

- R. S. B., of Ill.—The best chemists regard it as settled that nitrogen forms a part of steel. Nitrogen and carb to form cyanogen, and steel is considered a cyanide of iron.
- J. B. F., of Conn.-" Anastatic Printing" is a term which has been used for printing with plates of zinc, prepared by etchin and transferred copies of prints. A printed sheet of an engraved picture, or map, is first moistened with dilute nitre acid, which acts upon all the parts but those containing the printer's ink. The sheet is then pressed smoothly upon a flat zinc plate, and is allowed to re mainfor a short period. The acid in the paper attacks and etche all the zinc surface except those portions covered with the ink of the print, which being protected, are left in relief. The plate of zin then washed with a solution of gum in weak phosphoric acid, which wets only the portions that have been eiched. A roller containing lithographer's ink is now passed over the plate, when the raised parts containing the transfer print take up the ink from the roller, while the etched portions are not effected. A sheet of paper is now laid upon the zinc plate, which is run into the press and an impression taken. It was anticipated at one period that this system of printing would, in a great measure, supersede that of lithography with prepared stones, but such hopes have not been realized. We have seen several very legible but somewhat coarse maps produced by anastatic printing
- G. W. C., of N. Y .- You will find full information respecting the examination of engineers for the navy, the amount of their salaries, and a great deal of other useful information about the American navy, on page 198, Vol. IV., present series of the Scientific American. The Board for examining candidates for Navy Engineers commenced a session on the 4th of this month at the yard, Philadelphia.
- M. C., of Pa .- Soluble glass would not answer, we be lieve, for coating the inside of petroleum oil barrels, as it would be liable to crack off when the barrels are rolled.
- C. L. D. G., of Me. Three pounds of salt and half a pound of white copperas (sulphate of zinc) are sufficient for mixing with a bushel of lime in making good whitewash for outhouses.
- G. Q. J., of Mass.-A knowledge of elementary chemistry would be a great advantage to you in practicing the art of varnish making. Musspratt's Chemistry is not yet completed: it is a very useful and reliable chemical cyclopedia. Miller's Chemistry would be a good work for you to study. A little essential oil, especially oil of cloves—when mixed with gum-paste—prevents it from becoming moldy.
- M. C. L., of C. W.-It is generally estimated that 5-horse power will drive one run of mill-stones; though at the Metropolitar Mills in this city it takes just 10-horse power to each run with the bolting machinery, &c. Thirty-three thousand pounds of water per minute falling one foot gives 1-horse power. Hence if the fall wa 7 feet it would take 4,714 lbs., per minute, and with 10 feet 3,300 lbs As your wheel would waste from 10 to 50 per cent of the power, the proper allowance must be made for this. An ordinary overshow wheel generally yields about 70 per cent of the whole power of the water.
- E. S., of N. Y.-Fulton's first war steamer was provided with appliances to discharge steam and hot water into the vessel of an enemy, and thus convert it into a huge stewing-pan
- S. G. & Bros., of Ohio.-We are not acquainted with any other method of tempering the steel mold boards of plows to preven them warping, than the exercise of care in the common mode of Cover the surface with a paste of flour and salt, heat the mold boards slowly and carefully up to a low red heat, and then dip cautiously into cold water or oil. Some makers of steel plows keep odes of tempering secret.
- MULEY SAWS .- A correspondent desires to obtain information respecting the best length of pitman for muley saws. Dif ferent opinions and practices prevail among sawvers respecting the length of pitman to length of stroke. The savyers respecting the savyers given to the public, would be of general benefit and lead to the adoption of more uniform and correct proportions in mill gearing

Money Received

At the Scientific American Office on account of Patent Office business, during one week preceding Wednesday, Sept. 4

D. C. S., of Conn., \$53; L. S., of N. Y., \$10; R. L., of Mass., \$20 D. C. S., of Conn., \$53; L. S., of N. Y., \$10; K. L., of Mass., \$20; A. A., of Ohio, \$20; F. L. H., of Vt., \$40; G. J., of N. Y., \$20; J. M. O., of N. Y., \$20; J. B. B., of Cal., \$20; L. A. B., of N. Y., \$20; W. S. M., of N. Y., \$45; H. G. S., of N. Y., \$20; G. F., of N. Y., \$40; C. Van H., of Mass., \$25; C. McW., of Cal., \$30; E. T. & J. H., of N. Y., \$22; J. J. K., of Ill., \$15; W. R. P., of Ohio, \$15; S. & P., of N. Y., \$22; J. J. K., of Ill., \$15; W. K. P., of Olno, \$15; S. & P., of Conn., \$15; T. W., of Ill., \$15; J. M. F., of Ill., \$15; W. M., of Mass., \$20; J. P. R., of Iowa, \$25; L. B. L., of Cal., \$30; C. H. B., of Mass., \$30; T. J. P., of Pa., \$15; A. W., of Pa., \$15; C. L. N., of N. Y., \$15; S. & R., of N. Y., \$30; W. H. A., of Conn., \$15; C. B., of N. Y., \$15; E. F., of N. Y., \$15; J. E., of Conn., \$25; J. G. W., of N. Y., \$250; J. L. L., of N. Y., \$15; W. M., of Olio, \$25; W. P., of N. Y., \$25; H. J. P., of N. Y., \$25; T. J. W., of England, \$70 C. & M., of N. Y., \$30; W. O. L., of N. Y., \$25.

