

Advertisements.

Inside Page, each insertion - - 75 cents a line
Back Page, each insertion - - - \$1.00 a line

The above are charges per agate line—about eight words per line. This notice shows the width of the line, and is set in agate type. Engravings may lead advertisements at the same rate per agate line, by measurement, as the letter press. Advertisements must be received at Publication Office as early as Thursday morning to appear in the following week's issue.

The Remington Standard Typewriter



presents the practical results achieved by the best inventive and mechanical skill, aided by capital and the experience gained during the FIFTEEN YEARS in which it has been the STANDARD WRITING-MACHINE OF THE WORLD

ARTIFICIAL INCUBATION.—A Description of the French process of raising chickens. With 7 figures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 778. Price 10 cents.

MACHINE TOOLS Engine Lathes, Planers, Shapers, Turret Lathes, etc. Send for Catalogue. The Hendey Machine Co., Torrington, Conn.

THE MODERN ICE YACHT.—BY Geo. W. Polk. A new and valuable paper, containing full practical directions and specifications for the construction of the fastest and best kinds of Ice Yachts of the latest, most approved forms.

TO INVENTORS AND MANUFACTURERS

SIXTIETH GRAND NATIONAL INDUSTRIAL EXHIBITION OF THE American Institute of the City of New York. Will open September 30 and close November 28, 1891.

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

COLORING MATTERS: THE QUANTITATIVE estimation of by means of their absorption spectra. By T. L. Patterson, F.I.C., F.C.S. With 4 figures. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 760. Price 10 cents.

GENERAL AND EXPERIMENTAL MACHINE WORK. BEST FACILITIES IN CHICAGO. NATIONAL MACHINE WORKS 35 59 CANAL ST. CHICAGO

MILITARY SIGNALING.—THE EARLY history of Semaphore Telegraphy and the modern practice of it in the American Army. With 7 illustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 781 and 782. Price 10 cents each.

CHICAGO.

WANTED.—Established manufacturers, employing 50 men or more, to locate in the best manufacturing suburb of Chicago. Exceptional railroad facilities, high lands, cheap fuel, splendid water, cheap homes for workmen, special inducements. Address, Chicago Heights Land Association, 807 and 808 Chamber of Commerce, Chicago, Ill.

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 years' experience, and now have unequalled facilities for the preparation of Patent Drawings, Specifications, and the prosecution of Applications for Patents in the United States, Canada, and Foreign Countries.

SIEMENS' CABLES. SUBMARINE, TELEGRAPH, UNDERGROUND, TELEPHONE, INTERIOR, ELECTRIC LIGHT. Manufactured under authority of SIEMENS & HALSKE by THE EDISON GENERAL ELECTRIC CO. at their SCHENECTADY WORKS.

HARTFORD STEAM BOILER INSPECTION AND INSURANCE CO. CONN. Illustration of a steam boiler.

Motor of 19th Century. Can be used Any Place, to do Any Work, and by Any One. No Belts, No Fire, No Steam, No Ashes! No Gauges! No Engineer! A perfectly safe Motor for all places and purposes.

THE HANDY Gate Valve for low pressure steam, water, oil, etc., being simple, more compact, better suited for the purpose and much lower in price than wheel-handled straightway valves.

\$85 Lovell Diamond Safety \$85 Diamond Frame, Steel Drop Forgings, Steel Tubing, Adjustable Ball Bearings to all Running Parts.

JAMES WATT, AND THE APPLICATION of Science to the Mechanical Arts.—By Archibald Barr, B.Sc. A very interesting review of the life work of the celebrated engineer.

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

POROUS EARTHENWARE.—BY Chas. C. Gilman. An elaborate discussion of terra cotta lumber and its future uses.

LITTLE HERCULES DRILL CHUCK Has eccentric rotating, self-gripping jaws which hold strongest when working hardest.

The Best Foundation for Plaster of any kind at same money. Combines strength, warmth, dryness, resistance, stone burning construction. No cracking, no shrinkage. Nails driven anywhere.

EVERY HOUSEKEEPER NEEDS THE PERFECTION FLOUR BIN. A HOUSEHOLD NECESSITY. No home complete without it.

ELECTRIC POWER APPARATUS, FOR EVERY VARIETY OF MECHANICAL WORK. SAFE, SURE, RELIABLE. ESTIMATES FURNISHED. THOMSON-HOUSTON MOTOR CO., 620 ATLANTIC AVENUE, BOSTON, MASS.

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, ROCHESTER, N. Y.

DEVELOPMENT OF AMERICAN Blast Furnaces, with special reference to large Yields. By James Gayley. A description of some of the principal blast furnaces in the United States.

OILS AND FATS—SOME PRACTICAL notes on the oils and fats used for industrial purposes. A valuable and interesting paper, contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 800. Price 10 cents.

EXCELLENT BLACK COPIES, only equalled by Lithography of anything written or drawn with any Pen by the Patent SPECIMENS AUTOCOPYIST. Ten Eyck & Parker, 66 Pine Street, New York

COMPLETE STEAM PUMP 10 SIZES FROM \$7 TO \$75 FOR DRIVE WELLS & ETC. PRICES AND DESCRIPTIVE CIRCULARS VAN DUZEN & TIFT SOLE MAKERS. GINGINATI, O.

GEAR CUTTING Leland, Faulconer & Norton Co., Detroit, Mich. THE STANDARD H.W. JOHNS ASBESTOS BOILER COVERINGS. H.W. JOHNS MFG. CO., 87 MAIDEN LANE, NEW YORK.

HANGERS AND COUPLINGS COMPLETE STOCK OF Double Brace, Self-Oiling, Adjustable Ball and Socket Hangers, Pillow Blocks, Post Hangers, Etc. Edison Patent Compression Coupling. EDISON GENERAL ELECTRIC CO., SCHENECTADY, N. Y.

THE GRAVES ELEVATORS. PASSENGER & FREIGHT. L. S. GRAVES & SON ROCHESTER N.Y. NEW YORK, BOSTON, ST. LOUIS, DETROIT. 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 in fringes the right secured to this Company by the above patents.

BALL AUTOMATIC MADE ONLY BY THE BALL ENGINE CO. INTERESTED IN ELECTRICITY? Then send 25c to the AMATEUR ELECTRICIAN, Chicago, Ill., & get that illu- strated monthly for beginners all Jan. '92. Sample copy 10c.

THE SCIENTIFIC AMERICAN

ESTABLISHED 1846. The Most Popular Scientific Paper in the World. Only \$3.00 a Year, Including Postage. Weekly—52 Numbers a Year.

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.

THE Scientific American Supplement

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.

Building Edition.

THE SCIENTIFIC AMERICAN ARCHITECTS' AND BUILDERS' EDITION is issued monthly. \$2.50 a year. Single copies, 25 cents. Forty large quarto pages, equal to about two hundred ordinary book pages.

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