

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.

For mining engines. J. S. Mundy, Newark, N. J. "U. S." metal polish. Indianapolis. Samples free. Stave machinery. Trevor Mfg. Co., Lockport, N. Y. Edmonds' Automatic Oil Burner, Bradford, Pa. Circulars free.

Fruit stoner patent for sale. See illus. notice page 357. Joseph Boeri, 626 5th Avenue, N. Y., basement. Bookbinding.—All classes of work. Magazines a specialty. Haddon & Co., 139 Center St., New York.

Microbe Killer Water Filter, McConnell Filter Co., Buffalo, N. Y.

Distance Reading Thermometers.—See illus. advertisement, page 319. Ward & Doron, Rochester, N. Y.

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

Cheapest Water Power.—See top of 1st column, page 170. Also top of 2d column, page 239. Look, it will pay.

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

Centrifugal Pumps. Capacity, 100 to 40,000 gals. per minute. All sizes in stock. Irvin Van Wie, Syracuse, N. Y.

Inventors wishing to bring their inventions to the public notice should confer with H. Pittock, Room 61, 1 Beacon St., Boston, Mass.

Guld & Garrison, Brooklyn, N. Y., manufacture steam pumps, vacuum pumps, vacuum apparatus, air pumps, acid blowers, filter press pumps, etc.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. 75¢ by mail. Munn & Co., publishers, 361 Broadway, N. Y.

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., Crooklyn, N. Y.

Patent Electric Vise. What is claimed, is time saving. No turning of handle to bring jaws to the work, simply one sliding movement. Capital Mach. Tool Co., Auburn, N. Y.

Patent for Sale.—Newly patented machine for cutting toothpicks, match sticks, kindling wood, etc., from veneer. Nine millions per hour. J. Powers, 45 Varet St., Brooklyn, E. D., N. Y.

Competent persons who desire agencies for a new popular book, of ready sale, with handsome profit, may apply to Munn & Co., Scientific American office. 361 Broadway, New York.

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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. 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.

(6063) M. L. R. asks: 1. Should it be made a point, when putting wire in a house for a telephone, to keep it away from the roof? How near may it come without danger? A. No special care need be taken. A foot or two is ample distance. 2. Please explain the phenomenon caused by striking sugar with a piece of metal, when a flash of bluish light may be seen. A. It is phosphorescence due to mechanical and electrical disturbance of the molecules.

(6064) W. G. M. asks: 1. Can I connect a small sewing machine motor on to electric wire in place of the incandescent lamp? A. Not unless wound for the potential of the circuit. 2. Will the telephone spoken of in query No. 5985 of April 28, 1894, operate successfully in a city among electric wires, and for how long a distance could it be used? A. It will work fairly well up to a distance of several miles. 3. Two palm leaf fans connected to an arm five feet long, suspended from the ceiling, make a three foot stroke and thirty strokes each way per minute. How heavy a weight attached to clockwork, and falling eight feet, will be required to operate the fan continuously for eight hours? A. It would require several tons weight.

(6065) A. F. W. writes: 1. I have removed the copper plating from electric light carbons by placing them in threffe for three-quarters or a half an hour. I have then used them for a bichromate battery. A. We are glad to give our readers this suggestion. 2. In a Brush lamp are there two arcs or one? A. One arc. 3. How often do the carbons have to be renewed? A. Every day. 4. Do you know of any book that tells fully how to do sleight of hand tricks? A. We can supply the following books: "Sleight of Hand," by Sachs, London, price \$3; "Modern Magic," by Professor Hoffman, price \$2.50; "Art of Modern Conjuring," price \$1.50, mailed.

(6066) G. L. C. asks: How much will it take of ammonia at 2° Baume to neutralize 1 ounce of tartaric acid (crystal). A. For 1 part tartaric acid 0.69 of ammonia solution is needed, all parts by weight.

