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 This is for our information, and not for publication.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. D. asks how to make carbon paper or transfer paper. A. Mix lard to a paste with lampblack, rub this upon the paper, remove the excess with a rag, and dry the paper, which should be thin post or tissue paper.

(2) I. M. G. asks: 1. In Fig. 2, in your description of electric motor, in issue of March 17, is the iron wire which is wrapped on the spool insulated? A. It is partially insulated with shellac varnish. 2. Will it matter if more than one piece of wire is used, if they are twisted or joined together, and what is done with the ends of the wire? A. You may use several pieces, but the ends should be allowed to abut without being twisted. The outer end of the wire is held temporarily by shellac. 3. Will cotton cloth do to wrap the iron wire ring? A. One thickness of thin cotton cloth applied with shellac varnish or thin glue will answer. 4. What will be the result if the coils of the armature do not have the same number of convolutions? A. The machine will have an irregular action. 5. Will any other screws work as well as brass wood screws? Will ordinary telegraph wire do instead of Stubs' wire? A. Yes. 6. What is the rule of thumb? A. Virtually no rule at all. The meaning of the expression is that you should construct your machine by adapting one part to another as you proceed, without any special calculation. 7. In the field magnet, are the strips lapped over each other, or just brought up against each other? A. The ends of the strips should abut. 8. Will lead answer the same purpose as Babbitt or type metal? A. No. 9. What is to prevent the metal from filling up the entire opening and leaving no oil hole? A. Nothing; the oil hole is to be drilled. 10. How much space should be left between the field magnet and the armature? A. The smaller the space between the armature and the field magnet, the better. 11. Can the motor be run either way by reversing the current? A. No; it can be done only by shifting the commutator brushes.

(3) G. G. asks if there is any particular way to lace a quarter turn belt so as to have an equal strain on both edges of the belt. A. Begin on the outside of the belt at the middle, pass one end of the lacing through one end of the belt and bring it out through the corresponding hole of the other end of the belt, laying it diagonally off to the left. Now pass the other end of the lacing through the hole last used, and carry it over the first strand of the lacing on the inside of the belt, passing it through the first hole used, and lay it diagonally off to the right. Now proceed to pass the lacing through the holes of the belt in a zigzag course, leaving all the strands inside the belt parallel with the belt, and all the strands outside the belt oblique. Pass the lace twice through the holes nearest the edge of the belt, then return the lace in the reverse order toward the center of the belt, so as to cross all the oblique strands, and make all the inside strands double. Finally pass the end of the lacing through the first hole used, then outward through an awl hole, then hammering it down to cause it to hold. The left side is to be laced in a similar way.

(4) J. M. C. writes: 1. I have just made six cells, 1 zinc 1½ inches by 3½ inches, 2 carbons 1½ inches by 3½ inches. I want to know if they will turn, or more than turn, the motor described in March 17 issue? A. Your batteries will turn the motor, but will give very little power. 2. Can I construct a smaller one on the same principle? A. Yes; follow out the same general proportions. 3. Can I make the field magnet solid, either wrought or cast, and, if built up, are the joints broken just where they happen to come? A. Yes; when built up the joints are broken just as they happen to come. 4. How is induction coil made to suit as many of my cells as would be proper to use, in an ordinary medical battery? I would like to have working directions. A. For induction coils and very full directions for making, see SUPPLEMENT, Nos. 160, 166, and 569.

(5) E. H. L. writes: I am much interested in your admirable description of a small dynamo as furnished in SCIENTIFIC AMERICAN SUPPLEMENT, No. 600. I want such a one for running a single arc lamp, such as requires 50 Bunsen cells. This dynamo does not furnish E. M. F. high enough for such, I fear. Can it be wound with finer wire, and so made suitable for our needs without otherwise altering the dimensions? Perhaps you can also tell me where I could get such a one made complete, for a reasonable price, or of any other pattern that will answer. We want an experimental dynamo for general purposes as well as for the arc lamp of our projector. How high candle power does the dynamo furnish in an arc lamp? How will the light compare with an ordinary lime light? A. The dynamo, when made as described in the SUPPLEMENT, No. 600, will answer your purpose perfectly. To adapt it to an arc light, all you need to do is to connect all of the wires of the field magnet in series, then arrange the dynamo as a shunt machine, and add some resistance to that of the field magnet in the shunt, the amount to be determined by experiment. Then have the winding of the armature secured by a sufficient number of bands of brass wire to prevent its destruction by centrifugal action, also wrap the wires leading to the commutator cylinder with adhesive tape, and finally increase the electromotive force by increasing the speed to say 3,000 revolutions per minute. The light will be ample for projection. With a parabolic reflector it will be superior to the calcium light.

(6) G. R. F. asks the process of taking and using glue moulds. A. A good gelatine mould may be made in the following manner: Soak the best white glue in cold water for 24 hours, then drain off all the water. Melt the soaked glue in a water-jacketed kettle, then pour the glue upon the object, the latter being incased in a lead or pasteboard box. Let it cool for 12 hours, then separate the cast from the object. If the object be a statuette, a thread should be attached to the back, and extended out of the mould at both ends, so that it may be used for cutting open the mould after it is cooled, to permit of taking out the statuette. A good material for a mould is made in the following way: Dissolve 20 parts of fine gelatine in 100 parts of hot water, and a d ⅛ part of tannin and the same amount of rock candy. It is said that a mould made of gelatine or glue alone may be made more durable by pouring over it a solution of bichromate of potash in water, 1 part of bichromate to 10 of water, and afterward exposing it to sunlight. Most objects require oiling slightly before being covered with glue or gelatine.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

March 20, 1888,

AND EACH BEARING THAT DATE.

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

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