

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 the following week's issue.

Marine Iron Works. Chicago. Catalogue free. "U. S." Metal Polish. Indianapolis. Samples free. Yankee Notions. Waterbury Button Co., Waterbury, Ct. Handle & Spoke Mch. Ober Lathe Co., Chagrin Falls, O. Improved Bicycle Machinery of every description. The Garvin Machine Co., Spring and Varick Sts., N. Y. Concrete Houses - cheaper than brick, superior to stone. "Ransome," 757 Monadnock Block, Chicago. The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Verne Refrigerating Machine Company. Foot of East 18th Street, New York.

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.

The Temperly Transporter. See illustration, front page of SCIENTIFIC AMERICAN, April 24. It is manufactured by the Lidgerwood Mfg. Co., 96 Liberty Street, New York. Write for particulars.

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

Notes & Queries

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 This is for our information and not for publication.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. Buyers wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same. 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.

(7167) C. F. H. K. says: Will you please let me know what kind of acid will change the color of blue print photography paper to a dark brown? Also how much to use of it and how long to use it, and if you use it before, or after washing the prints. A. Borax..... 2 1/2 oz. Hot water..... 38 "

When cool add sulphuric acid in small quantities until blue litmus paper turns slightly red, then add a few drops of ammonia until the alkaline reaction appears and red litmus paper turns blue. Then add to the solution 154 grains of red crude gum catechu. Allow it to dissolve, with occasional stirring. The solution will keep indefinitely. After the print has been washed out in the usual way, immerse it in the above bath a minute or so longer than it appears when the desired tone is reached. An olive brown or a blackish brown is the result.

NEW BOOKS, ETC. ELECTRIC POWER TRANSMISSION. A Practical Treatise for Practical Men. By Louis Bell. New York: The W. J. Johnston Company. 1897. Pp. 491. Price \$2.50. The familiar power house of the Niagara Falls generating plant gives the subject for the frontispiece of this exhaustive book. It really seems as if an adequate treatment was at last given to an all-important subject. The design of the author has been to avoid the following up of the abstract mathematics of the subject, simply introducing such conditions as are quite essential to a proper treatment of the subject. He devotes his energies on the other hand to putting into tangible shape the most recent results in this branch of electrical science. At the same time he seems to have avoided giving the work the unsatisfactory aspect of a purely theoretical one, and on turning over its pages it seems evident that an excellent contribution to a subject hitherto inadequately treated is here to be found. It does seem as if the index for so comprehensive a book might have been considerably greater in extent.

SEWER FLUSHING DIAGRAMS. Showing how far the Discharge from a Flush Tank will give a Self-Cleansing Velocity. S. H. Adams. New York: Spon & Chamberlain, 12 Cortlandt Street. London: E. & F. N. Spon, 125 Strand. Price \$5. These diagrams are devoted to data relating to the action of pipe sewers established by actual tests, and, despite its somewhat high price, it is to be treated as a sine qua non in advanced engineering practice, and hence receives our commendation.

REISSMANN'S RAFTER AND POLYGON GAGE. Copyright 1897. Price 30 cents. This gage is somewhat in the same line as the one just spoken of, and is designed for the use of carpenters. It gives rules for laying out complicated roofs, measuring the timbers and framing complicated roofs in general.

The Bridgeport Wood Finishing Company have recently issued, more especially for the use of architects, a specimen book containing samples of different woods finished with the Wheeler wood filler and the Breinig stains, which is something quite remarkable in the way of catalogue work. The book contains forty-

eight specimens of oak, mahogany, cherry, cypress, maple, whitewood, sycamore, curly birch, pine, ash, etc., mounted on heavy cardboard, their finely finished surfaces protected by layers of soft cotton, and all showing the great beauty which can be developed in clearly bringing out the natural grain of a wood and finishing it with a high polish, which the materials furnished by this company render entirely practicable. The samples given are but a small percentage of the kinds of wood on which these finishes are applied, but the book forms a volume almost as large as a dictionary.

