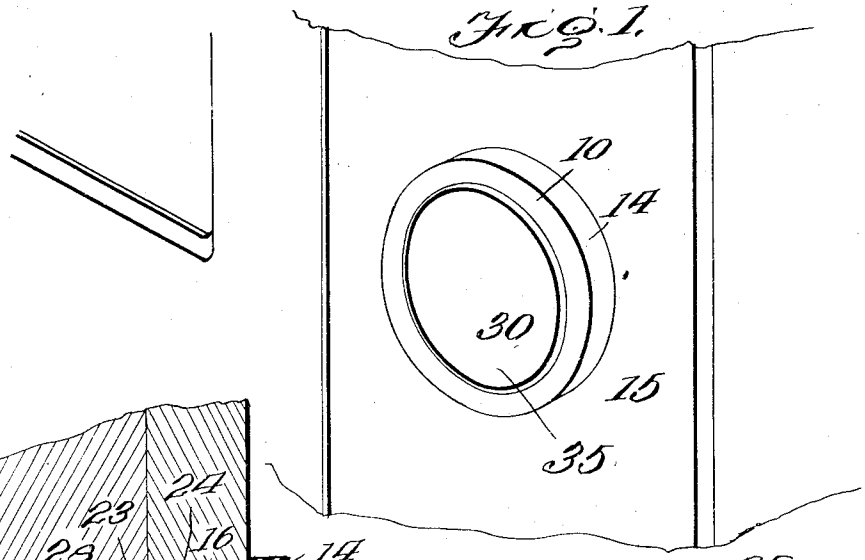
C. A. FRANCK.

ELECTRICAL PUSH BUTTON.

APPLICATION FILED FEB. 3, 1914.

1,143,264. Patented June 15, 1915.

Fig. 1.



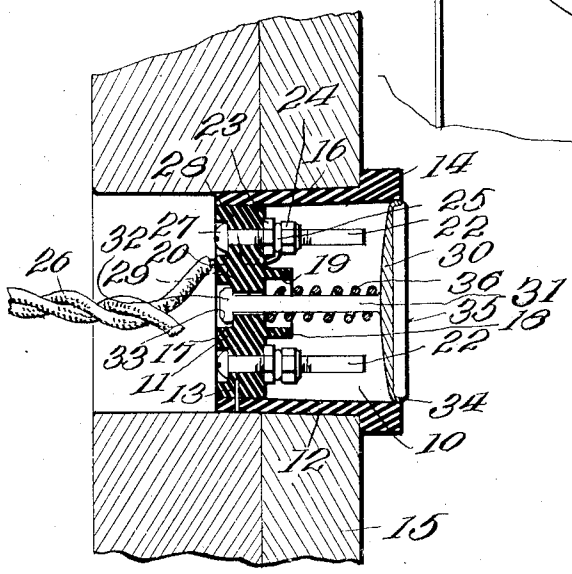


Fig. 2.

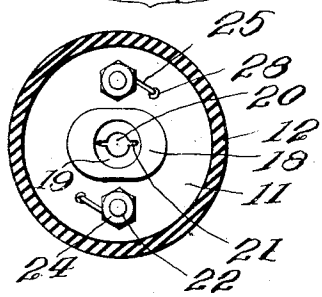


Fig. 3.

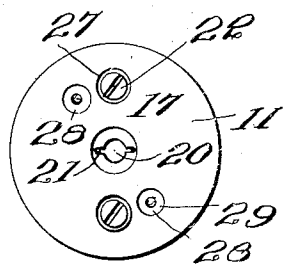


Fig. 4.

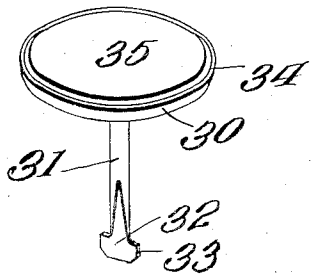


Fig. 5.

Witnesses.

W. H. Woodman.

Inventor

C. A. Franck.

By Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES A. FRANCK, OF YONKERS, NEW YORK.

ELECTRICAL PUSH-BUTTON.

1,143,264. Specification of Letters Patent. Patented June 15, 1915.

Application filed February 3, 1914. Serial No. 816,249.

To all whom it may concern:

Be it known that I, CHARLES A. FRANCK, citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Electrical Push-Buttons, of which the following is a specification.

My invention relates to new and useful improvements in electrical push-buttons, the primary object of my invention being the provision of a push-button construction in which the button or plunger part is detachable from the remainder of the device.

A further object of my invention is to provide a push-button construction in which the binding-posts to which the circuit wires are connected themselves serve as the fixed contacts and in which the body portion or shell of the push button proper serves as the movable contact to bridge the circuit between the binding posts.

A still further object of my invention is the provision of means for readily securing the push-button against disengagement from its casing without the use of any additional fastening devices.

A still further object of my invention is the construction of a shell or casing for the push-button proper and the binding posts made entirely of fiber, vulcanized rubber or other non-current conducting material, thereby avoiding any possibility of accidental short-circuiting.

With these and other objects in view, my invention will be more fully described, illustrated in the accompanying drawings and then specifically pointed out in the claims which are attached to and form a part of this application.

Figure 1 is a perspective view of my improved push-button mounted in a wall; Fig. 2 is a central sectional view taken through the casing illustrating the manner of mounting the push-button proper therein; Fig. 3 is a front elevation of the casing or shell of the push-button, the push-button proper being removed; Fig. 4 is a rear elevation of the structure shown in Fig. 3; Fig. 5 is a perspective view of the push-button proper or the movable contact member.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

My improved electrical push-button structure includes a shell or casing, indicated as a whole by the numeral 10 and consisting of a base 11 and tubular body portion 12. The base is preferably circular in shape and the body portion preferably tapered slightly from its outer to its inner end, the base being permanently secured in the inner end of the body portion by a plurality of pins 13, the outer ends or heads of which lie flush with the outer face of the body portion 12.

