No. 630,113. Patented Aug. 1, 1899.

M. ROLLE.

ELECTRICALLY OPERATED DISPLAY TURN TABLE.

(No Model.)

Fig. 1.

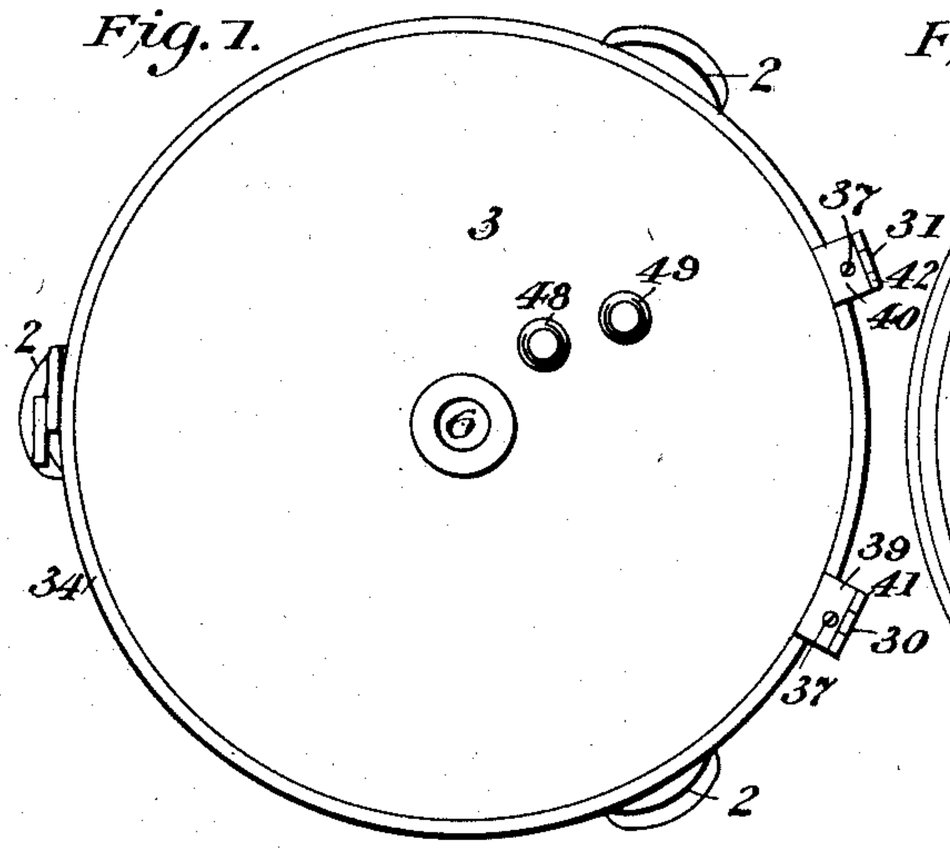


Fig. 2.

