

inventions that have for their object the securing of nuts on railroad tracks, bridges, machinery, etc. It consists of hinged lock plates provided with beveled sockets to fit over the nuts, the lock plates having their free ends locked together by lock and key.

Mr. Emery O. Bicknell, of Boston, Mass., has patented an envelope having bronze aniline lines arranged on the outside of the flaps and a little back of the edges, the lines being adapted to change color if the envelope is tampered with by the application of steam or moisture.

An improvement in churn powers has been patented by Mr. George W. Sampson, of Tecumseh, Kan. This invention relates to that class of churns that are provided with two dashers, set one above the other, and operating with a reciprocating vertical motion.

An improved separator for the distillation of whisky has been patented by Mr. Martin V. Monarch, of Owneborough, Ky. The inventor utilizes the heat of the low wines or vapors thereof as they pass to the condenser for heating the charge for the still to nearly the boiling point, and at the same time the escape of the alcoholic vapor arising from the charger is prevented, and mealy or improper substances are separated or eliminated from the low wines.

An improved thill coupling, patented by Mr. Frank P. Johnson, of Eyer's Grove, Pa., consists in a novel construction and arrangement of a spring and a locking lever, and the combination thereof with the thill iron and clip, whereby the coupling and uncoupling of the thill and holding the same securely in place are facilitated.

Mr. Sylvester W. Sheldon, of New York city, has patented a device applicable to barrels of different sizes, for supporting them so that they may be easily moved within fixed limits. It is designed for the use of grocers, housekeepers, and others, who are frequently obliged to remove barrels from under shelves and to replace them. The invention consists of two principal parts—a pivotal support for one side of the barrel and a jointed roller support for the other side. The pivotal support has a base plate containing a cavity for the reception of a pivot, carrying at its upper end a curved plate provided with two notched projections for receiving the chine of the barrel. The roller support is made in two parts hinged together to adapt it to barrels of different sizes, and supported on rollers, one roller being pivoted in each part.

Mr. Charles D. Hoffman, of Cairo, N. Y., has patented an improvement in the class of washing machines in which a suds box is mounted on rollers that run on horizontal rails and is reciprocated by means of a crank and pivoted connecting rod.

A combined clothes rack and mantel, which is simple and convenient, has been patented by Mr. Charles C. Field, of Crete, Neb. It consists in a hollow lintel having the front side pivoted at its lower edge and the upper part solid, and provided with a series of radiating recesses in front, in combination with bars.

An improvement in stock cars which will permit the loading of cars very rapidly, afford plenty of space for the animals, and permit their feeding conveniently, has been patented by Mr. Edgar G. Frisbie, of Monroe, Mich. The car is subdivided into several compartments by a longitudinal partition and several transverse hinged gates provided with spring latches. It is provided with troughs partitioned into two subdivisions, one for water, the other for feed.

An improvement in the class of mortise and rim locks having keyhole guards consisting of pivoted plates adapted to swing over the keyhole and prevent the insertion of picks on the outer side of the lock whenever a key is inserted on the inner side, has been patented by Mr. Josiah H. Browne, of Salem, Mass. The improvement consists in the construction and arrangement of sliding guards and the devices which co-operate with them, so that the movement of one guard causes the opposite movement of the other.

An improved headlight case, patented by Mr. Robert C. Greenland, of Connellsville, Pa., consists, principally, in a novel arrangement of oscillating valves for securing a uniform ventilation of the case; also in arranging the door so as to obtain an air-tight joint and a device for more securely fastening the door; and in connecting the top of the case with the dome by means of a double hinge, so as to permit the top to be opened in two directions.

Mr. Henry R. Robbins, Md., of Baltimore, has patented a novel form of press for forming a special construction of can-head, which head is made in one piece, with a skirt or flange at right angles to the main portion, and with a swell or bulge at the corner.

Mr. John T. Hodge, of Carter's depot, Tenn., has invented a convenient and simple device for containing and delivering groceries and other articles to scales to be weighed, thereby avoiding the necessity of keeping such articles in boxes and barrels under and about shop counters, and avoiding also the inconvenience and labor of frequently handling such boxes and barrels. The invention consists of a series of hoppers or equivalent receptacles placed on the floor of the room above the shop counter, and of pipes or tubes leading from each one of said hoppers or receptacles down to within a short distance of the counter, so that the scales can

be placed under the mouths of these pipes to receive the contents therefrom, the pipes being provided with gates or slides to regulate the delivery of articles from them.

