

1,308.—Lewis Herring, of Montgomery Co., Pa., assignee of J. Y. Humphrey, of Philadelphia, Pa., for Mica Chimneys for Lamps. Patented July 17, 1860:

I claim the construction and use of lamp chimneys made mainly of mica, when the upper end is contracted and made smaller than the lower or middle portions thereof, substantially in the manner and for the purpose described.

I also claim binding the mica chimney of a lamp with rings of metal, substantially in the manner and for the purpose described.

1,309.—H. D. Snow, of Rochester, N. Y., for Improvement in Governor Valves. Patented Oct. 11, 1859:

I claim constructing steam governors substantially as set forth, so as that the downward movement of the balls, when they drop below the point affording a full opening to the valve shall tend to close it.

EXTENSION.

5,583.—Edward Spain, of Philadelphia, Pa., for Improvement in Churns. Patented May 16, 1848:

I claim the saving the dasher the form represented and described, which, while it imparts a compound reciprocating and rotating motion to the dasher, as it is operated upon, thereby also enables a large-sized dasher to be passed whole through a comparatively small-sized square aperture in the side of the barrel, as set forth.

DESIGNS.

1,576.—Henry A. Fowler, of Afton, N. Y., for Design for Hames Fastening.

1,577.—David Foyer, of Dover, N. H., assignor to Abraham Folsom & Son, of Boston, Mass., for Design for a Floor Cloth Pattern.

1,578 and 1,579.—F. S. Otis, of Brooklyn, N. Y., for two Designs for a Clock Case Front.

1,580.—J. R. Wemmett, of New York City, for design for a Spoon.

1,581.—C. J. Woolson, of Cleveland, Ohio, for Design for a Cook Stove.

PATENTS FOR SEVENTEEN YEARS.



The new Patent Laws enacted by Congress on the 2d of March, 1861, are now in full force, and prove to be of great benefit to all parties who are concerned in new inventions.

The duration of patents granted under the new act is prolonged to SEVENTEEN years, and the government fee required on filing an application for a patent is reduced from \$30 down to \$15. Other changes in the fees are also made as follows:—

Table listing various patent fees: On filing each caveat \$10, On filing each application for a Patent, except for a design \$15, On issuing each original Patent \$20, On appeal to Commissioner of Patents \$20, On application for Re-issue \$30, On application for Extension of Patent \$50, On granting the Extension \$50, On filing Disclaimer \$10, On filing application for Design, three and a half years \$10, On filing application for Design, seven years \$15, On filing application for Design, fourteen years \$30.

The law abolishes discrimination in fees required of foreigners, excepting 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) on the above terms.

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 for whom we have taken out Patents have addressed to us most flattering testimonials 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 corps of Draughtsmen and Specification Writers than are employed at present 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.

The Examination of Inventions.

Persons having conceived an idea which they think may be patentable, are advised to make a sketch or model of their invention, and submit it 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 Patent 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 Home Office. But for a fee of \$5, accompanied with a model or drawing and description, we have a special search made at the United States Patent Office, and a report setting forth the prospects of obtaining a Patent &c., made up and mailed to the Inventor, with a pamphlet, giving instructions for further proceedings. These preliminary examinations are made throughout Branch Office, corner of F and Seventh-streets, Washington, by experienced and competent persons. More than 5,000 such examinations have been made through this office during the past three years. Address MUNN & CO., No. 37 Park-row, N. Y.

How to Make an Application for a Patent.

Every applicant for a Patent must furnish a model of his invention. If susceptible of one; or if the invention is a chemical production, he must furnish samples of the ingredients of which his composition consists, for the Patent Office. These should be securely packed, the

inventor's name marked on them, and sent, with the government fees by express. The express charge should be prepaid. Small models from a distance can often be sent cheaper by mail. The safest way to remit money is by draft on New York, payable to the order of Munn & Co' Persons who live in remoteparts of the country can usually purchase drafts from their merchants on their New York correspondents; but, if not convenient to do so, there is but little risk in sending bank bills by mail, having the letter registered by the postmaster. Address MUNN & Co No. 37 Park-row, New York.

