



H. R., of Mass.—You state that your shellac varnish is opaque and brittle. You probably used inferior alcohol to dissolve the lac. Rectified alcohol alone should be employed as the solvent, in order to form transparent varnish. Apply it in very thin coats, and allow each to dry perfectly before the other is put on.

H. J. and E. H. B., of N. Y.—A substitute for transparent mica, for uses and similar purposes, would be valuable. The principal defect of mica is its laminating quality, it splits so readily into fine scales. We are not acquainted with any substitute for mica that possesses fire-proof, translucent and flexible qualities.

J. P. S., of N. Y.—You ask our opinion respecting the best oil for mowers and reapers, and state that the greatest difficulty which you have encountered, is the quick dispersion of any oil which you have applied to the cogs and knives, "it flies off so quickly." You also state that you have employed expensive castor oil in the expectation that it would stay on longer and be fully cheaper on this account than lard oil. The best lubricators for mowers is a question deserving much attention. It cannot be solved by theory; careful experiments with different lubricators, can alone determine which oil or mixtures of oils and grease is the best. The best lubricators known to us for fine machinery, is pure sperm oil, but you want adhesiveness as well as good lubricating qualities. A mixture of dissolved india rubber and coal oil may be a good lubricator for mowers. Give it a trial.

A. C., of N. Y.—The pulp of potatoes scraped into water cleanses the finest kinds of silks without injury to the fabric or color.

B. G. of Vt.—You can make a good blue ink by taking three drachms of Chinese blue (terrocyanide of iron) and grind it up with one dram of binocalate of potash and seven ounces of water. Usually about one dram of gum is added to these quantities.

D. A. R., of Conn.—To drive away and keep rats from corn-cribs and granaries, place some gas-tar in them, and dab some in their holes, and they will leave the premises at once. The tar can be obtained at any place where gas is manufactured.

J. A., of Cal.—We think you can obtain Johnson's Practical Draughtsman of W. H. Townsend & Co., of this city. We do not know the price of Silliman's Philosophy. It is published by H. C. Peck, of Philadelphia. We should think it worth about \$1.50.

G. H. M., of N. Y.—About 8½ lbs. of powder are used for a common 42-pound spheroidal shot; much less, however, is frequently used; it all depends upon the range and penetration required.

G. W. P., of Mass.—King's work on Propellers is a valuable one for you to study in order to fit you for becoming a naval engineer.

J. B. W., of Mass.—The mineral which you have sent us consists mostly of iron pyrites, and is of no value.

E. P., of Ohio.—Kaolin will not make a superior hard soap when used as a substitute for rosin, because it is an insoluble substance. Soapstone must answer your purpose as a substitute for kaolin.

H. W., of Ohio.—In Russia very little turpentine or varnish is used in their paints. They use the curd of milk mixed with pigments; it is more durable and less dangerous on account of fires. A very excellent fire-proof wash for outside buildings is made of clay stirred up in water containing about an ounce of potash for every five gallons. This wash is excellent for the boiler rooms of steamboats.

J. R. W., of Conn.—A steam floating ram for destroying war vessels is not new. You will find the description of such a vessel on page 167, Vol. 1, new series SCIENTIFIC AMERICAN. Elongated bullets and bolts for rifles are not such modern missiles as you suppose. They have been borrowed from the Genoese cross-bow; and Robbins, the author of a work on gunnery, suggested the employment of such bullets for rifles in 1741. Breech-loading cannon are certainly the most convenient and safe for loading with percussion shell.

R. R. T., of N. Y.—A composition of 9 parts by weight of zinc and 12 of lead, is very good for the expanding bands of iron cannon shot. This alloy, for such purposes, was patented by Capt. J. Lawrence, in England, in 1852.

C. S. P., of Maine.—Box is the wood principally used in wood engraving. The logs are sawed in pieces just the length of type, about nine-tenths of an inch. One of the surfaces is made very smooth and covered with a very thin white paste. Upon this surface the picture is drawn with a pencil, and then the engraver cuts out the parts that are to be left white. The block is set in the form with the types and the raised surfaces receive the ink from the roller as it is passed over the form.