Specifications and drawings and models belonging to parties with the following initials have been forwarded to the Patent Office from Aug. 28, to Wednesday, Sept. 4, 1861:—
J. C. C., of Conn.; C. McW., of Cal.; N. B., of Ky.; G. A. R., of

Germany (2 cases); C. & M., of N. Y.; J. G. W., of N. Y.; C. A. W., of Mass.; L. B. L., of Cal.; J. P. R., of Iowa; G. F., of N. Y.; C. L., of Ohio; W. M., of Mass.; W. M., of Ohio; E. P. R., of N. Y. (2 Cases); J. H. S., of N. J.; C. H. B., of Mass.; L. T., of N. Y.; C. Van H., of Mass.; J. W. H., of N. S.; W. P., of N. Y.; T. J. W., of England (2 cases); W. O. L., of N. Y.; H. C., of England; O. B., of

New Books and Periodicals Received.

THE UNION FOREVER.—We have received from the publisher, James D. Torrey, No. 13 Spruce street, this city, the first number of a history of the war, which is published in weekly parts, at ten cents each. It is entitled "The Union Forever, and the War for the Union. A History of the Rise and Progress of the Rebellion, and Consecutive Narrative of Events and Incidents, from the First Stages of the Treason against the Republic, Down to the Close of the Corflict, Together with Important Documents, Extracts from Remarkable Speeches, &c., &c., "This is a very good current history of the war, in convenient form for preservation.

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 ountry 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 discov ery 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 pare the simultaneously with the application here; or, if this cannot be conveniently onsly with the application here; or, if this cannot be conveniently done, as little time as possible should be lost after the patent is issued. aone, as little time as possione 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 State, 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 or Oct. 1, 1832, and now in operation, include the Omica Kingdom of Great Britain and Irelandin 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.

The particular 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 relimquished list right to grant patents for any of its colonies, each colony being permitted to regulate us 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 nvention has been previously secured by patent in some other country; in such case, it must take date with and expire with the previous try; in such case, it must take date with and expire with the previous patent. After the patent s 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 previous patented in another country, they expire with the date thereof. The working of the invention must take place within one year from date of the attent; but an extension for an additional year may be obtained on upplication to the proper authorities. Inventors are only legally entiof patent; but an carrier authorities. and pplication to the proper authorities. tied to take out patents.

THE NETHERLANDS.

THE NETHERLANDS.

Patents are granted by the Royal Institute of the Netherlands to ratents 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 afterward. A respite, however, of six additional months may be obtained, if good and sufficient reasons for it can be shown.

AUSTRIA

AUSTRIA

Austrian patents are granted for a term of fifteen years, upon the paymentol 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 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 steems, specially sent out by the Emperor to examine Amdrican 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. 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, 856; 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

SAXONY.

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

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 vears.

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 on practice when a patentee finds a purchaser for his invention for the latter to cause such examination to be made before he will acent 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 ωt speculators, whether in the guise of patent agents or patent brokers.

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 SCIENTRIC 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 lo cated 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.

Exercise The fees required by the first be weenered to find the care of fin

ventors to entrust their cases to the care of a complexent, retailed at home.

Figs.—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 unformation respecting the expenses of obtaining foreign patents.

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

CHANGE IN THE PATENT LAWS.

NEW ARRANGEMENTS-PATENTS GRANTED FOR SEVENTEEN YEARS.

The new Patent Laws, recently enacted by Congress, ar ow in full force, and promise to be of great benefit to all parties who be concerned in new inventions.

The duration of patents granted under the new act is prolonged to EVENTEEN years, and the government fee required on filing an cation for a patent is reduced from \$30 down to \$15. Other changes the feesare also made as follows :-

On filing each Caveat	. \$	10
On filing each application for a Patent, except for a design		
On issuing each original Patent.	. \$	20
On appeal to Commissioner of Patents	. \$:	20
On application for Re-issue	. \$:	Ж.
On application for Extension of Patent	.\$	5/
On granting the Extension	. \$	50
On filing Disclaimer	.\$	10
On filing application for Design, three and a half years		
On filing application for Design, seven years	٠\$	16

On filing application for Design, seven years.
On filing application for Design, fourteen years.
The law abolishes discrimination in fees required of foreign ceptin reference to such countries as discriminate against citizens of the United States—thus allowing English, French, Belgian, Austrian, Russian, Spanish, and all other foreigners except the Canadians, to enjoy all the privileges of our patent system (except in cases of designs

During the last sixteen years, the business of procuring Patents for new inventions in the United States and all foreign countries has been conducted by Messrs. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN; and as an evidence of the confidence reposed in our Agency by the Inventors throughout the country, we would state that we have acted as agents for more than FIFTEEN THOUSAND Inventors! In fact, the publishers of this paper have become identified with the whole brotherhood of Inventors and Patentees, at home and abroad. Thousands of Inventors • whom we have taken out Patents have addressed to us most flattering onials for the services we have rendered them, and the wealth which has inured to the Inventors whose Patents were secured through this Office, and afterward illustrated in the SCIENTIFIC AMERICAN, would amount to many millions of dollars! We would state that we never had a more efficient cops of Draughtsmen and Specification Writers than are employed at p esent in our extensive Offices, and we are prepared to attend to Patent business of all kinds in the quickest time and on the most liberal terms.

