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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 This is for our information, and not for publication.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) J. A. K. writes: I have a telephone wire running from my house to the store; how can I attach a ground wire to prevent lightning from following the telephone wire into the house or store?

A. Carry a wire from your gas fixtures or water pipes to the vicinity of your telephone. Let it terminate in a metal comb about two inches long, with forty or fifty sharp teeth like a saw. Screw this to a board. Opposite, and with its teeth facing those of the first comb, place a second one connected to the line wire near the telephone, between it and the line. Have the teeth of the two combs as close as possible without absolute contact existing. Use one of these attachments at each end of the line.

(2) E. R. W. asks: 1. Does it take a current of higher tension to run an incandescent lamp than an arc lamp? A. In general terms, it is the other way; more intensity is needed for the arc light. 2. Will a ten inch Grenet cell run a 6 candle power incandescent light? A. No. 3. Suppose I wish to light a private residence with incandescent lamps; would it be economical and profitable to use a Shipman automatic engine to run a dynamo of sufficient size? A. Electric lighting on the small scale with special plant is not economical as a rule. 4. What is the best battery for telegraphic purposes? A. For closed circuit, gravity (sulphate of copper) batteries are largely used. For open circuit work, Leclanche cells.

(3) J. T. D.—A solution of orange shellac in alcohol is generally used on the plates of electrostatic machines.

(4) C. P. K. asks: Will a solution of bichromate of potash and sulphuric acid corrode or eat its way through a wooden tank lined on the inside with lead? Can the same fluid mixture be contained in a wooden tank coated outside and in with asphaltum varnish? If so, how long would such a tank last? A. Either tank will answer for battery fluid for an indefinite period. If oil of vitriol and bichromate of potash, undiluted by water, were used, then a lead lining would be requisite. Exact durability cannot be given.

(5) H. W. B. asks: 1. What difference does it make in the strength of an electro magnet whether the coils are wound in regular layers or put on roughly? A. The power of an electro magnet depends on the proximity of the exciting wire to the core and on the number of convolutions. To secure these ends, the wire should be smoothly laid. 2. Which would work best on a short telephone line of 200 feet in length—telephones wound with No. 34 cotton-covered wire or those wound with No. 36 wire? A. The No. 34 wire telephone. 3. What is the penalty for making, selling, or using a telephone? A. This is determined in the courts; there is of course no statutory penalty. 4. What could be done to a person for connecting a telephone to a line wire if it did not interfere with the working of the line, and he could not use it for conversing, but only for listening? A. This might give rise to a suit for infringement or for trespass, or possibly something much more serious than either of these. 5. Where is the best place to take a course in electrical engineering, and also in mechanical engineering, with length of courses? A. The Stevens Institute of Technology, Hoboken, N. J.; the Boston Institute of Technology, Boston, Mass.; or the Sibley Mechanical College of Cornell University, Ithaca, N. Y. The course is generally four years.

(6) O. W. asks how to make a cheap and also a very good battery. I have three glass jars, each about 8 inches high and 6 inches wide. A. Use flat carbon plates, about 8 inches by 4 inches by $\frac{1}{4}$ inch, and zincs to match, but thinner. Amalgamate the zincs by rubbing with mercury, keeping the surface moist with dilute sulphuric acid. One zinc may be used as a rubber for the other. For exciting fluid, mix five fluid ounces of oil of vitriol with three pints of cold water, and after it has cooled add six ounces finely powdered bichromate of potash. A little nitric acid will improve the constancy. Each cup contains one plate of zinc and one of carbon; connect zinc of one to carbon of next; do not let the plates touch each other under the fluid.

