L. P. HYNES.
PUSH BUTTON.
APPLICATION FILED DEC. 21, 1916.

1,316,158.

Patented Sept. 16, 1919.
2 SHEETS—SHEET 1.

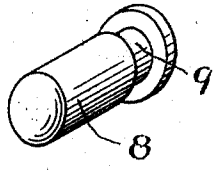


Fig. 2.

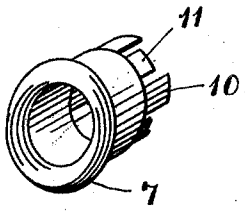


Fig. 3

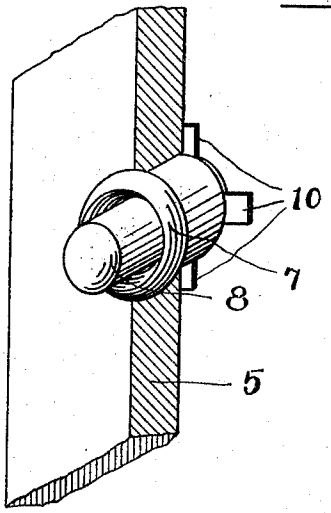


Fig. 5

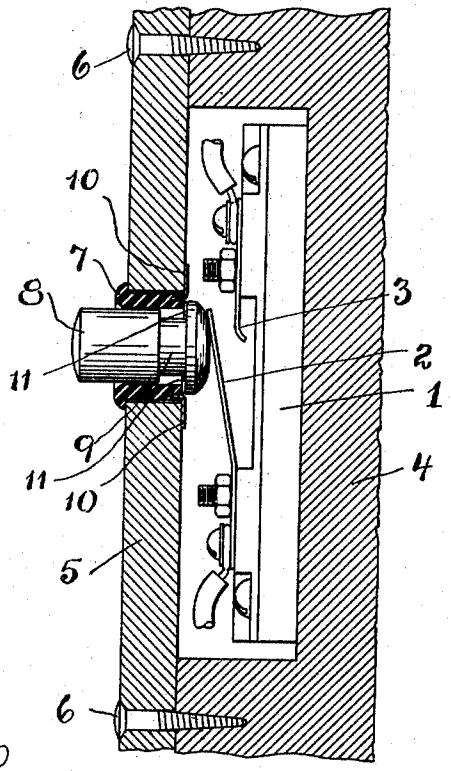


Fig. 1

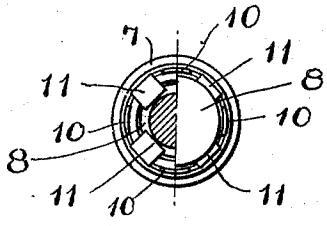


Fig. 4

Lee P. Hynes Inventor
by
Emery, Booth, Janney & Varney Atty.

THE COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

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2 SHEETS—SHEET 2.

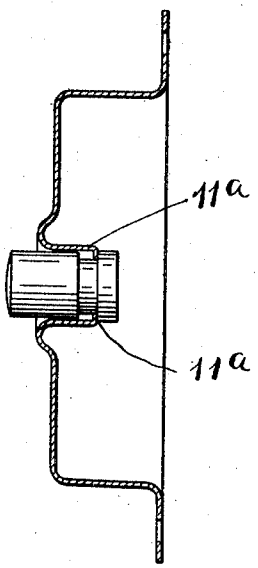


Fig. 6.

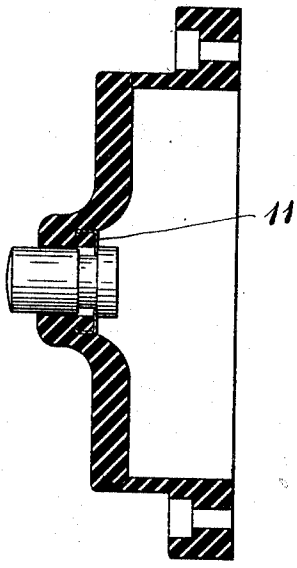


Fig. 7

Lee P. Hynes Inventor.
by
Emery, Booth, Janney & Varney Atty.

UNITED STATES PATENT OFFICE.

LEE P. HYNES, OF ALBANY, NEW YORK, ASSIGNOR TO CONSOLIDATED CAR HEATING COMPANY, A CORPORATION OF WEST VIRGINIA.

PUSH-BUTTON.

1,316,158. Specification of Letters Patent. Patented Sept. 16, 1919.

Application filed December 21, 1916. Serial No. 138,139.

To all whom it may concern:

Be it known that I, LEE P. HYNES, a citizen of the United States, and a resident of the city of Albany, county of Albany, State of New York, have invented an Improvement in Push-Buttons, of which the following is a specification.

My invention relates to push buttons such as are used to control electric bells or other signals and has particular reference to means for guiding and retaining said buttons in place during the operation of the device controlled by the button and while the button is removed for purposes of inspection or repair.

In the case of signal buttons for railways to which use my invention has been extensively applied, the push button is usually mounted in a ferrule which is slipped into a hole in a wooden panel covering the switch, or else mounted in a removable cover which may be attached to the side wall of the car to cover the switch mechanism.