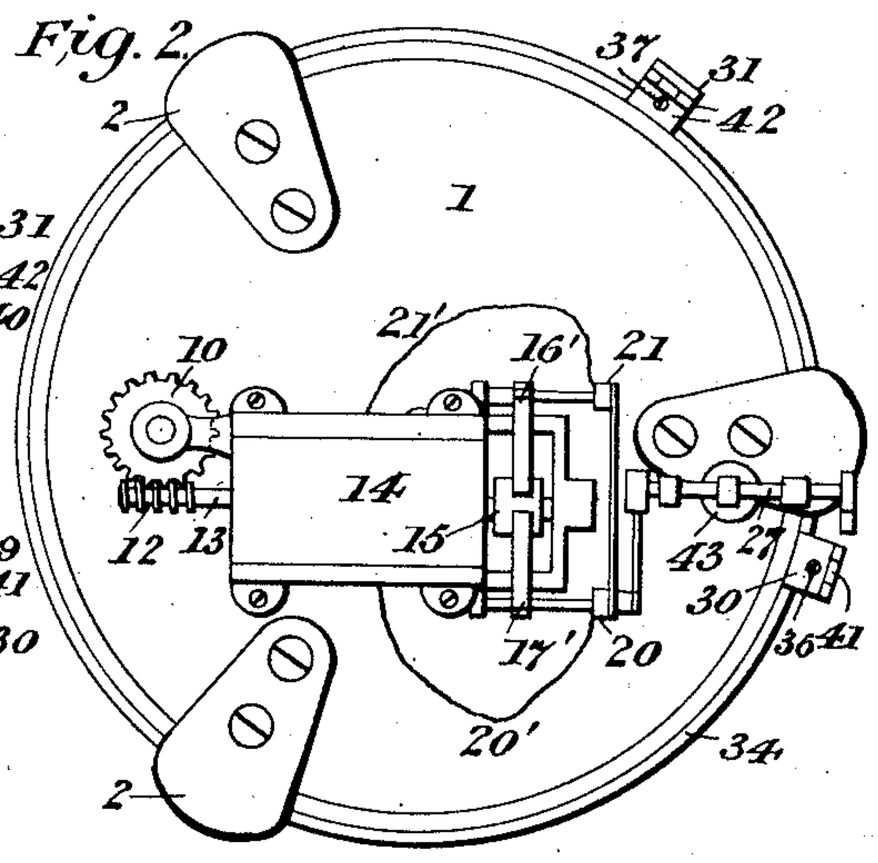


Fig. 3.

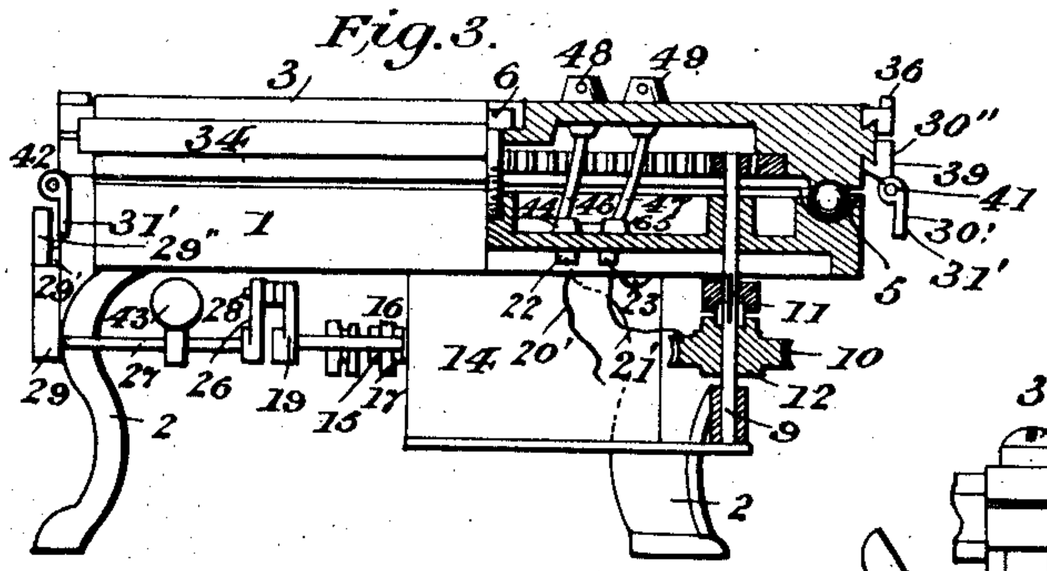


Fig. 4.

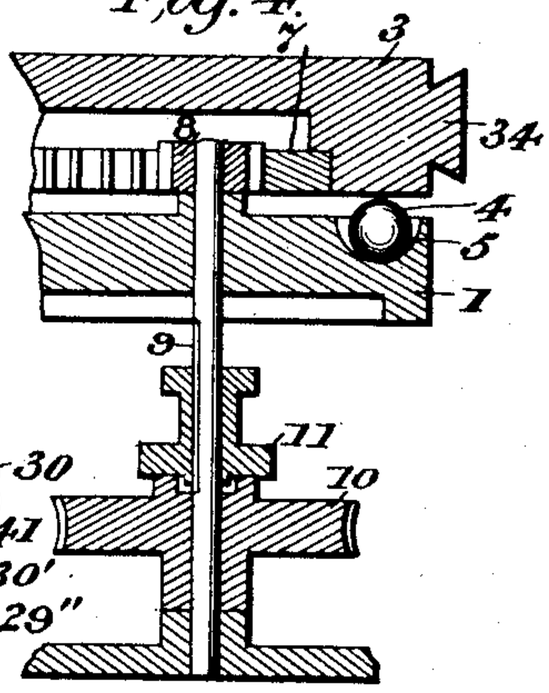


Fig. 5.