(7) W. J. McC. asks how to take the sound off an acoustic telephone into a receiver, and also how to make the receiver? A. Acoustic telephones, so called, consist of two similar instruments, one at each end of the line. Each instrument is substantially a tense drumhead, generally somewhat funnel shaped. To its center is attached one end of the line wire, which may be of steel, and which strains the membrane by its pull. The line wire is directed in its course by loops of leather or muslin. Sharp bends are prejudicial. The wire must be tightly strained from drumhead to drumhead. On speaking into one instrument, the sound is repeated in the other. We refer you to advertisements in our columns.

(8) F. D. H. asks: 1. What gears are required to cut a thread of $\frac{9}{16}$ per inch on a single geared lathe, whose lead screw is 6 per inch?
A. Spindle 12 24 36 48
 — or — or — or —
On screw 19 38 57 76

2. What cement will resist the action of alcohol (for an unlimited time), and will attach smooth metal to glass? A. Glue and whiting if the alcohol is anhydrous.

(9) A. H. H.—The independent cut-off in a steam engine is more perfect in its action and considered more economical than cutting off and exhausting by one valve. Engines with independent cut-offs are more expensive than the plain ones. Good clean tin cans are worked up into stamped goods, such as toys, etc., but will not pay freight charges.

(10) C. C. S.—In both the Bessemer and Clapp-Griffiths process, the silicon is first oxidized and combines with the ferrous and manganous oxides to form a siliceous slag. The carbon then burns, the disappearance of the carbon flame indicating the end of the reaction. We believe that a basic lining has never been used in the Clapp-Griffiths converter, but there is no reason why it should not be. The mixture of fire clay and magnesia which you suggest would not work, as any excess of silica in the slag would set free the phosphorus anhydride from any oxide of iron with which it had combined, and the phosphorus would be again reduced by the carbon, or, at such an elevated temperature, even by the iron itself. You would thus defeat the very purpose for which the magnesia and lime are employed.

(11) K. E. E. M.—The furnace referred to in our article on the Clapp-Griffiths steel process as having produced 325 tons of pig iron in 24 hours is located at the Edgar Thomson Steel Works, Bessemer, Pa. We believe that it is designated as "Furnace D," and that the diameter of the bosh is 21 feet, the height of the shaft being over 100 feet. As far back as the spring of 1883, it had produced 305 tons of pig metal in 24 hours, and we were informed, at the time of our last visit to the works, in February, that the record since then had reached 325 tons.

(12) W. R. P. asks the highest temperature (C. scale) yet produced by combustion, also by electric arc? A. 1,600° C. in steel furnaces. About 2,500° C. by hydro-oxygen blowpipe. Probably 500° higher by electric arc.

(13) N. T. G. asks: What will darken the color of a mustache without using common dyes? A. There is nothing more satisfactory than the common silver hair dyes. An excellent brown dye is described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 356, under title of "A Bismuthic Hair Dye." The expressed juice of the bark or shell of green black-walnuts is the simplest form of hair dye.

(14) M. H. S. writes for a recipe for the glaze known as salt glaze, such as is used on cheap yellow and Rockingham pottery. A. Common salt is placed in the oven with green wood for fuel to form an irritable smoke. This salt, heated to redness, receives, and is decomposed into hydrochloric acid and soda, the vapors of which fill the oven. The inside and outside of the vessel submitted to this process are thus simultaneously glazed. See Wagner's Chemical Technology, under "Pottery."

(15) F. G. B. desires a receipt for coloring the skin to a dark complexion and a preparation to take it off. The color to be that of a Cuban or Spaniard. A. The general principle in making such preparations consists in mixing the dry powder, a little darker than the desired tint, with some fat, such as petrolatum or lard. A formula for a brown face paint is as follows. Take of:

Burnt umber.....1 part.
Cacao butter.....6 parts.
Oil of neroli.....5 drops.
Melt the cacao butter, add the umber, and while cooling make an intimate mixture, adding the perfume toward the last. Wash it off with vaseline.

(16) W. M. B. asks: How are silver flowers worked into iron for ornamentation? A. The design is etched out of the iron by means of acids, and the silver is then brazed in and polished down.

