

Business and Personal.

The charge for insertion under this head is One Dollar a line for each insertion; about eight words to a line. Advertisements must be received at publication office as early as Thursday morning to appear in the following week's issue

Cutting-off Machines, 3 and 4 1/2", for prompt delivery. Send for descriptive circulars and prices. W. P. Davis, Rochester, N. Y.

"U. S." metal polish. Indianapolis. Samples free. Presses & Dies. Ferracute Mach. Co., Bridgeton, N. J. 6 Spindle Turret Drill Presses. A. D. Quint, Hartford, Ct. Mixing machinery. J. H. Day & Co., Cincinnati, Ohio. Ag'ts and sub's wanted. Scientific Machinist, Clev'd, O.

Universal and Centrifugal Grinding Machines. Pedrick & Ayer, Philadelphia, Pa.

Will sell, or place on royalty, valuable railroad patent, No. 446,274. J. B. W., Box 210, Minneapolis, Minn.

The Improved Hydraulic Jacks, Punches, and Tube Expanders. R. Dudgeon, 24 Columbia St., New York.

For pumping engines. J. S. Mundy, Newark, N. J.

Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Light and Canal Sts., New York.

Centrifugal Pumps. Capacity, 100 to 40,000 gals. per minute. All sizes in stock. Irvin Van Wie, Syracuse, N. Y.

Crandall's patent packing for steam, water, and ammonia. See adv. next week. Crandall Packing Co., Palmyra, N. Y.

Guild & Garrison, Brooklyn, N. Y., manufacture steam pumps, vacuum pumps, vacuum apparatus, air pumps, acid blowers, filter press pumps, etc.

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

Wanted—Novelties to manufacture on royalty, in cutlery, cutting instruments, or malleable iron tools. S. T. Roller, 10 Appleton St., Holyoke, Mass.

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

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.

What do you want to buy? We will send without cost to you, catalogues, price lists, and information concerning anything you wish. Parot, Willey & Co., 265 Broadway, New York.

Competent persons who desire agencies for a new popular book of ready sale, with handsome profit, may apply to Munn & Co., Scientific American office, 361 Broadway, New York.

For Sale—Patent No. 471,891, issued March 29, 1892, for brake shoe. This invention provides a brake shoe for road wagons, having a face which may be readily renewed, and is formed of a single casting. For particulars address Mark A. Penney, Perris, Cal.

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.

INDEX OF NOTES AND QUERIES. Table with columns for topic and page number.

(4352) A. V. F. asks: 1. Why is cyanide of copper better than sulphate of copper for plating? A. Because an alkaline solution will not corrode the metal upon which the copper is to be deposited. An acid solution will corrode some metals, and the thin film of oxide would prevent the adhesion of the copper. 2. Why cannot sulphate of aluminum be used as well as sulphate of copper for electrotyping? A. No method has been discovered as yet for using sulphate of aluminum for electrotyping.

(4353) T. H. B. asks: Is the trolley wire insulated or not? A. It is supported by insulators but has no insulating covering.

(4354) C. F. Van D. asks: 1. What kind of glass jars must I use in making Leyden jars? I have tried common fruit jars, also flint glass jars procured at the druggists'. The fruit jars give best results, but neither give even fair results. Is it in the composition of the glass? A. Use glass which contains no lead. A great deal depends upon the composition of the glass and the thickness of the walls of the jar. They should be rather thin. 2. I have constructed a Winshurst influence electrical machine, and get splendid results. It was made according to description in SCIENTIFIC AMERICAN some years ago. When I turn the handle, I notice that there is a very peculiar odor noticeable. Is this what is called "ozone"? Is it injurious to inhale the same, or otherwise? A. The odor you describe is due to ozone. It is not especially injurious, but if inhaled continuously will produce a headache, and curiously enough it often cures a headache.

(4355) E. H. A., Dallas, Texas, asks how to construct best a "polar chamber," and what to do with the injurious heavy drops of dew collecting on the cold walls? The hot weather here is upon us, and polar chambers would be perhaps a luxury, if not a health resort. A. The best arrangement for a "polar"

or cool chamber is by the use of compressed air, say to a pressure of 15 lb. per square inch, allowing the air to cool to normal temperature in coils of pipe in the outer air, and then discharge in a closed room. This will give a temperature in hot weather in your climate of about 60° with very little cost for air compression. A windmill or gas engine may be used for compressing the air. We do not advise a lower temperature than above stated, if so low. The change on going in and coming out will be too great for health. The walls should never be cold enough to collect moisture or dew.

(4356) J. A. L. asks: 1. How much coal would be required to furnish 1 horse power for ten hours, if used by a fairly economical stationary steam engine? A. 60 to 80 pounds of good coal should run your engine ten hours. 2. Have been unable to prepare sensitized silver paper that would keep according to formula prescribed in query No. 3240 without getting a milky precipitate and small granular crystals on the paper. A. We think the precipitate is a chloride of silver. There may have been too much citric acid added. Try another brand of albumen paper. Sometimes this is defective. Another formula, said to be an improvement, is as follows:

- Silver nitrate..... 2 oz. Citric acid..... 1 " Alcohol..... 1 1/2 fl. oz. Water..... 16 oz.

