A. A. ZIEGLER.

ELECTRIC BELL.

APPLICATION FILED MAR. 26, 1910.

1,031,313. Patented July 2, 1912.

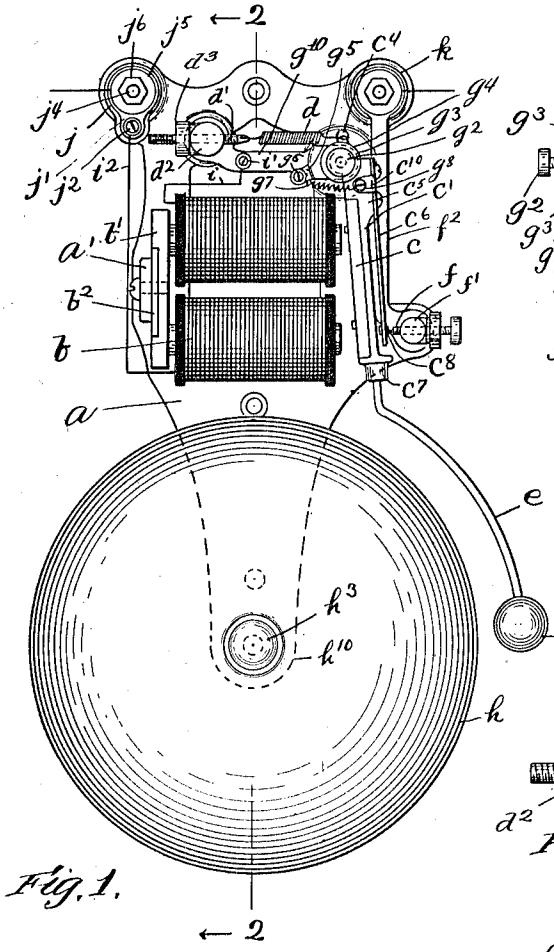

Fig. 1.

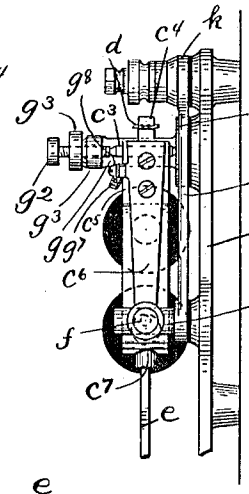

Fig. 3.

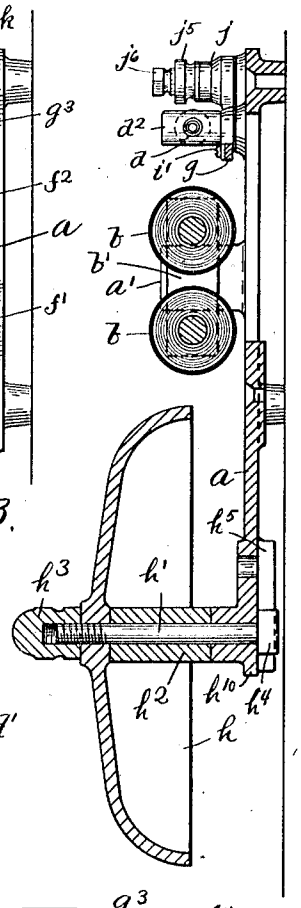

Fig. 2.

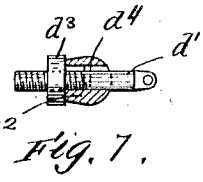

Fig. 7.

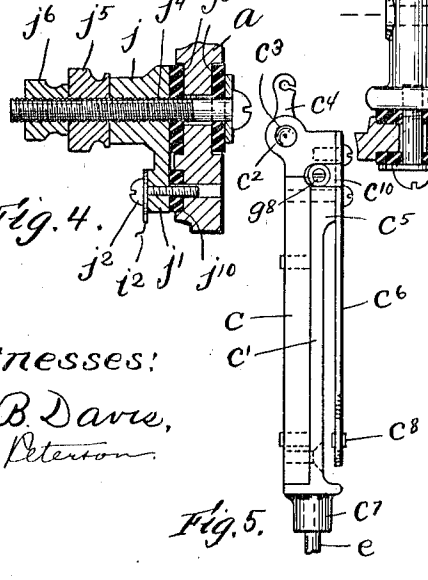

Fig. 4.

Fig. 5.

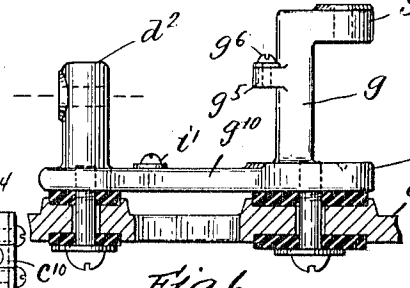

Fig. 6.

