

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 This is for our information, and not for publication.

(1) L. Z. asks: 1. Does a lion belong to the cat or dog family? A. The cat family. 2. Why is it necessary to have the pneumatic gun, described in SCIENTIFIC AMERICAN of October 31, 1885, so long in construction, and was there ever any other projectile tried than the one described in the same issue? A. The gun is required to be of considerable length to realize the full expansive force of the air.

(2) J. R. asks if glass is porous? A. According to the usual understanding of the word "porous," glass is not porous.

(3) A. F. H. asks: Is it an essential in a dynamo, substantially after the Siemens pattern, that the armature coil should be wound upon iron? Will not a wood core answer the purpose? A. A current can be generated in an armature without an iron core, but it will be very weak. The iron core seems to be necessary for the production of strong currents.

(4) N. J. asks: 1. What is the temperature kept up in the so-called "flasher" engines (i. e. steam engines without a boiler, where the steam required for each stroke is generated by injecting a small quantity of water into a heated vessel)? If above 350°, how is it that the water does not assume the spheroidal shape? A. The temperature may vary between wide limits. To generate a pressure of 100 pounds to an inch a temperature of 320° Fah. must be maintained. With sufficient heat, the water would assume a spheroidal condition. 2. "Flasher" engines are said to be impracticable, on account of their rapid destruction. In which way does this destruction take place? Is it owing to the rapid succession of high pressure and low pressure in the heated vessel, thus loosening the joints, and tending to tear the vessel, or is it the surface action on the heated brass, where the water spray strikes it? And if so, is the abrasion of the surface of the brass due to the mechanical action or to increased chemical action of the water jet? A. The rapid destruction of such engines is due to the oxidation of the steam generator.

(5) C. E. M. asks for information for making pocket battery for Edison's incandescent light. Explain theory of Holtz electrical machine. A. A battery which will operate a small Edison lamp for a short time, say a half hour or so, may be made by using two elements, each composed of one zinc rod, from 3/4 to 1 1/2 inch in diameter, and two carbon rods such as are used in electric lighting. The zinc must be amalgamated. The solution used is that formed of bichromate of potash, sulphuric acid, and water, which has been so often described in the Notes and Queries. For a description of Holtz electric machine consult SUPPLEMENT, Nos. 278, 279, 282, 701, and 321.

(6) F. J. S. writes: I am using a McIntosh galvanic battery, the hard rubber cups of which have become leaky; is there any way of repairing them? A. Stop the leaks with a cement composed of equal parts of gutta percha, brown pitch, and shellac.

(7) A. J. H. writes: 1. I have for some time been using glass lamp chimneys known as "lead glass," also called fireproof; very often they fly to pieces, especially in cold weather; can you explain the reason why? A. It is due to the unequal expansion caused by heating one part of the chimney more than another, or by the exposure of one part of the chimney to a draught of cold air, causing a sudden contraction of that part. 2. Some claim that it is caused by the friction raised by rubbing them when cleaning them with a cloth, while others hold that it comes from the gas generated by the coal oil that accidentally gets inside. A. We think that the answer to your first query is sufficient explanation.

(8) G. F. asks: 1. Can you refer me to back number, or repeat solution to plate brass or copper, in a bath, without electric current? A. You do not say what metal you desire to use in plating the copper. 2. Can you tell me how to make and apply the black japan or paint on woodwork, like trays, handles, pen holders, and the like. A. You will find full instructions for japanning in SUPPLEMENT, No. 316.

(9) J. F. asks (1) for an ink for hand stamps that will not injure the rubber. A. Mix and dissolve 2 to 4 drachms aniline color, 15 ounces alcohol, 15 ounces glycerine. The solution is poured on the cushion and rubbed in with a brush. 2. How to make a varnish or covering for woodwork, such as the black handles on enameled water pails, and the like. A. 1 ounce nutgall broken into small pieces; put into barely 1/2 pint vinegar, which must be contained in an open vessel, let stand for about 1/2 hour, add 1 ounce steel filings; the vinegar will then commence effervescing; cover up, but not sufficient to exclude all air. The solution must then stand for about 2 1/2 hours, when it will be ready for use. Apply the solution with a brush or piece of rag to the article, then let it stand until dry; if not black enough, coat it until it is, each time of

course letting it remain sufficiently long to dry thoroughly. After the solution is made, keep it in a closely corked bottle.

(10) J. W. W.—The moulds for rubber stamps are made of plaster of Paris. The rubber is pressed into the mould with a small press or clamp, then placed in a small vulcanizing oven heated by steam or a furnace to a temperature from 250° to 275°. We do not know the cost of apparatus.

