Business and Personal.

The Charge for Insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in next issue.

Notes & Queries

HINTS TO CORRESPONDENTS.

No attention will be paid to communications unless accompanied with the full name and address of the writer.

Names and addresses of correspondents will not be given to inquirers.

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 do not appear after a reasonable time should repeat them. If not then published, they may conclude that, for good reasons, the Editor declines them.

Persons desiring special information which is purely of a personal character, and not of general interest, should remit from $1 to $5, according to the subject, as we cannot be expected to spend time and labor to obtain such information without remuneration.

Any numbers of the SCIENTIFIC AMERICAN SUPPLEMENT referred to in these columns may be had at this office Price 10 cents each.

Correspondents sending samples of minerals, etc., for examination, should be careful to distinctly mark or label their specimens so as to avoid error in their identification.

(1) E. M. H. asks: 1. Is there any difference between the effect of quantity and intensity currents upon an electro-magnet? A. Yes; quantity currents are adapted to coarse wire magnets used on short circuits. Intensity currents are adapted to fine wire magnets and circuits of high resistance. 2. What proportion should the size of the core bear to the number of coils to get the greatest effect? A. In general, the winding should equal the core in thickness. 3. Should a larger gauge wire be used for an intensity current than for a volume current when wrapping a magnet? A. See reply to first query.

(2) Ph. L., Brazil, writes: Please let me know through your columns a good recipe for preparing fish for export—canned, smoked, and salted. Will extraction of air from tins prevent putrefaction? A. See SUPPLEMENT, No. 320.

(3) A. M. W. asks how to take the lime out of the water for use in boilers. The water is very hard and alkaline. A. Dr C. F. Chandler says, in his report on "Water for Locomotives, and Boiler Incrustations," that barium chloride decomposes calcium sulphate (sulphate of lime), forming barium sulphite, which is deposited; barium carbonate is sometimes used, but these are, perhaps, too expensive, and hence catechu, nutgalls, oak bark, shavings and sawdust, tan bark, tormentilla root. mahogany, logwood, etc., are recommended. These substances contain tannic acid, which is extracted by the water, and forms a basic calcium tannate (tannate of lime) that separates out. The use of the aqueous extract of these substances is the best on account of avoiding mechanical obstructions liable to occur in the use of chips, sawdust, etc. An incrustation powder composed of sawdust, 70 parts; barium chloride, 15 parts; ammonium chloride (sal ammoniac), 10 parts; is good, but perhaps too expensive.

(4) C. H. L. writes: I have in my parlor a chandelier made in imitation of bronze. The bronze has worn off, and consequently gives the chandelier a whitish gray appearance. Is there not a paint or stain by which I can rebronze it? A. All dealers in artist's colors sell bronze powders and bronze or gold paint, which will answer your purpose.

(5) H. G. L. asks: 1. Could a Ruhmkorff induction coil have a wooden bobbin on which the insulated wire is wound? A. Yes. 2. Would it be better to coat this bobbin with shellac? A. Yes. 2. Is there any article in the SCIENTIFIC AMERICAN or SUPPLEMENT which relates to induction coils? A. See SCIENTIFIC AMERICAN SUPPLEMENT, 160.

(6) B. T. B. asks: 1. Should the resistance of the field magnets in a self-exciting dynamo be equal to that of the armature? A. No; it may be more in some cases and less in others. 2. If the resistance of the armature in a low tension machine be such a small fraction of an ohm, how can the resistance of the field be the same, and yet have enough wire to magnetize sufficiently? A. In this class of machines the resistance of the magnet exceeds that of the armature. 3. Is there any advantage in having long magnets, as on the Edison machine? A. Yes. 4. I want to make a Gramme machine with ring core, outside diameter 3½ inches, and 2½ wide, wound with four layers No. 18 wire, making resistance of armature about one ohm. What size and quantity of wire would be best for field? A. Use six or seven layers of No. 16. Better make a larger machine. It will cost no more, and will give better satisfaction.

(7) G. L. G. says: Can you tell me of any gum or article of any kind that can be applied in a liquid form to fill the openings of wire cloth, so as to make a partially transparent sheet which will stand the weather? My idea is to obtain a substitute for glass in hot bed sash. A. Possibly gelatine may answer, in following proportions: Water ounce, gelatine ounce; bichromate of potash. The latter renders the gelatine insoluble.

