

Advertisements.

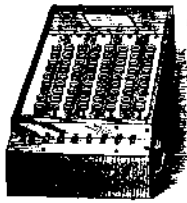
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This handle will hold files of every shape and size, and will hold them perfectly. It is made of malleable iron, and is five inches long. We will send one by mail, prepaid, on receipt of Fifteen cents.

Millers Falls Co.
93 Reade Street, New York.



COMPTOMETER

ALL ARITHMETICAL PROBLEMS
Solved rapidly and accurately by using the COMPTOMETER. Saves 40 per cent. of time. Entire relief from mental strain. Adapted to all commercial and scientific computations. Send for circular.

FELT & TARRANT MFG. CO., 52-56 Illinois St., Chicago.

STEEL * BELT * LACING

For Leather, Cotton, and Rubber Belting.
The BRISTOLS' MFG. CO., Waterbury, Conn.

"Improvement the order of the age."

THE SMITH PREMIER TYPEWRITER



Important Improvements.
All the Essential Features greatly perfected. The Most Durable in Alignment. Easiest Running and Most Silent. All type cleaned in 10 seconds without soiling the hands. The Smith Premier Typewriter Co., Syracuse, N. Y., U. S. A. Send for Catalogue.



WOODEN TANKS FOR RAILROADS, MILLS, FARMS, etc. COMPLETE STOCK OF PRESS LUMBER SPECIFICATIONS FURNISHED FOR FOUNDATIONS & SHEDS. W. C. CALDWELL & CO. No. 217 E. MAIN ST. LOUISVILLE KY.



COLTON'S PATENT FILE CLEANER
Steel Back and Frame.
COLTON'S PATENT TOOL HOLDERS
of Coppered Steel Wire.
MUNGER-COLTON MFG. CO., CHICAGO, ILL.



GENUINE FLAX FIBER-WARP

Water, Dairy, and Chamber Pails, Wash Basins, Spittoons, Shop Jars, Mats, etc., decorated and plain, white and colored. Made only by this Company, and bearing its trade mark. Will best of anything suit your tastes. Ask your dealer for it.

WORKING MODELS and Experimental of Standard Pyrometers for blast furnaces, oil stills, superheated steam, etc. Aug. Zaubits, 48 Centre St., N. Y.

Gates Cornish Rolls Pulverizer



Simple, Durable, Compact, Dustless, and a finished product direct from the machines. The best Ore Granulator for leaching and concentration. MANUFACTURE ALSO Gates Rock and Ore Breakers. Address for Catalogues GATES IRON WORKS, 50 S. W. Clinton St., Chicago, 215 Franklin St., Boston, Mass., 44 Dey St., New York.

NEW KODAKS



"You press the button, we do the rest."

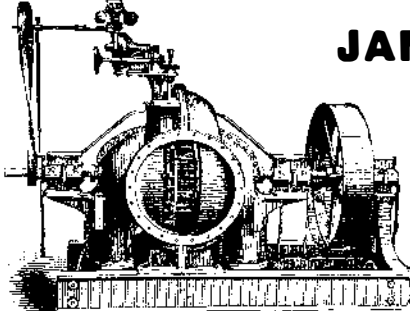
Seven New Styles and Sizes
ALL LOADED WITH Transparent Films.

For sale by all Photo. Stock Dealers.
THE EASTMAN COMPANY,
Send for Catalogue. ROCHESTER, N. Y.



DETROIT SURE GRIP Steel Tackle Blocks
Will hold load at any point without fastening the rope. HALF THE COST of hoisting saved to Machinists, Builders, Contractors, and others. Write for catalogue.
Fulton Iron & Engine Wks.
Est. 1852. 37 Brush St., Detroit, Mich.

JAMES LEFFEL WATER WHEELS



BUILT BY THE
JAMES LEFFEL & CO.
UPRIGHT AND HORIZONTAL,
FOR
ELECTRIC, MINING, AND MANUFACTURING PLANTS.

Easy working gates. High percentage and even speed at full and part capacity. Equally adapted to high and low heads. Large number of sizes and styles. Send for descriptive pamphlet to

THE JAMES LEFFEL & CO.
SPRINGFIELD, OHIO. | or 110 LIBERTY ST. NEW YORK CITY.

