

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

I wish to buy second hand lathes, planers, drills, shapers, belting, engines, and boilers. Will pay cash. W. P. Davis, Rochester, N. Y.

For Sale—A large number of 16 and 32 light Jenney dynamos at half their original cost. For particulars address Louisiana Electric Light Company, New Orleans, La.

Acme engine, 1 to 5 H. P. See adv. next issue.

Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J., Burnham standard turbine, Burnham Bros., York, Pa.

Wanted—Garbage burner. Send full particulars, circulars, etc., to M. & Co., care Scientific American.

Best Ice and Refrigerating Machines made by David Boyle, Chicago, Ill. 170 machines in satisfactory use.

Steam Hammers, Improved Hydraulic Jacks, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Light and Canal Sts., New York.

Packer Ratchet Drills are drop forged from Norway iron and bar steel. Billings & Spencer Co., Hartford, Conn.

Tight and Slack Barrel Machinery a specialty. John Greenwood & Co., Rochester, N. Y. See illus. adv., p. 300.

Wanted—Capital to develop several useful inventions. Sketches furnished on application. Address Griswold Bros., Dodge Center, Minn.

For the original Bogardus Universal Eccentric Mill, Foot and Power Presses, Drills, Shears, etc., address J. S. & G. F. Simpson, 26 to 36 Rodney St., Brooklyn, N. Y.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4; Munn & Co., publishers, 361 Broadway, N. Y.

A rare opportunity for a young man with a few thousand dollars capital to secure a permanent position as manager of a Western water works company. Address President Water Co., care this paper.

For Sale—Four Buckeye engines, comparatively new, 15 by 18 cylinder. Flywheel 9 ft. by 16 in. face. Diskcranks and automatic cut-offs. For particulars address Louisiana Electric Light Company, New Orleans, La.

Engineers, manufacturers, and makers are invited to send gratuitously catalogues, price-lists, and trade terms to George T. Poole, Assoc. R. I. B. A., Assoc. M. I. C. E., Colonial Architect and Superintendent of Public Works, Department of Public Works and Buildings, Perth, Western Australia.

Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.



HINTS TO CORRESPONDENTS.

Names and Address must accompany all letters, or no attention will be paid thereto. This is for our information and not for publication.

References to former articles or answers should give date of paper and page or number of question.

Inquiries not answered in reasonable time should be repeated; correspondents will bear in mind that some answers require not a little research, and, though we endeavor to reply to all either by letter or in this department, each must take his turn.

Special Written Information on matters of personal rather than general interest cannot be expected without remuneration.

Scientific American Supplements referred to may be had at the office. Price 10 cents each.

Books referred to, promptly supplied on receipt of price.

Minerals sent for examination should be distinctly marked or labeled.

(3020) R. G. W. asks: Can you give me any test to know when any gold remains in a worn-out cyanide of gold bath, without the troublesome way of evaporating? A. You might test it by trying if it will deposit any gold upon a clean surface of silver. Or add solution of sulphate of iron to acidified sample. A precipitate will indicate gold if the bath is clean.

(3021) E. H. A. asks for the process of burnishing the gilt on photograph cards. A. The gilt on card mounts is put on by first using a size, then the gold leaf is applied and rubbed or brushed over with a thin solution of albumen; when dry, this is burnished with an agate or bone tool.

(3022) A. K. C. asks how to melt or dissolve old rubber that has been used and out of shape, so as to recast. Would a mould of plaster Paris answer? Would the article be smooth and not sticky? A. You cannot melt or dissolve old rubber. It can be worked up by mastication with fresh gum. It can be shaped to a certain extent only by pressure and heat. If once melted, it will not again solidify. In "Rubber Hand Stamps and the Manipulation of India Rubber," \$1 by mail, you will find the whole subject treated.

(3023) L. D. N. asks how to repair a looking glass where the coating has seemed to have parted or has been removed in spots. A. From a small piece of old looking glass scrape off all the silvering except what will suffice to cover the spot and cap over on all sides. Place a drop of mercury on the silvering thus isolated. This will soften it so that it can be pushed off and dropped upon the defective place. The result will probably be imperfect. Possibly the mirror has a true silver surface. If so, the replating cannot be thus effected. An alkaline solution of silver nitrate with a reducing agent may be used, but success with a really bad mirror would be very doubtful. See query 1944.

(3024) J. C. G. asks for a composition for silver plating by the dipping process. A. Any plating solution of silver can be used. An ammoniacal solution of nitrate of silver with some whitening in suspension is available. The plating produced is very inferior.

