

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 This is for our information, and not for publication. 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. 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.

(1) C. V. A. asks: 1. What cement should be used to fasten to the revolving plate of a Toepfer-Holtz electrical machine the brass buttons against which the wire brushes rub? Will shellac answer the purpose? A. Shellac or sealing wax will answer. Equal parts of pitch and gutta-percha melted together forms a good cement for this purpose. 2. What cement should be used for attaching the paper and tin foil inductors to the stationary plate? A. Shellac varnish answers very well. 3. Can common window glass be used for making the plates? A. Yes. 4. How can I cut a 3 inch hole in a plate of glass? A. Make a number of concentric cuts with a diamond. Back up the glass around the outer circle with plaster of Paris. After the plaster sets, drop a bullet on the center of the circle from a distance of two feet or more.

(2) J. A. A. asks (1) which way a valve should be set in piping any steam apparatus; that is, should the steam when the valve is shut strike the top or bottom of valve? A. Always connect valves so as to shut against the constant steam pressure. This will allow of repacking the spindle stuffing box at all times. 2. Which is the most economical, to run with full boiler, that is, water up to top gauge cock, or down to one and one-half or two gauges, as the case may be? A. The water line in boilers for economy, which means dry steam, should not be at the high water mark, but at a safe medium between the high water mark, and the top of the tubes. As a general rule for horizontal tubular boilers of medium diameters, one and a half inches above the top of the upper tubes, to each foot of diameter, is a safe and economical height for the water line. This should correspond with the middle gauge cock when three are used or to the second (from bottom) when four are used. There is much difference of opinion among constructing engineers as to the exact positions of gauge cocks and water gauge, so that it becomes a necessity for those in charge of boilers to know the relative position of water gauge and gauge cocks above the tubes.

(3) M. asks: What will clean old printer's ink barrels? A. Kerosene.

(4) L. M.—By the census of 1880, there were 31,668 persons engaged in mining iron ore and 140,978 persons were employed in the manufacture of iron and steel. The whole number of mechanics engaged in manufactures was 2,738,950.

(5) N. F. H. asks: 1. I wish a receipt for making a paste polish for stoves. A. Black lead 1 pound, water 4 ounces, turpentine 4 ounces, sugar 1 ounce. Mix thoroughly. 2. Give me the process of making condensed milk. A. See the article "How Condensed Milk is Made," in SCIENTIFIC AMERICAN SUPPLEMENT, No. 156.

(6) W. F. L. asks the best receipt for japanning light castings without baking. A. You may purchase air-drying black varnishes through the varnish trade. A very cheap black varnish, quick drying, may be made by mixing lamp black with shellac varnish, adding a little 95 per cent alcohol for the required thinness.

(7) F. D. asks: If the size of a dynamo is doubled, does the lighting power also increase in the same proportion? A. The increase in power will be about quadrupled if the linear dimensions are doubled. When the sectional areas are doubled, the machine will have little more than double the power. If you intend making a machine larger than that described in SUPPLEMENT No. 161, we would advise you to follow instructions given in SUPPLEMENT No. 600.

(8) E. M. S. desires a receipt or method better than soap, water, and scrubbing brush for cleaning one's hands. A. Put 1/4 pound Glauber's salt, 1/4 pound chloride of lime, and 8 ounces of water into a little wide-mouthed bottle, and when required for use pour some of the thick sediment into a saucer and rub it well over the hands with a nail brush.

(9) H. S. B. asks: 1. If a ball is fired straight upward, with an initial velocity of 530 meters per second, how high will it go? A. 41,000 feet. 2. How long will it take to go and how long to return? A. 49 seconds going up, 52 seconds coming down. 3. Give the velocities at the beginning and end of each second going and returning. A. You can learn how to figure the several answers from Haswell's Engineer's Manual, which we mail for \$4, and from other works. 4. Will its penetrating power be the same practically at the end of the last second of its fall as when it left the muzzle of the gun? A. No; you must deduct for the friction of the air. 5. Does the air offer more resistance in the ascent than in the descent? A. Yes; by the value of the greater velocity. The propelling force overcomes both gravity and air friction to send the ball up. Only one of these factors, gravity, pulls the ball down.

