

the weight and net price of commodities. The beam of the scale has a weight scale at its lower portion and a value scale at its upper portion.

MUSIC-HOLDER.—OLAVES I. BYE, Hillsborough, N. D. The purpose of this invention is to provide a simple and cheap music-holder which may be directly attached to the instrument so as to hold the music at all times in clear view of the performer.

SUGAR-CRYSTALLIZER.—EDWARD P. EASTWICK, Jr., New Orleans, La. The purpose of the present invention is the provision of an apparatus for crystallizing sugar in motion that will give a more complete movement to the mass than has hitherto been attained.

NECK-YOKE.—SAMUEL J. McDONALD, Gallatin, Mo. In this invention, the center ring or loop has a swivel connection with the cross-pole of the neck-yoke, thus enabling the center ring or loop to adjust itself to any necessary position.

MILITARY EQUIPMENT.—HENRY J. ROSE, Hythe, and WILLIAM GILBERT-COOPER, Dover, England. This invention provides an equipment for military and sporting purposes by means of which equipment a knapsack or handbag, great coat, canteen, ponch and the like can be carried with the utmost convenience and least discomfort.

SKIRT.—BERTHA E. MARTIN, Asbury Park, N. J. The skirt provided in this invention is a bicycle-skirt, having the appearance of an apron front. The skirt is designed not to blow up over the knees and to be used upon drop frame or diamond frame bicycles.

PASSAGEWAY FOR BULKHEADS.—DALLAS DU BOIS, Montclair, N. J. In this invention, a device is provided whereby communication may be obtained between one compartment and another, at the same time maintaining a waterproof and fireproof division between the compartments.

PENCIL HOLDER AND SHARPENER.—CONSTANT E. COURY, New York city. To provide a holder in which the pencil may be readily advanced as it wears and at the same time permits the sharpening of the point, this inventor employs a spirally grooved case having a longitudinal slot.

Designs.

WIRE-FENCE.—ALBERT HENLEY, Lawrence, Kans. This design consists of a series of horizontally disposed trapezoidal figures in which the parallel sides are approximately vertical, of the same length throughout the same rows and of gradually increasing length from row to row.

BOTTLE.—HERMAN TAPPAN, New York city. A circular base is provided for this bottle, from which base rises a cylindrical body slightly tapering inwardly at its upper end, terminating in a neck formed with raised spirals and ending in a reduced cylindrical mouth.

JET FOR LIME LIGHTS.—JOHN A. MANTZ, Jersey City, N. J. The leading feature of this design consists in a boss, from one side of which extends a bend of the base portion and from the top of which boss rises upwardly and forwardly a spout terminating in a contracted mouth.

HOOK.—EUNICE R. MORTON, Revere, Mass. This hook consists of a bar, from the upper end of which rise the spaced side members of a loop, from the middle portion of which extends upwardly the shank of a hook ranging in an opposite direction to a hook-plate depending from the upper edge of the bar first mentioned and from between the side members of the hook.

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Notes & Queries

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.

(7474) F. W. M. says: I take the liberty of sending you a cutting of an ash tree I have, with a growth which I believe are eggs, and asking you what it is and for a cure. Last year this same tree, later in the season, had numerous small insects on some of the branches which looked like mould or moss, and which I scorched off, and now think perhaps they were a more advanced stage of the same thing I inclose.

(7475) F. G. G. asks: Is there any rule by which I can find the strength of an electromagnet, having given the size of the core and wire, the number of coils, and the amount of current? A practical formula for this case is TCM / (2661 L) = A

The value of M varies greatly with the quality of the iron and the degree of saturation. For strong saturation of well annealed wrought iron its value may be as low as 400, and its value may rise as high as 3,000. For a horse-shoe magnet the area to be taken is that of both poles. The mean total length is half the sum of the inside and outside distances around the core and armature. The armature should have as large an area of cross section

as that of the core of the magnet. No allowance is here made for the leakage of the magnetic lines; so that the actual result in any case will be somewhat less than is given by the formula. Much depends upon the accuracy with which the armature fits upon the poles of the magnet. The full calculations of the lifting power of an electromagnet may be found in S. P. Thompson's "Electromagnet," price \$6 by mail. The formula expressed as a rule is: Multiply the number of turns of wire by the number of amperes of current. Multiply this product by 400 for full saturation, and this in turn by the square root of the total area of the poles of the magnet. Divide the final product by 2661, and this quotient by the mean length of the iron circuit. The result is the lifting power in pounds.