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 pamphlet of advice regarding applications for Patents and Caveats, in English and German, furnished gratis on application by mail. Address MUNN & CO., No. 37 Park-row, New York.

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 Boulevard St. Martin, Paris; and 26 Rue des Eperonniers, 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 not limit the issue of Patents to Inventors. Any one can take out a Patent there.

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.

Rejected Applications.

We are prepared to undertake the investigation and prosecution of rejected 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, documents, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dependent upon the final result.

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

Assignments of Patents.

The assignment of Patents, and agreements between Patentees and manufacturers, carefully prepared and placed upon the records at the Patent Office. Address MUNN & CO., at the Scientific American Patent Agency, No. 37 Park-row, New York.

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 York.



C. H. S., of N. H.—The best description of the manufacture of woollen goods that we are acquainted with is that in Ure's Dictionary of Arts and Sciences. It is said that a new edition of the work is about being published.

H. O. N., of N. Y.—Parachutes are made in the form of umbrellas with a hole at the apex to prevent them from oscillating. Experienced aeronauts generally avoid the use of parachutes; accidents so frequently result from their use. The rapidity of the descent will depend on several circumstances, but principally on the size of the parachute in relation to the weight of its burden.

H. A. J., of Me.—Plaster of Paris after being calcined and ground, requires only to be wet with water in order to cause it to harden.

L. C. C., of Mass.—Our aeronauts make their balloons of cotton cloth, and generally cover them with a cement, the composition of which they keep secret. We know of nothing better than linseed oil. Hydrogen gas will make its way in time through any substance, even wrought iron plates.

E. G. S., of N. B.—Overman's work on the manufacture of iron was published by Henry C. Baird of Philadelphia in 1850. Ure's Dictionary of Arts and Sciences contains an elaborate treatise on the subject.

Q. A. S., of Pa.—For information in relation to the improvement on Mr. Parkes's plan of vulcanizing, you can address John A. Greene, 37 Milk street, Boston. Alcohol boils at a temperature of 173°, and water at 212°, so you are in greater danger of explosion with alcohol than with water at a given temperature.

T. S. C., of N. Y.—To transmit 15 horse power with a belt running 25 feet per second, your belt should be 11½ or 12 inches wide. It will take 45,000 pounds of water per minute to give 15-horse power with 11 feet fall. The very best turbines have yielded 87 per cent of the whole power of the water; this would require about 52,000 lbs. per minute for your purpose. Very few wheels, however, yield more than 70 per cent, and with one of this class you would need about 64,000 lbs. per minute. A cubic foot of water weighs 62½ lbs.

R. U., of Mich.—There are a great many roofing compositions. Some patented, and some kept secret. The essential ingredients in most of them are coal tar and asphaltum.

J. W., of Ohio.—A gallon of water weighs 8 pounds, 33,000 pounds per minute gives one horse power for every foot fall, and a good overshot wheel will yield about 70 per cent of the power. Hence it will take 2,107 gallons per minute to give you 5 horse power from a 13-foot overshot wheel.

C. W. B., of Ill.—India rubber may be dissolved in spirits of turpentine or in benzole. You can form it upon a mold by dipping the mold into the solution repeatedly as candles are dipped; allowing the rubber to harden between the immersions. If you use a wooden mold rub the surface with pumice stone before using it.

H. C. F., of N. Y.—If you wish to submit plans of an iron-plated battery to the inspector of the government, address Hon. Gideon Welles, Secretary of the Navy, Washington.

P. H. S., of N. J.—We have a good opinion of Well's Natural Philosophy, and for a new beginner we think it equal to any other. It is issued by Iverson & Plimney of this city.

R. N., of Pa.—Professor Gillespie's work on Surveying and Mahan's Civil Engineering are good works. You can obtain them at Appleton's in this city.

N. P. A., of N. Y.—If your model now in the Patent Office shows the invention you desire to claim you can surrender your original patent and ask for a re-issue. If what you now claim was new when you first applied for the patent you are entitled to the re-issue.

G. A. B., of Prince Edward Island.—You will find rules for making a chime of bells in almost every encyclopedia, but it requires a thoroughly practical person to tune a chime, just as it requires a practical person to tune a piano forte. It cannot be done by theory.

