

(No Model.)

R. VARLEY, Jr.
ELECTRIC BELL.

No. 525,169.

Patented Aug. 28, 1894.

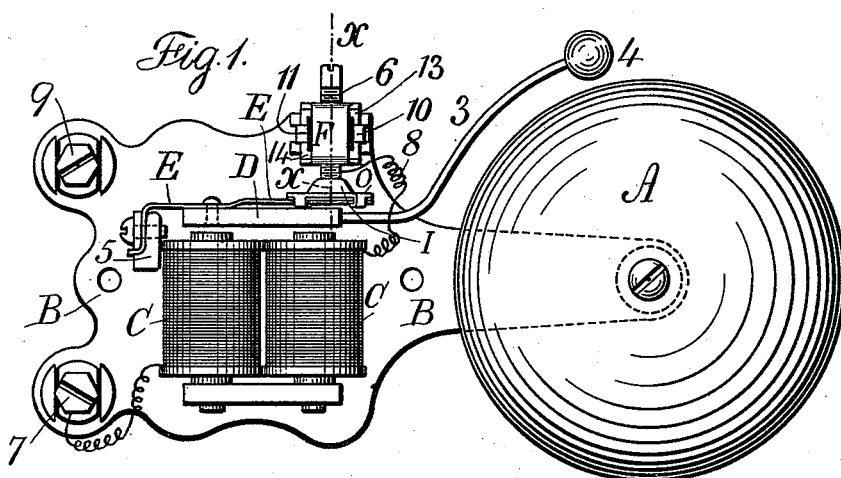
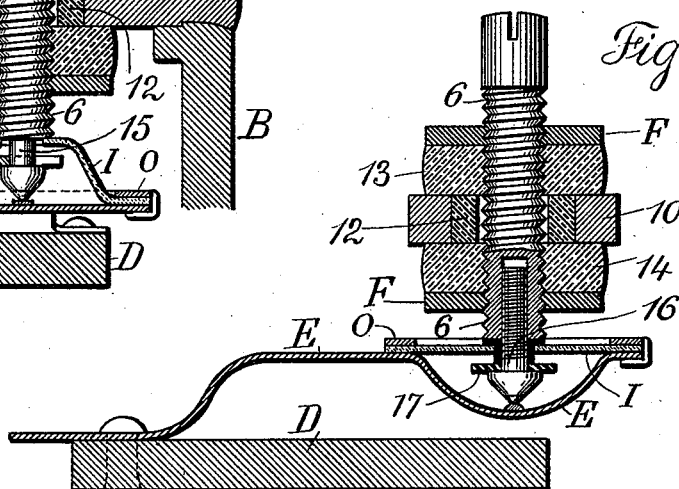
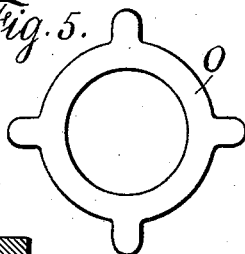
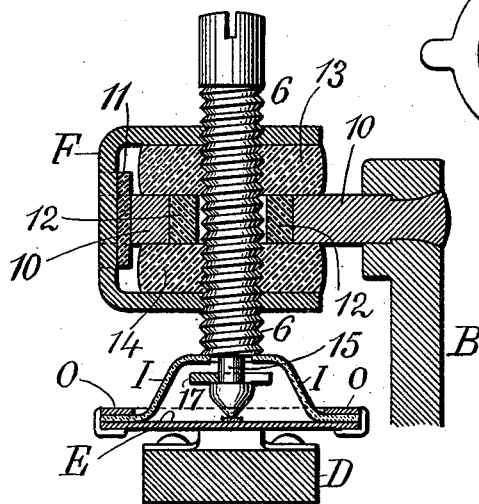


Fig. 2.

Fig. 5.

Fig. 4.



Witnesses:
J. Staib
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UNITED STATES PATENT OFFICE.

RICHARD VARLEY, JR., OF ENGLEWOOD, NEW JERSEY.

ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 525,169, dated August 28, 1894.

Application filed September 21, 1893. Renewed July 10, 1894. Serial No. 517,154. (No model.)