(17) D. H. N.—The largest driving wheel on a locomotive in the world is said to be that of one built for the Bristol and Exeter Railroad, England, in 1859. It was originally 9 feet in diameter, but its size was reduced, and is now 8 feet 10 inches.

(18) M. F. D. asks (1) a method for effectually deodorizing carbon bisulphide. A. Distill the carbon disulphide with quicklime, the two substances having been in contact for 24 hours. The distillate to be received in a flask partially filled with clean copper turnings. 2. In a mixture of rubber cement, with a given quantity of ultramarine blue added, does the ultramarine blue add to the unpleasant odor of the carbon bisulphide? A. We should think not; but you can obviate any difficulty of that character by using chloroform or ether as a solvent for the rubber.

(19) R. H. R. asks if cast zinc plates will do in a Grove's battery. A. They will answer, but rolled plates are preferable on account of lightness and uniformity of composition and structure.

(20) C. B. H. asks for black ink for use on the hektograph. A. Use a strong aqueous solution of nigrosine (aniline black) in the proportion of about 1 of the coloring material to 5 or 7 of water. It must be a saturated solution, rather thick.

(21) F. R. W. writes: What can be put in melted sulphur to toughen it, so that articles cast from it will not crack when cold? Sulphur alone is apt to crack if heated unevenly. A. When sulphur heated to 230° is suddenly poured into cold water, it remains soft, and so plastic that it may be advantageously employed for obtaining impressions of woodcuts and engraved plates; these impressions, as the sulphur again hardens after a few days, are used as moulds. We know of nothing that can be added to sulphur to lessen its brittleness, but it is used as above described for casts.

(22) E. Y. E. desires a sure way to detect sewer gas in a house, and the remedy. A. There is no direct way of always certainly detecting the presence of sewer gas. It can be inferentially determined where defective plumbing exists. The only remedy is to be sure that your plumbing is perfect.

(23) G. A. D. desires a formula which when applied to highly polished brass will keep it absolutely bright, and free from tarnishing. A. Thinly coat with a varnish of bleached shellac and alcohol.

(24) H. H. says: If I have a tank containing compressed air, 10 pounds to the inch, and the temperature of air in the tank is 80°, what will be the increased space the air would occupy with same pressure, the temperature being raised to 160° Fah.? What is the law or rule governing air under such conditions? A. For approximate calculations allow one-fifth of 1 per cent expands on per degree Fah. The true rule is that air under constant pressure expands one forty-ninth of its volume at 32° F. for each degree F. This would give for your case the following result: 1,000 parts of air at 80° would expand at 160° to 1,148 parts.

(25) W. M. S. writes: I have bought a one barrel breech loading shot gun, Spanish make, very light, and it gives a very strong rebound or kick in firing. A. This is a common fault of light guns. They recoil less with light charges of both shot and powder, but the difficulty cannot be entirely overcome without permanent weight added to barrel and stock.

(26) R. A. H. writes: I saw a man selling what he called a magic glass, a piece of plain window glass, which by breathing on would display figures. How was this done? A. The drawing is made on the glass by means of soapstone or stearite; when breathed on it appears, and disappears as the moisture from the breath dries away.

(27) A. H. G. asks how to color white-wash brown—a cheap color, that will not wash off easily. A. Add brown sienna to the whitewash in order to produce the desired color, and mix with alum or glut water.

(28) J. M. L.—Sugar, glycerine, and gum arabic are the articles used to produce the glossy appearance of ink. Not enough of either must be used to impede the flow.

(29) W. H. asks (1) if there is any fluid compound (not volatile under a temperature of 300° Fah.) more expansive than mercury. A. No. 2. What is the most expansive metal or other solid known not destructible under a temperature of 300° Fah.? A. Zinc.

(30) "4man."—There is no necessary relation of resistances between the secondary coil of the induction coil and the telephone. The primary of the induction should leave about $\frac{1}{2}$ ohm resistance; for the secondary and the telephone, 80 ohms is good.