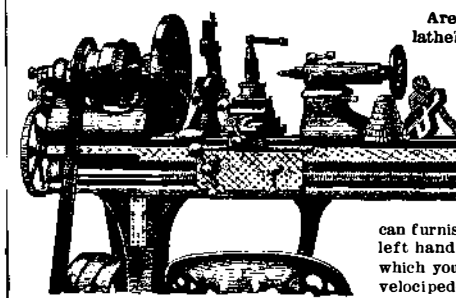
SAWS Wanted 50,000 Sawyers and Lumbermen to send us their full address for a copy of Emerson's Book of SAWS, new 1890 edition. We are first to introduce NATURAL GAS for heating and tempering Saws with wonderful effect upon improving their quality and toughness, enabling us to reduce prices. Address EMERSON, SMITH & CO. (Ltd.), Beaver Falls, Pa.

PRACTICAL BUSINESS TYPEWRITERS AT A LOW PRICE
Catalogue free. Address Typewriter Department, POPE MFG. CO., Boston, New York, Chicago.

JENKINS STANDARD PACKING!
JENKINS BROS., 71 John St., N. Y.; 105 Myk St., Boston; 21 North 5th St., Phila.; 54 Dearborn St., Chicago

KEUFFEL & ESSER CO. NEW YORK.
Levels, Transits, Surveyors' Compasses, Pocket and Prismatic Compasses, Hand Levels, Angle Mirrors, Planimeters, Pantographs, Engineers' Slide Rules, Leveling Rods, Poles, Chains, etc.
Catalogue on application.

FOOT POWER LATHES



Are you looking for a foot-power, metal-turning, screw-cutting lathe? If so, you certainly want the best tool your money can buy, for however it may be in regard to other goods, it is indisputably true of machinery and tools that the "best is none too good." We can give you the best foot-power lathe ever made, either in this country or in Europe. This is a strong statement, and we are fully prepared to substantiate it.

Our lathes are superior to all others in elegance of design, workmanship, and finish. More than this, they are COMPLETE tools. We can furnish you a lathe having back gear, reverse feed for right or left hand threads, hollow spindle and other indispensable features which you will not find in cheaper grade tools. Added to all this, our velocipede foot-power is incomparably the best ever applied to a foot lathe.

We make these lathes in different sizes, from 9 to 13 inches swing and taking between centers from 25 to 69 inches. In price they range from \$70 to \$200, and their high quality taken into consideration, are the cheapest lathes on the market. We shall be pleased to mail to any address our complete catalogue and price list, which fully describes these lathes, as well as a large number of other machines which we manufacture.

W. F. & JOHN BARNES CO., 99 Ruby St., Rockford, Ill.

WANTED To sell remaining State and Territorial rights in my Family Emergency Medicine fortune. Good really taken in exchange.
WANTED—An expert patent right seller. Have a big thing for such. No patent agencies need apply.
T. J. HUTTON, M.D., Post Surgeon, Fort Mojave, Arizona.

MALLEABLE AND FINE GRAY IRON ALSO STEEL CASTINGS FROM SPECIAL PATTERNS
THOMAS DEVLIN & CO. FINE TUNING, JAPANNING AND FINISHING
LEHIGH AVE. & AMERICAN ST. PHILA.

THE COPYING PAD.—HOW TO MAKE and how to use; with an engraving. Practical directions how to prepare the gelatine pad, and also the aniline ink by which the copies are made. How to apply the written letter to the pad, how to take off copies of the letter. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 438. Price 10 cents. For sale at this office and by all newsdealers in all parts of the country.

CHANDLER & TAYLOR CO'S SELF-CONTAINED STEAM ENGINES
Are tested under full load before shipment.
12 TO 80 H. P.
IN STOCK FOR QUICK DELIVERY.
For Circulars address CHANDLER & TAYLOR CO., INDIANAPOLIS, IND.

BRISTOL'S RECORDING PRESSURE GAUGE for Steam, Water, Gas, or Air Pressure
Insures Safety and Economy.
LOW PRICE.
Send for Descriptive Circular and Fac-simile Chart. The BRISTOLS' MFG. CO., Waterbury, Conn.

