H. J. HEENEY.

CIRCUIT CLOSER.

APPLICATION FILED NOV. 17, 1910.

1,170,063.

Patented Feb. 1, 1916.

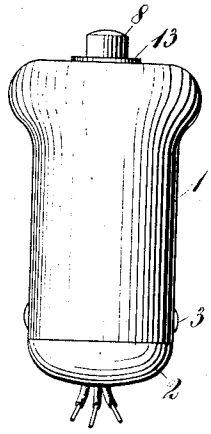


Fig. 1.

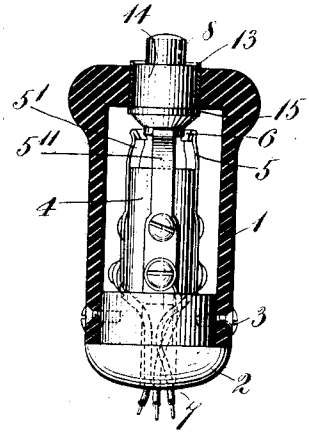


Fig. 2.

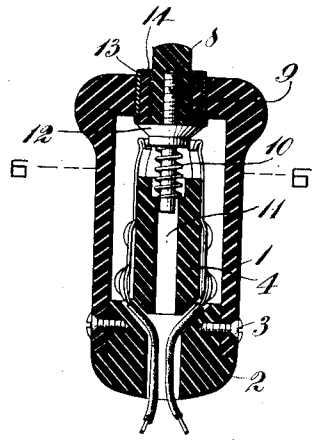


Fig. 3.

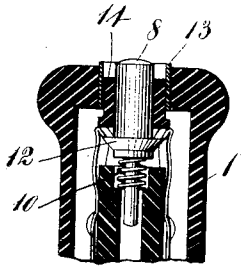


Fig. 4.

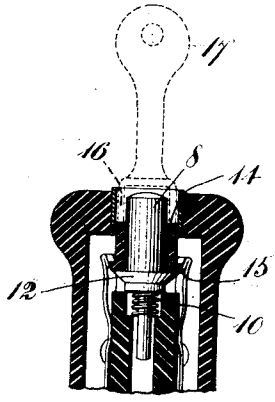


Fig. 5.

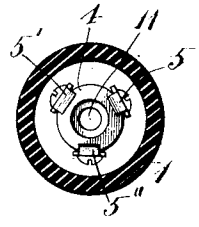


Fig. 6.

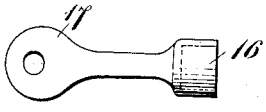


Fig. 7.

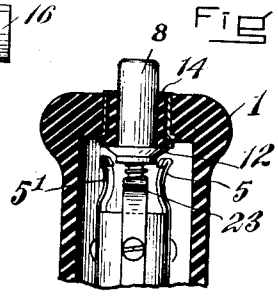


Fig. 9.

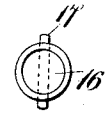


Fig. 8.

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UNITED STATES PATENT OFFICE.

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CIRCUIT-CLOSER.

1,170,063. Specification of Letters Patent. Patented Feb. 1, 1916.

Application filed November 17, 1910. Serial No. 592,765.

To all whom it may concern:

Be it known that I, HENRY J. HEENEY, a citizen of the United States, and a resident of Roxbury, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Circuit-Closers, of which the following is a specification.

The object of the present invention is to produce a push-button circuit closer which is especially adapted for use in hospital signaling systems.

Several embodiments of my invention are shown in the drawings which accompany and form a part of this specification, but it will be understood that I do not limit myself to the particular forms of apparatus shown therein.

In the drawings, Figure 1 is an elevation of a push-button circuit-closer made in accordance with the present invention. Fig. 2 is a central section through the casing of said circuit-closer showing certain parts in elevation. Fig. 3 is a central section through the circuit-closer and casing with the push-button in circuit-breaking position. Fig. 4 is a similar section showing the push-button in circuit-closing position. Fig. 5 is a section showing one method of unlocking the circuit-closer. Fig. 6 is a section taken on the line 6—6 of Fig. 3. Fig. 7 is a side view of one form of unlocking key that may be employed. Fig. 8 is an end view of said key. Fig. 9 is a central section of a modification.