J. H. C., of Mass.—Canadian balsam dissolved in rectified oil of turpentine is the best clear varnish for maps, drawings, &c. The balsam should be placed in the turpentine and set aside in a moderately warm place, and agitated occasionally for about seven days. A varnish made with pale mastic dissolved in alcohol is used to fix pencil drawings.

W. G. R., of Del.—Every patented article must bear the date of the issue. You were not obliged to put the date on the articles you have sold and delivered previous to the issue, but all that are subsequently sold should have a label attached stating the date of the patent. Or in your case it would be better to stamp it into the wood.

SPECIAL NOTICE—FOREIGN PATENT.—The population of Great Britain, is 30,000,000; of France, 35,000,000; Belgium, 5,000,000, Austria, 40,000,000; Prussia, 20,000,000; and Russia, 60,000,000. Patents may be secured by American citizens in all of these countries. Now is the time, while business is dull at home, to take advantage of these immense foreign fields. Mechanical improvements of all kinds are always in demand in Europe. There will never be a better time than the present to take patents abroad. We have reliable business connections with the principal capitals of Europe. Nearly all of the patents secured in foreign countries by Americans are obtained through our agency. Address Munn & Co., 37 Park row, New York. Circulars about foreign patents furnished free.

Money Received

At the Scientific American Office on account of Patent Office business, during one week preceding Wednesday, May 21 1862:—

- List of names and amounts received: S. B. E., of Conn., \$15; B. and R., of Ill., \$25; J. C. M., of Ill., \$25; J. G. W., of N. Y., \$180; B. R., of Mass., \$40; J. H. R., of Ill., \$25; E. W., of Mass., \$15; N. F. S., of Ill., \$25; H. B. B., of Mass., \$15; T. S., of O., \$20; C. S. L., of Ind., \$15; W. S. M., of Md., \$15; S. W. R., of Mass., \$30; E. B. R., of N. J., \$15; B. F. H., of N. H., \$25; W. E. S., of Wis., \$15; A. S., of N. Y., \$15; T. S., of N. Y., \$43; S. H., of England, \$20; C. W. R., of Mich., \$20; A. K., of N. Y., \$18; A. B., of N. Y., \$89; O. L., of N. Y., \$25; J. R. A., of Pa., \$25; A. M. F., of Conn., \$20; A. S., of N. Y., \$15; J. Q. A. S., of Pa., \$30; B. A. M., of Conn., \$25; H. K., of N. Y., \$15; G. G. L., of Del., \$30; C. B. M., of Ill., \$25; J. G. E., of Pa., \$15; W. M. D., of Mich., \$15; S. W., of Mass., \$15; J. A. McC., of N. Y., \$20; J. R. A., of N. Y., \$10; D. K., of Mich., \$25; J. B. A., of Ill., \$15; J. T., of N. Y., \$50; W. B. W., of Mass., \$20; J. B. S., of Prussia, \$20; E. H., of Conn., \$45; W. H., of N. Y., \$45; B. R., of N. Y., \$25; E. C., of Ky., \$295; N. P., of N. Y., \$15; U. H. S., of Ill., \$15; J. S. W., of Va., \$25; C. W. B., of Mass., \$35; H. C. F., of Vt., \$25; G. H., of Ill., \$25; G. D., of Mass., \$15; E. T. B., of Mich., \$15; E. J. B., of N. Y., \$10; T. McD., of Pa., \$25; G. S., of N. Y., \$15; W. M., of O., \$30; F. G. S., of Mass., \$15; R. T. C., of Ill., \$15; P. B., of N. J., \$20; W. and P., of O., \$30; W. B. B., of Ill., \$20; G. J., and H. W. R., of N. Y., \$20; A. M., of Mass., \$20; J. M., of N. Y., \$35; L. C. C., of Mich., \$20; J. W. S., of N. J., \$20; J. B. L., of N. Y., \$20; H. W. Sr., of N. J., \$12; A. S. H., of Ill., \$20; P. N. H., of N. J., \$20; S. B. C., of N. Y., \$20; A. M. F., of Conn., \$10.

