

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 This is for our information and not for publication.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.

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Niinerals sent for examination should be distinctly marked or labeled.

(7232) H. G. V. writes: 1. I tried to make some batteries. I cut lead plates about 6×7 and roughened them with a coarse rasp, put red lead paste on each side, with strips of asbestic cloth next to each plate and a piece of cardboard between. Have six to eight plates to each cell on the outside of the bunch. I put thin boards with three hard rubber tubes that pass through all and hold them together; each bunch is put in a bard there any battery of higher voltage than the bichromate rubber jar. I charged them once and got good results; tried to recharge, but could get nothing. Used the same current both times, which is 125 volts and about 4 or 5 amperes. Do not think they are short circuited. Put them in series with alternate fields. What is the in an issue of three or four weeks ago? A See Supple. trouble? A. For charging storage cells use a continuous current; place them in series. Allow 21/2 volts for each cell. The remaining voltage of your current must be disposed of by resistance coils or lamps, arc lights preferred, since they carry more current than incandescent lamps. Thus, if you have 10 cells, 10×2'5 volts=25 volts. If the current is of 125 volts, there remains 100 volts, which two arc lamps in series will use up. Or you points: First we have 7 foot head or 7 feet over the wheel can cheaply make a coil of No. 10 bare iron wire for the and the forebay or water house is 10 feet by 12 square. same purpose. The advantage of the lamps would be that you can do the charging at night, if you have any use if I make the water house larger, or do I gain any power for the light. They should charge in series with the alternator field. If they get 21/2 volts per cell, which you can easily measure; but with only 4 or 5 amperes, it will 'ing the water bay of your wheel. The head or height require 21/2 to 2 times as long to charge them as with 10 of the surface above the wheel and the quantity of water volts each when in series with the alternator field since is the measure of your water power. If your race is the resistance of the field coil is so great as compared small, so that it does not keep the water in the bay at with the very low resistance of the cells 2. Should they be charged in series or separately? If in series, would I the bay, in order to gain power. get the same voltageper cell as when charged separately? A. Storage cells are always charged in series. Put as many in one series as will use up the voltage of the circuit at 2½ volts per cell. That is, divide the voltage of the circuit by 2.5; the quotient is the number of cells which should be put in one series thus: $125 + 2 \cdot 5 = 50$ cells. As many such series may be put in multiple as the current can supply. 3. What can I cover the batteries with to keep from spilling the fluid and keep the salts from creeping? A. There is no remedy for spilling, except to keep the battery still. Salts may be kept from creeping by coating the upperedge of the cell with paraffine. Dip the edge of the cell into the melted paraffine. 4 If the field of a motor gets hot on a warm day, would it pay to put an air blast on? A. If the heating is so great as to endanger the insulation, something should be done. It indicates too strong a current in the field. An air blast might cool it: additional external resistance in series with the field will also remedy it.

(7233) A. B. J. asks: 1. Where can I obtain any information regarding size and description of how a solid back telephone transmitter is made, and also what kind of carbon is used in the same? A. See Scientific American, vol. 72, No. 7. 2. Would carbon such as used in arc lights, finely powdered, answer same purpose? A. Yes; but not quite as well as the polished granules. 3. What is meant by kilowatts or watt hours? A. A kilowatt is 1.000 watts. A watt hour is one watt of electric power flowing for one hour through a wire. 4. What is a Wheatstone bridge? A. A Wheatstone bridge is an instrument for measuring electrical resistance. We should advise you to study carefully some text book on electricity. Avery's "School of Physics," chap. 6, is excellent.

(7234) T. B. B. writes: I have a small engine, the cylinder of which is 2×4 inches. Would you kindly tell me how large a boiler I will have to make to work it economically? A. Your engine at 60 pounds boiler pressure, and with 150 revolutions per minute, should be equal to one-half horse power, and will require a boiler with 10 square feet of fire heating surface. You will find a description and scale drawings for safe boilers f the size you require in SCIENTIFIC PLEMENT, No. 702, 10 cents mailed.

(7235) E. D. A. asks: Will you give the formula for a lasting luminous paint? A. We can send you five papers on the subject of luminous paint on receipt of fifty cents, which will give you all the neces-

(7236) W. C. asks: How to wind the 8 light dynamo described in Scientific American Sup-PLEMENT No. 600, to convert the same into a 550 volt motor for direct current? A. You should not attempt to convert the dynamo of Supplement No. 600 into a motor for a 550 volt direct current. The design is not fitted for it: the number of turns for the armature coils would have to be too great, and the commutator could not stand the current. The armature would require 40 turns in each coil of No. 28 wire. The same field could probably be used with a regulator of about 400 ohms.