In the particular drawings selected for more fully disclosing my invention, 1 represents a casing of suitable insulating material, shown in the present instance as closed at the bottom by the plug 2 secured thereto by the screws 3 and formed integral with the stem 4, to which the spring-finger circuit-closing elements are attached. In the arrangement shown in Figs. 2 to 6, inclusive, three such spring fingers 5 5′ 5″ are shown, although it will be understood of course that I do not limit myself to any particular number thereof. Each spring finger is provided with a suitable catch 6, shown in the present instance as formed by bending the end thereof backward on the spring finger, and the ends of said fingers are bent as shown so as to incline slightly outwardly. A conductor 7 is connected to each of the circuit-closing members and may be inclosed by the usual covering to form a conducting cord. The pin 9, which is threaded into the push-button 8 or otherwise secured thereto, carries the contact-maker 12, which coöperates with the spring fingers, and this contact-maker, as shown in the present instance, is a downwardly flaring truncated cone. A spring 10 surrounding the lower portion of the pin 9 which is located in the bore 11 normally maintains the contact-maker 12 out of contact with the spring fingers. In the metallic bushing 13 and closely fitting the push-button 8 is the insulating collar 14, which is provided at its lower end with the flange 15 which is slightly larger in diameter than the bushing 13 and extends slightly beyond the edge of the circuit-closer 12. When the push-button is depressed, the catches on the ends of the spring fingers snap over the edge of the contact-maker as shown in Fig. 4, thereby electrically connecting the conductors 7 and securely holding said contact-maker in its circuit-closing position against the force exerted on it by the spring 10.

To unlock the circuit-closer suitable means may be employed to force the collar 14 downward so that the flange 15 thereof will spread the spring fingers as shown in Fig. 5, thereby releasing the contact-maker 12 from their grasp and allowing the spring 10 to move the same to its normal position. A suitable form of key or unlocking implement, consists, as shown in Figs. 7 and 8, of the flattened piece 17 provided with the cupped end 16 which may be placed over the push-button to move the collar 14 downwardly as shown in Fig. 5. In the modification shown in Fig. 9, one of the spring fingers is replaced by a shorter finger 23, terminating below the ends of the fingers 55′ so that when the fingers 5 and 5′ snap over the edge of the contact-maker 12, the latter is not quite in contact with said finger 23, a further movement of the push-button 8 being required to bring said contact-maker into contact with said finger 23. Accordingly in this modification a little extra play between the contact maker 12 and the stem 4 will be allowed, preferably by slightly shortening said stem. When the push-button is depressed to its lowermost limit, so as to bring the contact-maker 12 into contact with the finger 23, the elas-

ticity of the fingers 5 5′ will maintain the same against the perimeter of said contact-maker, so that the contact between 5 5′ and 12 need not be broken by making the contact between 23 and 12. The circuit-closer shown in Fig. 9, like those shown in Figs. 1 to 6, inclusive, is self-locking.

As will be apparent, the several circuit-closers above described although especially adapted for hospital signaling systems are capable of general application and various modifications may be made in the particular devices illustrated without departing from the principle of my invention.

I claim:

1. A push-button circuit-closer comprising in combination a contact-maker, a plurality of spring-fingers each provided with means for holding said contact-maker in circuit-closing position, means normally holding said contact-maker out of contact with said spring-fingers and means movable with respect to said contact-maker for releasing the latter from said spring-fingers.

2. A push-button circuit-closer comprising in combination a contact-maker, a plurality of spring-fingers each provided with means for holding said contact-maker in circuit-closing position, means normally holding said contact-maker out of contact with said spring-fingers, a push-button attached to said contact-maker, and a collar surrounding said push-button and movable relatively thereto for spreading said spring-fingers apart and releasing the said contact-maker therefrom.

3. A push-button circuit-closer comprising in combination a contact-maker, a plurality of spring-fingers each provided with means for holding said contact-maker in circuit-closing position, means normally holding said contact-maker out of contact with said spring-fingers, a circuit-closing element terminating below the ends of said spring-fingers and means movable with respect to said contact-maker for releasing the latter from said spring-fingers.