(10) J. S. writes: 1. I make a beverage with essence of pineapple and pear acid, tart and brat sugar. It is made in a tub and drawn through a beer machine, it is clear and palatable, but I cannot get it to effervesce as bottled ginger beers do. A. This result can probably be brought about by the addition of sugar.

See the articles on "Effervescing Beverages," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 270, and also in the article on "Champagne Cider," in SCIENTIFIC AMERICAN SUPPLEMENT, No. 313, which we send for ten cents each. 2. In your journal, December 25, 1886, you give a formula for foam sirup made from quillaya bark. It is good and answers well, but a bit too expensive. Can you tell me how the liquid foamine is made? A. The foam may be produced by adding a suitable quantity of gum arabic, 2 to 4 ounces, dissolved in an equal amount of water. The usual mixture however, is quillaya bark 4 ounces, alcohol 4 ounces, glycerine 4 ounces, and water 6 ounces. Exhaust by percolation to make 1 pint of tincture. 3. How is the rose colored stain made that ladies use for their faces? It is only removed with lemon juice. A. Use finely bolted talc 4 ounces and carmine 2 drachms, with a little warm and dilute solution of gum tragacanth. 4. I use burnt sugar to color my beverage with. It is objected to by total abstainers as looking too much like ales. Can you tell me of a nice wine coloring that will not be affected by the acid? A. You can diminish or increase the amount of burnt sugar used when a suitable shade is obtained. This is more satisfactory than purchasing coloring materials, which you may buy at a chemist's shop. 5. Will peroxide of hydrogen mixed with spirits of ammonia turn white hairs black? A. You cannot. See the article on "Hydrogen Peroxide," in SCIENTIFIC AMERICAN SUPPLEMENT, No. 339.

(11) W. J. M. writes: 1. Where an engine is running machinery of very irregular load or motion, should not the slide valve be adjusted on steam ports so as to give equal lead on each port in order to secure as regular motion as possible? A. Yes. 2. Is it customary to give one-sixteenth to one-eighth inch more lead on front steam port than on rear port? A. This is sometimes done by engineers seeking the finest adjustment and allowing for piston rod area. 3. When admitting water and steam through the angle valves in to glass water gauge (new gauges), how do you proceed to avoid breakage of glass tube or gauge? A. Open the drip, then open the upper valve slightly and allow steam to blow through. Then open the lower valve slowly allowing the cold water in the lower pipe to run out. When running hot, close the drip and the hot water will rise in the gauge. Then open both valves wide. The cyclopedia you ask about describes many governors.

(12) R. B.—Transparent cosmetique is nothing more than a transparent soap, made with alcohol. Take a good suet or tallow soap, which is cut into very thin ribbons and exposed to the air and sun until it is thoroughly dried. It is then pulverized in a marble mortar and passed through a fine sieve. The powder thus obtained is directly dissolved in strong boiling alcohol. While the soap is liquid, the colors and perfumes are incorporated with it, 3 1/2 gallons of alcohol of 7849 sp. gr. are generally used with 50 pounds of soap. A still heated by steam or hot water is used for this operation, as a considerable quantity of alcohol would be lost in a common heating pan, and the direct application of fire would destroy the transparency of the soap.

(13) W. N. R. asks the form and use of a railroad Y. A. It is a turn out from and return to the main track in the form of a letter Y, sometimes used instead of a turntable. The term is also applied to a sort of frog used on horse car roads instead of a switch.

(14) W. S. asks the difference in the terms soluble, insoluble and reverted phosphates, or is soluble and reverted the same thing? A. In the manufacture of fertilizers the tri calcium phosphate is treated with sulphuric acid in order to convert it into the soluble monocalcium phosphate; but as it very rarely happens that sufficient acid is used for this purpose, we have three determinations that are usually made in the analysis of a fertilizer. 1. The total phosphoric acid. 2. The soluble phosphoric acid, and 3. The insoluble phosphoric acid.

