

(5305) T. K. writes: I observe very frequent reference in the SCIENTIFIC AMERICAN to the Fuller battery. I have tried, without success, to get information about this battery or to obtain the cells or parts of them here, as it seems to be quite unknown.

(5306) W. W. P. writes: I have a double sulphate of nickel bath (about 20 gallons) which worked with perfection until lately. It now turns dark and it seems to turn only in spots. I think the bath is strong enough, as it weighs 8 1/2.

(5307) F. P. writes: I would like to make some bottled soda water and I think I can do it by filling the bottle with water, putting in the proper amount of sodium bicarbonate, and lastly some citric acid in crystals and corking it quickly before the acid can dissolve enough to act on the soda.

(5308) "Beta" says: How many quart size Fuller cells would be required to operate an induction coil giving 1/2 inch sparks, and about how many hours would they give a stream of sparks continuously on one charge of cells?

(5309) C. C. W. writes: Many remedies have been offered in your columns from time to time for the relief or cure of poisoning by oak or ivy, and all probably have merit. I have found however that a solution of boracic acid, applied frequently, as soon as the symptoms make their appearance, will do wonders.

(5310) M. A. T. says: 1. Near our city is a gas (natural) pipe line thirteen miles in length. The first three miles are laid with six inch pipe, the remaining ten miles with eight inch pipe.

(5311) X. Y. Z., Melbourne, asks: Is it practicable to drive a small boat—large enough to carry two persons—six ten or twelve feet long by about two feet beam, a speed of five or six miles per hour by hand power screw?

(5312) J. T. D. asks: How can we make a pond hold water where the banks and bottom are almost clear sand where we wish to make the pond?

within a reasonable distance, the pond can be made tight with a clay and sand puddle, which, if two parts clay to one part of the sand from the excavation is used, should be fairly tight if made six inches thick all over the bottom and sides, well compacted by ramming, then covering with six inches of the fine top loam.

(5313) T. H. writes: Can you give the point of lowest elevation on the dividing ridge between Lake Erie and Ohio valley—from Chautauqua Lake to Toledo? If you have not the data at hand, perhaps some of your readers have.

(5314) P. R. L. writes: It is stated in "Experimental Science" that an induction coil may be used in charging a Leyden jar. I do not understand how a condenser may be charged by an alternating current.

(5315) O. S. asks: 1. Will you give me directions how to mend rubber, so that it will hold warm water? A. The only way to mend rubber so that it will withstand hot water is to apply a patch consisting of a layer of vulcanized rubber, then vulcanizing the whole.

(5316) J. S. F. asks: Has the United States passed a law and fixed a penalty for circulating foreign coins? A. There is no law against the use or abuse of foreign coins in the United States.

(5317) J. B. R. asks: Is there always a draught up a tall chimney, and does this draught vary at times very much? If there are times when no draught at all is felt, please give conditions.

(5318) J. W. S. writes: Do you think there is anything in the very common notion among practical mechanics that pumps raising water to a considerable height must be down close to the water to do their best work?

(5319) T. D. D. writes: I have been a steady subscriber for your valuable paper for over 45 years, and wish you would make careful answer to the following questions: What would, in your best judgment, be the per cent of saving to the track and road-bed and rolling stock of any through line of railroad if an endless rail could be used?

NEW BOOKS AND PUBLICATIONS. SHORTHAND INSTRUCTION AND PRACTICE. By Julius Ensign Rockwell. Bureau of Education, Circular of Information, No. 1. 1893. 8vo. Pp. 205, tables.

A CHAPTER ON CHOLERA FOR LAY READERS: HISTORY, SYMPTOMS, PREVENTION, AND TREATMENT OF THE DISEASE. By Walter Vought, Ph.B., M.D., Medical Director and Physician in Charge of the Fire Island Quarantine Station, Port of New York. Illustrated with colored plates and wood engravings. Philadelphia: The F. A. Davis Co. 1893. 12mo. 110 pages. Price 75 cents.

THE SHAKERS. By C. E. Robinson. East Canterbury, N. H. 1893. 8vo. Pp. 194. Illustrated. No index.

THE COMPASS. Edited by William Cox. Vol. II. 1892-93. New York: Keuffel & Esser Co. 1893. 8vo, cloth. Pp. 192. Illustrated. Price \$1.75.

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.

INDEX OF INVENTIONS For which Letters Patent of the United States were Granted August 22, 1893, AND EACH BEARING THAT DATE.