(7476) J. H. L. writes: I wish to call your attention to the difference between an eighty gear on a bicycle or a sixty, backpedaling down a hill. Does it require any more strength to hold a large gear down a hill than it does a small one? A. It requires less pressure on the pedals of a low gear bicycle than on those of a high gear, in going down hill.

NEW BOOKS, ETC.

AN ELECTRICAL THEORY EXPLANATORY OF THE SOLAR SYSTEM. By "Delta." Published by the author. 1898. Pp. 12. Cloth. 12mo.

This is a reprint from the Electrical Review of January 21, 1898, and embodies a theory that is at least ingenious.

DIE SCHLEIF-, POLIR-, UND PUTZMITTEL für Metalle aller Art, Glas, Holz, Edelsteine, Horn, Schildpatt, Perlmutter, Steine, u. s. w. Von Victor Wahlburg. Vienna, Budapest and Leipsic: Verlag von A. Hartleben. With 91 illustrations. Pp. 304. Price \$1.25.

The second edition of "Die Schleif-, Polir-, und Putzmittel" has given the author an opportunity thoroughly to revise and enlarge his work, and to eliminate all that seemed antiquated when viewed in the light of improved methods. After having exhaustively treated the various polishing substances in the order of their hardness, the author passes to a description of the manufacture of polishing papers and cloths, of emery disks, rings, cylinders, etc.

We have received a new catalogue of photographic lenses, shutters, and accessories issued by the Bausch & Lomb Optical Company, of Rochester, N. Y. It is one of the finest catalogues which it has been our good fortune to examine. The lenses themselves are not only described and illustrated in a thoroughly scientific manner, but excellent examples of the work which is done with them are given.

TO INVENTORS.

An experience of 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.

INDEX OF INVENTIONS For which Letters Patent of the United States were Granted

AUGUST 9, 1898, AND EACH BEARING THAT DATE.

Table listing inventions and their dates, including: Abrading wheel, D. J. Lattimore; Advertising device, J. B. Healey; Air brake, F. L. Guillemet; Air compressor, Heston & Harison; Alcohol manufacturing ethylic, A. M. Viljon; Angle bars, device for bending, D. Brennan et al; Assayer's furnace, Longman & Calkins; Awl, sewing, G. E. Summers; Bag fastener, A. H. Propper; Bag holder, N. F. Becker; Bag holder, W. D. Graves; Bag holder and weigher, combined, J. E. Otto; Baking pan, compartment, L. A. Tuell; Bale tie, F. H. Daniels; Ballot box, L. M. Foster; Barrel, metal, J. Harmatta; Bath apparatus, shower, W. R. Baker; Batteries and composition for producing same; Battery, See Storage battery; Bearing, antifriction, E. Rivett; Bearing, ball, Harper & Grohmann; Bearing, bicycle, W. R. Fox; Bearing, roller, R. G. Petway; Bearing, vehicle wheel, W. Meeker; Bearings, machine for assembling ball retainers for ball, E. Klahn; Bed, invalid, A. McKnight; Beehive, J. F. Wessel; Beer, etc., process of and apparatus for gasing, J. L. Alberger; Belt, and belt, Boston, supporting, P. E. Post; Belt, waist, J. Pendergast; Bicycle, G. G. Bieber; Bicycle, F. J. Wadman; Bicycle chain brush attachment, F. G. Kinnard; Bicycle gear, D. L. Harshner; Bicycle gear, E. H. Godfray; Bicycle handle, E. Anderson; Bicycle handle bar, G. J. Bungay; Bicycle locking or securing device, T. Gilmer; Bicycle pedal toe clip, C. O. Nelson; Bicycle saddle, L. M. Hildreth; Bicycle support, J. Booth; Bicycle supporting device, E. Russ; Board, See Gameboard, Plaster board.

