

F. SCHOENWOLF.
RELAY BUZZER.
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1,269,005.

Patented June 11, 1918.

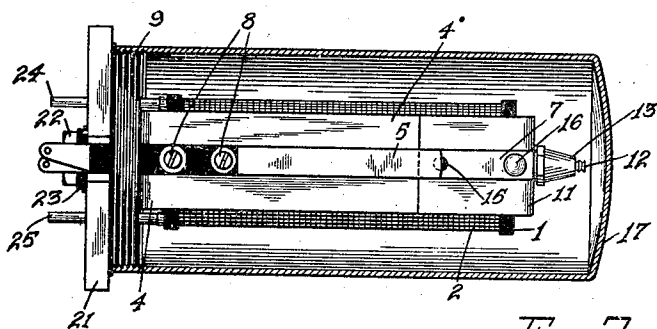


Fig. 2.

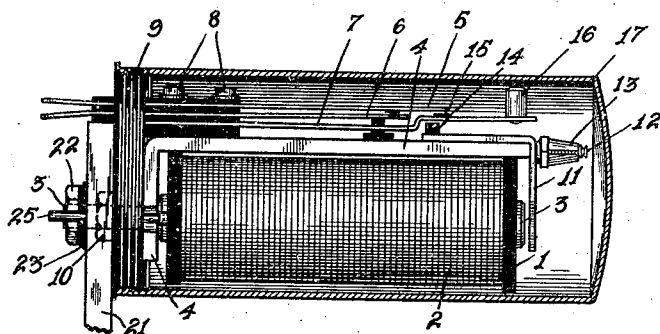


Fig. 1.

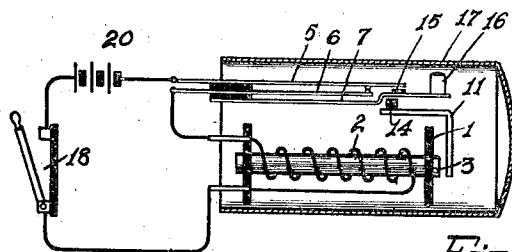


Fig. 3.

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UNITED STATES PATENT OFFICE.

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RELAY-BUZZER.

1,269,005.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRED SCHOENWOLF, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Relay-Buzzers, of which the following is a specification.

My invention relates to buzzers and has to do more particularly with buzzers of the relay type, an object of my invention being to produce a device of the above character which is more effective in its operation. In using buzzers as signals in connection with telephone switchboard work the ordinary electric bell type has been in general use but these devices are not well protected from the dust and also are of such shape that they must usually be mounted against the wood-work of the switchboard. One of the features of my invention lies in the use of an ordinary relay in combination with a dust-proof cover, the relay being so constructed that when vibrating it acts upon the cover and thus produces a very effective sound. My improved device is also preferably arranged to mount on an ordinary relay strip alongside of the switchboard relays.

For a better understanding of my invention reference is to be had to the accompanying drawing in which all parts are shown at normal and in which like parts in the different figures are indicated by like reference characters.

Figure 1, is a side elevation of the buzzer showing the protective shell in section;

Fig. 2 is a plan view of the buzzer; and

Fig. 3 illustrates diagrammatically the buzzer connected in an operating circuit.

Referring now more in detail to my invention as illustrated, it comprises a spool 1 with an energizing winding 2 upon the spool core 3. A heel iron 4 of magnetic material is in contact with the core 3, the heel iron being angular in shape and its portion 4^a extending along the top of the winding 2. The springs 5, 6, and 7 are insulatively mounted upon the extension 4^a, being preferably fastened to the heel iron by the insulated screws 8. The core 3 has an extension 3^a which is threaded and extends through the heel iron 4 and a circular back plate 9, the two being securely held to the core 3 by means of a nut 10 (shown dotted in Fig. 1,) which is threaded upon the extension 3^a of the core. An armature 11 is provided which

is mounted upon the heel iron and has a threaded pin 12 extending through into the end of the extension 4^a. An adjustable nut 13 is threaded upon the pin 12 to hold the armature loosely upon the said pin, the nut 13 being used as adjustment means for the armature 11. The armature 11 carries a buffer 14 of suitable insulating material which when the armature is attracted engages the spring 7 which spring also carries a buffer 15 of suitable insulating material which engages the spring 5 when it is moved by the attracted armature to open the normally closed contacts of the springs 5 and 6. The spring 7 also carries a hammer 16 which is securely mounted upon it in a suitable manner. The circular back plate 9 is threaded to receive a cylindrical cover 17 against which the hammer 16 is forced by the actuation of the armature to produce an audible signal, this shell also acting as a protective means for the relay buzzer against injury and dust.