(11) R. P. M. asks: What is the rule for silvering on glass, such as door knobs and ornaments? I have some glasswork which is hollow, and would like to silver them on the inside only. A. See "How to Silver Glass," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 106. Take silver nitrate 1 ounce, distilled water 1 pint, strong liquor ammonia sufficient quantity, added very gradually, to first precipitate and then redissolve the silver; then add honey, 3/4 ounce. Put sufficient quantity of this solution in the globe, and then place the globe in a saucpan of water; boil it for 10 to 30 minutes, occasionally removing it to see the effect.

(12) D. P. asks the per cent of starch in white and yellow corn, also of potatoes. A. The average quantity is about 53 1/2 per cent in flat yellow American maize and 54 1/2 in the flat white and round yellow varieties. From 66 to 75 per cent of starch is obtained by the manufacturer from the potato.

(13) M. B. S. B. writes: I have a lot of woolen clothing that has become soiled with linseed oil house paint. Please inform me what will remove it. A. Use turpentine, or benzine, and soap. See table on Removal of Stains and Grease Spots, contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 158.

(14) W. H. D. writes: I spilt tincture of iron on the edge of a book so that all the leaves are stained a little. Is there any way it can be removed without destroying the book? A. The tincture of iron is soluble in a solution of warm oxalic acid, in dilute hydrochloric acid, and in citric acid. These substances will readily remove the iron, but great care must be taken to avoid injuring or destroying the paper of the leaves.

(15) E. McG. asks what the ingredients of "Ayer's Hair Vigor" are. A. According to Professor Chandler's analysis of this preparation, it contains 2.89 grains of lead to the fluid ounce. It is therefore probably a perfumed solution of sugar of lead.

(16) W. F.—All of the cotton factories in this and every other country produce cotton waste. All machine shops and all marine, river, and stationary engines, as well as all factories running machinery, use it.

(17) P. D. L. asks a good recipe for walnut stain for pine wood. A. Make a solution of 3 ounces each permanganate of potash and sulphate of manganese, in 5 quarts hot water. Apply several times with a brush or dip small articles. When the proper tinge is obtained, oil or varnish the work.

(18) O. C. P. desires a cure for stammering. A. Reading aloud for several hours daily is often advised, but this fails to prevent stammering in speaking. The latter appears to be a nervous affection, and its abatement depends upon the individual.

(19) R. K. S. asks: Would the inletting of the ocean to the Sahara desert have any influence on the equilibrium of the earth? If not, why? A. Yes. It would change the center of gravity, proportionally, as the relative weight of the water let into the desert would to the whole weight of the earth divided by 2.

(20) H. G.—The piston travels fastest on the first half of its stroke, due to the impulse of the full pressure of the steam. This is not perceptible in engines with heavy flywheels running a large amount of shafting and machinery. It is very perceptible in the motion of the engines of sidewheel steamers.

(21) J. S.—Augers were twisted by hand hot by holding one end in a vise, by the early makers. Now they are made in dies and rollers by machinery, much of which is the subject of patents. The finishing is done with emery wheels and buffs.

(22) W. S. C.—It is generally conceded that a high speed engine requires more lead than a slow speed. There are differences of opinion as to the requirements of the various kinds of engines, and engine builders generally set the lead to suit their own experience.

(23) T. S. W.—Pure, sweet, cold pressed lard oil mixed with ten per cent of Pratt's astral oil makes a good oil for lanterns. We cannot give the mixture sold by the dealers, as every one mixes to suit his trade.

(24) J. S. asks: 1. What amount of horse power would be required to force from the bottom of a well 30 feet deep 200 gallons of water in a minute, and what size pump and pipe would be required? A. Two horse power, including friction of pump. Pump should have 7 inch by 12 inch cylinder, and be worked 100 times a minute for 200 gallons. 2. If a vessel containing 50 gallons of air was placed at a depth of 30 feet under water, what amount of pound weight would it raise to the surface, how long would it be in making the ascent, and what amount of horse power would it produce? A. Fifty gallons of air will lift about 425 pounds in water. If placed at a depth of 30 feet, it must not be subject to compression for the above duty. If placed in an elastic inclosure, it will not lift more than 212 pounds at that depth, but will increase its lifting power by expansion as it rises. The time required to come to the surface might be 5 or more seconds according to the work required, and might produce 1 1/4 horse power.