Table listing inventions and their dates, including: Boat, D. Ahern; Bolt, T. P. Russell; Bottle, non-refillable, E. A. Clair; Bottle, non-refillable, S. W. Durham; Bottle, non-refillable, A. M. Legrand; Box, See Ballot box; Box beam, box girder, and box post, metal, C. M. Horton; Box blank making machine, F. P. Rosback; Box blank making machine, J. Uhrli; Box nailing and printing machine, F. P. Rosback; Brake, See Air brake; Shoe brake, Vehicle brake, Wagon brake; Brakes, device for actuating fluid pressure, R. Fitzgerald; Bridges, etc., construction of tension members for, G. Lindenthal; Bridge, safety, J. Hammond; Broom case, G. Hacker; Broom clamp, J. Hielt; Bubble blower, P. D. Horton; Burner, See Hydrocarbon burner; Button fastening device, J. P. Dunn; Button setting machine, S. Upton; Button setting machine, G. J. Gisson; Cable carrier, J. T. Cowley; Cakes, etc., device for ornamenting, L. Ferrioli; Calk, reversible, K. J. Gaitzsch; Can opener, M. F. Connett; Cane crusher, A. L. Marshall; Car coupling, R. H. Dowling; Car coupling, A. L. Humphrey; Car coupling, J. P. Paulussen; Car coupling, W. Shanklin; Car fender, M. Gummel; Car safety bridge, J. H. Burkhardt; Car step lifter, T. Millen; Carrier, See Cable carrier, Elevated carrier; Case, See Broom case, Eyeglass case, Refrigerating shipping case; Cash holder, Art. R. Daley; Change delivering device, J. S. Johnston; Checking device, W. M. Shutt; Chuck for woodworking machinery, lathe, C. H. Bartlett; Cigar machine, J. Reuse; Cigar making machine, J. Reuse; Clamp, See Air brake; Clasp, See Rein clasp; Clay products, machine for making, W. W. Wallace; Cleaning, apparatus for chemical, A. F. Platt; Clip, See Hat clip; Clock, alarm, J. J. Hirth; Cloth winding machine, J. E. Windle; Clothes line prop, extensible, J. W. Wood; Clothes pin, duplex, J. R. Holt; Clutch, friction, W. J. Elliott; Coat and vest holder, D. W. Axene; Cock, drain, F. C. Kral; Coin freed apparatus, A. E. Box; Collar and socket machine, C. D. De Forest; Collar turning and ironing machine, W. C. Sbow; Conveying apparatus, J. T. Cowley; Cooker, steam, W. J. Thomson; Cooking apparatus, electric, J. B. Cary; Cooking utensil, S. Kaufmann; Cooking utensil, portable, A. Westheimer; Coop and trap, combined folding, W. A. Neal; Cornstalks, means for extracting pith or cellulose from, F. J. Wright; Cotton gin, M. Swanson; Cotton press, J. W. Graves; Counter, score, H. De Wallace; Coupling, See Car coupling, Pole coupling, Rope coupling, Thill coupling; Crucible furnace, self heating, R. Baumann; Crusher, See Rock crusher; Cultivator, H. Otchouse; Cultivator, disk, A. L. Brock; Cushion, See Rocker cushion; Cutoff for water spouts or other conduits, H. Apple; Cutter, See Fruit or flower stem cutter; Cutting and delivery mechanism, L. C. Crowell; Cycle saddle, R. W. Jamieson; Damper regulator, E. K. Hutchison; Demijohn, G. Becarro; Dental plugger, W. E. Hanson; Detailing machine, T. J. Ryland; Dowel pin pointing machine, C. F. Stewart; Draught equalizer, G. S. Hoffman; Drill, See Ridge drill; Drum, heating, C. P. Vernier; Dust collector, E. B. Draver; Dust