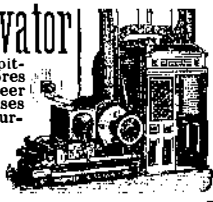
ANTI MONOPOLY LUBRICANTS. D.A. STUART & CO. CHICAGO.
MACHINERY OILS. GREASES
Cylinder Oil. ENGINE OIL. LUBRICATING.
QUALITY GUARANTEED. SEND FOR PRICE LIST.

SYRACUSE MALLEABLE IRON WORKS
W. B. BURNS PROP'T

SCIENTIFIC AMERICAN SUPPLEMENT. Any desired back number of the SCIENTIFIC AMERICAN SUPPLEMENT can be had at this office for 10 cents. Also to be had of newsdealers in all parts of the country.

Otis Electric Elevator

for Private Residences, Hospitals, Small Office Buildings, Stores, etc. Safe, simple (no Engineer required). Running expenses very light. Also manufacturers of the Standard Hydraulic Passenger and Freight, Steam and Belt Elevators.
Otis Brothers & Co., 35 Park Row, New York



GRAVES ELEVATORS.
PASSENGER & FREIGHT L.S. GRAVES & SON ROCHESTER N.Y.
NEW YORK BOSTON ST. LOUIS DETROIT

The Pelton Water Wheel

Gives the Highest Efficiency of any Wheel in the World. Over 1,000 in use.
Affords the most simple and reliable power for all mining and manufacturing machinery. Adapted to heads running from 20 up to 2,000 or more feet. From 20 to 30 per cent. better results guaranteed than can be produced from any wheel in the country.

ELECTRIC TRANSMISSION.
The advantages the Pelton Wheel affords in the way of a uniform and reliable power, close regulation, and the facility of adaptation to varying conditions of speed and pressure, have brought it into special prominence and extensive use for this class of work. All applications should state amount and head of water, power required, and for what purpose, with approximate length of pipe line. Send for catalogue.
THE PELTON WATER WHEEL CO.
121-123 Main St., San Francisco, Cal., U.S.A.

PELTON WATER MOTORS

Varying from the fraction of 1 up to 15 and 20 horse power, unequalled for all light running machinery. Warranted to develop a given amount of power with one-half the water required by any other.
Send for Motor Circular. Address as above.



THE STANDARD H.W. JOHN'S ASBESTOS BOILER COVERINGS
H.W. JOHN'S MFG. CO. 87 MAIDEN LANE, NEW YORK. PATENTED
2 to 40 H. P.
The Motor of 19th Century
Can be used Any Place, to do Any Work, and by Any One. No Boiler! No Fire! No Steam! No Ashes! No Gauges! No Engineer! A perfectly safe Motor for all places and purposes. Cost of operation about one cent an hour to each indicated horse power. For circulars, etc., address
Charter Gas Engine Co.
Simplicity, Safety. P. O. Box 148, Sterling, Ill.

The Goulds Mfg. Co. IMPROVED POWER PUMPS

Manufacturers of IMPROVED POWER PUMPS for every service. We have competent Engineers to examine Manufacturing Plants, make recommendations and estimates for placing our improved Fuel Saving Devices. Contracts written with full guarantee.
Triplex Boiler Feed Pump. Send for New No. 5 Power Pump Catalogue, now in press. Warehouse, 60 Barclay Street, New York. Factory, 47-57 Ovid Street, Seneca Falls, N. Y.

THE AMERICAN BELL TELEPHONE CO.

95 MILK ST., BOSTON, MASS.

This Company owns the Letters Patent granted to Alexander Graham Bell, March 7th, 1876, No. 174,465, and January 30th, 1877, No. 186,787.

The transmission of Speech by all known forms of Electric Speaking Telephones infringes the right secured to this Company by the above patents, and renders each individual user of telephones not furnished by it or its licensees responsible for such unlawful use, and all the consequences thereof, and liable to suit therefor.

OTTO GAS ENGINES

33,000 SOLD.
Engines and Pumps Combined.
For COAL GAS or GASOLINE.
SCHLEICHER, SCHUMM & CO. PHILADELPHIA, CHICAGO, NEW YORK.

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