The 1897 catalogue of the Keuffel & Esser Company, of New York, has considerable new matter, and its entire text and illustrations are well worth the attention of artists, draughtsmen, surveyors, architects and engineers. The book has 424 pages, and we are informed that 400 of its engravings are separately copyrighted, as well as the text. The company has long held a leading position as manufacturers and importers of drawing materials and surveying instruments, and has a most enviable reputation for furnishing the widest variety and the very highest qualities of everything which any one may desire to purchase in their line. The reading matter of the book also affords a most excellent guide to a sound judgment when one is selecting either instruments or materials.

TO INVENTORS. An experience of nearly fifty years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices, which are low, in accordance with the times and our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS For which Letters Patent of the United States were Granted JUNE 15, 1897. AND EACH BEARING THAT DATE.

Table listing inventions with dates and names, including: Acid, making lactic, P. Roosen; Advertising annunciator for cars, electrical, Orr & Fugh; Air brake hose coupling, J. Redfern; Alarm, train, J. P. Smith; Armature for dynamo electric machines, H. H. Wait; Armor plates, apparatus for treating, W. E. Corey; Axle box, vehicle, Felumee & Pink; Bag, S. H. Malt; Ball and handle for vessels, combined, P. S. Witcher; Band cutter and feeder, I. D. Parmley; Banjo harp attachment, A. A. Farland; Basket, fruit, R. S. Williams; Battery plate and producing same, secondary, W. P. Patton; Bed or couch, interconvertible, E. R. Leighton; Bed, studio folding, M. McCoy; Bedclothes clamp, H. S. Calkin; Bell, bicycle, N. T. Mills; Belt, concentrator, G. Gates; Belts, adjustment for concentrator, G. Gates; Bench, See Wash bench; Benzyl morphine, J. F. F. Von Mering; Bicycle, M. A. Harris; Bicycle brake, J. Boyfeldt; Bicycle brake, W. H. Hart; Bicycle changeable gear, T. S. Drummond; Bicycle frame, E. Baum et al.; Bicycle pannier, E. C. Bartlett; Bicycle pedal, F. H. Bolte et al.; Bicycle repair, H. L. Davis; Bicycle support, W. C. Kelly; Bicycle support, adjustable, M. Goodman; Binder, S. M. Simons; Bird cage bracket, A. Merget; Bit, See Ironing board; Block, See Meat block; Board, See Ironing board. Plaster board; Bobbin, H. A. Mack; Boiler, See Pipe boiler. Steam boiler; Boiler water regulator, U. S. Archer; Bolt, See Sliding bolt; Bolt cutter, C. W. Harris; Bookbinder, S. G. Brown; Boot or shoe numbering machine, S. Snow; Boot or shoe setting up or marking machine, E. F. Mower; Bottle, J. Malepierre; Bottle, G. C. Phillip; Bottle, J. E. Welsh; Bottle, non-refillable, J. Boston; Bouquet holder, H. S. Schnell; Box, See Feed box; Box, E. & V. P. Adams; Boxes, jars, canisters, etc., closing of, J. M. Arnot; Brace, See Skaters ankle brace; Bracket, See Bird cage bracket; Brake, See Bicycle brake. Emergency brake; Bicycle brake; Velocipede brake; Bridge, J. H. Semmes; Bride bit, J. T. Fogg; Broom corn sizing machine, Gaffney & Fischer; Burner, See Gas burner. Vapor burner; Butter moulder, W. D. Marshall; Calendar or almanac, S. Weghorn; Can, See Oil can; Car, box, A. W. Stebbins; Car brake equalizing levers, hanger for, W. H. Durant; Car coupling, P. Hien; Car coupling, D. C. Miller; Car coupling, L. Pfanz; Car coupling, C. W. Richey; Car coupling, J. A. Rightmire; Car coupling, I. N. Robertson; Car fender, T. W. Fitzgerald; Car fender, W. R. Johns; Car fender, A. Mazzanovich; Car fender and stop, I. Benjamins; Car, hand, W. N. Rousey; Car, metallic, C. T. Schoen; Car side bearing, railway, J. C. Wands (reissue); Car signal, W. J. Gubitz; Car step, extension, I. N. Davis; Car ventilation, W. Curlett; Card holder, T. Shea; Carpet fastener, stair, C. G. Trisler; Carrier, See Parcel carrier; Case, See Snow case; Cash drawer, attachment, A. K. Suddoth; Cash registering and indicating machine, C. H. Little; Caster, H. Goldsmith; Caster, furniture, F. B. Lentz; Casting apparatus, metal, J. B. Laughlin; Cement, manufacture of, M. W. L. Nahnsen; Chair, See Combination chair; Chair and boot black stand, E. Choinaux; Check and waste box or protector, W. P. Goller; Check protector, C. E. Ongley; Churn, M. W. Hutchinson; Cigar package, H. C. Mahrt; Cigarette machine, J. D. Tejada; Circuit protecting sander, A. L. Creelman; Cistern cleaner, H. G. Jaren; Clamp, See Bedclothes clamp; Clean, See Cistern cleaner; Clop, See Mechanical clip; Closet, See Sanitary closet; Cloth cutter, Morse & Randall; Clothes line reel, H. O. Amundson; Clutch, safety, J. Richards;

