

RECENTLY PATENTED INVENTIONS.

Railway Appliances.

RAIL JOINT.—Edwin M. Cooke, Brooklyn, N. Y. According to this invention, a jacket is formed to receive the meeting ends of the rails, and wedges are driven between the jacket and the base of the rails, goffers or corrugated portions forming the walls of the wedge recesses, while side plates extend up and bear snugly under the base of the rail. Another patent has also been granted to the same inventor for a rail joint of different construction, in which ways or recesses are provided between the upper side of the base of the rail and the jacket, the wedges fitting these recesses being formed of sections having each a straight and an inclined face, one section being inserted in the way and the other section driven upon the first one.

SWITCH STAND SIGNAL.—Michael B. Hurly, Quebec, Canada. A lantern is secured on a rotating sleeve and made to revolve on a stationary lamp and hood, so that corresponding colored lights will only be seen through in the desired direction up and down the track, the device being intended especially for use with three-way switches, or those by which trains may be directed from a main line to tracks on opposite sides.

SWITCH STAND.—Frank C. Baker, Blue Island, Ill. This invention covers a device in which the lever is thrown parallel with the rails of the track, instead of at a right angle thereto, the improvement being especially designed for use in crowded railroad yards.

AUTOMATIC SWITCH.—Adelbert G. Lawrence, Motley, Minn. This device consists of two revolving shafts placed beneath and at right angles to the main track and side track, and connected by means of levers, links, and pitmen to a throw bar underneath, and attached to the movable track, the switch being operated automatically by the flange of the car wheel.

CABLE GRIP.—Charles S. Chapman, Kansas City, Mo. This is a double socket grip designed for use on roads having duplicate cables, or on single-track roads having passing switches and cables running in both directions in the same tunnel, the main object of the invention being to so construct the grip that the parts subject to the most wear may be readily removed and replaced.

Agricultural.

PLOW.—William W. Leak, Montgomery, Ala. This invention covers a novel construction of the plow point, designed to obviate the necessity of resharpening by providing plates thin enough to form an edge for the plow, and adapted to be adjusted down on the body of the plow point as the plate is worn away.

CULTIVATOR.—Theodore Meyer, Amity, Iowa. This device is intended as an attachment which may be applied to an ordinary two-wheeled straddle row cultivator, providing a harrow wherein a single group or a series of groups of rotary teeth may be readily adjusted vertically and also laterally to avoid contact with the plants not in line, while the teeth may be rotated while being so adjusted.

Mechanical.

PULLEY SUPPORT.—Adelbert G. Lawrence, Motley, Minn. This device relates to pulleys for shifting belts, a yoke being turned to fit on the ends of the boxes, and capable of being adjusted to any angle, supporting at its center an arm terminating in a box between the pulleys, which supports the ends of the shafts, on which are journaled working and idle pulleys, doing away with wear and jumping of the idle pulley in machinery run at high speed.

BRICK LAYER'S PLUMB LEVEL.—James Smith, Centerville, Md. It consists of a frame to which is applied angle castings or guides, the frame also having graduated plates, while at each side of the frame is a plumb level or bob, and also a spirit level, making a convenient and accurate instrument, which can be expeditiously handled.

BUTTON MACHINE.—Anton Scholz, Brooklyn, N. Y. In this machine a yielding plate is employed having a sharp edge surrounding one of the dies and abutting against the other when the dies are pressed together, the machine being specially adapted for pressing glass or jet buttons into perfect shape, obviating additional trimming, and saving material.

COTTON SEED CRUSHER.—John J. Woodward and Peyton B. Bibb, Montgomery, Ala. Crushing rolls are arranged below the hopper, with a clearing distributor immediately above the meeting faces of the rolls, and a cut-off operating between the distributor and the discharge opening of the hopper, whereby if the rolls become clogged the supply may be cut off, the clearing distributor meanwhile operating to clear the rolls.

