

Advertisements.

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Inside Page, each insertion, - 75 cents a line
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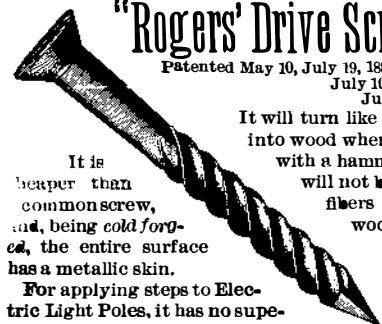


OVERMAN WHEEL CO.
BOSTON. WASHINGTON. DENVER. SAN FRANCISCO.
A. G. SPALDING & BROS., Special Agents,
CHICAGO. NEW YORK. PHILADELPHIA.

COLD FORGED PRODUCT.

"Rogers' Drive Screw."

Patented May 10, July 19, 1887;
July 10, 1888;
July 19, 1892.



It is cheaper than common screw, and, being cold forged, the entire surface has a metallic skin.

It will turn like a screw into wood when driven with a hammer, and will not break the fibers of the wood.

For applying steps to Electric Light Poles, it has no superior.

Send for samples to

AMERICAN SCREW CO.
PROVIDENCE, R. I.

Motor of 19th Century
Can be used any place, to do any work, and by any one. No Boiling! 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., P. O. Box 145, Sterling, Ill.

ASTRONOMY
Poole Bros. Celestial Planisphere and Celestial Handbook just published. For descriptive circular address POOLE BROS., CHICAGO, ILL.

RIEDLER ENGINES AND PUMPING
ARE POSITIVELY BETTER THAN ANY OTHERS UPON THE MARKET.
FOR EVIDENCE OF THIS FACT WRITE FOR PARTICULARS TO FRASER & CHALMERS 133 FULTON ST. W. CHICAGO, ILL.

The equal of a high priced watch in Style—open face, hunting, nickel, silver and filled gold cases. Durability—All watches selling above \$10 are warranted for ten years. The Quick-winding—only five seconds required. Waterbury.

Stem-set, full jeweled, and sold by jewelers everywhere—for Boys, Ladies and Gents.—Limit, \$4 to \$15, in a hundred different styles.

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.
In this line of business they have had forty-five years' experience, and now have unequaled 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 entrusted 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, 361 Broadway, New York.
BRANCH OFFICES.—Nos. 622 and 624 F Street, Pacific Building, near 7th Street, Washington, D. C.

SEND FOR OUR CIRCULAR.
IN ONE MINUTE
IT WILL CONVINCED YOU OF OUR ABILITY TO SUPPLY TOILET PAPER FOR LESS MONEY THAN IT CAN BE OBTAINED ELSEWHERE. A.P. W. PAPER CO. ALBANY, N.Y.

ZINC ETCHING HALFTONE PROCESS
Printer OF MAGAZINES, BOOKS, SOUVENIRS.
Engravings CATALOGUE WORK A SPECIALTY
A.H. KELLOGG SCOTT & BOWNE BUILDING New York.

KODAKS.
Take one with You to the World's Fair.
They're the only practical camera for the purpose. No bulky glass plates—no troublesome holders—no need of hunting up a dark room. With our special Columbian spools of film, containing 200 exposures you can have your Kodak loaded before leaving home and can then "press the button" as often as you like, while at the Fair without the necessity of reloading.
Eastman Kodak Co., Rochester, N. Y.

"IMPROVEMENT THE ORDER OF THE AGE."
The Smith Premier Typewriter
Embodies the most Progressive Mechanical Principles. All the Essential Features Greatly Perfected. Perfect and Permanent Alignment. Easiest Running, and Nearly Silent. All type cleaned in Ten Seconds without Soiling the Hands.
The Smith Premier Typewriter Co., Syracuse, N. Y., U. S. A.
We have 20 branch offices in the principal cities throughout the United States.

No one ever wrote 1000 Letters an Hour, that is, unless they first wrote one and then copied the rest on an EDISON MIMEOGRAPH
Invented by Thos. A. Edison. For Daily Office Use in duplicating both handwriting and typewriting. Anybody can operate it. Simple—Compact—Cleanly—Cheap. Endorsed by over 90,000 users. Catalogues and Samples of Work sent free upon application. Manufactured only by the A. B. DICK CO., 134 E. Lake St. Chicago, Branch Office, 47 Nassau St., N. Y. City, 117 So. Fifth St., Phila.

BICYCLES ON EASY PAYMENTS.
New or 2d hand; lowest prices, largest stock, makers & oldest dealers in U.S. We sell everywhere. Cash, free. ROUSE, HAZARD & CO. 16 6th St., Peoria, Ill.

