

of a donkey in relief waiting for the feed supposed to be in the feed-box.

DESIGN FOR A BOX-COVER.—H. L. CROLL, New York, N. Y. The design is produced on the top of a box cover and consists in a major wreath, inclosing two minor wreaths, and these minor wreaths respectively inclosing portraits.

NOTE.—Copies of any of these patents will be furnished by Munn & Co. for ten cents each. Please state the name of the patentee, title of the invention, and date of this paper.

Business and Personal Wants.

READ THIS COLUMN CAREFULLY.—You will find inquiries for certain classes of articles numbered in consecutive order. If you manufacture these goods write us at once and we will send you the name and address of the party desiring the information. **In every case it is necessary to give the number of the inquiry.**

MUNN & CO.

- Marine Iron Works. Chicago. Catalogue free.
- Inquiry No. 4231.**—For manufacturers of aluminum bones for sharpening knives.
- AUTOS.**—Duryea Power Co., Reading, Pa.
- Inquiry No. 4232.**—For makers of Ferris wheels for use at fairs and summer resorts.
- Morgan Emery wheels. Box 517, Stroudsburg, Pa.
- Inquiry No. 4233.**—For makers of fans driven by spring motors.
- "U. S." Metal Polish. Indianapolis. Samples free.
- Inquiry No. 4234.**—For catalogues, prices and descriptions of automobiles suitable for a livery.
- Blowers and exhausters. Exeter Machine Works, Exeter, N. H.
- Inquiry No. 4235.**—For makers of light, portable bandsawmills.
- Handle & Spoke Mch. Ober Mfg. Co., 10 Bell St., Chargin Falls, O.
- Inquiry No. 4236.**—For makers of plows with an elevator attachment for placing dirt into wagons.
- Mechanics' Tools and materials. Net price catalogue. Geo. S. Comstock, Mechanicsburg, Pa.
- Inquiry No. 4237.**—For domestic and foreign manufacturers of inflatable rubber toys, such as balloons, etc.
- Sawmill machinery and outfits manufactured by the Lane Mfg. Co., Box 13, Montpelier, Vt.
- Inquiry No. 4238.**—For a machine for cutting wire into lengths and winding it around a small package.
- Let me sell your patent. I have buyers waiting. Charles A. Scott, Granite Building, Rochester, N. Y.
- Inquiry No. 4239.**—For a steam jacketed vulcanizer for making artificial rubber limbs, etc.
- MANUFACTURERS!** Want any parts made of any metal? Write us. Metal Stamping Company, Niagara Falls, N. Y.
- Inquiry No. 4240.**—For makers of wire cushions for invalid chairs.
- Inventions developed and perfected. Designing and machine work. Garvin Machine Co., 149 Varick, cor. Spring Sts., N. Y.
- Inquiry No. 4241.**—For dealers in second-hand pool and billiard tables.
- Manufacturers of patent articles, dies, stamping tools, light machinery. Quadriga Manufacturing Company, 18 South Canal Street, Chicago.
- Inquiry No. 4242.**—For a mechanical lawn grass (not leaf) rake.
- FOR SALE.**—Patent No. 670,432. Hat fastener clasp head as did old elastic, but is applied under hair. Address Emma T. Miller, Urumia, Persia.
- Inquiry No. 4243.**—For makers of apron springs for use of sporting men, etc.
- Crude oil burners for heating and cooking. Simple, efficient and cheap. Fully guaranteed. C. F. Jenkins Co., 1103 Harvard Street, Washington, D. C.
- Inquiry No. 4244.**—For makers of shot guns, hammer and hammerless guns, etc.
- The largest manufacturer in the world of merry-go-rounds, shooting galleries and band organs. For prices and terms write to C. W. Parker, Abilene, Kan.
- Inquiry No. 4245.**—For makers of hose, hose reels, cut-off nozzles, spanners, hydrant wrenches, axes, etc.
- We manufacture anything in metal. Patented articles, metal stamping, dies, screw mach. work, etc. Metal Novelty Works, 43 Canal Street, Chicago.
- Inquiry No. 4246.**—For makers of small steel castings or small steel pressed work.
- The celebrated "Hornby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York.
- Inquiry No. 4247.**—For dealers in "Wheatstones Dial Telegraph Instruments."
- Contract manufacturers of hardware specialties, machinery, stampings, dies, tools, etc. Excellent marketing connections. Edmonds-Metzel Mfg. Co., Chicago.
- Inquiry No. 4248.**—For dealers in phosphorescent sulphide of calcium.
- WANTED.**—A competent and energetic foreman for brass manufacturer making brass fittings. One who is a good manager of men and systematic in the handling of work, also practical in designing tools. A growing opportunity for the right man. Address with references "Brass Manufacturer," Box 773, New York.
- Inquiry No. 4249.**—For machinery for grinding bones for fertilizing purposes.
- FOR SALE.**—Patent desk calendar (No. 722,705, March 17, 1903) accepted by four San Francisco wholesale stationery houses for regular drummers' line for Pacific coast. A money maker for party who has means to introduce extensively. F. H. Smith, 2019 Broadway, San Francisco, Cal.
- Inquiry No. 4250.**—For makers of adding machines.
- Manufacturers desired for the manufacture under royalty of valuable U. S. air compressor patents. Invention great success and growing rapidly into large use abroad. Principals only dealt with. Full particulars on application to Box 722, c. o. Judd's, 5 Queen Victoria Street, London, England.
- Inquiry No. 4251.**—For information as to the new telephone system lately devised.
- WANTED.**—A factory superintendent for progressive manufacturer of brass and iron fittings. A man versed in general machinery and tool practice and thoroughly systematic in management of work and output. Must be qualified in the handling of men and perfectly reliable for taking charge of factory. Give references and address "Manufacturer," Box 773, New York.