Rejected Applications.

We are prepared to undertake the investigation and prosecution of reected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, docu-ments, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dedent upon the final result.

All persons having rejected cases which they desire to have prose cuted are invited to correspond with us on the subject, giving a brief history of their case, inclosing the official letters, &c.

Testimonials.

The annexed letters, from the last three Commi we commend to the perusal of all persons interested in obtaining Pat-

Messrs. Munn & Co.:—I take pleasure in stating that, while I held the office of Commissioner of Patents, more than one-fourth of all the office of Friedrice Came through four bands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill and fidelity to the interests of your employers.

Yours, very truly,

CHAS. MASON.

CHAS. MASON.

Immediately after the appointment of Mr. Holt to the office of Post aster-General of the United States, he addressed to us the subjoined

master-General of the United States, he addressed to us an every gratifying testimonial:—

Messrs, Nun & Co.:—It affords me much pleasure to bear testimony to the able and elficient manner in which you have discharged your duties of Solicitors of Patents while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and, I doubt not, justly deserved) the reputation of energy, marked ability and uncompromising fidelity in performing your professional engagements.

Very respectfully,

Your obedient servant,

J. HOLT.

MESSES. MUNN & Co.:—Gentleman: It gives me much pleasure to say that, during the time of my holding the office of Commissioner of Patents, a very large proportion of the business of inventors before the Patent Office was transacted through your agency, and that I have ever found you faithful and devoted to the interests of your clients, as well as eminently qualified to perform the duties of Patent Attorneys with a kill and accuracy. Very respectfully,

Your obedient servant, WM. D. BISHOP.

The Validity of Patents.

Persons who are about purchasing Patent property, or Patentees who are about erecting extensive works for manufacturing under their Patentees who are about extensive works for manufacturing under their Patentees who are about extensive works for manufacturing under their Patentees who are about purchasing Patentees who are about purchasing Patentees who are about purchasing Patent property, or Patentees who are about purchasing Patentees who are about purchasing Patentees who are about purchasing Patentees who are about even patente ents, should have their claims examined carefully by competent attor neys, to see if they are not likely to infringe some existing Patent, be fore making large investments. Written opinions on the validity of Patents, after careful examination into the facts, can be had for a reasonable remuneration. The price for such services is always settled upon in advance, after knowing the nature of the invention and being informed of the points on which an opinion is solicited For urther particulars, address MUNN & CO., No.37 Park-row, New York.

The Examination of Inventions.

Persons having conceived an idea which they think may be patent able, are advised to make a sketch or model of their invention, and submitit to us, with a full description, for advice. The points of novelty are carefully examined, and a reply written corresponding with the facts, free of charge. Address MUNN & CO., No. 37 Park-row, New York.

Preliminary Examinations at the Patent Office

The advice we render gratuitously upon examining an invention does not extend to a search at the Patert Office, to see if a like invention has been presented there, but is an opinion based upon what knowledge we may acquire of a similar invention from the records in our Hom Office. Butfora fee of \$5, accompanied with a model or drawing and description, we have a special search made at the United States Paten Office, and a report setting forth the prospects of obtaining a Patent &c., made up and mailed to the Inventor, with a pamphlet, giving in structions for further proceedings. These preliminary examinations are made through our Branch Office, corner of F and Seventh-streets, Washington, by experienced and competent persons. Over 1,500 of these examinations were made last year through this Office, and as a measure of prudence and economy, we usually advise Inventors to have a preliminary examination made. Address MUNN & CO., No. 37 Park-row. New York.

 ${\bf Caveats.}$ Persons desiring to file a Caveat can have the papers prepared in the shortest time by sending a sketch and description of the invention The government fee for a Caveat, under the new law, is \$10. A pam phlet of advice regarding applications for Patents and Caveats furnished gratis on application by mail. Address MUNN & CO., No. 37 Park-rov

Foreign Patents.

We are very extensively engaged in the preparation and securing of Patents in the various European countries. For the transaction of this business, we have offices at Nos. 66 Chancery-lane, London; 29 Boule vard St. Martin, Paris; and 26 Rue des Eperonikers, Brussels. We think we can safely say that three-fourths of all the European Patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does n

limit the issue of Patents to Inventors. Any one can take out a Patent

Circulars of information concerning the proper course to be pursued in obtaining Patents in foreign countries through our Agency, the requirements of different Patent Offices, &c., may be had gratis upon application at our principal office, No. 37 Park-row, New York, or either of our Branch Offices

Extension of Patents.