(15) T. D. McC. asks: 1. How can I make a gelatine pad for copying writing? A. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 438, for this information. 2. In oiling the blades of my knife the white bone handle became discolored with the kerosene. What will restore its white color? A. Immerse in a dilute solution of binoxide of hydrogen. 3. How much No. 24 insulated wire should I use on each core of an electric door bell, and what will be the resistance? A. Use two ounces on each leg of the magnet, giving a total of about 5 ohms resistance.

(16) A. L. L.—The plant sent to be named is Solanum mammosum.

(17) C. D. asks: How many cells of the electric simple plunger battery described in SCIENTIFIC AMERICAN of August 20 will be required to produce the voltaic arc? A. About sixty.

(18) A. E. asks: Can the wire of an induction coil of the secondary current be used after it is broken in several places, by twisting the ends together? It is No. 26, silk covered. A. Twist the ends together and solder them, washing off carefully and drying before rewinding.

(19) E. D. asks what proportions to use of white lead and gum arabic powder, for a preparation for stamping with the perforated patterns. A. The white powder used consists of white lead with just sufficient gum arabic to make it adhere when pressed over with a heated iron. 2. How to clean the lead out of a rifle without injuring the barrel. A. Special brushes are made for this purpose, but when the lead is bright, as it is likely to be from recent firing, a good plan is to shake a small quantity of mercury well in the barrel, and it will loosen the lead so it will come out readily with a good swabbing.

(20) C. J. L. asks the ingredients used in the manufacture of the dye on a piece of wool he sends, saying it is a fast color and the skins are used in the trimming of saddles in Texas. A. The coloring matter is one of the fast aniline yellow dyes, known under the name of naphthol. They are used in the proportion of about 1 pound of dye to 100 of the material.

TO INVENTORS.

An experience of forty 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 unequaled 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

October 25, 1887,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions with patent numbers, including Agricultural boiler, Almonds from their hulls, Audible signal, Axle and bearing, Axle nut, Bales and appliance therefor, Battery, Bed, folding, Bed slat support, Beer cooling apparatus, Bell, car, Board, Boiler, Book and tally sheet, Books, machine for rounding and backing, Boot or shoe jack, Boot or shoe burnishing machine, Boots or shoes, shank stiffener, Boring machine, Bottle washer, Bottling gazogene, Box, Bracket, Brake, Brick, dry wall, Broom, brush, Broom hook, Bucket, bait and fish, Buckle tongue, mechanism for forming, Burner, Bustle, Button attaching machines, Button holder and buckle, Buttonhole barring machine, Button making machine, Caddy, tea or sugar, Calendar, Can heading machine, Cans, graduated inspection sash section for measuring, Car brake, Car coupling, Car coupling, H. P. Jones, Car coupling, E. M. Lane, Car coupling, Martin & Harris, Car coupling, W. McCubbin, Car coupling, T. B. Nutting, Car coupling, A. Ormsby, Car door, freight, Car heater, W. L. Horne, Car heater, R. B. Owen, Car heater, J. R. Pearce, Car, railway, Cars by steam, device for heating railway, Cars, grip for cable railway, Cars, steam heating apparatus for railway, Carding cotton, etc., machine for, Carding or separating fibrous material, machine for, Carrier for paint, lunch, etc., Cartridge holder, Case, See Photograph case, Cases, manufacturing jacketed, Cereals, preparing, Chain, drive, Chain link, horse power, Chamber vessel, Chamois skin with rouge, impregnating, Check rein holder, Cheese machine, Chimney cap, Chimney cap, Emery & Spence, Chuck, F. C. Larger, Chuck for watch movement plates, Chop grader and purifier, Chopper, Cigar box, Clasp, L. Messer, Clock, E. Kuhn, Closet, See Water closet, Clothes drier, Commode, Conduit system, hauling through, Cork puller, Corset, W. McCabe, Cotton chopper, Cotton chopper and cultivator, Coupling, See Car coupling, Pipe coupling, Thill coupling, Culinary or egg beater, Cultivator, M. H. Damerell, Cultivator, H. N. Timms

