

Advertisements.

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COLD FORGED PRODUCT.

"Rogers' Drive Screw."

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

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

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

Send for samples to

AMERICAN SCREW CO.
PROVIDENCE, R. I.



Computing Figures

mentally is probably the hardest kind of toil known. The Comptometer makes it easy, is twice as quick, insures accuracy and relieves all mental and nervous strain. Why don't you get one? Write for Pamphlet.

FELT & TARRANT MFG CO.
52-56 ILLINOIS ST., CHICAGO.

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.

MALLEABLE AND FINE GRAY IRON ALSO STEEL CASTINGS FROM SPECIAL PATTERNS. THOMAS DEVLIN & CO. LEMING AVE. & AMERICAN ST. PAUL.

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 to make a motor which might be driven with advantage by a current derived from a battery, and which would have sufficient power to operate a foot lathe or any machine requiring not over one man power. With 11 figures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 841. Price 10 cents. To be had at this office and from all newsdealers.

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 Engines! A perfect safe Motor for all places and purposes. Cost of operation about one cent an hour to each individual horse power. For circulars, etc., address CHARTER GAS ENGINE CO., P. O. Box 145, Springfield, Ill.

PLATINUM.

HIGHEST AWARDS at the International Exhibitions of 1881, 1885, 1886, 1887, 1889, 1892, 1893, for products and manufactures of Platinum and the precious metals.

JOHNSON, MATTHEY & CO., Ltd.
Hatton Garden, London. Founded 1725.

CHICAGO EXHIBITS 1893. Value \$100,000. Improved Platinum Still for the concentration of Sulphuric Acid, also model of first etc. Made 1893. Gold-lined Platinum Concentrating and Laboratory Apparatus, as manufactured in 1855. Platinum Wire, Sheets, Crucibles, Dishes, Tubes, etc. Series of Metals of the Platinum group—IRIDIUM, OSMIUM, RHODIUM, RUTHENIUM, ALLADIUM, ALLOY, IRIDIO-PLATINUM, RHODIO-PLATINUM, IRIDIO-RHODIO-PLATINUM, SILVER and PLATINUM, PALLADIUM and SILVER. Standard Metre and Kilo. IRIDIUM, 10 per cent. PLATINUM, 90 per cent. as furnished to the French International Commission. Density 21.562. Purity of Platinum 999.9973 per 1,000 parts. Prices for free delivery United States on application.

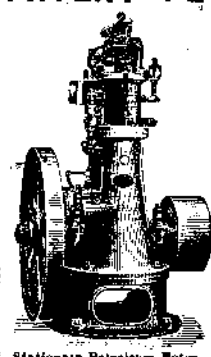
THE STANDARD H.W. JOHNS' ASBESTOS BOILER COVERINGS. H.W. JOHNS & CO. 87 MAIDEN LANE, NEW YORK. PATENTED. CHICAGO, PHILADELPHIA, LONDON.

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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.

PATENT PETROLEUM MOTORS. NO. 1 BENZINE

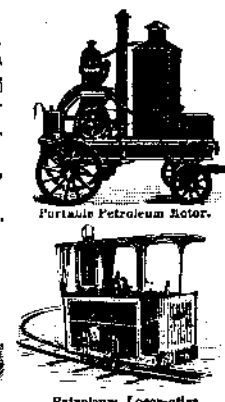


Stationary Petroleum Motor.

Specially adapted to run all kinds of machinery used in small industries, mills, small electric light plants, pumps, all kinds of vehicles, etc., etc. No Racer. Over 1700 motors already in use. Received awards at all Expositions. Motors of from 1/2 to 30 h. p. ready for delivery. Our Motors are exhibited at Columbian Exposition, Chicago, Oct. 2, in Machinery Hall of the German Dept. Send for Illustrated Catalogue and Price List, Free. J. M. GROB & CO., Mfrs. Leipzig-Eutritzsch, GERMANY. First and largest Oil Engine Manufactory in Europe. Sole Agents for the U. S., Messrs. CHAS. G. ECKSTEIN & CO., 41 John St., New York City.



PETROLEUM MOTOR BOAT.



Petroleum Locomotive.

KODAKS \$6.00 TO \$100.00

Eastman Kodak Company,

Send for Catalogue.

Rochester, N. Y.



THE FISHER Patent Steam Pump Governors For Steam Pumps Working under Pressure and the FISHER PATENT GRAVITY GOVERNORS For Steam Pumps filling elevated open tanks, are the most positive and durable devices made for the purpose. REDUCING VALVES. Send for circulars and testimonials. FISHER GOVERNOR CO., 201 S. 1st Avenue, - - Marshalltown, Iowa.

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

Scientific Book Catalogue

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. MUNN & CO., Publishers Scientific American, 361 Broadway, New York.



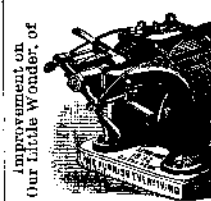
"IMPROVEMENT THE ORDER OF THE AGE." The Smith Premier Typewriter

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.