Notes and 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.
- Buyers** wishing to purchase any article not advertised in our columns will be furnished with addresses of houses manufacturing or carrying the same.
- 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.

(9035) J. T. K. asks: 1. I want to magnetize a needle to saturation, steel $\frac{1}{4}$ x 1-16 inch, 3, 6 or 12 inches long (but I suppose the length would not make any difference, so it was long enough for the winding). How many ampere-turns should I use? How long should the current be kept in the circuit? A. To magnetize a bar of steel by a battery, wind a coil of a few turns of wire of such a size that the bar will slip easily through it. Connect it to the current, and pass the bar back and forth a few times from the middle to the end and then to the other end, etc., stopping at the middle before cutting off the current. If you have an electromagnet with an iron core such as a telegraph sounder, you can magnetize a small bar by drawing it from end to end along one of the ends of the core of the electromagnet. It is well to draw it in the opposite direction along the other core, also, the same number of strokes to each core. If you would use a dynamo current for the magnetizing, you may connect the coil or electromagnet for the purpose in series with a lamp, arc or incandescent, and use the current which lights the lamp to do the work.

2. Have you a SUPPLEMENT that explains how to wind a transformer for a certain output, both step-up and step-down? That is, how many primary turns to how many secondary turns? If not, where can I get a book at low cost that will tell? A. We have not published any plans for transformers. You will find some in the book "Electrical Designs," which will take 200, 400, or 1,000 volts, and deliver 15, 32, 50 or 100 volts, or the reverse.

(9036) A. W. writes: During a late residence of five months on the highland of Bolivia at 13,000 feet above sea-level, I noticed that all colorless transparent glass assumed a deep violet hue after a short time. The neighborhood is flat and sandy, forming the bed of a dried-up lake. The district is subject to violent electrical disturbances. Borax, magnesia and niter are present. Can you tell me the cause of the violet color of the glass? A. We should look for the cause of the discoloration of the glass to some substance in the region rather than to the altitude. But we are not able to explain the case satisfactorily to ourselves. Some reader may have knowledge on the matter.

