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COMBINED RHEOSTAT AND SWITCH

Filed May 20, 1926

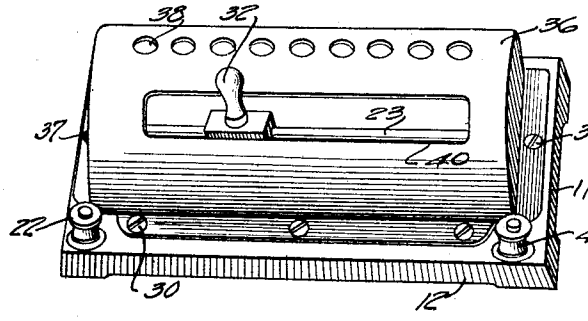


FIG. 1.

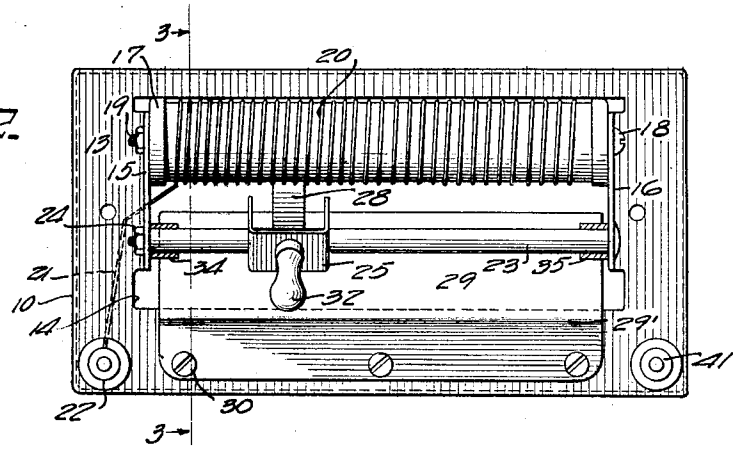


FIG. 2.

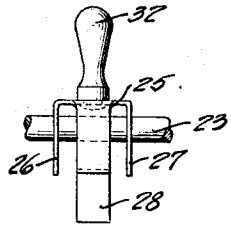


FIG. 4.

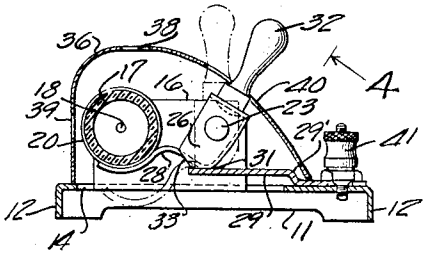


FIG. 3.

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UNITED STATES PATENT OFFICE

LOUIS CARUSO, OF IRVINGTON, NEW JERSEY, ASSIGNOR TO THE LIONEL CORPORATION, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

COMBINED RHEOSTAT AND SWITCH

Application filed May 20, 1926. Serial No. 110,494.

The present invention relates to a combined rheostat and switch, and is more particularly directed toward a structure suitable for use in controlling the circuit for small power consuming devices such as electric motors used in toys.

In operating toy electric trains, it is desirable to control the speed of the train by controlling the voltage applied to the track layout on which the trains run. It is also desirable to be able to stop the train at any time by opening the circuit. The present invention contemplates a structure suitable for this purpose. One may readily control the resistance in circuit with the track layout and may open or close the circuit as desired without change of resistance.

An object of the invention is to provide a combined rheostat and switch for the above purposes by means of which one may easily control the speed of the train and stop and start it at will, preferably without changing the resistance in the circuit.

Another object of the invention is to provide such a device made up in a suitable size for use in toy layouts and with which a child may safely control the circuit.

Another object of the invention is to provide such a device in which the contacts are securely held in an open position when it is desired to stop the motor and in which the contact is held securely against the resistance when the circuit is to be established.

Another object of the invention is to provide such a device of this character wherein the operator may vary the resistances in circuit without opening the circuit or may move the adjustable parts of the rheostat when the circuit is opened without restoring the circuit.

Other and further objects of the invention will appear as the description proceeds.

In the accompanying drawings, there is shown, for purposes of illustration, one of the many possible embodiments in which the invention may take form, it being understood that it is illustrative rather than limiting the same.

In these drawings:

Figure 1 is a perspective view of an embodiment of the invention;

Figure 2 is a top plan view of the same with the top or cover removed;

Figure 3 is a section taken on the line 3—3 of Figure 2, looking in the direction of the arrow, the cover being in place and showing the switch in open position in dotted lines; and

Figure 4 is a fragmentary view taken in the direction of arrow 4 of Figure 3.

All parts of the rheostat and switch are for convenience mounted on a sheet metal base 10 of general rectangular configuration provided with depending flanges or side walls 11 and 12 to facilitate supporting the platform portion 13 placing it above the table or other support on which the device is to rest. This sheet metal stamping is also preferably provided with a rather large centrally located hole 14 and lugs or flanges 15 and 16 are bent upwardly near the ends of the stamping, as indicated.