PERFORATED SHEET METALS. For Cotton, Oil & Rice Mills, Sugar Houses, Distilleries, Flour Mills & Fertilizer Wks. Mining, Gas & Water Wks., Thrashers & all kinds of Grain Cleaning Machinery, Steel & Iron Plates & Cylinders for Screening Ore, Coal & Stone. For Filters, Strainers, Ventilators, Oil, Gas & Vapor Stoves & all special purposes. Perforated Tin & Brass. THE HARRINGTON & KING PERFORATING CO., CHICAGO AND 284 PEARL ST. NEW YORK

VAPOR ENGINES.

Best and Cheapest for Pumping and All Farm Work. NO BOILER! NO FIRE! Send for catalogue. SAFETY VAPOR ENGINE CO., 16 Murray St., N. Y.



Columbian Exposition Electrical Bldg., Section L, Col. 4

NICKEL AND ELECTRO-PLATING

Apparatus and Material. THE HANSON & VAN WINKLE CO. Newark, N. J. 81 LIBERTY ST., N. Y. 23 S. CANAL STREET, CHICAGO.

IMPROVED TROLLEY SYSTEM.—Description of an improved overhead system of electric traction recently adopted by the South Staffordshire Tramway Company. With 9 engravings. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 886. Price 10 cents. To be had at this office and from all newsdealers. The same number contains a description (with 2 illustrations) of a new electric tramway at Paris, and also a description of Siemens & Halske's electric railway conduit, with 3 illustrations.



Small Electric Motor for Amateurs. Illus. in Sci. Am. Supp., 783. Materials and directions for making sent by mail, \$1.25. Difficult parts finished. An instructive Christmas present. W. S. BISHOP, 956 Grand Ave., New Haven, Conn.

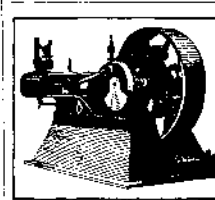
CHOLERA: EPIDEMIOLOGY OF.—By Dr. G. Archie Stockwell. An interesting and valuable paper on the dissemination of the Asiatic Cholera, showing what does and what does not spread the disease. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 888. Price 10 cents. To be had at this office and from all newsdealers.

If you want the best Lathe and Drill

WESTCOTT'S. Strongest Grip, Greatest Capacity and Durability, Cheap and Accurate. Westcott Chuck Co., Oneida, N. Y., U. S. A. Ask for catalogue in English, French, Spanish or German.

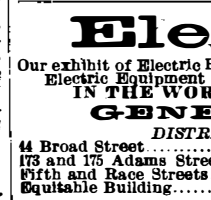
MECHANICS' TOOLS.

If you are interested in Tools as a manufacturer or amateur, you should have a copy of our new catalogue. Our 1892 edition is a very elaborate and complete book of 704 pages, handsomely bound in cloth. The book will be sent to any part of the world, prepaid, on receipt of \$1.00, and the money thus paid will be refunded with the first purchase amounting to \$10.00 or over. Every manufacturer and amateur should have this catalogue, even if they do not intend buying their Tools and Supplies of us. MONTGOMERY & CO., Fine Tools, 103 Fulton Street, New York City, N. Y.



THE STURTEVANT AUTOMATIC STEAM ENGINES. HORIZONTAL-UPRIGHT. SEND FOR CATALOGUES TO BOSTON, MASS. NEW YORK, PHILA. CHICAGO, LONDON.

THE "OLIN" GAS AND GASOLINE ENGINES, FROM 1 TO 10 HORSE POWER, FOR ALL POWER PURPOSES. THE OLIN GAS ENGINE CO., 222 CHICAGO STREET, BUFFALO, NEW YORK.



Electric Railways. Our exhibit of Electric Railway Apparatus at the WORLD'S FAIR is the most complete there. The entire Electric Equipment of the INTRAMURAL RAILROAD, including the LARGEST DYNAMO IN THE WORLD, was furnished by us. GENERAL ELECTRIC COMPANY. DISTRICT OFFICES: 44 Broad Street, New York; 173 and 175 Adams Street, Chicago, Ill.; 515 and 517 Race Street, Cincinnati, O.; Equitable Building, Atlanta, Ga.; 1835 F Street, N. W., Washington, D. C. All business outside the U. S. transacted by Thomson-Houston International Electric Co., 44 Broad St., New York

CASH PAID for all kinds of good Second-hand Iron and Wood-Working Machinery. Address W. P. DAVIS, ROCHESTER, N. Y.

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.

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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, representing Engineering Works, Steam Machinery, New Inventions, Novelties in Mechanics, Manufactures, Chemistry, Electricity, Telegraphy, Photography, Architecture, Agriculture, Horticulture, Natural History, etc. Complete list of patents each week. Terms of Subscription.—One copy of the SCIENTIFIC AMERICAN will be sent for one new—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. Clubs.—Special rates for several names, and to Post Masters. Write for particulars.

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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. The elegance and cheapness of this magnificent work have won for it the Largest Circulation of any Architectural publication in the world. Sold by all newsdealers. \$2.50 a year. Remit to MUNN & CO., Publishers, 361 Broadway, New York.

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