(9037) A recent note gave figures for the pressure used in organ bellows in pounds per square inch. It is the custom of builders to rate the pressure to be used in the organ in inches of water, determined by the difference of level in the two arms of a "U" tube, one arm of which is connected to the bellows. In our statement the error was made to give as pounds per square inch figures which should have been given as inches of water. A firm of builders has given us the following data: "Pressures of air usually employed are 3 to 3½ inches on the manual pipes, and 3½ to 4 inches on the pedals. In very large organs this is very often increased as high as 8 inches on the pedals and from 8 to 15 inches where there is a solo organ."

(9038) W. L. W. asks: Requiring to gild the first surface of a glass mirror whose surface must remain optically true, we have tried the formula furnished by Prof. Schwarzenbach. The experiment has failed entirely, although conducted with care. Can you say also whether any particular method for making the marsh gas is required to insure purity? A. The following process, devised by Wernicke and improved by Böttger, will undoubtedly give thorough satisfaction. Three solutions are prepared. a. Dissolve 1 gramme pure gold in aqua regia, evaporate to dryness in the water bath to expel excess of acids, take up with water and dilute to 120 cubic centimeters. b. Dissolve 6 grammes pure caustic soda in 100 c.c. of water. c. Reducing solution: Dissolve 2 grammes dextrose in 24 c.c. water and add 24 c.c. alcohol and 24 c.c. acetaldehyde of 0.870 spec. grav. This solution should always be freshly prepared, as it deteriorates on standing. For gilding, mix in the ratio of 64 c.c. of solution a, 16 c.c. of solution b, and 1 c.c. of solution c. The glass surface to be gilded should be cleaned thoroughly with caustic soda solution, but not with acid. Marsh gas is obtained in pure form by mixing 2 parts sodium acetate, 2 parts caustic potash and 3 parts quicklime, and heating the mixture.

(9039) M. K. McQ. says: 1. What amount of electricity is used in decomposing a given amount of water? A. One coulomb of electricity will decompose water so as to give 0.00010384 gramme of hydrogen and 0.0008256 gramme of oxygen. This is an amount of current given by one ampere flowing at a pressure of one volt for one second. Any other amounts are calculated easily from this. 2. Give a formula or recipe for a cement that will firmly unite meerschaum and silver. As a subscriber of the SCIENTIFIC AMERICAN I cannot say enough in its praise as an up-to-date scientific publication. a. Dissolve good glue in water and add half as much linseed oil varnish and one-quarter as much Venice turpentine as the amount of glue used. b. Mix 3 parts copal varnish, 1 part linseed oil and varnish, 1 part oil of turpentine and 1 part glue. c. Mix Canada balsam with carpenters' glue 2 ounces and Venice turpentine ¼ ounce.

(9040) O. R. B. asks how to lag pulleys. A. Cast-iron pulleys may be lagged with leather without the use of rivets, by first brushing over the surface with acetic acid, which will quickly rust it and give a rough surface; then attach the leather to the face of the pulley with cement composed of 1 pound of fish glue and ½ pound of common glue. To Cover Pulleys with Paper.—Scratch the face of the pulley with a rough file thoroughly, so that there are no bright or smooth places. Then swab the surface with a solution of nitric acid, 1 part; water, 4 parts; for 15 minutes; then wash with boiling hot water. Having prepared a pot of the best tough glue that you can get, stir into the glue a half ounce of strong solution tannic acid, oak bark, or gallnuts, as convenient to obtain, to a quart of thick glue; stir quickly while hot and apply to the paper or pulley as convenient, and draw the paper as tightly as possible to the pulley, overlapping as many folds as may be required. By a little management and moistening of the paper, it will bind very hard on the pulley when dry, and will not come off or get loose until it is worn out. Use strong hardware wrapping paper.

