



**WOOD, TABER & MORSE,**  
Eaton, Madison Co., N. Y.,  
MANUFACTURERS OF  
**PORTABLE AND AGRICULTURAL  
Steam Engines**

Of the HIGHEST STANDARD, in every respect, of materials and workmanship. Were pioneers in the manufacture of

**Practically Portable Steam Engines,**  
And with determined policy to build only the BEST MACHINERY from the BEST MATERIALS, and in the BEST MANNER OF CONSTRUCTION, and with continued improvements, have attained the HIGHEST STANDARD in excellence of workmanship, simplicity of design, and capacity of power. For a quarter of a century have maintained their manufacture, the

**Standard Portable and Agricultural Engines** of the world. Descriptive Circulars sent on application. Mention this paper.

**SEND TO LONDON BERRY & ORTON**  
PHILADELPHIA FOR  
**THE BEST BAND SAW BLADE**

**HEADACHE—A VALUABLE COLLECTION** of recipes and suggestions for the treatment of different forms of headache, collected from a variety of trustworthy sources. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 383. Price 10 cents. To be had at this office and from all new dealers.

**\$72 A WEEK,** \$12 a day at home easily made. Costly outfit free. Address TRUX & Co., Augusta, Me.

**IRWIN TAYLOR** Solicitor of Patents,  
TOPEKA, KANSAS.

**GUNS**  
SEND US your address on a postcard, and we will furnish you, free, our large list of 100 catalogues. Hundreds of bargains. Everything in the gun line, watches, cutlery, etc., at bargain prices. Address G. W. TURNER & SONS, 16 & 17 Dock St., Boston, Mass.

**MICROSCOPES!**  
TELESCOPES,  
FIELD GLASSES,  
MAGIC LANTERNS,  
ANEROID BAROMETERS,  
SPECTROSCOPES,  
DRAWING INSTRUMENTS!  
Philosophical and Chemical Apparatus.  
Catalogues as follows sent on application: Part 1, Mathematical Instruments, 162 pp.; Part 2, Optical Instruments, 186 pp.; Part 3, Magic Lanterns, 112 pp.; Part 4, Philosophical and Chemical Apparatus, 160 pp.; Part 5, Meteorological Instruments, 120 pp.

**QUEEN & CO., PHILAD'A.**

**COE BRASS MFG. CO.**  
BRASS TORRINGTON—CONN. WIRE  
AND  
COPPER MATERIALS FOR METALLIC  
IN SHEETS, TUBES, AND SPECIALTY BLANKS

**\$66 a week** in your own town. Terms and \$5 outfit free. Address H. H. HARRIS & Co., Portland, Me.

**OPIUM**  
Habit easily cured with **CHLORIDE OF GOLD**  
LESLIE E. KEELEY, M.D., SURGEON, C. & A. R. R.  
DOWNTOWN, ILLINOIS.

**RUPTURE**  
cured without an operation or the injury trusses inflict by Dr. J. A. SHERMAN'S method. Office, 251 Broadway, New York. His book, with photographic likenesses of bad cases, before and after cure, mailed for 10c.

**MANHOOD!**  
THE SCIENCE OF LIFE  
KNOW THYSELF.  
A Book for Every Man!  
Young, Middle-Aged, and Old.

The untold miseries that result from indolence in early life may be alleviated and cured. Those who doubt this assertion should purchase and read the new medical work published by the Peabody Medical Institute, Boston, entitled "The Science of Life: or, Self-Preservation." It is not only a complete and perfect treatise on Manhood, Exhausted Vitality, Nervous and Physical Debility, Premature Decline in Man, Errors of Youth, etc., but it contains one hundred and twenty-five prescriptions for acute and chronic diseases, each one of which is invaluable, so proved by the author, whose experience for 21 years is such as probably never before fell to the lot of any physician. It contains 300 pages, bound in beautiful embossed covers, full gilt, embellished with the very finest steel engravings, guaranteed to be a finer work in every sense—mechanical, literary, or professional—than any other work retailed in this country for \$2.50, or the money will be refunded. Price only \$1.25 by mail. Gold medal awarded the author by the National Medical Association. Illustrated sample sent on receipt of six cents. Send now.  
Address, **PEABODY MEDICAL INSTITUTE, or Dr. J. A. PARKER, No. 4 Rulifish Street, Boston, Mass.** The author may be consulted on all diseases requiring skill and experience.