I have found that when such covers or cover panels were removed or during shipment, the push buttons were very apt to become dislodged from the covers and become lost, thus necessitating replacement.

Among the objects of my invention are to provide a simple inexpensive means for guiding the push buttons when placed in operative position, and to limit their movement in the guiding means so as to prevent their becoming dislodged or lost. I further aim to provide motion limiting means of such a character that the in-and-out travel of the button will not be interfered with except when it exceeds the normal movement required for the operation of the switch.

Other objects and advantages of my invention will be more fully pointed out in my specification and described in my claims.

In the drawings:

Figure 1 illustrates my invention applied to a signal switch for railway cars attached to the usual wooden post, the invention being illustrated in a vertical sectional view.

Fig. 2 is a perspective detailed view of the button.

Fig. 3 is a perspective detailed view of the button guiding means.

Fig. 4 is a front view partly in section of the button mounted in the button guiding means.

Fig. 5 is a perspective view partly in section of the button and button guiding means mounted in the wooden panel shown in Fig. 1.

Fig. 6 is a vertical sectional view of a modification of my invention.

Fig. 7 is a vertical sectional view of another modification of my invention.

In Fig. 1, the switch base 1, carrying switch contacts 2 and 3, is mounted in a recess in the usual wooden post 4. A cover strip 5, is attached to the wooden post by means of screw 6, or in any other convenient manner, such cover strip forming the finished surface of the post. The cover strip is provided with a hole through which passes a ferrule 7 which guides the push button 8 in its in-and-out travel. The inner end of push button 8 presses against contact 2, and causes it to contact with contact 3 when moved inwardly in the usual manner.

Push button 8, is provided with an annular depression 9, the width of which is slightly greater than the normal travel of the button. If desired, the annular depression need not extend completely around the circumference of button 8, and may consist merely of a number of slots of suitable length and width.

Ferrule 7, is attached to the cover strip by means of a plurality of metal prongs 10. Prongs 10 occupy the position shown in Fig. 3, until the ferrule is slipped through the hole in cover strip 5, when they are bent into the position shown in Fig. 1, thus securing the ferrule in place. Prongs 10, may be attached to the ferrule 7 in any suitable manner, but I prefer to make the ferrule 7, of some molded material, such as bakelite, and secure the prongs in the ferrule by molding them in it.

Also secured to ferrule 7, are a plurality of prongs 11, which, in conjunction with the annular depression 9, of the push button constitute the limiting means for the movement of the button. Prongs 11 occupy the position shown in Fig. 3, until the push

button is slipped into place, when they are bent into the position shown in Fig. 1, thus engaging the annular recess in push button 8. The length of prongs 11, is so proportioned that they will not contact with the bottom of the annular groove 9, and they will thus permit free movement of the push button 8 between the ordinary limits of its travel.

Where the switch is mounted upon the outside surface of the panel of the car, or in any other position where it is necessary or desirable to provide the switch with a protruding cover, I make use of the constructions illustrated in Figs. 6 and 7.

Fig. 6 illustrates a metallic cover which is not provided with a separate ferrule, the guiding means being formed integrally with the cover as shown. In this case, I also form integrally with the cover prongs 11^A, which may be bent into place after the push button has been inserted in the same manner as prong 11.

When it is desired to use a protruding cover of insulating material, I preferably form the guiding ferrule integral with the cover and mold prongs 11 into the cover as shown. Such an arrangement is shown in Fig. 7 of the drawings, wherein a ferrule 11 is shown molded into the insulating material which in this case forms a cover of the switch, the other parts of which are not illustrated, as the construction is readily understood without them. This arrangement may be made in various forms with and without the prongs for securing it to the case since the molded insulating material will retain the ferrule in place very well without them.

I do not wish to be confined to the particular modifications illustrated and described, since it will be evident to those skilled in the art that many modifications may be made without departing from the spirit of my invention.

What I claim is:

1. The combination of a push-button having a substantially circumferential groove, a ferrule, a substantially rigid lug or lugs projecting from the ferrule into the groove in the button and constituting a stop or stops limiting the motion of the button in both directions, and means for attaching the ferrule to a support.

2. The combination of a push-button having a substantially circumferential groove, a ferrule, substantially rigid lugs projecting from the ferrule into the groove and constituting stops for limiting in both directions the motion of the button so that it is retained in place in the ferrule, and other lugs projecting outward from the ferrule and forming means for attaching it to a support.

3. In a device of the kind described, a push button having an annular groove, an apertured switch cover, a ferrule adapted to enter the aperture in the switch cover, a set of prongs carried by the ferrule and adapted to engage the cover to hold the ferrule in position, and a second set of prongs also carried by the ferrule and adapted to engage the groove in the push button, to limit its movement.

4. A push-button having a substantially circumferential groove, a surrounding member of insulating material, a metallic ferrule molded in the insulating material, and substantially rigid lugs projecting from the ferrule into the groove and forming stops for limiting the motion of the button in both directions, as described.

In testimony whereof, I have signed my name to this specification this 19th day of Dec. 1916.

L. P. HYNES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."