

RECENTLY PATENTED INVENTIONS.

The inventions described in this Department were patented through the Scientific American Patent Agency.

Electrical Devices.

ELECTROSONATOR.—R. SAKAMOTO, Tokyo, Japan. The device relates to sound transmitters for transmitting sound into the human body to an internal organ. The sound is produced by a vibrator operated from an electromagnet. In use the examiner who listens through a stethoscope applied to the body near the sound-producer may determine the exact position, form, and motion of the internal organ of the body, as well as accurately determine any dislocation, enlargement, or diseased condition.

Of Interest to Farmers.

PROCESS FOR EXTRACTING HONEY.—L. W. AVANT, Atascosa, Texas. By means of this invention the honey may be extracted from beehives without opening the hive or materially disturbing the bees, and without robbing the hive of the wax of which the cells are made. The advantage of this is that it relieves the bees of the labor of gathering the wax, thus economizing time and allowing the bees to devote their undivided energy to the gathering of honey.

Of General Interest.

WATERPROOF FUSE CAP.—T. M. DANIELS, Valdez, Alaska. This cap is adapted to be attached readily to the end of the fuse in a watertight manner. Its design is such as to prevent the occurrence of "miss-fires" or "miss-holes" in blasting, which are largely due to the fact that the explosive in the cartridge becomes wet.

MATRESS.—F. A. KAISER, Scranton, Pa. As usually made it is difficult to fill the edge of a mattress uniformly throughout its length with the stuffing or filling material so that the "roll edge" is uniform. In the present invention a separate strip of felt, cotton batting, or the like, is provided, which is placed along the inner surface of the covering and through a portion of this strip, after the roll edge is formed complete, the main body of the stuffing or filling material may be inserted in the ordinary manner.

LOCK FOR BAG FRAMES.—L. B. PRAHAR, New York. The special object of this invention is to provide a lock in which the thumb piece of the latch is formed integral with the body of the latch, and extends through an opening in the side of the casing. The casing is so formed that the thumb piece may be readily removed to a position parallel to the bag frame, but further movement is prevented by engagement of the thumb piece with the casing.

MOTH BALL HOLDER.—G. THOMPSON, New York, N. Y. This moth ball holder is adapted to be attached to the frame of an upright piano in a position above the action, and without interfering therewith. The holder will retain the ball until all is evaporated, thus not only serving to protect the felt of the action from the moths, but to prevent particles of the moth ball from dropping into the case.

SPOOL CASE.—C. J. ALFRED, New York, N. Y. This case is adapted to be applied to a work basket and is so arranged as to permit the free withdrawal of the thread, but it will frictionally bind the same and prevent its unwinding except when intentionally pulled out. The device is provided with a cover which grips the thread and severs it at the points desired.

FAN.—E. GOOSCH, New York, N. Y. The fan is of the rotatable type for hand use. The leaf of the fan is mounted on a spindle which may be rotated by reciprocating a thumb piece which projects from one side of the fan handle. The object of the invention is to enable a person to fan himself with little exertion.

CIRCULAR BACK FOR CAMERAS.—E. L. HALL, New York, N. Y. The purpose of this invention is to provide a circular back adaptable to almost any type of camera by means of which a plate holder may quickly and readily be shifted from one position to another without removing it from the apparatus.

STEVEDORE RIG.—J. KNUZZEL, New York, N. Y. The object of this invention is to enable the cargo to be not only lifted out of the hold of the vessel, but swung sideways on to the dock by the mere action of hauling on the hoister line. This object is attained by a peculiarly rigged gaff along which the hoister line runs and by means of which the hoister acts first to lift the cargo out of the hold, and then to swing the gaff and its load sideways over the dock.

Household Utilities.

CONNECTION FOR WATER RECEPTACLES.—E. F. COOK, Freeport, N. Y. This invention is particularly adapted to provide a connection suitable for laundry tubs which will furnish suitable valves independent of each other for directing hot or cold water or both, through a single outlet into the tub.

WINDOW LOCK.—C. C. HIGGINS, Woodmere, N. Y. The invention relates to win-

dow locks, providing a type of lock in which there are two bolts, one for each sash, but in which these bolts are independent of each other for some purposes, and yet work in unison for other purposes.