Table listing inventions with patent numbers, including Cutter, See Fruit, vegetable, and bread cutter, Straw cutter, Cutters, making right and left rotary, Decantation apparatus for effecting the automatic separation of solid matter held in suspension in liquids, Desk, C. Emmel, Die press, C. L. Hart, Dish washing machine, Door, H. H. Greenman, Door check, G. H. Lusk, Door check, C. A. Williams, Door mat, G. Kelly, Draught equalizer, E. R. Parker, Draught equalizer, C. D. Smith, Drier, See Clothes drier, Drill, See Grain drill, Dropper, See Dropper, Seed dropper, Dust pan, L. R. Reichert, Earth and rock drilling machine, Egg beater, Ejector, fluid, C. M. & C. E. Kemp, Electric conductor, underground, Electric current indicator, Electric machine regulator, dynamo, Electric motor regulator, Electric wires, railway rail and conduit for, Electrical combination lock, Electrical communicating system, Electrical resis ance board, Elevator, N. C. Kwik, Elevators, means for controlling, Engine, Evaporating in closed vessels, Exercising machine, Fans, system of automatic, Feather trimming, Feed trough, Fence, metallic, Fence weaving machine, Fence weaving machine, A. T. Hoadley, Fence, wire, Fertilizer, phosphatic, Filter, submerged sectional, Filter, water, Firearm, J. J. Speed, Firearm, breech-loading, Firearm, magazine, Fire extinguishing apparatus, Fire extinguishing apparatus, automatic, Fishing rod, Folding bracket, Foot warmer, Hartman & Frow, Frame, See Piano frame, Stretcher frame, Fruit picker, Fruit, vegetable, and bread cutter, Furnace for treating town and other refuse, Furnace register, J. Munson, Furnaces and means for operating them, rocking bars for, Gauge, See Siding or weatherboarding gauge, Galvanic battery, Gas, apparatus for manufacturing heating and illuminating, Gas, apparatus for the manufacture of heating and illuminating, Gas cut-off, Gas pressure regulator, Gas scrubber, Gaseous fuel, apparatus for making and burning, Locke & Richardson, Jr., Glass tile, manufacture of, Gloves, fastening device or button for, Rhodes, Goods, apparatus for delivering prepaid, Grain drill, Grain drill tube, Grain to flour, reducing, Grate, D. E. Bangs, Guard, See Hatchway guard, Gun, air, W. F. Markham, Gun, machine, H. Allender, Hair curler, J. T. Stansbury, Hanger, See Hat hanger, Harness, attachment for double, Harness loop, A. Ramsay, Harvester, grain binding, Harvester reel, Harvesting machine, cotton, Hat, H. F. Price, Hat hanger, A. W. Jaynes, Hatchway guard, automatic, Hay press, C. H. H. French, Hay sling, P. F. Chambard, Hay stacker, S. B. Gilliland, Heater, See Car heater, Heater register box, Heating apparatus, J. Lewis, Heating apparatus, water, Hoisting engines, brake for, Holdback, W. Reed, Holdback, C. W. Teetzel, Holder, See Button holder, Cartridge holder, Check rein holder, Lead and crayon holder, Pistol or mace holder, Sled iron holder, Spring holder, Hook, See Brush hook, Wire hook, Horseshoe, J. E. & E. W. Bingham, Hydraulic jack, L. Belden, Incandescent lights on arc circuits, governor for, C. D. Baker, Incubator, J. L. Campbell, Indicator, See Electric current indicator, Time sounding indicator, Induction coil, coin operated, Injector, J. Desmond, Insect trap, J. S. & S. B. Ezell, Jack, See Boot or shoe jack, Hydraulic jack, Pegging jack, Pump jack, Jar sealing device, Faatz & Calkins, Key, See Telegraph key, Knitting machine, D. C. Bellis, Ladder, J. G. Eddy, Lamp chimneys, rack for displaying, Lamp for railway trains, tail, Lamps, etc., suspension device for, Lathe for forming pivots of balance wheel shafts, Lath machine, sheathing, Lath, metallic, Lead or crayon holder, Leaves, reproducing natural