

would seem puerile to not a few inventors. The unwillingness and impatience of most of them to an examination of their pretensions are well known. They are generally too much taken up with the creation of their "genius" to admit of it in any other than an offensive light, and doubt the advice given them of making sure whether it has been patented or not in some corner or other of the civilised world. The same invention may have been made or even abandoned as too insignificant, or improved upon by some one else. Happily, there are those among inventors who are wise enough not to shrink from such a test, and to seek to inform themselves as correctly as possible, respecting all inventions of a concurrent nature. Therein lies the great difficulty. Let us take, for instance, the electric light and the telephone, two subjects which have stimulated to the utmost the genius of inventors throughout the world. Not a week passes but what some patents are applied for, and granted here and there for improvements in these two objects. Now what guarantee have these inventors, one of which lives in America, and the other in Austria or Sweden—that at the very moment they apply for their patents they may not have already been forestalled by some other competitor? The announcement on the subject does not fly through the press as rapidly as is thought. It is only when the inventions are of a nature to engross the attention of the whole world that newspapers, forced along by the current, take up and ventilate the matter. Inventors desirous of being well informed would hence make a great mistake if they relied for information on newspapers, and especially the newspapers of one country alone. The essential point for them is to be made acquainted with inventions immediately Letters Patent have been granted. But therein, as previously stated, lies the difficulty! Let us suppose in fact that the inventor of a telephone requests us to obtain for him with the least possible delay the specifications of all patents which, in every country, have been or are about to be granted on this head. How should we proceed? The following table may guide us. Descriptions of Patents may be made known to the public within the following delays:—

Canada	- - -	from 30 to 40 days.
France	- - -	" 14 to 20 "
England	- - -	" 14 to 20 "
Germany	- - -	" 30 to 100 "
Italy	- - -	" 30 to 100 "
Sweden	- - -	" 20 to 60 "
Austria	- - -	" 30 to 60 "
Russia	- - -	" 30 to 60 "
United States	- - -	" 30 to 60 "

Thus it is seen that it takes from 14 to 100 days to obtain information respecting an application for a patent. That is not excessive. This granted, how is it possible to know whether the applications have been made to the governments?

To sum up, the first reform to be demanded is that the special papers giving information on patents applied for in every country, should be found on the table of our public libraries. It is very humiliating that Paris, where libraries, museums and collections of every kind abound, should rank in as regards technical libraries, below London, Vienna and Berlin. We may be allowed to hope, therefore, that she may before long regain the rank that befits her. It is quite evident from the foregoing that the means at the disposal of inventors to enable them to ascertain what novelty there may be about their discoveries, are totally inadequate. Then again, great exhibitions are far from bringing out everything relating to each branch of industry; and it may safely be said that ideas of possible improvements, but which have not taken a practical shape, exist with respect to most of the objects thus exhibited; or that the said improvements have not figured at these exhibitions. Despite all the business transactions between nations, springing from commerce, travels, books, the press and exhibitions, rare indeed are the industries the improvements in which come rapidly to the knowledge of the public. The validity of patent rights suffer from this delay, and we should not be far out of our reckoning in estimating at 30 per cent. the number of invalid patents applied for, either in France, in England, in Italy, or, in a word, in every country where there is no preliminary examination of applications for Letters Patent. Such a sifting is done in the United States, and in Germany, with a view to diminish the number of insignificant patents; and from 20 per cent. to 30 per cent. of the applications are rejected. It must be conceded, nevertheless, that even in Germany and the United States, the officials entrusted with the duty of examining applications are liable to mistakes. It may even be confidently asserted that 30 per cent. of the patents granted, and 40 per cent. of these applied for in that country, could not stand their

ground before a tribunal competent enough to decide in the matter of novelty in the would-be inventions. Hence arises immense loss, both in time and money; for what with government taxes and fees for agents, the amount paid for each patent cannot be less than 250 fr. This represents an annual loss of many millions resulting, in every country, from avoidance of patents. To return to our point, the reason why so many patents are void, is that the means at hand to obtain information are insufficient; we would therefore call the attention of Governments to the following suggestions:

1. That in every country there should be a library provided with all official publications of foreign countries touching on the lists, descriptions, and drawings of patents granted; such an institution might be created, by establishing either a separate section in the local library already in existence, or a special one, like the Free Public Library at the offices of the Commissioners of Patents in London.

2. That the example of England be everywhere followed as regards her *Commissioners of Patents Journal*, which publishes a list of all the patents granted abroad, in the language of the country where they have been taken out.

3. That governments should come to an understanding to draw up their notices of patents in such a manner, as would make the searching of such records for a particular invention, in whatever country it may have been granted, a matter of a few minutes only.

Up to the present no two countries agree in the method followed for the classification of patents; precise research is therefore a material impossibility. Only when the complaints of which we have made ourselves the mouthpiece, shall have had due attention, will inventors possess adequate means to make sure of the originality of their discoveries.

Chemistry, Physics, Technology.

THE RINGS OF NEWTON.

All transparent bodies show a beautiful play of colour, when they are reduced to sufficiently thin layers. This is observed most easily in soap-bubbles and in the thin films of glass which a glass-blower produces when he expands the glass-ball he is blowing, until it bursts. The same is seen when a drop of any ethereal oil, say oil of turpentine, is placed upon water so as to expand upon it and make a very thin layer. It is also seen when a bright piece of metal, say steel, is heated for the purpose of tempering; the film of oxide formed shows colors varying with the thickness of the film. So too when a heavy piece of glass is cracked, the thin film of air in the crack will show the same appearance of various colours.

The best way to produce these colours in regular order, and the method of observing the thickness of the films producing them, was invented by Sir Isaac Newton, who, by placing a curved lens upon a flat glass table, produced coloured rings, which have been named after him—the rings of Newton. In order to do this successfully, the lens must have a very feeble curvature, or, in other words, a long focus, say from 40 to 60 feet; or a convex lens with a curvature of say 20 inches, may be laid on a concave lens of 21 inches, which gives results about equivalent to a lens of 50 feet focal length laid upon a plane surface. When pressed down by proper appliances, such as screws along the edge a series of concentric coloured rings are seen, of which the adjoined illustration gives some idea, while the following details may be observed.

In the center where the contact takes place, reflected light shows a dark spot; around this is a ring of bluish-white, then yellowish-white, brownish-orange, red, another ring of violet, blue, yellowish-green, yellowish-red; then purple-red, blue, yellowish-green, red, carmine-red; then greenish-blue, pale green, yellowish-green, red, etc.

The exterior rings become narrower and narrower, as seen in the figure, and are alternately pale green and pale red—they become more and more faint, so that as a rule only eight or nine rings can be distinguished. The details here described can only be seen when the lenses used are such as to produce large rings; when lenses of short focus, such as spectacle-glasses, are pressed upon a piece of flat plate-glass, the rings form so small a spot that details cannot well be observed with the naked eye; but then a magnifying-glass may be used and they may be thus seen enlarged.

Instead of rings, the same succession of colors may be observed in bands produced by two pieces of thin plate-glass from 5 to 6 inches long and 1 to 2 inches wide. At one end they are separ-