(31) C. H. S. asks about tempering mill picks. A. There is no special art in tempering mill picks different from the operation with other cutting tools for hard substances. Water at ordinary temperature with a little salt in it. Do not draw the pick thin, and use great care not to overheat the corners, which is the cause of all the trouble. A slow, dull fire for hammer heating as well as for hardening. "Temper thick and grind thin" is an old maxim.

(32) H. & S. write: We recently bought a keg of poster printing ink (black), which is so thick that it will not distribute on the rollers. How shall we thin it? A. With boiled oil. You have probably been using your ink in a cold room, and it would, most likely, work well in warm weather.

(33) W. L. R. asks: Why is the center of connecting rods of stationary engines made heavier and larger than at the ends? A. To prevent vibration.

(34) C. Q. H. asks the strongest wood, in proportion to its weight, that would be suitable for making framework for a flying machine? A. Lance wood.

(35) G. G. McC. asks how to get a black dye or stain for cast iron that can be varnished. Dip in a solution of gallic acid and water, or make by boiling gall nuts in water, in a glass or earthen jar.

(36) J. H. (of California) writes: I dry quite a good deal of fruit, apricots, peaches, apples, etc., by artificial heat. Fruit is placed on trays made of iron. Have used galvanized iron, but the coating does not last more than one season. I then coat with shellac varnish. Can you suggest anything better and more lasting? A. We know of nothing better than cheese cloth on wood gratings, often renewed, for health and cleanliness.

(37) G. R. asks the acids and any component parts of fluids that make a mantel piece ornament in a bottle, I think zinc and acetic acid. The ornament is inside the glass bottle. A. Dissolve 1 ounce lead acetate (sugar of lead) in $1\frac{1}{4}$ pints distilled water, add a few drops of acetic acid, place the liquid in a clear white glass bottle, and suspend a piece of zinc in it by means of a fine thread suspended from the cork.

(38) F. E. asks whether water in range boilers heated by water back is suitable for cooking purposes. A. It is objectionable, although the hot water from the range boilers is a great deal used by cooks, for boiling vegetables and meats. If the boiler is tin lined and much water used through it, there is less objection. Water that has remained hot in the boiler a short time gives an unpleasant odor, and if in a galvanized iron boiler, is poisonous.

(39) W. H. R.—Lead 6 parts by weight, bismuth 7 parts by weight, cadmium 1 part by weight, make an alloy that melts at 180° Fah.

(40) G. A. S. writes: I have seen the statement that the greatest number of revolutions ever recorded of a shaft making was 57,000 per minute in a very fine machine built in France to test the speed of light. Is this correct? A. The highest velocity in Wheatstone's apparatus was 48,000 per minute. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 165, for full description. Also SUPPLEMENT, No. 168, for experiments on the duration of the electric spark with speed of 20,000 per minute. Have no doubt that 57,000 is feasible.

(41) W. P. T. says: Please give me the greatest speed of any boat you know of. A. A new torpedo boat by Yarrow & Co.—2766 miles per hour.

(42) C. F. C. asks how to stop the crack in a plated coffee pot, which got cracked by a fall. A. It will be necessary to coat with solder, and possibly the following simple process will answer: Cut a piece of tin foil the size of the surfaces to be soldered, dip a feather in a solution of sal ammoniac, and paint over the surfaces of the metal; then place them in their proper position, with the tin foil between; keep it so arranged on a piece of iron hot enough to melt the foil. When cold they will be found firmly fastened together.

(43) C. S. asks for an ink or similar preparation, which may be printed upon brass or zinc plates, and that will resist muriatic and nitric acids. A. Take of chloride of potassium $\frac{1}{4}$ ounce, soft water 1 pint, to be kept in glass and used with a quill pen. 2. An ink that may be printed with upon glass to resist hydrofluoric acid. A. You will find that it is the glass that is attacked by the hydrofluoric acid and not the ink. Any carbon ink, such as printer's ink or asphalt ink, should resist the action of this acid.