To all whom it may concern:

Be it known that I, RICHARD VARLEY, Jr., a citizen of the United States, residing at Englewood, in the county of Bergen and State of New Jersey, have invented an Improvement in Electric Bells, of which the following is a specification.

In Letters Patent No. 473,717, granted to me April 26, 1892, and No. 449,302, granted to me March 31, 1891, the electrodes made use of in electric bells and similar devices are inclosed so as to prevent dust, insects or other substances getting between the surfaces of the electrodes and preventing the proper passage of the electric current.

The present invention is an improvement upon the devices before made by me and relates to the peculiarities of construction and the combinations of devices hereinafter set forth and claimed.

In the drawings, Figure 1 is an elevation representing the bell with my improvements applied thereupon. Fig. 2 is a section at the line x, x , and in a magnified size. Fig. 3 is a section of the armature spring in a modified form. Fig. 4 is a face view of the split washer, and Fig. 5 is a face view of the clamping ring.

The bell A is upon a suitable base B, and the electro-magnet C is provided with an armature D having a spring 3 and a hammer 4 for striking the bell.

The armature D is preferably connected to the spring E which is secured to a bracket or post 5 upon the base B, and this spring is made with an offset and continued along parallel or nearly so to the armature, and such spring forms one electrode and the screw 6 forms the other electrode, it being understood that the electric circuit passes from the binding post 7 through the helices of the electro-magnets and by the wire 8 to the insulated screw 6 and thence by the spring E to the frame or base B of the bell and by the binding post 9 and circuit wire to the battery.

In order to insulate the screw 6 and at the same time to apply to the same sufficient friction to prevent the screw turning while in use and to avoid lock nuts that have heretofore usually been provided, I make use of the clip F, preferably of sheet metal and bent to a U form and having the screw 6 passing through the two nearly parallel end portions of such

clip, and this clip forms the nuts for the screw 6 to pass through; and I place between the bracket 10 and the clip F a piece of hard rubber 11 so as to insulate the clip from the end of the bracket, and I also put through the bracket 10 a tube at 12 also of insulating material for the screw 6 to pass through, and I introduce rubber washers 13 and 14 between the bracket 10 and the end portions of the clip F, and these rubber washers 13 and 14 are to be under sufficient compression to hold tightly in their position, and the screw 6 passing through the rubber washers 13 and 14 while such washers are under compression, is grasped by the rubber sufficiently for applying the friction needed to prevent the screw 6 turning accidentally, and in this manner the screw is firmly held so that it will not rotate accidentally, and there is a slight elasticity in the connection between the bracket and the screw, so that the armature or its spring in striking against the end of the screw as the armature vibrates, does not meet with a solid resistance, and the expense of construction is lessened and the parts rendered more durable and less liable to become rusty, so that the screw is as easily turned in adjusting the electrodes at one time as at another time.

I make the end of the screw 6 with a neck 15, as in my aforesaid patents, and I find that when a piece of kid or other suitable material is provided with a hole corresponding in size to the neck, such material may slide freely upon the neck as the armature and spring vibrate; I therefore connect to the armature or its spring a septum I with a central hole adapted to the neck 15 of the screw 6, and in order to make use of a septum having a hole accurately fitting the neck, I sometimes provide a screw 16 forming the neck and the head of the screw being pointed and forming the electrode or contact point with the spring E; and it is advantageous to make the septum I of insulating material, but if such septum I is not of insulating material a small tube of hard rubber may be employed around the neck 15 and between the same and the septum.

The septum I requires to be attached to the armature or spring E around its edges, and with this object in view a ring O of sheet metal is provided with prongs or claws at its

edges, and such ring is adapted to rest upon the septum I, the ring, the septum and the end of the spring E corresponding in size and shape so that the claws that project from the edges of the ring can be bent over and clinched beneath the edges of the spring E and thereby hold the septum in its position upon the armature spring E.

I find it advantageous to make use of a piece of kid for the septum I so that such kid or other flexible material may be sufficiently dome-shaped to pass up around the neck 15 and to furnish the room necessary for the end of the electrode that is between the septum and the spring or armature, but in cases where the armature or spring is recessed, as illustrated in Fig. 3, the septum I might be flat or nearly so.