(3025) Subscriber asks: Can you inform me what chemical ingredients will erase ordinary writ-

ing ink from paper? A. Javelle water or a mixture of oxalic and tartaric acids in equal quantity dissolved in water.

(3026) J. W. asks how to clean tarnished gold and silver lace. A. Brush away all the dust, then brush with rock alum which has been burned, crushed, and sifted through a lawn sieve. This will remove the tarnish.

(3027) A. M. T. asks how to pickle mushrooms. A. Wash the mushrooms with water, wipe them with flannel and put them in brine and boil. After boiling for a few minutes drain in a colander and spread out on a linen cloth to dry. Place in bottles, add a little mace and fill up the bottle with white vinegar. Pour some melted mutton fat on the top before corking and seal with bottle wax.

(3028) G. F. S. asks: 1. Is water porous? 2. A. Not in the mechanical sense. It has physical or molecular pores. 3. Can you reduce the bulk of water by pressure? A. Yes.

(3029) E. S. D. asks: Will you kindly (through columns of SCIENTIFIC AMERICAN) give a receipt for a preparation suitable for removing wood stains from the hands of wood turners? Would like to know of some chemical or preparation which would permanently remove such stains. A. We would suggest javelle water. Borax would also be advantageous used in strong aqueous solution.

(3030) F. C. K. asks for some salt or other chemical which is soluble in milk, and that would have no effect on it while cool, but that would have an acid reaction when heated that would coagulate the milk without changing its color or making it poisonous. A. Sulphate of ammonia becomes acid on boiling and might answer your requirements.

NEW BOOKS AND PUBLICATIONS.

ARTISTIC HOMES, in city and in country, with other examples of domestic architecture. By Albert W. Fuller and William Arthur Wheeler. Boston: Ticknor & Co. 1891. 70 plates. Price \$6.

This very elegant work presents a series of photographs of houses, of public buildings, railroad stations, high schools, etc., in various parts of the country. Of each building the exterior view with plans, as a rule, is given. The execution of the work leaves nothing to be desired, and the un-commented-on illustrations tell their own story.

THE ELEMENTS OF DYNAMIC ELECTRICITY AND MAGNETISM. By Philip Atkinson, A.M., Ph.D. New York: D. Van Nostrand Company. 1891. Pp. xii, 405. Price \$2.

This book, it is stated, was written for learners rather than for the learned. It includes a very convenient resume of the subject of current electricity, contains numerous illustrations and seems altogether to be an acceptable presentation of the subject. Electricity is now settled on a basis so far fixed that much that is written about its elements is necessarily a repetition in each book. Dr. Atkinson seems to have brought his subject well up to date. Numerous illustrations, with an excellent table of contents and index, add materially to the value of the work.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

May 5, 1891,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions with names and patent numbers. Includes items like 'Accouchement apparatus for instruction, M. Klautsch', 'Adjustable wrench, J. Muller', 'Air and gases, compressor for, T. C. Craven', etc.

Table listing inventions with names and patent numbers. Includes items like 'Cars, combined dust arrester and ventilator for, H. A. Dirkes', 'Cash register, G. T. Farnell', 'Cash register, W. G. Latimer', etc.

Table listing inventions with names and patent numbers. Includes items like 'Horse tail holder and rein guard, J. W. Lindsay', 'Horseshoes, attaching toe weights to, G. W. Wempe', 'House, See Portable house', etc.

Table of contents listing various items such as Steam engine, Duplex, Blessing & Overton, and other technical specifications with corresponding page numbers.

DESIGNS. Game counter, L. Steinberger, 20,709. Handle for an iron fork, etc., S. F. Roberts, 20,708.

TRADE MARKS. Car couplings, standard Car Coupling Company, 19,433. Carlsbad powder, effervescent, E. Kutnow & Co., 19,432.

A Printed copy of the specification and drawing of any patent in the foregoing list or any patent in print issued since 1863, will be furnished from this office for 25 cents.

Advertisements.

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

USE ADAMANT WALL PLASTER. It is Hard, Dense, and Adhesive. Does not crack or crumble. It is impervious to wind, water, and disease germs.

ICE HOUSE AND REFRIGERATOR. Directions and Dimensions for construction, with one illustration of cold house for preserving fruit from season to season.

LATHES. Seneca Falls Mfg. Co., 695 Water St., Seneca Falls, N. Y. Catalogue of all our Machinery.

ADVERTISING SPECIALTIES! Inventors can sell us outright or have manufactured on royalty, inventions of novelty or utility that can be used for advertising.

The Sebastian-May Co. Improved Screw Cutting. Foot & Power LATHES \$60.

