

RATES OF ADVERTISING.

TWENTY-FIVE CENTS per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they must send when they wish advertisements published we will explain that eight 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 they may deem objectionable.

IMPROVED FURNACE—PATENTED JANUARY 3, 1865.—This is an invention of high importance to Engineers, Petroleum Distillers, Sorghum Manufacturers, Salt Evaporators, Etc., and is destined to create a revolution in the arrangement of furnace fires under long boilers and evaporators of every kind. This furnace is made to extend in continuous sections under long boilers or evaporators to any desired length; the grate being also in sections resting on wheels set in a ledge on each side of the furnace, and each grate is raised and lowered at pleasure to apply more or less heat to the pan or boiler.

When the heat is too great, the draught is shut off in front; when it is about right, the chimney stopper is closed, and the heat all retained; as the boiling slackens, the grates are raised one or all, less or more, nearer to the pan; as the fire deadens, the draught is let on, and so continued.

When either grate wants more coal, it is drawn out, supplied, and returned to its place in one minute, or less, and the places of any two of them can be exchanged quite as quickly.

When the furnace is too long for the grates to be run in and out with a hook, it is done by an endless chain.

The furnace is always inclosed by walls, which support the pan or boiler above it, except an extra section, which extends out front of the doors, where the fires are all made.

Fires arranged on this plan can be immediately withdrawn in case of the water getting too low in the boiler.

To Sorghum Manufacturers it must be invaluable, from the facility it affords for economizing the heat, modifying, regulating and varying it under different parts of the pan, as desired.

To protect the furnace is exposed to injury from heat but the grates.

Explicit directions given for making and setting a furnace; they can be cast and fitted, boxed and shipped to any point.

The inventor being a confirmed invalid, is disposed to sell out his whole patent to some party more able to introduce it, and will assist in procuring foreign patents. Address

BARCLAY BROWN, Byberry, Twenty-third Ward, Philadelphia.

INVENTORS EMPORIUM, NO. 37 PARK ROW, N. Y. New and useful inventions manufactured, introduced and sold on commission. Agents wanted. [10 25] RICE & CO.

ENGINEERING SCHOOL, FRANKLIN, DEL. CO., N. Y., has full means for instruction in Mathematics, Drawing, Mechanics, Physics, Chemistry, and all applications with full sets Eng. Instruments, Chem. Apparatus, Etc. \$180 pays Board and Tuition one year. G. W. JONES, A. M., Prin. Vol. XII 16 20

CHALLENGE.—WE OFFER FOR SALE A NEW No-Chimney Kerosene Oil Burner, that gives a most brilliant light, without smoke or odor, that cannot be extinguished by sudden motion. We challenge the world to produce its equal. Send fifty cents and get a sample by return of mail. NEW YORK LAMP CO., No. 259 Pearl street, N. Y. 16 4

THIS DAY PUBLISHED—A MANUAL OF DRAFTING INSTRUMENTS AND OPERATIONS, in four divisions: 1st, Instruments and Materials. 2d, Fundamental Operations. 3d, Practical Constructions. 4th, Properties of Colors, Harmony of Colors, and a Text Book for self instruction. By Prof. S. Edward Warren. 1 vol., 12mo., with cuts and plates, \$1 25. Also, by the same Author: 1st, The Student's, Draughtsman and Artisan's Manual of Elementary Geometrical Drawing. Numerous Plates. 1 vol., 12mo., \$1 50. 2d, A Manual of Elementary Problems in the Linear Perspective of Form and Shadow. Numerous Cuts. 1 vol., 12mo., \$1 31. General Problems from the Orthographic Projection of Descriptive Geometry. 1 vol., 8vo., Numerous Plates. \$3 50. At Wholesale and Retail by JOHN WILEY & SON, No. 535 Broadway. In Preparation: A Manual of Quantitative Chemical Analysis and Assaying. By Prof. S. W. Johnson, of Yale College, New Haven. 1

12 MILLING MACHINES.—2 THREE-SPINDLE Drills; 3 Four-foot Screw-cutting Lathes; 2 Five foot ditto; 1 Heavy Lathe, 32-inch boring, 12-foot bed; 1 Fowler's Patent Press; 1 Lever Press; 1 ten-horse Engine and Boiler. Address CHAS. H. SMITH, No. 145 North Third street, Phila. 16 30w

FOR SALE.—STATE RIGHTS OF MY PATENT extra, make bar. It is easy to manufacture and requires but little capital. The patent was issued last year, and a quantity of them have been sold in this State. They weigh but two ounces and are better than any others in use. Any one introducing them in the South can realize a fortune. Address JOHN ZENGELER, Chicago, Ill. P. O. Box 2,662. 1