(6067) C. B. S. asks: 1. What kind of wood would be best to burn for potash manure? A. Elm and vine. 2. Would the ashes from pine wood sawdust be good? A. They are very poor. 3. How is sulphate of potash made? A. By neutralizing the carbonate with sul-

phuric acid, evaporating and crystallizing. 4. Will you name a good book on the above subject? A. We can supply "Chemistry of Acids, Alkalies, and Salts," by Richardson & Watts, 3 large volumes, price \$20. Also Wagner's "Chemical Technology," price \$7.50.

(6068) F. A. asks: I have dynamo No. 600. The armature is wound with No. 18 B. & S. wire. Can I wind fields to generate a current to light six or eight 16 candle power 110 volt lamps, and if so, how much of what size wire? A. The armature will need rewinding, as well as the field, for change of voltage. No. 18 wire is too large.

(6069) F. R. B. asks: Would an incandescent lamp that requires 1/2 ampere of current on a 110 volt circuit have 220 ohms of resistance? If so, would the candle power be about 16? A. Yes.

(6070) J. O. L. asks: Will you inform me how to make copper wire flexible? A. If you mean to make copper wire springy, it can be done by drawing from a larger size and not annealing.

TO INVENTORS.

An experience of forty-four 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

May 29, 1894.

AND EACH BEARING THAT DATE.

(See note at end of list about copies of these patents.)

