$ ozs. chromate of potash, $3\frac{1}{2}$ ozs. carbonate of soda, $3\frac{1}{2}$ ozs. chloride of calcium, and 9 ozs. common salt. When all these are in solution, 45 quarts of the oil to be purified is let in and well stirred for 5 or 10 minutes; after which it is left to rest for a week in a warm place, at the expiration of which time the clear pure oil can be drawn off through the upper stop cock without disturbing the impurities and cleansing fluid at the bottom.