FONVIELLE & LONTIN'S ELECTRICAL MOTOR.

This little apparatus, which was presented to the Academie des Sciences at its session of April 5, is composed of a galvanometric helix (Fig. 1) in which there is a small soft iron disk capable of revolving on its supporting pivot. If, on arranging a horseshoe magnet over this apparatus in such a way that its polar extremities are at the ends of the frame, an induction current from a small induction coil be sent into the wire of the helix, the disk begins to revolve rapidly

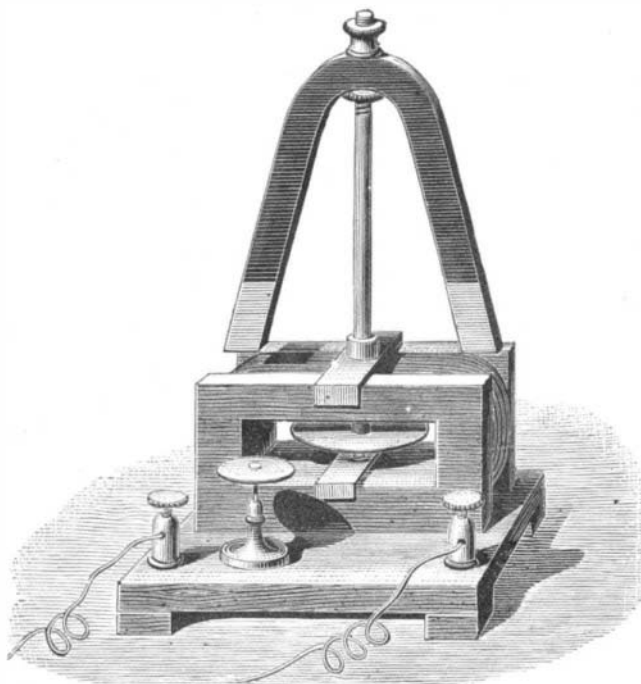


Fig. 1.—FONVIELLE & LONTIN'S ELECTRICAL ROTATOR.

and in a perfectly definite direction, which is dependent on the position of the poles of the magnet and on the direction of the currents induced in the wire of the galvanometric helix. When the magnet is crosswise, there is no longer any rotation. The phenomenon has been explained very simply by MM. Jamin and Du Moncel. As well known, the current induced by breaking is always more powerful than that induced by closing. The disk of soft iron polarized by the outer magnet behaves like a magnetized needle placed in a galvanometric helix, and assumes its motion under the action of a series of electrical impulses, the poles remaining fixed in space, while the disk displaces itself by its rotation. The current produced by closing the primary circuit of the induction coil acts in a direction opposite to that produced by opening, but as its intensity is much less, the disk moves under the differential action of the two. Each current induced by closing produces a new impulse on the disk, since the poles are always in the prolongation of the fixed magnet.

The same rotatory motion is produced with the *direct current of the battery interrupted with sufficient rapidity*. In this case the rotary speed is not so great, but this must be attributed to the fact that the electrical impulses are not produced with sufficient rapidity, and that, moreover, the resistance of the galvanometric helix is not so well adapted to

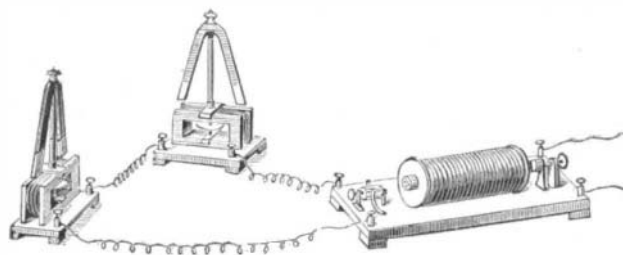


Fig. 2.—Arrangement of two rotators mounted in tension in the induced circuit of a Ruhmkorff coil.