COFFEE CLEANER.—Augusto Gallardo, San Jose, Costa Rica. This is a machine for peeling, polishing, and cleaning coffee, the coffee being passed through cones in such way that the pressure of the mass will contribute to the rubbing off of the several coatings and the polishing of the grains, whatever may be their varying sizes.

Miscellaneous.

VEHICLE SPRING.—Albert E. Cook, Knowlton, Quebec, Canada. The spring has its lower leaf formed in two parts with their inner ends connected by a spring, in combination with a rocker-shaped bearing, whereby in the working of the spring its slack will be automatically regulated and an extended bearing for the spring is provided.

SHOE OR SLIPPER.—James Hanan, Jr., New York City. In this shoe or slipper the counter is bare upon its inner surface and split at its lower edge to form a narrow inner flap and a narrow lower flap secured to the heel of the shoe, whereby the shoe is

made firmer at less expense, and there is no need of a lining at this point, where the lining most commonly wears through.

IRONING BOARD.—Albert T. Scanland, Dunn Loring, Va. This improved form of board has devices for clamping and supporting the board proper in position on top of a table, be clamped to one end of and extended from a table, or be supported upon and between two chairs.

POULTRY CARRIER.—George M. Beer-bower, Cherry Vale, Kansas. There are eyes or staples in the coop or carrier, and a wire, cord, or rod, for securing the legs of the fowls, without injuring their joints, while the carrier is provided with facilities whereby the fowls may be conveniently provided with food and water while in store or transit.

SELF-WAITING TABLE.—Andrew Dahlstrom, Ashton, Mich. Combined with a main table is a supplemental or revolving table, and a suitable spring-operating gearing disposed within the main table, arranged to operate the revolving table, the table being easy to operate, and when in operative condition presenting a neat and ornamental appearance.

CHIMNEY.—Joseph A. Hodel, Cumberland, Md. This invention is an improvement on a former patented invention of the same inventor, and provides a novel construction and combination of parts whereby the chimney may be simplified, rendered easy of connection with the chimney wall, firm in position, and efficient in use.

TRUSS.—Alexander Dallas, Bayonne, N. J. This is a truss for retaining and curing abdominal ruptures, and is made to allow for connection with battery wires for establishing an electric current to the parts subjected to pressure by the pads, to prevent atrophy of the parts.

SUPPOSITORY FORMER.—Wayne J. Hull, Alexandria, Dakota Ter. This is a machine of simple construction wherein suppositories may be expeditiously formed without the aid of heat, and wherein suppositories of different sizes may be shaped.

BOTTLE STAND.—Charles K. Hall, New Orleans, La. This is a stand provided with a support for bottles and a retaining plate, and the stand also has a rim to prevent removal of the bottles from the stand except through a door in the rim, which door may be kept locked, so that only the person holding the key can remove the bottles from the stand.

SCIENTIFIC AMERICAN
BUILDING EDITION.

MAY NUMBER.—(No. 43.)