(7237) G. E. R. writes: Will you kindly inform me through Notes and Queries how to prepare a solution to be used as a flux for brazing? What kind of solution or mixture can be applied to remove borax easily after brazing? I have been using borax as a flux, but find some difficulty in getting the spelter to flow into the joints, as the borax seems to fill and keep out the spelter. Bicycle alarm, C. Schonlank

I also find the melted borax is very hard to remove after brazing; of course dipping the hot parts into water would remove the surplus flux after brazing, but it tempers the steel, which I want to guard against. Borax is the only suitable finx for brazing. It should be ground with water to a creamy consistence on a small slab of stone made slightly hollow on the surface to hold the mixture. Hard slate or a fine hard sandstone is most suitable. Use a small brush and smear the surfaces that are to be brazed, with enough outside to hold the spelter from falling off. A small piece of brass laid on the upper side of the joint will often flow through better than the loose spelter. Use hydrocbloric acid and water equal parts to clear the joint of borax. Have it hot and dip the work when cooled just below the red; then the steel will not harden. If the borax is not all removed, it may be thoroughly cleaned off by boiling the joint a few minutes in the acid water. See "A New Book on Bicycle Repairing," by Burr, \$1 by mail, which fully describes the best methods of brazing.

(7238) J. T. B. asks (1) whether it would not be better to wind the induction coil (Supple-MENT, No. 160) all the way across with silk covered wire. A. No; the wire wouldcost more than it would be worth the gain would be almost nothing in length of spark. 2. Would not adhesive tape be better for insulating purposes? A. No. Adhesive tape soon dries, and is of no more value than a porous cloth would be: the spark would pass through it easily. 3. Would it be any thinner? A. That would depend on the quantity you used, but it is not a suitable material for the purpose. The insulation of the primary coil must be impervious to air. 4. Is cell? A. No practical battery. The bichromate battery is the best for your purpose. 5. Have you any issue of your paper describing some experiments with alternating electricity, for which I could use the alternator described MENT, Nos. 762, 763, 792, 847 and 855. 6. Can you give me a formula for a liquid to remove rust from a bicycle A. Try Kerosene oil.

(7239) W. G. M. says: I write you for a little information. I am repairing a water mill with a turbine wheel, and want your advice on the following Now what I want to know is, shall I have any more power over the wheel? A. You can gain no power by enlarg-The probability is that the cells do not get 21/2 that you can make effective on the buckets of the wheel nearly full head, the race should be made larger, and not

> (7240) S. L. asks: Which contains the greater number heat units-one ton of coal or one barrel of petroleum? A. A ton of coal (2,000 pounds) has a heating capacity of about 28,000,000 heat units. A barrel of petroleum (42 gallons, or about 275 pounds) has a heating capacity of about 3,500,000 heat units, or 1/8 as much as a ton of coal.

> (7241) T. O. S. asks for the formula of D. W. C. Hoover's pyro and potash developer:

Water..... 12 ounces.

Sulphite soda crystals	2 "
Citric acid	0 grains.
Bromide ammonium2	0 "
Pyro	1 ounce.
No. 2.	
Water1	2 ounces.
Sulphite soda crystals	2 "
Carbonate of potash	3 "
To develop, take	
No. 1	1 drachm.
No. 2	1 **
Water	1 00000

To develop a 5×8 plate take water, 4 ounces; No. 1 2 drachms; No. 2, 2 drachms. If more intensity is re quired, add more of Nos. 1 and 2. More of No. 1 will restrain and of No. 2 will accelerate.

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For which Letters Patent of the United States were Granted

NOVEMBER 9, 1807.

AND EACH BEARING THAT DATE.

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

Adjustable wrench, M. M. Funk	. 593,354
Air brake hose coupling, Bragg & Moyers	593 581
Alarm. See Bicycle alarm. Fire alarm. Ash pit, C. Jackson. Bag. See Clothes bag. Punching bag.	000,001
Ash nit C. Jackson	593 540
D- Coo Clubboo b- Dunching bo-	. 000,010
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Baking pan, G. J. Cave. Baling press, A. Barrett.	. 593,390
Raling press. A. Rarrett	593 504
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Baling press, E. J. Shirley	. 550,080
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ton	593,294
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Bearing, shaft, M. H. Barker	
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Bedstead fastening, E. F. Tilley	502 444
D. A. C. L.	. 000,444
Bedstead rail grip joint, L. C. Neff	. 593,330
Bell, door, W. B. McAshan	. 593,233
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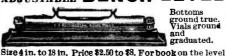
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ill p. e,	Drilling and boring machine, horizontal, W. B. Pearson. Just pan, J. Jeklin. Jye, violet disazo, F. Bender. Dyeing, V. G. Bloede. Dynamo, constant current, C. N. Black. Eaves trough hanger, C. F. Throm. Egg case, C. A. Prechtel. Electric cable joint or coupling, G. Tailleur. Electric circuit controller, J. H. Bowley. Electric switch, H. E. Waite. Electric switch for chandeliers or brackets, J. W. Parkin.	593,286 593,287
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