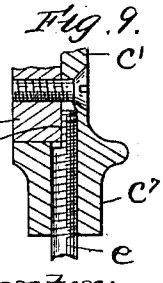

Fig. 9.

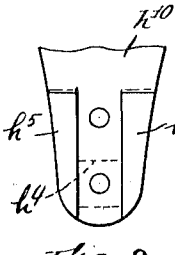

Fig. 8.

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UNITED STATES PATENT OFFICE.

ALFRED A. ZIEGLER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO UNITED ELECTRIC APPARATUS COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ELECTRIC BELL.

1,031,313. Specification of Letters Patent. Patented July 2, 1912.

Application filed March 26, 1910. Serial No. 551,734.

To all whom it may concern:

Be it known that I, ALFRED A. ZIEGLER, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Electric Bells, of which the following is a specification.

This invention relates to electric-bells, and has for its object to provide an electric-bell with heavily constructed and substantially durable parts, whereby it is adapted to withstand severe usage, and the parts of which may be easily removed for purposes of repair, and all the parts may be insulated from the base or frame, whereby the current is not permitted or required to pass through said base or frame.

My invention involves improvements in the construction of the various parts, as will be hereinafter described.

Figure 1 is a front view of an electric-bell embodying this invention, Fig. 2 is a vertical section of the bell as shown in Fig. 1, taken on the dotted line 2—2, Fig. 3 is a side view of the upper portion of the bell, Fig. 4 is a sectional detail of one of the binding-posts, Fig. 5 is a side view of the armature-lever, Fig. 6 is a plan view of the support for the armature-lever and tension-spring, Fig. 7 is a detail of the adjustable end-connection for the tension-spring, Fig. 8 is a detail of the lower end of the frame bearing the gong, Fig. 9 is a sectional detail of the connection of the bell-hammer arm with the armature-lever.

a represents the base-plate or frame, which is made of any suitable shape and material; b the electro-magnet, which is supported on an ear a', projecting forward from the base-plate, and c the armature, which is secured to the newly-formed armature lever c'. A plate of brass b^2, or equivalent material, is interposed between the heel-piece b' and the ear a' to magnetically insulate the electro-magnet from the frame, and the armature is likewise magnetically insulated by the armature-lever being made of brass or equivalent material.

The armature-lever, see Fig. 5, is made as a bar, formed by casting or otherwise. It has at its upper end a perforated ear c^2, through which a pivot-pin c^3 projects, which extends a short distance at opposite sides of the ear, and is formed with conical ends. It also has an ear c^4 formed with hooked end to which one end of a tension-spring d is connected. It also has a boss c^5 formed with a flat face, to which the upper end of a spring-arm c^6 is attached by screws or otherwise, said boss c^5 providing for supporting the spring-arm, which is made flat and without a bend, with its lower end-portion free from contact with the bar. It has a recess at one side extending nearly throughout its length, which receives the armature c, and said armature is secured to the bar by screws or otherwise. It has a boss c^7 at its lower end, which is provided with a screw-threaded hole extending through it and opening into the recess for the armature, which receives the screw-threaded end-portion of an arm e, bearing the bell-hammer e'. The upper end of the arm e is formed with a flat side e^2, see Fig. 9, which extends over the armature c, so that, when said armature is secured to the bar, said arm is held from turning. The spring-arm c^6 has its lower end a contact-plate c^8, which, as the arm is moved, engages and disengages the end of a contact-screw f.

The pivot pin c^3 is mounted in a supporting-frame, which is attached to, but insulated from, the base a. Said supporting-frame, see Fig. 6, comprises a yoke g, having a step for one end of the pivot-pin formed in one of its arms g', and having a pivot-screw g^2, with a socketed end for the other end of the pivot-pin mounted in its other arm g^3. Said pivot-screw is adjustable, and is held in different positions by a check-nut g^4. An ear g^5 is formed on the yoke g, adapted to receive a screw g^6, which engages one end of a circuit-wire g^7, and the spring-arm c^6 has an ear c^{10}, which extends over the edge of the armature-lever, and a screw g^8 extends through said ear, which engages the other end of said circuit-wire. The spring-arm is thus electrically connected with the supporting-frame, so as to insure a path for the current without relying upon the pivotal connection, which is uncertain.

