

SUNSHINE AND RAIN.

For Latest Improved Meteorological Apparatus, Self-recording Anemometers, Automatic Rain and Snow Gages, Barometers, Wind Vane Registers, Sunshine Recorders, U. S. Army Signaling Heliographs, etc., etc., write to

JULIEN P. FRIEZ,

109 GERMAN STREET, BALTIMORE, MD., U. S. A.

(Special U. S. Government Contractor.)

Photographic Sunshine Recorder.

STANDARD Instruments and Apparatus for Schools, Colleges, Observatories, State Signal Corps, National Guard and Export. (Catalogue and Price Lists Free.) Remember: The Best are the Cheapest, always.

PRACTICAL WORKING DRAWINGS

OF CORLISS AND AUTOMATIC ENGINES

From 25 H.P. to 500 H. P. Both types are now successfully manufactured either SIMPLE, TANDEM or CROSS-COMPOUND, and represent standard practice in the UNITED STATES. COMPLETE SETS OF BLUE PRINTS furnished by the designer and builder, having 15 years' experience; prints show every needed dimension, guaranteed correct, and furnished at a fraction of the cost. GAS ENGINE Designs and Drawings furnished. Address: C. M. GIDDINGS, M.E., ROCKFORD, ILL., U. S. A.

POCKET PRESTO CAMERA



A Photographic Wonder. A Midget in size, a Giant in capacity. 50 film exposures, or 4 glass plate exposures without reloading. Makes big pictures—good ones too. Size 1 1/4 x 1 1/4. A REAL POCKET CAMERA. Rounded corners.

So Simple a Child Can Operate it. Snap Shot or Time Exposures. Price, complete, with film and glass plate magazines, loaded for 25 exposures, \$2.50. Illustrated booklet on receipt of stamp. Sample mounted photo free if you mention "Scientific American."

A KINETOSCOPE FOR \$1.00

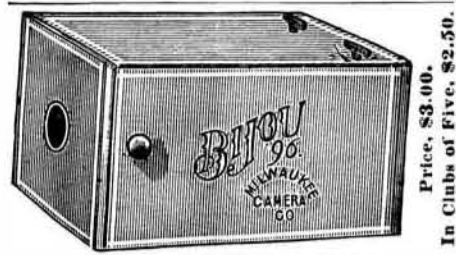
Scientific! Simple! Wonderful! Presents its subjects in colors. See Scientific American issue of June 20. Viscoposcope complete, with one set of 6 subjects, express prepaid to any United States address, \$1.25. Extra Viscoposcope Subjects, price per set of six, 25 cents. Agents wanted.

E. B. KOOPMAN, SOLE MANUFACTURER, 35 S. WILLIAM ST., NEW YORK.

THE NEW BRISTOL COUNTER



Registers an accurate account of work done on printing presses, grain mills, weighing, measuring and other automatic machines. Counts up to 1,000,000 and repeats automatically. Simple, accurate, durable. Special counters on order. Send for circular. C. J. ROOT, Bristol, Conn., U. S. A.



THE POCKET BIJOU

takes 25 exposures with one loading. Size of photo, 2x2 inches. Size of camera, 2 1/2 x 3 x 4 1/4 inches. Achromatic Lens. Time and instantaneous shutter. Every camera tested and warranted. Local and traveling agents wanted.

MILWAUKEE CAMERA CO., Milwaukee, Wis.



GRINDER

made to attach to any size or make of pumping wind mill, and grind all kinds of grain. A wonderful machine. Also manufacturer of Steel Wind Mills. E. B. WINGER, Station R, CHICAGO.

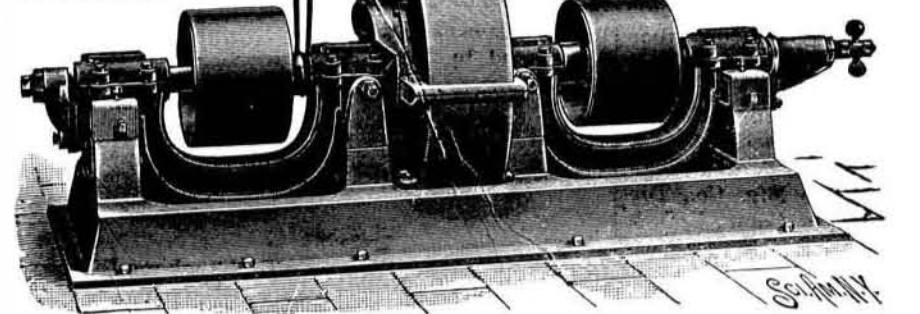


WOOD Machiner

Foot and Hand Power. Agents Wanted in Every County. L. F. PARKS, 2622 Colerain Ave. CINCINNATI, O.

ROBINSON PATENT GRINDING MILL.

BEST IN THE WORLD.



MANUFACTURED BY

MUNSON BROS.,

ESTABLISHED 1825.

