

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line.

"U. S." metal polish. Indianapolis Samples free. Wood pulp machinery. Trevor Mfg. Co., Lockport, N. Y.

Send for free catalogue of tricks for parlor and stage. 284 Asylum St., Room D, Hartford, Conn. Emerson, Smith & Co., Ltd., Beaver Falls, Pa., will send Sawyer's Hand Book on Circulars and Band Saws free to any address.

Split Pulleys at Low prices, and of same strength and appearance as Whole Pulleys. Yocom & Son's Shafting Works, Drinker St., Philadelphia, Pa.

The "Olin" Gas and Gasoline Engines, from 1 to 10 horse power, for all power purposes. The Olin Gas Engine Co., 222 Chicago Street, Buffalo, N. Y.

Perforated Metals of all kinds and for all purposes, general or special. Address, stating requirements, The Harrington & King Perforating Co., Chicago.

Send stamp for circular of castings and parts of the dynamo-motor advertised on page 336, Scientific American. Elbridge Electrical Mfg. Co., Elbridge, N. Y.

The best book for electricians and beginners in electricity is "Experimental Science," by Geo. M. Hopkins. By mail, \$4; Munn & Co., publishers, 361 Broadway, N. Y.

Patent Electric Vise. What is claimed, is time saving. No turning of handle to bring jaws to the work, simply one sliding movement. Capital Mach. Tool Co., Auburn, N. Y.

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Notes & Queries. HINTS TO CORRESPONDENTS. Names and Address must accompany all letters, or no attention will be paid thereto.

the regulation of the current is automatic." Just before this it describes the way in which shunt-wound dynamos regulate themselves in arc lighting where the lamps are connected up in series.

(5626) J. P. G. writes: 1. In SUPPLEMENT, No. 641, on page 10240, in second column, you give No. 18 wire for armature, and on next page, last column, No. 16 for same.

(5627) C. S. asks how to make a dry cell. A. See our SUPPLEMENT, Nos. 157 and 767; also the SCIENTIFIC AMERICAN, vol. 61, No. 20, and vol. 67, No. 2.

(5628) E. F. asks: 1. What must be the essential difference between an arclamp designed to burn on a constant potential circuit and one designed to burn on a constant current circuit?

(5629) W. S. D. writes: The recent application of electricity to canal boats is regarded as a great invention. Now, it has always been stated that steam could never be used as a motive power on canals for the reason that the banks were undermined and ruined by the wash of the swiftly moving boat.

(5624) G. A. M. asks (1) for a compound with which to coat wood and metals so that they will resist the action of the acids such as are used in batteries.

(5625) E. R. W. asks: 1. Please tell me exactly how the resistance of commercial German silver wire compares with that of pure copper.

(5630) W. J. R. asks: How is it that stumps of trees are found in the bogs of Ireland as far as twenty feet from the surface, which look as if they had been broken off?

trees. The part above the water decaying, left the stumps under water, which preserved them until the vegetable growth converted the pond or swamp into a peat bog.

(5631) R. W. C. asks for a formula for computing the number of pounds pressure a boiler will stand, if you know the thickness of the iron and the size of the boiler.

(5632) C. W.—Catgut is made by scraping the entrails of sheep, twisting them while stretched, and holding them so until they are dry.

(5633) J. R. asks: 1. A test suitable to make before an audience to demonstrate the existence of opium in cigarettes.

(5634) W. C. asks: 1. What determines which is the positive pole in a thermo-electric pair?

(5635) D. W. R. writes: We have a dynamo (5 K. W.), 105 volts. Could I connect it so that I could weld iron or "burn" sheet lead?

(5636) G. A. G. asks: 1. Can I draw electricity from a storage battery and use it for heating in welding and smelting iron and minerals, and how shall I proceed?

(5637) C. H. McD. writes: 1. I have four storage batteries running a 4 candle power lamp of 6 volts. At times the lamp grows dim and then brightens up again; what is the cause of the batteries acting so?

TO INVENTORS. A newspaper of forty-four years, and the preparation of more than one hundred thousand applications for patents at home and abroad, enable us to understand the laws and practice on both continents, and to possess unequalled facilities for procuring patents everywhere.

Table listing various inventions and their corresponding page numbers, including items like Air drying apparatus, Air warming furnace, Alarm, Amusement apparatus, Arrow, Bag, Band cutter and feeder, Battery, Bearing, adjustable spindle, etc.

INDEX OF INVENTIONS For which Letters Patent of the United States were Granted December 19, 1893, AND EACH BEARING THAT DATE.