Specifications and drawings and models belonging to parties with the following initials have been forwarded to the Patent Office from May 11 to Wednesday, May 21, 1862:—

- List of initials: H. W., of N. J.; J. Q. A. S., of Pa.; O. L., of N. Y.; B. R., of N. Y.; H. H. B., of Mass.; G. H., of Ill.; C. B. M., of Ill.; D. K., of Mich.; L. H., of N. Y.; A. M. F., of Conn.; J. S. W., of Va.; J. C. M., of Ill.; B. and R., of Wis.; W. T. G., of Paris; W. M., of O.; T. McD., of Pa.; B. F. H., of N. H.; J. H. R., of Ill.; B. A. M., of Conn.; J. R. A., of Pa.; A. G., of N. Y.; H. C. F., of Vt.; N. F. S., of Ill.; T. S., of O.; A. B., of N. Y. (2 cases).

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.

RECEIPTS.—When money is paid at the office for subscriptions, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of our reception of their funds.

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.

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 at this office. Address MUNN & CO., No. 37 Park-row, New York.

RATES OF ADVERTISING.

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INVENTORS AND CONSTRUCTORS OF NEW AND USEFUL CONTRIVANCES OR MACHINES, of whatever kind, can have their inventions illustrated and described in the columns of the SCIENTIFIC AMERICAN.

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STEAM GAGES, WATER GAGES, GLASS TUBES, Gauge Cocks, Steam Whistles, Low-Water Alarms, Indicators for ascertaining the working horse power of steam engines.

SPIN DIALS, OF A NEW AND BEAUTIFUL DESIGN. Very ornamental and useful in the garden, lawn, &c.

WHEELS, OF A NEW AND BEAUTIFUL DESIGN. Very ornamental and useful in the garden, lawn, &c.

PICKERS.—RICHARD KITSON, HEAD OF WORTHEN street, Lowell, Mass.—Manufacturer of Kitson's Patent Cotton Mower, Kitson's Patent Cotton Picker, Kitson's Patent Cotton Waste Machine and Bag Picker.

MILL STONE DRESSING DIAMONDS, SET IN PATENT Protector and Guide. For sale by JOHN DICKINSON, attendance and sole manufacturer.

THE PATENT SOLAR MATCHES CONTAIN NO SULPHUR, and are the best burning match yet invented.

NOTICE TO INVENTORS AND MANUFACTURERS.—We are the exclusive owners, under Goddard's patent, of the rights to make, use, sell, or otherwise dispose of rubber rollers.

UNIVERSAL CLOTHES WRINGER.—WE BELIEVE this to be the most powerful, most durable, and most convenient wringer invented.

METALS.—THOS. J. POPE, No. 92 JOHN STREET, New York City.—Charcoal and Anthracite Pig Iron, direct from furnaces.

RUSSELL'S SELF-RAKER FOR HARVESTERS HAS been thoroughly tested, and is found equal to the best.

COMBINED SHINGLE AND HEADING SAW.—UNQUALIFIED for simplicity and economy of power and lumber.

MACHINERY FOR SALE, AT VERY LOW PRICES.—6 slide lathes, 2 double-axle lathes, 2 iron planers, 2 bolt cutters, 2 punching machines.

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A SUBSTITUTE FOR LEAD PIPE, VIZ., A SEMI-ELASTIC PIPE OR HOSE. C. McBurney's Patent.—It can be universally applied for the forcing, suction or conducting of water, hot or cold.

TURBINE WATER WHEELS, CONSTRUCTED UPON the best principle for great economy in water.

LARGE MANUFACTORY AND STEAM POWER FOR Sale or to Let Cheap.—For sale or to let, in Bridgeport, Conn., a Large Frame Manufactory, 123 feet long, 33 feet wide.

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NEW YORK EMERY WHEEL COMPANY, MANUFACTURERS OF SOLID EMERY WHEELS, Patented Jan. 7, 1862.

LAUTH'S PATENT SHAPING, PISTON RODS, MANDRELS, Plates, &c. of iron or steel. Address the subscribers (who are the only manufacturers under Mr. Lauth's patents).