TALCOTT'S COMBINATION PATENT BELT HOOKS, W. O. TALCOTT, Providence, R. I.

INVENTIONS WORKED OUT. Drawings and Models made. Perfect safety to inventors assured.

TOOL CATALOGUES FREE TO ANY ADDRESS. TOOLS OF ALL KINDS.

\$3 PRINTING PRESS. Do all your own printing. Save money. Catalogue for two stamps. Kelsey & Co., Meriden, Conn.

Fine Taps, Dies, Reamers, Etc. Lightning and Green River Screw Plates.

WILEY & RUSSELL MFG. CO., Greenfield, Mass. New York Office, 126 Liberty Street.

INVENTIONS PRACTICALLY DEVELOPED? Drawings, Pattern Making, Experimental and Fine Machine Work of all kinds.

The most Successful Lubricator for Loose Pulleys in use. VAN DUZEN'S PATENT LOOSE PULLEY OILER.

INVENTIONS INTRODUCED AND promoted. Wilson & Co., 21 of College Place, New York

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.

STEEL TYPE FOR TYPEWRITERS. Stencils, Steel Stamps, Rubber and Metal Type Wheels, Dies, etc.

ROCK DRILLS AIR COMPRESSORS, MINING AND QUARRYING MACHINERY, Ingersoll-Sergeant Drill Co. No. 10 PARK PLACE, NEW YORK.

ROCK DRILLS AIR COMPRESSORS & GENERAL MACHINERY FOR MINING, TUNNELING, QUARRY & RAILROAD WORK. RAND DRILL CO 23 PARK PLACE NEW YORK.