(25) J. A. H. writes: In replies to correspondents, October 3, 1885, is a recipe for aerated bread. 1. Are the directions there complete, for making this bread? A. Yes. 2. How much water should be used to the soda and acid? A. Sufficient to make a

dough. 3. Should any salt be used? A. No. Carbonate of magnesia and the muriatic acid combine and form salt. 4. Will the muriatic acid found at the stores do to use? A. It is best to buy the article from the druggist.

(26) H. and M. have an argument about potassium. M claims it is a mineral, H says it is a metal. Which is right? A. H is right. Potassium is a metal, possessing curious qualities. It bursts into flame when it touches water. It is silvery in appearance, but quite soft—softer than lead, and much lighter in weight than the latter. Potassium, although in itself soft, is a constituent of certain minerals found in one of the hardest rocks, namely, granite.

(27) S. T. writes: In SCIENTIFIC AMERICAN, of October 17, you state that a sailboat would not move forward if the wind from a bellows on board were directed against her sail. This of course is correct if the bellows were parallel and the sail at right angles with the boat; but supposing the bellows were placed at right angles with a catboat, and directed against a sail held 30 or 35 degrees from the boat, as in sailing across the wind, would not there be a perceptible motion forward on still water? A. The principle of an artificial blast athwartship impinging upon an inclined surface or sail, and thereby imparting motion to the boat, is correct; but the mechanical effort produced in proportion to the power consumed is so small that any practical allusion to such projects savors of the ridiculous. The bellows will do more work if pointed astern and blown against the air or water.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

December 1, 1885,

AND EACH BEARING THAT DATE.

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

Table listing inventions with patent numbers and dates. Includes items like Advertising sign, Air engine, Ash pan and sifter, Augers, Baby jumper, Bag, Bag fastener, Bag lock, Baking powder, Bath and wash tub, Battery, Bed bottom, Bed cover fastener, Bed, invalid, Bed, sofa, Bed, spring, Bed, spring, Beehive, Beer, apparatus, Bell, automatic alarm, Belt stretching machine, Bicycle, Billiard tables, Blank feeding mechanism, Boiler, Boiler covering, Boiler furnace, Boiler furnace grate, Boiler furnace, steam, Boiler furnace, steam, R. C. Carpenter, Boiler furnace, steam, M. A. Foster, Boilers, furnace for heating steam, Book rest, adjustable, Boot, J. F. Shaw, Boot, G. Vallant, Boot or shoe nailing machine, Boot or shoe sole, Bottling machine, Bouquet holder, Box, Bracelet clasp, Brake shoe, Brick machine, Brick or tile die, Buckle, R. M. Dillard, Buckle, suspender, D. L. Durand, Buckle, suspender, J. Spruce, Cab, hansom, W. Johnstone, Cabinet, jeweler's, H. Knickmann, Calculator for measurement of logs, tabular, C. Rich, Camera, Can, Car coupling, Car coupling, J. Hinn, Car coupling, S. Moorman, Car door, grain, W. McGuire, Car heater, W. C. Baker, Car, railway, J. A. Enos, Car wheel, J. Ferguson, Carbon baking box, W. J. Possons, Carrier, See Straw carrier, Trace carrier, Cartridge, W. Lorenz, Cartridges, mould for making compressed powder charges for, E. Rubin, Case, See Ticket case, Cash box system, automatic, J. C. Martin, Caster, J. L. Purple, Caster, R. S. Thompson, Casting mould, metal, W. S. Platt, Centrifugal machine, E. Rothe, Chain link, J. P. Preston, Chain machine, F. P. Hinds, Chains, appendage for ornamental, J. L. Sweet, Chair, See Nursery chair, Chair, Hall & Lane, Chair, A. F. White, Chimney protector, W. Hubbard, Chuck, lathe, G. A. Barnes, Churn, F. L. White, Churning device, F. L. Foushee, Cigar boxes, press board for, C. Lorenz, Cigar bunching machine, Borgfeldt & Schutz, Cigar cutter, W. M. Ducker