**NEW YORK BELTING AND PACKING COMPY.**  
The Oldest and Largest Manufacturers of the Original  
**SOLID VULCANITE  
EMERY WHEELS.**  
All other kinds Imitations and Inferior. Our name is stamped in full upon all our standard BELTING, PACKING, and ROSE. Address

**NEW YORK BELTING AND PACKING CO.,**  
Nos. 13 & 15 Park Row, opp. Astor House, New York.

**NEW HAVEN MANUFACTURING CO.**  
NEW HAVEN, CONN..  
MANUFACTURERS OF IRON WORKING  
**MACHINE TOOLS**  
Lathes, Planers, Drills, Shapers, etc.  
ILLUSTRATED CATALOGUE ON APPLICATION.

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

**HISTORY OF THE PIANOFORTE—BY**  
A. J. HICKINS. Brief history of the instrument from the earliest mention of its name up to the present time. The parts of the pianoforte that are indispensable for the production of tone. The inventor of the instrument. The first German pianoforte manufacturer. Invention of the square piano. The German grand piano. The pianos of Stein, Huhn, Bach, Broadwood, Backers, Stodart, and Erard. Great changes and improvements in 1820. Pianos of Meyer, Allen, Chickering, Steinway, Lightenthal, Pope, Tomlinson, Hawkins, Wornum, Southwell, Collard, and others. Illustrated with six figures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 385. Price 10 cents. To be had at this office and from all new dealers.

**IMPORTANT NOTICE!**  
Before putting in new machinery for the season, **Sugar Refiners or Owners of Chemical Works** had better consult H. WEINDEL, 405 N. Fourth St., Phila., Pa., about his lately brought out Rotary Four-cylinder Blowers. No valves, no stoppage for oiling; high efficiency at low vacuum. Reasonable prices. Best hand and Power Air and Gas Pumps in large variety.

**UNIVERSAL**  
The Newell  
Pulverizes everything—hard, soft, gummy, etc. The best Clay Grinder and the best Cotton Seed Huller in the world.  
Portable Steam Engines, Stationary Engines, Horizontal and Upright Boilers, all sizes, on hand for immediate delivery.  
10 Barclay St., N. Y. City.

**ROCK BREAKERS AND ORE CRUSHERS.**  
We manufacture and supply at short notice and lowest rates, Stone and Ore Crushers containing the invention described in Letters Patent, issued to E. H. Blake, June 15th, 1883, together with NEW AND VALUABLE IMPROVEMENTS, for which Letters Patent were granted May 11th and July 26th, 1880, to Mr. S. L. Marsden. All Crushers supplied by us are constructed under the superintendence of Mr. Marsden, who, for the past fifteen years, has been connected with the manufacture of Blake Crushers in this country and England.  
**FARREL ROUNDELY AND MACHINE CO.,** Manufacturers, Ansonia, Conn.  
**COPELAND & BACON,** Agents, New York.

**HENDERSON'S SPECIAL REFRACTORY COMPOUNDS.**  
SUBSTITUTES FOR FIRE BRICK.  
Costs less than common red brick. Practically infusible. Can be made in any locality where sand is found. No expensive machinery required. Repairs made by same material. Specially advantageous for Iron, Steel, Silver, and Lead Smelting Works; also for inner walls of FURNACES AND BOILERS. For particulars of manufacture and license to use, apply to **JAMES HENDERSON,** Bellefonte, Penn.

**CONTINENTAL WORKS, BROOKLYN, N. Y.**  
**DUC'S MECHANICAL ATOMIZER OR PULVERIZER.**  
For reducing to an impalpable powder all kinds of hard and brittle substances such as QUARTZ, EMERY, CORUNDUM, GOLD AND SILVER ORES, BAKYTES, COAL, PIROPHORIC ROCK, etc. It is simple and not liable to get out of order, revolving shell being constructed of Siemens-Martin steel, and all parts mechanical in design and of first-class construction. Weight, 5,500 lb.; heaviest piece, 1,500 lb. It will pulverize 7 TO 10 TONS IN TEN HOURS with 30 H.P. For circulars and full particulars, apply to or address **THOS. F. ROWLAND,** Sole Manufacturer, Brooklyn, N. Y.

