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 This is for our information, and not for publication.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 Toepler-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 gange 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 ¼ pound Glauber's salt, ¼ 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 590 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 burnt 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 8 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, 3½ gallons of alcohol of 0·849 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 simple plunge 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.

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.]

Agricultural boiler, J. H. & C. Rose ... 372,044
Almonds from their hulls, device for separating, J. L. Heald ... 372,146
Audible signal, J. Speirs ... 372,240
Axle and bearing, vehicle, E. V. Straight ... 371,991
Axle nut, G. B. Lumpkin ... 372,227
Bales and appliance therefor, tying cotton, F. T. Warburton ... 372,188
Battery. See Galvanic battery.
Bed, folding, F. R. Wolfinger ... 372,004
Bed slat support, W. Sloppy ... 371,985
Beer cooling apparatus, C. F. Elze ... 372,134
Bell, car, W. H. Hudson ... 372,265
Board. See Electrical resistance board.
Boiler. See Agricultural boiler.
Book and tally sheet, combined poll, W. M. Kinnard ... 371,948
Books, machine for rounding and backing, E. Crawley ... 372,128
Boot or shoe jack, F. W. Stone ... 372,279
Boot or shoe burnishing machine, F. W. Hood ... 371,941
Boots or shoes, shank stiffener for, W. Gordon ... 372,140
Boring machine, adjustable, G. W. Coonse ... 372,120
Bottle washer, J. B. Coolehan ... 372,205
Bottling gazogene, C. E. Avery ... 372,248
Box. See Cigar box. Heater register box. Paper box. Shut-off box.
Bracket. See Folding bracket.
Brake. See Car brake. Vehicle brake.
Brick, dry wall, E. A. Adams ... 372,007
Broom bridle, W. F. George ... 372,259
Brush hook, Chapman & Kennedy ... 371,923
Bucket, bait and fish, R. S. Craig ... 372,124
Buckle tongues, mechanism for forming, Kelsey & Hartshorn ... 372,152
Burner. See Vapor burner.
Bustle, N. F. Ardery ... 372,192
Bustle, H. O. Canfield ... 372,116
Bustle, A. Taylor ... 372,183
Bustle, D. Wertz ... 372,098
Button attaching machines, chute for, F. A. Smith, Jr. ... 372,045
Button, cuff or collar, J. A. Lieb ... 372,033
Button holder and buckle, combined, B. G. Corser ... 372,062
Buttonhole barring machine, H. L. Kemp ... 372,226
Button making machine, L. E. Chace ... 372,011
Caddy, tea or sugar, G. Hazelton ... 372,263
Calendar, A. Jording ... 371,944
Can. See Oil can.
Can heading machine, Angell & Kendall ... 371,912
Cans, graduated inspection sash section for measuring, G. Trubell ... 371,996
Car brake, L. Dube ... 371,930
Car coupling, J. J. Billingsley ... 372,111
Cas coupling, H. P. Jones ... 372,268
Car coupling, E. M. Lane ... 371,953
Car coupling, Martin & Harris ... 372,037
Car coupling, W. McCubbin ... 372,163
Car coupling, T. B. Nutting ... 372,062
Car coupling, A. Ormsby ... 371,966
Car door, freight, J. B. Batt ... 372,105
Car heater, W. L. Horne ... 372,071
Car heater, R. B. Owen ... 372,275
Car heater, J. R. Pearce ... 372,169
Car, railway, C. A. Davis ... 371,923
Cars by steam, device for heating railway, W. Martin ... 371,959
Cars, grip for cable railway, B. L. Harris ... 372,144
Cars, steam heating apparatus for railway, R. Coddington ... 372,061
Carding cotton, etc., machine for, F. Mills ... 372,038
Carding or separating fibrous material, machine for, W. S. Archer ... 371,913
Carrier for paint, lunch, etc., R. G. Johnson ... 372,267
Cartridge holder, J. J. Speed ... 372,181
Case. See Photograph case.
