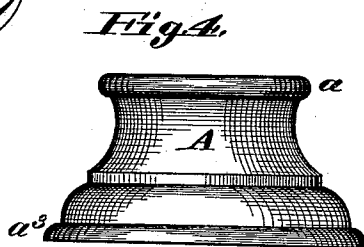
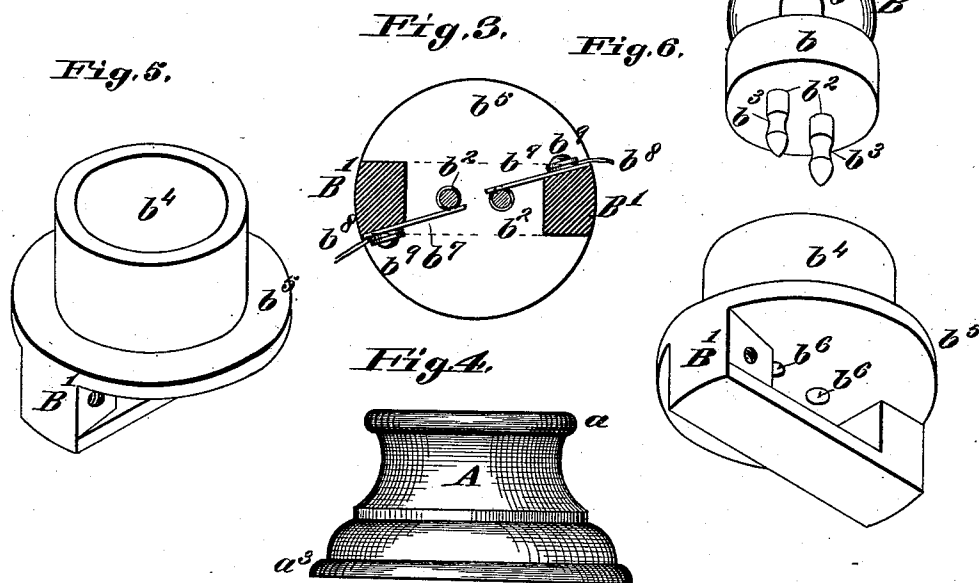
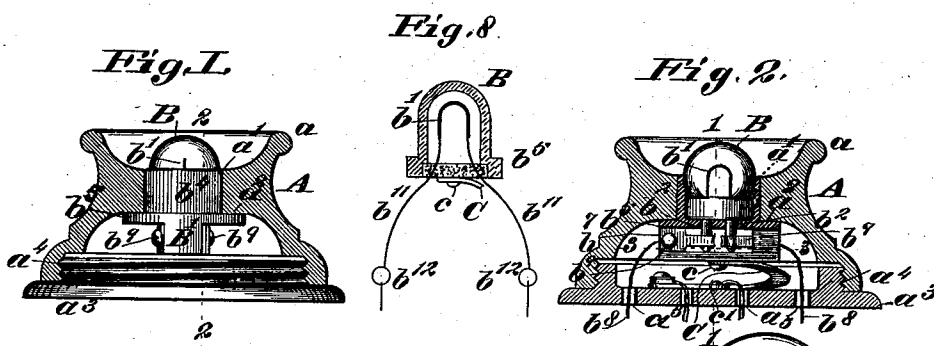


(No Model.)

B. F. REX.  
ELECTRIC PUSH BUTTON.

No. 506,729.

Patented Oct. 17, 1893.

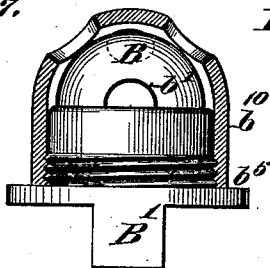


*Attest, Fig. 7.*

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# UNITED STATES PATENT OFFICE.

BENJAMIN F. REX, OF ST. LOUIS, MISSOURI.

## ELECTRIC PUSH-BUTTON.

SPECIFICATION forming part of Letters Patent No. 506,729, dated October 17, 1893.

Application filed February 16, 1893. Serial No. 462,608. (No model.)

*To all whom it may concern:*

Be it known that I, BENJAMIN F. REX, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented a new and useful Improvement in Electric Annunciators, of which the following is a specification.

My invention relates to electric annunciators, in which the circuit is completed and a bell caused to ring, or other signal given, by pressing a button. Where such annunciators are used, it is often difficult to find the button in the dark, and this is particularly true where they are used as door bells, and the users are strangers.

