

Advertisements.

Inside Page, each insertion... 75 cents a line. Back Page, each insertion... \$1.00 a line.

THIS SAWING MACHINE, operated by one man, will saw off a 2-foot log in 2 minutes. Warranted the best in use.

SUMMER BEVERAGES. A COLLECTION of over forty choice and valuable recipes for making various delicious summer beverages for domestic or restaurant use.

GOULDS' HAND POWER PUMPS should be used by every household, factory, railroad, steamboat, or mine, and will give satisfaction.

Mill Stones and Corn Mills. We make Burr Millstones, Portable Mills, Smut Machines, Packers, Mill Picks, Water Wheels, Pulleys, and Gears, specially adapted to Flour Mills.

SCIENTIFIC AMERICAN SUPPLEMENT. Any desired back number of the SCIENTIFIC AMERICAN SUPPLEMENT can be had at this office for 10 cents.

THE SKINNER PORTABLE & STATIONARY ENGINES & BOILERS & GOVERNORS. FIRST CLASS & ECONOMICAL. SKINNER & WOOD, ERIE, PA.

FARM LAW. BY HON. EDMUND H. BENNETT. This paper, which was read by the author before the State Board of Agriculture of Massachusetts, is full of important information regarding points of law not generally known.

THE ONLY PERFECT FORGE PORTABLE & HAND BLOWER MADE. MFG. BY BUFFALO FORGE CO. BUFFALO, N.Y.

Cigar Box Lumber, MANUFACTURED by our NEW PATENT PROCESS. The Best in the World. SPANISH CEDAR, MAHOGANY, POPLAR.

ESTABLISHED 1848. PATENT SPARR ARRESTER. 8-H. P. Mounted, \$650. 10 " " " 750. 12 " " " 1000.

IT PAYS to sell our Rubber Hand Printing Stamps. Circulars free. G. A. HARPER & BRO., Cleveland, O. H.W. JOHNS' ASBESTOS. Liquid Paints, Roofing, Boiler Coverings, Steam Packing, Sheathings, Fire Proof Coatings, Cements, &c.

Park Benjamin's Scientific Expert Office, 37 PARK ROW, NEW YORK. Examines and Reports on Inventions for Investors.

WIRE ROPE. Address JOHN A. ROEBLING'S SONS, Manufacturers, Trenton, N. J., or 117 Liberty Street, New York.

HARTFORD STEAM BOILER Inspection & Insurance COMPANY. W. B. FRANKLIN, V. Pres't. J. M. ALLEN, Pres't. J. B. PIERCE, Sec'y.

WATSON'S NON CHANGEABLE GIP LATHES HAS THE GREAT FACILITIES FOR LARGE OR MEDIUM SIZE WORK.

VALVE REFITTING MACHINES. ALL USERS OF GLOBE VALVES SHOULD HAVE ONE. GRISCOM & CO., POTTSVILLE, PENN.

PATENT Steam Friction Crane. Will coal locomotive in three minutes. Two machines will load or unload 1,000 tons per day of coal or ore.

THE TREATMENT OF IRON TO PREVENT CORROSION. By Prof. Barré. An interesting paper detailing the theory and practice of oxidizing the surface of iron by means of superheated steam to prevent rusting.

Lathes, Planers, Shapers Drills, Bolt and Gear Cutters, Milling Machines. Special Machinery. E. GOULD & EBERHARDT, Newark, N. J.

THE EMERSON PATENT INSERTED TOOTH & DAMASCUS TEMPERED \$100. GOLD PREMIUM SAWS ARE SUPERGEDING ALL OTHERS.

SMALL STEAM YACHT. BY M. A. BECK. Plan and elevation of a small steam yacht with detailed drawings showing arrangements of machinery.

Roots' Positive Blast Blower. P. E. & F. M. ROOTS, M'f'rs, Connorsville, Ind. S. S. TOWNSEND, Gen. Agt., 6 Cortlandt St., N.Y.

ICE AT \$1.00 PER TON. The PICTET ARTIFICIAL ICE CO., LIMITED. Room 51, Coal and Iron Exchange, P. O. Box 3083, N. Y.

WIRE ROPE. J. LLOYD HAIGH, Manufacturer of. of every description, for Railroad and Mining Use.

Working Models. And Experimental Machinery, Metal or Wood, made to order by J. F. WERNER, 52 Centre St., N. Y.

WOOD WORKING MACHINERY. PLANING, MATCHING, MOLDING, MORTISING, TENONING, CARVING MACHINES. BAND & SCROLL SAWS. UNIVERSAL VARIETY WOOD WORKERS.

Pyrometers. For showing heat of Ovens, Blast Pipes, Boiler Flues, Superheated Steam, Oil Stills, etc.

The J. L. Mott Iron Works, 88 and 90 BEKMAN ST., MANUFACTURERS OF DEMAREST'S PATENT WATER CLOSETS.