Advertisements.

ORDINARY RATES. Inside Page, each insertion -- 75 cents a line Back Page, each insertion --- \$1.00 a line For some classes of Advertisements, Special and Higher rates are required. 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 be advertised 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.

Star Foot power Lathes Automatic Cross feed 9 and 11-inch Swing. New and Original Features. Send for Catalogue B. Seneca Falls Mfg. Company, 695 Water St., Seneca Falls, N.Y.

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.

POWER & FOOT LATHES SHAPERS, PLANERS, DRILLS MACHINE SHOP OUTFITS TOOLS AND SUPPLIES. CATALOGUE FREE. SEBASTIAN LATHE CO. 120 CULVERT ST. CINCINNATI, O.

SOMETHING NEW AND GOOD HALL BICYCLE STAND For Cleaning, Adjusting or Exhibiting Bicycles. Simple, light, durable, and can be folded in small space. Readily adjustable to any make of wheel. All parts of wheel accessible. Saves back-breaking labor in cleaning. Price \$1.25. Send for circular. Liberal discount to dealers. Manufactured by WALWORTH MFG. CO. 20 Oliver St., Boston, Mass., U. S. A.

LATHES FOR GUNSMITHS, TOOL MAKERS, EXPERIMENTAL AND REPAIR WORK, ETC. Send for Illus. Catalog. W. F. & Jno. Barnes Co. 1939 Ruby Street, ROCKFORD, ILL.

STEAM STAMP MILL A mill for crushing ores. Equal in efficiency to a five stamp battery, and a boon alike to the prospector and mining capitalist. Send for catalogue. GATES IRON WORKS, Dept. C. 650 Elston Ave., Chicago, U. S. A.

PHYSICAL AND SCHOOL APPARATUS INDUCTION COILS for experiments in X rays and other electrical work. Catalogue Free. E. S. RITCHIE & SONS, BROOKLINE, MASS.

THE COBURN PATENT TROLLEY TRACK HOUSE DOOR HANGERS The first made with adjustable track. The track can be put up in 30 minutes. Send for Book. The Coburn Trolley Track Mfg. Co., Holyoke, Mass.

PRATT'S CONE BELT SHIFTER Simple in construction, easily applied. Saves TIME to manufacturers. TROUBLE to operator, and WEAR to belts. In ordering give width of belt. For Belts 1 to 2 1/2 inches wide, \$3.50 2 3/4 to 4 " 4.50 Send for catalogue of machinists' tools CHANDLER & FARQUHAR, 38 Federal St., BOSTON, MASS.

Queen's Patent "Triple Plate" Toepler-Holtz Electrical Machine. Can be used at all times of year and in all kinds of weather. Prices range from \$25 to \$50. Send circular on application. We carry a complete line of Electrical and Physical Instruments and Apparatus. QUEEN & CO., Inc. 1011 Chestnut St. Philadelphia, Pa.

ROCK DRILLS AIR COMPRESSORS SIMPLEST, MOST EFFICIENT and DURABLE. RAND DRILL CO. Send for Catalogue. 100 Broadway, New York.

