June 9, 1942. G. B. BENANDER 2,285,887

PUSH BUTTON CIRCUIT CLOSER

Filed July 10, 1941

Fig. 1

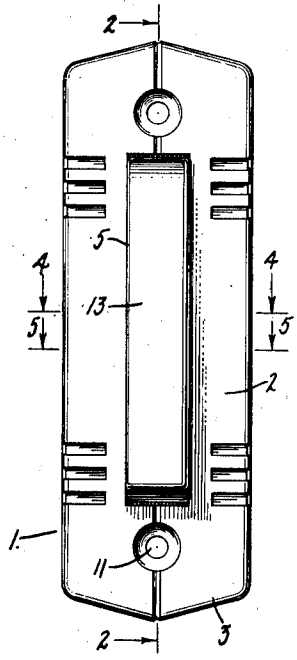


Fig. 2

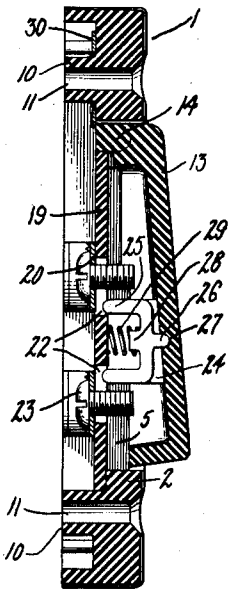


Fig. 3

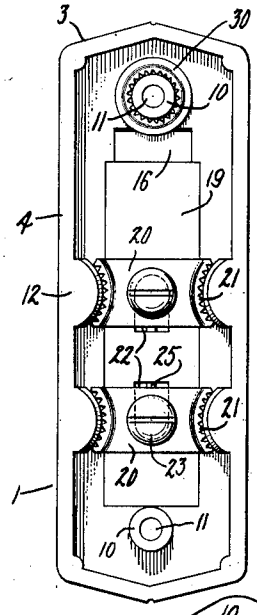


Fig. 4

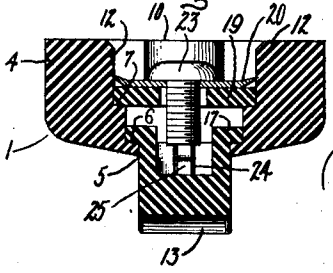


Fig. 5

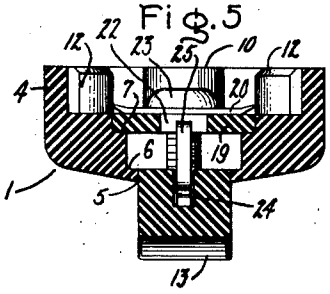
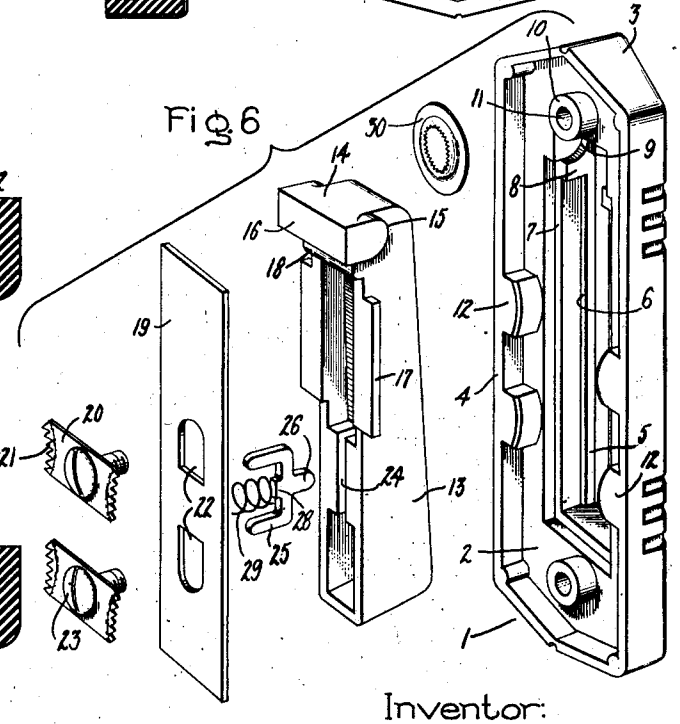


Fig. 6



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UNITED STATES PATENT OFFICE

2,285,887

PUSH BUTTON CIRCUIT CLOSER

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Application July 10, 1941, Serial No. 401,783

6 Claims. (Cl. 200—159)

The present invention relates to push button circuit closers, such as are used, for example, for door bells and the like and has for its object to provide an improved circuit closer which is simple in construction and composed of a minimum number of parts whereby it may be manufactured at low cost, and which at the same time is attractive in appearance, rugged and easily installed and operated.

