(No Model.)

C. A. TUCKER & O. H. HUEBEL.

ELECTRIC BELL.

No. 353,274. Patented Nov. 23, 1886.

Fig. 1.

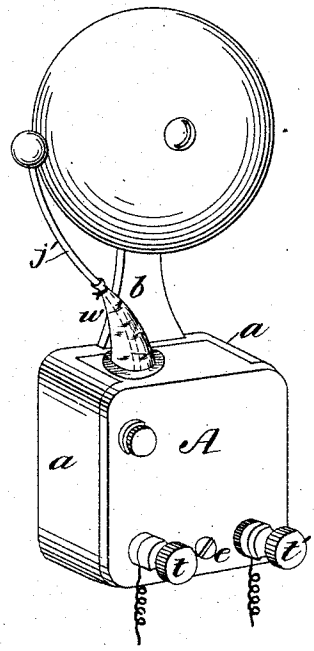


Fig. 2.

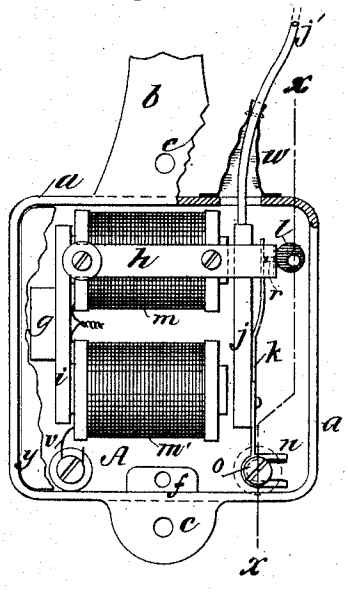
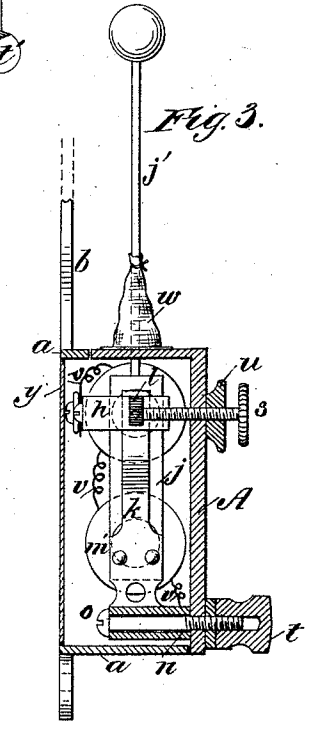


Fig. 3.



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ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 353,274, dated November 23, 1886.

Application filed May 21, 1886. Serial No. 202,854. (No model.)

To all whom it may concern:

Be it known that we, CHARLES A. TUCKER, residing in the town of Islip, in the county of Suffolk and State of New York, and OTTO H. HUEBEL, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Electric Bells; and we do hereby declare that the following is a full, clear, and exact description of our invention, reference being had to the accompanying drawings, which form part of this specification.

The invention relates to bells adapted to be operated by electricity, and has for its object improvements in structures of this character by which they will be secured against injury from dust, moisture, insects, and other substances, and whereby the parts can be easily and exactly adjusted, or taken out of their case for examination and replaced without removing the case from its position on the wall, or wherever the same may be secured.

In the drawings we show a structure containing our invention, in which Figure 1 is a front elevation. Fig. 2 is a back elevation. Fig. 3 is a section through the line *x x* of Fig. 2.

Similar letters of reference indicate like parts in all the drawings.

Heretofore the operating parts of such bells have been usually secured to the wall, either on a board or within a box which has been there fastened directly, so that when access to such parts was desired for any purpose either the whole structure had to be loosened from its position and taken down and then again secured to its position, or the parts had to be examined in the place where the structure was located, these requirements being often very inconvenient.

We arrange the operating parts of our bell in a case consisting of an inclosing-frame, *a a*, provided with a suitable gong-standard, as *b*, which may all be made in one piece, and having suitable means for attachment in position, as by means of the screw-holes *c c;* and this frame may be made of any suitable material, preferably cast metal. This frame forms an inclosure for the sides, bottom, and part of the top; but no portion of the operating mechanism is attached to this frame, so that when this part of the structure is once fixed in its proper position it need never be removed therefrom for any purpose of adjusting or examining the parts, &c.

The operating parts of the bell are all secured to the front A, which is secured to the frame *a a*, and held in position there in any convenient manner, as by means of a screw, *e*, holding it to the support *f*. Such support *f* may conveniently be formed as a part of the frame *a a*. Thus the front A, with its attached operating mechanism, may be taken out of the frame by simply withdrawing the screw *e*.