If you want the best CHUCKS, buy Westcott's Little Giant Double Grip Drill Chucks, Little Giant Drill Chucks, Improved Onida Drill Chucks, Cutting-off Chucks, Scroll Combination Lathe Chucks, Geared Chucks, Plain Universal Lathe Chucks, Independent Lathe Chucks. Made by Westcott Chuck Co., Oneida, N. Y., U. S. A. Ask for catalogue in English, French, Spanish or German. FIRST PRIZE AT COLUMBIAN EXPOSITION, 1893.

Table listing various mechanical devices and their prices, including: Combination chair, G. C. Starcher; Composing machines, machine for making controllers for, F. A. Johnson; Composing machines, making controllers for, F. A. Johnson; Computing machine, H. W. Byron; Conduit, flexible, A. L. Tucker; Copies of printed or written matter, method of and means for obtaining, W. M. Williams; Corner plaster strip, J. S. Merritt; Coupling, See Air brake hose coupling. Car coupling. Hoop coupling. Shaft or pole coupling; Crate, folding egg, H. C. Dean; Curette, E. D. Saint Cyr, Jr.; Currier, hair, C. Juller; Current motor, W. P. Francis; Curtain rod, extension, F. H. Lovell; Cutter, See Band cutter. Bolt cutter. Cloth cutter. Rotary cutter; Cycle fitting, Beecher & Cornforth; Decorating machine, W. Butler; Denture, artificial, A. L. & B. F. Gilmer; Designing and engraving, S. Eaton; Desk and seat, school, J. Worthington; Diaper protector, C. R. Warren; Distribution system, E. W. Rice, Jr.; Door lock, R. D. York; Door opener, J. Headlam; Door or gate check, R. B. Vaughn; Door sealer, G. A. Doyle; Dress stiffener, G. A. Dodge; Drill dressing and sharpening machine, rock, W. Wanless; Duplicating apparatus, automatic, G. H. Davis; Dust collector tube cleaning device, L. E. Sheets; Electric circuit protector, A. L. Creelman; Electric motor controlling apparatus, B. A. Fiske; Electric signal, A. L. Creelman; Electric sparks for signals or theatrical effects, production of, V. Taberlitch; Electromagnet, C. E. Scribner; Emergency brake, G. M. McLaughlin; End gate, P. O. Gorman; Engine, See Gas engine. Pumping engine. Rotary steam engine. Steam engine; Engine, See Air pressure indicator device for steam, W. Uhlmeier; Engine indicator, J. J. Waldner; Engines off dead centers, apparatus for throwing, Rauch & Kennedy; Engraving and ornamenting machine, W. S. Eaton; Extension table, E. Bauman, Jr.; Eyelet, F. F. Hawkins; Fan, rotary, C. E. Rowe; Fastener, W. B. H. Dowse; Fastener for garments, suspenders, etc., W. S. Faucet, M. A. Martin; Feed box, R. S. Franz; Fence, wire, R. H. Bloomer; Fences, device for attaching stay wires to, F. Foster; Fender, See Car fender. Rear fender; Filter and cleaner, Tonner & Lindsay; Finger cap or protector, E. M. Syvils; Firearm, recoil operated, G. V. Fosberry; Firearm, recoil operated, P. Mauser; Firearm sight, T. J. Dolan; Fire escape, J. H. Griffin; Fire escape, F. Landenberger; Fire escape, D. Rich; Fishing tackle float, E. E. Wilson; Floor and ceiling plate, E. P. Waggoner; Flower pot, M. A. Walker; Fluid pressure and hydraulic motor, S. B. Battery; Fuel compressor, T. M. Cochrane; Furnace, See Garbage furnace; Furnace both plates, manifold water supply for blast, H. G. Bauman; Furnace feeding device, Roney & Churchill; Furniture, J. B. Albietz; Garbage furnace, R. L. Walker; Gas apparatus, H. A. Jones; Gas burner, V. H. Slinack; Gas, carburettor, W. B. Griffin; Gas