(No Model.)

W. A. HARVEY.

ELECTRIC BELL.

No. 534,330. Patented Feb. 19, 1895.

Fig. 1.

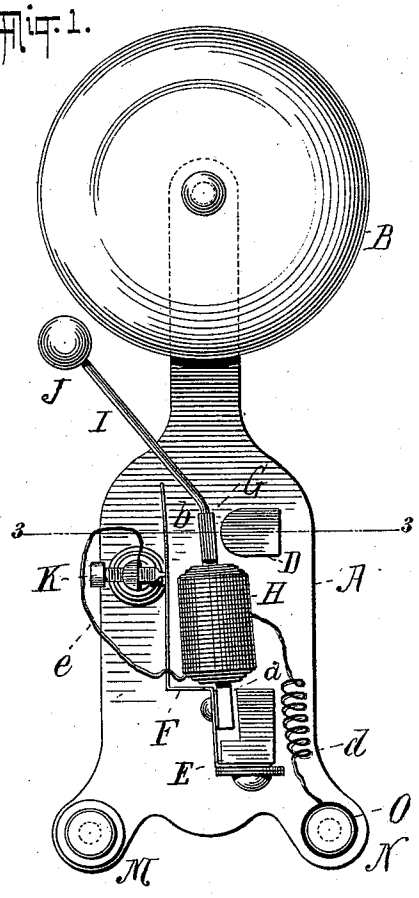


Fig. 2.

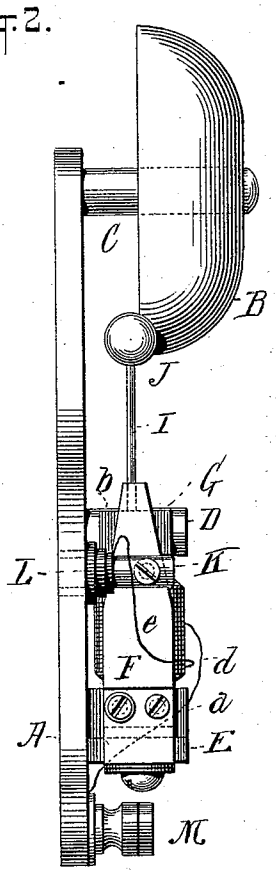
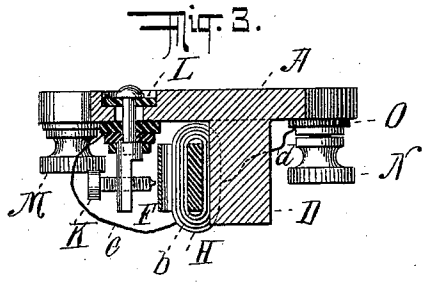


Fig. 3.



WITNESSES:

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WILLIAM A. HARVEY, OF SCRANTON, PENNSYLVANIA.

ELECTRIC BELL.

SPECIFICATION forming part of Letters Patent No. 534,330, dated February 19, 1895.

Application filed October 19, 1894. Serial No. 526,372. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. HARVEY, of Scranton, Lackawanna county, Pennsylvania, have invented a new and useful Improvement in Electric Bells, of which the following is a specification.

My invention relates to an electric bell wherein the operating mechanism consists in an electro-magnet suitably supported so as to vibrate before a fixed armature. The said electro-magnet operates the hammer which strikes the bell. By reason of this construction I find that for a bell of given size and power a less amount of wire is needed in the electro-magnet than is commonly required; also that the mechanical construction is simpler and that therefore the apparatus may be made more cheaply than such existing electric bells with which I am familiar.

In the accompanying drawings, Figure 1 is a face view of my electric bells. Fig. 2 is a side view, and Fig. 3 is a section on the line 3—3 of Fig. 1.

Similar letters of reference indicate like parts.

A is the supporting plate carrying the gong B upon any suitable standard, as C. The plate A is of iron and is provided with two projecting lugs, D and E. Supported upon the lug E, by means of a spring, F, is the iron core G upon which is mounted the coil H. The extremities of the core G are made flattened, substantially as shown, one of them, *a*, being received in a recess in the lug E and between said lug and the supporting spring F, the other, *b*, being disposed directly opposite the lug D. The end *b* of the core G carries an arm, I, which is suitably placed and provided with a hammer, J, to strike the gong B when the core G is vibrated. The spring F, beyond its point of support of the core G, extends upward parallel to said core and bears against a set-screw, K, which screw may be provided in the usual way with a platinum tip. The support for the screw K is insulated from the base A by a rubber washer, L, or any other suitable means.

Upon the base plate A are two binding-posts, M and N. The binding post N, is insulated from the plate A by a rubber washer, O.

The circuit in the apparatus is as follows: From post N by wire *d* to coil H, through said coil by wire *e*, to screw K, then to spring F and through the lug E to the base plate A and so to binding post M.

The operation of the device is as follows: When the current passes through the coil H the core G is magnetized thereby and the lugs D and E are also magnetized inductively. The core G carrying the coil then moves toward the lugs D and E, the spring F yielding. As soon, however, as the core has moved sufficiently far to break the electrical contact between the spring F and the screw K circuit is broken, attraction between the core G and the lugs D and E ceases and the spring F carrying the core and coil moves back by its own resiliency to its original position, again establishing contact, and so on. The result obviously is that the core G carrying the coil H is set into rapid vibration and the bell is thus sounded.

While I have described the instrumentalities hereinafter claimed specifically in connection with an electric bell, it is to be understood that I do not limit their employment to such application; but may use them in any signaling apparatus wherein it is desirable to throw a body into vibration by electrical means.

I claim—

1. In a signaling apparatus a plate of magnetic material, two projections thereon, an electro-magnet supported at one extremity of its core upon one of said projections and free to vibrate, and having the opposite end of its core extending in front of said other projection, and a spring carried by said magnet for alternately opening and closing circuit through its coil.

2. In a signaling apparatus an electro-magnet supported so as to be free to vibrate, and having its core extending beyond both ends of its coil, two fixed armatures disposed laterally to said protruding ends, upon one of which armatures said magnet is supported, and a spring carried by said magnet for alternately opening and closing circuit through its coil.

3. The combination in an electric bell mechanism of a plate of magnetic material having integral projecting lugs, a spring supported

upon one of said lugs, an electro-magnet attached by one end of its core to said spring and having both ends of its core in inductive proximity to said lugs, a contact point on said plate disposed in the path of vibration of said spring, and circuit connections, substantially as described.

4. The combination in an electric bell mechanism of a plate of magnetic material having integrally-formed lugs or projections, an electro-magnet supported upon one of said lugs and free to vibrate and having its core extending at its opposite ends in inductive proximity to both of said lugs, a bell on said plate, a hammer operated by said magnet to strike said bell, and a circuit-breaker operated by the vibrations of said magnet to open and close circuit through its coil, substantially as described.

5. The combination in an electric bell mechanism of a plate of magnetic material having integrally-formed lugs or projections, D and E, spring F, supported upon lug E, electro-magnet H secured at one end of its core to said spring F and having said end in inductive proximity to lug E and the opposite end of its core in inductive proximity to lug D and contact screw K bearing against spring F, substantially as described.

WILLIAM A. HARVEY.

Witnesses:
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