4. A push-button circuit-closer comprising in combination a tubular casing, a longitudinally-bored stem secured within said casing, spring fingers carried thereby, a pin having its lower portion arranged within the bore of said stem, a contact-maker carried by said pin, a spiral spring surrounding the lower portion of said pin and interposed between said contact-maker and stem, and a push-button secured to the upper portion of said pin and extending beyond said casing.

5. A push-button circuit-closer comprising in combination a contact-maker, a plurality of spring-fingers each provided with a catch for holding said contact-maker in circuit-closing position, means normally holding said contact-maker out of contact with said spring-fingers and means movable with respect to said contact-maker for releasing the latter from said spring-fingers.

6. A circuit-closer comprising in combination a contact-maker, a plurality of spring-fingers each provided with means for holding said contact-maker in circuit-closing position, means normally holding said contact-maker out of contact with said spring-fingers, means for actuating said contact-maker and means movable with respect to said contact-maker for releasing the latter from said spring-fingers.

7. A push-button circuit-closer comprising in combination a contact-maker, a spring-finger provided with means for holding said contact-maker in circuit-closing position, means normally holding said contact-maker out of contact with said spring-finger and means movable with respect to said contact-maker for releasing the latter from said spring-finger.

8. A push-button circuit-closer comprising in combination a contact-maker, means normally holding said contact-maker in circuit-opening position, a plurality of current-carrying spring-fingers for holding said contact-maker in circuit-closing position, a push-button attached to said contact-maker and a collar surrounding said push-button and movable with respect thereto for spreading said spring-fingers and releasing said contact-maker therefrom.

9. A push-button circuit-closer comprising in combination a casing, a stem secured within said casing, spring-fingers carried by said stem, a pin movable with respect to said stem, a contact-maker carried by said pin, resilient means for normally maintaining said contact-maker in circuit-opening position, means for holding said contact-maker in circuit-closing position, a push-button secured to the upper portion of said pin, and key-controlled means for releasing said contact-maker from circuit-closing position.

10. A push-button circuit-closer comprising in combination a tubular casing, a longitudinally-bored stem secured within said casing, spring fingers carried thereby, a pin having its lower portion arranged within the bore of said stem, a contact-maker carried by said pin, spring means for normally maintaining said contact-maker out of contact with said spring fingers, and a push-button secured to the upper portion of said pin and extending beyond said casing.

11. A push-button circuit-closer comprising in combination a tubular casing, a longitudinally-bored stem secured within said casing, spring fingers carried thereby, a pin having its lower portion arranged within the bore of said stem, a contact-member carried by said pin, a push-button secured to the upper portion of said pin and extending be-

yond said casing, said spring fingers being provided with means for grasping said contact-maker when the latter is in circuit-closing position and means whereby said contact-maker may be released from said spring fingers.

12. A push-button circuit-closer comprising in combination a contact-maker normally maintained in circuit-opening position, a plurality of current-carrying spring-fingers each provided with means for holding said contact-maker in circuit-closing position, and means movable with respect to said contact-maker for releasing the latter from said spring-fingers.

13. A push-button circuit-closer comprising in combination a casing, a stem secured within said casing, spring-fingers carried by said stem, a pin movable with respect to said stem, a contact-maker carried by said pin and normally out of contact with said spring-fingers, means for holding said contact-maker in circuit-closing position, a push-button secured to the upper portion of said pin, and key-controlled means for releasing said contact-maker from circuit-closing position.

14. A push-button circuit-closer comprising in combination a contact-maker, means normally holding said contact-maker in circuit-opening position, a plurality of current-carrying spring-fingers for holding said contact-maker in circuit-closing position, a push-button attached to said contact-maker and means movable with respect to said push-button for spreading said spring-fingers apart and releasing said contact-maker therefrom.

In testimony whereof, I have hereunto subscribed my name this 11th day of November 1910.

HENRY J. HEENEY.

Witnesses:
GEO. K. WOODWORTH,
E. B. TOMLINSON.