## 

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illustrated. By mail, 15 cents. E. E. Roberts, 107 Libillustrated. By mail, 15
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for their Portable Electric Lighter. See adv.
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Fire Brick. Tile, and Clay Retorts, all shapes. Borgner
O ${ }^{\prime}$ 'srien. whf'rs, 23d St., above Race, Phila.. Pa. Drop Forgings of Iron or Steel. See adv., page 76. Cope \& Maxwell M'f'g Co.'s_Pump adv., page77. Steam Hammers, Improved Hydraulic Jacks, and Tub xpanders. R. Dudgeon. 24 Columbia St., New York Diamond Engineer, J. Dickmson, 64 Nassau St.. N.Y ree. Address Emerson. Smith \& Co.., Beaver Falls, r'a Eagle Anvils, 10 cents per pound. Fully warranted Gould \& Eberhardt's Machinists' Tools. See adv.,p. 76. For Heavy Punches, etc., see illustrated advertise
Barrel, Key, Hogshead, Stave Mach'y. See adv. p.76. Upright Self-feeding Hand Drilling Machine. ExcelWoodwork'g Mach'y. Rollstone Mach. Co. Adv., p. 77.
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erial where iillo, etc., drying bouses are used. See p. 78. The Sweetland Chuck. See illus. adv., p. 78.
Knives for Woodworking Machinery. Bookbinders, and
aper Mills. Taylor, Stiles \& Co., Riegelsv!le, N. J. For Sale.-A Foundry and Machine Shop,with a Corn and Foed Mill, the whole driven by an automatic engine
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## Railway and Machine Shop Equipment

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the George Place Machinery Compan
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For Pat. Safety Elevators, Hoisting Engines. Friction
Clutch Pu leys, Cut-oft Coupling. see Frisbie's ad. p. 44. Mineral Iands Prospected, Artesian Wells Bored, by a. Diamond Drill Co. Box 423 . Pottsville, Pa. See p. 46. Improved Skinner Portable Engines. Erie, Pa.
Contracts taken to Manuf. small goods in sheet or cast brass. steel, or iron. Estimates given on receipt of
model. H. C. Goodrich, 66 to 72 Ogden Place, Chicago. Steam Pumps. See adv. Smith, Vaile \& Co., p. 29. Stone bottles for beer and ink. Merrill \&Co., Akron, $\mathbf{O}$.
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seven hundred in use seven hundred in use. For circular add
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branches of chemical industry. Send for circular. Guild \&Garrison’s Stearn Pump Works, Brooklyn, N. Y. Steam Pumping Machinery of every descrip-
tion. Combination Roll and Rubber Co., 68 Warren street,
N. Y. Wringer Rolls and Moulded Goods Specialties. First Class Engine Lathes. 20 inch swing, 8 foot bed now ready. F. C.\& A.E. Rowland, New Haven, Conn.