(9041) G. F. M. says: 1. Do you know of a process to remove iron rust, fats or acid stains from marble, without cutting it down? A. Grease spots can often be removed by applying over the spot some fuller's earth or powdered chalk, saturated with benzine; let lie for a few hours, then remove and scour. Acid stains cannot be removed, as they eat into the marble. Iron stains can sometimes be removed by the use of hot strong caustic soda solution. Oxalic acid is much more likely, however, to remove the stain, but will more or less attack the marble. 2. What substance will produce the greatest volume of gas when brought in contact with fresh or salt water? A. Metallic lithium will probably yield the greatest volume of gas when brought in contact with water. Theoretically, 7 pounds of lithium will yield 1 pound of hydrogen gas, equivalent to over 5,000 liters, or about 180 cubic feet.

(9042) G. W. says: Would you please send me a receipt for making a good library paste, one that will keep for an indefinite length of time and one that would answer the purpose of a photo-mounter? A. Dextrine forms the base of nearly all library pastes. The dextrine is treated chemically, and the manufacture is entirely unlike that of ordinary pastes. Many of these pastes are patented. We have no definite formula. For \$1 we will look up and send two or three copies of patents which will give you an idea of the composition and methods of manufacturing such pastes.

(9043) J. J. McV. says: Can you inform me where I can obtain the following information in regard to wood pulp? 1. About what is its weight per cubic foot when in the pulp? Also its weight per cubic foot after it has been compressed into the solid form? A. Wood pulp is always put on the market in the form of a coarse board; the specific gravity in this form will vary, being dependent on the nature of the wood, the method in which the pulp has been made, and its relative dryness. We cannot find any figures published, and doubt whether any determinations have been made of its specific gravity. 2. Can it be made impervious to moisture, and reasonably free from decay, if placed in the earth? And does the process of making it so materially increase the cost? A. The treatment to which pulp is subjected in the manufacture of indurated ware, fiber pipe or papier mache makes it quite impervious to water. The cost of such treatment is considerable, relative to the cost of the wood pulp itself. 3. When compressed into the solid form what is its tensile and shearing stress per square inch? A. We know of no records of these tests. 4. What is the approximate cost per cubic foot or pound of the compressed product when made from the coarsest, cheapest kinds of timber, in large quantities? A. We have no information on this subject. 5. What is the process of making the pulp from the coarsest timber? And also how is it made waterproof? A. There are two general methods, mechanical and chemical. The mechanical is simply a grinding operation. The chemical method is subdivided into two, the soda method and the sulphite method. Descriptions of the methods of making wood pulp are beyond our limit of space, but the details can be found in all chemical technologies. It is waterproofed with rosin dissolved in boiled linseed oil.

NEW BOOKS, ETC.

INDIA RUBBER AND GUTTA PERCHA. By T. Seeligmann, G. L. Torrilhon and H. Falconnel. London: Scott Greenwood & Co. New York: D. Van Nostrand Company. 1903. 8vo. Pp. 402. Price \$7.50.

A complete practical treatise on these two gums, dealing with the historical, botanical, arboricultural, mechanical, chemical, and electrical aspects is this work, translated from the French by John Geddes McIntosh. The literature of rubber is extensive, as is shown by the excellent bibliography. It is rather surprising that the invention of vulcanization is credited to Nelson Goodyear instead of Charles Goodyear. It is to be hoped that the error will be corrected. The book is an excellent one, but some views of American rubber plants might have profitably been included, also rubber-tire making. Foreign authors are apt to forget that the rubber industry was brought to perfection by American inventors. Thomas Hancock does not deserve much credit for what he did, and the story is not given in the volume before us.

LE NAVIRE POUR PASSAGERS. Essai sur un Type Nouveau de Navires sans Tangage et sans Roulis Evitant Ainsi le Mal de Mer aux Passagers Inchaivrables et Insuissibles après Abordage. Par C. Turc, Lieutenant de vaisseau, Ancien élève de l'Ecole polytechnique. Paris: E. Bernhard et Cie. 1903. Pp. 88.

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