Table listing various inventions such as Acid proof composition, Advertising wagon, Air compressor, Alumina, Arm rest for writing purposes, Aspha, Asphalt heating machine, Auger, Awning attachment, Ax, Axle lubricator, Ballot box, Banjo mute, Barbed wire, Bars or rods, Battery, Bearings, Bed, Bed joint, Bed sofa, Bedstead, Belt tightener, Belt raising or lowering mechanism, Bicycle, Billiard games, Board, Boiler, Book holder, Book stapling machine, Boot or shoe nailing machine, Bouquet holder, Box, Box pile, Bracket, Braiding machine, Braking iron, Brick presses, Broom, Broom corn machine, Brush, Brush, Buckle, Buff wheel, Buffering wheel, Building, freeproof, Burner, Butter preserving or renovating, Button, Button riveting machine, Calipers, watchmaker's, Cambering machine, Camera shutter, Can, Can filling machine, Cane transferring device, sugar, Car bumper, Car coupling, Car coupling, Car fender, Car lighting or heating system, Car standard, Carpet stretcher, Carriage, Carriage, baby, Carriage top, Cash register and indicator, Castle guard, Chair, Chuck, drill grinding machine, Churn, J. P. Bolding, Churn, J. W. Crabbe, Churn attachment, Cigar lighter, electric, Cigar tip cutter, A. P. Thompson, Cigarette making machine, Circuit closer, Cleaner, Clip, F. C. Atherton, Clock case, A. Bannatyne, Clock, electrically illuminated, Clock striking mechanism, Clock cutting machine, Cloth drier, Clutch, Clutch, McMahon & Carver, Clutch, rope, D. W. O'reut, Coil separator, Cock box, Com, Com discharging and delivering device, Comb cleaner, Comb cleaner, G. W. Richardson, Comb compressor, steam, Cork cutting machine, Cork feeder, Cork shell cutting machine, Coupling, Crane, charging, Crib, folding, Cuff blank turning machine, Cuff holder, Current motor, Curtain rod, adjustable, Curtains, etc., adjustable rack for stretching lace, Cutter, Refrain water, Cutter, Cutter beads, power attachment for side, Cycle driving mechanism, Damper, W. E. Patchin, Deck and seat, school, Desk support and binze, combined, Distillating water, method of and apparatus for, Door check, Door lock, sliding, Dress goods rack, Drier, Drill, See Rock drill, Edges, compound for and method of preserving, Electric battery, Electric motors, operating, Electrode, therapeutic, Elevator, Elevator, Engine, See Steam engine, Engine steering gear, traction, Evaporating apparatus, Excelsior machine, Eyelet, Eyelet, L. E. Pank, Fats from animal or vegetable substances, extracting, method for weight, Fence machine, wire and picket, Fence post, Fence wire, machine for stretching or removing, Fender, Filing device, fireproof, Fire alarm apparatus, Firearm, recoil-operated, Fire pile, Fireproof structure, Fish line reel, Fish line reel, Fish line reel, Floors, etc., construction of fireproof, Flypaper, sticky, Foo for horses, preparing, Foo od products from cereals, machine for the manufacture of, Furnace, See Gas furnace, Furnace, J. W. Wilkinson, Furnace door, L. Duffner, Furnaces, wind jacket for blast, Walker & Murphy, Gauge, See Weatherboard gauge, Gas burner, Gas furnace, Gas making apparatus, Gas service pipes, condenser and drip, Gate, Gate, J. B. Van Nada, Gear, reversing, Grain binder, Grain binder tension device, Grinding machine, Gun, recoil-operated magazine, Gun, H. E. Leed, Hat fastener, Hat rack, C. E. Cochrane, Hay rake and loader, Head rest, Heater and table, Heaters, condenser for steam or hot water, Heating apparatus, hot water, Heel, A. J. Gotham, Hinge, J. P. Berry, Hitching device, horse, Hoisting machine, L. Hamerly, Holdfast, Hook, See Mousing hook, Hook, J. M. Reid, Horseshoe, nailless, Humidifying fibrous substances, means and apparatus for, Insulator, Insulator, Insulator, Iron, apparatus for breaking pig, Kitchen cabinet, Knob attachment, Knob attachment, Lamp shade, Lamp shade, regulator for continuously-fed, Lantern, bicycle signal, Leather scoring machine, Leveled articles, construction of, Liquid distributor, automatic, Loom for weaving bordered fabrics, Loom, leas-off mechanism, Lubricator, See Axle lubricator, Matrix drying apparatus, Measuring machine, cloth, Mechanical movement, Milling machine, Mirror adjusting device, Mousing book, self, Mowing machine, Mud and oil trap and water purifier, Net frame, landing, Nipple wrench, A. Dudley, Nut lock, J. J. Bentley, Nut lock, H. J. Van Nest, Oil can, C. S. Upson, Oil or gas, with other material, etc., mechanically compounding, Orange sorting machine, Ore roaster, Ore roaster, Packing for rock drill pistons, Paper bags, making, Pattern tracing and cutting machine, Pen holder, Pencil sharpener and eraser, combined, Photography, reproducing objects in relief or intaglio by the aid of, M. Russo, Pianoforte action, T. Cabill, Picture making machine, Picturing banking device, H. Redmond, Pins, bolts, and rivets, tool for making, Pipe, See Tobacco pipe, Pipe coupling, A. Bryant, Piston, for signal apparatus, Pistol, magazine, Blachon & Minard, Placer machine, dry, Walmsley & Wright, Planing machines, adjustable bearing for upper feed rolls of, J. R. Thomas, Planter, corn, B. J. Darby, Planter, hand, J. Chedwell, Plover wheel, J. H. Jones, Pneumatic tire wheel, W. Turner, Pneumatic transmittor or store service, Yale & Ames, Pockethook holder, F. Holzhauser, Pockethooks, etc., corner or frame for, Polishing or buffing wheel, T. J. Clerry, Post, See Fence post, Propeller, O. B. Genty, Pulverizer and grinding machine, G. Hibbert, Pulverizer and planter, combined, E. Showell, Pump, hydraulic, E. H. Weatherhead, Pump rods, grip for polished, M. Turton, Rack, See Dress goods rack, Hat rack, Railway, cable, C. W. Hunt, Railway chair, A. F. Naylor, Railway danger signal, pyrotechnic, Fox & Yates, Railway for signal apparatus, J. G. Dixon, Railway rail chair, making, A. J. Moxham, Railway rail joint, Hall & Baker, Railway safety system, W. H. Elkins, Railway signal, electric, Selden & Riley, Railway track structure, J. H. White, Railway trolley, M. F. Ward, Railway trolley, conduit, W. Lawrence, Railway turntable, electric, R. M. Hunter, Rake, See Hay rake, Rakes and loaders with wagons, device for connecting hay, M. Mann, Reel, See Fish line reel, Refrigerator, L. B. MacDonathan, Refrigerator, car, Miller & Du Bois, Register, See Cash register, Revolver screen, D. E. Phillips, Revolver lock mechanism, D. B. Wesson, Roaster, See Ore roaster, Rock drill, J. H. Stearns, Rock drill, M. V. Trube, Sash fastener, F. Burmeister,