WINDOW-BLIND GUIDE AND STOP.—W. W. BRUCE, Baltimore, Md. In raising and lowering window shades that are wound on a spring-actuated roller, it often occurs that the shade slips out of the hand and flies up, wedging the stick in the bottom hem between the roller and the window frame so that it causes a good deal of trouble to release it. The present invention obviates these difficulties by providing guiding means and a stop for the shade.

Machines and Mechanical Devices.

MILK PURIFIER AND HOMOGENIZING MACHINE.—H. H. SUTTSY, Sioux City, Iowa. The invention relates to machines of the class in which milk is passed centrifugally through purifying and homogenizing media, and in which the impurities and the homogenized milk are separately discharged from the machine. In the present invention the milk is conducted through straining media and then through an irregularly-shaped conduit which causes the globules of butter fat to be broken up and disseminated throughout the milk.

CANNON PINION.—W. F. JOST, Pocatello, Idaho. The invention relates to horology and has for its object to provide a cannon pinion securely locked to the center arbor to prevent lifting and throwing it out of gear with the minute wheel, to provide true and even friction, to carry the hands safely when the watch is running, and not to interfere with the motion of the balance wheel when setting. The arrangement allows of placing or removing the cannon pinion to and from the arbor without springing the latter or breaking the jewels.

CONTROLLING MECHANISM.—H. MEYER, New York, N. Y. The invention is adapted for use on self-playing pianos. It provides a mechanism arranged to control independently the tempo, action, expression, the damper, and the hammer rail in a very simple and efficient manner.

BLACKING MACHINE.—E. E. TALIAFERRO, Colorado Springs, Colo. In this bootblackening machine a set of brushes are provided which travel around the foot form on which the shoe is placed, so as to efficiently polish all parts of the shoe. Means are provided for withdrawing the brushes to permit of placing the shoe in position. The mechanism automatically stops after completing the cycle of operations.

LATHE ATTACHMENT.—A. E. WHITING, Weston, Va. The invention relates to boring engine cylinders and the like and its object is to provide an improved lathe attachment designed for quickly and accurately centering the work to bring the latter in axial alignment with the lathe.

MACHINE FOR UNRAVELING TEXTILE FABRICS.—P. F. VOGEL, Clinton, Tenn. The object of this invention is to provide an inexpensive mechanism to be used in combination with loopers which join together edges of knit goods. It serves to unravel the selvage edges of such goods and to wind the unraveled yarn upon a reel.

UNIVERSAL INDICATOR.—H. P. BOETTCHER, Jersey City, N. J. This indicator is more especially designed for tool makers' and machinists' use, operating, when applied to the work, to accurately and automatically show to what extent, if any, the work is out of true.

UNIVERSAL ELEVATING AND LOWERING DEVICE.—E. G. GEBAUER, Santa Fe, New Mexico. The construction provided by this invention operates to maintain a cable in a constant position as it coils or uncoils from a drum. The drum is arranged to travel to and fro as it rotates, the reversing of the travel being accomplished automatically.

Prime Movers and Their Accessories.

STEAM SERVICE CONTROLLING AND RECORDING APPARATUS.—G. M. HILGER, Chicago, Ill. This invention provides an apparatus intended for use in connection with steam service plants by means of which to automatically reduce steam pressure to the desired degree, and to record the differences in pressure and the volumes of steam delivered, whereby to admit of convenient computation of the horse-power and other conditions concerned with the steam service.

EXPLOSION ENGINE.—A. W. COTTRELL and M. A. MOORE, Douglas, Ariz. Ty. In this explosion engine there are three explosion chambers and four feed valves, causing twelve explosions at every revolution. The chambers being long permit the exploded gases to expand to atmospheric pressure before leaving the engine thus giving more power from a given amount of fuel, reducing the noise of the exhaust, and acting as a cooling agent to the engine.

Railways and Their Accessories.

SAFETY APPARATUS FOR RAILWAYS.—A. BONOM, New York, N. Y. By providing trip devices which are placed at intervals along the track, and controlling mechanism operable by these trips on trains going in

either direction, Mr. Bonom furnishes a safety apparatus which operates effectively to prevent two trains from meeting when going in opposite directions on the same track. The mechanism also prevents rear-end collisions.