**SPEAKING TELEPHONES.**  
**THE AMERICAN BELL TELEPHONE COMPANY,**  
W. H. FORBES, President. W. R. DRIVER, Treasurer. THEO. N. VAIL, Gen. Manager.  
Alexander Graham Bell's patent of March 7, 1876, owned by this company, covers every form of apparatus, including Microphones or Carbon Telephones, in which the voice of the speaker causes electric undulations corresponding to the words spoken, and which undulations produce similar articulate sounds at the receiver. The Commission of Patents and the U. S. Circuit Court have decided this to be the true meaning of his claim; the validity of the patent has been sustained in the Circuit on final hearing in a contested case, and many injunctions and final decrees have been obtained on them. This company also owns and controls all the other telephonic inventions of Bell, Edison, Berliner, Gray, Blake, Phelps, Watson, and others.  
(Descriptive catalogues forwarded on application.)  
Telephones for Private Line, Club, and Social systems can be procured directly or through the authorized agents of the company.  
All telephones obtained except from this company, or its authorized licensees, are infringements, and the makers, sellers, and users will be proceeded against. Information furnished upon application.  
Address all communications to the  
**AMERICAN BELL TELEPHONE COMPANY,**  
95 Milk Street, Boston, Mass.

**SPRAY FEED WATER PURIFIER**  
FOR STEAM BOILERS  
U. S. & FOREIGN PATENTS

**TORPEDO BOATS.—DESCRIPTION OF**  
some of the most approved systems of torpedo apparatus used in the French navy, and an account of some recent experiments with them. Illustrated with two engravings. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 385. Price 10 cents. To be had at this office and from all new dealers.

**THE DUPLEX INJECTOR.**  
The constantly increasing demand for this Boiler Feeder proves its superiority over other machines now in use. Send for illustrated circular and price list. Manufactured by **JAMES JENKS,** Detroit, Mich.

**\$5 to \$20 per day** at home. Samples worth \$5 free. Address **BRINSON & Co.,** Portland, Me.

**ICE MAKING MACHINES,**  
And Machines for Cooling Breweries, Pork Packing Establishments, Cold Storage Warehouses, Hospitals, etc.  
SEND FOR ILLUSTRATED AND DESCRIPTIVE CIRCULARS.  
**PICTET ARTIFICIAL ICE CO. (Limited),**  
P. O. Box 3083. 142 Greenwich St., New York City, N. Y.

**MATHEMATICAL INSTRUMENTS**

AND  
**Drawing Materials**  
The Largest AND  
**BEST STOCK**  
IN THE  
**United States**  
Prices and Illustrated Catalogue of 186 pages sent on application.  
—ALSO—  
Sample Books of Drawing Papers.  
**QUEEN & CO., Philadelphia**

**Valuable U. S. Patent for Mixing and Crushing**  
Machine in great demand among Chemists, Grocers, Drysalers, etc., etc., to be disposed. Address  
**P. H. BRACHER & CO.,** Wincanton, England.

**GELATINE PLATES.—PAPER BY**  
E. Howard Farmer, F.C.S., giving full details in regard to the method of preparing gelatine plates of a good quality and very suitable for landscape work. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 384. Price 10 cents. To be had at this office and from all new dealers. The same number contains an article on making "Pictures on Glass" by the Godard method, the images or drawings being reproduced by means of vitri-fiable colors and a sensitizing solution.

**NEW YORK STENCIL WORKS**  
STEEL LETTER STAMPS  
STEEL DIES & C.  
100 NASSAU ST. N.Y.

**ROOT'S NEW IRON BLOWER**

**POSITIVE BLAST.**  
**IRON REVOLVERS, PERFECTLY BALANCED,**  
Has Fewer Parts than any other Blower.  
**P. H. & F. M. ROOTS, Manufacturers,**  
CONNEERSVILLE, IND.  
S. S. TOWNSEND, Gen. Agt., 22 Cortlandt St., 9 Day St., COOK & CO., Selling Agts., 22 Cortlandt Street, JAS. BEGGS & CO., Selling Agts., 9 Day Street, NEW YORK.  
SEND FOR PRICED CATALOGUE.