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.
ELECTRIC SUPPLIES MOTORS, and DYNAMOS, from 1-6 h. p. to 15 h. p. Bells, Annunciators, Batteries, etc. No Toys, but Standard Goods. Complete illustrated catalogue sent on receipt of 2c. postage.
The Holtzer-Cabot Electric Co. 24 Franklin St., BOSTON, MASS.

AGENTS WANTED FOR FINE TOOLS IN EVERY SHOP.
C.H. BESLY & CO. CHICAGO, ILL. U.S.A.

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO.
LONDON HYDRAULIC POWER COMPANY.—Description of the plant of a company for supplying hydraulic power in London for running elevators in private dwellings, and doing other similar work. With 6 illustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 895. Price 10 cents. To be had at this office and from all newsdealers.

W. W. Johns' Asbestos Roofing
This Roofing may be easily applied by unskilled workmen. It is more durable than tin and costs about one half as much. It has been in use for thirty five years by many well known manufacturers and large corporations throughout the United States.
SAMPLES, PRICES & FURNISHED ON APPLICATION
H. W. JOHNS MFG CO. NEW YORK · JERSEY CITY · CHICAGO · PHILADELPHIA · BOSTON · ATLANTA

Electric Motors FOR ALL POWER PURPOSES.
MILLS, FACTORIES, SHOPS, LOCOMOTIVE WORKS, ETC., OPERATED BY OUR ELECTRIC MOTORS.
Are Cleaner, Healthier, Give Greater Returns for Outlay, than those Operated by Other Methods. PROFIT—ECONOMY.
GENERAL ELECTRIC COMPANY, DISTRICT OFFICES:
44 Broad Street, New York. 620 Atlantic Avenue, Boston, Mass. 173 and 175 Adams Street, Chicago, Ill. 509 Arch Street, Philadelphia, Pa. Fifth and Race Streets, Cincinnati, O. 401 4th St. N. W., St. Paul, Minn. Equitable Building, Atlanta, Ga. 1333 F Street, N. W., Washington, D. C. 15 First Street, San Francisco, Cal. Masonic Temple, Denver, Colo. All business outside the U. S. transacted by Thomson-Houston International Electric Co. 44 Broad St. New York

Why Does he Ride a Columbia? Because He knows That Columbians Lead all Bicycles. Stay at the Head. Are always the Standard.
Catalogue free at Columbia agencies, by mail for two-cent stamps. Pope Mfg. Co., Boston, New York, Chicago, Hartford.

DON'T DRINK DIRTY WATER. AVOID CHOLERA AND ILL HEALTH AND DISEASE AND BUY THE CHEAPEST AND BEST SELF CLEANING WATER FILTER. FITS ANY FAUCET. SAMPLE MAILED PRICE 50c. AGENTS WANTED. SEED & CO. 23 CENTRE ST. NEW YORK.

PATENT JACKET KETTLES
Plain or Porcelain Lined. Tested to 100 lb. pressure. Send for Lists. BARROWS-SAVERY CO., S. Front & Reed Streets, Philadelphia, Pa.

The American Bell Telephone Company
125 MILK ST., BOSTON, MASS.

This Company owns the Letters Patent No. 186,787, granted to Alexander Graham Bell, January 30, 1877, the scope of which has been defined by the Supreme Court of the United States in the following terms: "The patent itself is for the mechanical structure of an electric telephone to be used to produce the electrical action on which the first patent rests. The third claim is for the use in such instruments of a diaphragm, made of a plate of iron or steel, or other material capable of inductive action; the fifth, of a permanent magnet constructed as described, with a coil upon the end or ends nearest the plate; the sixth, of a sounding box as described; the seventh, of a speaking or hearing tube as described for conveying the sounds; and the eighth, of a permanent magnet and plate combined. The claim is not for these several things in and of themselves, but for an electric telephone in the construction of which these things or any of them are used."
This Company also owns Letters Patent No. 463,569, granted to Emile Berliner, November 17, 1891, for a Combined Telegraph and Telephone; and controls Letters Patent No. 474,231, granted to Thomas A. Edison, May 3, 1892, for a Speaking Telegraph, which cover fundamental inventions and embrace all forms of microphone transmitters and of carbon telephones.

A GENTLEMAN'S LAUNCH
YOUR OWN ENGINEER. Launches 19 to 60 feet in length, with automatic machinery. No Smoke. No Engineer. No Danger. No Dirt.
PADDLE YOUR OWN CANOE. Canoes, Family Row and Sail Boats. Fishing and Hunting Boats. Manufactured by THOMAS KANE & CO., Chicago, Ill. Send for catalogue specifying line desired.

PRINTING INKS.
The SCIENTIFIC AMERICAN is printed with CLAS, ENER, JOHNSON & CO.'S INK. Tenth and Lombard Sts., Philadelphia, and 47 Rose St., opp. Duane, New York