Wood-Working Machinery, Such as Woodworth Planing, Tonguing, and Grooving Machines, Daniel's Planers, Richardson's Patent Improved Iron Machines, Mortising, Moulding, and Re-Saw Machines, Eastman's Pat. Mill Machines, and Wood-Working Machinery generally.

IMPORTANT FOR ALL CORPORATIONS AND MANAGERS CONCERNED. Buerk's Watchman's Time Detector, capable of accurately controlling the motion of a watchman or patrolman at the different stations of his beat.

BIBB'S Celebrated Original Baltimore Fire-Place Heaters. Mantles, Furnaces, Ranges, etc. B. J. BIBB & SON, Office and Salesrooms, 34-41 Light St., Baltimore, Md.

ARCHAEOLOGICAL EXPLORATIONS IN TENNESSEE. By F. W. Putnam. An exceedingly interesting narrative of Prof. Putnam's explorations of the celebrated burial mounds of a prehistoric race in the State of Tennessee.

Columbia Bicycle. A practical road machine. The velocipede of 1870 is no more to be compared with the present bicycle than a spavined donkey with a blooded horse.

The George Place Machinery Agency. Machinery of Every Description. 121 Chambers and 103 Reade Streets, New York.

SHAFTING, PULLEYS, HANGERS, etc. A specialty. Send for Price List to A. & F. BROWN, 57-61 Lewis Street, New York.

Wheeler's Patent Wood Filler fills the pores of wood perfectly, so that a smooth finish is obtained with one coat of varnish.

\$2 WATCHES. Cheapest in the known world. Agents wanted. Address COULTER & CO., Chicago.

\$3 Printing Press. Prints cards labels &c. (Self-inker \$5) 18 larger sizes for business or pleasure, young or old.

MACHINISTS' TOOLS. NEW AND IMPROVED PATTERNS. Send for new illustrated catalogue. Lathes, Planers, Drills, &c. NEW HAVEN MANUFACTURING CO., New Haven, Conn.

TIGHT & SLACK BARREL MACHINERY. A SPECIALTY. JOHN GREENWOOD & CO. ROCHESTER N.Y.

Rare Chance to Advertise. Next to the SCIENTIFIC AMERICAN, the SCIENTIFIC AMERICAN SUPPLEMENT has the largest circulation of any newspaper devoted to science and the mechanical industries published in this country.

PERFECT NEWSPAPER FILE. The Koch Patent File, for preserving newspapers, magazines, and pamphlets, has been recently improved and price reduced.

Address MUNN & CO., Publishers SCIENTIFIC AMERICAN, 37 Park Row, New York. BRANCH OFFICE—Corner of F and 11th Streets, Washington, D. C.

THE TANITE CO., STROUDSBURG, PA. EMERY WHEELS AND GRINDERS. LONDON—9 St. Andrews St., Holborn Viaduct, E. C. LIVERPOOL—42 The Temple, Dale St.

ROCK DRILLING MACHINES AND AIR COMPRESSORS. MANUFACTURED BY BURLEIGH ROCK DRILL CO. FITCHBURG MASS. SEND FOR PAMPHLET.

SPARE THE CROTON AND SAVE THE COST. Driven or Tube Wells furnished to large consumers of Croton and Ridgewood Water.

PLOWS, OFFICIAL TRIAL OF. AT Paris Exhibition of 1878. By Edward H. Knight. A paper of great interest to all manufacturers and exporters of plows, showing, by description and figures, the characteristics of the various forms of this instrument.

THE FORSTER-FIRMIN GOLD AND SILVER AMALGAMATING COMPANY of Norristown, Pa., will grant state rights or licenses in easy terms.

\$10 to \$1000 Invested in Wall St. Stocks makes fortunes every month. Books sent free explaining everything. Address BAXTER & CO., Bankers, 17 Wall St., N. Y.

THE DRIVEN WELL. Town and County privileges for making Driven Wells and selling licenses under the established American Driven Well Patent.

SHAFTING, PULLEYS, and HANGERS a specialty. Vertical and Horizontal Engines; also, Nadig's Patent Pulley Moulding Machine.

PATENTS. MESSRS. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN, continue to examine improvements, and to act as Solicitors of Patents for Inventors.

Foreign Patents.—We also send, free of charge, a Synopsis of Foreign Patent Laws, showing the cost and method of securing patents in all the principal countries of the world.

When ordering copies, please to remit for the same as above, and state name of patentee, title of invention, and date of patent.

A pamphlet, containing full directions for obtaining United States patents sent free. A handsomely bound Reference Book, gilt edges, contains 140 pages and many engravings and tables important to every patentee and mechanic.

When ordering copies, please to remit for the same as above, and state name of patentee, title of invention, and date of patent.

A copy of the claims of any patent issued since 1836 will be furnished for \$1.

When ordering copies, please to remit for the same as above, and state name of patentee, title of invention, and date of patent.

A copy of the claims of any patent issued since 1836 will be furnished for \$1.

THE "Scientific American" is printed with CHAS. ENEU JOHNSON & CO.'S LITH. Tenth and Lombard Sts., Philadelphia, and 50 Gold St., New York.