The paper is floated two minutes in hot water, and three minutes in cold water. It should be carefully dried and kept in a dry place.

(4357) F. H. T. asks: 1. In washing dry plates after developing or fixing can I use salt water (sea water)? If not, why? A. No, because in drying it will leave the plate covered with chloride of sodium or salt. 2. Why does the alum solution that I use for hardening the film discolor, and does it make any change in the ultimate result? If it does not, where does the coloring matter come from? A. The coloring of the alum is due to the developer left in the plate after washing and to the gelatine. By filtering the alum each time and keeping it in a stoppered bottle it can be used repeatedly. In hot weather it is advisable to use a fresh bath of alum for each batch of plates. Cramer's chrome alum solution is considered the best.

(4358) R. E. D. asks: 1. Will you kindly inform me what the tonnage of American vessels is at present, and what it was before the war? Is the American merchant marine increasing under the present administration? When the war vessels now being built are finished, will the United States navy be able to repel a naval invasion by any foreign country, and protect our ports from bombardment? Is farming by irrigation being employed to any extent in the Western and Pacific States and Territories? A. The largest tonnage built in any one year was in 1855—533,000 tons. Since then it has varied in different years from 100,000 to 250,000. The total tonnage of the United States is about 4,000,000 tons and has steadily increased. We think the United States is amply able to repel any attack from a single nation. An invasion is out of the question. Irrigation is largely on the increase in the Western States, and will eventually become the means of farming thrift over millions of acres of our arid lands.

(4359) C. L. K. asks: 1. What is the black incrustation which forms on the zinc plate of a gravity battery. Does it increase the internal resistance? My zinc are made from scrap sheet zinc. When it is dissolved in nitric acid, and ammonium hydrate is added, a bluish precipitate falls. How can copper form there when the zinc does not come in contact with any copper sulphate? A. The black incrustation referred to is metallic copper in a finely divided state. Probably a little copper sulphate is mingled with the zinc sulphate. 2. Why is the incrustation harder to remove when the battery (36 cells) is working through 2,000 ohms than when 1 cell is working through 10 ohms? Merely jarring the zinc will remove it in the latter case, while it takes hard and continued scraping to get it off in the former. A. In the case of 36 cells, probably owing to the greater resistance of the circuit, a greater amount of copper was deposited upon the zinc. 3. Does an abundance of precipitated copper on the copper plate increase the internal resistance? A. It has the opposite effect. 4. Will zinc sulphate crystallize over the edges of the jars before the solution is saturated? A. It is always liable to do so. 5. Why are not the coils of a sounder made of German silver wire instead of copper. Its price per ohm is much less than copper, and the coils could be placed much nearer the magnets? A. It is a mistaken idea to suppose that resistance alone adds any efficiency to a magnet. It is a question of ampere turns. If the ampere turns can be secured in a magnet without any resistance, so much the better. The use of German silver for magnets would be something like drawing steam through a coil of small pipe when a large straight pipe could be used for the same purpose.

(4360) W. H. P. asks: 1. What are the data and process for computation of the motive power to be obtained from the flow of an artesian well? A. The water power of an artesian flowing well may be obtained by measuring the quantity of water delivered at the highest available point in cubic feet per minute. Multiply by 62 1/2 pounds to a cubic foot and by the height of available flow in feet from the ground and divide the product by 33,000 pounds for the gross horse power. Of this you can utilize from 60 to 80 per cent for power by water wheels or turbines. 2. Is there a method of connecting and firmly uniting pieces of vulcanized rubber; or car spring rubber for example? A. For firmly cementing rubber springs together use rubber cement prepared for vulcanizing and heat in a vulcanizing oven. Composite cements will not stand the elastic strain on car springs. No perfect way of uniting vulcanized rubber is known.

(4361) A. F. H. wishes to know how old faded photographs can be restored. A. The print is removed from the mount by soaking in warm water. Then it is immersed in a weak solution of bichloride of mercury and warm water, 10 grains of the bichloride to 4 ounces of water. See SCIENTIFIC AMERICAN SUPPLEMENT, No. 451, for full directions.

TO INVENTORS.

An experience of forty 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. A synopsis of the patent laws of the United States and all foreign countries may be had on application, and persons contemplating the securing of patents, either at home or abroad, are invited to write to this office for prices which are low, in accordance with the times and on an extended facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Granted

May 10, 1892.

AND EACH BEARING THAT DATE.

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

Table listing inventions with names of inventors and page numbers. Includes items like Acid pan and making the same, Advertising machine, Aerial balloons, etc.

Table listing inventions with names of inventors and page numbers. Includes items like Draught equalizer, Drier, Drum, heating, Dust collector, Earthenware, etc.