Table listing inventions with patent numbers and dates. Includes items like Cigar cutter and perforator, Clasp, Cleaner, Clevis, Clipping machine, Clover huller, Clutch, Metzger & Cooper, Coconut pulp, F. Senn, Coffee roaster, M. J. Clark, Coffin, W. Holdsworth, Collar attachment, horse, G. Van Wagenen, Coloring machine stop motion, F. P. Fitz Simons, Combination wrench, W. S. McKenzie, Connecting rods, stub end for, L. Griscom, Cornet tuning attachment, W. Buckley, Corset shaping machine, T. S. Gilbert, Cotton gin, Nixon & Cress, Cotton picker stem, C. T. Mason, Jr., Cotton press, R. F. Horton, Coupling, See Car coupling, Railway rail coupling, Thill coupling, Coupling bolt, M. Miller, Cuff holder, E. Smith, Cultivator, J. Q. Adams, Cultivator, H. C. Stahl, Cultivator and furrower, wheel, I. Libbey, Cultivator and harrow, D. Walls, Curtain stretcher, L. E. Lafferty, Cupid for railway cars, Enright & May, Cut-off, automatic, P. Sears, Cut-off for engines, electro magnetic, R. A. Bailey, Cutter, See Cigar cutter, Feed cutter, Hay or straw cutter, Desk, school, J. M. Sauder, Die, See Brick or tile die, Digger, See Potato digger, Disinfecting water closets, W. M. Ernst, Domestic and agricultural boiler, E. Richmond, Domino, F. H. Richards, Dovetailing machine, L. P. Garcin, Dowel pins, machine for making, C. J. Robinson, Drawing roll, N. L. Randall, Drier, See Fruit drier, Drill, See Grain drill, Ratchet drill, Drying apparatus, platen for, A. S. Nichols, Earring, G. M. Hathaway, Egg beater, G. H. Thomas, Electric machine, dynamo, H. Muller, Electric machine regulator, dynamo, W. H. Schlesinger, Electric machines, armature for dynamo, C. T. Jackson, Electric signaling apparatus, J. P. Tirrell, Electrical conductors, contact device for suspended, C. J. Van Depoele, Electrical indicator, C. H. Pond, Electrodes for secondary batteries, manufacturing, E. Jones, Electroplating, apparatus for, H. R. Boissier, Elevator, See Hydraulic elevator, Elevator belts, slat attaching device for, D. Maxwell, Elevator safety catch, H. Albert, Elevator safety device, W. W. Jackson, Elevator stop, automatic, J. S. Ashton, Eng gate, wagon, H. H. Turner, Engine, See Air engine, Traction engine, Envelope, J. N. Williams, Envelopes, machine-made paper for, F. H. Deakards, Evaporating saline or saccharine liquids, system of inclined troughs with inclosed steam pipes for, C. N. Waite, Extractor, See Nail extractor, Eyeglass spring and nose guard, G. W. Wells, Face protector, E. T. Stover, Faucet, fluid discharge and vent, W. S. F. Dillon, Feed cutter, H. G. Shippis, Feed cutter, M. R. Vinson, Feed trough, G. Laning, Feed water heater, D. Lee, Feeding hogs, device for, H. Sloan, Felt and expelling water from the same, machine for compressing and evening, C. H. Merritt, Fence, J. Du Bois, Fence building machine, W. N. Parrish, Fibrous material from wood for surgical and other purposes, manufacture of, J. Odelga, File, H. G. Piffard, Filter, W. Neracher, Filtering liquids, apparatus for, M. M. Monsanto, Fire escape, J. R. Fuller, Fire escape, P. H. Montague, Fire escape, C. S. Watson, Fire escape ladder, A. Rose, Fire extinguishers, automatic sprinkler for, A. M. Granger, Fireproofing and other preservative purposes, composition for, A. J. Martin, Fishing rods, reel holder and fastening for, F. D. Divine, Flue cleaner, L. Duennisch, Folding apparatus, L. C. Crowell, Folding machine, L. C. Crowell, Fruit drier, A. J. Dodge, Fruit drier, J. C. Gunn, Fruit drier, M. Reynolds, Jr., Fur seal and other skins, removing stagy hairs from, A. Paterson, Furnace, See Boiler furnace, Furnace, J. A. Price, Furnace, W. Westlake, Gauge, See Railway track gauge, Game apparatus, G. Marzari, Garment supporter, W. H. Frost, Gas, apparatus for making illuminating, F. Egner, Gas conveying apparatus, T. A. & A. A. Connolly, Gas lighter, electric, J. Geary, Gas mains, detecting and carrying off leakage from, G. Westinghouse, Jr., Gas mains, detecting and closing leaks in, G. Westinghouse, Jr., Gas regulator and cut-off, J. P. Reinecke, Gate, See Railway gate, Gate, Austin & Chamberlain, Gate, J. H. Lamoureux, Gate, D. Spell, Generator, See Steam generator, Glass tile and making the same, J. Haley, Glove or mitten, felt, W. P. Hyatt, Gold separator, S. C. Oliphant, Grading machine, road, J. D. Adams, Grain binder, D. N. Green, Grain binder cord holder, J. O. Jackman, Grain drill, seed sower, fertilizer distributor, and roller, combined, T. R. Crane, Grain separator, H. Bailey, Grapping or holding device, M. T. Wyatt