To enable the button to be readily found in the dark is the object of my invention. I attain that object by the mechanism illustrated in the accompanying drawings,—in which—

Figure 1 is a vertical cross section of that part of the annunciator to which my improvement relates, along the line 1—1, Fig. 2. Fig. 2 is a vertical cross section along the line 2—2, Fig. 1. Fig. 3 is a horizontal cross section of the form of base shown in Figs. 1, 2, 5, 6 and 7, along the line 3—3, Fig. 2. Fig. 4 is a view in perspective, of the case for the button. Fig. 5 is a view in perspective of the base, to which the button is, in one form of my improvement, attached when in use. Fig. 6 is a view of the button, and of the base, placed in position to receive it. Fig. 7 is a side elevation of the button and base, showing a perforated guard in cross section. Fig. 8 is a view analogous in part to Fig. 2, showing a modification in vertical cross section.

Similar letters refer to similar parts throughout the several views.

A (Figs. 1, 2, and 3) represents the case for the button.

$a$  is the top of the case. It is shown screw-threaded around its inner edge near the bottom.  $a'$  is an opening in the top of the case, through which the button may project.  $a^2$  is a shoulder.  $a^3$  is the base of the case.  $a^4$  is a screw-threaded shoulder, over which the top of the case fits.  $a^5, \bar{a}^5, \alpha^5, \alpha^5$  are openings in the base ( $a^3$ ) for the passage of conductors. Any other convenient device for attaching the top to the base of the case may be substituted for the one shown. I consider the other well-

known methods the equivalent of the one described. All that is necessary is that the top should be detachable.

B (Figs. 1, 2, 6, 7 and 8) is a hollow airtight button formed in whole, or in part, of a substance through which light can pass to some extent, from the interior of the button to the outside.

$b$  (Figs. 2 and 6) is a part of the button, designed in one form shown, to fit into a socket.

$b'$  (Figs. 1, 2, 6 and 8) is a conductor placed in the hollow of the button, and designed to be rendered incandescent by means of the passage of a current of electricity through it. It should be of a size and substance suitable for use in an incandescent lamp of the size and desired illuminating power of the button. As the object of the light in the interior of the button is to attract attention to the button, and enable it to be found in the dark, and not to illuminate exterior objects, the illuminating power of the conductor, when rendered incandescent, may, if desired, be very small.

I use the word "incandescent" throughout this specification and my claims as including within its meaning any degree of heat sufficing to produce light, as, for instance, a red as well as a white heat. The method of attaching the filament, or conductor, intended to be rendered incandescent, to the conductors connected therewith, and intended to afford passage to and from it for electricity, is not shown. Any one familiar with the art of making incandescent electric lamps will understand how to make a proper connection. The conductor to be rendered incandescent should be prevented from wasting either by producing a vacuum in the interior of the button, sufficiently perfect for practical purposes, or by filling the interior of the button with a suitable gas or vapor. These methods of preventing the wasting of the conductor are well known, and, so far as my improvement is concerned, are equivalents of each other.

Where, in my claims, I speak of the air being exhausted from the interior of the button, I wish to be understood as including buttons filled with a gas or vapor, as well as those in which there is a vacuum. I mean by "exhausted" sufficiently exhausted for the purpose.

$b^2, b^3$  (Figs. 2 and 6) are contact pins connected electrically with the conductor  $b$  in one form of my device. They are shown pointed at the outer ends, and provided with grooves

5  $b^3, b^3$ .

$B'$  (Figs. 1, 2, 5, 6 and 7) is a base to which the button is, in the form shown in said figures, designed to be attached. I prefer to construct it of an insulating material. Where  
10 it is not so constructed, the conductors should be properly insulated. In the form shown in Fig. 8, the base is a part of the button.

$b^4$  (Fig. 5) is a socket in which the button rests. In the drawings it is shown unnecessarily deep. Where a guard is used over the  
15 button, as shown in Fig. 7, the outside of the socket ( $b^4$ ) may be screw-threaded and the guard screwed over it, or attached in any other convenient method.

$b^5$  (Figs. 1, 2, 5, 6 and 8) is a flange designed to rest against the shoulder,  $a^2$  of the case A, and act as a stop to prevent outward movement beyond a desired point. I prefer to use some form of stop, but a stop may be dispensed with where the button is directly or  
20 indirectly attached to a spring so arranged as to prevent the escape and loss of the button.

$b^6, b^6$  (Fig. 6) are holes in the bottom of the socket  $b^4$  through which the contact pins,  
30 when used, are intended to pass.

$b^7, b^7$  (Figs. 2 and 3) are contact springs designed to convey the current to and from said contact pins, and also to tend to keep the button in place by entering said grooves ( $b^3, b^3$ ) in said pins.  $b^8, b^8$  are conductors connected with said contact springs,  $b^7, b^7$ . One of said conductors should connect with, or lead to, a source of electricity, or electrical energy, and the other should be grounded, or  
35 act as or connect with a return wire or conductor. Electricity may be turned on and off by means of a suitable switch, located in a convenient place.  $b^9, b^9$  (Figs. 2 and 3) are binding screws, by which said springs ( $b^7, b^7$ ) and said conductors connected therewith, are  
40 attached to the base  $B'$ .

