

(28) J. M. D. asks: Do you know of anything that will cut off the attraction of a magnet? A. Place a brass plate between the poles of the magnet and the armature.

(29) W. T. B. says: I have learned from several that there is a mode of increasing negative electrical attraction, relative to the positive, in other words, of having a great attraction and slight repulsion. Is this so? A. It is probably erroneous.

(30) S. D. asks: What is the explanation of the term squaring the circle? A. Calculating the exact superficies of a circle whose diameter or radius is given, so that the side of a square of the same area may be known.

(31) C. W. says: Please state the composition and properties of croton chloral. A. Ordinary chloral is an aldehyde; it is the hydrate of trichloroacetyl, C2Cl3OH. Croton chloral is the hydrate of trichloroacetyl, C2H3Cl3O, or the aldehyde of crotonic acid, C2H3Cl3O, in the radical of which three atoms of hydrogen have been replaced by three atoms of chlorine. Anhydrous croton chloral is a colorless, oleaginous liquid, having a peculiar odor, recalling that of ordinary chloral. It is insoluble in water, but, like ordinary chloral, it combines with water to form a crystallized hydrate. The hydrate of croton chloral crystallizes in white mucous spangles. It is slightly soluble in cold water, more freely soluble in warm water, and extremely soluble in alcohol. It dissolves more readily in glycerin than in water.

(32) F. M. H. asks: Will five Calland batteries be enough to plate with? A. Yes.

(33) N. B.—If the moon's node be less than 90° 30' from the center of the earth's shadow, there will certainly be an eclipse of the moon. If the sun be more than 12° 4' from the node, there cannot be an eclipse. The moon crosses the ecliptic 19° further west each year.

(34) W. M. D. asks: 1. In what manner are the connections usually made or attached to the pendulum of a regulator beating seconds, to convey a current of electricity to another clock? In other words, how can I make and break connections at each second, and at the same time take no power that would disturb the pendulum as regards its rate? A. The pendulum in swinging passes through a small cup of mercury. 2. What form of battery will convey a weak current for a year without attention? A. The Leclanché or the gravity battery.

Has mercury any effect on platinum when brought in contact with it? A. It will adhere to the platinum, but will cause no injury.

(35) W. T. H. asks: Is it darkest just before daylight? A. No.

What is a good cement to stick rubber coat seams together with? A. Dissolve a small quantity of pure rubber in hot naphtha.

(36) W. E. S. says: I think my eyes are getting weak, but am not sure. Will you please tell me how I can test them? A. By comparing with some one whose eyes are undoubtedly good.

(37) F. H. W. asks: 1. How can I make a soft iron core for a magnet? A. Bend a rod of iron into the shape of a horseshoe. 2. Should the wire be wrapped tight around the soft iron? A. Yes. 3. Would a battery made of a common tin can lined with lead, with zinc hung in the top, make a battery of any strength? A. Yes. 4. What fluid should I use for such battery? A. Put crystals of sulphate of copper in the bottom of the can, and fill with water.

(38) S. H. B. asks: Will the Leclanché battery answer for an electrical clock in which the impulse is to be given to the pendulum at each return to one side, the pendulum beating in half seconds? A. Yes.

(39) W. H. M. asks: Is electricity a substance? A. That question still remains to be solved. The present opinion seems to be rather inclined to regard it as a force.

(40) T. C. H. asks: Will you please give me a good recipe for separating silver and gold when melted together? A. Melt the alloy, and while in a fused state pour it from some height into a vessel of water to which a rapid rotary motion is given. By this means the metal may be obtained in a finely granulated state. Add to the metal thus obtained a quantity of chemically pure nitric acid, and heat gently. When the solution ceases, which may be known by the discontinuance of effervescence, the liquid may be poured off. If any grains appear entire, more acid must be added until the silver is all dissolved. The remaining gold will have the appearance of black mud or powder, which must be thoroughly washed and melted. The silver is recovered by precipitation with muriatic acid and reduction. The precipitate of silver must be well washed with boiling water, and may be fused with niter or tested off with lead.

(41) C. L. W. asks: What will restore the color of a book slate which has turned white? B. Try a thin coat of lampblack in alcohol.

(42) I. F. M. asks: Would not the attractive force between two magnets with the opposite poles in contact be greater than that with which both magnets, with like poles adjacent, would attract an armature? In other words, would one magnet attract another of the same power with more than twice the force that it would the armature? A. No.