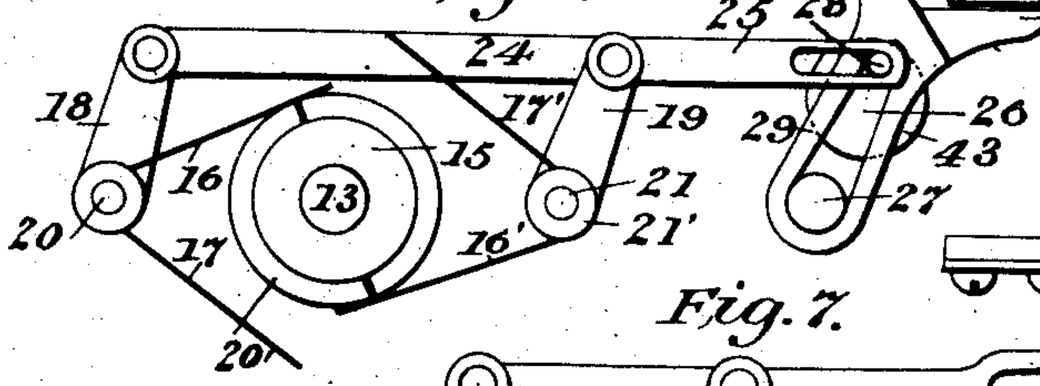


Fig. 6.

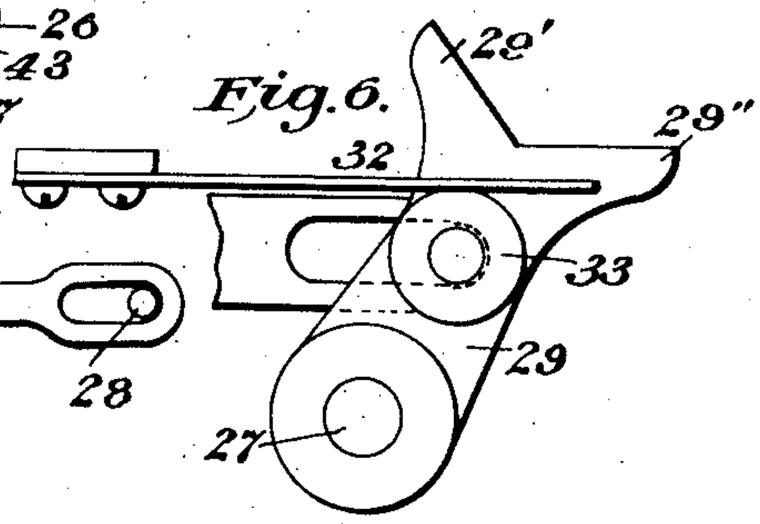
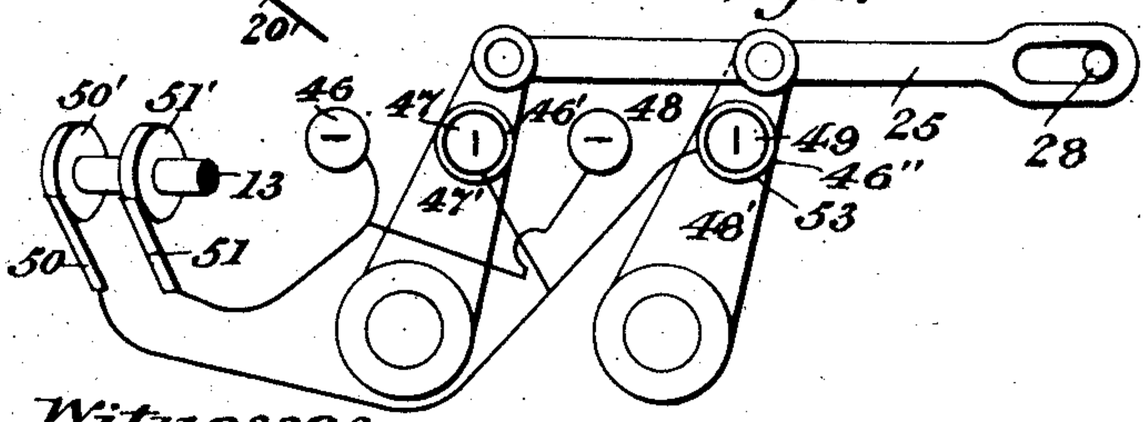


Fig. 7.



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UNITED STATES PATENT OFFICE.

MAX ROLLE, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRICALLY-OPERATED DISPLAY TURN-TABLE.

SPECIFICATION forming part of Letters Patent No. 630,113, dated August 1, 1899.

Application filed October 18, 1898. Serial No. 693,882. (No model.)

To all whom it may concern:

Be it known that I, MAX ROLLE, a citizen of the United States, residing at Philadelphia, Pennsylvania, have invented a new and useful Improvement in Automatically-Operating Turn-Tables, of which the following is a specification.