Va uable Patents are annually expiring which might be extended an bring fortunes to the households of many a poor Inventor or his family. We have had much experience in procuring the extension of Patents and, as an evidence of our success in this department, we would state that, in all our immense practice, we have lost but two cases, and these rere unsuccessful from causes entirely beyond our control.

It is important that extension cases should be managed by attorneys

of the utmost skill to insure success. All documents connected with extensions require to be carefully drawn up, as any discrepancy or untruth exhibited in the papers is very liable to defeat the application.

Of all business connected with Patents, it is most important that extensions should be intrusted only to those who have had long experience, and understand the kind of evidence to be furnished the Patent Office, and the manner of presenting it. The heirs of a deceased Patentee may apply for an extension. Parties should arrange for an application for an extension at least six months before the expiration of

For further information as to terms and mode of procedure in obtaining an extension, address MUNN & Co., No. 37 Park-row, New

It would require many columns to detail all the ways in which the Inventor or Patentee may be served at our offices. We cordially invite all who have anything to do with Patent property or inventions to call at our extensive offices, No. 37 Park-row, New York, where any questions regarding the rights of Patentees, will be cheerfully answered.

Communications and remittances by mail, and models by express (prepaid), should be addressed to MUNN & CO., No. 37 Park-row, New

RATES OF ADVERTISING

Thirty Cents per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they mustsend when they wish advertisements published, we will explain that ten words average one line. Engravings will not be admitted into our advertising columns; and, as heretofore, the publishers reserve to themselves the right to reject any advertisement sent for publication.

DUNCHING PRESS-OF GREAT POWER, WEIGHING about three tuns, for sale by SAMUEL BOYD, No. 23 Platt street, New York.

POLYTECHNIC COLLEGE, WEST PENN SQUARE, Philadelphia, for the Professional Education of Engineers, Architects, Practical Chemists, and Geologists. The Course on Military Engineering will include Field Fortifications, Siege Operations, Strategy and Tactics. Address A. L. KENNEDY, M. D., President of Faculty.

TO GUNBOAT BUILDERS.—STEAM AND WATER Gages, Glass Tubes, Indicators, Patent Gage Cocks, Steam Whistles, &c. Send for prices. E. BROW, 1* No. 311 Walnut street, Philadelphia, Pa.

TEAM THERMOMETERS, FOR SHOWING THE pressure and temperature of steam engine boilers. G. TAG-LIABUE, Barometer, Thermometer and Hydrometer maker, No. 28 Pearl street, New York. Coal Oil Hydrometers, Self-registering Thermometers, &c., &c.

Thermometers, &c., &c.

IMPORTANT TO SHIPOWNERS.

SANDS'S PATENT SEAM-ROPED SAILS.—Sails made by this pian are cheaper, lighter and more durable than lap-made sails. In a suit of sails for a 1400-tun ship a saving is effected of just 1000 yards of canvas, and of about 1200 lbs. in weight. After thorough trial, they are fully approved of and recommended by Capt. Barker, of the ship Aurora (Capt. Look, of the ship Emerdic) Capt. Look, of the ship Emerdici Capt. Luce, of the ship Aurora (and Ressrs. Howland & Frohingham, owners and agents of the Dramatic Line. Any information in regard to these sails may be obtained of Messrs. Howland & Frohingham, at 106 Wall street, New York.

WILLIAM A. SANDS.

MACHINISTS' TOOLS.—SECONDHAND PLANERS, Lathes, Drilling Machines, Punching Machines, Granes, &c., in good order, for sale by CHAS. W. COPELAND, No. 122 Broadway, New York.

QUIMBY'S LETTER CASE FOR POST OFFICES.—
The subscriber is now ready to furnish his Cases for Post Offices at a cost of \$30 and upward. The posmaster of New York city has expressed the opinion that it will be adopted in all the principal Post Offices in the country. See engraving and description in the SCIENTIFIC AMERICAN Of August 31, 1861 (Vol. V., No. 9). For further particulars, address the inventor, R. QUIMBY, P. M., Sing Sing, N. Y. **Cases may be seen at the Post Offices of Jersey City, Williamsburgh, Yorkville and Sing Sing.

GUILD & GARRISON'S CELEBRATED STEAM
Pumps—Adapted to every variety of pumping. The principal
styles are the Direct Action Excelsior Steam Pump, the improved
Balance Wheel Pump, Duplex Vacuum and Steam Pumps, and the
Water Propeller, an entirely new invention for pumping large quantities at a light lift. For sale at Nos. 55 and 57 First street, Williamsburgh, and No. 74 Beekman street, New York.

9 If GUILD, GARRISON & CO.

TLAX COTTON—PREMIUMS.

The Rhode Island Society for the Encouragement of Domestic Industry offer the following:

A premium of thirty dollars for a bale of not less than fifty pounds of the best prepared Flax Cotton, fit for use on cotton machinery, accompanied with a statement of its culture, production and preparation, including cost of the various processes.

A premium of twenty dollars for the second best bale of the same, on the same conditions.

A premium of twenty dollars for the second best bale of the same, on the same conditions.