(44) J. T. H.—Gold is worth per troy ounce \$20.67183. Rare metals are quoted by the gramme. Reducing this to troy ounces we have, omitting fractions:

Table with 2 columns: Metal name and price per troy ounce. Includes Barium, Calcium, Osmium, Rubidium, Zirconium.

(45) J. P. writes: I have a marble mantel in my house stained in imitation of porphyry. The staining is wearing off in spots, exposing the white marble; what kind of paint or stain can I use to make it a plain color? A. Marble may be stained or dyed of various colors by applying their solutions to the stone made sufficiently hot to make the liquid just simmer on the surface.

(46) J. H. P. asks whether a wide angle lens is as good for copying or enlarging small negatives as a portrait lens. A. No; it is much slower, and not as rectilinear. For accurate work a Dallmeyer, Steinheil, rectilinear, or a Ross rapid symmetrical lens, with daylight or a powerful artificial light, is the best.

(47) C. C. writes: Suppose it requires 500 pounds of water at 60° per hour to extract a certain amount of heat, how much air at the same temperature per hour would be required to extract the same heat, and what is the rationale of the calculation? A. As the specific heat of water is 1, and the specific heat of air is 0.2377, then 1+0.2377=4.2 pounds of air to equal 1 pound of water.

(48) J. B. says: In the SCIENTIFIC AMERICAN of April 3 (query No. 8), A. B. S. asks if a tube sheet that has a crack between the tubes can be repaired successfully. I say yes; thus: drill a hole in the crack midway between the tubes large enough to tap with a taper tap (16 thread), so that the thread will cut a little into each tube, then cut a plug a little tapering and screw it into the hole as tight as it will go, and then cut the plug off a little outside the head, and it will be a success, and last as long as the head will.

(49) J. M. asks: How many horse power will it require to furnish steam for a drying room 14x14x8, temperature 120° to 150°? How many coils of pipe, and the best way to arrange them, etc., for drying fibrous plaster plates 1/2 inch thick? Is steam or hot air preferable? A. You will require about 3 horse power and about 700 feet 1 inch pipe, which may be arranged in a flat coil just above the floor.

(50) H. R. H. asks: 1. What is a good material to use to paint a fireplace and also fender where the japan is burnt away? A. We know of nothing that would be acceptable on the ironwork of a fireplace but the hard-baking japan. 2. Has the tunnel under the British Channel ever been begun? A. About a mile of preliminary tunnel on each side of the channel has been done.

(51) F. W. L. asks: 1. Is there any cement which is suitable to fill cracks in brass such as those in screwheads, and which will polish down satisfactorily? A. Use shellac melted in. 2. A good recipe for brass lacquer. A. Clear shellac dissolved in 95 per cent alcohol. Settle, and decant the clear lacquer. 3. Is there any cement easy to apply which will make good electrical connections, as, for instance, between German silver wire and the brass or copper plates of a rheostat? A. Nothing but metallic solders.

(52) W. T. B. asks the distance that steam can be carried to advantage for heating purposes with a pressure of about 100 pounds. Also the best method. A. It may be carried several thousand feet in wrought iron pipe through subways of brick or wood; pipe should be well felted, and arranged for taking up expansion.

(53) F. M. asks if there is any difference in the power required to move a live or dead weight on a wagon. A. On a perfectly even track there should be no difference in traction for a load of given weight, whatever its composition may be. On a rough road or cobble-stone street, elasticity in the load becomes equivalent to springs on a wagon, and if not lessening the average power of draught, it mitigates the severity of draught, and in this way makes a difference in favor of live or elastic loads.