Cases, manufacturing jacketed, G. M. Stevens ... 372,242
Cereals, preparing, J. F. Gent ... 372,065
Chain, drive, H. H. Doubleday ... 371,929
Chain link, horse power, W. H. & J. Butterworth, Jr. ... 372,252
Chamber vessel, J. A. Davis ... 372,063
Chamois skin with rouge, impregnating, Darby & Blakeslee ... 372,207
Check rein holder, Moore & McMann ... 371,964
Cheese machine, C. & T. Holly ... 372,149
Chimney cap, Emery & Spence ... 372,017
Chuck, F. C. Larger ... 371,954
Chuck for watch movement plates, C. V. Woerd ... 372,002
Chuck, lathe, A. F. Cushman ... 371,926
Chop grader and purifier, J. R. Davis, Jr. ... 372,015
Chopper. See Cotton chopper.
Cigar box, S. Cohn ... 372,113
Clasp, L. Messer ... 372,164
Clock, E. Kuhn ... 372,074
Closet. See Water closet.
Clothes drier, E. Goss ... 372,217
Commode, L. B. Robb ... 372,237
Conduit system, hauling through, J. F. Munsie ... 371,965
Cork puller, D. J. Hurley ... 372,266
Corset, W. McCabe ... 372,162
Cotton chopper, J. J. Ballard ... 372,008
Cotton chopper and cultivator, Lindy & Hood ... 371,955
Coupling. See Car coupling. Pipe coupling. Thill coupling.
Culinary or egg beater, C. S. Pusey ... 372,043
Cultivator, M. H. Damerell ... 372,206
Cultivator, H. N. Timms ... 371,935
Cutter See Fruit, vegetable, and bread cutter. Straw cutter.
Cutters, making right and left rotary, C. H. Trask ... 372,049
Cutters, making rotary, C. H. Trask ... 372,050
Decantation apparatus for effecting the automatic separation of solid matter held in suspension in liquids, P. Gaillet ... 372,216
Desk, C. Emmel ... 372,135
Die press, C. L. Hart ... 372,262
Dish washing machine, P. E. Cox ... 372,123
Door, H. H. Greenman ... 372,066
Door check, G. H. Lusk ... 372,084
Door check, C. A. Williams ... 371,999
Door mat, G. Kelly ... 372,225
Draught equalizer, E. R. Parker ... 372,083
Draught equalizer, C. D. Smith ... 372,091
Drier. See Clothes drier.
Drill. See Grain drill.
Dropper. See Dropper. Seed dropper.
Dust pan, L. R. Reichert ... 371,973
Earth and rock drilling machine, E. W. Poorman ... 371,968
Egg beater, D. H. Rice ... 371,976
Egg beater, D. T. Winter ... 372,282
Ejector, fluid, C. M. & C. E. Kemp ... 372,024
Electric conductor, underground, H. Metzger ... 372,078
Electric current indicator, W. H. Markland ... 371,958
Electric machine regulator, dynamo, C. E. L. Brown ... 372,201
Electric motor regulator, A. W. Meston ... 372,231
Electric wires, railway rail and conduit for, J. T. Nulty ... 372,278
Electrical combination lock, C. J. Kintner ... 372,029
Electrical communicating system, A. G. Holcombe ... 371,940
Electrical resistance board, I. W. Colburn ... 372,012
Elevator, N. Ackwith ... 372,107
Elevators, means for controlling, J. I. Veeder ... 372,280
Engine. See Rotary engine. Traction engine.
Evaporating in closed vessels, A. Miller ... 372,079
Exercising machine, E. W. Murphy ... 372,272
Fans, system of automatic, J. Sands ... 372,174
Feather trimming, E. Tausky ... 371,992
Feed trough, J. D. Barber ... 371,918
Fence, metallic, J. A. Cooper ... 372,264
Fence weaving machine, F. W. Binford ... 372,197
Fence weaving machine, A. T. Hoadley ... 371,989
Fence, wire, A. F. Caldwell ... 372,060
Fertilizer, phosphatic, J. Reese ... 372,087
Filter, submerged sectional, Thacher & Breymann ... 372,185
Filter, water, G. G. Kennedy *et al* ... 372,025
Firearm, J. J. Speed ... 372,182
Firearm, breech-loading, W. M. Farrow ... 372,213
Firearm, magazine, F. F. Knous ... 372,153
Fire extinguishing apparatus, W. Neracher ... 372,167
Fire extinguishing apparatus, automatic, F. Grinnell ... 372,219, 372,220
Fishing rod, S. G. Monce ... 372,165
Folding bracket, W. F. Gage ... 372,215
Foot warmer, Hartman & Frow ... 372,145
Frame. See Piano frame. Stretcher frame.
