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MARCH, 1893, NUMBER.—(No. 89.)

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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 This is for our information and not for publication.

(4757) N. N. writes: I have an artesian well 612 feet deep, 5 inches diameter, and flows 190 gallons of water a minute. How much power can I get from it, and in what way can I test the pressure of it with a steam gauge?

(4758) R. V. De B. writes: It is proposed to feed a reservoir from a lake situated on a higher level. The lay of the land is such that a canal with a slight but continuous fall could be constructed from the lake to the reservoir.

(4759) E. R. F. asks: If the air contained in a cylinder 8 inches long and 1 1/2 in diameter is compressed into 1/2 of that space, with the pressure of how many atmospheres would it rest on a square inch of surface?

ounce, what force in pounds would it exert on the bullet, and how far and with what force or penetrating power would such a force drive it (the bullet)?

(4760) W. K. M. asks: Has the process of tempering aluminum been discovered yet, and is it possible to use it in the open air without fear of its tarnishing?

(4761) F. W. W. says: I have a few hives of bees which I keep for pleasure. Ever since I first had them, my extracted or strained honey has sugared or crystallized.

(4762) C. G. C. asks: Will there be a gain (if so, how much?) in mixing hot air (furnace gases) with steam in working an ejector (pump) to lift cold water on high lifts to prevent condensation of steam?

(4763) W. C. R. asks: How can I count the flaps of a small bird's (sparrow) wings, and how may I compute the area of a bird's wing which is somewhat irregular in form?

(4764) Subscriber asks: Can wood carbon be used instead of battery carbon in an arc light? A. Wood carbon was the material used in producing the electric arc by Sir Humphry Davy, but it is not as good as the manufactured carbon made from powdered coke.

(4765) H. G. asks: What explosive powder when mixed with powdered magnesium will cause a powerful instantaneous flash, suitable for photographic purposes?

(4766) A. D. M.—A good cement for celluloid is made from 1 part shellac dissolved in 1 part of spirits of camphor, and 3 to 4 parts of 90 per cent alcohol.

(4767) G. M. R.—The designs for watch works are made on an enlarged scale, generally ten times the size, which makes the actual dimension expressed with a decimal point one digit to the left.

(4768) E. R. S. asks: 1. What book is there on friction, suitable for a young student, yet giving practical calculations, such, for instance, as finding the horse power required to keep an axle or shaft turning at a required speed?

tricity," \$1 by mail. Multiply the desired horse power by 746, divide by the potential difference at your disposal.

(4769) R.—No one has the right to make a patented article for his own use without consent of the patentee.

(4770) O. M. W. writes: I have built a small electric machine, windings and pattern after the 8 light dynamo described in the SCIENTIFIC AMERICAN, except size; armature 3 1/4 inches long, 2 3-16 inches in diameter; magnet waists oval, 1 x 2 inches; 4 inches long; magnet coils 18 wire gauge; armature No. 20; 16 commutator bars; each armature coil six turns per layer, two layers deep.

(4771) W. H. D. writes: I want to know about the resistance necessary for a 1/2 horse power motor when running it with fan on a 500 volt T. H. street railway circuit, with amperage bearing as high as 240.

(4772) W. A. S. writes: I have been trying to smelt tin cans, tin clippings, and all kinds of rough iron scrap, in a common straight cupola such as all foundries use, and have been unable to get any iron.

(4773) C. E. B. asks how big a space he needs for the gas in a gas engine with a cylinder 1 1/2 inches in diameter and a stroke of 2 1/4 inches, also how big space he requires for the compression of the air.

(4774) M. T. B.—Your proposed improvement in telescopes would have no value, as the defects of each telescope and mirror would be multiplied; furthermore, each reflection and each refraction of the light absorbs an appreciable quantity, so that your telescope would lack in illumination as well as defining power.