LIST OF BOOKS

Engineering and Mechanics

- Applied Mechanics. A Manual of. By William John Macquorn Rankine. With numerous diagrams. Twelfth edition, thoroughly revised by W. J. Millar, C.E. London, 1888. \$5.00
Constructive Steam Engineering. A Descriptive Treatise on. Embracing Engines, Pumps, and Boilers, and their Accessories and Appendages. By J. M. Whitham, M.E., C.E. One vol., large octavo. 500 pages. 50 illustrations. Handsomely bound in cloth. Just published, 1891. \$10.00
Engineer, Millwright, and Mechanic's Pocket Companion. Comprising Decimal Arithmetic, Tables of Square and Cube Roots, Practical Geometry, Mensuration, Strength of Materials, Mechanic Arts, Wheels, Pumps and Pumping Engines, Steam Engines, Tables of Specific Gravity, etc. Also series of Mathematical Tables, containing the circumferences, squares, cubes, and areas of circles, superficies, and solidity of spheres, etc. Revised, corrected, and enlarged from the eighth English edition, and adapted to American practice, with the addition of much new matter. By Julius W. Adams, N. Y., 1888. \$2.00
Engineers' Field Book for Railroad Engineers. Containing formulae for laying out curves, determining frog angles, leveling, calculating earth work, etc. Together with tables of radii, ordinates, deflections, long chords, logarithms, logarithmic and natural sines, tangents, etc., etc. By John B. Henck, A.M. Revised edition. N. Y., 1888. \$2.50
Engineer's Handy Book. Containing a full explanation of the Steam Engine indicator and its use and advantages to Engineers and Steam Users. With formulae for estimating the power of all classes of Steam Engines. Also facts, figures, questions, and tables for Engineers who wish to qualify themselves for the United States Navy, the Revenue Service, the Mercantile Marine, or to take charge of the better class of stationary steam engines. With illustrations by Stephen Roper, author of Roper's Series of Hand Books, for Steam Users. Tenth edition, 1889. \$3.50
A special circular of Roper's Works will be mailed on application.
Engineer's Hourly Log Book. Arranged to record for each hour of the twelve or twenty-four, totals and averages of the following: Boiler pressure, Fuel used, Ashes and unconsumed combustible, Uptake temperature, Feed temperature, Turns per minute, Throttle Opening, etc. Oblong boards. N. Y., 1889. \$0.50
Hydraulics. Hydraulic Power and Hydraulic Machinery. By Henry Robinson. With numerous wood cuts and 43 litho. plates. 1887. \$10.00
Hydraulic Motors. Turbines and Pressure Engines, for the use of Engineers, Manufacturers, and Students. By G. R. Bodmer, Am. Inst. C.E. With numerous illustrations. 1889. \$5.00
Hydraulics. Practical Hydraulics. A series of rules and tables for the use of engineers, etc. Thos. Bos. Ninth edition. 30 pages, with 8 plates. 12mo. cloth. 1888. \$2.00
Mechanics of Engineering. (Fluids.) A treatise on hydraulics and pneumatics. For use in technical schools. I. P. Church. 852 pages, 8vo, cloth. 1889. \$3.00
Mechanical Drawing Self-Taught. Comprising instructions in the selection and preparation of Drawing Instruments, Elementary Instruction in Practical Mechanical Drawing, together with examples in simple Geometry and Elementary Mechanism, including Screw Threads, Gear Wheels, and various Pieces of Work, useful and Ornamental, and several hundred illustrations. One large quarto volume, 586 pages, cloth. Price... \$3.00
Mechanical Text Book; or, Introduction to the Study of Mechanics. By Wm. J. M. Rankine, C.E., LL.D., Trinity College, Dub. F.R.S., London and Edin., F.R.S., S.A., and E. F. Bamber. With numerous diagrams. Third edition, London. \$3.75
Mine Engineering. A Practical Treatise on. By G. C. Greenwell, F.G.S.M. Inst. C.E. Third edition, Revised from the Second. N. Y., 1889. \$6.00
Mining Machinery. Containing Illustrations Describing Current Mining Machinery of various kinds. Machinery used for Mining Purposes, including Stamp Batteries, Prospecting Stamps, Crushing Mills, Rock Drills, Air Compressors, Ore Breakers, Screens, Jiggers, Amalgamating Pans and Settlers, Percussion Tables, Fans, Feeders, Churning Plant, Aerial Ropes, Water Wheels, Steam Engines and Boilers, Turbines, Water Wheels, Pumping Engines, Diamond Boring Machines for deep boreholes, Boring Tools, Mine Stores, etc., the whole being codified for telegraph purposes, and forming the best guide to intending purchasers of Mining Machinery. By C. Cornes. 12mo. cloth. London, 1889. \$1.00
The Practical Steam Engineer's Guide. In the Construction and Management of American Stationary, Portable, and Steam Fire Engines, Steam Pumps, Boilers, Injectors, Governors, Indicators, Pistons and Rings, Safety Valves and Steam Gauges. For the Use of Engineers, Firemen, and Steam Users. By Emory Edwards. Illustrated by 119 Engravings. Third Edition, revised and corrected. 420 pp. 12mo. \$2.50
Pumps and Pumping. Handbook for Pump Users. By C. P. Baily. Mining, Manufacturing, Construction, and Management. 2mo. cloth. Illustrated. London, 1888. \$1.00
Pumping Engine. Practical Handbook on Direct-Acting Pumping Engine, and Steam Pump Construction. By Philip R. Bjorling. With 20 plates. 1889. \$2.00
Pumping Engine and Steam Pump Construction. Practical Handbook on Direct-Acting. 123 pages, with 20 plates. P. R. Bjorling. 12mo. cloth. 1888. \$2.00
Steam Boilers, their Management and Working on Land and Sea. By James Peattie. 220 pages and 34 diagrams. N. Y., 1888. \$2.00
Steam Boiler Catechism. A Practical Book for Steam Engineers, and for Firemen, Owners and Makers of Boilers of any kind, covering the Properties of Steam and of Fuels, and the Theory and Practice of Designing, Constructing, Setting, Connecting, Testing, Firing, and Repairing. By Robert Grimshaw, M.E. Profusely illustrated. N. Y., 1888. \$2.00
Water Supply. Notes on Water Supply in New Countries. By T. W. Stone, Assoc. M. Inst., C.E., author of "Simple Hydraulic Formulae," 1888. \$3.00
Water Supply, Drainage, and Sanitary Appliances of Residences, including Lifting Machinery, Lighting and Cooling Apparatus, etc. By Frederick Colyer. 1889. \$1.50
Thermodynamics of the Steam Engine and other Heat Engines. C. H. Peabody. 70 pages. 8vo. cloth. 1888. \$5.00
Thermodynamics, Heat Motors, and Refrigerating Machines. By De Volson Wood, N. Y., 188. C. cloth. \$4.00
The Young Mechanic. Practical Carpentry. Containing Directions for the Use of all kinds of Tools, and for the construction of Steam Engines and Mechanical Models, including the Art of Turning Wood and Metal. By John Lukin. Illustrated. 2mo. \$1.75
The Complete Practical Mechanic. Embracing Lathe Work, Vise Work, Drills and Drilling, Taps and Dies, Hardening and Tempering, the Making and Use of Tools, Tool Grinding, Marking Out Work, etc. By Joshua Rose. Illustrated by 366 engravings. Fourteenth edition, thoroughly revised and in great part rewritten. 438 pages. 12mo. \$2.50
Any of the above books promptly sent by mail, postpaid, on receipt of the price, by MUNN & CO., Publishers of the "Scientific American," 361 Broadway, New York. Send for our New and Complete Catalogue of Books, sent free to any address.