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1. Elegant plate in colors, showing elevation in perspective and floor plans for a dwelling costing four thousand dollars. Page of details, etc.
2. Plate in colors of a summer cottage for one thousand two hundred dollars. Floor plans and page of details.
3. Design for a bank building, with plan and view of interior.
4. Perspectives and floor plans of an elegant residence at Bell Haven Park, in Greenwich, Conn. S. Edwin Tobey, Boston, Mass., architect.
5. A mountain cottage lately erected at St. Cloud, Orange, N. J. Elevation and floor plans. Architect Mr. Arthur D. Pickering, New York.
6. A dwelling at Springfield, Mass. Plans and perspective elevation. Cost eight thousand five hundred dollars.
7. Engraving showing perspective elevation of a cottage erected at Roseville, N. J., at a cost of six thousand seven hundred and fifty dollars. Floor plans. F. W. Ward, architect, New York.
8. Illustration and floor plans of a combined school house and country cottage erected at St. Cloud, Orange, N. J. Arthur D. Pickering, New York, architect.
9. A residence at Springfield, Mass. Perspective elevation and floor plans. Cost three thousand five hundred dollars. J. D. & W. H. McKnight, architects.
10. A cottage built at Roseville, N. J., for six thousand seven hundred and fifty dollars. Elevation and floor plans.
11. A cottage at Holyoke, Mass., lately erected for Howard A. Crafts, at a cost of three thousand one hundred dollars.
12. View of Auburndale Station, Boston and Albany Railroad, with plan of station grounds. H. H. Richardson, architect.
13. Miscellaneous Contents: The final payment clause in building contracts.—The plan.—Bending wood.—The Stanford tomb.—Experiments with cement mortar.—The railroad in horticulture.—The improved "Economy" furnace, illustrated.—The Academy at Mount St. Vincent on the Hudson, N. Y.—Wrought iron and cement lined pipes, illustrated.—Sheathing and lath combined, illustrated.—Artistic wood mantels.—A new ventilating furnace, illustrated.—Creosote wood preserving stains.—Large trees.—Rotary cutting tools for working wood, 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.

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.

(795) F. M. asks: 1. Is the simple electric motor described in your SUPPLEMENT suitable for running a propeller in a 12 or 13 foot canoe? A. It would answer. 2. What size propeller should be used for such a boat? A. Use a two-bladed eight inch screw, ten inches pitch. 3. Are four one-gallon cells of Fuller battery sufficient to run the motor, and about what power would be developed? A. They would give about 1-10 horse power. 4. How long will one solution last, that is, how long can the propeller be run by one charge without stopping? A. It depends on the work. One charge might last six hours. 5. How should the battery be connected—in series or parallel? What is the difference in effect between the two ways? A. In series. Even then the voltage would be rather low. Series arrangement increases voltage, and diminishes amperage, and vice versa.

(796) D. S. M. writes: 1. For information in regard to the process used in air brazing or soldering light sheet brass for making tubing. A. File the parts to be joined to an accurate fit, bring them together, and secure with iron wire. Place a mixture of pulverized borax and fusible brass (spelter) in small fragments along the seam and heat in a forge or with

a blow pipe. The fusible brass will melt and run into the joint and secure it. Allow it to cool before removing the wire. Also see article in SCIENTIFIC AMERICAN of May 4. 2. Also the amount of sulphuric acid used to the gallon for making water gas. The materials used are old scraps of iron or zinc, sulphuric acid, and water. A. One hundred pounds of sulphuric acid will give about two pounds of hydrogen gas, occupying a volume, under ordinary conditions, of 652,336 cubic inches or 377 cubic feet. For a description of the processes of making hydrogen gas on the large scale, we refer you to our SUPPLEMENT, Nos. 656 and 657, in which various processes are described.

(797) H. W. asks: 1. Weight of one cubic inch of pure platinum. A. About 5300 grains, varying according to the processes it has gone through, rolling, wire drawing, etc. 2. Value of same? A. \$120.

(798) F. S. M. asks: I have just completed a simple electric motor according to the plans published by you in SUPPLEMENT, No. 641, only that I reduced the plans one-third, which I figured would give me a little less than one-half the power. I wound both the field magnet and armature with No. 20 single cotton covered wire and made the armature core out of No. 20 iron wire. It runs finely with a battery of four cells with zincs and carbons 5 by 6, but does not give much power. Did I use the right size of wire in winding? I made it carefully to scale and the parts fitted together all right. The battery cells I made out of mill board according to the instructions in last week's SUPPLEMENT, and had excellent success. In addition to a thorough soaking in hot paraffine, I allowed a coating 1/2 in. thick to cool on the bottom inside and then brushed the hot wax all over the inside. They hold two quarts of fluid and are 6 by 7 by 3 1/4 in. in size. The series consists of four cells of the size. How large a candle power lamp would it light? The zincs and carbons are as stated, 5 by 6 inches. A. We think, if you were to connect your field magnets and your armature in parallel, the motor would work better. It will also be well to use two additional battery cells. Such a battery as you now have would light a five-candle power lamp.