$b^{10}$  (Fig. 7) is a guard surrounding the button. It is shown perforated. Where it is formed of a transparent substance, the perforations are unnecessary, unless the light is so feeble as to be invisible through it. I use the word transparent throughout this specification, and my claims, as including translucent, as well as perfectly transparent, within its  
45 meaning. The guard  $b^{10}$  is not essential, but may be used, if desired.

In the modification shown in Fig. 8, the contact pins  $b^2, b^2$ , and contact springs  $b^7, b^7$ , are dispensed with, and a simpler and less  
50 expensive construction adopted. No separate base for the button is used in this form, and the filament intended to emit the desired light is connected with conductors, one of which is connected with a source of electricity, and the other with a grounded, or return  
55 conductor.

Where I speak of conductors being con-

needed, I do not desire to be confined to any special form of connection. I mean by connected, so related that electricity may pass  
70 from one to the other in the desired manner.

The method of making the connection shown in the drawings (Fig. 8) is by means of flexible conductors ( $b^{11}, b^{11}$ ) connected with  
75 said filament or conductor  $b'$ , and leading to binding posts  $b^{12}, b^{12}$ . Said conductors, by reason of their flexibility, permit of the reciprocation of said button.

In Fig. 8, a flange  $b^5$  answering to the flange or stop  $b^5$  of the separable base  $B'$  is shown.  
80 The function of the flange, being merely that of a stop, it is obvious that it is not necessary that it should extend entirely around the button as a simple projection would answer the purpose, though less perfectly. There are  
85 other obvious equivalents, which would allow of inward movement, but prevent the button from moving outward beyond the desired point; and, as has been stated, the stop, though desirable, is not absolutely essential.

C is a spring shown attached to the base  $a^3$  of the case A. The button B rests on or against this spring, directly or indirectly and where the spring is relied upon to prevent the escape of the button from its case, it is at-  
90 tached to, or connected with it, in any convenient manner.

C is a contact point, which, in the form of device shown is a part of the spring which itself acts as a conductor. It may, however, be  
100 separate from the spring and supplied with a separate conductor, without departing from my invention; though it should be so arranged that it may be forced into contact by pressure on the button.

$c'$  is a contact connected with a conductor leading either to a source of electricity, or the signaling apparatus.

Where  $c$  is connected with the source of electricity,  $c'$  should be connected with a  
110 grounded or return conductor, and vice versa. Pressure upon the button B compresses the spring C, and by bringing  $c$  and  $c'$  into contact makes the circuit. When the pressure is removed, the circuit is broken by the ac-  
115 tion of the spring C, which separates  $c$  and  $c'$ .

Where the form of device shown in Figs. 1 to 7 is used, the button may be placed in position by merely slipping it into its socket and pressing it into place. It may be detached  
120 by unscrewing the top of the case, and pushing it out by pressure against the ends of the pins  $b^2, b^2$ . When the form shown in Fig. 8 is used, it may be allowed to rest on or against the spring C, and removed after the top  $a$  is  
125 unfastened, by merely loosening the binding posts  $b^{12}, b^{12}$ .

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a hollow, air-tight  
130 annunciator button, having the air exhausted from its interior, formed in whole or in part of a transparent substance, and containing a conductor suitable for use in an incandescent

electric lamp, connected with conductors in whole or in part outside of said button, and a spring compressible by pressure upon said button.

- 5 2. The combination of a hollow air-tight annunciator button, having the air exhausted from its interior, formed in whole or in part of a transparent substance, and containing a  
10 conductor suitable for use in an incandescent electric lamp, connected with conductors in whole or in part outside of said button, a spring  
compressible by pressure on said button, and  
two contact parts which make a circuit when  
15 brought together, and which may be forced together by pressure on said button, and which are separated when the pressure is removed.

3. The combination of a case with a hollow air-tight annunciator button, having the air

exhausted from its interior, formed in whole 20 or in part of a transparent substance, and containing a conductor suitable for use in an incandescent lamp, and which may be rendered incandescent by the passage of a current of  
25 electricity, a stop attached to said button to prevent its escaping from the case, and a spring pressing said button outward.

4. The combination of the case A, button B containing the filament *b'*, the spring C and contacts *c* and *c'*, substantially as described. 30

5. In combination with the transparent push button B containing a lighting medium, a perforated guard over the same, substantially as described.

BENJAMIN F. REX.

Witnesses:

CHAS. D. MOODY,  
A. BONVILLE.