either water or air. The piston is operated until the obstructions are removed.

FOOT GEAR PATTERN.—Adolf Ehrenreich, New York City. This invention consists principally of a main or foundation plate forming the outlines of shoe patterns, and slides held adjustable on the main plate give outlines for various parts of the pattern. The improvement is readily adjustable for any size and style of shoe or other foot gear.

PENCIL OR PEN HOLDER FOR SLATES OR DRAWING BOARDS.—Philip E. Hannum, Carterville, Mo. The improved holder appliance consists of a case attached to the end strip of the frame, preferably by means of clamping flanges. The case has different compartments for the reception of a knife, rule, erasers, etc., and on its cover are serrated sections for conveniently sharpening a pencil.

CAROUSEL.—Milton T. Weston, Kenton, Ohio. This is a merry-go-round in which a number of carriages are made to revolve around a central point through the exertions of the occupants of the carriages. It is of simple, strong, and inexpensive construction, designed to be perfectly balanced in operation, and having an operative mechanism comparatively free from friction.

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.

FEBRUARY, 1895.—(No. 112.)

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1. Elegant plate in colors, showing an artist's home at Bronxwood Park, N. Y. Perspective elevation and floor plan. Cost complete $3,800. Mr. A. F. Leicht, architect, New York City. A unique design.
2. A residence at East Orange, N. J., recently completed for Geo. R. Howe, Esq. Two perspective elevations and floor plans. A pleasing design. Mr. Jas. H. Lindsley, architect, Newark, N. J.
3. A cottage at Glen Summit, Pa., erected for H. H. Harvey, Esq. Two perspective elevations and floor plans. A handsome summer cottage with some novel architectural features. Messrs. Neuer & Darcy, architects, Wilkesbarre, Pa.
4. A residence at Forest Park, Springfield, Mass. Two perspective elevations and floor plans. A combination of the Colonial style with French chateau features. Mr. Louis F. Newman, architect, Springfield, Mass.
5. "Sunnyside." The residence of Robt. S. Walker, Esq., at Flatbush, L. I. Three perspective elevations and floor plans. An exquisite design. Mr. Frank Freeman, architect, New York City.
6. A picturesque and well appointed residence erected for the late E. E. Denniston, Esq., at School Lane, Pa. Cost complete $22 000. Perspective elevation and floor plans. Mr. Geo. T. Pearson, architect, Philadelphia, Pa.
7. A residence at Nutley, N. J., recently erected at a cost of $5,800. Perspective elevation and floor plans. Mr. E. R. Tilton, architect and designer, New York City.
8. A cottage in the Colonial style at Sonthampton, L. I. Two perspectives and floor plans. Mr. C. H. Skidmore, architect.
9. Hall and Library at Glen Ridge, N. J., erected at a cost of about $12,000. Mr. Wilbur S. Knowles, architect, New York City. Perspective view and floor plans.
10. A dwelling in the Colonial style at Sonth Orange, N. J. Cost complete $6,500. Mr. P. C. Van Nuys, architect, Newark, N. J. Two perspective elevations and floor plans.
11. Two views showing a most successful alteration in the Colonial style of the Blinn homestead at Cambridge, N. Y. One view showing the original structure as built over one hundred years ago and the other showing the additions and changes recently made. Mr. H. Inman Furlong, architect, New York City. Perspective views and floor plans.
12. A cottage in the Colonial style at Cushing's Island, Me., erected for Francis Cushing, Esq. Two perspective elevations and floor plans. Cost complete $2,000. Mr. John C. Stevens, architect, Portland, Me. A unique and picturesque design for a model summer home.
13. A Colonial house at Weatogue, Conn., being erected for the summer residence of Arthur M. Dodge, New York City. Perspective view and floor plans. Measrs. Child & De Goll, architects, New York.
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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.

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(6428) B. L. T. asks: 1. Where can I obtain a table giving the safe capacity in amperes of different sizes of German silver wire? A. Use the copper wire tables, taking German silver wire of 2·7 times the diameter of the copper wire given as safe. 2. How can I obtain an illustration of the conduit and grip used on the Broadway cable system? A. See SCIENTIFIC AMERICAN, No. 20, Vol. 68.

(6429) A. B. R. asks: 1. Could 2 or 3 cells storage battery be used to run simple electric motor in "Experimental Science," if so, how many plates per cell and what size? To be run 100 hours. A. Yes. Use two square feet of positive plate. 2. In cab of locomotive running, the brass eye through which bell cord passes out of cab to engine bell becomes charged apparently with frictional electricity, as it emits sparks when whistle is blown. This occurs at night in very dry cold atmosphere. The eye is insulated by the wood of the cab. Three small air pipes are very close and one large steam pipe about eight inches away. Can you explain the phenomenon? A. It is due to the production of so-called frictional electricity, exactly as in the old fashioned frictional electric machine.

(6430) C. S. B. asks (1) what size wire to use for ½ horse power motor for fields and armature. Also the number of sections for armature and number of loops to each coil? A. See our SUPPLEMENT, No. 600. 2. Can you give me the formula for some compound to use on tape for insulating purposes that will not dry out soon? A. If you add castor oil to shellac varnish, it will dry with extreme slowness.

(6431) H. C. L. asks: 1. Would like to be informed in the SCIENTIFIC AMERICAN how to make a cautery cell? A. Any low resistance cell will answer for cauterizing. 2. What is the internal resistance of a standard gravity battery? A. Two to six ohms is a good allowance. 3. Of a Leclanche? A. One or two ohms. 4. What size ports are necessary for cylinder 6 inches diameter, 12 inches stroke, at 40 pounds steam pressure, to make 30 strokes per minute? A. Steam ports 3/16 inch by 4½ inches, and exhaust ports ¾ inch by 4½ inches, as yours is a slow-running engine. 5. What is the rule for such a calculation? A. A good rule for ordinary speed engines is to make the steam ports 1-15 of area of cylinder, and exhaust ports twice the area of steam ports. Arrange width and length to suit any peculiarities in construction of the steam chest.

(6432) A. S. asks: Which is the best kind of glue to use for sticking paper on cast iron 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 INVENTORS.

An experience of nearly fifty 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 unequaled 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 our extensive facilities for conducting the business. Address MUNN & CO., office SCIENTIFIC AMERICAN, 361 Broadway, New York.

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