IMPROVED MILLING MACHINES, WITH HAND AND POWER FEED, furnished for \$500 per year, by W. T. NICHOLSON, Providence, R. I.

PATENT FOR SALE.—IMPROVED CATCH BOLT FOR Door Locks and Latches, which greatly facilitates their operation, and does not increase the cost of manufacture.

EMPLOYMENT! AGENCIES WANTED!! A NEW ENTERPRISE.—The Franklin Sewing Machine Company want agents, at a salary of \$40 per month and expenses paid.

SPRING TACKLE BLOCKS.—PATENT RIGHT FOR Sale, or license to manufacture granted on reasonable terms.

BAIRD'S PATENT PREPARATION FOR THE PROTECTION OF Steam Boilers from Incrustation.—It does not injure the metals; is a great saving of fuel; does not foam, and works equally well in salt and fresh water.

FULTON'S COMPOUND, FOR CLEANSING STEAM BOILERS OF SCALE.—This article is powerful to remove scale, and to injure the boiler.

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.

SECOND-HAND PORTABLE AND STATIONARY ENGINES, Boilers, Machinists' Tools. For sale low, by C. GRAY, Box 1,863, Boston, Mass.

NEW SHINGLE MACHINE—THAT WILL RIVE AND SHAVE 24,000 Shingles in a day, for sale by S. C. HILLS, No. 12 Platt street, New York.

ONE 50-HORSE STEAM ENGINE, AS GOOD AS NEW, will be sold cheap on application to GUILD & GARRISON, Nos. 55 and 57 First street, Williamsburg, or No. 74 Beekman street, New York City.

TERRYVILLE CLOCK SPRING COMPANY.—MANUFACTURERS OF Polished Clock, Watch and Toy Springs, Terryville, Conn.

IMPORTANT TO INVENTORS.

MESSRS. MUNN & CO., PROPRIETORS OF THE SCIENTIFIC AMERICAN, continue to solicit Patents in the United States, and Foreign Countries.



Patents are now being solicited in the United States and Foreign Countries. They are now being solicited in the United States and Foreign Countries.

Consultation may be had with the firm between nine and four o'clock, daily, at their PRINCIPAL OFFICE, No. 37 PARK ROW, New York. We have also established BRANCH OFFICE in the CITY OF WASHINGTON.

They are very extensively engaged in the preparation and securing of Patents in the various European countries. For the transaction of this business they have Offices at Nos. 66 Chancery Lane, London, 29 Boulevard, St. Martin, Paris, and 26 Rue des Eperonniers, Brussels.

A pamphlet of information concerning the procedure to be pursued in obtaining Patents in the United States, and in the various Foreign Countries, may be had gratis upon application to the Principal Office, or either of the Branch Offices. They also furnish a Circular of information about Foreign Patents.

The annexed letters from former Commissioners of Patents were commended to the perusal of all persons interested in obtaining Patents.—Messrs. Munn & Co.—The undersigned have the honor to acknowledge the receipt of your letter of the 10th inst., in relation to your application for a patent for an improvement on the machinery of printing presses.

Messrs. Munn & Co.—The undersigned have the honor to acknowledge the receipt of your letter of the 10th inst., in relation to your application for a patent for an improvement on the machinery of printing presses.

PORTABLE STEAM ENGINES.—COMBINING THE maximum of efficiency, durability and economy, with the minimum of weight and price. They are made in every variety and are more than 200 lbs. in size.

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MACHINE BELTING, STEAM PACKING, ENGINE and HOSE.—The superiority of these articles, which are made of vulcanized rubber, is well established. Every belt will be warranted superior to leather, at one-third less price.

IRON PLANERS, LATHES, FOUR-MINUTE DRILLS, Milling Machines, and other Machinists' Tools, are constantly on hand and finishing, and for sale low. For particulars, apply to address NEW HAVEN MANUFACTURING COMPANY, New Haven, Conn.

A MESSIEURS LES INVENTEURS.—AVIS IMPORTANT.—Les Inventeurs non familiers avec la langue française qui proposent nous adresser dans leur langue natale. Toute description concise pour notre examen.