**MALLEABLE** CASTINGS FROM SHEET  
THOMAS DEVLIN & CO.  
FINE TANNING, JAPANNING AND  
LEIGH AVE. & AMERICAN ST. PHILA.

**Unpatented Inventions For Sale.**  
The advertiser having (by adv. in this column) disposed of one invention, would like to sell a few more; among them a **HAND MOTOR**, thoroughly improved. Price, in five or six figures, on issue of patent. **JOHN LEE COOPER,** 116 A 10th St., San Francisco, Cal.

**THE RIGHTS OF THE INSANE—A**  
paper by C. H. Hughes, M.D., recapitulating the rights that are possessed by the insane before the law in civil and criminal trials. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 386. Price 10 cents. To be had at this office and from all new dealers.

**Lowest Price**  
**PLANNER**  
AND  
**CHEAPEST**  
FOR THE MONEY.  
With Buzz Attachment or without. Also manufacturers of the  
**Double Acting Water Rams**  
**C. Hodgkins & Son, Marlboro, N. H.**

**ARE YOU SHORT OF WATER**  
Our method challenges investigation. Our machinery is portable, operated by horse or steam power. Procures water in earth or rock, anywhere, no matter how great the drought. We want names of parties wanting water. Send 3c. stamp for catalogue. **C. D. Pierce Well Co.,** 25 Essex St., N. Y.

**VOLNEY W. MASON & CO.,**  
**FRICITION PULLEYS, CLUTCHES, AND ELEVATORS,**  
PROVIDENCE, R. I.

**CARY & MOEN**  
STEEL WIRE OF EVERY DESCRIPTION  
234 W. 29 ST. EVERY & STEEL SPRINGS, NEW YORK CITY

**FRICITION CLUTCH**  
Pulleys and Cut-off Couplings.  
**JAS. HUNTER & SON,** North Adams, Mass.

**Clark's Noiseless Rubber Wheels.**  
Absolutely prevent splintering and wearing of floors caused by use of Iron Wheels. Adapted for Trucks, Boxes, Baskets, Tables, and work of every kind in Mills, Warehouses, Stores, etc. Catalogue free.  
**GEO. P. CLARK,** Windsor Locks, Ct.

**MALARIA—BY JAS. H. SALISBURY,**  
M.D. Prize essay of the Albany Medical Association. Views of the profession, in past and present times, on the subject of malaria. Periodicity of symptoms. Cryptogams growing upon the animal body. Muscarine. Minute bodies suspended in the night air of malarious levels. Symptoms of local fever. Transmission of malarious influence by the wind. Aqueous Ague plants and their allies. Fever caused by upturned earth. Fever caused by inhaling night exhalations from small boxes of developing ague plants. Descriptions of several cases of malaria. Therapeutic remarks. Plants in the urine of ague. Plants producing malaria of a congestive type. Bodies found in the urine of malarious cases. Bodies found in morning expectorations. Ague in the blood. Sputa. Plants in the perspiration of ague. Pathology of intermittent fever. Plants that excite fermentation in the urine of ague. Crystalline forms found in the urine of ague patients. Treatment of malarial fever. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 378, 379, 380, 381, 382, and 383. Price 10 cents each, or 60 cents for the series. To be had at this office and from all new dealers.

**STRAIGHT LINE ENGINE CO. SYRACUSE, N.Y.**  
STRICTLY FIRST CLASS AUTOMATIC ENGINE OF FROM TEN TO SIXTY HORSE POWER.

**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 Inventions.  
In this line of business they have had thirty-eight years' experience, and now have unequalled facilities for the preparation of Patent Drawings, Specifications, and the prosecution of Applications for Patents in the United States, Canada, and Foreign Countries. Messrs. Munn & Co. also attend to the preparation of Caveats, Copyrights for Books, Labels, Reissues, Assignments, and Reports on Infringements of Patents. All business intrusted to them is done with special care and promptness, on very reasonable terms.  
A pamphlet sent free of charge, on application, containing full information about Patents and how to procure them; directions concerning Labels, Copyrights, Designs, Patents, Appeals, Reissues, Infringements, Assignments, Rejected Cases, Hints on the Sale of Patents, etc.  
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.

**MUNN & CO., Solicitors of Patents,**  
261 Broadway, New York.  
**BRANCH OFFICE** Corner of F and 7th Streets, Washington, D. C.