MACHINE SCREWS.—WE KEEP IN STOCK ALL lengths, thickness and threads, of Flat and Round-head Machine Screws, made by the American Screw Co. On the receipt of 20 cents we will send a card Screw Gauge, enabling parties unacquainted with the different numbers to order the thickness and thread they wish, with prices attached. CHARLES MERRILL & SONS, No. 536 Grand street, New York. 16 2

PRINTING PRESS PATENT FOR SALE, WITH TWO Presses complete—one hand the other treadle—patterns, Etc. Hand Press illustrated in SCIENTIFIC AMERICAN, July 11, 1886. The whole cost \$500. Will be sold for \$300, or exchanged for a Steam Engine and Boiler of one-half to one-horse power. Address JOHN H. UTTER, Westery, R. I. 16

FOR SALE—A BOILER 4 FT. 8 IN. DIAM. BY 21 feet long, with two 1 1/2 inch diameter and three 1 3/4 inch diameter return flues, almost entirely new. Also a Steam Engine, 12 by 48 in. cylinder, second hand, not quite complete, will be sold separate or together. H. M. AMES & CO., Oswego, N. Y. 1

FOR SALE.—NE ENGINE LATHE, SECOND HAND, 10 feet bed, 20 inch swing. Price \$175. L. W. MOUNT, Medina, N. Y. 1

F. B. HUNT'S HOOSIER FODDER CUTTER—PATENTED in the United States and Europe; the most popular cutter in use; it cuts with equal facility hay, straw and corn fodder; is simple and durable, and can be worked with ease by a boy of ten years, having the most simple and complete change of feed, cutting any length desired. This machine was patented Jan. 5, 1864, and was exhibited at twenty different State and County Fairs, at which it took 18 first and 2 second premiums. In each case of failure to get the first premium the committees were divided—self-interest or controlling the majority. Seldom has there anything become so suddenly popular and profitable as the Hoosier Fodder Cutter. All who have had an equal experience or observation in the matter pronounce it a fixed fact—a success beyond all controversy. Although it has been but a short time since this machine was introduced, it has been conclusively proven that the fodder from an acre of corn cut or chaffed by this machine is worth the entire cost of making the crop. Machines and shop rights to manufacture for sale by TOBIAS, LANE & CO., Richmond, Ind. 15 2

WATER WHEELS.—J. E. STEVENSON, No. 200 Broadway, N. Y., Hydraulic and Mechanical Engineer and Manufacturer of the HELICAL TURBINE WATER WHEEL. Particular attention paid to the improvement of Water Powers and Mill Sites. Surveys made. Plans, Specifications and Estimates furnished. General Agent for the purchase and sale of all kinds of Mill Property and Machinery. Contracts for furnishing Turbines, Mill Gearing, Shafting, Pulleys and all Iron Work for Cotton, Woolen, Grist and Saw-mills. 15 3

PLATINA PLATE AND WIRE—BEST FRENCH IMPORTED, by SAML. S. WHITE, No. 668 Broadway. 15 4

FOR SALE—A ROTARY STEAM POWER PUNCHING and Raising Press, with eight sets of dies complete, for tin box and can work. Address Box 94 Post-office, Philadelphia. 15 6

NEW STEAM ENGINE FOR SALE—250 H. P., HORIZONTAL, cylinder 6 feet stroke, 30 inch diameter. Built at the Burdon Iron Works, Brooklyn, N. Y. where it may be seen. Apply to A. & P. ROBERTS & CO., Philadelphia, Pa., WILLIAM LILLY, Mauch Chunk, Pa., THOMAS BARBER, Allentown, Pa., or HUBBARD & WHITTAKER, Brooklyn, N. Y. 15 12

CAN I OBTAIN A PATENT?—FOR ADVICE AND instructions address MUNN & CO., No. 37 Park Row, New York, for TWENTY YEARS Attorneys for American and Foreign Patents. Caveats and Patents quickly prepared. THE SCIENTIFIC AMERICAN, \$3 a year. 30,000 Patent Cases have been prepared by M. & CO.

VALUABLE DISCOVERY.—IT HAS BEEN ASCERTAINED that Railroad Ties may be preserved for a great length of time by the application to them of a composition discovered and lately patented by B. S. FOREMAN, Architect and Builder, at Morrison, Ill. 15 6

NEEDLES.—SAND'S NEEDLE CO., MANUFACTURERS of Machine Spring Needles. These needles are made by patented machinery, and consequently we claim a uniformity of spring which cannot be obtained in the ordinary way of making. Address, with two samples inclosed, SAND'S NEEDLE COMPANY, Laconia, N. H. 16 11

MACHINIST'S TOOLS AND BUSINESS FOR SALE, in Springfield, Mass., now doing a large and profitable business. For full particulars address Box 1066 P. O., Springfield, Mass. 15 4