The bales to be delivered at the rooms of the Society on or before Sept. II, 1861. The premiums will be awarded by the Standing Committee at their meeting to be held on the third Wednesday in September, and paid as soon as awarded.

The Society will defray all the necessary expenses of transportation on the bales of proper size offered for premiums, and will claim the right to retain the same at their pleasure, on payment of a fairprice. The Bax cotton will be open for public examination at the Exhibition of Vegetables, Fruits and Flowers, to be held by the Society at Railroad Itali, September II, 161. W. R. STAPLES, See'y. Communications upon this subject may be addressed to the Secretary of the Society, or to either of the following persons as the Special Committee of the Society upon Flax Culture, &c.

James Y. Smith, Providence.

William Viall,

His Excellency, William Sprague, Providence.

Bailey W. Evans.

William Viall,
His Excellency, William Sprague, Providence.
Bailey W. Evans,
Robert S. Burrough,
Edward Harris, Woonsocket,
Elisha Dyer, Providence, Chairman,
Lyman B. Frieze, "Secretary.

TRON PLANERS, ENGINE LATHES, AND OTHER MA-L chinists Tools, of superior quality, on hand and timshing, and for sale low; also, Harrison's Grain Mills. For descriptive circular, address NEW HAVEN MANUFACTURING CO., New Haven, Conn. 1 26

S WISS DRAWING INSTRUMENTS.—CATALOGUE (7TH edition), containing over 250 illustration. edition), containing over 250 illustrations of Mathematical, Optica and Philosophical Instruments, with attachment of a large sheet representing the genuine Swiss Instruments, in their actual size and shape will be delivered on application to all parts of the United States (gratis), by C. T. AMSLER, No. 635 Chestnut-street, Philadelphia, Pa., established agency for the Swiss Drawing Instruments since 1848.

Being about to retire from business, I have sold my stock of Swiss Mathematical Instruments to Messis. McALLISTER & BROTHER, of No. 728 Chestnut street, Philadelphia, who will continue to kee such for sale, and to whom I refer my former friends and customers.

C. T. AMSLER.

Philadelphia, Pa., June 12, 1861.

Philadelphia, Pa., June 12, 1861.

OIL: OIL! OIL!—FOR RAILROADS, STEAMERS AND
for Machinery and Burning.—Pease's Improved Machinery and
Burning Oil will save fifty per cent, and will not gun. This Oil possesses qualities witally essential for lubricating and burning found
in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillfull engineers and machinists
pronounce it superior to and cheaper than any other, and the only Oil
that is in all cases reliable and will not gum. The SCENTIFIC AMERICAN,
after sever at lests, pronounces it "superior to any other they have ever
used for machinery." For sale only by the inventor and manufacturer,
F. S. PEASE
No. 61 Main-street, Bufalo, N. Y.

N. B.—Reliable orders filled for any part of the United States and
Europe.

MACHINE BELTING, STEAM PACKING, ENGINE
HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior
to leather, at one-third less price. The Steam Packing is made in every
variety, and warranted to stand 300 degs, of heat. The Hose never needs
oiling, and is warranted to stand 300 any required pressure; together with
all varieties of rubber adapted to mechanical purposes. Directions, prices,
&c., can be obtained by mail or otherwise at our warehouse. NEW
YORK BELTING AND PACKING COMPANY.

13 Nos. 37 and 38 Park-row, New York.

DUMPS! PUMPS!! PUMPS!!!—CARY'S IMPROVED Rotary Force Pump, unrivaled for pumping hot or cold liquid Manufactured and sold by CARY & BRAINERD, Brockport, N. Also, sold by J. C. CARY, No. 2 Astor House, New York City. 14th

HARRISON'S GRIST MILLS—20, 30, 36 AND 48 inches diameter, at \$100, \$200, \$300 and \$400, with all the modern improvements. Also, Portable and Stationary Steam Engines of all sizes, suitable for said mills. Also, Bolters, Elevators, Belting, &c. Apply to S. C. HILLS, No. 12 Platt-street, New York.

THE GRAEFENBERG MANUAL OF HEALTH.

THE GRAEFENBERG MANUAL OF HEALTH.

This valuable family medical work, containing 300 pages, has been revised and improved, and elegantly illustrated with beautifully colored Engravings of the human system. Sent by mail to any part of the country on receipt of 25 cents. It is a complete guide to ail diseases, and their cure.

Address letters to

Secretary Graefenberg Co., No. 2 Bond St., New York.

One of the leading New York Journal says:—"The popularity of this admirable and conjendious work is well shown by this being the twenty-fourth edition of the Manual It contains a number of colored anatomical plates, and is a complete family physician, the bestandmost compendious that we have ever seen. Dr. Buchan's famous work is not to be compared in value to this excellent adviser. Its at once simple, popular, plain and explicit, and the mother, with such an adviser, is predared at once to apply the proper remedies in case of sudden attack of sickness in the family. In the country a copy of the Manua of II ealth is indepensable, and every family should possess one. It will save a hundred times its cost in doctors' bills, and, what is far better, will be the means of preserving many valuable lives to their families and relatives."

LIVE WITHOUT THE DOCTOR.

