

the old Babbitting and whatever grease there may be. If practicable heat the lower boxes quite warm. After removing them and while warm, put them in place, and adjust the shaft in the way it is to run. If there is any danger of the metal running out at the ends of the boxes, cut thick straw board and fit to the ends of the boxes and up to the shaft so as to retain the metal until it hardens. Heat the metal hot, and pour carefully so as to fill the box and come to the diametrical center of the shaft, remove the shaft and trim off the superfluous metal. Put the shaft again in place. Put on the upper box and pour through the oil hole. Remove the box, trim off, and drill out the hole for reception of oil.

(39) J. F. P. asks for the process of tempering edge tools, etc.? A. See SCIENTIFIC AMERICAN SUPPLEMENT No. 71, p. 1123.

(40) A subscriber asks: What is the simplest way of keeping the temperature of my greenhouse above 45° winter nights? It is ten feet square, and is well warmed by the sun during the day. A. Put in a few lengths of cast iron pipe, fill them with salt water brine, and connect them with a stove so as to bring a portion of the pipe in contact with the fire. Let the pipe be 4 inches in diameter and set at a grade, leaving the stove at a high point and returning to it at a lower one. This will insure a circulation, and by keeping a slow fire a permanently low temperature may be maintained. This apparatus can be constructed by your plumber, or a similar one may be ordered of any dealer in this city. The salt will prevent the water from freezing should the fire be suffered to expire.

(41) A. G. M. asks for information about the fruit called Aku? A. Guinea is the native country of this fruit. It was brought to Jamaica by Captain Bligh in 1791, where it grows well. The fruit is about the size of a goose's egg and has a sub-acid flavor. It is considered wholesome and nutritive.

(42) B. H. asks what or-moulu is? A. It is a name given to a particular alloy of zinc and copper, generally about 52 parts zinc and 48 of copper. It is so finished as to have the appearance of gold. The term is often applied in a general sense to works of art. The metal is sometimes finished by dipping in an acid, which helps produce the gold-like surface. Lacquer is often applied to prevent tarnish.

(43) E. G. M. asks how marquetry is made? A. It is different pieces of colored wood glued to a ground of some firm wood. It is now chiefly confined in its use to floors, in which the various pieces of wood are usually disposed in regular geometrical figures.

(44) H. C. D. asks how to weld tortoise shell? A. Provide a pair of pincers or tongs. File the tortoise shell clean and make so as to form a lap joint. See that there is no grease about it. Wet the joint with water, apply the pincers hot, following them with water, and the shell will be joined as if it were one piece. Be careful that the heat be not so great as to burn the shell. You can test it by trying it on a piece of white paper.

(45) M. G. asks how to make extract of cinnamon? A. Dissolve 2 drachms of oil of cinnamon in 1 pint of good alcohol; add gradually 1 pint of water, and then stir in by degrees 4 ozs. powdered Ceylon cinnamon; agitate for some time and filter through paper.

(46) T. H. asks for a good indelible ink to use with stamps? A. Mix equal parts black oxide of manganese and hydrate of potash, heat to redness, and rub with an equal quantity of smooth white clay into a paste, water being added for that purpose, or, sulphate of manganese, 2 drachms; lampblack, 1 drachm; powdered loaf sugar, 4 drachms; rubbed into a paste with water. After stamping, dry the linen and wash well in water.

(47) N. P. asks how to test castor oil? A. If the oil be adulterated with rape oil, it may be detected by its not dissolving in strong alcohol, and also by its density. Pure castor oil is soluble in an equal weight of alcohol, specific gravity 0.820.

(48) J. H. asks: The bluing on some of our try-squares and bevels has come off; how can I re-blue them? A. Remove the blades, polish them and blue by heat, immersing the blades in a pan of powdered charcoal while being heated. Remove from the fire when the desired color is obtained. Or use an application of thin shellac varnish colored with Prussian blue. In purchasing a glazier's diamond, is there any way by which an inexperienced person can tell which are good? A. No.