engine, J. O. Brown; Gas engine, E. B. Dake; Gas engine, Wright & Stephens; Gas machine, H. C. Sergeant; Gas manufacturing apparatus, J. L. Stewart; Gas manufacturing apparatus, acetylene, J. H. Exley; Gas producing apparatus, M. Loriois; Gas saving check, A. Kuhne; Gate, See End gate; Gate, See Carburettor; Gear for variable speed driven mechanism, changeable, F. H. Lefroy; Generator, See Steam generator; Glass blowing machine, H. J. Colburn; Glassware, machine for manufacturing, C. E. Heston; Gold from auriferous material, apparatus for extracting, J. J. Deeble; Governor, pneumatic, Pain & Tremaine; Governor, steam engine, E. C. Knapp; Grading and ditching machine, M. G. Bunnell; Grading and leveling dust from pulverized ore, etc., apparatus for, Fape & Henneberg; Grand stand, pavilion, etc., Kaufman & Gronau; Hammer, brick mason's, H. C. Stallings; Harrow, D. Manuel; Harrow tooth fastener, D. W. Hoehall; Harvesting traction wheel, G. M. Kilgus; Harvesting machine, beet, L. Frennet-Wauthier; Hat pin retainer, M. J. Guthrie; Hay press, R. A. Simpson; Headlight, electric, F. W. Dressel; Hearse, M. Koppe; Heating apparatus, H. H. Sawyer; Heating apparatus, water, W. C. Clarke; Heel attaching machine, F. F. Raymond, 2d; Heel nailing machine, C. C. Small; Hinge, box, W. Wilson; Hoe or cultivator, grape, A. G. Johnson; Hoe, shufle, E. W. Farrells; Hoop trap, A. Ancluy; Hoist, H. L. Ferris; Hoisting machinery, A. J. Shaw; Honing machine, T. F. Curley; Hoop coupling, metal, O'Melveny & Vail; Hoop, See Splitting and shaving machine, J. S. Griffith; Horse blanket, W. G. Ayres; Horseshoe, detachable, E. F. Pfeuger; Horseshoe, elastic tread, F. W. Hahn; Hunting apparatus, B. Ott; Hydrant, W. C. Corey; Hydraulic intensifier, G. W. Shem; Indicator, See Engine indicator. Interest and time indicator; Insect exterminator, J. Schindler; Insect shield, W. Harris; Insulator, E. H. Libby; Interest and time indicator, J. L. Cathcart; Iron and steel directly from ore, method of and furnace for making, C. J. L. Otto; Ironing board, J. M. Harrigan; Jail cell, E. C. W. Stewart; Jail cell, E. C. W. Stewart; Journal box, W. H. Kendall; Key fastener, A. J. Welker; Knife, See Pruning and grafting knife; Knitting machine needle and method of making, A. E. Dodge; Lace fastener, C. H. Krebs; Lacing, boot or shoe, J. L. Glenn, Jr.; Lacing, shoe, I. M. Slocum; Lamp, bicycle, Elton & Smith; Lamp, bicycle, L. H. White; Lamp, electric arc, L. H. Heuser; Lamp, for bicycles, etc., Holmes; Lamp, hanging, L. J. Atwood; Lamp, incandescent electric, C. E. Scribner; Lamp socket, E. M. Bradford; Lamp support, cycle, J. H. White; Lamps, increasing illuminating power of electric lamp, P. Mersch; Lasting machine, S. W. Ladd; Lasting machine, Ladd & McFeely; Lasting machine, A. F. Preston; Leaf turner, F. W. Hand; Leather rolling machine, J. M. Brownell; Letter box attachment, E. P. Chaney; Lifter, See Store goods lifter; Lightning arrester and multiple automatic fuse block, G. X. Gast; Linotype machine, F. A. Johnson; Lock, See Door lock. Seal lock. Seat lock; Lock, A. T. Green; Lock, J. W. T. Morris; Loom cloth guide, P. Sullivan; Loom doubling attachment, W. Crutchev; Loom pattern mechanism, A. R. Fatten; Lubricating apparatus, A. Bler; Lubricator, See Saw lubricator; Lubricator, S. O. Jones;

(Continued on page 412)