No. 703,091. Patented June 24, 1902.

A. F. SPENCER.

ELECTRIC BELL.

(Application filed Feb. 21, 1902.)

(No Model.)

Fig. 1.

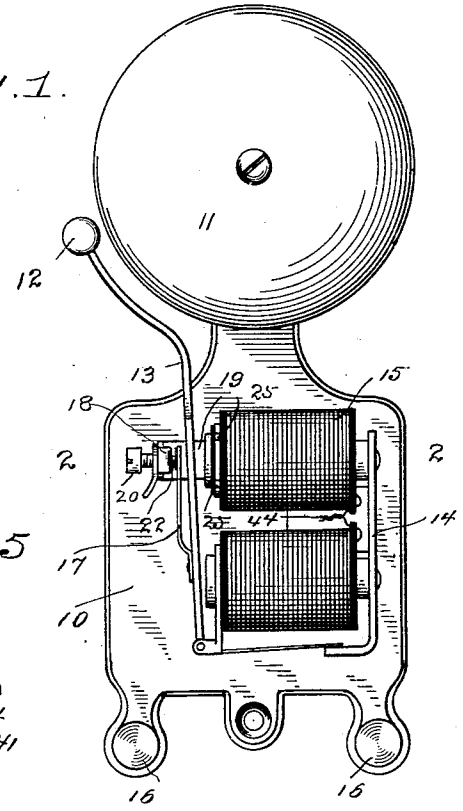


Fig. 4.

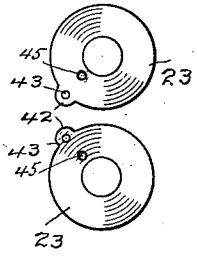


Fig. 5.

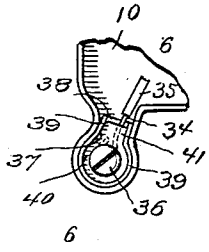


Fig. 2.

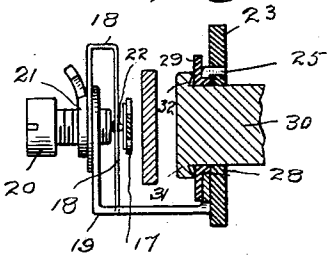


Fig. 3.

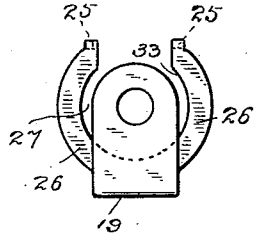


Fig. 6.

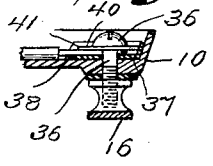
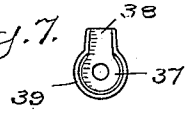


Fig. 7.



WITNESSES.

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UNITED STATES PATENT OFFICE.

ALBERT F. SPENCER, OF ANSONIA, CONNECTICUT, ASSIGNOR TO THE ANSONIA ELECTRICAL COMPANY, OF ANSONIA, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 703,091, dated June 24, 1902.

Application filed February 21, 1902. Serial No. 95,069. (No model.)

To all whom it may concern:

Be it known that I, ALBERT F. SPENCER, a citizen of the United States, residing at Ansonia, county of New Haven, State of Connecticut, have invented a new and useful Electric Bell, of which the following is a specification.

This invention relates to certain improvements in electric bells which simplify and cheapen the construction and greatly improve the operation in use.

It is one of the objects of this invention to provide a novel circuit-breaker terminal which will permit the use of an ordinary commercial screw as an adjusting-screw and will do away with the necessity of inserting a contact-point in the end of the adjusting-screw, the contact-point in my novel construction being carried by the contact-spring.

A further object of my invention is to devise a simple and inexpensive means of attaching the circuit-breaker frame to the core-head which shall insure perfect insulation and do away entirely with more or less serious objections to the structures heretofore in use.

A further object of my invention is to provide an entirely novel means of attaching a terminal to a metal frame, whereby perfect insulation is secured by the use of a flanged insulating-washer of peculiar construction.