(4775) W. M. C.—(1) First select a clean perfectly fitting cork for each bottle. Then melt your salve and pour it into the bottles from a vessel provided with a spout, taking care in doing so not to allow any of the grease to touch the inside surface of the neck.

(4776) E. F. S. writes: I was in a store the other day, and saw a clerk take a cotton string about six or eight inches long (common wrapping twine) and stick it to a glass showcase on the inside with a piece of wet paper across the middle and let both ends hang down alike, but opposite each other, from the round side of the showcase.

(4777) A. A. asks what size wire to wind the four cores of a small shunt wound dynamo, the cores of which are 4 inches by 2 inches by 3/4 inch. I wish to wind these with such wire as will, when wound to about 5-16 inch thick all over, permit about 1 ampere of current only to pass through the coils.

(4778) T. B. writes: I have a magnet that I wish to wind to obtain best results. The size of the cores is 2 inches long and 5-16 inch in diameter. What size and quantity of wire shall I wind on bobbins?

(4779) G. A. G. asks: How far will the electricity now in use on the electric street railways jump

from one trolley wire to the other, supposing the wires to be cut, and how far would the electricity jump, supposing I extended an additional wire from the trolley wire toward the ground or rail? A. The current on a trolley wire will not jump across a space until the wires are first placed in contact and then separated so as to form an arc. When the wires are touched and separated, an arc of probably two or three inches might be produced.

(4780) G. T. W. asks: Are there two kinds of electricity? How are the batteries made they use on railroads for telegraphy? They are not gravity batteries. They look white, as if made of some kind of salt. A. The idea of two kinds of electricity was exploded long since, although they are sometimes spoken of now as positive and negative electricity. The batteries to which you refer are probably the Edison Lalande batteries. You will find a description of this battery in SUPPLEMENT, No. 792.

(4781) C. M. asks: 1. Regarding the speed of electricity, how fast does it travel through or over a cable? A. The speed of electricity varies greatly under different circumstances. In the Atlantic cable it is very much retarded, so that it requires two or three seconds to send a signal. The speed of electricity under the most favorable circumstances is about the same as that of light, viz., 185,000 miles per second. 2. Can water be compressed? A. Water can be slightly compressed.

(4782) J. B. asks: What pressure of steam is carried on the boilers of passenger steamers on the ocean, using triple and quadruple expansion condensing engines? A. Steam pressures on boilers of large ocean steamers is 125 to 180 pounds per square inch.

(4783) P. & M. ask: What link in a moving train of 20 cars has the most weight on it? Please answer in order to settle a wager. A. The first link.

(4784) A. W. B. asks the method used in adjusting the cork used in making the joints of certain wood wind instruments, as the clarinet, flute, and others. A. The corks for flutes, clarinets, and other instruments are cut by means of thin tubular cutters. They are secured to the joint of the instrument by means of bichromatized glue or marine glue.

(4785) H. W. R. asks: 1. For recipe for the most durable whitewash for trees. Also for wood fences, if different. A. For a durable whitewash for trees and fences, 1 bushel best white lime, slaked in boiling water. Add to the cream 4 pounds sulphate of zinc and 2 pounds common salt dissolved in water. Make the mixture thin enough to use with the brush. If a light brown color is required, add a little hydraulic cement, ochre for yellow and Venetian red for pink or red. 2. How can we best make cinders from our boilers available for durable walks? If to be mixed with cement, what kind of cement and in what proportion? A. For walks of cinders and ashes use one part of hydraulic cement to equal parts of sifted cinders and fine ashes or sand. Lay coarse cinders on the bottom, roll or ram hard and finish with the cement mixture from one to two inches thick, as you can afford.

(4786) W. J. M. asks: What government holds the fastest cruiser and the highest speed attained by the same for certain length of time? A. The Argentine government, 22 knots, six hours.

Replies to Enquiries.

The following replies relate to enquiries published in the SCIENTIFIC AMERICAN, and to the numbers therein given.