An insulating core 17 is mounted on a rod 18 which passes through the lugs or flanges 15 and 16, which is fastened in place by a nut 19 threaded onto it, as shown at the left of Figure 2. This insulating core carries a winding 20 of bare resistance wire. This winding is connected by a wire 21 which is carried underneath the platform 13 to a binding post 22 insulatively carried on the left corner of the stamping 10. The other end of the wire on the insulating core is secured in any convenient and well known fashion. A rod 23 is mounted between the lugs or flanges 15 and 16 a short distance in front of the resistance coil and parallel with the core. This rod may be secured in place in any convenient manner, as, for example, by a nut 24. A slider 25 has depending arms 26 and 27 through which the rod 23 passes. The slider also has a contact finger 28 which extends down below the rod 23 and over underneath the coil 20.

A spring plate 29 is mounted on the front part of the platform 19 by small bolts or screws 30. This plate is offset as indicated at 29′, and is made of a resilient material, preferably brass, and as here shown extends

a short distance beyond the rod 23. The lower right hand side of the legs 26 and 27 in the slider are rounded as indicated at 31 and the plate 29 is adapted to engage this portion of the slider and place the contact 28 toward the coil on the core 17.

The slider 25 is provided with a handle 32 for convenience in operating the same. When the handle is moved to the dotted line position, as indicated in Figure 3, the contact 28 is moved to the dotted line position so as to free it from the resistance coil. The plate 29 then engages with the lower left hand side 31 of the legs 26 and 27 and applies spring pressure to hold the movable slider in this position and keep the circuit open. One may move the slider back and forth along the rod 23 no matter in which angular position the slider may be. If the contact is against the rheostat one may readily vary the resistance in the circuit. The single plate spring acts on the slider at all times.

Stops 34 and 35 limit the movement of the slider 25 so as to prevent moving the contact 28 beyond the coil 20. In order to protect the rheostat a sheet metal cover 36 which may conveniently take the shape illustrated is provided. It is fastened in place by screws 37 and has ventilation holes 38 and 39 and a slot 40 in which the handle 32 may be moved. A grounded binding post is indicated at 41 for connecting the device to the other side of the circuit.

From the foregoing, it will be obvious that one may open the circuit at any desired point along the resistance coil by merely shifting the handle 32 to the dotted line position. It is not necessary to return the slider to the off position. Once the proper resistance has been determined, the train or other device may be stopped and started as desired. It is of course obvious that the device may be used for other purposes than the control of toy motors.

It is obvious that the invention may be embodied in many forms and constructions, and I wish it to be understood that the particular form shown is but one of the many forms. Various modifications and changes being possible, I do not limit myself in any way with respect thereto within the scope of the appended claims.

I claim:

1. In combination, a base, a resistance coil supported on the base, a rod carried parallel with the resistance coil, a slider on the rod having a contacting arm engageable with the resistance coil, and a stationary spring plate extending alongside the rod for pressing the slider to hold the contact against the coil.

2. In combination, a base, a resistance coil supported on the base, a rod carried parallel with the resistance coil, a slider on the rod having a contacting arm engageable with the resistance coil, and a stationary spring plate extending alongside the rod for pressing the slider to hold the contact against the coil, the slider being angularly movable about the rod to a position to separate the contact from the coil, the spring plate acting to hold the slider in this angular position.

3. In combination, a resistance coil, a rod parallel with the coil, a slider carried on the rod and movable therealong and oscillatible on the rod, a contact carried by the slider and engageable with the coil when the slider is in one angular position and disengaged when it is in the other angular position, and a single spring engaging the slider to hold the contact in either of these positions as the slider is moved along the rod.

4. A combined rheostat and switch comprising a resistance coil, a contact movable therealong, mountings for the contact to permit moving it away from the coil to open the circuit, and a spring for pressing the contact against the coil or for holding it separated from the coil.

5. In combination, a sheet metal base, a pair of upstruck ears, an insulating core and a rod mounted between the ears and parallel with one another, a resistance coil on the core, a slider on the rod, the slider having a contact engageable with the coil on the core, and a sheet metal spring carried on the base and engageable with the slider to hold the contact against the coil.

6. In combination, a sheet metal base, a pair of upstruck ears, an insulating core and a rod mounted between the ears and parallel with one another, a resistance coil on the core, a slider on the rod, the slider having a contact engageable with the coil on the core, and a sheet metal spring carried on the base and engageable with the slider to hold the contact against the coil, the slider being movable about the axis of the rod to disengage the contact from the coil, the spring reacting against the slider when in this position to hold the contact in disengaged position.

7. In a combined rheostat and switch, a resistance coil, a rod, a slider movable therealong and movable on the rod, a spring plate, a contact on the slider, the slider having such configuration that the spring plate holds the contact against the coil when the slider is moved along the rod in one of its positions and holds the contact away from the coil when the slider is rocked to its other position.

Signed at Irvington, in the county of Essex, and State of New Jersey, this 14th day of May, 1926.

LOUIS CARUSO.