

changeable as rights or lefts, so that the plates may be worn down evenly.

CAROUSEL.—Milton T. Weston, Kenton, Ohio. In the construction provided for under this patent the carriages may swing outward from their supporting arms at angles varying with the velocity at which the revolutions are made. Each carriage is also provided with its own driving mechanism, operated by pedals by those occupying the carriage, and all the carriages being connected with a multiple drum, one section only of which is connected with one carriage.

TRUSS.—Douglas Reid, New Richmond, Wis. This truss is designed not to bind the hips or interfere with the free movement of the limbs. The pressure of the pad may be regulated by drawing together the rear portions of the band, the springs being designed to afford only the lightest necessary pressure.

WATER CLOSET FLUSHING TANK.—Richard A. L. Blondel, Boston, Mass. According to the improvements covered by this patent, the discharge valve, valve seat and attachments are removably and adjustably connected with the "spud" in the bottom of the tank, and the disagreeable sound caused by the passage of air through the overflow pipe at the time of discharge of water from the tank is prevented. The flushing or main discharge valve is automatically locked and held open for a certain length of time, and then released and caused to close slowly and noiselessly.

CASTRATING FORCEPS.—Ned Farish, Jackson, Miss. This is a tool in which a medicated sponge is held on the upper jaw in front of the knife to reduce loss of blood and obviate the use of clamps, etc.

Designs.

INLET VALVE CASING.—Richard A. L. Blondel, Boston, Mass. This design comprises a horizontal flange or extension of the body of the valve casing in connection with a vertical cylindrical offset arranged beneath and joined with the flange.

BRUSH BACK.—Charles Osborne, New York City. This back is ornamented with forget-me-nots and conventionalized floriate scrolls framing a plain surface, with festoons beneath a shell-like figure at the top of such surface.

NOTE.—Copies of any of the above patents will be furnished by Munn & Co., for 25 cents each. Please send name of the patentee, title of invention, and date of this paper.

SCIENTIFIC AMERICAN BUILDING EDITION.

JUNE, 1895.—(No. 116.)

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2. An elegant plate in colors showing a cottage at Bronxwood Park, Williamsbridge, N. Y., recently erected at a cost of \$2,200. Perspective view and floor plans. Mr. A. F. Leicht, architect, New York City. A neat design.
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12. Miscellaneous contents: The Hanging Gardens of Babylon.—Perspective drawings.—Concrete roofs.—Points of support.—Architects' estimates.—An improved hot water heater, illustrated.—A new invention for raising water, illustrated.—Improved paving.—The Bommer spring hinge, illustrated.—A mixing regulator for gas machines, illustrated.—Adjustable sliding door track and hanger, illustrated.—Woodworker's improved vise, illustrated.—African mahogany.—A new steam and hot water heater, illustrated.—Powers' improved automatic chimney top, illustrated.—Improved wood working machinery, illustrated.

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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.

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.

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Minerals sent for examination should be distinctly marked or labeled.

(6550) F. W. L. asks: 1. What is a good dressing for leather belts, also for rubber belts? A. Lubricator for Belts.—Five parts of India rubber are cut fine and melted together with 5 parts oil of turpentine in an iron, well covered vessel; then add 4 parts of resin, stir well, melt, and add 4 parts of yellow wax, stirring constantly while melting. This mixture while warm is added, with constant stirring, to a melted mixture of 15 parts fish oil and 5 parts of tallow, and the whole is agitated until it has congealed. The mass is applied to old belts upon both sides in a warm place, and when the belts are in use, from time to time upon the inner side. By this treatment they become very durable.

2. How can I make a good cement for holding the splices of a leather belt? A. Leather Belting, Cement for.—Take of common glue and American isinglass, equal parts; place them in a boiler, and add water sufficient to just cover the whole. Let it soak ten hours, then bring the whole to a boiling heat, and add pure tannin until the whole becomes ropy or appears like the white of eggs. Apply it warm. Buff the grain off the leather where it is to be cemented; rub the joint surfaces solidly together, let it dry a few hours, and it is ready for practical use. And if properly put together, it will not need riveting, as the cement is nearly of the same nature as the leather itself. 3. What is the best commutator lubricant? A. Heavy petroleum oil applied very sparingly with a cloth slightly moistened with the oil. 4. How can I find the horse power of a common slide valve engine? A. Horse Power of Steam Engines.—Multiply the square of the diameter of the cylinder in inches by 0.7854, and this product by the mean engine pressure, and the last product by the piston travel in feet per minute. Divide the last product by 33,000 for the indicated horse power. In the absence of logarithmic formulae or expansion table, multiply the boiler pressure for $\frac{1}{2}$ cut-off by 0.91, for $\frac{3}{4}$ cut-off by 0.85, $\frac{1}{2}$ cut-off by 0.75, 3-10 cut-off by 0.68. This will give the mean engine pressure per square inch near enough for ordinary practice, for steam pressures between 60 and 100 pounds, always remembering that the piston travel is twice the stroke multiplied by the number of revolutions per minute.

