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Fires arranged on this plan can be immediately withdrawn in case of the water getting too low in the boiler.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

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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.

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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.

FOR SALE.—STATE RIGHTS OF MY PATENT extra machine 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 ZENGER, Chicago, Ill. P. O. Box 2,662.

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.

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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.

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

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 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.

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.

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FOR SALE.—A ROTARY STEAM POWER PUNCHING and Raising Press, with eight sets of dies complete, for tin box and can work. Address Box 941 Post-office, Philadelphia. 15 6*

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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*

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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*

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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 Timan'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* acknowledgment 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.