MINERALS, ETC.—Specimens have been received from the following correspondents and examined, with the results stated:

C. I.—They are iron pyrites.—J. W. W.'s specimens did not come to hand.—I. S. B.—It is a fine sand, consisting mostly of siliceous and alumina. It can be used for grinding and polishing powder. It would not be easy to grind it finer, except by suit-

able steel rollers; but the finer particles could be separated from the coarser by suitable sieves and bolters, and then the coarser could be ground, if necessary.—L. G. D.—There is nothing peculiar about this earth, except that it is quite white from being unstained by iron; and that it is in a fine powder. It consists principally of silicate of alumina.—J. H.—Both the specimens contain sulphuret of iron.—J. T. T.—It is sulphuret of iron (iron pyrites).—J. H. M.—They are worms growing from germs in organic tissues, like the interior portion of feathers.—J. J. J.—Your specimen is fine sand with scales of mica. The powder marked P is a mixture of particles of metallic lead with oxide of lead, carbonate of lead, chloride of lead, and sulphate of lead.

C. F. A. asks: How can I construct the sliding or guiding parts of a self-supporting drawer, so that it may be drawn out its full depth, from under a bench?—E. J. Q. asks: 1. What is laminated steel? 2. A gunsmith in Boston says he can take any gun barrel and make a laminated steel barrel of it. Can it be done?—W. H. B. Jr. asks: How can I make artificial firebrick?—L. K. Y. asks: What is Vienna lime?—C. H. M. says: 1. It is observed that the putty used in stopping up the nail holes in boats where galvanized nails are used soon becomes soft and friable, and ceases to afford adequate protection. To what is the change due? 2. What can be used, in place of putty, that will remain hard and firm in covering galvanized nails while exposed to salt water? T. H. U. asks: 1. How can I get rid of the red spider which infests house plants? I have tried tobacco water and smoke, but without effect. 2. How can I get rid of moths in carpets?—J. C. asks: 1. How can I cause a quick fermentation, to prepare molasses for distillation? 2. How can I take the taste of molasses from the spirit after distillation?

COMMUNICATIONS RECEIVED.

The Editor of the SCIENTIFIC AMERICAN acknowledges, with much pleasure, the receipt of original papers and contributions upon the following subjects:

- On Lining Engine Cylinders. By F. G. W.
On Splicing Large Belts. By T. G. B.
On Hydrophobia. By J. K.

Also enquiries and answers from the following: W. A. T.—J. S.—T. F. M.—W. H.—H. D. D.—C. G.—A. J. B.—H. E. B.—G. B.—G. W.

HINTS TO CORRESPONDENTS.

Correspondents whose inquiries fail to appear should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them. The address of the writer should always be given.

Enquiries relating to patents, or to the patentability of inventions, assignments, etc., will not be published here. All such questions, when initials only are given, are thrown into the waste basket, as it would fill half of our paper to print them all but we generally take pleasure in answering briefly by mail, if the writer's address is given.

Hundreds of enquiries analogous to the following are sent: "Where can illustrations of new designs for furniture be obtained? Who sells the best feed water heater and filter? Why do not makers of glue advertise in the SCIENTIFIC AMERICAN?" All such personal enquiries are printed as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

Rochester, N. Y., Dec. 24th, 1874.
MR. GEO. W. HARROLD, Rochester:
DEAR SIR—The "PROVY'S AUTOMATIC STEAM TRAP," fitted by you to our heating apparatus, has, after due trial, proved in every way satisfactory, and its working has surpassed our expectations. We now experience a considerable gain of heat from the same steam coil at a low pressure. It is a valuable saver of fuel, steam, and pumping, and its use results in less work for the Engineer. For economy in steam heating we can cheerfully testify to its great value. Yours truly, STEWART RUBBER CO.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were

Granted in the Week ending

December 15, 1874,

AND EACH BEARING THAT DATE.

(Those marked (r) are reissued patents.)