(8) W. C. & Co. ask: What is the best way to burnish tin? We have a foot lathe capable of making 600 to 900 revolutions per minute. A. Tin can be burnished in the same way as with silver, viz., with a polished steel burnisher and soap water. It is also planished with polished hammers in the process of manufacture; but these are tedious processes for ordinary ware. A revolving brush and wet whiting or chalk will be more appropriate for your work. Some use a buff wheel of wood covered with felt, where the surfaces are large and plain. Buff or brush crosswise, so as not to streak the work. For a final finish a soft cotton cloth and dry Vienna lime gives a fine luster.

(9) F. E. G. asks: 1. In which of two cases will a wire wear the least and run with the least friction in turning a right angle—to make the turn around one wheel 7 inches in diameter, or to run around two wheels of 3½ inches to make the turn? A. The wire will work better and last longer running over the larger wheel. It is sharp bending around the small wheels that soon breaks the wire; besides, in using two wheels to make a turn, the wire is bent and straightened twice in making the turn. 2. Are there any pearls found in the oysters of this country? A. Pearls are occasionally found in the common oyster; they are of no value.

(10) V. T. asks: Will salicylic acid prevent cooked fruits or preserves and jellies from souring or moulding? Is there anything better than salicylic acid to keep preserves and jams from spoiling? A. Salicylic acid will answer your purpose. Prof. Kolbe says "that the preserving power of salicylic acid will be greatly increased by adding a small proportion of potassium bisulphate and potassium chloride; these will prevent the salicylic acid from combining with the phosphates contained in the substance, thereby losing its efficiency." Benzoic acid is considered, according to Watts' 3d Sup., to be more powerful as an antiseptic than salicylic, boracic, or formic acids.

(11) J. C. asks: 1. Of what is printer's varnish made that is used to thin ink, and the amount of each ingredient used in a pint? A. Either resin or linseed oil. 2 What is used for a "drier"? A. Manganese borate. 3. How can job ink be made indelible? A. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 157. 4. How can it be made to give a glossy appearance? A. Job ink cannot be made glossy, except by the subsequent application of varnish.

(12) J. E. A. writes: I am in want of information in regard to the best manures for orange growing in the soil of Florida. A. SUPPLEMENT, 227, contains "Florida Orange Culture;" SUPPLEMENT, 242, "Cheap Manure for Gardens;" SUPPLEMENT, 177, "Agricultural Plant Feeding;" SUPPLEMENT, 171, "Homemade Superphosphates;" SUPPLEMENT, 186, "How to Make a Poor Soil Fertile." Dealers in fertilizers furnish pamphlets on this subject.

(13) G. F. asks: How can I wash or erase printed matter from paper? A. Use plenty of naphtha or benzol, or strong hot caustic soda or potash solution (in water).

(14) S. H. J. asks: 1. How to make those small pellets known as serpent eggs, which, when ignited, form themselves into long masses or cylinders. A. Potassium dichromate, 2 parts; potassium nitrate, 1 part; white sugar, 3 parts. Pulverize each of the ingredients separately, and then mix them thoroughly. Make small paper cones of the desired size and press the mixture into them. Also, see SUPPLEMENT, 250. 2. How can I make a brilliant black ink? A. The addition of sugar will give a gloss to the ink. For receipts, see SCIENTIFIC AMERICAN SUPPLEMENT, 157.

(15) R. V. J. asks: 1. What is the effect of burning salicylic acid in atmospheric air? A. There would result from the combustion of salicylic acid in air, carbon dioxide and water. From the general properties of nitrogen, we should infer that its presence would have no effect upon the combustion. With nitrous oxide, a decomposition of the latter would result. Nitrous oxide is one of the most stable of the oxides of nitrogen, and we presume it could be kept for some time without its becoming decomposed, providing, of course, that it was kept away from the air. 2. Can protoxide of nitrogen be confined in closed vessels for a length of time without change? A. Yes.

(16) R. B. C. asks: 1. After the sand is packed around the pattern for casting, how is the pattern taken out without breaking the mould? A. Use a flask that divides through the middle, and place the pattern in the flask, so that every part shall have a taper from the dividing plane; or, if the pattern be properly made and itself divided, mould one-half upon a board and in a half flask, then turn the flask over and place the other half upon it, and the half of the flask in its place. Then sift a little powdered charcoal upon the sand in the side made up. Then finish the mould and separate the flasks and take out the patterns, after rapping it a little one way and the other. We recommend you to visit a foundry before you commence. 2. What kind of a crucible should I use for melting brass, and where can I obtain such? A. Use a black lead crucible. Such crucibles are sold by all dealers in metallurgists' supplies. 3. At what temperature is brass fusible? A. Brass melts at 1,900°.