The tension-spring d, which is attached at one end to the ear c^4, is attached at its opposite end to a screw d', passing entirely through a hole in a post d^2, and said screw has a check-nut d^3 mounted on it to hold

it in fixed position, and has also a laterally-extended pin d^4, see Fig. 7, which enters a key-way in the hole through the post, to thereby prevent it from turning. The post d^2 is formed as an integral part of the supporting-frame for the armature-lever, being connected by a bar g^{10}. One of the magnet-wires, as i, is attached to the supporting-frame of the armature-lever, as, for instance, to the bar g^{10}, by a screw i'. The other magnet-wire i^2 is connected with a binding-post j, which is secured to, but insulated from, the base-plate. The body of the binding-post has an ear j' extended from it, to which said magnet-wire is connected by a screw j^2. To secure the binding-post to the base-plate said base-plate is formed with recesses in its front and back sides, see Fig. 4, made concentric with a hole which is formed through the base-plate, and bushings j^3, of insulating-material, are placed in said recesses, and a screw j^4 extends through said bushings and through the hole in the base-plate and through the body of the binding-post, and its projecting screw-threaded end receives upon it a binding-nut j^5 and a check-nut j^6, adapted to receive between them or between the binding-nut and the body of the post the leading-in wire. The base-plate is also formed with a hole which receives a bushing j^{10}, of insulating-material, which is formed with a hole to receive a screw j^2, which extends through the ear on the binding-post. Thus, both the body of the post and the ear are insulated from the base-plate, and the binding-post is prevented from turning. The other parts are secured to the base-plate in the same manner, so as to be insulated therefrom.

The contact-screw f extends through a post f', which is connected to, but insulated from, the base-plate, and is integrally connected with the body of a binding-post k by a link f^2, so that the post f' is electrically connected with the binding-post k, and also is held from rotation on the base-plate, thereby to insure the contact-screw always occupying a position in front of the contact-plate c^8 borne by the resilient arm c^6. The binding-post k is secured to, but insulated from, the base-plate.

The base-plate is formed at its lower end with an extension h^{10} to receive a support for the gong h. A bolt h' extends through a hole in said extension and through a sleeve h^2 and through a hole in the gong h, and receives upon its projecting end a nut h^3, and the head h^4 of said bolt is made square and occupies a position between a pair of flanges h^5 on the back side of the base-plate, to thereby keep it from turning. Said extension h^{10} is made long enough to provide for the attachment thereto of gongs of different sizes, and, as here shown, it has two holes for the attaching-bolt h'.

When assembling the device gongs of different sizes may be selected, and also arms of different lengths, which carry the bell-hammer, and, as they are both detachable, they may be carried in stock for immediate use.

I claim:

1. An electric-bell having a base-plate, an electro-magnet, a pivoted armature-lever bearing a bell-hammer and a resilient contact-arm, a contact-screw adapted to be engaged by said arm, a post through which said screw extends, a binding-post having a body and means to rigidly connect said post bearing the contact-screw with the body of the binding-post, thereby to prevent both posts from turning with respect to the base-plate and also to electrically connect them together, substantially as described.

2. An electric-bell having a base-plate, an electro-magnet, a pivoted armature-lever bearing a bell-hammer, a resilient contact-arm attached to said lever having an ear extended over the side of said lever, a support to which said armature-lever is pivoted, means to attach said support to the base-plate, means attached to the base-plate to prevent said support from turning, a wire attached at one end to said support, and a screw extended through the ear on the contact arm for attaching the other end of said wire to said armature-lever, substantially as described.

3. An electric-bell having a base-plate, an electro-magnet, a pivoted armature-lever bearing a resilient contact-arm, a contact-screw adapted to be engaged by said resilient arm, a post bearing said contact-screw, a binding-post integrally connected with the aforesaid post to electrically connect them together and prevent them from turning, means for attaching said posts to but insulating them from the base-plate, a support for the armature-lever, means to attach it to and insulate it from the base-plate, means attached to the base-plate to prevent said support from turning, another binding-post attached to but insulated from the base-plate, means to hold said binding-post from turning, means for attaching one of the magnet-wires to the support for the armature-lever and the other magnet-wire to said last-named binding-post, and a circuit-wire connected at one end to said support and at the other end to said resilient contact-arm, substantially as described.

4. An armature lever having a recess for the armature and a boss provided with a hole extending through it opening into said recess, an armature arranged in said recess, a hammer-carrying arm held in said hole and projecting into said recess under the armature, said arm having a flattened end portion which engages the armature, whereby the armature prevents the turning of said arm, substantially as described.

5. In an electric-bell, an armature-lever having a recess for the armature and having a boss at its lower end formed with a screw-threaded hole through it, opening into said recess, a hammer-carrying arm provided with a screw-threaded portion to enter said screw-threaded hole in said boss, and having a flattened portion extending under the armature which is contained in said recess, whereby it is attached to the lever and held from turning, substantially as described.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

ALFRED A. ZIEGLER.

Witnesses:
B. J. NOYES,
H. B. DAVIS.