B. F. N., of N. Y.—The battle of Marengo was the one at which a portion of the French army fled in such confusion. It was with great difficulty that Napoleon rallied the fugitives behind the division of Lannes.

M. A. W., of N. J.—Good black paint, containing some fine emery, makes a most excellent composition for blackboards used in school rooms. The paint should be put on in three successive coats, each allowed to dry perfectly. The silicate of potash (soluble glass) mixed with the oxide of zinc makes a good composition for white writing boards for school rooms. It is not so easily put on the wall, however, as the paint. Be careful and use very fine emery, and if you put a coat of varnish on the top of the paint, you must mix some emery with it also.

W. S. K., of Penn.—A battery of small guns forming a stack or organ gun, is one of the oldest forms of a war engine. A few years since Sir John Shaw revived this invention in England, using rifled guns for the old smooth bores. It caused some talk at the time, but it has since fallen into deserved silence owing to defects in its principle of construction.

H. S., of N. Y.—The experiments made with the Armstrong gun at Shoeburyness, Eng., by which iron bars, eight and ten inches thick, placed as a target, were broken, should not be taken as proof against good plates of the same thickness being as easily broken. It has now been ascertained that the bars were imperfectly secured, therefore the experiments were valueless as a guide respecting the resistance against shot of good plates well secured in a ship.

T. Van D., of N. J.—The sample of ore which you have sent to us contains traces of copper, but it will require a quantitative analysis to determine whether or not it would pay to smelt it.

N. M. L., of C. W.—We hope you will use all your influence to obtain a reform in the Canadian Patent Laws, so as to permit the citizens of the United States to obtain Canadian patents. A great number of new and useful improvements for the benefit of Canada would soon be introduced if protection were given to our citizens.

J. T., of Mass.—We advise you to get a tubular boiler of the first quality for your engine. A cheap boiler is generally an expensive and dangerous man-trap and fuel-consumer.

H. B., of Vt.—In casting your bullets always heat the mold before you commence to pour in the lead, or else the bullets will have a very uneven surface. The best formed bullets are struck out of solid lead, in dies, by machinery. Every bullet cast in a mold should be afterwards subjected to a few blows from a hammer in a sledge.

G. P. C., of N. Y.—Cotton requires to be prepared with a mordant for dyeing aniline colors, but not silk. The common mordant used is nitrate of lead and corrosive sublimate in solution.

### TO OUR READERS.

Models are required to accompany applications for Patents under the new law, the same as formerly, except on Design Patents, when two good drawings are all that is required to accompany the petition, specification and oath, except the government fee.

INVARIABLE RULE.—It is an established rule of this office to stop sending the paper when the time for which it was pre-paid has expired.

PATENT CLAIMS.—Persons desiring the claim of any invention which has been patented within thirty years, can obtain a copy by addressing a note to this office, stating the name of the patentee and date of patent, when known, and inclosing \$1 as fee for copying. We can also furnish a sketch of any patented machine issued since 1853, to accompany the claim, on receipt of \$2. Address MUNN & CO., Patent Solicitors, No. 37 Park Row, New York.

BINDING.—We are prepared to bind volumes, in handsome covers, with illuminated sides, and to furnish covers for other binders. Price for binding, 50 cents. Price for covers, by mail, 50 cents; by express or delivered at the office, 40 cents.

BACK NUMBERS AND VOLUMES OF THE SCIENTIFIC AMERICAN.—Volumes I., II. and III. (bound or unbound) may be had at this office and from all periodical dealers. Price, bound, \$1.50 per volume, by mail, \$2—which includes postage. Price in sheets, \$1. Every mechanic, inventor or artisan in the United States should have a complete set of this publication for reference. Subscribers should not fail to preserve their numbers for binding.

NEW PAMPHLETS IN GERMAN.—We have just issued a revised edition of our pamphlet of *Instructions to Inventors*, containing a digest of the fees required under the new Patent Law, &c., printed in the German language, which persons can have gratis upon application to this office. Address MUNN & CO., No. 37 Park-row, New York.