A further object of my invention is to provide a novel means of connecting the coils, the coil-heads at one end being provided with projecting lips having holes through them and the wires being passed through the holes and joined together on the inner side of the coil-head.

With these and other objects in view my invention consists in certain constructions and in certain parts, improvements, and combinations, which will be hereinafter fully described and then specifically pointed out in the claims appended hereto.

In the accompanying drawings, forming part of this specification, Figure 1 is an elevation of my novel electric bell, showing the mechanism attached to a metal frame, the cap being removed; Fig. 2, a detail sectional view, on an enlarged scale, on the line 2 2 in Fig. 1, illustrating the construction and mode of operation of the adjustable circuit-breaker terminal; Fig. 3, an elevation, on the same scale, of the circuit-breaker frame detached; Fig. 4, a detail elevation, on the scale of Fig. 1, showing coil-heads detached and provided with projecting lips; Fig. 5, a detail rear elevation illustrating the attachment of a terminal to a metal frame; Fig. 6, a detail sectional view on the line 6 6 in Fig. 5; and Fig. 7 is a view of the flanged insulating terminal washer detached.

10 denotes the bell-frame, in the present instance a metal frame, 11 the bell, 12 the clapper, 13 the armature by which it is carried, 14 the coil-frame, 15 the coils, and 16 the binding-posts, all of which may be of any ordinary or preferred construction.

17 denotes the usual armature-spring; 18, a U-shaped spring which for convenience I term the "contact-spring;" 19, the circuit-breaker frame; 20, the adjusting-screw, which passes through one arm of the contact-spring and through the circuit-breaker frame and is adapted to engage the other arm of the contact-spring to determine its position relative to the armature-spring, and 21 a lock-nut for securing screw 20 in position after adjustment.

Heretofore it has been common to provide in the end of the adjusting-screw a contact-point which engages the contact-spring. In my improved construction I affix a contact-point 22 to contact-spring 18. This enables me to effect an appreciable saving in the cost of construction, as I use ordinary commercial screws not requiring any additional operations, and for the contact-points I use ordinary rivets, passed through holes in the contact-springs and secured in place by slight heading down.

The coil-heads are specifically indicated by 23. As a means of securing the circuit-breaker frame to one of the coil-heads, the upper left-hand coil-head as seen in Fig. 1, I provide recesses 24 in the coil-heads, one appearing in Fig. 2, which are engaged by lugs 25 on the circuit-breaker frame. The circuit-breaker frame is made U-shaped, as seen in plan or inverted plan, (see Fig. 2,) and

the inner arm thereof, which I have specifically indicated by 26, is enlarged and is provided with an opening 27, having a neck 33 leading into it between the lugs 25. This opening receives an insulating-sleeve 28, which passes into the opening, but will not pass through the neck, and is provided with a flange 29.

30 denotes the core, whose head 31 is provided on its inner face with an undercut groove 32.

The mode of assembling will be clearly understood from Fig. 2, in connection with which see Fig. 3. The insulating-sleeve 28 and the coil-head 23 are slipped over the core, and the core is passed through neck 33 and into opening 27, the coil-head being upon one side of the inner arm 26 of the circuit-breaker frame and flange 29 of insulating-sleeve 28 on the other side. The coil-head and the core-head are then compressed tightly together, lugs 25 on the circuit-breaker frame passing into the openings to receive them in the coil-head and sleeve 28 passing into opening 27 in the inner arm of the circuit-breaker frame, the flange 29 of said sleeve lying between the core-head and the inner arm of the circuit-breaker frame and being partially compressed into undercut groove 32, so as to insure absolutely tight contact between the flange of the insulating-sleeve and the core-head.

In the accompanying drawings I have illustrated an electric bell having a metal frame. It is of course well understood that in electric bells having metal frames one of the terminals must be connected to one of the binding-posts, but must be effectually insulated from the frame. This I accomplish in the novel manner which I will now describe.

