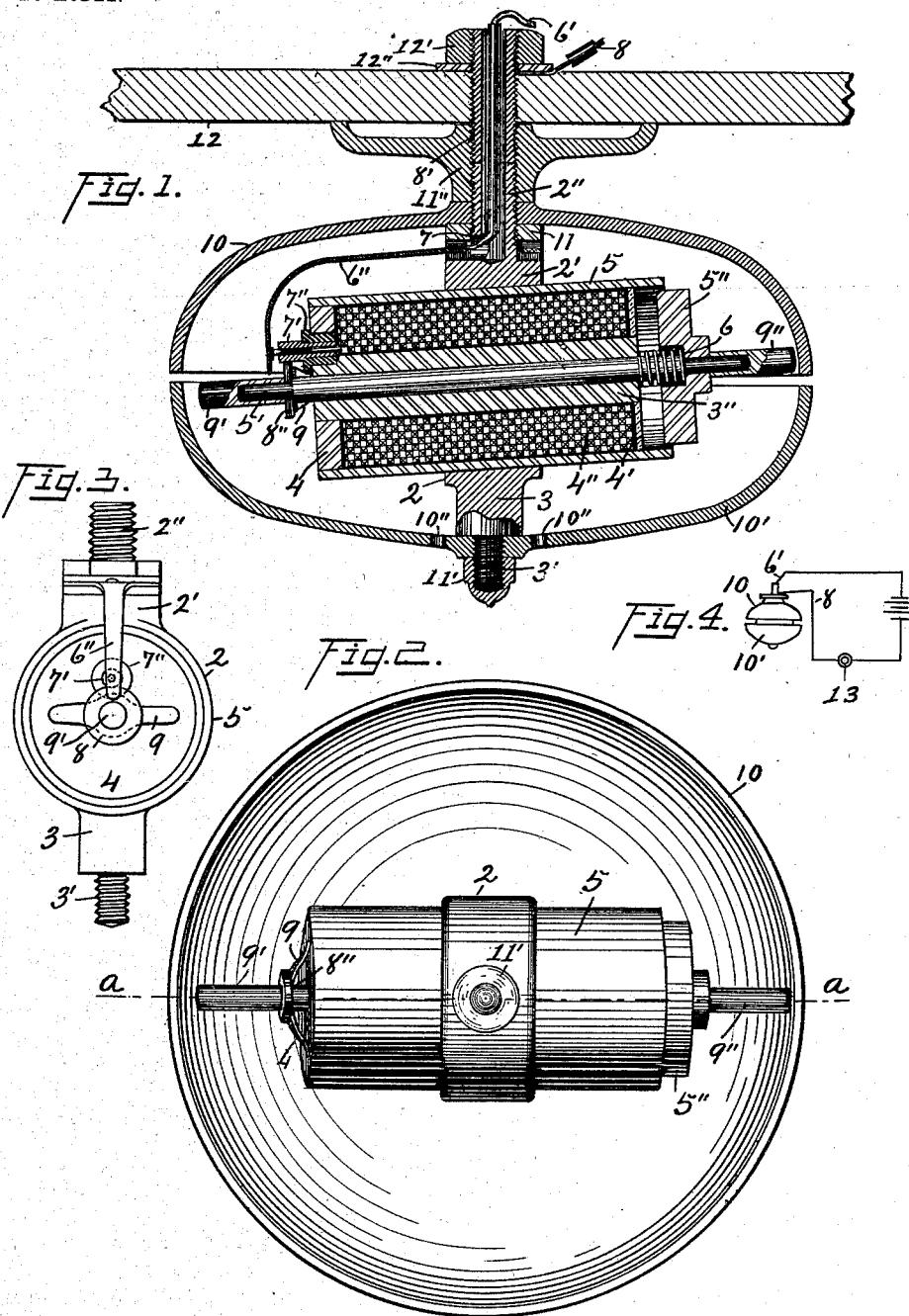


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H. E. DEY.
ELECTRIC BELL.
APPLICATION FILED AUG. 16, 1901.