receptacle pouch, W. J. Mokomev; Eaves trough hanger and screen attachment, F. P. Dick; Electric cable, H. A. Reed; Electric conductors, supporting clip for overhead, W. A. Bartley; Electric meter and motor, Davis & Conrad; Electric motor, W. H. Powell; Electric regulator, automatic, R. Skeen; Electrical resistance, switch for varying, E. F. H. H. Lauckert; Electrodynamical apparatus for operating clipping, brushing, or other mechanisms, W. P. Freeman; Elevator, C. H. Newhall; Elevator carrier, H. H. Drew; Elevator, C. H. Newhall; Elevator governor and safety attachment, J. W. Trammell; Embroidering machine, R. Loeb; End gate lock, N. C. Murray; Engine, See Internal combustion engine, Rotary engine; Engine attachment, gas, J. H. Wiehl; Envelop, reversible, E. A. Burlingame; Envelop, safety, F. C. Cuckson; Eyeglass case, H. E. Bemis; Feed water regulator, boiler, A. Blechryden; Feed water supply, engine, E. S. Hough; Feeding trough, A. A. Innis; Fence building appliance, wire, G. Kentch; Fence post, J. Carr; Fender, See Car fender; Fibrous materials, feeding apparatus for machinery for preparing, J. Good; Filter, W. M. Fowler; Filtering apparatus, R. Douglas; Finger ring exhibitor, M. Adair; Fire extinguishers, sprinkler head for automatic, G. E. Hibbard; Fireplace back or lining, J. A. Dickson; Floor laying machine, J. C. Dukes; Flower pot, A. N. Free; Flower pot hanging basket, G. A. Freund; Frame, See Spinning frame; Fruit or flower stem cutter and holding attachment, D. Tilden; Furnace, See Assayer's furnace, Crucible furnace, Smelting furnace, Smoke consuming furnace; Furnace, P. Boimare; Furnace, H. E. Wallis; Furnaces, rocking fire bar for, A. Pilatt; Game board, L. J. Scovel; Garment hanger, E. H. Foote; Gas generating apparatus, acetylene, J. Boland; Gas generating apparatus, acetylene, A. A. Strom; Gas generator, acetylene, F. E. Bundy; Gas generator, acetylene, C. Kelly; Gas heater valve, A. E. Detwiler; Gas or oil motor for bicycles, W. Morava; Gas producing apparatus, acetylene, T. Hennessy; Gate, See Mine gate, Railway crossing gate; Gate, Flesher & Crisler; Gate, E. Grist; Gates, opening or closing, W. J. Moore; Gear rotor foot variable, T. Foster; Generator, See Gas generator, Steam generator; Glass and apparatus therefor, production of corrugated sheet, W. L. Pilkington; Glass holder, J. Kirby, Jr.; Glassware articles, apparatus for making, C. N. Brady; Glassware manufacturing apparatus, T. Coleman et al.; Glove fasteners to garments, machine for attaching, E. Flag; Gold separating apparatus, W. Darling; Grating machine, A. B. Hostetter; Gun lock safety attachment, P. M. Wood; Hacking machine, J. Good; Handle, See Tool handle; Hanger, See Eaves trough hanger, Garment hanger; Harvester, cotton, G. S. Lee; Hat clip, E. Anderson; Hat holding device, R. Piesbergen; Hat sweat band, C. Stader; Hay stacker, J. Dain, Jr.; Heat retarder, F. Kuhn; Heater, See Water heater; Heating air for therapeutic or other purposes, apparatus for, W. Taylor; Heating and evaporating liquids, A. G. Hoffmann.

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