(799) J. L. S. asks what thin liquid wood preservative to use on exposed pine trusses that have become slightly checked. Oil paint is almost too thick to flow into the openings. Shall protect them by covering after treatment. A. The best and cheapest preservative for such work is a coat of thin coal tar (thinned with benzine), if there is no objection from its odor. As you say the truss is to be covered, the appearance should not be objectionable. If a water solution is required, we recommend a solution of 20 pounds sulphate of iron to 100 pounds water as the cheapest, and if it can be thoroughly applied by soaking, it makes a very durable preservative. Or you may saturate with corrosive sublimate solution, one pound of chloride of mercury to four gallons of water, although this is very poisonous and dangerous to persons making the application.

(800) C. H. B.—The "median power" of Oliver Evans is the center of percussion of revolving bodies, or "center of gyration" of the later books. Its distance from the center of a true disk is called the radius of gyration. In a millstone which is supposed to be nearly a perfect disk, the distance of the center of gyration from the center of motion is .7071 of the radius from the center or radius $\times 0.7071$. See Haswell's Engineers' Pocketbook, which we can mail for \$4. The center of gravity in a trapezium and trapezoid are also illustrated with rules and formulas in Haswell.

(801) S. C.—For clock and musical bells no other metals than copper and tin should be used. Copper 1 pound, tin 5 1/4 ounces is as hard a composition as can be used to advantage. It is used for clock bells and gongs. In casting the gongs should be gated at several points along the edge from a side runner. Stand the flask on end as usual with brass founders for pouring, partially dry the gong prints by holding a red hot iron over it for a few minutes, for thin gongs. If they are found to crack by leaving in the mould, remove from the mould as soon as poured and anneal in hot ashes. For other information asked see "Gas Engine," by D. Clerk, for \$2.50, which we can send by mail.

(802) J. R. H. writes: 1. How is oxygen and hydrogen gas made. Also is it more compressible than air? A. Oxygen is made by heating chlorate of potash mixed with binoxide of manganese in a retort. The gas comes off quickly below a red heat. Hydrogen is made by dissolving zinc or iron scrap in sulphuric or hydrochloric acid. They differ but slightly in compressibility from air. 2. If you have a cylinder one-half full of water and the rest full of air, pressure 100 pounds per square inch, in the top of the cylinder a hole less than an inch in diameter, in that hole put a funnel, insert the small end of it in the hole in top of cylinder, if that funnel is full of water, will it run into the cylinder? A. No. Air would bubble out through it until the pressure was reduced, when it would run in. Some water, however, might work its way in along the sides of the funnel tube while the air was escaping. 3. If in that cylinder you make two openings, one into the air and one into the water, each 1 square inch, the opening into the air will have a pressure of 100 pounds, what pressure will the one leading into the water have? A. In the water opening there will be a little more than 100 pounds outward pressure, owing to the weight of the liquid column above it. 4. Is it possible to temper copper to the hardness of steel? If so, how is it done? A. No way of doing this is known.

(803) E. A. D. writes: 1. I have several fonts of job type and a first class dental vulcanizer. Can I use the latter for making rubber stamps, and, if so, how? Please give full directions. A. See SCIENTIFIC AMERICAN SUPPLEMENT, Nos. 83 and 569. 2. Where can I get the rubber for the above purpose? A. Apply to any rubber belting, packing, or supply house. Consult our advertising columns. 3. I have noticed that, in some of the so-called induction machines now on the market, the coils are not induction coils at all, but simple coils wound with very fine wire. Does this coil in any way increase the intensity of the current passing through it? A. Such a coil gives an intensified extra current on making or breaking the connection. 4. A receipt for a nickel solution for plating. A. Consult