Fruit picker, G. J. Kuehn ... 371,951
Fruit, vegetable, and bread cutter, C. F. Rigby ... 372,173
Furnace for treating town and other refuse, Richmond & Birtwistle ... 372,172
Furnace register, J. Munson ... 372,271
Furnaces and means for operating them, rocking bars for, J. Settle ... 372,176
Gauge. See Siding or weatherboarding gauge.
Galvanic battery, J. T. Armstrong ... 372,193
Gas, apparatus for manufacturing heating and illuminating, J. Roberts ... 371,978
Gas, apparatus for the manufacture of heating and illuminating, J. Roberts ... 372,238
Gas cut-off, F. M. Margach ... 372,086
Gas pressure regulator, P. Keller ... 371,946
Gas scrubber, W. Simpkin ... 372,178
Gaseous fuel, apparatus for making and burning, Locke & Richardson, Jr. ... 371,956
Glass tile, manufacture of, W. Buttler ... 372,268
Gloves, fastening device or button for, J. C. Rhodes ... 371,975
Goods, apparatus for delivering prepaid, A. Brunet ... 372,010
Grain drill, T. R. Crane ... 372,125, 372,127
Grain drill tube, T. R. Crane ... 372,126
Grain to flour, reducing, J. R. Davis, Jr ... 372,016
Grate, D. E. Bangs ... 371,917
Guard. See Hatchway guard.
Gun, air, W. F. Markham ... 372,161
Gun, machine, H. Allender ... 372,191
Hair curler, J. T. Stansbury ... 372,092
Hanger. See Hat hanger.
Harness, attachment for double, G. E. Boughton ... 371,921
Harness loop, A. Ramsay ... 372,171
Harvester, grain binding, W. P. Hale ... 372,067
Harvester reel, W. P. Hale ... 372,068
Harvesting machine, cotton, C. T. Mason, Jr. ... 371,960
Hat, H. F. Price ... 371,970
Hat hanger, A. W. Jeynes ... 372,151
Hatchway guard, automatic, J. A. Barclay ... 372,057
Hay press, C. H. H. French ... 371,932
Hay sling, P. F. Chambard ... 372,203
Hay stacker, S. B. Gilliland ... 372,138
Heater. See Car heater.
Heater register box, J. Detwiler ... 372,130
Heating apparatus, J. Lewis ... 372,032
Heating apparatus, water, G. W. Blake ... 372,249
Hoisting engines, brake for, N. B. Cushing ... 372,013
Holdback, W. Reed ... 372,236
Holdback, C. W. Teetzel ... 372,184
Holder. See Button holder. Cartridge holder. Check rein holder. Lead and crayon holder. Pistol or mace holder. Sad iron holder. Spring holder.
Hook. See Brush hook. Wire hook.
Horseshoe, J. E. & E. W. Bingham ... 372,112
Hydraulic jack, L. Belden ... 371,919
Incandescent lights on arc circuits, governor for, C. D. Baker ... 371,915
Incubator, J. L. Campbell ... 372,115
Indicator. See Electric current indicator. Time sounding indicator.
Induction coil, coin operated, W. Oliver ... 372,168
Injector, J. Desmond ... 372,209
Insect trap, J. S. & S. B. Ezell ... 372,257
Jack. See Boot or shoe jack. Hydraulic jack. Pegging jack. Pump jack.
Jar sealing device, Faatz & Calkins ... 372,212
Key. See Telegraph key.
Knitting machine, D. C. Bellis ... 372,195
Ladder, J. G. Eddy ... 372,133
Lamp chimneys, rack for displaying, B. O. Smith ... 371,986
Lamp for railway trains, tail, R. J. Armour ... 372,054
Lamps, etc., suspension device for, L. F. Griswold ... 372,289
Lathe for forming pivots of balance wheel staffs, C. V. Woerd ... 372,001
Lath machine, sheathing, O. A. Kelsey ... 372,075
Lath, metallic, M. J. Donovan ... 372,131
Lead or crayon holder, C. W. Boman ... 372,198
Leaves, reproducing natural, A. Thommen ... 372,094