

guideways for a holder in the form of a plate provided with a slot, jaws, and a tongue. The holder is slipped longitudinally to engage the button so that the jaws clutch the edge of the button and prevent an up-and-down movement thereof and of the belt. The tongue locks the button and holder together to prevent longitudinal movement of the holder, but allows the holder to move longitudinally with the button on its guideways.

SYRUP-JAR.—JOHN ORMEROD, Brooklyn, New York city. This invention provides a pivoted or drop syrup-jar especially adapted for use on soda-water fountains. The jar is pivoted at its faucet so that it may be moved inward and outward with the least possible exertion. The center of gravity is so placed that when the jars are in an upright position they will not be liable to drop down.

RUBBER COMPOUND.—JOSEPH C. PETMECKY, Austin, Tex. This compound for repairing pneumatic tires consists of pure rubber dissolved in a quick-drying solvent, ground and slightly vulcanized rubber, and cotton fibers, the whole being thoroughly mixed together in proper proportions.

DUMPING-VEHICLE.—THOMAS HILL, Jersey City, N. J. The object of this invention is to protect the vehicle when it comes into contact with the ground from the usual sudden blow. To accomplish this object, the inventor provides a compensating curved upper bearing partially overhanging the lower curved bearing on the vehicle-frame. A rolling-shaft is attached to the body, the ends of which shaft are adapted to revolve or slide in the upwardly-curved bearings, so that while the body is in the act of dumping and changing its center of gravity on the lower curved portion of the frame, it will travel up the overhanging portion above and prevent the possibility of the body's sliding on the lower curved portion of the frame and striking the ground with a sudden jar.

STYLE OF MANUFACTURED TOBACCO.—WILLIAM A. FRETWELL, South Boston, Va. The present invention is designed to enable the tobacco-grower to market his tobacco without the need of a manufacturer's plant and the expense and tedious operation ordinarily incurred. The inventor omits the stemming, the alternate drying and drawing of the moisture of the lumps, and the pressing. Instead, after the tobacco is sliced and flavored, it is at once completely dried while the stems are still intact, and then ordered by steam or dampness. The leaves are then folded and wrapped into neat packages.

JUG CARRIER.—FREDERICK O. BALCH, Neillville, Wis. The carrier is composed of a band adjustable so that it can be clasped upon jug-necks of different sizes. Hanger-rods are connected with the band, one of the rods having a sliding connection with the band whereby it may be adjusted to correspond with the adjustment of the band.

DEVICE FOR OPENING OR CLOSING GATES.—PATRICK C. and ANTHONY J. GIBBONS, Edina, Mo. The improvements in gates provided by these inventors are concerned chiefly with means for opening and closing a gate at a distance. The means consist primarily in peculiarly-constructed hinges on which the gate is mounted to swing so that its free end may be tilted upward, swung into open position, and subsequently back into closed position.

WINDMILL.—OED OLSSON, Ord, Neb. This windmill has no rudder. The wheel itself acts as a rudder, being mounted behind the pivot upon which it swings. A peculiar manner of connecting the blades is employed, to swing their edges to the wind. A governor is provided which controls the speed by automatically shifting the vanes. The parts of the mill are all made of iron, so that they will not readily wear out or break, the general construction being also such that any blacksmith can substitute new parts for those which have been worn out or broken.

COMBINATION ARTICLE FOR HOUSEHOLD USE.—CHARLES E. McLAUGHLIN and ELMER H. WILLIAMS, Kanawha City, W. Va. The combined article comprises a step-ladder, an ironing-board, and a clothes-rack, the various parts being so constructed and arranged that they may be compactly folded together when not in use and easily and quickly arranged in proper position when required for use.

BOWLING-ALLEY LIGHT AND PIN-INDICATOR.—GUSTAVE BURKHARDT, Chicago, Ill. This appliance for reflecting the light and indicating the set of pins on bowling-alleys has its reflector-walls so arranged relatively to the light that the rays can be positively concentrated within a desired radius and the burner held invisible. Thereforator has a supplemental portion or triangular pin set face, with light-openings for numerals corresponding in number and arranged with the set of the pins of the alley, so that the bowler can see how every pin is numbered.

APPARATUS FOR CONTROLLING HORSES.—ALEXANDER WHELAN, Washington, D. C. The apparatus consists essentially of a band adapted to inclose the legs of a horse. The band is suspended by lines from a frame forming a support and provided with individual guides for the lines by which the band is suspended. By operating certain mechanism in the carriage or wagon, the band can be lowered to embrace the legs of the horse so that he cannot run away.

Designs.

TERMINAL MEMBER FOR EXERCISING MACHINES.—EZRA R. GOODRIDGE, Manhattan, New York city. This design provides a unique terminal member for exercising machines, by means of which the cords can be effectively secured in place.

VISIBLE PITCH MUSIC-STAFF.—ALBERT R. PARSONS, Garden City, N. Y. The leading feature of this design consists of variously-spaced parallel lines, certain of which are heavy and continuous, others of which are light and continuous, and still others of which consist of dots. Of the dotted lines, certain are nearer to the full lines above them than to the full lines below them; and certain are nearer to the full lines below them than to the full lines above them.

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(7677) M. B. writes: 1. I have made the Wehnelt's electrolytic current breaker described in SCIENTIFIC AMERICAN and SUPPLEMENT of April 15. I used platinum wire of several different sizes (20, 22, 26) with the invariable result that the wire was destroyed, before my coil had been in operation ten minutes; I varied the distance between platinum wire and lead plate and the strength of the acid, with same result. The current used was the 52 volt alternating, and a one ampere fuse in circuit was intact. Can you tell me where the fault lies? A. The platinum wires were probably destroyed by heat, melted. They were too fine for the purpose. 2. What is the insulating material used in the Wylats-Rochefort transformer described in the SUPPLEMENT of January 7, 1899, or what easily procurable oil or fluid will answer the same purpose? A. We do not know the material used as an insulating paste. Paraffine oil would serve the same purpose.