UTICA, N. Y., U. S. A.

For Grinding Corn, Corn and Cob, Oats, Spices, Oil Cake, Glue, Sugar, Corn Hulls, etc. Capacity 3000 to 5000 pounds of feed meal per hour.

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. 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.

(6899) H. H. B. asks: 1. How many feet of No. 30 German silver resistance wire would it take to reduce a current of 20 cells Mescro dry battery (in series—about 6 amperes with a potential of about 90 volts) to 1/100 of an ampere, and about what would it cost? A. Approximately, 220,000 feet. You would do much better if you would employ some other type of resistance, or if you would use finer wire. Thus one fourth of the above length of No. 34 wire would answer. 2. What is the best mixture with which to launder collars and cuffs and shirts? A. It is more a matter of manipulation than of starch. You may add a little paraffine wax. A sad iron with an irregularly roughened surface is used. 3. What would be a good colorless enamel or lacquer? A. Celluloid varnish is probably the best colorless lacquer, although white shellac answers very well. The formula for colorless lacquer would depend upon the metal, etc., to which it is to be applied; no general formula. 4. How can we get rid of those small red spiders that stay in the woodwork of a house? A. Try using borax around the cracks; it is doubtful if anything will be very efficacious. 5. How must I charge the induction coil described in "Experimental Science" to get a 5 inch spark? A. Make it twice as large in its lineal dimensions, and wind secondary in six or more sections.

(6900) G. C. W. writes: I have 25 cells of storage battery which I wish to charge and use about 10 hours a day. I also have a 110 volt direct current line at my disposal. Is it the best to connect the cells all in series, and then in series with a 110 volt lamp, and let it charge while using, or would it be better to put a 50 volt lamp in series? The reason I wish to use the storage battery is to get a steady current; the charging current varies at times. If neither of the ways is correct, please advise what is best. A. The lamp will cut down your current a good deal, leaving you about half of an ampere of charging current when connected with the battery. This will make the charging very slow. Otherwise the arrangement will work. Always charge in series.

(6901) H. B. L. says: Will you kindly advise me through the columns of the SCIENTIFIC AMERICAN as to the best paste to use for attaching paper labels to tin? I am now using a paste, the basis of which is dextrine, but it leaves the edges sticky, and a preliminary application of acid is necessary. A. 1. 4 parts shellac, 2 parts borax; water, 30 parts; boil until the shellac is dissolved. 2. Add 4 ounces dammar varnish to 1 pound of tragacanth mucilage. 3. Balsam of fir, 1 part; turpentine, 3 parts; use only for varnished labels. 4. Butter of antimony is good to prepare the tin for the label. 5. Venice turpentine added to good starch paste makes an excellent mounting medium. 6. Use liquid glue or glue dissolved in acetic acid. 7. Add 1 ounce of tartaric acid to each pound of flour used in making flour paste. 8. Add 10 per cent flour to tragacanth mucilage. 9. Corrosive sublimate, 125 parts; wheaten flour, 1,000 parts; absinthe, 500 parts; tansy, 500 parts; water, 15,000 parts. This cement is useful for vessels which are kept in a damp place. 10. Starch, 100 parts; strong glue, 50 parts; turpentine, 50 parts; the whole boiled in water. This cement dries quickly.

(6902) G. J. O. writes: I would be pleased to have you inform me of the method or process of amalgamating zinc properly. A. If you will rub on mercury with a strip of zinc used as the rubbing tool having scraped your zinc surfaces and dipped them in weak acid, you should have no trouble in uniformly amalgamating them. You may try dipping in an acid solution of mercury, nitrate or chloride (corrosive sublimate), or simply rub the clean zinc wet with acid with a lump of corrosive sublimate. The latter is a most dangerous poison, and rubber gloves should be worn in using it, and if there is any cut on the hand, do not attempt the process described.

(6903) J. H. G. asks (1) how to make a good cement for hard rubber. A. Dissolve bleached gutta percha in carbon bisulphide. Cement, and when dry brush over carbon bisulphide in which sulphur has been dissolved, or take equal parts of pitch and gutta percha melted together, and linseed oil is added, which contains litharge. Melt until all are well mixed; use no more of the linseed oil than necessary. Apply warm. 2. If the voltage of an induction coil is known, how can the length of spark be found? A. As an approximation allow 10,000 volts to one-tenth inch. 3. How can I make a heavy white smoke which is not poisonous? A. Mix hydrochloric acid vapor with vapor of ammonia, or use steam. The latter, except for its dampness, is the most satisfactory on the large scale.