(4687) Answering No. 4687, the method of winding Thomson-Houston spherical armatures is as follows: Two shells of cast iron form heads, iron bridges are put from one head to the other and these wound with iron wire, forming an oblate spheroid. An insulating covering is put on and the surface divided into six sections by wooden pegs. Beginning at end of shaft opposite from the armature, one half of No. 1 coil is wound in sections opposite one another. Armature is turned next 120° and 1/2 of No. 2 coil wound. Turn 120° and wind whole of No. 3 coil. Turn 120° and wind remainder of No. 1. Turn 120° and wind remainder of No. 2. Connect all of inside ends together and carry outside ends to commutator segments. A 96 A. 1250 V. dynamo of this make has 10 ohms No. 7 B. and 8. wire on field magnets and 12,075 feet No. 12 B. and S. on armature, the resistance of the coils averaging about 13.25 ohms, two always being in series. Such an armature weighs about 520 pounds. J. G. (4693) will, I think, find that article he refers to in the Electrical World. It was published in 1889 or thereabout, in the early part of the year.—C. M. D.

TO INVENTORS.

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TRADE MARKS.

Table listing trade marks with page numbers, including: Bicycles, Kenyon Bicycle Manufacturing Company, 22,661, Biscuit and crackers, L. A. Goudy, 22,654, Boots and shoes, N. P. Company, 22,650, Cathartic, H. H. & Company, 22,650, Coffee, J. Aparicio & Co., 22,635, Coffee and spices, Wheeling Coffee and Spice Company, 22,636, Complexion powder, Tetlow Manufacturing Company, 22,644, Compositing, for cleaning wood, marble, tilings, ceilings, etc, C. J. Jorgensen, 22,655, Confections, H. Williamson, 22,632, Corn in the form of flakes, alimentary products from, Indianapolis Hominy Mills, 22,637, Corsets, H. B. Claffin Company, 22,628, Detachable, H. Platt, 22,630, Drilling, Patent, Hooper & Co., 22,630, Engraving plates for making relief-cuts, T. M. Bell et al., 22,600, Gum, chewing, S. B. Lafferty, 22,633, Hair dressing, M. T. Hickey, 22,645, Hams, bacon, and shoulders, Swift & Company, 22,638, Lace pins, scarf pins, studs, and similar articles, R. M. Meade & Co., 22,627, Lotions for remedial purposes, D. A. Bowker, 22,646, Medicinal plasters, G. M. Dorrance, 22,662, Medicines and remedies, homeopathic and other, Munson's Homeopathic Family Medicine Company, 22,647, Metal and anti-friction journal bearings, Babbitt, T. Hertz & Son, 22,658, Mineral water and beverages into which it enters as a constituent, Waukesha Hygeia Mineral Springs Company, 22,643, Oil, lubricating, Reliance Manufacturing Company, 22,650, Oysters, W. L. Ellis & Co., 22,640, Paints, stns, varnishes, and similar articles, Harrison Bros & Co., 22,656, Pork products, pig, McDowell Packing Company, 22,639, Pumps, Red Jacket Manufacturing Co., 22,638, Pumps, wood, C. S. Burlingham, 22,644, Remedy for bog cholera and other diseases, E. C. Rosenz, 22,648, Remedy for neuralgia, E. B. White, 22,648, Salves and liniments for animal use, Reliance Manufacturing Company, 22,651, Sewing machines, Chicago Sewing Machine Company, 22,662, Sheet, Mink, Hooper & Co., 22,631, Steel and iron, soft, Wilmot & Hobbs Manufacturing Company, 22,659, Steel hardening and tempering compound, W. F. Altemus, 22,647, Whisky, D. L. Blyer & Co., 22,641, Wines and brandies, Germain Fruit Company, 22,642

A printed copy of the specification and drawing of any patent in the foregoing list, or any patent in print issued since 1863, will be furnished from this office for 25 cents. In ordering please state the name and number of the patent desired, and remit to Munn & Co., 361 Broadway, New York.