Table listing inventions and their patent numbers, including items like Adding machine, Alarm electric water, Anchor, Baby jumper, Bath, Battery, Bedstead, Bell door, Billiard table cushion, Blender, Bird cage, Blacking, Boiler cover, Boiler sectional steam, Boiler tube expander, Boiler water indicator, Butt-brooding machine, Boot heel blank, Boot heel die, Boot and shoe last, Boot and shoe nail, Bottle stopper, Bonquet holder, Bread slicer, Brick and the machine, Brick machine, Broiler, Buckle, belt, Buoy mooring attachment, Cable stopper, Can for paint, Car brake, Car brake, Car brake, Car coupling, Car propeller, Car spring, Car starter, Car dirt reflector and ventilator, Carpet lining, Cart brake, Cartridge, Casspool, Chair, Churn, Churn, Cigar, Clothes line, Conkling apparatus, Cornice runner, Cotton gin rib, Cotton velocipede picker, Cullinary vessel, Cultivator, Cultivator, Cultivator, Curtain fixture, Dental compound, Digger, Dish drainer, Door plate, Dryer, Egg carrier, Elevator, Elevator, Elevator, Engine, Engine, Engine crank and piston, Explosive compounds, Feed rack, Firearm, Firearm, Fire extinguisher, Fireplace, Flies, Flange machine, Frog, Fuel, Gauge, Gas and air, Gas apparatus, Gas cooking apparatus, Gas machine, Gas regulator, Gas retort, Gas retort, Gas pressure regulator, Gas, determining gravity, Glass tamper, Glass, manufacture of, Grain, apparatus for steaming, Grinding cylindrical surfaces, Grinding apparatus, Guns, attaching the fore-end to, Gutters, making wooden, Hame fastener, Harrow, Harrow, Harrow, Harrow, Harrow, Harvester, Harvester, Hat measurer and stretcher, Hay loader, Hinge, blind, Hoisting machine, Horse cheler, Horseshoe nails, Horseshoe nails, Hose coupling, Hose, making hydraulic, Hosery, stamping and stripping, Hudson, A. Gudenoge, Ironing board, Jack, lifting, Jelly jar, Knitting machine, Knob spindle fastener, Ladder, Lamp pendant, Lamp wick, Lath, spoke, Leather erasing machine, Leather, etc., scouring, Leather-sealing machine, Lock, alarm combination, Loom, Crompton & Wymann, Loom shuttle guard, Lubricating compound, Lubricator, steam cylinder, Match composition, Mechanical movement, Millstone bush, Mine safety attachment, Mooring attachment for buoys, Motor, vehicle, Mowers, track cleaner, Mowing machines, Musical damper action, Nail extractor, Needle holder, Needle blanks, swatch, Organ action, Organ, reed, Organ attachment, Overalls, Paint, manufacture of, Paper mill, Penell case, Penell, lead, Photograph brush, Piano forte attachment, Pipe joint, Pipes, ascertaining leakage in, Pitman box, Planing machine, Planter, corn, Planter, corn, Planter, check row, Plow, F. Striddle, Plow, C. M. Van Every, Plow point, Calvin & Wallace, Plow, shovel, Plow, sulky, Press, B. J. Day, Press, piston, etc., hydraulic, Propeller, screw, Propeller wheel, Dowler & Birdseye.

Table listing inventions and their patent numbers, including items like Pulley, stop, Pump, T. J. Reamy, Pump, plunger for oil, Pump valve, Punch, railway ticket, Railway axle box, Take, horse hay, Range, E. O. Brinckerhoff, Rein holder, Riveting machine, Roof, joisting boards, Rope molding, Rope socket, Sash fastener, Sash fastener, Sash holder, Saw mill, Saw mill, muley, Saw mills, set work for, Sawing machine, Scales, beam, Screw caps, for turning, Screw cap, chuck, Smith & Perry, Scriber, Sewing machine threader, Sewing machine clutch, Sheet metal, sheathing, Shirt hosom, Shoe pegs, making wire, Sifter, coal, Skeeping die, sled, Socket holding machine, Spring head blank bar, Strrup, Stone, artificial, Stone, etc., grinding and polishing, Stoves, cooking, Stove for burning kerosene, Strainer, Lipman & Friedberg, Stamp extractor and stone miller, Switch, Telegraph, printing, Telegraph, printing, Telegraph relay and sounder, Tin plate, making, Tube expander, Type setting machine, Tyre setter, Valve, compound, Valve for steam vacuum pumps, Valve, steam cut-off, Valve, stop, Vehicle motor, Vehicle seat, Vehicle seats, back for, Vehicle wheel, Vehicle wheel, Vehicle wheel, Vehicle wheel tyre, Vehicle wheel tyre, Velocipede for picking cotton, Vessels, sail for, Wagon and carriage safety guard, Wagon axle, Wagon spring seat, Wall paper striping machine, Wash stand, Washing machine, boiler, Washing machine, Goudonough, Weather strip, Welt trimmer, Whiffletree attachment, Windmill, Windmill, W. C. Nelson.

Table listing inventions and their patent numbers, including items like Coffin handle tip, Jewelry drop, Breast pin, Bracelet, Soap, Gas globe gallery, Buttons, Revolving fire arms, Inkstands, Advertising wagons, Typers, Trade marks registered, Cigars, Medical compound, Whisky, Cigars, Cannon goods, Baking powders, Mustard, Tobacco, Corners, Starch, Stationery, Cigars, Soap, Cocoon preparations, Schedule of patent fees, Canadian patents, List of patents granted in Canada, December 11 to December 17, 1874.