(49) S. H. J. says: I wish to fasten photographs to glass for coloring. What perfectly transparent fastener can I use which will not crack? A. See answer to E. F. (25) No. 12, p. 187, current volume.

(50) J. M. asks how the power of a telescope is estimated? A. Divide the focal length of the objective in inches by that of the eye piece in inches. This will give the magnifying power of the instrument.

(51) T. G. A. asks: Would you advise the use of any hair-producing elixir on the face? A. No.

(52) G. F. S. asks: 1. What is the best method of mending articles of celluloid, such as jewelry, etc.? A. Dissolve good glue in a small quantity of strongest vinegar or acetic acid by aid of heat. 2. Is there no way to restore the bright coral red which celluloid loses after long exposure? A. No.

(53) J. B. asks: 1. Will the airo-hydrogen blowpipe produce as strong a heat as the oxyhydrogen blowpipe? A. No. 2. Is the first safer than the latter? A. In inexperienced hands, yes. 3. Is there an alloy of platinum known (to solder platinum) which would resist a greater heat than fine gold? A. No. With skillful manipulation and a good blowpipe (oxyhydrogen) platinum may be welded perfectly. 4. If so, will you please state whether such could be brought to melt by the illuminating gas and common blowpipe? A. No; the heat of an oxyhydrogen flame is requisite.

(54) G. A. says: Volatile oils cannot be used in public buildings at frontier posts, and candles do not give sufficient light for the post schoolroom. Can you suggest any simple contrivance for illuminating purposes that will produce a brilliant light, like the lime

light, etc.? A. We do not know of such a device. Simple machines for making illuminating gas automatically from the vapor of light hydrocarbon oils are in the market. The electric lamp, using a small magneto-electric machine driven by some small motive power, affords a brilliant light; the first cost of the apparatus, however, is considerable.

(55) H. M. says: 1. I have a lens (double convex) 4 1/2 inches in diameter and 2 1/2 inches focus. Will it answer for an objective for a telescope? A. Not very well. 2. What size and focus will the eyepiece need to be? A. The eyepiece may be an inch in diameter (leaving an aperture in mounting of about 3/4 inch), 1 inch focus, and placed at 27 inches from the objective.

(56) G. G. says: I wish to etch letters on glass. Have tried asphaltum varnish, shellac, etc., which all fail to keep the fluorine acid from spreading even after being dry a long time. What I wish is something which I could use to cover the whole glass, except the letters, and which will withstand the action of the acid? A. Beeswax or paraffin is used for this purpose; melt and apply it to the glass previously warmed; when cooled, cut out the letters and expose to the acid.

(57) J. D. asks: What are the fire-extinguishing chemicals composed of, also whether they are explosive by contact with steam? A. The materials used in the Babcock and similar fire extinguishers are carbonate or bicarbonate of soda dissolved in water and a small quantity of oil of vitriol contained in a leaden cup, the inversion of which brings the acid in contact with the soda solution. The chemicals are not explosive in any way.

(58) A. M. G. asks for a recipe for removing superfluous hair? A. Sulphuret of barium 3 ozs., water 12 ozs. A little powdered starch is wetted with this solution and immediately applied. When dry it can be removed and takes the hair with it.

(59) R. M. H. asks: 1. What causes animalcules to appear in the vinegar, and do they always come when it is made of grain or fruit? A. Nearly all vinegars prepared by slow fermentation contain microscopic organisms, derived from the germs present in the ferment, and from the air. 2. What must I do to remove them from the vinegar? A. Add a little of solution of sulphite of soda, agitate, allow to stand for a few hours, and strain off into clean barrels. 3. About how long a time should elapse after making until it must be corked tight, or is it better to leave the bung out of the cask? A. As soon as the fermentation is complete, it may be drawn off into clean tight barrels for storage.