(54) W. A. S. asks (1) what pigment to use to color glass panes either a light violet or light green color, the violet preferred. A. Prepare separately an alcoholic solution of bleached shellac or sandarac and a concentrated alcoholic solution of a convenient aniline color. The latter solution is added to the former just before using. It is well to heat the glass slightly before coating, and we think that it will be found better to apply it on the inside. 2. What is the best composition for putty, that would not be broken off either by frost or damp? A. Putty is made of common whiting, pounded very fine, and mixed with linseed oil till it becomes about the thickness of dough; if properly made and used, it is not affected by ordinary cold or damp.

(55) W. S. & Co. ask a way to cover a steam drum of large boilers with a good and cheap cement, etc. A. Asbestos cement and hair felt are

both good. If not available, use a thin sheet iron jacket set up around the drum, having 2 or 3 inches of space between jacket and drum, which fill with the dry ashes from the ash chamber at back of boilers. This is cheap and durable.

(56) E. H. McM. asks how compound sulphate of indigo is made, giving quantities, etc. A. Into 5 pounds of the most concentrated sulphuric acid stir by degrees 1 pound of the best indigo, finely ground; expose this mixture to a heat of about 160° Fah. for 10 or 12 hours, stirring it occasionally. Great care must be taken in its preparation to prevent overheating, as this would result in the decomposition of the indigo, yielding indigo green and sulphurous acid.

(57) J. S.—The panoramic eyepiece has its best position for definition. They are not much in use for ordinary telescopes. If necessary, use two eyepieces. The power to read or define print at a distance depends more upon the perfection of the object glass than upon its size. You may be able to read the SCIENTIFIC AMERICAN at from 500 to 2,000 feet, using powers up to 200.

(58) G. W. T. asks: Will you please be kind enough to give me your ideas about concrete for foundations for houses? Which is the most durable and least liable to give—concrete or piles? I wish to build on a lot which is not very solid ground, and do not know which to use for a foundation. A. If the soil of your lot is simply weak, dig trenches and fill in with concrete composed of 1 part of good Portland cement to 4 parts of gravel, broken stones, or pieces of hard brick, not larger than a hen's egg, and 2 parts of clean, sharp sand. Piles are principally employed where the uncertainty of the ground goes down deeply.

(59) R. W.—Many of the bricks now used throughout the country are made without the impression, or "frog," as it is called. Those which are wire-cut never have them, and many of the hand-made bricks are not provided with them. It is very doubtful indeed whether the frog is of any practical advantage, in fact, the generally accepted opinion now is that it is a detriment rather than otherwise, as it needlessly increases the quantity of mortar in a wall, and therefore weakens it. The object of the mortar is nothing beyond forming an adhesive substance between the bricks, and it is difficult to see how the frog can assist such adhesion, which, with good mortar and bricks properly laid and well wetted previously, should be perfect. The Philadelphia red pressed brick is an excellent one for facings.

(60) H. W. W. asks concerning the SCIENTIFIC AMERICAN SUPPLEMENT, No. 535, article headed, "The Condensation of Fumes by Static Electricity," will you please to inform me what material it will be necessary to use in making the combs? Also if sufficient power can be got from cell batteries? A. The combs may be made of any metal—steel, brass, or iron. Electricity of higher tension is needed than a cell battery will give. Use a frictional or induction machine, as directed in the article; or a cell battery with an induction coil would answer.

(61) W. J. W. asks if it is an admitted fact that the clouds have to attain a certain height before it thunders. A. There is no reason for believing that such is the case. As thunder and lightning are the result of an electric discharge between the earth and the clouds, they are dependent only upon the electrical condition of the clouds and the resistance of the atmosphere. The distance through which such discharge is possible will therefore vary with these conditions.

(62) G. A. H. desires a process for bleaching bones. A. By immersing for a short time in water containing a little sulphurous acid, chloride of lime, or chlorine. See "Peroxide of Hydrogen," contained in SCIENTIFIC AMERICAN SUPPLEMENT, No. 339.

