

Advertisements.

ORDINARY RATES.

Inside Page, each insertion, - 75 cents a line
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COLD FORGED PRODUCT.

Forged Wood Screw

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.

AMERICAN SCREW CO.
PROVIDENCE, R. I.

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Motor of 19th Century. Can be used anywhere, to do any work, and by any one. No Boiler! No Fire! No Steam! No Ashes! No Gauges! No Engineer!

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RECENTLY PUBLISHED. Our new catalogue containing over 100 pages, including works on more than fifty different subjects. Will be mailed free to any address on application.

OTTO GAS AND GASOLINE ENGINES. 1/2 to 100 h.p. Can be used in cities or in country independent of gas works or gas machines.

Model & Experimental Work. Small Articles Manufactured in Quantities. Inventions perfected and developed.

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CARBUTT'S DRY PLATES AND "CELLULOID" FILMS. Especially adapted for Photographing Machinery and THE MECHANICAL TRADES.

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.

THE BRIDGEPORT WOOD FINISHING CO. MANUFACTURERS OF WHEELER'S PATENT WOOD FILLER BREINIG'S LITHOGEN SILICATE PAINT.

ASTRONOMY. Poole Bros. Celestial Planisphere and Celestial Handbook just published.

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RAILWAY & STEAM FITTERS SUPPLIES. Rue's Little Giant Injector. Screw Jacks, Portable Forges & Blowers.

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The Smith Premier Typewriter. Embodies the most Progressive Mechanical Principles. All the Essential Features Greatly Perfected.

ELECTRO MOTOR. SIMPLE. HOW TO MAKE. By G. M. Hopkins. Description of a small electro motor devised and constructed with a view to assisting amateurs.

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Model & Experimental Work. Absolute secrecy. Advice and ideas not charged for.

LIGHTNING CONDUCTORS. A valuable and exhaustive paper giving Reynolds' instructions for erecting and testing lightning rods.

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO. HARTFORD, CONN.

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

Patent Electric VISE. What is claimed, is time saving; not turning of handle to bring jaws to the work.

ENGINES, BOILERS & MACHINE TOOLS. Complete outfits furnished. Send for prices and 300 p. catalogue.

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.

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.

THE SCIENTIFIC AMERICAN

ESTABLISHED 1845. The Most Popular Scientific Paper in the World Only \$3.00 a Year, including Postage.

This widely circulated and splendidly illustrated paper is published weekly. Every number contains sixteen pages of useful information and a large number of original engravings of new inventions and discoveries.

Terms of Subscription. One copy of the SCIENTIFIC AMERICAN will be sent for one year—52 numbers—postage prepaid, to any subscriber in the United States, Canada, or Mexico, on receipt of three dollars by the publishers; six months, \$1.50; three months, \$1.00.

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This is a separate and distinct publication from THE SCIENTIFIC AMERICAN, but is uniform therewith in size, every number containing sixteen large pages full of engravings, many of which are taken from foreign papers and accompanied with translated descriptions.

The most important Engineering Works, Mechanisms, and Manufactures at home and abroad are illustrated and described in the SUPPLEMENT. Price for the SUPPLEMENT for the United States, Canada, and Mexico, \$5.00 a year; or one copy of the SCIENTIFIC AMERICAN and one copy of the SUPPLEMENT, both mailed for one year to one address for \$7.00.

Building Edition.

THE SCIENTIFIC AMERICAN ARCHITECTS' AND BUILDERS' EDITION is issued monthly. \$2.50 a year. Single copies, 25 cents. Thirty-two large quarto pages, forming a large and splendid Magazine of Architecture, richly adorned with elegant plates in colors, and with other fine engravings; illustrating the most interesting examples of modern architectural construction and allied subjects.

A special feature is the presentation in each number of a variety of the latest and best plans for private residences, city and country including those of very moderate cost as well as the more expensive. Drawings in perspective and in color are given, together with Plans, Descriptions, Locations, Estimated Cost, etc.

PRINTING INKS.

The SCIENTIFIC AMERICAN is printed with CHAS. ENEU JOHNSON & CO.'S INK, Tenth and Longard Sts., Philadelphia, and 47 Rose St., opp. Duane, New York

ASBESTOS SMOKE STACK PAINT. Used on the ships of the U.S. Navy and by the prominent Steamboat and Transportation Companies.

ELECTRIC MOTORS. Our exhibit in Electricity Building is the only complete exhibit of the application of Electricity to Power Work at the WORLD'S FAIR.