(60) G. T. L. asks: 1. If the vapor of bisulphide of carbon will have any deleterious effects upon a steam engine as ordinarily constructed, the vapor being used instead of steam to drive the engine? A. It would have no bad effect other than that of dissolving all oil or grease with which it might have contact. 2. Would there be any danger of explosion on decomposition of the liquid bisulphide on being evaporated in an ordinary steam boiler? Would the liquid have any effect on the iron of the boiler if the boiler were heated by steam? A. Bisulphide of carbon vapor is very inflammable, and when mixed with air, very explosive when ignited. It would suffer no decomposition by being heated to boiling, and, if pure, would have little effect upon the iron. 3. If water and bisulphide of carbon be mixed together, the water predominating, and the mixture be evaporated in a boiler, would there be an explosion or any chemical action of any kind, altering the character of the two mixed vapors? A. No, but the liquids would not mix, and the bisulphide would become entirely vaporized before the temperature of the water attained the boiling point. 4. Is the liquid bisulphide compressible to any appreciable extent, and what is its cost in large quantities? A. No. The price, we believe, is about 75 cents a gallon. 5. Would it be safe to let the exhaust escape through a blast pipe into the stack? A. No.

(61) W. N. H. asks for a recipe for good writing ink? A. Take Aleppo galls, well bruised, 4 ozs., clean soft water 1 quart. Macerate in a clean corked bottle for ten or twelve days with frequent agitation, add 1 1/2 oz. gum arabic dissolved in about 2 ozs. of water, lump sugar 1/2 oz. Mix well and add 1 1/2 oz. of sulphate of iron crushed small. Agitate occasionally for two or three days, when it may be decanted for use. When time is any object boiling water may be used instead of cold, and the ingredients put at once into the bottle and agitated until the ink is made.

(62) C. A. J. asks how sound is transmitted by the telephone? A. The voice causes the diaphragm of the instrument upon which it is thrown to vibrate. Electric undulations are induced in the coil that surrounds the magnet, which are precisely analogous to the undulations of the air produced by that voice. This coil and magnet is connected to a similar one at the other end of the insulated line of wire, and these undulations travel through the wire and are received and resolved into air undulations upon a similar diaphragm of the instrument at the end of the line where they are received.

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

J. M. B.—The white specimen is agate—corresponding to the *Leucachates* of Pliny. The other specimen is a sanded agate pebble or an inferior opal.—J. Y.—No. 1 (powder) contains, besides gold and silver, silica, alumina, lime, and traces of magnesia. It would be called a gold-bearing quartzite rock, with, however, a large percentage of iron. No. 2 is cassiterite or tin stone.—J. B. J.—It is rich in manganese—an impure braunite.—G. M. C.—It is a calcareous deposit filled with the fossil remains of numerous species of trilobites, and some vegetable matter.—Minerals of J. C. and L. S. W. are missing.—E. R. A.—It is a variety of fluorspar—fluoride of calcium.—C. B. K.—Specimens not yet received.—F. P. L.—It is an argillaceous carbonate of iron; its value will depend upon the percentage of iron it contains.—A. H.—No. 1 is serpentine and trap rock. No. 2 is gneiss. No. 3 is quartzite containing graphite.—J. C. and M. S.—Specimens not received.

—J. H. P.—It is an ochreous clay, but the amount of metallic base is small. It is not valuable.—J. F.—The incrustation consists of carbonate and sulphate of lime, magnesia, alumina, silica, sesquioxide and carbonate of iron, and a little organic matter.—A. R. P.—No. 1 is a limestone containing mica schist, hornblende, and malachite—carbonate of copper. No. 2 is lime carbonate. No. 3 is a shale rich in malachite. No. 4 is a shale containing much mica, also hornblende.

COMMUNICATIONS RECEIVED.

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

- On Using Explosives for Deep Tillage. By J. R. C.
On the Keely Motor. By J. A. F.
On a Remedy for the Glutted Labor Market. By R. S.
On the Navy Yard Fire Test. By ———
On Weak Eyes. By ———
On Throwing a Ball in a Curve. By ———
On Why are we Right Handed? By F. H. P.
Also inquiries and answers from the following:
M. H.—P. L. W.—J. G.—B. C.—W. L. B.—J. T. J.—
H. McI.—R. J. K.—H. E. B.—H. H. A.—C. H. R.—
J. C. E.—W. B. N.—C. F.—S. H. R.