34 denotes the terminal, shown as provided with a sheath 35 and connected to the binding-post (see Figs. 5 and 6) by a screw 36 in the usual manner. Between the head of screw 36 and the frame I place an insulating-washer 37, having on one side an extension 38 and having an upturned flange 39 at the edge of the washer and at the sides of the extension, but not at the end of the extension, the extension resembling a trough leading into the cup-shaped body of the washer.

40 denotes a metal washer adapted to lie in the cup of the insulating-washer and having a lip 41, adapted to lie in the trough formed by the flanges on the sides of the extension of the insulating-washer. In assembling the insulating-washer is placed in position. A loop is formed at the end of the terminal and laid upon the insulating-washer. Then the metal washer is placed over the terminal loop, the lip lying in the trough of the insulating-washer, and then the screw is passed through both washers, the loop, and the frame in the usual manner. The flange upon the insulating-washer prevents the terminal from coming in contact with the frame under any circumstances, and the lipped metal washer holds the terminal securely in place.

As a means of connecting the coils so that the twisted ends of the coil shall be wholly out of the way I provide the coil-heads 23 with lips or extensions 42, having holes 43. The ends of the coils are passed outward through holes or perforations 45, formed in the coil-heads, bent back, and then passed inward through the holes 43, after which they are twisted or otherwise connected together, as at 44, the connected ends of the coils lying in between the coils and wholly out of the way, as clearly shown in Fig. 1. This I find an important feature in practice, as the twisted ends of the coils lying upon the outer side of the coil-heads have heretofore been a source of considerable inconvenience.

Having thus described my invention, I claim—

1. In an electric bell the combination with an armature-spring and circuit-breaker frame, of a contact-spring provided with a contact-point, and an ordinary commercial screw arranged to support said contact-spring and also to regulate the adjustment of said contact-point relative to said armature-spring.

2. The approximately U-shape contact-spring 18 having a contact-point 22, substantially as shown, for the purpose specified.

3. In an electric bell, the combination with a circuit-breaker frame having an arm provided with engaging lugs and an opening, of a core having a head, a coil-head having recesses to receive the lugs, and an insulating-sleeve lying between the core and the wall of the opening and having a flange lying between the circuit-breaker frame and the core-head.

4. In an electric bell, the combination with a circuit-breaker frame having an arm provided with engaging lugs, an opening, and a neck leading into said opening, of a core having a head, a coil-head having recesses to receive the lugs, and an insulating-sleeve lying between the core and the wall of the opening and having a flange lying between the circuit-breaker frame and the core-head, said neck permitting the core to pass but retaining the sleeve in the opening.

5. In an electric bell, the combination with a circuit-breaker frame having an arm provided with engaging lugs, and an opening, of a core having a head provided with an undercut groove, a coil-head having recesses to receive the lugs and an insulating-sleeve lying between the core and the wall of the opening and having a flange lying between the circuit-breaker frame and the core-head, said flange when the coil-head and the core-head are pressed together being partly crowded into the undercut groove.

6. The circuit-breaker frame 19 having an arm 26 provided with lugs 25 and an opening 27, substantially as shown, for the purpose specified.

7. The combination with the frame and a terminal 34, of an insulating-washer having an extension and a flange surrounding the

washer and the sides of the extension, a metal washer adapted to lie in the cup of the insulating-washer and having a lip adapted to lie between the side flanges of the extension and a screw passing through the washers and engaging the frame to which the terminal is connected above the insulating-washer.

8. The insulating-washer 37 having an extension 38 and a flange surrounding the washer and the sides of the extension, substantially as shown, for the purpose specified.

9. In an electric bell, the combination with coil-heads having holes formed therein, said heads also having lips or extensions also having holes formed therein, of coils having their ends passed through said former holes and then passed backward through the holes of said lips or extensions and connected together on the inner sides of the coil-heads between the coils.

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

ALBERT F. SPENCER.

Witnesses:
GEORGE M. MORRISON,
HENRY J. STUART.