Table listing various inventions such as Saw, drag, J. A. Geselus, Scalpel, J. W. Jones, Scarf pliers, C. J. Partridge, Scraper, R. O. G. H. Hancill, Screen, See Revolvable screen, Screwdriver, J. J. Edwards, Sear, safety, G. A. Horne, Seamaphore, J. W. Davis, Separator, See Coal separator, Grain separator, Steam separator, Sewing machine, J. Reece, Sewing machine, shuttle-actuating mechanism, H. Moore, Shade bracket, window, Klein & French, Shaft support, vehicle, J. J. Barker, Shaping beccy masses, machine for, E. Goldman, Single marker, C. Gayer, Shoe, inside, J. H. Foss, Shoestring fastener, S. E. Blake, Shutter power, H. Zimmerman, Signal, See Railway signal, Railway for signal, Smoothing and rolling apparatus, copper, J. C. Bull, Smocking cloth, clasp for, F. S. Pinkham, Smoke consumer, F. S. Sejnoba, Smoking apparatus, mouthpiece and stem for, W. Brien, Soldering caps on cans, machine for, M. J. Hawkins, Soldering tool, Orr & Thomas, Spinning frame tension device, R. Atherton, Spool making machine, J. F. Wardle, Sprinklers, sprinkling head for street, W. H. Miller, Stamps, labels, etc., apparatus for affixing, E. C. Phillips, Start table, or analogous article, S. H. Horgan, Stapling machine, E. T. Greenfield, Starching machine, A. Conkling, Stay, dress, F. W. Lyon, Steam boiler, W. Saur, Steam boiler, radial tube, E. S. T. Kennedy, Steam engine, J. L. Gourley, Steam engine, B. F. Sparr, Steam separator, C. J. Mellin, Stone or cement composition, artificial, C. A. Shank, Stove and lamp, oil, J. F. Place, Stove for drying, F. Schreiner, Stove, use, C. S. Upson, Stove hearth and ash box, combined, E. L. Flood, Stove, lamp, C. S. Upson, Stove, oil, J. F. Place, Stove, oil cook, C. H. Boeck, Stove, vapor heating, B. S. Koll, Surgical chair, adjustable, Shackelford & Milton, Suspenders, cast-off, C. Bloomberg, Switch, See Tongue switch, Switch, H. P. Ball, Switchboards, testing system for multiple, C. E. Schriener, Table for draughtmen, etc., J. W. Brainwell, Tables, blinda, desks, etc., flexible cover for, C. S. Homer, Tag, marking, S. Daneyer, Talking board, M. Schirman, Tank, See Water closet flushing tank, Telephone, magneto, A. Boardman, Telephone, spring attachment, W. Weber, Thrashing machine, concave and feed board, D. W. Broatch, Tinning machine, J. Hirschmann, Tire, pneumatic, R. Hoffman, Tire, pneumatic, H. Dickson, Tobacco, cooling chamber for ordering, S. P. Mayo, Tobacco pipe, O. M. Jonasson, Tongue switch, A. J. Moxham, Transplanter, D. D. F. H. Bemis, Transplanter, F. H. Bemis, Trap, See And oil trap, Trolley wire support, B. J. Jones, Trolling spoon, J. R. Harlow, Trunk, F. Lyford, Type, device for removing leads from, W. Weatherby, Typewriting machine, G. B. Webb, Underclo, R. Hadrich, Vamps to uppers, machine for pasting, H. Fischer, Vehicle spring and axle attachment, W. Beckert, Vessel, screw-propelled, C. G. Lunaborn, Voting machine, J. McParman, Wagon, dumping, S. Phillips, Washing machine, E. H. Davenport, Washing machine, E. C. Brewer, Watch jewels, mechanism for loading, G. E. Hunter, Watch, stem winding and setting, D. H. Church, Watches, plate for stem winding, W. H. Hasten, Water closet flushing tank, Kirchner & Spears, Weatherboard gauge, T. L. Wint, Weatherboard gauge and adjuster, Abshler & Lacke, Wheel, See Buff wheel, Buffing wheel, Pneumatic, Wheel guard, hand, J. W. Cameron, Whistle, steam chime, H. R. Frisbie, Winding cotton web, etc., machine for, E. Goldman, Window, door, or the like, horizontally sliding, C. Summerman, Wire machine, wire, S. W. Williams, Wire twisting machine, R. Sedgwick, Wood, vulcanizing, C. Howard, Wood, vulcanizing and drying, C. Howard, Wrench, See Nipple wrench, Pipe wrench, Wrench, T. E. Chatten, Wrench, K. A. Klose, Wrench, H. Krebs, Zither, gutting, F. Menzenhauer,