(63) H. S.—There is no difference observable to the eye between mammoth and medium clover seed. Salt that is found in the earth was deposited in the early geological ages, the localities being inland salt lakes or lagoons from the sea, the constant evaporation causing a deposit of salt, as in the great salt lakes of Utah and Nevada. The salt beds, afterward, becoming covered with earthy material, were preserved as we find them. Salt is a chemical compound of chlorine and sodium, and is necessary to the animal economy as health preserving and a stimulant to digestion.

(64) N. P. M. asks: What will best remove moss and weather discolorations from marble monuments and gravestones? A. Take equal parts of caustic potash, quicklime, and soft soap, make them into a thick paste with water, and apply with a brush; leave for about a week, and apply again and again until the stains have disappeared. A weak solution of aqua fortis or nitric acid may be used if preferred.

(65) D. B. K. asks how to make an insoluble glue suitable for gluing split bamboo fish rods. A. Take of gum shellac 3 parts, India rubber 1 part, by weight. Dissolve the rubber and shellac in separate vessels in ether, free from alcohol, applying a gentle heat. When thoroughly dissolved, mix the two solutions, and keep in a bottle tightly stoppered. This glue resists the action of water, both hot and cold, and most of the acids and alkalis. The addition of not over 2 per cent of potassium bichromate to a solution of glue, and subsequent exposure of the glued parts to the sunlight, will make an insoluble cement.

(66) Reno asks how to polish black walnut with oil, and what kind of oil to use. A. Mix with good whiting such colors as will produce as near as possible the color of the wood to be filled. This mixture to be dry. Then give the wood a good coat of oil, and sprinkle the mixture over the work until it is pretty well covered; then with a soft rag or other soft substance rub this on well. When the filling is satisfactory, finish with linseed oil, put on with a brush, wipe off, and rub to a polish with fine cotton; finish with a silk handkerchief or any fine fabric.

(67) L. A. B. desires a recipe for making a violet sachet powder for perfuming clothes, note paper, etc. A. Take of powdered rose leaves or orris

root 3 pounds, powdered bergamot peel 1 pound, powdered cloves and cinnamon each 6 ounces, powdered acacia and orange flowers each 8 ounces, starch 3 pounds.

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

I. G. G. R.—Wad (manganese oxides) on basalt or trachyte. We should like to have communicated to us the locality where this mineral was found.—H. H. C.—Your specimen is probably part of the stem of fossil radiate of the general name of crinoids. It has, we think, been artificially polished. It is of no value.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted April 20, 1886,

AND EACH BEARING THAT DATE.