the direct current. The motion is quite rapid when the current of the battery is sent and made to traverse the inductor of the coil and the vibrator, for there is then produced a series of impulses which are sufficiently rapid to communicate a certain rotary speed to the disk. On arranging two helices (Fig. 2) in the circuit of the secondary wire of the coil, a movable disk may be made to revolve in each helix; but on removing the disk from one of the helices the disk in the other takes an accelerated velocity. To explain this phenomenon, which appears to have somewhat astonished M. De Fonvielle, we have only to bear in mind the well-known reactions of magnets and currents. The rotatory motion is produced also with movable pieces of soft iron of various shapes—needles, stars, whole disks, split or annular, spiral bands, etc. On doing away with the fixed magnet the phenomenon takes place under the action of terrestrial magnetism, although to a less degree. The fact that there is no motion when the magnet is placed crosswise with the spirals of the galvanometer, proves the exactness of M. Jamin's

theory; for, in this case the disk in the interior of the galvanometric helix forms, under the influence of the external horseshoe magnet, a true magnetized bar placed crosswise with the current, and consequently cannot assume any motion under its action. MM. Lontin and De Fonvielle's apparatus constitutes a new and original form for demonstrating the laws which govern the action of magnets and currents, and, as such, will take its place in physical cabinets alongside of analogous apparatus of Ritchie, Barlow, Faraday, etc.

Curious Intermittent Spring in Guatemala.

M. De Thiersant, Chargé d'Affaires of France in Guatemala, gives, in *La Nature*, the following account of a phenomenon witnessed by him in the last named country. At about ten miles from the capital, near a town called Nejapa, on the lowest declivities of the volcano of San Salvador, there is a spring known in the country under the name of Rio Huido (fleeing river), which, for a period of seven consecutive years, furnishes enough water to form a true river. The waters of this spring are crystalline and wholesome, and, it is said, are excellent for certain diseases like leprosy, and for strengthening the system when debilitated by the climate. As soon as the seven years are completed, these same waters disappear at a certain definite hour, the spring ceases to flow, and the river bed, becoming completely dried, exhibits thereafter nothing but sand and dust. The intermittent periods have been as follows: From 1866 to 1873 the waters flowed; from 1873 to 1880 the spring ceased; and in the month of January of the present year, the spring began to flow again. This phenomenon is doubtless not a new one, and science has long ago explained it, but there do not perhaps exist many springs the intermittent period of which is so long and so regular as that of the one at Nejapa.

Hallucination of the Senses.

Professor Maudsley remarks, in a recent lecture, that one striking feature observed by medical men who have had cases of hallucination under their charge is that the patients cannot be convinced that the objects they see, the sounds they hear, and the sensations they perceive, have no real existence, and that the sensations they receive are the result of their excited nerves. It frequently happens, too, that a person who suffers from hallucination in respect of one sense has the others unaffected, and is, on all other matters, perfectly normal. Hallucination may arise either from an idea on which the mind has dwelt, appearing as something exterior, or from excitement of the sensory ganglia. It is said that Newton, Hunter, and some others of equal professional eminence, could, at will, picture forms to themselves till they appeared to be realities.

NEW INVENTIONS.

An improved wagon axle has been patented by Mr. John B. Herman, of Blair, Nebraska. The object of this invention is to furnish wagons so constructed as to run easier than when constructed in the usual way, and in which the bearings can be kept oiled and the brake can be readily applied.

An improvement in that class of vertically revolving wind-wheels having radial feathering sails or vanes, which are adjusted, according to the force of the wind acting on them, by means of a lever or governor vane, has been patented by Mr. Andrew D. Worman, of Frederick, Md.

An improved machine for packing meats into cans has been patented by Mr. William Steuerwald, of New York city. It is so constructed as to fill a can at one descent of the follower. It consists of a holder to receive the can, a top having a tapering tube to enter the hole in the can, a tapering hopper, and a contractible follower for forcing the meat into the can at a single movement.

Mr. John Law, of Lebanon, O., has patented a simple device to serve both to support the sides and back of the seat, and to hold the rails of a shifting-top buggy or other vehicle.

An improved clothes-pounder has been patented by John W. Troeger, of Naperville, Ill. This invention consists in an arrangement and combination of an outer cone and a series of inner cones provided with perforated concave diaphragms, whereby several advantages are obtained.

An improved bridle has been patented by Mr. John W. Aiken, of Tennessee, Illinois. The object of this invention is to lessen the amount of stock and labor required in making bridles, and at the same time furnish bridles that are neat in appearance, strong, and durable.

Mr. Robert E. Greenwell, of Osage Mission, Kan., has patented improvements in railway joints of that form in which a set of bolts project through the fish plates and have ends slotted lengthwise to receive a key which is driven in a plane parallel with the bolt. The invention consists in combining the fish plates, the slotted fish plate bolts, a key, and an elongated gib behind the key, which gib passes through two or more of the bolts and serves to tie them together and prevent them from being bent by the entrance of the key.