SAVE MONEY AND GAIN HEALTH.—The expense and trouble consequent upon the necessity of employing a physician, is no small item in the yearly calculations of the head of a family.

The most of this, and in fact all, except when serious accidents require surgical operations, or where very violent vital diseases render an occasional call necessary, can be avoided by having the Graefenberg Manual of Health and an assortment of Graefenberg Medicines.

FAMILIES can save large sums in doctors' bills, and avoid much suf-fering, by using the Graefenberg Medicines and Manual of Health.— New York Tribune.

The Graefenberg Manual of Health, together with their valuable series of Family Medicines, will enable a family to dispense in nine cases out of ten, with the cost of a physician—Observer.

NEARLY fifteen years experience has gained for the Graefenberg Company's Institution the confidence and esteem of the American people, and the combination of professional treatment under the direct supervision of the Medical Board, with the preparation and sale of family medicines and er authority of an act of the Legislature of New York, has formed a union of professional practice and commercial enterprise never before witnessed. At the present day the position of the Graefenberg Company's Medical Institute is unparalleled by that of any Public Charity or Medical college in the world.

The Graefenberg Company wish it to be distinctly understood that their theory and practice is not based upon infallibility. What is claimed, and what is borne out by facts, is that the medicines are the result of the highest medical skill adapted to the compounding of simple and entirely vegetable medicinal preparations. The treatment is the most judicious application of these simple vegetable productions in aid of the great and equally simple laws of nature governing the human system in health and disease. In ninety-nine cases out of a hundred the Graefenberg treatment will certainly cure.

CONSULATE OF THE U. S. OF AMERICA, BOMBAY, Sept., 1860.

This is to certify that I am personally acquainted with J. F. Bridg M. D., of the city of New York, and that he is a learned and skill physician of high standing; and further, that I have used the Graete berg Medicines according to directions given in the Graefenberg Ma ual of Health, for several years, to my entire satisfaction; and I confidently recommend them to all who wish to save doctors' bills a enjoy good health.

American Consul, Bombay

The Graefenberg Institute combines the sale of medicine, medical advice, and the reception of patients for treatment in the Institute Buildings, No. 2 Bond Street, N. Y. Many of the leading public men in the country have spoken in the highest terms of the Graefenberg Institution and its theory and practice. Others who are unacquainted with the medicines, but who are aware of the integrity and truthfulness of the Resident Physician, have permitted him to refer to them for the truth of what he may say. Among these last we have noticed the names of Horace Greeley, of the Tribune; Prof. M. P. Jewett, of the Vassar Female College, Poughkeepsic; the Rev. E. H. Chapin, D.D., of New York; Prof. A. P. Peabody, of Harvard University, &c.

of New York; Prof. A. P. Peabody, of Harvard University, &c.

WE, the undersigned citizens of the town of Persia, Cattaraugus County, N. Y., and the town of Collins, Eric County, N. Y., most cheerfully certify that we and our families have used the Graefenberg Family Medicines, and especially the Graefenberg Vegetable Phils, with the most gratifying results. We believe they justly merit the good qualities chimed for them by the Graefenberg Company, and would confidently recommend them to the public.

Signed by Geo. S. Hicker: Thomas J. Parker, physician; Abraham Sucker, farmer; I. P. Rollen, farmer; John Havens, merchant; Ely Page, farmer; Stephen Hooker, farmer; E. Goss, drover; G. F. Southwick, farmer; P. Walden, farmer; Wm. Grilliths, butcher; D. Grannis, wheelwright; Edwin P. Dally, builder; H. N. Hooker, merchant, John Barnheart, farmer; E. Van Dorke, cordwainer.

Sworn to before John B. Wilbor, Justice of Peace.

CERTIFICATE FROM THE GOVERNOR OF VIRGINIA

CERTIFICATE FROM THE GOVERNOR OF VIRGINIA.

I, William Smith, Governor of Virginia, certify and make known that Joseph Prentice—who signs a certificate relating to the Graefenberg Vegetable Pilis—is the Clerk of the Court of this State. The said certificate embraces the names of the most reliable and responsible people in this community, and certifies to the invariable curative action of the Graefenberg Vegetable Pills, in the following diseases:—
Billious Complaints, Asthma, Constipation, Dyspepsia, Erysipelas; Low, Nervous and Simple Fevers; Gastric Fevers, Gripes, Heardburn, Headache, Indigestion, Hysterics, Liver Complaint, Nervous Disorders, Neuralgia, Rheumatism, and all diseases arising from want of action in the discretice organs.

ders, Neuralgia, Rheumatism, and all diseases arising from want of action in the digestive organs.

And I further testify that full credit and faith are due and onght to be given to said certificates.

In testimony whereof, I have subscribed my name, and caused the Great Scal of the State to be affixed hereunto.

Done at the city of Richmond, the twenty-second day of November, in the year of our Lord one thousand eight hundred and forty-eight, and of the Commonwealth the seventy-third.

By the Governor, Win. H. Richardson, Sec. Com. and Keeper of the Scal.

property. Four hoxes of Graefenberg Pills will be sent to any part of the country, without expense, on the receipt of one dollar.