Referring now to Fig. 3 the relay buzzer is shown in diagram and the operation of the buzzer is readily apparent by referring to the said Fig. 3. In the diagram I show a simple switch 18 which is adapted to close an energizing circuit for the relay buzzer from the negative pole to the battery 20, closed contacts of springs 5 and 6 through the energizing winding 2 and the switch 18 to the other side of the battery 20. This energization causes the attraction of the armature 11 and the buffer 14 engages the spring 7 forcing it upwardly so that the buffer 15 of the spring 7 engages the spring 5 to open the normally closed contacts of the springs 5 and 6. The spring 7 being forced upwardly by armature 11 adds momentum to the hammer 16 which strikes the shell 17. The opening of the contacts of the springs 5 and 6 interrupts the energizing circuit for the winding 2, the armature 11 thus falling back and again closing the contacts of the springs 5 and 6. The circuit is thus opened and closed as long as the switch is in its closed position causing the armature 11 to attract and release which causes the hammer 16 to strike the shell 17 rapidly producing a clear and loud metallic sound which although louder than the ordinary buzzer is not so loud as a bell. The buzzer can be conveniently fastened to a mounting frame 21 as illustrated in Figs. 110

1 and 2 by having the extension 3' of the core 3 extend through the frame 21, and threading a nut 22 thereon, the extension 3' being suitably insulated from the frame 21 by the bushing 23. The terminals 24 and 25 of the energizing winding 2 also extend through the frame being suitably insulated from the same. The springs 5 and 6 extend through an opening in the back plate 9 forming terminals so that wires can be conveniently soldered thereto for connection purposes.

In working out my invention I have embodied it in a well-known Kellogg type of relay but I contemplate using it in other types of relays and therefore I do not desire to be limited to the exact structure as shown and described but aim to cover all that which comes within the spirit and scope of the appended claims.

Having described my invention what I claim as new and desire to secure by United States Letters Patent, is:

1. A device of the character described, including an electromagnet, a heel iron and an armature for said electromagnet, a mounting plate, a member extending from the core of said electromagnet through the said heel iron and mounting plate to secure said electromagnet and heel iron to said mounting plate, a spring member extending parallel to the axis of said electromagnet having its one end attached to said heel iron, a pair of interrupter springs also secured to said heel iron and extending parallel to said first spring, a buffer extending through an orifice in said first spring against which one of said springs of said pair of springs rests, a buffer carried by said first spring adapted to engage the other spring of said pair of springs to move it from engagement with its companion spring, a circuit for said electromagnet adapted to be intermittently interrupted by the action of said spring member, a dust cover for completely

inclosing said electromagnet and springs, and a weight attached to said spring member adapted to intermittently engage the inner surface of said dust-proof cover in response to the intermittent operation of said electromagnet to produce an audible signal.

2. A device of the character described including an electromagnet, an armature and a heel iron for said electromagnet, a threaded circular back plate to which said electromagnet and heel iron are secured, a spring member extending parallel to the axis of said electromagnet having its one end attached to said heel iron, a pair of interrupter springs also secured to said heel iron, and extending parallel to said first spring, a buffer extending through an orifice in said first spring against which one of said springs of said pair of springs rests, a buffer carried by said first spring adapted to engage the other spring of said pair of springs to move it from engagement with its companion spring, a circuit for said electromagnet extending through said pair of interrupter springs and adapted to be intermittently interrupted by an intermittent operation of said spring member, a cylindrical dust cover provided with threads for engaging the threads of said circular back plate thereby forming a dust-proof casing for the structure, and a weight attached to said spring member adapted to intermittently contact the inner surface of said dust-proof cover in response to the intermittent operation of said electromagnet to produce an audible signal.

Signed by me at Chicago, county of Cook and State of Illinois, in the presence of two witnesses.

FRED SCHOENWOLF.

Witnesses:

GEORGE E. MUELLER,
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