Zur Beachtung für deutsche Erfinden. Die Unterzeichneten haben eine Anstalt, die sich mit der Verfertigung und der Vertheilung von Patenten beschäftigt, und sind bereit, allen Erfindern, welche nicht mit der englischen Sprache bekannt sind, für die Verfertigung und die Vertheilung von Patenten in der deutschen Sprache, und für die Verfertigung und die Vertheilung von Patenten in jeder Sprache, die ihnen beigegeben wird, die nöthigen Anstalten zu treffen. Auf der Office wird deutsch gesprochen.

Munn & Co., 37 Park Row, New York. Auf der Office wird deutsch gesprochen.

The "Merrimac" Patented Forty-Eight Years Ago.

We announced last week that we had discovered in the Patent Office the specification and drawings of an invention made forty-eight years ago, which, in its essential features, was a facsimile of the famous steamer *Merrimac*. We now publish the specification with engravings of the drawings which are attached to it. The smoke represents the powder in the act of exploding to throw up the hinged portion of the deck into a vertical position, in order to repel boarders. This feature is absurd, but it is not necessarily connected with the other parts of the plan, the practical efficiency of which has, after so great a lapse of time, been so signally demonstrated.

The fact of this important invention lying latent for so many years, is a striking proof of the necessity

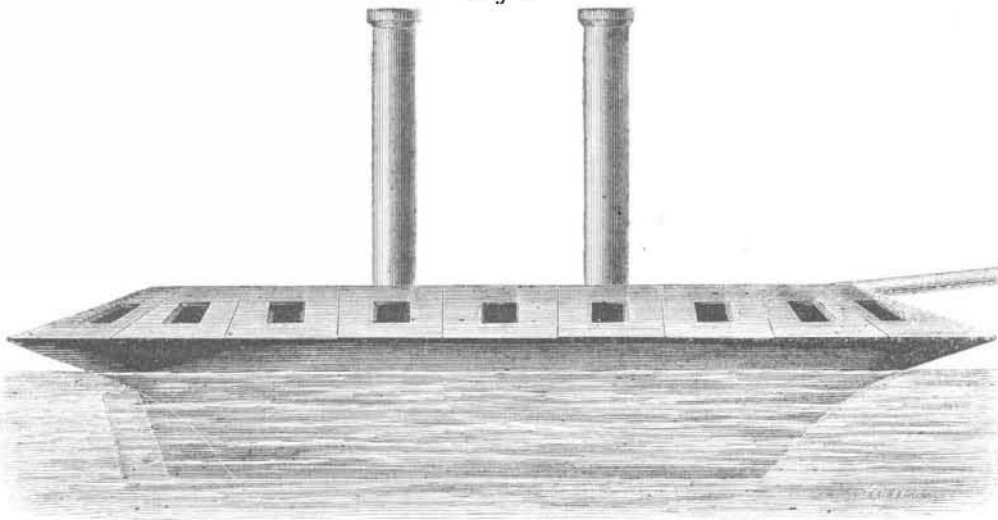
The power may be reversed to propel her either way; said power is connected to upright levers to make horizontal strokes alternately. The elevation of her timbers and gearing will be proportioned by her keel and tonnage.

On a Dew Bow Seen on the Surface of Mud.

Prof. Rankine, in a letter to the *Philosophical Magazine*, says:—

There was seen to-day (February 13, 1862), by myself and some other persons in this neighborhood, a very beautiful phenomenon, of which the cause is obvious, and of such a nature that one would expect the phenomenon to occur frequently; but I do not remember to have yet seen any instance of it recorded in any scientific publication. I refer to a pris-

Fig. 1.



THE EARLY PROTOTYPE OF THE "MERRIMAC."