ELECTRICAL!

New Nickel Iron, Wood Box Bells, fine finish, one magnet, two poles, 60 cents; two magnets, 65 cents. Annulars, 4 points, \$4.50. Special prices on large orders. NOVELTY ELECTRIC CO., 54 North 4th St., Phila., Pa.

THE SMITH PREMIER TYPEWRITER

Important Improvements. All the Essential Features greatly perfected. The Most Durable in Alignment. Easiest Running and Most Silent. All type cleaned in 10 seconds without soiling the hands. The Smith Premier Typewriter Co., Syracuse, N. Y., U. S. A. Send for Catalogue.

LIGHTNING WELL-SINKING MACHINERY MANUFACTURERS. Hydraulic, Jetting, Revolving, Artesian, Diamond Prospecting Tools, Engines, Benders, Wind Mills, Pumps, Encyclopedias, 1,000 engravings, Earth's Strata, Determination quality water mailed, 25c. The American Well Works, Aurora, Ill. 11 & 13 S. Canal St., Chicago, Ill. Dallas, Texas.

OIL WELL SUPPLY CO.

91 & 92 WATER STREET, Pittsburgh, Pa. Manufacturers of everything needed for ARTESIAN WELLS for either Gas, Oil, Water, or Mineral Wells, Boilers, Engines, Pumps, Cordage, Drilling Tools, etc. Illustrated catalogue, price lists and discount sheets on request.

STEREOTYPING; THE PLASTER AND Paper Processes.—Composition and preparation of the mould, the best alloys of metal and proper degree of heat, trimming and mending the plate, etc. A minute description of both processes, with numerous illustrations. A paper of great interest to every printer. By Thomas Bolas, F.R.S., F.I.C. SCIENTIFIC AMERICAN SUPPLEMENTS, 773 and 774. 10 cents each.

ARTESIAN Wells. Oil and Gas Wells drilled by contract to any depth, from 50 to 3000 feet. We also manufacture and furnish everything required to drill and complete same. Portable Horse Power and Mounted Steam Drilling Machines for 100 to 600 ft. Send 6 cents for illustrated catalogue. Pierce Artesian and Oil Well Supply Co., 80 Beaver Street, New York.

THE EUREKA INCUBATOR

Will EUREKA INCUBATOR Run for 3 weeks and not vary 2 degrees. New regulator. Catalogue 5 cents. J. L. Campbell, West Elizabeth, Pa.

CLARK'S Ventilating and Drying FANS.

Light Running, Adjustable Blades, Self-Oiling Bearings. 24-page catalogue free. Also Rubber Press Rolls for Wool and Yarn Washing and Dyeing Machines. GEO. P. CLARK, Manuf. Box L. Windsor Locks, Ct.

STEREOTYPING—A VALUABLE series of lectures by Thomas Bolas, discussing the most recent methods in this branch of typography. With 23 illustrations. Contained in SCIENTIFIC AMERICAN SUPPLEMENT Nos. 773 and 774. Price 10 cents each. To be had at this office and from all newsdealers.

OUR MAGIC LANTERNS WITH OIL LAMPS HAVE NO EQUAL VIEWS OF ALL SUBJECTS. EASTERN PRICES GUARANTEED. L. MANASSE 88 MADISON ST. CHICAGO ILL.

UNION MANUFACTURING & PLATING CO.

236-238-240 Carroll Ave., Chicago, Manufacturers of METAL SPECIALTIES FOR INVENTORS. ALL KINDS OF PLATING. Estimates furnished. Correspondence invited. BARNES PAT. FOOT POWER MACHINERY. I feel so highly pleased with your Velocipede Foot Power with sweat, that I wish to add my testimony to its superiority. I did not expect to like it, but having used the Velocipede Power, would have nothing else. It so greatly lessens the fatigue of using foot power, in fact, it may be said to be almost without fatigue, and is a steadier motion. I only wish I had known of it sooner. Send for catalogue. W. F. & J. BARNES CO., 329 Ruby St., Rockford, Ill.

NICKEL PLATING & POLISHING MATERIALS. ZUCKER & LEVETT CHEMICAL CO. NEW YORK U.S.A. NICKEL ANODES, NICKEL SALTS, ROUGES, COMPOSITION, BUFFING WHEELS, ELECTRO & NICKEL PLATING OUTFITS.