



*Inventor:*  
*A. Frohne*  
*Attys.*

1,402,757.

A. FROHNE,  
 ELECTRIC REVERSING SWITCH AND THE LIKE.  
 APPLICATION FILED AUG. 18, 1921.

Patented Jan. 10, 1922.

# UNITED STATES PATENT OFFICE.

ALBIN FROHNE, OF CHICAGO, ILLINOIS, ASSIGNOR TO AMERICAN FLYER MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## ELECTRIC REVERSING SWITCH AND THE LIKE.

1,402,757.

Specification of Letters Patent. Patented Jan. 10, 1922.

Application filed August 18, 1921. Serial No. 493,346.

*To all whom it may concern:*

Be it known that I, ALBIN FROHNE, a citizen of Germany, having declared my intention of becoming a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Electric Reversing Switches and the like, of which the following is a specification.

This invention has to do with an improved electric reversing switch for use in connection with toy electric locomotives and cars and the like. The switch of the present invention is intended for controlling the delivery of current to the motor of the toy locomotive or car. Said switch is so constructed that when its position is reversed, it will reverse the connections so as to reverse the direction of the electric motor.

One of the objects of the present invention is to provide a switch of this kind which may be very easily operated by the control devices located adjacent to the track on which the locomotive or car is traveling.

Another object is to provide a switch of such construction that it may be very cheaply manufactured from a small number of parts.

A further object of the invention is to so construct the switch that the contacts will be very effectively and firmly made in either position in which the switch may be thrown.

Other objects and uses of the invention will appear from a detailed description of the same which consists in the features of construction and combinations of parts hereinafter described and claimed.

Referring to the drawing:

Figure 1 shows a side elevation of the working mechanism of a toy electric locomotive having applied thereto a switch embodying the features of the present invention;

Fig. 2 shows an end view corresponding to Fig. 1 looking at the switch;

Fig. 3 shows a fragmentary detailed cross section taken on the line 3—3 of Fig. 2, looking in the direction of the arrows; the contacts being in the normal position; and

Fig. 4 shows a fragmentary view corresponding to Fig. 3, the contacts being reversed.

The operating mechanism is designated in its entirety by the numeral 5. It includes the wheels 6 which travel on the running

rails 7 and 8. A contactor 9 is provided on the locomotive which travels on the third rail 10 and establishes electric connection therewith.

The usual motor and other operating mechanism are located within the locomotive. At one end of the locomotive is placed the reversing switch designated in its entirety by the numeral 11. Said reversing switch includes a sheet metal plate 12, the upper end of which is provided with a lug 13 by means of which it may be attached to the frame of the locomotive. This plate 12 is normally grounded on the locomotive frame. The supplemental spring contact clips 14, 15 and 16 are provided in the switch as indicated. All of these spring clips are supported from the plate 12 but are insulated from said plate and from each other by means of intervening insulating plates 17. Set screws 18 are passed through the clips and through the insulating plates 17 and into the upper end of the plate 12, so as to secure the upper ends of all of the clips rigidly together. These set screws 18 are furthermore insulated from the various clips 14, 15 and 16.

The lower end of the clip 16 is turned in as shown at 19 in Figs. 3 and 4 particularly, so that in its normal position the clip 16 makes contact with the plate 12 and is therefore grounded. The lower ends 20 and 21 of the clips 14, and 15 respectively are turned in towards each other as shown in Figs. 3 and 4, so that they also are normally in engagement with each other. All of the clips are so proportioned that in their normal condition, as shown in Fig. 3, the clips 14 and 15 are electrically insulated from the plate 12 and from the clip 16 at the same time that the clips 14 and 15 come together, and the plate 12 and the clip 16 come together. Under these conditions, the clips 14 and 15 are electrically joined, and the plate 12 and clip 16 are electrically joined.

The plate 12 is provided with a pair of side lugs 22 and 23, and with a bottom lug 24 which lugs together provide a box like structure for the accommodation of the lower portions of the clips. A pin 25 is journaled across this structure and within the lugs 22 and 23. The central part of this pin carries a block of insulating material 26 of cam shape, which block is located between the lower portions of the clips 14 and

15. When the shaft 25 stands in the normal position, this cam block 26 stands upright, but when the shaft 25 is rocked the cam block is turned into the new position and the clips 14 and 15 are forced apart as shown in Fig. 4. This action serves to break the circuit between the clips 14 and 15; and the amount of movement of said clips is sufficient to bring the clip 14 against the plate 12 and to bring the clips 15 and 16 together. The movement is furthermore sufficient to force the lower end 19 of the clip 16 away from the grounded plate 12, so as to open the circuit at that point. The connections are thus reversed, the clip 14 being grounded onto the plate 12 and the clips 15 and 16 being brought together.

The shaft 25 may be rocked in any suitable manner. The arrangement illustrated is a simple one. It includes the operating fingers 27 and 28 on the shaft 25, said fingers standing at substantially right angles to each other. These fingers are adapted to reach down into position to engage the stationary operating blocks 29 and 30, located adjacent to the track. With the car traveling in the direction of the arrow of Fig. 1, it is evident that the finger 27 will engage the block 29 and thus the shaft 25 will be rocked into the position to reverse the connections. Thereupon the motor will commence to reverse and propel the car in the other direction. This rocking of the shaft 25 will simultaneously carry the finger 28 downwards into such position that it will ultimately engage the block 30, and the shaft 25 will be rocked back into its original position.

While I have herein shown and described only certain embodiments of the features of my present invention, still I do not limit myself to said embodiments, except as I may do so in the claims.

I claim:

1. A reversing switch member comprising in combination a base plate having at its upper end a lug for attachment to a carrier, and having at its lower end a pair of outstanding separated lugs, three vertically extending contact clips adjacent to said base member, means for securing the upper ends of said contact clips rigid with respect to the base member, means for insulating the contact clips from each other and from the base member, the lower end of the outermost clip being inturned towards the base member and normally in contact therewith, the

lower ends of the two other contact clips being turned towards each other and normally in contact with each other, a shaft journaled in the ears aforesaid and extending between the lower ends of the contact clips last mentioned, and a cam shaped block of insulating material on said shaft and between said clips and in position to separate the clips last mentioned when the shaft is rocked to thereupon force one of said clips against the base member and the other of said clips against the outermost clip, substantially as described.

2. A reversing switch member comprising in combination a base plate having at its lower end a pair of outstanding separated lugs, three vertically extending contact clips adjacent to said base member, means for securing the upper ends of said contact clips rigid with respect to the base member, means for insulating the contact clips from each other and from the base member, the lower end of the outermost clip being inturned towards the base member and normally in contact therewith, the lower ends of the two other contact clips being turned towards each other and normally in contact with each other, and a cam shaped block of insulating material journaled between the clips and in position to separate the clips last mentioned when said block is rocked to thereupon force one of said clips against the base member and the other of said clips against the outermost clip, substantially as described.

3. A reversing switch member comprising in combination a base plate, three vertically extending contact clips adjacent to said base member, means for securing the upper ends of said contact clips rigid with respect to the base member, means for insulating the contact clips from each other and from the base member, the lower end of the outermost clip being inturned towards the base member and normally in contact therewith, the lower ends of the two other contact clips being turned towards each other and normally in contact with each other, and a cam shaped block of insulating material journaled between the clips and in position to separate the clips last mentioned when said block is rocked to thereupon force one of said clips against the base member and the other of said clips against the outermost clip, substantially as described.

ALBIN FROHNE.