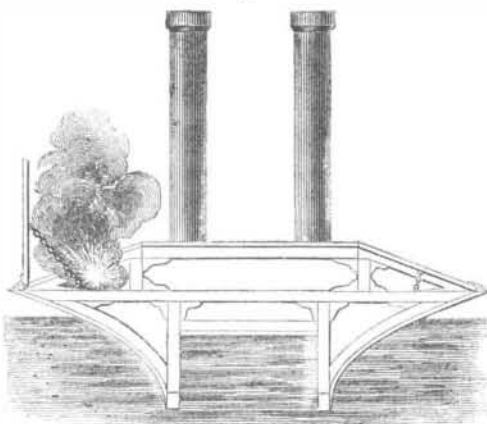
of exerting energy and enterprise in order to effect the introduction of even the most valuable patents. Unfortunately for the world, there was no *SCIENTIFIC AMERICAN* in those days.

THOMAS GREGG'S LETTERS PATENT.

The following are the Letters Patent, containing a description, in the words of the said Thomas Gregg himself, of his ball-proof vessel, propelled by steam power applied under her and in her concave stern:—

The boat is framed on an angle of about eighteen

Fig. 2.



degrees all round the vessel, when the top timbers elevate the balls, and the lower ones direct them under her. The top deck, which glances the balls, may be hung on a mass of hinges near the ports. Said deck is supported by knees and cross timbers on the lower side, so that it may be sprung with powder, if required, when boarded by the enemy, to a perpendicular, where said decks will be checked by stays, while the power of the powder will be exhausted in the open air, and then fall on springs to the center of the deck again. (See Fig. 2 cross section.) The aforesaid deck will run up and down with the angle which may be coppered or laid with iron. The gun deck may be boarded at pleasure, to give room, if required, as the men and guns are under said deck. The power is applied between her keels, where there is a concave formed to receive them, from the bow to the stern, except a small distance in each end forming an eddy.

matically-colored hyperbolic iris, or bow of the first order, exactly resembling that sometimes seen on a field of dewy grass; but in this case it was displayed on the muddy surface of a by-road near Glasgow, and on the less trodden parts of an adjoining turnpike road, throughout a distance of more than a mile. The time was between 12.30 and 1 P. M., Greenwich time; the morning had been hazy, but the mist had cleared away, and the sun was shining brightly.

The angular dimensions of the iris were obviously the same with those of a rainbow of the first order; its color were complete, from red to violet, and very bright and distinct, especially where the mud was softest and moistest; where a sheet of water, how thin soever, covered the mud, the iris vanished. No trace of an iris could be seen on the grass, in the sky, or any where, but on the mud; and on those parts of the turnpike road where the mud had been much disturbed no iris was visible.

The necessary conclusion from this appearance is, that the surface of the mud must have been thickly covered with globules of pure water, perfectly spherical and not in absolute contact with the mud, although resting on it; but those globules must have been extremely minute, for they were invisible to the closest inspection with the naked eye.

Chloride of Lime as an Insecticide.

Dingler's Polytechnisches Journal says:—In scattering chloride of lime on a plank in a stable all kinds of flies, but more especially biting flies, were quickly got rid of. Sprinkling beds of vegetables with even a weak solution of this salt effectually preserves them from caterpillars, butterflies, moths, slugs, &c. It has the same effect when sprinkled on the foliage of fruit trees. A paste of one part of powdered chloride of lime and one-half part of some fatty matter, placed in a narrow band round the trunk of the tree, prevents insects from creeping up it. It has ever been noticed that rats and mice quit places in which a certain quantity of chloride of lime has been spread. This salt, dried and finely powdered, can, no doubt, be employed for the same purposes as flour of sulphur, and be spread by the same means.

TEN new craters have appeared on Mt. Vesuvius during the present eruption. English photographers are at work taking photographs of the mountain in its excited state.

English Association of Inventors.

The *London Mechanics' Magazine*, of May 2d, says:—

A large and influential meeting of the general reception committee of the Social Science Association was held in the Mansion House, on Tuesday last, the Lord Mayor in the chair. A report was presented by the finance committee, stating the arrangements that had been made up to the present time. Papers on a variety of different subjects connected with the association have been promised by gentlemen intimately acquainted with the various questions which it is proposed to discuss. A series of interesting soirees will be given during the time of the meeting, and it is intended to provide for visits to places and institutions illustrative of the objects of the association. A large attendance of distinguished foreigners is expected. A fund is now being raised for the purpose of meeting the necessary expenses, and a Foreign Reception and Corresponding Committee has been appointed.



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