The front A is made of any suitable material, cast metal being convenient and cheap. On its inner face is secured a standard, *g*, which may be an integral part of it. To this standard a magnet-yoke, *i*, is properly fastened, and to this yoke suitable magnets, *m m'*, are secured. A vibrating armature, *j*, carrying the hammer-rod *j'*, is attached to the spring-strip *k* at the proper distance from the magnets. This spring-strip *k* is secured to a slotted support, *n*, which is held in place by the screw *o* in the slot, and by means of this arrangement the position of the armature relative to the magnets can be exactly and easily regulated, without twisting or bending the spring-strip *k* for that purpose, by simply loosening the screw *o*, moving the armature to the desired position, and then tightening the screw. The free end of the strip *k* operates as the circuit-breaker. A suitable metal strip, *h*, which is in electrical contact with one of the magnet-wires, as shown in Fig. 3, is secured to the insulated spool-heads of the magnet *m*, having its free end flexible and bent down by the side of the free end of the circuit-breaker *k*, and this free end of the strip *h* is adjusted to spring outward and away from the circuit-breaker when free, but it is held to the desired position by means of an eccentric, *l*, which is adjusted to bear against it. On the face nearest the face of the circuit-breaker of this end of the strip *h* is secured a suitable contact-point, *r*, Fig. 2. This contact-point *r* is adjusted in any desired position relative to the contact-breaker by means of the eccentric *l*, which is secured to the inner end of the set-screw *s*. This screw *s* passes through the front A of the case, and is provided with a friction-nut, *u*, whereby it is secured against disarrangement

when the eccentric has been turned to the desired position. The screw *o*, which secures the circuit-breaker *k* and vibrating armature *j*, enters the binding-post *t*, and by means of it the electrical circuit is made. The circuit is made from binding-post *t'* through magnet-wires *v*, strip *h*, contact-point *r*, strip *k*, screw *o*, to binding-post *t*.

When the face A is not made of non-conducting material, one of the binding-posts, as *t'*, must be insulated therefrom, and the eccentric *l* must likewise be insulated, as by making it of hard rubber or other suitable non-conducting material.

To exclude foreign substances, we attach a protecting-hood, *w*, to the hammer-rod *j'*. This may be made of silk or other suitable material that will not interfere with the vibrating of the rod, and its lower edges are cemented or otherwise suitably secured to the top of the part A, around the slot through which the rod passes, and the upper edges are fastened tightly to the hammer-rod itself. It will be seen that this device will protect the structure whether it be placed in position with the gong up or down. If water-proof material and cement are used, the hood will also prevent moisture entering the slot.

When the bell is to be secured to a dry, sound wall or other proper place, the back may be left open, if desired; but when there is any dampness or irregularity in the surface upon which the frame is to be fastened the back of the case is protected by any suitable covering, *y*, (shown broken away in Fig. 2,) and the whole exterior back surface properly coated with some moisture-proof composition, which will protect the parts, and make the structure much more enduring than when the back is left open.

By this disposition of the parts and their peculiar structure, as described, many advantages are obtained. The inclosing-case for the mechanism, once fixed in position on the wall, &c., need never be removed therefrom for the purpose of obtaining access to any of the operating parts, the operating parts being all adjusted on a flat plate, A. When the same is taken from the case, easy access is had to all the parts. The use of tension-springs is avoided. The adjusting-screw *s* is without the case, and on its front, where it can be easily reached. By means of the slotted support *n* the armature *j* may be quickly and easily adjusted parallel to the face of the magnet-cores by one screw, *o*, and by means of the hood *w*, securely incasing the hammer-rod and attached to the upper surface of the plate A, the operating parts are fully protected from foreign substances.

Having thus described our invention, we claim as new—

1. An electric-bell apparatus provided with a case consisting of a front, A, carrying the operating parts, in combination with the inclosing-frame *a a*, substantially as described and shown.

2. The frame *a a*, adapted to inclose and protect the operating mechanism of an electric bell, in combination with a removable front, A, supporting all the operating parts, substantially as described and shown.

3. The frame *a a*, adapted to inclose and protect the operating mechanism of an electric bell, and a cover-plate carrying the operating parts, in combination with the inclosing-back *y*, substantially as described and shown.

4. The frame *a a*, back *y*, and removable front A, in combination with the operating parts of an electric bell secured to such front A, substantially as described and shown.

5. The combination of the armature *j*, strip *k*, and the support *n*, slotted at right angles to the strip *k*, in combination with an adjusting-screw, *o*, substantially as described and shown.

6. The combination of the eccentric *l*, and screw *s*, and a suitable contact-point, as the strip *h*, substantially as set forth.

7. The combination, with an adjustable contact-screw passing through the front of the case, of an eccentric, *l*, formed of non-conducting material, substantially as described.

8. The combination of the magnet-wire *v*, terminating in a suitable contact-point, as *r*, with the adjusting-eccentric *l*, adapted to be operated from the front of the case A, substantially as set forth.

9. In an electric-bell apparatus, the combination of the vibrating hammer-rod *j'* and hood *w*, securely attached to the hammer-rod and to the plate A, and adapted to exclude foreign substances from the interior of the inclosing-case in whatever position the same may be placed, substantially as described and shown.

10. An electric-bell apparatus consisting of the case *a a*, front A, suitable magnets, rod *j'*, armature *j*, and adjustable standard *n*, in combination with the strip *h* and screw *s*, carrying the eccentric *l*, substantially as described and shown.

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