

C. AUTH.
PUSH BUTTON.
APPLICATION FILED DEC. 18, 1909.

985,101.

Patented Feb. 21, 1911.

Fig. 1.

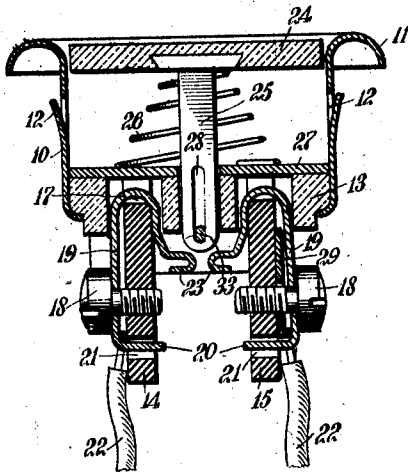


Fig. 2.

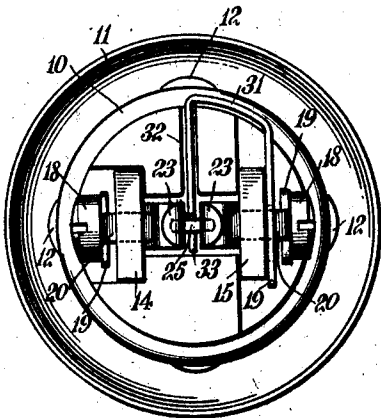
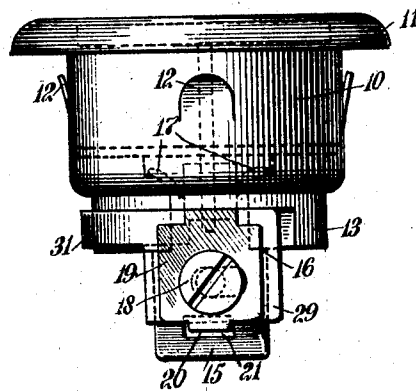


Fig. 3.

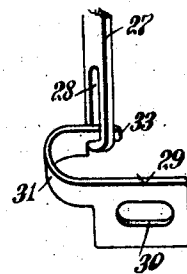


Fig. 4.

WITNESSES:

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PUSH-BUTTON.

985,101.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed December 18, 1909. Serial No. 533,866.

To all whom it may concern:

Be it known that I, CHARLES AUTH, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Push-Button, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in push buttons for use in automatically closing electric circuits, for giving signals, ringing bells, or the like. Push buttons of this character are commonly set into a wall, table or the like, so as to present a surface substantially flush with the surface of the wall or other support. The wires commonly lead from the rear side of the button, so that the only portion visible is the button proper, and possibly, an annular flange of the casing of the device. A plurality of push buttons of this character are often employed together, and each button is provided with a separate legend printed or engraved upon the face of the button proper, the legend serving to indicate the person to be called by the pressing of that particular button. It is often necessary to change the names of the parties designated on the buttons, and each time such change is made, it is necessary to remove the entire button from its recess or cavity in the supporting surface. During the removal and replacing of the button within the recess, the wires often become separated from their connections, and after the button is removed, special tools are usually required to replace the button proper within the casing.

One object of my invention is to so form the terminals that the wire cannot become separated from the terminals during the insertion or replacement of the button within the cavity, and a further object of the invention is to provide for the rapid and easy removal of the button proper from the casing, without necessitating the employment of special tools.

The invention consists in the special features of construction hereinafter defined in the claims, and one embodiment of which is hereinafter described in detail.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a longitudinal section through

a button constructed in accordance with my invention; Fig. 2 is a side elevation of the button at right angles to the section shown in Fig. 1; Fig. 3 is an inner end view of the button; and Fig. 4 is a perspective view of the retaining means for the button proper.

In the specific form illustrated, I employ a cylindrical sheet metal casing 10, adapted to fit in a cylindrical opening in a wall, table or other support, and having at its outer end an outwardly-extending flange 11, adapted to engage with the outer surface of the support and limit the inward movement of the casing. The casing may have portions 12 stamped outwardly therefrom to retard or restrict the free removal of the casing from its support. Within the casing and closing the inner end is a transverse wall or plate 13 of non-conducting material, as, for instance, porcelain or the like, and this inner wall serves to support all of the operating parts going to make up the button.

Extending outwardly from the under or lower surface of the wall 13, are two studs 14 and 15, formed of metal or any other suitable material. These studs each fit into a recess in the outer surface of the porcelain wall and preferably have shoulders 16 for limiting their inward movement. At their inner ends, each stud may be provided with two tongues 17, 17, which may be bent outwardly as shown in dotted lines in Fig. 2, so as to hold the studs firmly in place. It is, of course, evident that these studs may be secured in place in any other suitable manner. Preferably, the space between the two spaced tongues 17, 17, is filled with sealing wax or other similar compound to more effectively hold the parts against relative movement.