JOURNAL BOX.—W. A. HUFF, Newark, N. J. The object of this invention is to provide a journal box of simple construction having improved means for lubricating the wearing surfaces and for preventing a waste of oil from the box by working along the journal. The construction tends to keep the oil in a clean condition. Provision is made for the automatic deposit of solid particles which may accumulate in the oil.

Vehicles and Their Accessories.

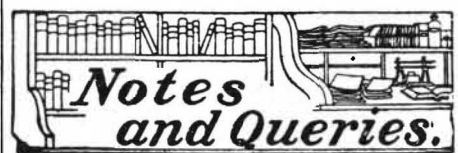
PNEUMATIC TIRE.—H. W. DOVER, Holyrood, St. James, Northampton, England. The invention relates particularly to means for securing pneumatic tires in position and its principal object is to provide a construction which will so hold the tire that the effect of the internal pressure will be to cause the tire to become more securely fixed in position instead of tending to become detached by increase of its diameter as heretofore.

COMBINED VEHICLE JACK AND WRENCH.—D. C. LASSITER, Shelmerdine, N. C. The invention relates to that class of jacks which support a wheel when it is removed from the spindle, in order that lubricant may be placed on the spindle. The object of the present invention is to provide a simple and convenient device for facilitating the handling of the wheels of the vehicle while lubricating the spindles.

Designs.

CASING FOR SODA-WATER FOUNTAINS.—C. F. POWERS, Coosada Station, Alabama. This patent presents a casing for soda water fountains including a body portion surmounted by a number of jars in two series, the larger jars being arranged in rear of the others, and the smaller jars appearing in a row across the front of the casing and above the body portion, all of the jars being similar in appearance and having each an ornamental cover.

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



Full hints to correspondents were printed at the head of this column in the issue of August 8th, or will be sent by mail on request.

(10921) C. L. H. asks: Can you tell me if any one makes an electric arc that could be used as a blowpipe? I wish to use it to melt small amounts of platinum. A. It is not difficult to arrange an electric arc blowpipe for melting metals or soldering. We should use the current which passes through the carbons for the magnet. Put the magnet of a few turns of wire in series with the carbons. Adjust the number of turns of wire and the distance of the magnet from the arc to produce the blowing power required. The apparatus is so simple that no special instruction is required for setting it up or operating it.

(10922) F. B. W. asks: Can you explain the phenomenon of the Aurora Borealis? A. We cannot explain the theory of the Aurora Borealis. The most we can do is to state the view held by the best scholars concerning it. To begin with, highly heated metals or carbon send out numerous minute particles with high velocities. These particles are called corpuscles, or electrons. They are known to carry charges of negative electricity, and to move with a very high velocity. It is reasonable to regard the sun and other stars at their enormous temperatures as sources of such particles, which move in mighty streams through the celestial spaces. When such particles strike a rarefied gas they render it luminous, as is seen in vacuum tubes. Such luminosity is associated with the discharge from the negative electrode of these tubes and has a name—"cathode rays." In the upper air these corpuscles from the sun may well be considered to produce luminous effects, such as the auroral light. Arrhenius first suggested this theory of the aurora, but it is now quite generally adopted. Duncan's "New Knowledge," price \$2, page 238, gives it in some detail. It is also to be found in Thomson's "Conduction of Electricity through Gases," price \$4.

(10923) E. E. asks: How is the focus of a concave lens determined? Is it the radius of a circle, or half the radius of the curvature? Please inform me as to both plano and double concave. A. All foci of concave lenses are virtual. For a biconcave lens of glass, whose index of refraction is 1.5, with the same radius of curvature on each face, the principal focal length is equal to the radius of curvature. For a plano-concave lens of the same glass, the principal focal length is equal to twice the radius of curvature. In these respects the con-

cave and convex lenses agree, excepting that the focal length of concave lenses is negative. The formula for determining focal length of concave lenses is $\frac{1}{f} = \frac{1}{p} - \frac{1}{p'}$.