HINTS TO CORRESPONDENTS.

We renew our request that correspondents, in referring to former answers or articles, will be kind enough to name the date of the paper and the page, or the number of the question.

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

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

Hundreds of inquiries analogous to the following are sent: "Who makes tile and brick making machines? Who makes models of boats?" All such personal inquiries are printed, as will be observed, in the column of "Business and Personal," which is specially set apart for that purpose, subject to the charge mentioned at the head of that column. Almost any desired information can in this way be expeditiously obtained.

OFFICIAL.

INDEX OF INVENTIONS

FOR WHICH

Letters Patent of the United States were Granted in the Week Ending

October 2, 1877,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A complete copy of any patent in the annexed list including both the specifications and drawings, will be furnished from this office for one dollar. In ordering, please state the number and date of the patent desired, and remit to Munn & Co., 37 Park Row, New York city.

Table listing inventions and their patent numbers, including items like Aerial machine, Anchor, Animal trap, Animal trap, Apple cutter, Axle boxes, Bag holder and truck, Bale tie, Bath, Battery, Bee hive, Billiard cue tip, Blower, Boiler plates, Boot and shoe holding device, Boot cleaner, Boot jack, Boot and shoe heel counters, Bottle stopper, Box covers, Box fastener, Box, wooden, Bridges, timber splice for, Hubbard & Eddy, Brush blocks, boring, O. D. & E. C. Woodbury, Bull wheel, W. H. H. Morris, Bull wheel, C. H. & D. C. Brawley, Burglar alarm, Hutchison & Ransom, Burners or carbureters, reservoir for, V. P. Harris, Buttons to cards, attaching, C. H. Kellogg, Calendar rolls, F. Voith, Can, shipping, Dennis & Betts, Car heating apparatus, J. F. Callaway, Cars, draft bars for railway, J. T. Wilson, Cars, track clearer for street, L. Wood, Caster, furniture, S. Myers, Casting metal articles, A. K. Rider, Cement, hydraulic, C. F. Dunderdale, Chair, rocking, H. Closterman, Jr., Chairs, attaching legs to, E. B. Witherell, Clasp for supporting garments, W. Lamb, Clothes dryer, D. K. Hickok, Cock, Dewrance & Mallinson, Cock, lock, G. H. Noyes, Cork-fastening machine, A. Werner, Corset, S. B. Ferris, Curtain roller and bracket, A. B. Shaw, Curtain tassel clamp, A. H. Knapp, Dish-washing apparatus, Watson & Scott, Distilling column, E. G. Starck, Doors, handle for carriage, G. W. Beers, Draft equalizer, A. K. Williams, Drill, hand, W. Aldrich, Dynamometer, A. F. Nagle, Egg beater, T. Borchert, Enameling iron ware, Quimby & Whiting (r), Excavating ditches, apparatus for, W. H. Minter, Fare box, A. C. Godell, Jr., Feather duster, J. W. Little, Fence, F. Fulkerson, Fence post, A. J. Nellis, Fence post, A. B. Sprout, Fence, zigzag, N. H. Hamlet.

DESIGNS PATENTED,

- 10,263.—CARPETS.—Frank E. Allen, Yonkers, N. Y.
10,264.—LACE FABRIC.—Abraham G. Jennings, Brooklyn, N. Y.
10,265.—BRACELET.—H. Lang, Kennett's Square, Pa.
10,266.—POCKET BOOK CLASPS.—L. Messer, New York, N. Y.
10,267.—PRINTED AND WOVEN FABRICS.—W. Morris, London, Eng.
10,268.—DISH HANDLES.—S. Stevens, Jersey City, N. J.
10,269.—SHOW CARDS.—W. C. Wilson, & T. S. Harrison, Philadelphia, Pa.

[A copy of any of the above patents may be had by remitting one dollar to MUNN & Co., 37 Park Row, New York city.]