Table listing inventions with patent numbers. Includes: Acid apparatus for making sulphuric, Hucker & Glichrist; Alarm, See High or low water alarm; Aluminum compounds, making, W. E. Case; Aluminum fluosulphate, making, W. E. Case; Amalgam, producing, J. B. Hall; Amalgamator, J. S. Johnson; Anchor, J. W. Byrne; Anchors, making, W. N. Fisher; Architectural purposes, composition for, J. Flynn; Atomizer, W. J. Ryan; Bearing for shafts, ball, P. L. Bennett; Bag holder, J. Travis; Bag turning device, L. E. Barbeau; Belt box, Lewis & Estep; Ballot box, registering and canceling, E. K. Tolman; Barrel or keg, David & Rath; Bender for finishing machine, C. B. Seaton; Belt, electric, Stephen S. & Backstrom; Bicycle, G. F. Case; Bicycle crank shaft and bearing, P. Gendron; Billboard, portable, F. R. Stone; Bill sheet, H. F. Vaughan; Binder knotter, G. W. Whitton; Binder twine, J. F. Fowler; Blower of carburetors, weight motor for, L. C. Huber; Board, See Billboard; Boat disengaging gear, Wilson & Pirrie; Boiler, See Steam boiler; Bolt head finishing machine, C. B. Seaton; Bolt memorandum or copy, W. H. Rodden; Bootjack, L. Even; Bottling machine, G. Feltman; Box, See Bolt box; Brake, See Vehicle brake; Brick mould, B. Morry; Brush, E. L. Chabouch; Brush bristle fastener, C. M. Kimball; Brush drying attachment, scrubbing, McGuire & Beemer; Buckle, F. Calif; Buildings, entrance for refuse conduits in, M. L. Snyder; Burner, See Gas burner; Lamp burner; Burning garbage, etc., apparatus for, Garretson & Tainter; Bushing and faucet, barrel, G. H. Merick; Butter extractor, centrifugal, O. Anderson; Button setting machine, G. W. Altman; Cable haul mechanism, J. H. Hahn, Jr.; Case, G. A. Patten; Car coupling, A. A. Brower; Car coupling, E. B. Hye; Car coupling, C. S. Park; Car coupling, W. E. Steffy; Car freight, E. E. Pratt; Car heating and ventilating apparatus, W. Howard; Car roof, J. C. Wands; Car seats, end panel for, H. Cochran; Cars, buffer and vestibule connection for passenger, H. C. Buhoup; Carpet sweeper, S. E. Raymond; Case, See Tobacco case; Cash indicator and register, A. C. Hansen; Cash register and till, A. L. Crawford; Cask, cylindrical, C. E. Pratt; Ceiling or wall, H. Lehmann; Chain, sprocket, S. H. Ferry; Chain, J. H. Deacon; Cigar wrapper cutter, H. Sternberg; Cigarette machine, J. B. Duke; Clay screen, J. C. Schroeder;