Each stud is provided with a screw 18, extending inwardly therethrough and serving to hold in place a combined contact and wire-retaining member 19. This member is preferably in the form of a piece of sheet metal with its body portion disposed adjacent the outer surface of the corresponding stud. The screw 18 extends through the body portion and serves to clamp the latter rigidly to the stud. At the outer end of the body portion, there is provided a tongue or extension 20, normally disposed substantially at right angles to the body portion and extending through an opening 21 in the stud adjacent the free end of the latter. In securing the wires 22 to the studs, the ends of

these wires are bared of insulation and are inserted between the plate 19 and the stud, and between the screw 18 and the finger 20. The free ends of the wires may then be
 5 twisted around their adjacent portions and the screws tightened. Even should the screws become loosened, the wires would still be retained in place and cannot be readily pulled out. Each member 19 ex-
 10 tends through into the wall 13 at the inner end of the stud, and through between the two tongues 17, 17. The member thence extends outwardly along the inner surface of the stud and terminates in a spring con-
 15 tact 23. The two spring contacts 23, 23, are disposed adjacent each other, but spaced apart, as is clearly indicated in Figs. 1 and 3. Each contact presents an outer curved surface and the space between the two con-
 20 tacts is in axial alinement with the body of the button.

For closing the circuit between the two contacts 23, 23, I provide a button proper 24, formed of any suitable material, and pre-
 25 ferably circular to fit within the outer end of the cylindrical shell or casing 10. The button proper is rigidly secured to a stem 25 formed of metal or other contacting material, and having its inner end extending through
 30 a central opening in the wall 13 and terminating adjacent to but spaced from the spring contacts 23. Beneath the button proper and within the casing, there is provided a coil spring 26, acting to force the
 35 button outwardly after it has been depressed. For preventing the end of the spring from coming in accidental contact with either or both of the studs, or the contact members 19, there may be employed a plate 27 of insulat-
 40 ing material, for covering the inner surface of the wall 13 and supporting one end of the spring.

One of the most important features of my invention resides in the means employed for
 45 limiting the movement of the button proper and normally holding it in the desired position. For accomplishing this, I preferably provide the stem 27 with a slot 28 extending
 50 lengthwise thereof and of a length at least equal to the length of the desired movement of the button proper. One of the studs, for instance, the stud 15, carries a button re-
 55 tainer 29 in the form of a piece of sheet metal having a body portion in engagement with the outer surface of the stud, and held by the screw 18. The body portion has a slot 30 therein, permitting of a limited move-
 60 ment of the body transversely of the general direction of the button. The body portion at one end, carries an arm 31, extending out-
 wardly to the edge of the wall 13 and thence inwardly along a groove 32 in the face of this wall. The arm 31, at its free end, carries a finger 33, which extends through the
 65 slot 28 of the stem, and is so disposed that

when it is at one end of the slot, the outward movement of the button proper is limited to the desired position. The same screw 18, which holds the combined wire retainer and contact member in place, also holds the but-
 70 ton-limiting and retaining member 29.

When it is desired to remove the button proper to replace it by a new one, for instance, one bearing a different legend, it is merely necessary to loosen the screw 18 and
 75 move the member 29 longitudinally. The slot 30 permits this movement, but prevents the complete removal or separation of the member. The finger 33 may be moved into or out of the slot 28, to retain or liberate the
 80 button, as desired, but when the screw 18 is tightened with the finger in place, the button proper and its stem have their movement limited. Furthermore, the finger by its en-
 85 gagement in the slot, prevents the rotation of the button proper, so that the button cannot be accidentally rotated to invert the legend. The wire 22 is preferably held be-
 90 tween the wire-retainer 19 and the button controller and retainer 29, so that the latter and the stem 25 are in electric contact with one wire. Thus, the spring-contact 23 on
 95 this side might, under some circumstances, be removed, although preferably I employ the two spring contacts, so as to frictionally engage the stem with greater pressure and provide for a better and direct passage of
 100 the current upon the pressing of the button.

It is, of course, evident that certain of the features hereinbefore described, may be em-
 105 ployed independently of other features, and that various changes may be made in the details of construction and the arrangement of parts, without departing from the spirit of my invention.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A push button having a casing provided with a transverse wall, a button
 110 proper having a stem movable through said wall, a retainer adjacent the surface of said wall and normally in engagement with said stem, to prevent the removal of the latter from the casing, a stud carried by said wall,
 115 a wire, and a screw serving to secure said wire to said stud and to hold said retainer against longitudinal movement.

2. In combination, a casing, a transverse wall, a stud extending therefrom, and a
 120 spring contact member carried by said stud and having a tongue extending through an opening in said stud, a wire, and a set screw for securing the contact member to the stud and clamping the wire therebetween.

3. A push button having a casing, a transverse wall, a stud carried by said wall, a
 125 button proper having a stem extending through said wall, a spring contact member disposed adjacent to said wall and in the

path of said stem, a retainer for engagement with said stem to limit the movement of the latter, and a set screw for securing said retainer and said contact member to said stud.

4. A push button having a casing, a transverse wall, a stud carried by said wall, a button proper having a stem extending through said wall, a spring contact member disposed adjacent to said wall and in the path of said stem, a retainer for engagement with said stem to limit the movement of the latter, and a set screw for securing said retainer and said contact member to said stud, said contact member having a finger for retaining said wire in engagement with said stud.

5. A push button having a casing provided with a transverse wall or partition, two studs rigidly secured thereto, spring contact members secured to said studs, and a

button proper having a stem terminating adjacent said contact members for completing an electric circuit from one member to the other and screws threaded into said studs and serving to hold wires between said contact members and said studs.

6. A push button having a button proper, a stem thereon, means for limiting the longitudinal movement of said stem, a stud, a wire, and a screw serving to secure said wire to said stud and to hold said means against displacement.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES AUTH.

Witnesses:

ALBERT H. TEALE,
C. F. DOHRMANN.