For a consideration of what I believe to be novel and my invention, attention is directed to the following specification and the claims appended thereto.

In the drawing, Fig. 1 is a face view of a push button circuit closer embodying my invention; Fig. 2 is a longitudinal sectional view taken on line 2—2, Fig. 1; Fig. 3 is a rear view; Fig. 4 is a sectional view taken on line 4—4 of Fig. 1; Fig. 5 is a sectional view taken on line 5—5 of Fig. 1, and Fig. 6 is an exploded perspective view of the several parts going to make up the circuit closer.

Referring to the drawing, 1 indicates a housing formed of suitable material, preferably a suitable molding compound. It is rectangular in outline and comprises a relatively thick front wall 2, end walls 3 and side walls 4. It is open at the back. In front wall 2 is a rectangular opening 5 shaped to provide shoulders 6 extending longitudinally along the sides of opening 5 adjacent the outer surface of the front wall and shoulders 7 spaced rearwardly from shoulder 6 and extending along the side walls and across one end of the opening. At one end of opening 5 are projections 8 which form curved pivot surfaces 9, one at each side of the opening. On the rear surface of front wall 2 at its two ends are posts 10, the outer ends of which are flush with the side and end walls and through which are openings 11 to receive screws for mounting the housing against a flat surface. On the rear surface of wall 2 along the side walls are opposed pairs of projections 12 having rounded inner surfaces flush with the inner edges of shoulders 7.

In opening 5 is a longitudinally tapering rectangular push button 13 having a pivot head 14 at one end provided with rounded outer surfaces 15 which engage pivot surfaces 9, flat inner surface 16 which lies flush with the inner surface of wall 2, and flanges 17 which engage shoulders 6. Flanges 17 are adjacent to head 14 and extend only part way along the push button as shown particularly in Fig. 6. Adjacent head 14, there is provided a projection 18 which lies between projections 8 and just slightly below the end surface thereof.

Push button 13 is held in place by a rectangular cover plate 19 which fits against shoulders 7 and which in turn is held in place by two combined contact and terminal plates 20. Plates 20 are curved inwardly at their ends and are provided with serrations or teeth 21 which engage projections 12 as best shown in Figs. 3 and 4. The plates 20 are wedged or forced down between the pairs of projections 12 as shown in Fig. 3, the teeth 21 engaging the inner opposed surfaces of the members 12 to firmly hold the plates 20 in position. Cover plate 19 is provided with two spaced openings 22 which are in line with the plates 20. In each plate 20 is a terminal screw 23 for attaching conductors to the plates.

Push button 13 is preferably hollow and is provided with walls which define a longitudinally extending groove or slot 24 in which is located a U-shaped bridging contact 25. On one side, the bridging contact is provided with a pivot head 26 which engages a depression 27 at the bottom of groove 24. Inside the U is a projection 28 over which fits one end of a coil spring 29, the other end of which engages the under side of plate 19. The two arms of the U-shaped bridging contact 25 are adapted to pass through the openings 22 in the cover plate and engage the contact plates 20.

To hold the pivoted end of the button 13 more firmly in position, I may provide a metal washer 30 which is forced down over the one inner post 10 and overlaps the end of the button as shown in Figs. 2 and 3.

In use, the electric wires are attached to the plates 20 by the binding screws 23 after which the circuit closer is fastened to a flat surface by suitable screws extending through openings 11. Ordinarily, the wires come out through an opening in the wall to which the circuit closer is attached and any excess length will be housed in the space formed between the side and end walls 3, 4. To close the circuit, the push button is pressed inward to turn it on its pivot head 14 to cause the U-shaped contact 25 to bridge plates 20. When pressure is removed from the button, spring 29 returns it to normal position in which contact 25 is out of engagement with plates 20. Flanges 17 serve to limit outward movement of the button.