(10924) W. E. F. asks: What would be the apparatus necessary to charge a storage battery from a trolley wire of an electric railway, and what size battery for 5 horse-power motor to run say 10 hours; and about what would the outfit cost, and how long would it take to charge it? A. You will require half as many storage cells to run your motor as the volts taken by the motor, since each cell will give 2 volts. To obtain the number of amperes you will need, divide 746 by the voltage of the motor. This gives the amperes for one horse-power hour. Multiply this by 5 and by 10, and you will have the ampere hours required for 5 horse-power for 10 hours.

(10925) C. C. McC. asks: Do you publish a work on the construction of voltmeters and ammeters that would enable one to construct one for use on an isolated plant? A. SUPPLEMENT No. 1215, price ten cents, will give information for the construction of a voltmeter and ammeter which may answer your purpose.

(10926) W. H. G. asks: 1. Please give acid used in pole indicator and ground detector and state what size and kind of wire is used. A. Make a solution of alcohol, 10 cubic centimeters, phenolphthalein, 1 gramme. Add to this distilled water, 110 cubic centimeters. Make a second solution of sodium sulphate, 20 grammes, in 100 cubic centimeters of water. Soak blotting paper in the first solution, and drain off the superfluous liquid. Then soak the paper in the second solution and dry the paper. To test the poles of an open circuit, moisten a strip of the paper, and place the ends of the wires about two inches apart upon it. A red spot will appear around the end of the negative wire. 2. Is there any way in which a bipolar dynamo can be made to give a steady current and not an alternating current? I cannot run a Ruhmkorff coil because of this, and would like to know if there is any instrument or battery that I can connect in circuit to stop this alternation? A. A dynamo gives a direct or continuous current when its armature is provided with a commutator. The same machine gives an alternating current when its armature is fitted with rings connected to the windings. Either form of dynamo will work a Ruhmkorff coil equally well. If the alternating current is to be used, screw down the vibrator so that it will not vibrate. 3. Do I understand that in the system of wireless telegraphy explained in SCIENTIFIC AMERICAN of January 4, 1902, there is no Ruhmkorff coil used in the transmitting part, but just the batteries connected to the earth? A. Yes; but Hertzian waves are not used in this system. 4. What are inductance coils, and please give an idea of how made? What is a choke coil and how made? A. An inductance or a choking coil is a coil to reduce the current by its induction upon the current as it passes through it. A second current is set up in the inductance coil, which flows in the opposite direction to the main current and thus chokes it off, so to speak. 5. Please give number of SUPPLEMENT, if you have same, that has plans and working drawings for constructing small gasoline motor. A. See SUPPLEMENTS Nos. 715 and 716, for construction of gas engines, 23 figures, 10 cents by mail. Also a book on "Gas Engine Construction," by Parsell and Weed, \$2.50 by mail.

(10927) D. A. H. asks: Have scientists generally accepted the theory that the electric current does not flow through a wire, but follows the space around it? A. An electric current flowing with unvarying intensity flows through the material of the wire, flows in the wire, and also sets up a magnetic field around the wire. In this field a magnet is attracted by the lines of magnetic force. When an electric current flows with a varying intensity, either increasing or diminishing in intensity, as, for instance, starting with a sudden rush and as suddenly dying out, then electric waves are thrown off into the space around the wire, it may be with great force, so that they are sent many miles. It is these waves which are used in wireless telegraphy. They are not in the wire. The wire is but a core or center around which the waves whirl with tremendous energy. We are but beginning to learn their power and value, and have not yet harnessed them and broken them into our use and service. 2. Referring to the article entitled "Humidity and Heating Systems" in your SCIENTIFIC AMERICAN, why is it that the humidity of the air in the house heated by artificial means is so much less than that outside? Does the air lose any of its moisture by being drawn into the house and heated? A. The humidity spoken of is not the amount of moisture in the air, but the percentage of moisture as compared with the total amount of moisture which the air could hold at that temperature. Air saturated with moisture is said to have 100 per cent of humidity. The whole name is relative humidity, which expresses the meaning better. It is the moisture relatively to complete saturation. Now, the capacity of the air to hold moisture varies greatly with the temperature. In a summer morning fog may lie thick over the earth, because the air was saturated with