### INSTRUCTIONS ABOUT EUROPEAN PATENTS, With a Synopsis of the Patent Laws of the Various Countries.

#### AMERICAN INVENTORS SHOULD BEAR IN MIND

that, as a general rule, any invention which is valuable to the patentee in this country is worth equally as much in England and some other foreign countries. Four patents—American, English, French and Belgian—will secure an inventor exclusive monopoly to his discovery among 100,000,000 of the most intelligent people in the world. The facilities of business and steam communication are such that patents can be obtained abroad by our citizens almost as easily as at home. The majority of all patents taken out by Americans in foreign countries are obtained through the Scientific American Patent Agency. We have established agencies at all the principal European seats of government, and obtain patents in Great Britain, France, Belgium, Prussia, Austria, Spain, &c., with promptness and dispatch.

It is generally much better to apply for foreign patents simultaneously with the application here; or, if this cannot be conveniently done, as little time as possible should be lost after the patent is issued, as the laws in some foreign countries allow patents to any one who first makes the application, and in this way many inventors are deprived of valid patents for their own inventions.

Many valuable inventions are yearly introduced into Europe from the United States, by parties ever on the alert to pick up whatever they can lay their hands upon which may seem useful.

Models are not required in any European country, but the utmost care and experience is necessary in the preparation of each case.

#### GREAT BRITAIN.

Patents for inventions under the new law, as amended by the act of Oct. 1, 1852, and now in operation, include the United Kingdom of Great Britain and Ireland in one grant, which confers the exclusive right to make, use, exercise or vend. This is conceded to the inventor, or the introducer, for a period of fourteen years, subject, after the patent is granted, and the first expenses paid, to a government tax twice during its existence—once within three years, and once again within seven. The purchaser of a patent would assume the payment of these taxes.

There is no provision in the English law requiring that a patented invention shall be introduced into public use within any specified limit. Under the Patent Act of October, 1852, the British government relinquished its right to grant patents for any of its colonies, each colony being permitted to regulate its own patent system. If a patent has been previously taken out in a foreign country, the British patent will expire with it.

#### FRANCE.

Patents in France are granted for a term of fifteen years, unless the invention has been previously secured by patent in some other country; in such case, it must take date with and expire with the previous patent. After the patent is issued, the French government requires the payment of a small tax each year so long as the patent is kept alive, and two years' time is given to put the invention patented into practice.

It should be borne in mind that, although the French law does not require that the applicant should make oath to his papers, yet if a patent should be obtained by any other person than the inventor, upon proof being adduced to this effect before the proper tribunal, the patent would be declared illegal.

#### BELGIUM.

Patents in Belgium are granted for twenty years, or if previously patented in another country, they expire with the date thereof. The working of the invention must take place within one year from date of patent; but an extension for an additional year may be obtained on application to the proper authorities. Inventors are only legally entitled to take out patents.

#### THE NETHERLANDS.

Patents are granted by the Royal Institute of the Netherlands to natives or foreigners represented by a resident subject, which extend to a period of about two years, within which time the invention must be brought into use, and upon payment of an additional tax, a patent will be granted to complete its whole term of fifteen years. Unless these conditions are complied with, the patent ceases.

#### PRUSSIA.

Applications for patents in Prussia are examined by the Royal Polytechnic Commission, and unless there is novelty in the invention, the applicant's petition will be denied; and if it is granted, the invention must be worked within six months afterwards. A respite, however, of six additional months may be obtained, if good and sufficient reasons for it can be shown.

#### AUSTRIA.

Austrian patents are granted for a term of fifteen years, upon the payment of 1,000 florins, or about \$500 in American currency. This sum, however, is not all required to be paid in advance. It is usual to pay the tax for the first five years upon the deposit of the papers, and the patent must be worked within its first year. The Emperor can extend the patent and privilege of working by special grant. In order to obtain a patent in Austria, an authenticated copy of the original Letters Patent must be produced.

#### SPAIN.

The duration of a Spanish patent of importation is five years, and can be prolonged to ten years; and the invention is to be worked within one year and one day.

To obtain a Cuban patent requires a special application and an extra charge.