NO MODEL.



Witnesses

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ELECTRIC BELL.

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To all whom it may concern:

Be it known that I, HARRY E. DEY, a citizen of the United States, residing at New York, Bronx borough, in the county and State of New York, have invented certain new and useful Improvements in Electric Bells, which improvements are fully set forth in the following specification and accompanying drawings, and in the latter—

10 Figure 1 is a central vertical section of an electric bell embodying my said improvements, the section being taken as along the line *a a* of Fig. 2. Fig. 2 is a bottom plan view, the secondary resonant member which I purpose employing being removed to better disclose the operative mechanism. Fig. 3 is a detail end elevation view of the operative mechanism of the bell, the primary and secondary resonant members being omitted. Fig. 15 Fig. 4 is a diagram illustrating the battery, resonant members, and circuit connections as I purpose to employ same.

Similar reference - numerals denote like parts throughout the several views of the drawings.

This invention relates to improvements in devices of that class commonly known as "electric bells," the same being extensively utilized in various locations as mediums where- 30 by the attention of individuals may be commanded.

The objects of this invention are to provide a bell of the character above indicated which shall be simple, inexpensive, and novel as regards construction; which shall be positive and reliable in operation; which shall ordinarily embody operative parts substantially housed against the deteriorating, injurious, and undesirable effects of dust, dirt, water, 40 and other foreign substances; which shall be so constructed as to render practicable the attainment of a "chime" effect when desired; which shall be attractive in appearance, and which shall possess certain well - defined advantages over prior analogous devices.

The invention consists in the employment of certain parts novel as to form, in the novel disposition and arrangement of the various parts of the general construction, in certain 50 combinations, and in certain details of con-

struction, all of which will be specifically referred to hereinafter and set forth in the appended claims.

In general terms my improved electric bell comprises a magnet-saddle, a pair of resonant members carried by and arranged substantially at right angles to the axis of the magnet-saddle, and an electrically - controlled striker arranged transversely of and at an inclination to the axis of the magnet-saddle, the said resonant members serving to substantially inclose the magnet-saddle and striker and the said striker having a line of reciprocating movement extending obliquely from one of the resonant members to the other and being adapted to engage in its movements the respective resonant members.

Having reference to the accompanying drawings, the magnet - saddle 2 which I employ is there shown as in the form of an annulus or ring, having a primary shoulder 2', terminating in a reduced extension 2'', the latter alining with the axis of the bell proper, and a secondary shoulder 3, located diametrically opposite the shoulder 2' and terminating in a reduced extension 3'.

I dispose within the saddle 2 an electromagnet, here shown as comprising the core 3'', opposing disks 4 4', supporting the core 3'', coil 4'' on the core 3'' intermediate of the disks 4 4', and an exterior casing or sleeve 5, the latter serving as a general tie member for holding the foregoing parts firmly in their respective positions for service and with the disks 4 4' fully inclosing the coil 4''. Disk 4 is 85 preferably of steel and serves as a yoke for the electromagnet, while disk 4' is of non-magnetic material.

5' is a striker, preferably of non-magnetic material, the same being here shown as elongated or in the form of a rod and extending longitudinally through the magnet-core 3''. The striker 5' carries an armature 5'', which under normal conditions is located adjacent to one pole of the magnet, the opposite pole of 95 said magnet being formed by the casing or sleeve 5.

I interpose between the armature 5'' and the electromagnet proper an elastic element 6, indicated in the accompanying drawings as in 100

the form of a spiral spring encircling the striker 5'. When arranged as indicated in Fig. 1 of the drawings, it is insulated from the core 3" or from the armature 5". The normal tendency of the elastic element 6 is to yieldingly urge the striker 5', with its armature 5", along its line of movement away from the electromagnet in one direction.