(6551) N. A. D. writes: In getting ready to start our engine, we found that the valves would not work. We removed the cylinder head to ascertain the cause, and we found four of the bolts broken, or the heads snapped from the bolts that hold the following head. The engine was left at half stroke, and the force was great enough to fly from the following head down to bottom valves. No water or ice in cylinder. Corliss engine, one hundred and eighteen horse power. I am at a loss to know the cause of the breakage. Will you explain? A. The breaking of a follower bolt is not unusual, but that four should break at the same time is inexplicable. Possibly they have not broken at once, but consecutively, and taken refuge in the exhaust valve until their number made an obstruction.

(6552) P. J. M. asks what the word horizon means in patents. A. It means the same as it does in any connection, i. e., the most remote visible limit of the earth's surface, or a line parallel with that limit where it adjoins the sky.

(6553) M. E. K. asks how pipes can be stopped leaking where they screw in the fittings on a hot water system. I am having some trouble with them and cannot stop the bad ones. A. The leaky pipe joints show bad work in putting together. Clamps can be made to fit the joints and bolted on with packing of iron

putty or rubber. The correct way is to take the work apart and make up the joints properly.

(6554) C. A. B. writes: 1. In the electric chime described in Hopkins' "Experimental Science" page 814, are the bells all of one size or will it be necessary to make a pattern for each? A. The bells are of different sizes. You could doubtless save money by purchasing the bells ready tuned. 2. How much wire will it want on the spool of the magnet for a bell with a 6 inch rim? A. Probably $\frac{1}{2}$ ounce of No. 24 wire on each spool will be right for a battery current.

(6555) S. W. asks how fast a boat 12 feet long, 33 inches beam, using a 6 inch 2 bladed propeller, can travel in calm water. The boat is good model. For motive power I wish to use the simple electric motor described in SUPPLEMENT, No. 641, running it with 4 cells of storage battery. How long can I run the boat and shall I use a flat or round belt? A. Four miles per hour is as much as you can expect with the motor and battery named. You should have not less than 6 cells. We do not recommend a belt. Use cut gearing and bring the shaft down to the motor. You may run from 6 to 8 hours.

(6556) F. H. writes: Suppose a circular piece of metal $2\frac{1}{2}$ inches diameter, and of certain thickness, weighs 10 pounds. How to find the weight of a double diameter (5 inches) piece of same thickness as former, then weight of a triple diameter, etc. A. The weights are as the areas. For the area, square the diameter and multiply by 0.7854. Twice the size is four times the weight for equal thickness.

(6557) J. B. B. writes: A young mechanic made the assertion the other day that if a gage was put under the bottom of a steam boiler and the boiler was put in use, the gage would only show the pressure of the water. I should think that the gage would show the pressure of the water plus the pressure of the steam. A. The gage will show the steam pressure added to the water pressure, as you suggest.

(6558) S. W. L. says: Will you please publish in your query column a receipt for making printer's tablet glue? A. The composition is said to be prepared as follows: Glue, 4 pounds; glycerine, 2 pounds; linseed oil, $\frac{1}{2}$ pound; sugar, $\frac{1}{4}$ pound; aniline dyes, q. s. to color. The glue is softened by soaking it in a little cold water, then dissolved together with the sugar in the glycerine, by aid of heat over a water bath. To this the dyes are added, after which the oil is well stirred in. It is used hot. Another composition of a somewhat similar nature is prepared as follows: Glue, 1 pound; glycerine, 4 ounces; glucose sirup, about 2 tablespoonfuls; tannin, one-tenth ounce. Give the composition an hour or more in which to dry or set before cutting or handling the pads.

NEW BOOKS AND PUBLICATIONS.

MONETARY SYSTEMS OF THE WORLD. A study of present currency systems and statistical information relative to the volume of the world's money. With complete abstracts of various plans proposed for the solution of the currency problem. By Maurice L. Muhleman. 1895. New York: Charles H. Nicol. Pp. 198. Price \$2.

A great amount of very curious and interesting information is contained in this work. We do not care to investigate the author's private views, but the simple information as to the standard coins of different countries is of much interest, and the archaeological point, that it is very difficult to supplant a coin of long acceptance, is brought out very clearly in respect to many lands. It really seems strange that mankind should be willing to live in so confused a state as regards measures and weights, and Mr. Muhleman's book is merely another demonstration of the fact that it is very hard to bring about a change for the better.

THE BROWNIE SONG BOOK. A book of brownie songs for children (young and old). Words and music written, composed and adapted by S. G. Pratt. London: Stanley, Lucas, Weber & Co. Chicago: Laird & Lee. Price 50 cents.

TO INVENTORS.

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