This invention relates to turn-tables for the display of figures, costumes, goods, and advertisements and is also applicable to supporting ventilating-fans in which changes in the direction of air-currents are desirable, and has for its object a convenient and simple means contained within the apparatus of adjusting the mechanism so as to turn continuously in either direction or to turn through any predetermined arc of a circle and to automatically reverse and to repeat such limited angular motion. To effect these desiderata, this invention can be concisely stated to consist of an electric motor provided with a commutator and two sets of brushes alternately applicable to contact with the commutator to procure reversed motion, adjustable means of changing the contacts of the brushes controlled by the turn-table, and means of imparting rotation from the motor to the turn-table and of releasing the connection between them.

When alternating-current motors are used, switches controlling the current in the conductors leading to the brushes contacting with the conducting-rings of the armature are used instead of the double set of brushes and commutator.

The construction of my invention and the operation thereof are hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 shows a plan view; Fig. 2, an inverted plan view; Fig. 3, an elevation partially in section; Fig. 4, an enlarged partially sectional view of the gearing for transmitting motion from the motor to the turn-table; Fig. 5, an enlarged view of the commutator and brushes and mechanism for reversing their contacts with the commutator. Fig. 6 shows a modification of part of the mechanism shown in Fig. 5. Fig. 7 shows an arrangement of switches for reversing the direction of rotation of an alternating-current motor.

Referring to the drawings, 1 represents the base-plate or frame, supported on pillars or feet 2, and 3 the turn-table, supported from the plate 1 by balls or rollers 4 in a raceway 5 and held in central position with the base-plate 1 by a pivot 6.

7 is an annular rack or gear-wheel attached to the turn-table 3, in which a pinion 8 on a vertical arbor 9 meshes and by which it is turned.

10 is a worm-wheel on the arbor 9, susceptible of turning thereon and provided with a clutch 11, by which it can be liberated from and engaged with the arbor 9 to rotate the arbor and the pinion 8.

12 is an endless screw engaging the worm-wheel 10 to rotate it. The screw 12 is secured upon and turned by the arbor 13 of the electric motor 14. The motor 14 is secured to the under side of the base-plate 1 and for the purpose of this invention may be of any of the known forms.

15 is the commutator of the motor. 16 and 16′ and 17 and 17′ are the other pair of conducting-brushes. The brushes 16 and 16′ and 17 and 17′ are supported on levers 18 and 19, turning on pivots 20 and 21 and connected electrically by flexible conductors 20′ and 21′, leading from binding-posts 22 and 23, to which the electric connections from the source of electric current are applied. The levers 18 and 19 are connected by a link 24, so that they move simultaneously, and by a link 25 with a pivot 28 on the lever 26, attached to the rock-shaft 27, by which they are operated. The link 25 is slotted at the point of attachment to the pivot 28, so that the rock-shaft 27 and lever 26 may turn partially without imparting motion to the link 25 and the connected parts for a reason hereinafter explained. The rock-shaft 27 derives motion from a lever 29, attached thereto, and is reciprocated by stops 30 and 31, adjustably secured to the rim of the turn-table 3, which stops alternately contact with the lever 29. The motion imparted to the lever 29, rock-shaft 27, lever 26, and pivot 28 by the stops 30 and 31 does not directly move the link 25; but, as shown in Fig. 5, a weight 43 on the upper end of the lever 26 after being forced by either stop 30 or 31 beyond the highest point of the arc in which the lever 26 and

weight 43 move, descends by the force of gravitation and completes the motion of the lever 29, rock-shaft 27, lever 26, and pivot 28 and moves the link 25, levers 18 and 19, and brushes 16 and 16′, 17 and 17′, retracting the one pair of brushes from and contacting the other pair with the commutator. During the interval of motion of the brushes the motor is without electric connection with the circuit and the motor and turn-table stop moving, and for this reason the gravitating weight 43 is used to complete the motion of the lever 29 after the turn-table 3 and the stops 30 and 31 have ceased to move, the motion first imparted to the pivot 28 from the turn-table simply moving the pivot in the slot of the link 25 without moving the link.

As shown in Fig. 6, a spring 32, attached to the frame 1, is applied, with its free end bearing on a roller 33, secured to the lever 29. The spring 32 is strained by the motion of the roller as actuated by the lever 29 and stops 30 and 31 until it has passed the point of greatest tension and then reacts upon the roller 33, completing the motion of the lever 29 and connected parts, with the same effect as described in referring to Fig. 5.

The stops 30 and 31 are formed with clamps 39 and 40, which embrace and hold on a rim 34 on the periphery of the turn-table 3. The clamps are made so as to be tightened or released by screws 36 and 37. The stops 30 and 31 are each made of two parts 30′ and 30″ and 31′ and 32″, connected with hinges 41 and 42. The outer parts 30′ and 31′ of either can be turned upward so that the stop will clear the lever 29 and then does not reverse the motion of the motor and turn-table.