6' is a leading-in wire running downwardly within the extension 2", the latter being hollow to permit this disposition of said wire. The wire 6' contacts at its lower extremity with the contact member 6", the latter being formed from metal, preferably having the quality of resiliency, and being suitably supported for service, as at the shoulder 2', and being insulated from all adjacent parts, save the wire 6', with which it contacts, the lower extremity of the latter leading from the interior of the extension 2" outwardly to engagement therewith, as by way of the lateral opening 7, with which the extension 2" is provided. The contact member 6" is of such a character that its free end normally makes connection with the post 7', extending through the disk 4 and insulated therefrom, as by means of the bushing 7", to connection with the inner end of the coil 4", the other end of the latter being grounded to the said magnet, in suitable connection with which a leading-out wire, as 8, is employed. In Fig. 1 I have shown a supplemental extension 8', which alines with the extension 2" and contacts therewith, and where this construction is adopted the shoulder 2', extension 2", and supplemental extension 8' form the leading-out circuit for connection with the wire 8.

The free end of the contact member 6" terminates in the line of movement of the catch 8", the latter of non-magnetic material and shown in the accompanying drawings as in the form of a washer fixed to or upon the adjacent end of the striker 5'. The purpose of the catch 8" will appear hereinafter. I also interpose between the catch 8" and the electromagnet proper an elastic element 9, illustrated in the drawings as in the form of a semi-elliptical leaf-spring, and the same tends to cushion the recoil of the striker 5' in the practical operation of my improved bell and serves a further purpose to be hereinafter explained.

Platinum contact-points are preferably employed, one at the free end of the contact member 6" and the other at the outer end of post 7', as in common practice, and the striker 5' is provided with service-tips 9' 9", one at each end thereof.

In connection with my improved bell I further make use of one or more resonant members, as 10 10', using a pair of such members varying in pitch or tone where a chime effect is desired. The members 10 10' are dished or cup-shaped, and when in position for service, as indicated in Fig. 1, open one toward

the other and substantially inclose and house the operative parts of my improved bell, thus well protecting such parts against the interference of foreign substances. As, however, the members 10 10' in practice should not contact one with the other, any slight quantity of water or the like that may find its way to the interior of the bell through the slight space which is permitted to intervene between said resonant members may escape therefrom by way of the same space or by way of a suitable opening or openings, as 10", formed in one or both of the members 10 10' and according to the position occupied by the bell. As here shown, the member 10' is located at the shoulder 3, and member 10 is located at the shoulder 2', with an intervening washer 11. They are held in position in any desired and well-known manner. I prefer, however, to provide each of the resonant members with a central threaded opening, so that, say, member 10' may be seated at the shoulder 3 by means of the threaded extension 3' and there securely held, as by means of a nut 11', and member 10 may be seated at the shoulder 2' or an intervening washer, as 11, by means of the threaded extension 2" and there securely held, as by means of the keeper 11", which latter is adapted to have a threaded engagement with the extension 2" after the manner of a nut and which serves also to duly space the bell proper from its supporting medium, as 12, and this supporting medium may be a member of a vehicle-body, as the base, a member of a building, or may be any other part adapted to support the bell in position for service.

Obviously the keeper 11" and supplemental extension 8' may in some instances be dispensed with; but where the former is employed and it is desired to fasten the same as a permanent fixture to the medium supporting the bell and at the same time permit ready detachment of the bell therefrom I prefer to make use of the latter or an analogous element or elements for accomplishing this end. As illustrated in the drawings, the extension 8' has a threaded engagement with the keeper 11" and extends through and somewhat beyond the supporting medium 12 to receive a nut 12' and intervening washer 12" if the latter is desired. It will be seen that with this construction and with the circuit-wires being suitably disconnected the bell proper may be removed from or returned to engagement with said keeper without affecting the latter.

In connection with my improved bell a battery or other suitable current or electric generator and a push-button, as 13, or analogous device are employed in circuit with the leading-in and leading-out wires 6' 8, as in common practice and as clearly indicated in Fig. 4.

