

Advertisements.

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

"Spur-Pointed" Wood Screws.

Patented May 10, July 19, 1887; Oct. 29, 1889;
Aug. 19, Oct. 21, 1890; April 7, May 12, 1891;
July 19, 1892.

Its Advantages are:

- 1. Stronger than a common screw.
- 2. Uniform and wide slot.
- 3. Requires the use of but one bit in hard wood.
- 4. Inserted easier.
- 5. Centralized point.
- 6. Superior holding power.
- 7. The screw being Cold Forged. Instead of Cut, leaves on its entire surface a metallic skin.

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 Boiler! No Fire! No Steam! No Ashes! No Goggles! No Engines! A perfectly safe Motor for all places and purposes. Cost of operation about one cent an hour in each indicated horse power. For circulars, etc., address
CHARTER GAS ENGINE CO.
P. O. Box 144, Newburg, Ill.

THE WILMOT & HOBBS MFG. COMPANY
GOLD ROLLED SHEET AND STRIP STEEL
FOR DIFFICULT PRESSING, STAMPING, DRAWN WORK, &c.

The Risk

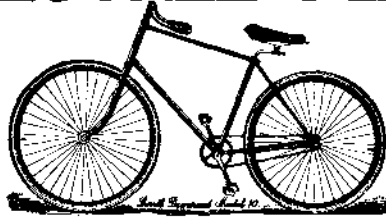
of carrying fine goods is part of the cost. Every time you bump a high-priced watch it costs you four dollars. Don't you realize that you would be better off with an everyday watch for the wear and tear?—as an accurate jeweled timepiece, and equal in looks with the other, can be bought for \$15 down to \$4: the new, quick-winding Waterbury, winds in five seconds. Don't forget the name.

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PATENTS!

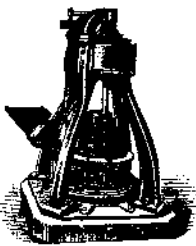
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HIGHEST GRADE. LOWEST PRICES.
FOR LADIES OR GENTLEMEN
Pneumatic Tires, \$115, \$100, \$85.
Cushion Tires, 105, 90, 75.
John P. Lovell Arms Co., Manufacturers
BOSTON, MASS.

Cycle Catalogue Free. AGENTS WANTED



THE GRIFFIN MILL

A perfect pulverizer of all refractory substances by either the wet or dry process. It works better and at less expense than any other Mill, and is conceded to be the only perfect pulverizing Mill manufactured.

For FREE Illustrated Pamphlet address
BRADLEY FERTILIZER CO., 92 STATE ST, BOSTON.

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 newdealers in all parts of the country.

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CHICAGO, ILL. U.S.A.

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Our New Films are giving perfect satisfaction. They are highly sensitive, and repeated tests show that they retain this sensitiveness as well as glass plates. No other films are so free from imperfections; none so uniform; none so reliable. Our film doesn't fail.

Eastman Kodak Co.,
Rochester, N. Y.



Mistakes in Addition, Office Headache, and in stakes in carrying forward don't occur where the Comptometer is used. It saves half the time in doing the work and all time looking for errors. Solves with great rapidity and absolute accuracy all arithmetical problems. Why don't you get one? Write for Pamphlet.
FELT & TARRANT MFG CO.
52-56 ILLINOIS ST., CHICAGO.

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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 hand writing and typewriting. Anybody can operate it. Simple—Compact—Cleanly—Cheap. Endorsed by over 50,000 users. Catalogues and Samples of work sent free upon application. Manufactured only by the A. E. DICK CO., 154 E. Lake St., Chicago. Branch Offices, 47 Nassau St., N. Y. City, 117 So. Fifth St., Phila.

SAWS Wanted 50,000 Sawyers and Lumbermen to send us their full address for a copy of Emerson's Book of SAWS, new 1892 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. (Limited), Beaver Falls, Pa.

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.

THE STANDARD
H.W. JOHN'S ASBESTOS BOILER COVERINGS
H.W. JOHN'S MFG. CO.
87 MAIDEN LANE, NEW YORK
PATENTED

LIFE SAVING DEVICES.—A collection of suggestions of devices for communicating between the shore and stranded vessels, offered to the London Daily Graphic by various correspondents. With 100 illustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874 and 884. Price 10 cents each, or \$1.00 for the series. To be had at this office and from all newdealers.

The Credit Company
Leading Lithographers
Chicago.

AMERICAN WATCH TOOL CO.
LATEST IMPROVEMENTS.
NEW STYLE.
NEW PRICES.
GROWING RAPIDLY in FAVOR
Waltham, Mass.

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401-407 Nibley Street, St. Paul, Minn.
1388 F Street N. W., Washington, D. C.
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All business outside the United States transacted by Thomson-Houston International Co., 44 Broad St., New York.

Do You Know Columbias?
To know Columbias is to own them—there are other good bicycles, but the Columbia guarantee is as solid as the mint.
Look about Columbias free at Columbia agencies. By mail for two 2-cent stamps. Pope Mfg. Co., Boston, New York, Chicago, Hartford.

TO BUSINESS MEN
The value of the SCIENTIFIC AMERICAN as an advertising medium cannot be overestimated. Its circulation is many times greater than that of any similar journal now published. It goes into all the States and Territories, and is read in all the principal libraries and reading rooms of the world. A business man wants something more than to see his advertisement in a printed newspaper. He wants circulation. This he has when he advertises in the SCIENTIFIC AMERICAN. And do not let the advertising agent influence you to substitute some other paper for the SCIENTIFIC AMERICAN, when selecting a list of publications in which you decide it is for your interest to advertise. This is frequently done for the reason that the agent gets a larger commission from the papers having a small circulation than is allowed on the SCIENTIFIC AMERICAN.
For rates see top of first column of this page or address MUNN & CO., Publishers,
361 Broadway, New York

THE COMET CRUSHER
THE GREAT BALLAST AND ORE BREAKER
FRASER & CHALMERS
133 CHICAGO ST. W. CHICAGO ILL.
2 WALL ST. NEW YORK

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.

COLUMBIA RIVER
An engineering work of great magnitude and successful results. Profusely illustrated in March issue of Lewis & Dryden's *Railway & Marine Gazette*, Portland, Ore. No. Every issue replete with maps and information about the Pacific Northwest.

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