GREAT INVENTORS—FULTON, STEVENSON, ARKRIGHT, Watt, with full titles and descriptions. Also, Gen. Terry, Miss Butt, Baron Cuvier, Sir John Herschel, Newton, Dalton, Howard, Buxton, Combe, Eustache, Gottfried, Burnett in his Comic Physiology, with 11 Illustrations, P. Benson, Sr. EYE GLANCES ON BROADWAY. Illustrated; Color of Eyes, Blue, Brown, Black, Hazel; Size of the Eye; Place of the Iris; Curves of the Eyelids; Eyelashes. CHOICE OF OCCUPATION, or Pursuits in Life; What can the Boys do Best? Hippocrates and the Temperaments; Crazy Phenomena; RELIGIOUS—The "Still Small Voice;" Skepticism; Veneration; The Law of Progress; Color Blindness; NOSES. REPORTERS AND REPORTING, with Portraits of MEMORY WOODFALL and JAMES PERRY. PSYCHOLOGY—A Lunatic's Experience; Chaos in the Brain; Longing to go up; Ride among the Stars; Visiting Jupiter; Coming to himself; Body Life and Soul Life. ETHNOLOGY—Nature in History; Climate and Vegetation; Climate and Color; North and South; Mixing the Races; How the Races die out. OUR SOCIAL RELATIONS—Matrimony; Let Girls be Girls; A Lesson for Wives; Marrying for show. With 57 engraved illustrations. PHRENOLOGICAL JOURNAL for APRIL, A Double Number. Only 20 cents by first post, or \$2 a year. Newsman or Address Messrs. FOWLER & WELLS, No. 389 Broadway, N. Y. 15 2

JOSEPH A. MILLER, MANUFACTURER AND PATENTEE. Improved fire fronts for boilers, superior to any others in use. Improved Argand furnace; saves from 20 to 40 per cent in fuel; burns smokeless; indestructible grate bars for steamship, steamboat, locomotive and other furnaces. Office 210 Broadway. 14 4

WARDWELL SUPERIOR PATENT SAW BENCHES, made by J. Goodrich, licensee, Fitchburg, Mass. Circulars free. 14 3

PATENT EXCHANGE, NO 229 BROADWAY, NEW YORK.—Patents and manufactured articles introduced and sold on commission. (14c) THOMAS G. ORWIG & CO.

ATTENTION, DEALERS IN WHEEL STOCK.—THE Jacobs Wheel Company are prepared to buy seasoned Wheel Stock, of prime quality, in cash, in any quantity, such as hubs, spokes, flues, bent rims, Hickory swamps. Address the JACOBS WHEEL COMPANY, No. 90 Wall street, or 145 and 147 Bank street, N. Y. 14 5

THE ADVERTISER, WHO HAS HAD A LENGTHY business experience, purposes shortly to visit the cities of Europe, and will assume charge of the introduction of a few American manufactures—patent rights, etc., which may be entrusted to him. Communications, stating particulars and address, may be addressed J. M. F., Box 1232, P. O., New York. 15 2

HORSE-SHOES.—JOHNSON'S PATENT HORSE-SHOES attached to the hoof without nails are the best shoes for an interfering or cutting horse. Illustrated in SCIENTIFIC AMERICAN, Vol. XII, No. 14. For particulars address JOHN M. JOHNSON, Station D, New York. A mistake occurred in the engraving of Fig. 2. 15 2

THE UNION MOLDING MACHINE—BEST IN USE.—For circulars address H. A. LEE, patentee, Worcester, Mass. 15 4

PHILOSOPHY.—WOULD LIKE A SITUATION TO teach Mental and Natural Philosophy. If I do not teach better than any other man can I will not ask anything for my services. Address J. SPEAR, M. D., Royalton, Boon Co., Ind. 15 2

W. BAILEY & CO., PROVISION BROKERS, NO. 40 West Fourth street, Cincinnati. Orders for Provisions, Lard, Tallow, Grease, Oils, Etc. carefully and promptly filled. XII 15 1/2

THE TURBINE FAN BLOWER—A NEW INVENTION—Patent applied for. The best Fan Blower ever made for Steamers, Forges, Foundries, or for any purpose requiring a strong blast of air; does not require a high speed; is more durable, and can be driven with much less power, than any other Fan Blower now in use; costs not much more than others kind. Manufactured by MARVIN SMITH, New Haven, Conn. Send for circular. 14 5

FOR SALE—A WROUGHT-IRON SHAFT—BEST quality—hammered; whole length twenty and one-half feet; eleven and one-half inches diameter. Bearings (at each end) fourteen inches long, ten inches diameter, with pillar blocks and boxes. PEASLEE & CARPENTER, Copake Iron-works, N. Y. 13 5

SOLID EMERY WHEELS, SILICATE OR VULCANITE, of every size, promptly made or shipped from stock. N. Y. EMERY WHEEL CO., No. 94 Beekman street, New York. 13 4