Table listing inventions with patent numbers. Includes: Clothes drier, J. C. Beckley; Clothes pounder, H. & F. G. Davis; Clutch, W. G. Austin; Clutch, J. Gawron; Clutch, J. J. G. G. G.; Clutch operating mechanism, H. W. Hill; Confections, machine for making, A. Van Ness; Conveyor, endless chain, G. W. McCaslin; Conveying apparatus, T. S. Miller; Cooker valve, E. F. Doty; Cooking machine, Carl G. Burnham, Jr.; Cooler, See Milk cooler; Corset stay, M. W. Bentus; Coupling, See Car coupling; Electro-magnetic safety coupling; Thrill coupling; Wire coupling; Cover for show barrels, hinged, W. R. & E. O. Hinde; Crank, R. S. Lovelace; Cranks, locking device for folding, D. F. Latin; Cuff, F. C. Dumas; Cuffs, etc., holder for, R. Katzer; Curtain or shade roll, J. A. Howell; Cushion, See Resilient cushion; Cut-out, electrical, L. B. Matson; Cutter, See Cigar wrapper cutter; Feed cutter; Kraut cutter; Vegetable cutter; Cutter head for wood turning machines, White & Bacon; Cutting tool or tool heads, shank for holding rotary, S. Rosenman; Cyclone case, O. O. Walker; Deburring implement, R. G. Kader; Dental drill, W. S. How; Dental engine, A. W. Browne; Dental engine, C. Doriot; Distilling volatile substances, apparatus for, T. G. Du Pont; Diving apparatus, G. W. Smith; Door and bingie, N. E. Wilson; Door operating device, P. Berger; Draughting device, tailor's, A. L. Faestel; Dresser, L. W. Bates; Dresser, L. W. Bates; Drier, See Clothes drier; Fruit drier; Drill, See Dental drill; Ear muff, I. B. Kleinert; Electric cable, M. G. Kellogg; Electric generator, self-exciting alternate current, P. Dietrich; Electric light switch, E. Bissner; Electric lighting system, L. Vialat-Chabrand; Electric machine or motor, dynamo, C. S. Bradley; Electric meter, F. L. Gregory; Electric meter, A. Reckenzaun; Electric motor regulating apparatus, C. H. Richardson; Electric motor starting device, A. D. Adams; Electric motors, apparatus for controlling, S. S. Wheeler; Electric search light, R. M. Hunter; Electrical conduit for buildings, Powers & Van Buren; Electrical contact device, J. K. Pritchard; Electrical conversion and distribution, system of, W. Stanley, Jr.; Electrical distribution, system of, O. B. Shallenbaker; Electro-magnetic safety coupling, Richter & Hoffmann; Elevator, W. F. Austin; Elevator, D. E. Crosby; Engine, See Dental engine; Rotary engine; Envelope and letter sheet, combined, N. W. Webb; Explosives, apparatus for producing smokeless, F. G. Du Pont; Explosives, making smokeless, F. G. Du Pont; Explosives, making smokeless, F. G. & P. S. Du Pont; Extractor, See Butter extractor; Faucet, F. M. Mott; Feed cutter, J. Butler; Fence, J. B. Whitacre; Field roller, J. S. Weckman; Fifth wheel, T. L. Bosart; Fifth wheel, H. C. Swan; File, letter, Stafford & Field; Filter, water, H. Hanks; Fish hook, D. Lehmann; Flooring or ceiling jack, W. M. Holliman; Flooring, wood tile, A. Salvatico; Flue stopper, E. H. Adams; Flue thimble, J. H. Watt; Form, cloth, J. Wade; Fortune-teller, J. Carey; Fringe or trimming holder, J. M. Schlesinger; Fruit drier, A. H. Carson; Furnace, See Heating furnace; Furnace door, C. W. Rneau; Furnace for heating, etc., E. J. & C. J. Buck; Gauge, See Saw table gauge; Game apparatus, F. R. Hokeboom; Garment protector, E. E. Fidler; Gas and electric light fixture, combined, J. A. O'Neill; Gas burner for heating stoves or grates, P. I. Miller; Gas for heating purposes, apparatus for producing, and utilizing, G. A. Watson; Gases, method of and apparatus for propelling prop user, W. H. Forbes; Gate, See Swing gate; Generator, See Electric generator; Glass and liquid refractometer, J. H. Blakesley; Glass blowing tube, A. Pittman; Globes, making lens, C. J. Beckus; Governor, steam engine, E. Conrad; Grain binder, Graham & Birkett; Grain meter, W. Howard; Grain scouring and polishing machine, J. H. Williamson; Grate bar, interlocking and interchangeable rocking, R. Carey; Hame, P. Barker; Hammer, blacksmith's, C. Weigant; Handle for sheet metal vessels, H. S. Raymond; Handles to vessels, attaching, E. M. Peacock; Harness, C. L. Passmore; Harness loop, C. W. James; Harness suspending device, L. Townsend; Harrow, C. Perrin; Harrow, C. Perrin; Harvester binder, Harzer & Greatrex; Harvester, corn, E. Warden; Hat fastener, J. Par ons; Hat support, R. Macomb; Heating furnace, J. A. P. Berg; Heat stiffener machine, L. W. Litch; High or low water alarm, W. A. Kitta; Hoop trough, I. Jones; Hook, See Fish hook; Horse power, A. Ker; Horseshoe and pad, M. Hallanan; Horseshoe and quarter boot, J. D. Munsey; Horseshoe, gallop, M. Hallanan; Indicator, See Dash indicator; Inkstand, H. S. Hele-Shaw; Insulator, electric wire, W. D. Trimble; Insulator, section, L. McCarthy; Jack, See Boot jack; Flooring or ceiling jack; Journal box dust guard, J. J. Busenbenz; Kettle lifter, L. E. Koons; Kilm, See Regenerative kiln; Knitting machine, L. N. D. Williams; Kraut cutter, R. L. Dorsey; Lactyl-paraphenitid and making it, F. Geromont; Lamp burner, C. A. Padin; Lamp chimney, E. Hammond; Lamp, electric arc, W. W. Millard; Lamp, incandescent electric, Cary & Nickerson; Lamp, incandescent electric, W. E. Nickerson; Lantern, A. Zimmermann; Lapping machine, Alnswoth & Haydock; Lashing pinchers, B. A. Norwood; Lasts for boots or shoes, machine for manufacturing, W. H. Austin; Laundry outfit, combination, A. Armstrong; Letter sign, C. Schwartz; Life-saving vehicle, W. B. Beal; Lifter, See Kettle lifter; Light, See Electric search light; Lightning arrester, W. L. Emmet; Lock, A. Burbee; Lock, W. J. Neidl; Lock and latch, A. Burbee; Loom shuttle motion, H. Wymann; Loom shuttle, self-threading, S. M. Hamlin; Loom temple, D. Durkin; Looms, take-up mechanism for circular, A. De Laet; Lubricator, See Pulley lubricator; Lubricator, E. D. Banes; Marking article, G. Gauchtel; Measure register, grain, B. F. Haley; Measuring apparatus for alternate currents, electric, S. Evershed; Measuring vessel, W. H. Bastin; Mechanical motor, Grass & Hardie; Meter, See Electric meter; Grain meter; Milk cooler, P. H. Fears; Mtl. See Windmill; Mining machine, F. M. Lechner;