From On the receipt of \$5, or upward, that amount of Graefenberg Medicine, at retul prices, will be sent to any place in the United States where there is an express line from New York, or from the General Agency, free of charge.

Agent, The of the Graefenberg Medicines, or information regarding the Institute, its terms, &c., may be had by addressing
JOSHUA F. BRIDGE, M. D.,
Resident Physician Graefenberg Institute,
No. 2 Bond Street, New York.

OLID EMERY VULCANITE.—WE ARE NOW MANUfacturing wheels of this remarkable substance for cutting, grinding and polishing metals, that will outwear hundreds of the kind commonly used, and will do a much greater amount of work in the same
time, and more efficiently. All interested can see them in operation at
our warehouse, or circulars describing them will be furnished by mail. ur warehouse, or circulars describing them will be furnished by ma NEW YORK BELTING AND PACKING CO., 1 13 Nos. 37 and 38 Park-row, New York.

Bur Beachtung für deutsche Erfinder.

Die Untergeidneten baben eine Anfeitung, bie Erfindern tas Berbaften angibt, um fich ibre Patente ju fichern, berausgegeben, und verabfolgen solche gratis an tiefelben.
Erfinder, welche nicht mit ber englischen Sprache befannt find, können ihre Mittheilungen in ber beutschen Sprache machen. Sigen von Erfindungen mit furzen, beutlich geschriebenen Beschreibungen beliebe man un abbreifern an Munn & Co., 37 Varf Row, Rew Yort. Dafelbft ift ju haben .

Die Patent-Bejete der Bereinigten Staaten,

nebit ben Regein und ber Geichäftsordnung ber Patent-Office und Anleitungen für ben Erfinder, um fich Patente zu fichern, in ben Ber. St. somohl als in Europa. Jenner Auszuge aus ben Patent-Gesen frember Länder und barauf bezügliche Rathichlage; ebenfalls nüpliche Winte fur Erfinder und solche, weiche patentiren wollen.
Preis 20 Ets., per Pul 25 Ets.

Scott Russell's Iron War Ships and Batteries.

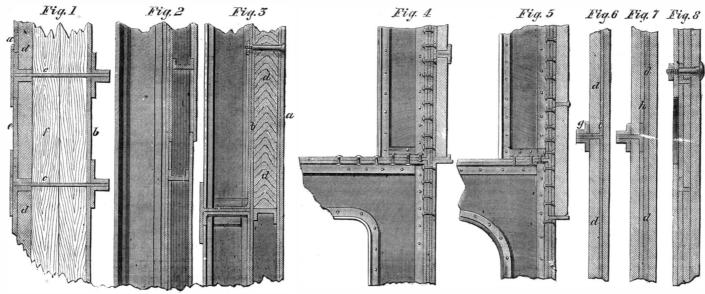
On page 138 of the present volume of the Scienti-FIC AMERICAN, we directed attention to "improvements wanted" in the construction of iron-plated ships, and we said: "What is wanted is some better mode of fastening iron plates to a ship's side." Since then our London cotemporaries, the Engineer and Me chanics' Magazine, have come to hand, illustrated with engravings of recent improvements relating to this very subject, for which no less eminent a person than Mr. Scott Russell, builder of the Great Eastern, has lately obtained patents. As iron shipbuilding, especially as it relates to iron-plated war vessels, is almost a new art and as it is probable that it will become universal, it opens up a very extensive prospect to inventors for making new improvements.

By thus using the requisite plates of iron to resist shell and shot, they will be found to increase, and, not as heretofore, to reduce the strength of the structure; and such protecting plates will not be injured by bolt holes being made through them, in order to their being fixed by bolts to the structure, as heretofore has been the practice. Or, instead of filling the cells with a combination of thick protecting plates of iron and wood filling, the cells may be entirely filled with iron plates of such a thickness as may be required, in which case it may be found desirable to have longitudinal cells only, and to arrange the butts of the filling plates in such a manner that the butts of no two strakes in the same cell are in the same plane, technically called "breaking the joints."

Fig. 2 shows a vertical section of the side of a ship

the skin or plating of the side of a ship, a number of recesses will be formed, each of a depth suitable for receiving a thick protecting plate or plates, at the same time allowing sufficient material to be hammered or bent over the edges of the thick protecting plates. The holding of the protecting plates to the skin or plating of the structure may, by these means, be very advantageously accomplished, and in a superior manner to that heretofore practiced, when holes have been formed in the protecting plates, and also in the frame to receive bolts, thus tending to weaken both the plates and the frame.

Figs. 4 and 5 show two sections of means of fixing protecting plates to the outer skin of a vessel or of a fortification. In these figures, the outer skin is shown to be of more than one thickness. In some cases,



CONSTRUCTING IRON WAR VESSELS

thousands of dollars in experimenting with ironplated vessels, and yet there are many defects in their great frigates, the Warrior and Black Prince. It requires practice to develop defects, and inventive genius to provide remedies. Mr. Scott Russell, in the accompanying illustrations, has presented a new method of fastening and plating war vessels. The improvements, he states, are also applicable to floating and land batteries.