(7678) J. K. asks: 1. In series wound dynamo, is the resistance of field magnet same as that of armature? Is it in shunt wound? A. The field winding of a dynamo is based upon the magnetic flux needed in the machine. 2. How long at one time will ten Bunsen cells connected in series run a motor? A. Till the sulphuric acid has formed all the sulphate of zinc it can; in other words, till the liquid is exhausted. The time required for this depends on the external resistance. 3. How long will the large plunge battery run the simple electric motor described in "Experimental Science"? A. Perhaps 6 hours, but not in a continuous service. 4. I have one Leclanche and three carbon cylinder batteries connected in series. They produce only a very slight current. Are they polarized? If so, how could I remedy them? A. Probably polarized. Rest is the cure.

(7679) W. J. P. asks: 1. What is the best kind of battery to use with a Ruhmkorff coil, in order to get the largest possible spark from coil? A. The potassium bichromate battery is, on the whole, the best primary battery for use with an induction coil. A very convenient form is described in SCIENTIFIC AMERICAN SUPPLEMENT, No. 792, price 10 cents. 2. How would you connect two Ruhmkorff coils up to get a combined effect, or can it be done, one coil having a condenser and the other not? I have tried various connections but I could not make it work properly. A. Two coils should be joined in series to use them together, but this is a case where two are not twice as good as one. 3. My coil is insulated by a 1/4 inch Fullerboard tube between primary and secondary and by paraffined bond paper between each layer of silk C wire of secondary. The edge of the paper between layers being turned up at opposite sides to prevent any possibility of the high tension wires of each layer getting together. With this insulation how large a current could I use without injury to coil? A. You tell nothing about your coil which can help toward an answer to your question. The primary will carry any current which does not overheat it, and that can be guarded against by trying it with the hand. Begin with a small current and increase slowly till you realize maximum effects for the coil.

(7680) M. S. L. asks: What is the best way to exhibit lantern slides (or other transparencies), without a lantern, I mean by placing a large number in a frame with diffusing media between the slides and source of illumination, to use with or without magnifying lenses? A. Transparencies, including lantern slides are exhibited in a frame by diffusing the light through ground glass. If you have not the ground glass, you can make one by careful and patient work, by rubbing a plate of glass with fine sand and a piece of wood. An

excellent substitute can be made with starch as follows: Put into 3 fluid ounces of water, 35 grains of starch, and dissolve the starch by boiling. Then let it cool. Pour a suitable quantity of the solution upon the glass, and spread it over the glass. Lay the glass level to dry.

NEW BOOKS, ETC.

STARS AND TELESCOPES. A New Hand Book of Popular Astronomy. By David P. Todd. Boston: Little, Brown & Company, 1899. Pp. 419. 12mo. Illustrated. Price \$2.

The volume before us is founded on the ninth edition of Lyth's Celestial Motions. The former book already covered the ground thoroughly. Dr. Todd has however rewritten the book and has made it one of the most interesting and valuable books which has ever appeared on the subject. We note with pleasure the fact that the time-honored and fossilized cuts of astronomical instruments have been entirely displaced by modern illustrations. There are many portraits of varying excellence of execution introduced through the book, adding greatly to its interest. We do not know of any book which is so well adapted to give the average reader and the student such a readable and practical knowledge of astronomy and astronomical methods as this volume, giving a welcome relief from the time-honored and inexpressibly dry methods of presenting the subject that beget a horror of the science.

VON LÖBEL'S JAHRESBERICHTE UEBER DIE VERÄNDERUNGEN UND FORTSCHRITTE IN MILITÄRWESSEN. Uebersicht der Entwicklung von 1874-1898. Erste Theil: Berichte über das Heerwesen der Einzelnen Staaten. Berlin: Ernst S. Mittler und Sohn, 1899. Pp. xxxix, 546. Large octavo. Price paper \$3.10.

Von Löbel's annual reports have long been recognized as the most authoritative reference-books on military affairs. In the accuracy and trustworthiness of their information they constitute a worthy companion to Brassey's Annuals. The present issue is a "jubilee volume," in which the development of the world's armies during the last twenty-five years has been described. The changes which have taken place during this period, the new methods which have been adopted, and the experience which has been gained in war, have all been carefully noted. This last volume will occupy an important position, for upon it will be based all future reports.

REPORT OF THE UNITED STATES COAST AND GEODETIC SURVEY FOR YEAR 1897. Washington, 1899. Pp. 784. Maps and charts.

This annual report gives an account of the work done in various sections of the country up to June, 1897. Some of the reports give illustrations of recording apparatus for measuring the height and duration of tides, others describe the recent photographic surveying instruments and their use. They are commended for topographical work. Still another report deals with the subject of accurately measuring the Great Salt Lake basin base line and includes photographs of the apparatus used, constructed in such a way as to secure measurements through three differently constructed metal bars, each acting as a check on the other. Differences of temperature are thus equalized and an average is obtained which is quite accurate.

INDEX OF INVENTIONS

For which Letters Patent of the United States were Issued for the Week Ending

JUNE 13, 1899,

AND EACH BEARING THAT DATE.

[See note at end of list about copies of these patents.]

Table listing inventions with patent numbers and dates. Includes items like Advertising apparatus, Agitating apparatus, Air compressing and cooling apparatus, Alarm mechanism, etc.

Table listing inventions with patent numbers and dates. Includes items like Cash register, Caster, Cellulose tetracetate, Chalker, Chaperon, Checkrein book, Chopper, Chuck for V-shank drills, etc.

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