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

G. M. W.—Sample *a*. Hornblende. Sample *b*. Contains two small brown paper packages, one containing iron pyrites with quartz gangue, the other, darker, is similar with an iron oxide gangue. They may carry gold, which can only be determined by assay. One large specimen of hornblende showing small crystals and crystalline structure. Several specimens of quartz with pyrites, possibly gold bearing. One specimen of brownish quartz with small crystals; and also smaller specimens of hornblendic gangue without any apparent definite mineralogical character. Sample *c*. Limonite, hydrated sesquioxide of iron Sample *d*. Quartz containing pyrites—probably carrying gold.—C. H. D.—The mineral sent is calcite, a calcium carbonate. If it contains phosphorus, it would be of value for fertilizers; from its appearance we would infer that it does not contain sufficient of that constituent to make it desirable.—C. J. S.—Iron pyrites, iron sulphide probably carrying gold.

COMMUNICATIONS RECEIVED.

On Vital Force Developed in Hatching Eggs. By H. S.
On the Tides. By C. W. T.
On the Sun. By J. T. R.
On Fire Escapes. By P. T. S.
On the Chemistry of the Galvanic Current. By W. H. G.

[OFFICIAL.]

INDEX OF INVENTIONS

FOR WHICH

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

January 23, 1883,

AND EACH BEARING THAT DATE.

[Those marked (r) are reissued patents.]

A printed copy of the specification and drawing of any patent in the annexed list, also of any patent issued since 1866, will be furnished from this office for 25 cents. In ordering please state the number and date of the patent desired and remit to Munn & Co., 261 Broadway, corner of Warren Street, New York city. We also furnish copies of patents granted prior to 1866; but at increased cost, as the specifications, not being printed, must be copied by hand.

Aerial ship, E. F. Falconnet 270,939
Air motor, compressed, C. W. Potter 270,982
Alarm. See Clock alarm.
Alkali, packing caustic, T. C. Taylor 270,997, 270,998
Amalgamating and separating gold, etc., from their ores, apparatus for, S. L. Trippe 271,162
Auger, I. T. Payne 270,977
Axle box, J. Kritch 270,903
Axle box, car, T. Millholland 270,908
Axles, device for truing, Thomas & Baker 270,916
Bag and twine holder, L. Steinberger 271,147
Baling press, G. H. Sullivan 271,153
Bar. See Chain bar. Harvester cutter bar.
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Bed bottom, spring, J. V. Gray 270,949
Bedstead, invalid, J. Q. A. Sargent 270,912
Beehive, Fife & Mercer 271,197
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Belt fastener, W. F. Wilkins 271,010
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Blower, fan, C. Hammelmann 270,897
Boiler. See Steam boiler. Straw burning boiler.
Bolt. See Door bolt. Thill coupling bolt.
Bolt guard, W. Newbold 270,972
Boot and shoe last, Packard & Arnold 270,975
Boot and shoe show-box, E. M. Kelly 271,081
Boots and shoes, heel plate for rubber, F. Richardson 270,911
Bottle box, J. E. Luscomb 271,087
Box. See Axle box. Boot and shoe show box. Bottle box. Camera box. Ice box.
Box loop, J. Watters 271,170
Brake. See Car brake. Locomotive brake. Vehicle brake. Wagon brake.
Brake lever, W. Moore 271,099
Brush for cleansing water closets, etc., flexible, C. F. Pike 270,979
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Burring machine, F. G. Sargent 270,988
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Car coupling, J. P. Lancaster 271,085
Car coupling, O'Connor & White 271,106
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Car motor, spring, G. Stites *et al.* 271,151
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Car starter, W. H. Harrison 271,066
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Carpet lining, etc., L. P. Jenks 271,075
Carpet linings, machine for folding, T. H. Farnham 270,940
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Cart, dumping, W. Loughridge 270,905
Cartridge case, paper, T. L. Sturtevant 270,996
Case. See Paper cartridge case.
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Chain bar, watch, J. Hoagland 271,069
Chain link, Simons & Scofield 271,141
Chest. See Ice chest.
Chopper. See Meat chopper.
Churn, E. J. Rowe *et al* 271,130
Chute, coal, J. Vinson 270,919
Cigar envelope or covering, J. A. Whitney 271,006
Cleaner. See Spectacle cleaner.
Clock alarm, O. H. Woodworth 271,012
Clock, quarter-second timing, J. Karr 271,078
Clutch and reversible pawl for sewing machines, etc., N. H. Davis 270,893
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Cornice, F. J. Geissinger 271,058
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Cultivator, E. Case 270,887
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