TRADE MARKS.

Table listing trade marks such as Axes and other tools, Collins Company, Belts and wearing appliances, electric, Owen Electric Belt and Appliance Company, Books, pass, W. J. Darrow Publishing Company, Blood purifiers, J. T. Farrell, Blood purifying herb teas, Weber's Medical Tea, China, French, T. Haviland, Cotton goods, woven, Massachusetts Cotton Mills, Faucets, E. Stebbins Manufacturing Company, Flour, wheat, A. M. Seixax, Hair restoratives, F. E. Bostwick, Liniment for internal and external use, E. F. Kessler, Medicinal lozenges or tablets, California Eucalyptus Company, Paints, kerosene, resin, turpentine, and lubricants, coloring and finishing, Shaw Brothers, Pie fabrics, mobair, Lister & Company, Pistols, revolver, Chicago Fire Arms Company, Poles, shovels, spades, hoes, picks, and mattocks, Collins Company, Pumps, air, Cleveland Faucet Company, Remedies for certain named diseases, Robert-Milton Manufacturing Company, Remedy for corns, J. C. Proctor, Remedy for various diseases, A. H. Parker & Company, Remedy for the asthma, F. E. Drumheller, Salt, dairy, Union Pacific Salt Company, Shingles, staves, casks, and barrels, Shaw Brothers, Water proofed outer garments made thereof, H. Shorey & Company, Whisky, E. Lynch, Whisky, brandy, gin, rum, and wines, M. Manning,

DESIGNS.

Table listing designs such as Bowl or similar article, H. Berry, Box, S. W. Babbitt, Clothes line holder, Hoffman & Hoffman, Electric wire fastening, H. Hubbell, Emery wheel dresser, A. Bender, Glass vessel, J. D. Bergen, Spoon, C. Thompson, Spoons, etc., handle for, W. C. Codman, Table top, lab, J. C. Miller,

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1833, will be furnished from this office for 25 cents. In ordering please state the name and number of the patent, and remit to Munn & Co., 361 Broadway New York. Canadian patents may now be obtained by the inventors for any of the inventions named in the foregoing list, provided they are complete at a cost of \$40 each. If complicated the cost will be a little more. For full instructions address Munn & Co., 361 Broadway, New York. Other foreign patents may also be obtained.