(6904) H. S. H. says: Will you please inform me where I can get information in regard to varnishing maps and drawings or, rather, preparing for varnish? A. Stretch your muslin (ordinary cotton stuff) on a wooden stretcher by means of tacks, cover your map on the back with an even and thin coat of good boiled starch or flour paste or other sticking materials, no matter what, if it only sticks. Lay the map on the cloth, only taking care to do this smoothly and to avoid

wrinkles; rub it evenly down after temporarily covering the place you rub with a piece of clean paper, so as to avoid friction over the map itself. Let it dry, and the work is done. In order to avoid wrinkles, it is quite essential to let your paper map, after being covered with the starch paste, soak for a few minutes, so as to give the paper a chance to expand from the moisture. It will then, while contracting from the drying, obtain a very smoothly stretched surface. Bookbinders always carefully observe this when pasting papers on book covers, etc. When dry, size with a weak solution of gelatine and then varnish. A good varnish for paper and maps is made with gum mastic, 6 parts; sandarac, 3 parts; dissolved in a mixture of 3 parts turpentine and 22 parts of alcohol. These ingredients, with the exception of the turpentine, are placed in a tinned copper vessel, in a bath of hot water, and are stirred for several hours until the gums are dissolved; the turpentine is then added and the stirring continued an hour longer, after which strain the varnish and set it aside for use.

(6905) J. H. G. says: I wish you would give a receipt through your valuable paper to make an amber oil varnish, same as the best violin makers use. Also how to apply same. A. The true Cremona varnish is of unknown formula; its preparation is a lost art. Amber, fused.....5 oz. Oil of turpentine.....5 " Drying linseed oil.....5 " The following is for a spirit varnish: Mastic.....1 dr. Sandarac.....1 " Lac.....6 1/2 " Alcohol.....5 fl. oz.

To tinge with yellow, annatto, aloes, gamboge, or turmeric may be used; for red, dragon's blood or red sanders wood. By mixing the above, intermediate shades may be obtained. The formula is only half the art; much depends on the application, treatment between coats, etc. It should be done by an expert.

(6906) S. F. says: Can you give me a table which will show how far a safety bicycle will roll in feet with each revolution of the cranks?

Table with 4 columns: Gear Inches, Distance Ft., Gear Inches, Distance Ft. Rows include gear sizes like 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64 and corresponding distances.

(6907) J. L. Q. says: Will you kindly inform me how to make and what different articles to use to make carton pierre such as is used in the manufacture of ornaments for picture frames? A. The following is a formula for such a composition: Glue, previously dissolved in water, 13 parts; pulverized litharge, 4 parts; white lead, 8 parts; plaster of Paris, 1 part; very fine sawdust, 10 parts. Oil the moulds in which it is cast to prevent adhesion.

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.

- Marine Iron Works, Chicago. Catalogue free. Cheap 2d hand lathes & planers. S. M. York, Clev'd, O. Concrete Contractors—Make more money by extending your business. Investigate Ransome's Concrete Construction. Liberal terms for exclusive rights. Ransome & Smith Co., 758 Monadnock Block, Chicago. "E. S." metal polish. Indianapolis. Samples free. Presses & Dies. Ferracore Mach. Co., Bridgeton, N. J. Handle & Spoke Mch. Ober Lathe Co., Chagrin Falls, O. Cheap 2d hand engines & boilers. S. M. York, Clev'd, O. Carpenters—Make more money. Investigate Ransome's Concrete Construction. Easily learned. Liberal terms for exclusive rights. Ransome & Smith Co., 758 Monadnock Block, Chicago. Screw machines, milling machines, and drill presses. The Garvin Mach. Co., Laight and Canal Sts., New York. The celebrated "Hornsby-Akroyd" Patent Safety Oil Engine is built by the De La Vergne Refrigerating Machine Company. Foot of East 138th Street, New York. More profitable than your business. Investigate Ransome's Concrete Construction. Easily learned. Liberal terms for exclusive rights. Ransome & Smith Co., 758 Monadnock Block, 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. Engineers—Go into the profitable business of Concrete Construction, Ransome's System. Easily learned. Liberal terms for exclusive rights. Ransome & Smith Co., 758 Monadnock Block, Chicago. Stay with your job, and with your wages pay installments for a profitable olive orchard. Booklet free. Whiting's Olive Colony, Byrne Building, Los Angeles, Cal. A Wall Street lawyer gives advice on patents, obtains capital, and incorporates companies, taking stock of company in payment. Box 168, Equitable Building, N. Y. City. Young Men seeking a profitable business should invest in Ransome's Concrete Construction. Easily learned. Liberal terms for exclusive rights. Ransome & Smith Co., 758 Monadnock Block, Chicago. MANUFACTURING INVITED.—Parties with paying articles for manufacture needing additional capital and location, write Secretary Board of Trade, Tidewater, Pa. No boomers; no experiments; only practical business now paying, or which can be made to pay, a reasonable per cent. on investment desired. General Contractors—Make more money. Investigate Ransome's Concrete Construction. Easily learned. Liberal terms for exclusive rights. Ransome & Smith Co., 758 Monadnock Block, Chicago. Send for new and complete catalogue of Scientific and other Books for sale by Munn & Co., 361 Broadway, New York. Free on application.