#### RUSSIA.

Since the close of the Crimean war, considerable attention has been given to Russian patents by Americans. Russia is a country rich in mineral and agricultural products, and there seems to be a field open for certain kinds of improvements. The present Emperor is very liberally disposed toward inventors, and as an evidence of the interest which he takes in the progress of mechanic arts, we may state that we have had visits from two distinguished Russian savans, specially sent out by the Emperor to examine American inventions. As Russian patents are expensive, and somewhat difficult to obtain, we do not take it upon ourselves to advise applications; inventors must judge for themselves; and this remark applies not only to Russia, but also to all other foreign countries.

#### CANADA.

Patents of invention are granted only to actual residents of Canada and British subjects. Under the general Patent Law of Canada, an American cannot procure a patent for his invention there. The only way in which he can do so is by virtue of a special act of Parliament, which is very difficult, uncertain, and expensive to obtain. Several zealous friends of reform in Canada are working earnestly to bring about a reciprocal law, but their efforts have thus far proved fruitless.

#### BRITISH INDIA.

The date of the law, Feb. 23, 1854; duration of a patent, fourteen years. Invention must be worked within two years from date of petition. Privilege granted only to the original inventor or his authorized agent in India.

#### SAXONY.

Duration of patent, from five to ten years. Invention must be worked within one year from date of grant. Careful examination made before granting a patent.

#### HANOVER.

Duration of patent, ten years; and in case of foreign patent having been previously obtained, an authenticated copy of said patent must be produced. Invention must be worked within six months from date of grant.

#### SARDINIA.

Duration of patent, from one to fifteen years. Patents for five years or less must be worked within one year, and all others within two years.

#### NORWAY AND SWEDEN.

Duration of patent, three years, at least; fifteen at most, according to the nature and importance of the invention. Patents for foreign inventions not to exceed the term granted abroad, and to be worked within one, two or four years.

#### AUSTRALIA.

Date of law, March 31, 1854. Careful examination made by competent persons previous to issue of patent, which, when granted, extends to fourteen years. Imported inventions are valid according to duration of foreign patent. It would require from twelve to eighteen months to procure a patent from the Australian government.

Parties holding foreign patents secured through our agency will be notified from time to time of the condition of their cases.

#### GENERAL REMARKS.

While it is true of most of the European countries herein specified, that the system of examination is not so rigid as that practised in this country, yet it is vastly important that inventors should have their papers prepared only by the most competent solicitors, in order that they may stand the test of a searching legal examination; as it is a common practice when a patentee finds a purchaser for his invention for the latter to cause such examination to be made before he will accept the title.

It is also very unsafe to entrust a useful invention to any other than a solicitor of known integrity and ability. Inventors should beware of speculators, whether in the guise of patent agents or patent brokers, as they cannot ordinarily be trusted with valuable inventions.

Messrs. MUNN & CO. have been established fifteen years as American and Foreign Patent Attorneys and publishers of the SCIENTIFIC AMERICAN, and during this time they have been entrusted with some of the most important inventions of the age; and it is a matter of pardonable pride in them to state that not a single case can be adduced in which they have ever betrayed the important trust committed to their care. Their agents in London, Paris, and other Continental cities, are among the oldest and most reliable Patent Solicitors in Europe, and they will have no connection with any other.

CAUTION.—It has become a somewhat common practice for agents located in England to send out circulars soliciting the patronage of American inventors. We caution the latter against heeding such applications, or they may otherwise fall into the hands of irresponsible parties, and thus be defrauded of their rights. It is much safer for inventors to entrust their cases to the care of a competent, reliable agent at home.

FEES.—The fees required by us for the preparation of foreign applications are not the same in every case; as, in some instances, when the inventions are of a complicated character, we are obliged to charge a higher fee. Applicants can always depend, however, upon our best terms, and can learn all particulars upon application, either in person or by letter.

Parties desiring to procure patents in Europe can correspond with the undersigned, and obtain all the necessary advice and information respecting the expenses of obtaining foreign patents.

All letters should be addressed to Messrs. MUNN & CO., No. 37 Park-row, New York.