They are constructed double, with an inner and outer skin or plating, and the space between the two skins is divided by longitudinal partitions only, or upright partitions only, as may be required, which connect the two skins and produce numerous cells. Suitable angle iron is used in the structure. Into each of these cells, which come near to or above the line of flotation of a ship or floating battery, or which in a land battery is desired to be rendered more or less strong to resist shell and shot, a thick protecting plate of iron, in size suitable to fit into the cell, is introduced. The space between the inner surface of the thick protecting plate and the outer surface of the inner skin or plating is filled with wood, so that the thick protecting plate of iron introduced into the cell will be securely retained in position without other fastenings. The inner as well as the outer skin or plating, as well as the longitudinal and upright partitions, should, when for ships or floating batteries, be made watertight in all parts.

Fig. 1 of the accompanying engravings shows a traverse section of a part of the side of a ship; a is the outer plating or skin of the vessel, and b is the inner plating or skin, and they are shown to be connected by longitudinal partitions, cc, and it is preferred that both longitudinal and upright partitions and angle iron should be used; dd is the protecting plate, there being a filling plate, ee, intervened between the outer skin and the protecting plate, or the surface of the protecting plate may be planed or otherwise formed to fit close to the angle iron and the outer skin; f f are fillings of wood or of any other suitable and comparatively elastic material. In place of using one thick plate of iron in a cell, the requisite thickness and substance may be obtained by introducing two or more plates in like manner to what is above described in respect to a single protecting plate.

ployed one over the other, in such manner as to break joint. The plating of the inner and outer skin is riveted in the ordinary manner, and, if desired, these may be applied "through" bolts or rivets, so that the outer skin and inner skin, together with the interposed protecting plates, may be all fixed together, and to the inner ribs or framing of angle iron, whether of L or T, or other form. In certain cases, upright webs only are used, and the cells are then filled with bars or plates of iron placed with their edges against the inner surface of the outer skin or plating, and the outer surface of the inner skin or plating; these bars or plates may be placed close together, thus entirely filling up the cells, or there may in some cases be spaces left between the bars. These spaces may be filled with cement, wood or other substance desired, and the bars may be of any shape or size that may enable them to add strength to each other and to the general structure.

Fig. 3 shows a section which may either represent a horizontal or a vertical section, according as the angle iron or other partitions are used in a vertical or horizontal direction. a is the outer plating or skin, and b is the inner plating or skin, having between them angle iron partitions; dd are the projecting bars or plates, which are bent so as to fit into and on each other. The edges of the plates or bars, dd, it will be seen, come against the inner and outer platings.

Thus, in using two or double angle irons back to back in this way, one will be hammered or folded over or bent in one direction to hold one edge of one thick protecting plate or plates, and the other will be hammered or bent over in the opposite direction, so as to hold one edge of a neighboring thick protecting plate or plates, the other edges of the protecting plate or plates being held in a similar manner by other angle or other irons. Or, by using a single angle or T-iron, the edges of the thick protecting plates being rounded or chamfered at the angle farthest from the skin or plating, that part of the angle or T-iron that projects beyond the thick protecting plate or plates may be hammered or riveted down so as to hold the adjoining edges of two thick protecting

From the above description, it will be understood that by thus using angle or suitably-formed iron on put together.

The British government has expended hundreds of or of a fortification wherein protecting plates are em- the requisite plates of iron for protecting a ship or battery from shell and shot are fixed by means of angle or suitably-formed iron fixed to the skin or plating, the projecting ribs of such angle iron being made suitable not only for receiving the desired thickness of protecting plate on either side of each of such ribs, but also to allow of the rib to project beyond the protecting plates on either side.

Fig. 6 shows a section of an arrangement where two angle irons, c c, are used back to back, to which the outer skin or plating is riveted; these angle irons extend beyond the protecting plates, d d, which may be single plates of considerable thickness, as shown, or two or more plates may be used to make up the required thickness; g g are other angle irons, which, being riveted on either side, securely hold the whole together.

Fig. 7 shows another section where, in place of using two single angle irons back to back, L or T angle iron may be used; and this figure also shows the use of protecting plating outside of the skin, a, as well as the inside thereof, the direction of the inner and outer protecting plates being reversed, and, by through bolts or rivets, the outer and inner protecting plates may be secured to each other; and to the angle iron, h, is a filling plate, when a single thick inner protecting plate is used, such filling plate, h, making up for the thickness of the angle iron. The great object is to avoid the injurious effects of having the protecting plates and the structure to which they are fixed perforated with numerous holes for the reception of bolts; and with this object, through bolts are employed as sparingly as may be. Screw bolts may be used, introduced from the interior, the inner surfaces of the thick protecting plates, in such cases, being tapped to receive the screws; the screws, when thus introduced from the interior, should not pass through the protecting plates, so as to appear on the outer surface thereof.

The edges of the other plates may be connected together by means of tongues and feathers formed on their edges, or by means of iron dowels, and then a certain number of through bolts used to tie the whole structure together. This will be understood by reference to Fig. 8, which represents a section of part of a ship or vessel, or of a fortification so constructed or