In assembling the circuit closer, the push button is placed in the housing from the rear, pivot head 14 being positioned on pivot surfaces 9 and flanges 17 being placed against shoulders 6.

Contact 25 and spring 29 are then put in place after which cover 19 is positioned on shoulders 7 and plates 20 forced into place to hold all the parts assembled. This is a very simple assembling operation, capable of being carried out rapidly and at low cost. At the same time, all the parts are held firmly in position.

It will be noted that the plates 20 perform three functions, they serve as terminals for the binding screws, as contacts for the circuit closer, and as means for holding the circuit closer assembled. This triple function of these members aids in reducing the number of parts. Also, no drive screws or molded-in inserts are required for the construction which is of advantage from a cost of manufacture standpoint.

The circuit closer is relatively thin so that when mounted on a door frame, for example, it projects out but a small amount. And the elongated push button, being in the form of a lever, is easy to operate as it is easily contacted. The contacts are entirely enclosed in the housing so as to keep out bugs or any foreign substances.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A circuit closer comprising an elongated housing having a front wall provided with a longitudinally extending opening, an elongated circuit closer button located in said opening and pivoted at one end thereof, a cover plate positioned over the opening at the rear face of said front wall, spaced contact plates on the outer surface of said cover plate, and a bridging contact located between said button and said cover plate and adapted to be projected through the cover plate by pressure applied to the circuit closer button to bridge said contact plates.

2. A circuit closer comprising an elongated housing having a front wall provided with a longitudinally extending opening, an elongated circuit closer button located in said opening and pivoted at one end thereof, a cover plate positioned over the opening at the rear face of said said front wall, spaced contact plates on the outer surface of said cover plate, the edges of which engage the housing to hold the cover plate in position, said cover plate having openings in line with said contact plates, and a bridging contact located between said button and said cover plate and adapted to be projected through said cover plate openings by pressure applied to the circuit closer button to bridge said contact plates.

3. A circuit closer comprising an elongated housing having a front wall provided with an opening, walls defining pivot surfaces at an end of the opening, a circuit closer button in the slot having a pivot head engaging said pivot surfaces, a cover plate for the opening at the rear surface of said front wall which serves to hold the pivot head in engagement with said pivot surfaces, contact plates wedged between walls of the housing for holding the cover plate in position, and a bridging contact located between said button and the cover plate for bridging said contact plates.

4. A circuit closer comprising a housing having front, side and end walls, said front wall having a longitudinally extending opening, a circuit closer button pivotally mounted in said opening, a circuit closer contact carried by said button, and spaced contact terminal plates respectively wedged between said side walls and adapted to be bridged by said circuit closer contact.

5. A circuit closer comprising a housing having front, side and end walls, said front wall having a longitudinally extending opening, a circuit closer button positioned in said opening, a cover plate positioned over said opening at the rear surface of said wall, spaced terminal contact plates wedged between said side walls for holding the cover plate in position, walls defining a slot in the circuit closer button, a circuit closer contact carried in said slot and adapted to be projected through said cover plate to bridge said terminal contact plates, and means biasing said circuit closer button to a position where said circuit closer contact is out of engagement with said terminal contact plates.

6. A circuit closer comprising a housing having front, side and end walls, said front wall having a longitudinally extending opening, a circuit closer button positioned in said opening, a cover plate positioned over said opening at the rear surface of said wall, spaced terminal contact plates wedged between said side walls for holding the cover plate in position, walls defining a slot in the circuit closer button, a U-shaped circuit closer contact carried in said slot and adapted to be projected through said cover plate to bridge said terminal contact plates, and a biasing spring located between the circuit closer contact and said cover plate and serving to hold the circuit closer contact in said slot.

GEORGE B. BENANDER.

CERTIFICATE OF CORRECTION.

Patent No. 2,285,887. June 9, 1942.

GEORGE B. BENANDER.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, second column, line 4, claim 3, for the word "slot" read --opening--; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of July, A. D. 1942.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.