In operation, the circuit being closed, as by properly manipulating the push-button 13, the striker 5' receives a reciprocating movement, for the reason that the electromagnet of the

bell attracts the armature 5", which, being fast on said striker, causes the latter to move longitudinally and rapidly in one direction against the tendency of the elastic element 6, during which movement of the striker catch 8" engages the free end of the resilient contact member 6" and urges it away from the post 7', thus breaking the circuit at that point, whereupon the striker 5' sustains a forcible thrust in the opposite direction through the medium of the elastic element 6, thereby causing catch 8' to recede from its engagement with the free end of the member 6" and permitting reestablishment of the circuit through the return of the free end of the member 6" to engagement with the post 7'. Then the armature 5" is again attracted by the magnet of the bell, as above described, and this operation is continued so long as the circuit is closed, as through the medium of the push-button 13, and a reciprocating movement is thus imparted to striker 5'. The movement of the striker 5' under attractive force between the magnet of the bell and the armature 5" is at all times cushioned by means of the elastic element 6, and the movement of said striker in the opposite direction is cushioned as it approaches its termination by means of the elastic element 9, the elements 6 and 9 being properly adjusted as to elastic tendency to yieldingly hold the striker out of contact with both of the resonant members 10 10' under normal conditions, and the elastic element 9 may or may not travel with the striker 5'.

As the resonant members 10 10' are arranged at right angles to the magnet-saddle and the line of movement or longitudinal axis of the striker is at an inclination to the axis of the magnet-saddle when said striker is moved in one direction, as under attractive force between the magnet of the bell and the armature 5", its tip 9" engages and quickly recedes from the resonant member 10', and on the return movement of said striker or its movement under the tendency of the elastic element 6 its tip 9" engages and quickly recedes from the resonant member 10, thus, where the members 10 10' vary in tone or pitch, producing a chime effect. It will be understood, however, that where this chime effect is not desired, or the inclosing of the operative parts is immaterial, one or the other of the resonant members 10 10' may be dispensed with, in which event the bell will have the character of a "single-gong" bell.

It will be seen that my improved electric bell is particularly well adapted for the purpose for which it is intended, and as the same may be modified to some extent without material departure from the spirit and principle of my invention I do not wish to be understood as limiting myself to the precise details of construction herein set forth.

Having fully described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. A bell comprising a magnet-saddle; a pair of cup-shaped resonant members duly supported and forming a substantial housing for said magnet-saddle; an electromagnet supported by said saddle; a striker arranged to reciprocate longitudinally along the axis of said magnet, and in a line intersecting both of said resonant members, the said striker being electrically controlled by the magnet; an electric generator; circuit connections between said generator and magnet, and means for controlling said circuit, substantially as herein specified.

2. A bell comprising an electrically controlled striker; a pair of cup-shaped resonant members duly supported and forming a substantial housing for said striker; means for supporting said members; an electric generator; circuit connections between said generator and striker, and means for controlling said circuit, the said striker being arranged for longitudinal reciprocating movement along a line intersecting both of said resonant members, substantially as herein specified.

3. A bell comprising a magnet-saddle having a hollow extension alining with the axis of the bell proper; a pair of cup-shaped resonant members duly supported and forming a substantial housing for said magnet-saddle; an electromagnet at said saddle; a reciprocating striker at said magnet and controlled thereby, said striker being disposed so as to reciprocate in a line intersecting both of said resonant members; an electric generator; circuit connections between said generator and magnet, and means for controlling said circuit, the said circuit connections comprising a portion disposed interiorly of said hollow extension, substantially as herein specified.

4. A bell comprising a magnet-saddle having a hollow extension alining with the axis of the bell proper; a pair of cup-shaped members, one of which is resonant, and the said members being duly supported and forming a substantial housing for said magnet-saddle; an electromagnet at said saddle; a reciprocating striker at said magnet and controlled thereby, said striker being disposed so as to reciprocate in a line intersecting both of said cup-shaped members; an electric generator; circuit connections between said generator and magnet, and means for controlling said circuit, the said circuit connections comprising a portion disposed interiorly of said hollow extension, substantially as herein specified.

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