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

Table listing inventions with names and patent numbers. Includes Advertising machine, Air compressor, Alarm apparatus, Amalgamating, Animal trap, Axle box, Bag, Bagasse burner, Baker's pan, Band for packages, Barrel, Battery, Beads, Bed rest, Bedstead, Bee trap, Beer and water cooler, Bell cord coupling, Bell cord, Belt and suspender, Belting, Bit, Blast oven, Blind or shutter, Block, Boiler, Boiler attachment, Boilers, Bolt machine, Bolt ing reel, Boot or shoe, Boot or shoe jack, Boot or shoe rubber, Boot or shoe sole, Boot or shoe stiffener, Boring and routing bit, Bottle capping machine, Bottle stopper, Box, Box for washing material, Carriage, Brake, Brick kiln, Bricks, Brushes, Buckle, Buckle, suspender, Buffering wheel gauge, Bullets, Burner, Button, Button making machine, Cages, Can, Cap for flasks, Car brake, Car coupling, Car coupling, J. P. Eakin, Car coupling, I. Hammond, Car coupling, G. H. Lipe, Car coupling, L. Merrill, Car coupling, J. W. Rykard, Car coupling, C. R. Tunks, Car coupling, H. Wallace, Car doors, indicator lock, Car heater, railway, Car platform gates, Haslam, Car, railway, Cars, cable traction, Carburetor, Carding machines, Carding machines, mechanism for stripping the flat cards of, Carriage, R. S. Tucker, Carriage top joint, Cart ridge shells, Carving apparatus, Caster, Casting teeth for diamond saws, Cement, Chain, drive, Chair, Charm and cigar cutter, Chart, anatomical, Chart, star time, Chimney and ventilator, Chimney and ventilator, combined, Chimney and ventilator, combined, S. W. Skipworth, Churn, W. M. Cline, Churn, P. Hauersperger, Churn, A. J. Ramsey, Chute or waterway, Cigar bunching machine, Cigar press, Cigar wrappers, Clamp, Clock system, Closet, Clocks, indicator for gas, Coffee and peanut roaster, Coffee roaster, Coin counter, Collar, horse, Collar pad, horse, Colors, wrapping, Colter, fastening, Colter, rotary, Colter, self-clearing breaking plow, Concentrating and amalgamating machine, Condenser, Condenser, steam, Conductor, underground, Conduit for electric conductors, Conduit, hot blast, Conveyor, Cooler, Coop, chicken, Cop winding machine, Cards or braids to textile fabrics, Corn hiller and cultivator, Corpse preserver, Corset stays, machine for covering, Cotton and hay press, Cotton gin, Couch, reclining chair, Coupling, Crusher, Cultivator, N. H. Shepardson, Cultivator, sulky, Cutter, Damper, stovepipe, G. C. Frazer, Desk and seat for same, adjustable, Disease germs in sanitary appliances, Distilling hydrocarbon oil, Ditching and tile laying machine, Ditching machine, Ditching machine, J. McLachlan, Door check, Door hanger, sliding, Drier, Drill, See Grain drill, Drill frame, quarry, Driving apparatus, Dust pan holder, Electric battery and means for emptying and recharging it with the exciting fluid, Electric current indicator, Electric lighting, system for, Electric lights, manufacture of carbon conductors for incandescent, Electric machine, dynamo, Electrical indicator, Electrical switch, Embroidery holder, Engine, Engraver's turntable or holder, Envelope blank feeding mechanism, Envelope blanks, mechanism for creasing, Envelope machine, Envelope machines, picker for, Envelopes, etc., holder for, Envelopes, machine for counting, packing and banding, Explosive compound, Extension table, Farm gate, Faucet, self-closing, Fence machine, Fence post, Fence post, G. W. McEwen, Fence posts, wire fastening device for metallic, Fences, machine for making slat and wire, Fences, machine for manufacturing, Fencing apparatus for automatically stopping machines for making wire, Fencing, machine for manufacturing barbed, Fertilizer distributor, Fibrous materials, machine for combing, File box, File, newspaper, Filtering device or stone, Firearm, Firearm, breech-loading, Card & Cruttenden, Firearm, breech-loading, R. A. Berger, Fire extinguishing apparatus, Fire extinguishing apparatus, Flier, Float, A. J. Wright, Flood gate, J. Dailey, Floor clamp, Moses & Hawley, Fly trap, Folding machine, Folding table, Fountain, Frame, Fruit drier, Fruit jar, Fuel, feeding, Furnace, Grewcox & Yeiter, Gauge, Gas and stench trap, Gas burners, automatic cut-off for, Gas lino illuminating gas, converting natural, Gas mains, preventing leakage in, Gas making apparatus, Gas meters, pressure regulator, Gas, odorizing, Gas pipes, cut-off for natural, Gas regulator, H. H. Gridley, Gas regulator, A. F. Olds, Gas, treating natural, Gate, See Farm gate, Gate, J. E. Covert, Gate, D. Slauson, Generator, Glass beveling machine, Glass, imitating stained, Glass, lead for setting stained, Glassware, manufacture of, Goods, making-up board for piece, Grader and ditcher, Grain binder,