It sometimes happens that persons ignorant of the construction of the apparatus seek to push the septum away from the end of the electrode so as to ascertain the manner in which the parts are constructed, and in so doing the apparatus is injured and it is difficult to replace the septum around the neck except when the parts may have been separated. To avoid this difficulty I make use of a washer 17 around the screw 6 at the neck 15 and between the septum I and the armature or spring, and this washer 17 can be sufficiently large to effectually resist any effort to press the septum off from the end of the electrode.

Where the screw 16 is made use of, the washer 17 can be provided with a central hole and be put upon the screw 16 before the same is screwed into the end of the screw 6, but where there is a neck turned in the screw 6 it is advantageous to cut the washer 17 radially, as illustrated in the detached view Fig. 4, so as to slip this washer over the neck 15 and then close the same sufficiently to hold the washer in position by pressure applied to the periphery of the washer.

In the normal position with the armature away from the electro-magnet and the electrodes in contact, the septum can press against the shoulder upon the screw 6 at the end of the neck, and in so doing the small chamber containing the electrodes will be effectually closed to exclude dust or moisture, and when the current passes through the magnet and the armature is attracted, the inner surface of the septum will close against the surface of the washer 17 and in so doing effectually prevent moisture or dust passing into the chamber containing the electrodes, and under these circumstances it is of but little consequence whether the hole in the septum is of precisely the same size as the neck 15, or whether it is larger than the same, because the dust or moisture will be effectually excluded for the reasons before mentioned.

This improvement is not limited to use with a screw forming one of the electrodes, nor to any special construction of electrode, so long as the end of the electrode passes through

the septum and is within the cavity that is closed by the septum that is secured at its edges.

I claim as my invention—

1. The combination with the screw forming one electrode, of a bracket through which the screw passes, a clip forming the nuts for the screw and insulating material between the bracket and the clip, substantially as set forth.

2. The combination with the electro-magnet and its armature, of a screw forming one electrode, a bracket through which the screw passes and insulating material between the screw and the bracket, a U-shaped clip piece through which the screw passes, elastic material between the nut portions of the clip and the bracket, and insulating material between the end of the bracket and the clip piece, substantially as set forth.

3. The combination with the armature or its spring forming one electrode, of the second electrode having a neck, a septum with a hole through which the neck of the electrode passes, and a ring by which the edges of the septum are clamped to the armature or its spring, substantially as set forth.

4. The combination with the armature or its spring forming one electrode, of the second electrode having a neck, a septum with a hole through which the neck of the electrode passes, a ring by which the edges of the septum are clamped to the armature or its spring, and a tube of insulating material around the neck of the electrode and between the same and the inner edges of the septum, substantially as set forth.

5. The combination with the armature or its spring forming one electrode, of the second electrode having a neck, a septum with a hole through which the neck of the electrode passes, and a ring by which the edges of the septum are clamped to the armature or its spring, and a washer around the neck and between the septum and the armature, substantially as set forth.

6. The combination with the armature or its spring, of an adjustable electrode, a septum connected at its edges with the armature or its spring and having a central opening, and a screw passing through the opening into the adjustable electrode, the screw forming the neck of the adjustable electrode, substantially as set forth.

7. The combination with the armature or its spring, of a septum connected with the armature or its spring around its edges and having a central opening, an adjustable electrode having a neck near the point thereof and a washer around the neck with which the septum is adapted to come into contact when the armature is attracted by the electro-magnet, substantially as set forth.

8. The combination in an electric bell, with the armature and electro-magnet, of a spring with which the armature is connected and which forms one of the electrodes, an adjust-

able electrode having a neck, a septum with an opening through which the neck passes, means for securing the edges of the septum to the spring, and a washer around the electrode at the neck and between the septum and the spring, substantially as set forth.

5 9. An electrode having a contact point, in combination with the second electrode and a septum, and a clamp for securing the septum
10 around its edges, there being a hole through

the septum for the passage of the contact point, so that both electrodes are within the cavity inclosed by the septum, substantially as set forth.

Signed by me this 12th day of September, 10
A. D. 1893.

RICHARD VARLEY, JR.

Witnesses:

GEO. T. PINCKNEY,
A. M. OLIVER.