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HENTS TO COHRESDONDENT
No attention will be paid to communications unless accompanied with the full name and address of the writer.
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Names and addresses of correspondents will not be
given to inquirers. We renew our re
We renew our request thatcorrespondents, in referring
o former answers or articles, will be kind 10 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 siould repeat them. If not then published, they may conclude that, for good reasons, the Persons desiring.
Persons desiring special information which is purely of a personal character, aud not of general interess, should remit from $\$ 1$ to $\$ 5$, according to the subject, as we cannol be expected to spend time and
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 becareful to distinctly mark or label their specimens so as to avoid error in their ident fication.
(1) E. M. H. asks: 1. Is there any difference between the effect of quantity and intensity cur rents upon an electro-magnet? A. Yes; quantity cur
rents 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? See reply to firs: 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. Se SUPPLement, No. 320
(3) A. M. W. asks how to take the lime out or the water for use in boilers. The water is very
hard and alkaline. A. Dr C. F. Chandler says, in his hard and alkaline. A. Dr C. F. Chandler says, in his
report on "Water for Locomotives, and Boiler Incrustreport on "Water for Locomotives, and Boiler Incrust-
a tions," that barium chloride decomposes calcium sulations," that barium chloride decomposes calcum sulphate of lime), forming barium sulphite, which is deposited; barium carbonate is and bed used, but these are, perhaps, too expensive, and hence bark, tormentilla root. mahogany, logwood, etc., are recommended. These substances contain tannic acid, which is extracted by the water, and forms a basic cal-
cium tannate (tannate of lime) that separates out. The cium tannate (tannate of lime) that separates out. The use of the aqueous extract of these substances is the liable liable to occur in the use of chips, sawdust, etc. An in
cruetation powder composed of sawdust, 70 parts barium chloride, 15 parts; ammonium chloride (sal am moniac), 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 whitish gray appearance. Is there not a paint or staln by which I can rebronze it? A. All dealers in artist's colors sell bronze powders and bronze or gold paint, wich will answer your purpose.
(5) H. G. L. asks: 1. Could a Ruhmkorff nduction coil have a woodeu hobbin 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 supple uent which relates to induction coils? A. See Scien
(6) B. T. B. asks: 1. Should the resistanc the field magnets in a self-exciting dynamo be quall to that of the armature? A. No; it may be more
in some cases and less in others. 2. If the resistance 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 small fraction of an ohm, how can the resistance of the
field be the same, and yet have enough wire 10 magnetse sufflciently: A. In this class of machines the re Is there any advantage in having long magnets, as on the Edison machive? A. Yes. 4. I want to make a inches, and $21 / 2$ wide, wound with four layers No. 18 wire, making resistance of armature about one ohm. What size and quautity of wire would be best for field? A. Dise six or seven layers of No. 16. Bettermake a
larger machine. It will cost no more, and will give betarger machine.
ter satisfaction.
(7) G. L. G. says: Can you tell me of any um or article of any kind that can be applied in a make a partially transparent sheet which will stand the
weather? My idea is to obtain a substitute for glass hot bed sash. A. Possibly gelatine may answer, in fol-
lowing proportions: Water ounce gelatine ounce. bichromate of potash. The latter renders the gelatine
(8) W. C. \& Co. ask: What is the best way to burnish tin? We have a foot lathe capable of mak ing 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 polished steel burnisher and soap water. It is also planished with polished hammers in the process of ma ufacture; but these are tedious processes for ordinary
ware. A revolving brush and wet whiting or chalk will be more appropriate for your work buff wheel of wood covered with felt where the faces are large and plain. Buff or brush crosswise 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 $33 / 2$ 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 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 twic 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 moulding? Is there anything better than salicylic aci to keep preserves and jams from spoiling? A. Salicylic acid will answer your purpose. Prof Robe "that the preserving power of salicylic acid will be greatly increased by adding a small proportion of po tassium bisulphate and potassium chloride; these will prevent the salicylic acid from combining with the phosphates contained in the substance, thereby losing its effcien cy." Benzoic acid is considered, according than salicylic, boracic, or formic acids.
(11) J. C. asks: 1. Of what is printer's varnsh made that is used to thin ink, and the amount of eich ingredient used in a pint? A. Either resin or linseed oil. 2 What is used for a "drier"? A. Man
ganese borate. 3. How can job ink be made indelible A. See Scientific a mebican Supplement, No. 157. 4

How can it be made to give a glossy appearance? A
Job ink cannot be made glossy, except by the subs quent application of varnish.
(12) J. E. A. writes: I am in want of infor mation in regard to the best manures for orange growing in the soil of Florida. A. Supplement, 22, contains
"Florida Orange Culture;" Supplement, 242, "Cheap Manure for Gardens;" Supplement, 177, "Agricultura Plant Feeding;" Supplement, 171, "Homemade Super phosphates:" Supplement, 186, "How to Make a Poor
Soil Fertile." Dealers in fertilizers furnish pamphlets
(13) G. F. asks: How can 1 wasb or erase printed matter from paper? A. Use plenty of naphth or benzol, or strong hot caustic soda or potash solution
(14) S. H. J. asks: 1. How to make those small pellets known as serpent eqgs, which, when ig
nited, form themselves into long masses or cylinders A. Potassium dichromate, 2 parts; potassium nitrate, 1 part; white sugar, 3 parts. Pulverize each of the in-
gredients separately, and then mix them thoroughly. Make small paper cones of the desired size and pres how mixture into them. Also, see Supplement, 250. 2 How can I make a brilliant black ink? A. The addi-
tion of sugar will give a gloss to the ink. For receipts, ee Scientific American Supplement, 15?
(15) R. V. J. asks: 1. What is the effect of urning salicylic acid in atmospheric air? A. There would result from the combustion of salicylic acid in
ir, carbon dioxide and water. From the ir, carbon dioxide and water. From the general properties of nitrogen, we should infer that its pres ence 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 oxdes 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 vessela for
(16) R. B. C. asks: 1. After the sand i acked around the pattern for casting, how is the pat ern taken out without breaking the monld? A. Use a lask 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 nade and itself divided, mould one balf upon a board made and itself divided, mould one balf upon a board 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 ont 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 meJting brass, and where can I obtain such? A. Use P black lead cruci-
ble. Such crucibles are sold by all dealers in metal
 lurgists' supplies. 3. At what
ble? A. Brass melts at $1,900^{\circ}$.
Minerals, etc.-Specimens have been reeived from the following correspondents, and xamined, with the results stated:
G. M. W.-Sample $a$. Hornblende. Sample $b$. Conains two small brown paper packages, one containing 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 smail crystals; and also smaller
definite mineralogical character. Sampie c. Limonite hydrated sesquioxide of iron Sample $d$. Quartz con taining pyrites-probably carrying gold.-C. H. D.- T 'h tains phosphorus, it would be of value for fertilizers from its appearance we would iufer that it does not con ain sufficient of that coustituent to makeit desirable.C. J. S.
gold.

## COMMUNICATIUNS 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

Grapent of the United States wore January $23,1883$.
AND EACH BEARING THAT DATE. [Those mark.ed (r) are reissuedi patents.]

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