The lever 29 has fingers (marked 29′ and 29″) which contact with the stops 30 and 31. These are made in two different planes, and the outer ends of the parts 30′ and 31′ are made so that the part 30′ contacts only with the finger 29′ and the stop 31′ only contacts with the finger 29″, and after either of the stops has passed the lever 28 the position of the finger is such that it clears the stop that moved it and the other finger is brought into position to engage the other stop as it returns. This feature of the construction of the stops is useful in that it avoids the possibility of breaking the propelling machinery in the event of the mechanism connecting the lever 29 with the brushes becoming stuck or inoperative to complete its motion by the weights 43 or spring 32.

The clutch 11 for engaging and disengaging the arbor 9 from the worm-wheel 10 provides an easy means of permitting the turn-table 3 to be moved freely by hand, as it is often desirable to do in draping and arranging the figures or object displayed on the turn-table 3.

On the base 1 are conducting-rings 44 and 45, electrically connected with the binding-posts 22 and 23, but otherwise insulated. Upon these rings conducting-springs 46 and 47, connected with insulated binding-posts 48 and 49 on the turn-table 3, trail and furnish the means of conveying electric current to any illuminating apparatus or electrically-driven mechanism placed on the turn-table 3. When a motor propelled by alternating current is employed, as shown in Fig. 7, the link 25 is connected to switch-controlling levers 47′ and 48′. The switches 46′ and 46″, connected with the line-wires 52 and 53, connect alternatively with electrodes 46 and 47 and 48 and 49, connected with brushes 50 and 51 and with the conducting-rings 50′ and 51′ on the armature-arbor, so that the shifting of the lever 44 by the link 25 reverses the direction of the current in the armature and reverses the motion of the motor and the connected turn-table. It should be observed that this change of switches does not effect or change polarity of the field-magnets or the motor, which for all practical purposes may be permanent magnets.

By this means electrically-propelled ventilating-fans can be so used as to direct air-currents in varying directions in apartments, and the whole apparatus is a convenient means of displaying goods and wares in motion in places where electric current is available with a minimum of time, trouble, and expense in preparation.

Having described my invention and the construction and operation thereof, what I claim is—

1. In a turn-table applicable to the display of wares, and costumes, a base, a turn-table supported thereon with rolling supports, an electric motor, connected to propel the same rotatively, a commutator on said motor with two pairs of brushes alternatively applicable to the commutator, in combination with a lever controlling said brushes, and stops attached to and operated by said turn-table to reverse the position of said lever, and the direction of rotation of the motor and turn-table, as and for the purpose set forth.

2. In a turn-table of the class described, an electric motor having a commutator rotatably connected therewith, a pair of stops adjustably attached to said turn-table, and a lever operated by said stops, combined with two pairs of connected brushes arranged to alternatively contact with the commutator of the said motor, and a lever first actuated by said stops, and afterward by the reaction of spring or gravitation to reverse the direction of motion of the brushes, as and for the purpose set forth.

3. In a rotating turn-table for the display and exhibition of wares and costumes, a rotatable turn-table, an electric motor connected therewith to rotate the same in combination with stops attached to said turn-table, and a tripping mechanism actuated by said stops and the reaction from gravitation or a spring, and arranged to reverse the adjustment of the brushes of said motor, and to reverse the direction of motion of the motor and turn-table, as and for the purpose set forth.

4. In a rotating turn-table, a pair of stops adjustably attached thereto, a lever operated by said stops, connected with brushes, said brushes arranged to alternatively contact with a commutator, a motor, and means of transmission of rotary motion from said motor to said turn-table, in combination with a coupling arranged to connect and disconnect said means of transmission, as and for the purpose set forth.

5. In a turn-table operated by an electric motor and controlled as to reversible motion by stops on said turn-table, hinges in said stops adapted to suspend the operation thereof, by placing the stops out of position to contact with the reversing mechanism, as and for the purpose set forth.

6. In a turn-table adapted to display figures, costumes and wares, a reversible mechanism operated and controlled by an electric motor, and the brushes thereof, in combination with a tripping mechanism, and a slotted link connecting said brushes therewith, arranged to operate on the brushes after the turn-table has ceased to move, as and for the purpose set forth.

7. In a turn-table, operated reversibly by an electric motor, a pair of stops attached adjustably to the turn-table, a rock-shaft operated jointly by said stops, and the reaction of a spring, or equivalent weight, in combination with a pivot operated by said rock-shaft and a link connected with current-controlling brushes or switches, to change the direction of motion of the motor and connected turn-table, by changing the direction of current in the armature-helices of the motor, as and for the purpose set forth.

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