The outer edge of the body portion 12 is thickened to provide a circumferential stop flange 14 to engage against the outer face of the wall 15 in which the push-button is mounted, the button being applied merely by seating the casing in the circular opening 16 formed in the wall, this opening being preferably a trifle smaller in diameter than is the largest diameter of the tubular body portion 12, in order to insure the close binding of the push-button in place. Both the base 11 and tubular body portion 12 are formed of fiber, vulcanized rubber, or other suitable non-conducting material, and the base is provided in its outer face and centrally with a circular recess 17 and at its inner face with a boss or extension 18 having a circular recess 19 in alinement with the recess 17. A bore 20 establishes communication between these recesses, and the base between the recesses 17 and 19 is further provided with slots 21 diametrically disposed and communicating with the bore 20.

A pair of screws 22 are passed inwardly through the base 11 at opposite sides of the bore 20 and secured against displacement by nuts 23, which also act as washers in connection with nuts 24 to secure the terminals 25 of the circuit wires 26. The outer face of the base 11 is preferably recessed, as shown at 27, to receive the heads of the screws 22 and the screws are so proportioned that their inner ends are spaced but a slight distance from the outer end of the tubular body of the shell 10. The base, adjacent each of the screws 22, is provided with a bore 28 to receive the uninsulated terminals of the wires 26 and the outer ends of these

bores are counterbored, as shown at 29, to provide sockets in which the ends of the insulation may seat in order to leave no bare wire exposed exterior of the push-button.

The push-button proper, or movable circuit-closer comprises a circular plate or head 30 and centrally formed shank 31 having a flattened terminal 32 provided with laterally directed shoulders 33. The circular plate or body portion 30 is provided with an out-turned annular flange 34 to form a seat for a finger-piece or disk 35 of ivory, celluloid, or other suitable material. In assembling the push-button, the push-button proper is inserted in the casing in such a manner that the flattened terminal 32 of its shank passes through the bore 20 and communicating slots 21 until the shoulders 33 have passed beyond the end of the bore 20. The push-button is then given a quarter turn to swing the shoulders out of alinement with the slots 21.

A helical spring 36 is positioned about the shank 31 of the push-button proper before its application to the casing and when the push-button is in position, as shown in Fig. 2, this spring is compressed between the body 30 of the push-button proper and the inner face of the base 11, consequently, holding the push-button in its outermost position, that is with the outer face of the finger-piece 35 extending slightly in advance of the outer edge of the shell of the push-button 12 and its shoulder. It will, of course, be apparent that by applying slight pressure against the finger-piece 35 the push-button proper may be faced inwardly against action of the spring 36 until its body portion 20 engages the ends of the screws 22 forming the binding posts. This body portion 30 of the push-button being formed of copper, brass or other suitable current-carrying metal closes the circuit between the wires 26. As soon as such pressure is removed a spring 36 immediately returns the push-button proper to its normal or extended position. The push-button proper may at any time be removed from its shell or casing by exerting slight inward pressure and then turning the button a quarter turn to bring the shoulders 33 of its shank in alinement with the slots 21 when the spring 36 will, upon relaxing of pressure, force the push-button from its casing.

This feature of making the push-button proper detachable from its casing and readily applicable thereto without the employment of separable fastening devices is of great importance as it permits the positioning of the push-button casings in partially finished walls and the later application of the push-button proper after the walls have been finished and painted or papered, as the case may be. Because of this, all possibility of injury or disfiguration of the push-button proper and its finger-piece is avoided. Furthermore, in case of repapering or repainting of the walls, the push-button may again be removed from its casing and reapplied after the walls have been treated.

The entire shell or casing of the push-button being formed of a non-conducting material, all likelihood of short-circuiting through any cause, such as dampness, is avoided. The utilization of the screws forming the binding posts as contacts against which the movable contact member engages simplifies and, consequently, cheapens the construction of the push-button. It will, of course, be clear that push-buttons may be constructed with three, or four or any number of contact points merely by the provision of additional binding posts. For this reason I do not wish to limit myself to the specific details set forth in the drawing and above specification, as various minor changes, within the scope of the appended claims may be made at any time without in the slightest degree departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new is:

1. A push-button including a base of insulating material, a tubular housing of insulating material closed at one end by the base, binding posts extending through the base with their ends adjacent the end of the housing, the base being formed with central opening slots extending radially from the opening, a metallic button movable in the housing, with a shank extending through the opening of the base, said shank having shoulders which pass through the slots of the base and engage the outer face of the base upon partial rotation of the push-button to hold the same against outward displacement, and a spring normally holding the button, with the shoulders of its shank, in engagement with the outer face of the base.

2. A push button including a housing, binding posts carried by the housing, the housing being provided with an opening and with slots extending radially from the opening, a button mounted in the housing and movable into and out of engagement with the contacts, a shank carrying the button and movable through the opening, shoulders formed upon the shank and movable through the slots in one position of the shank, and a spring bearing between the button and housing.

3. A push button including a housing, contacts in the housing, the housing being provided with an opening and with slots extending radially from the opening, a button mounted in the housing and movable into and out of engagement with the con-

tacts, means normally holding the button out of engagement with the contacts, a member carrying the button and movable through the opening, and shoulders formed upon the member and movable through the slots in one position of the member.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES A. FRANCK. [L. S.]

Witnesses:

ALFRED F. PAPIN,

HENRY HERBE.