CLARK'S PATENT FERULES FOR LEAKY BOILER TUBES.—Illustrated No. 2, Vol. XII, SCIENTIFIC AMERICAN. E. CLARK, No. 321 Spring street, New York. 12 8

FOR SALE—RIGHTS FOR PORTER'S REST AND Blacking Box. Illustrated Vol. XI, No. 21. Address J. H. PORTER, No. 415 Hudson street, N. Y. 14 3

THE PYRO PNEUMATIC FURNACE, FOR MALT Kilns, Drying Rooms, Destructing Cotton, Woolen, Hat and Linen Works, and all Sugar Refineries. Gives perfect dry heat with half the fuel; is cheaper and better than steam. JOSEPH A. MILLER, C. E., No. 200 Broadway, N. Y. Combustion, Heat, Drying and Ventilation Specialties. 14 4

FAN BLOWERS.—DIMPPEL'S, ALDEN'S, POTTER'S and others, of all sizes, on hand, for sale, by LEACH BROTHERS, No. 86 Liberty street, New York. 13 8

MALLEABLE CASTINGS, GREY IRON CASTINGS, Galvanized Castings of every description to order. JAMES L. HAVEN & CO., Cincinnati, Ohio. 10 10

G. W. B., of N. Y.—The Avery engine should yield the full power of the steam (except that which is obtained by expansion), provided the arm at the point of exit moves with a velocity equal to that with which the steam flows through the orifice. This requires a long arm and a very rapid revolution. You can see an old Avery engine at a saw-mill in Attorney street in this city.

S. C. S., of C. W.—For general use in soldering gold rings you will find the following recipe valuable: Gold, 2; silver, 1; copper, 1. Stir it well, and add a little borax in powder; pour out in slips, which will make it handier to use. To clean gold which has been soldered heat it very hot; let it cool gradually, then boil in urine and sal ammoniac. A harder solder than the above is made of gold and silver.

I. H. D., of Mass.—The dispatch on the American line does not go to the Independent line, because the circuit is broken; there is no connection between them. We have never seen two rudders applied to one vessel in the manner you describe, and do not doubt its utility so far as increased action on the hull is concerned. Your hoisting arrangement through the aid of a hydraulic press would be too slow. No body could wait fifteen minutes to hoist a tun twenty feet. Your plans for iron-coating ships are not new; similar ones have been published in the SCIENTIFIC AMERICAN.

J. H. M., of Mo.—A man has no right to make a patented article for his family use without the inventor's consent.

U. S., of Md.—W. W. Secombe, No. 254 Broadway manufactures a very excellent hand-stamp canceller.

F. T., of Iowa.—If you have used your smokestack nine years and find it has now failed you have had good service from it and it has died of old age. The exhaust passing into it does not affect its durability, for whatever moisture resulted therefrom would be dried up almost instantly.

R. T. D., of Conn.—What you require is the terchloride of gold. A brass chain washed in this receives a golden deposit when dried.

J. T., of D. C.—You will find the information about the reporting machine on page 113, vol. XI.

T. A. H. C., of Mo.—A very useful book for you will be the Timman's Manual and Builder's and Mechanic's hand book, by I. R. Butts & Co., Washington street, Boston, Mass.

Venango, of N. Y.—We understand that Professor Dana has a work in press on petroleum, and you will doubtless find that free from the absurdities and trivialities in the work of which you complain.

J. S., of Ill.—If you will send us a sample of the substance in your spring we will tell you whether it is petroleum. In these days the dreams of a great many people are running on oil wells.

J. W., of Mass.—No person except the owner of the patent right for a given state or territory has a right to make use of or sell the invention in such State.

A. G. W., of D. C.—We certainly did not mean to accuse you of plagiarism. We published your communication for the benefit of our large numbers of new subscribers, and we added the foot note principally to call your attention and that of other readers to our previous article.

NOTICE TO SUBSCRIBERS.

The first five numbers of the present volume of the SCIENTIFIC AMERICAN being out of print, we shall commence the time of each new subscriber from the date of receipt of the order, unless the writer states specifically that he wishes such back numbers as can be furnished.

SPECIAL NOTICE TO INVENTORS.

The money receipts on account of patent business, which have heretofore been published in this column, and the notification of cases sent to the Patent Office, will for the present be discontinued. The receipt of specifications and money from inventors will be acknowledged promptly by mail.

TO OUR READERS.

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 enclosing \$1 as fee for copy. 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.

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 acknowledgement of our receipt on of their funds.

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 are 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.

Back Numbers and Volumes of the "Scientific American."

VOLUME IV., AND VOLUME XI., (NEW SERIES) complete (bound) may be had at this office and from periodical dealers. Price, bound, \$3 00 per volume, by mail, \$3 75 which includes postage. 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. VOLS. I., II., III., V., VI., VII., VIII., IX., and X., are out of print and cannot be supplied.