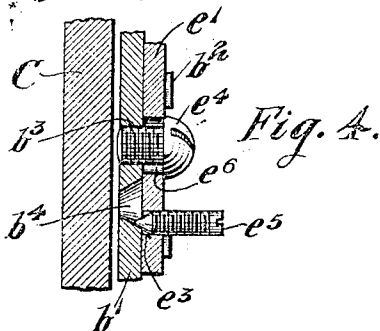
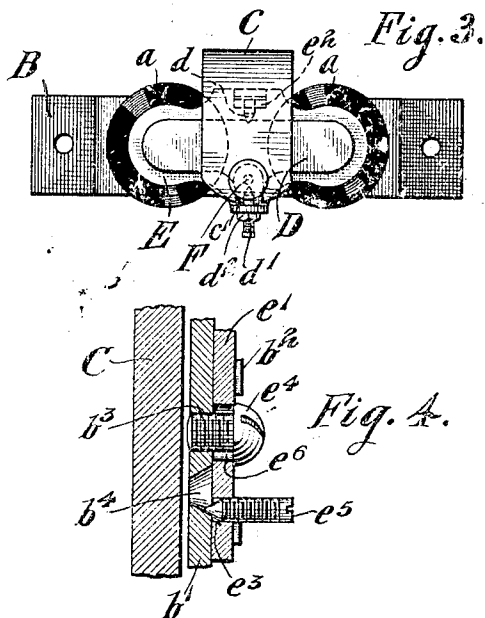
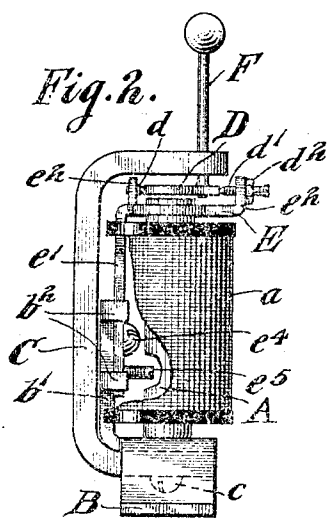
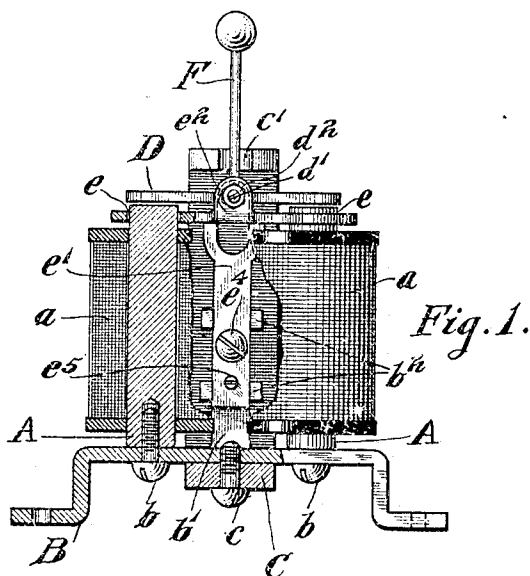


No. 819,083.

PATENTED MAY 1, 1906.

M. SETTER.
ELECTRIC BELL.
APPLICATION FILED OCT. 31, 1904.



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UNITED STATES PATENT OFFICE.

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ELECTRIC BELL

No. 819,083.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed October 31, 1904. Serial No. 230,758.

To all whom it may concern:

Be it known that I, MICHAEL SETTER, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric Bells, of which the following is a specification.

My invention relates to electric bells in general, but more particularly to the so-called polarized "ringers," employed, for example, at the subscriber's station of a telephone system, and especially to bells of this character having means for adjusting the armature relatively to the cores of the electromagnet.

Generally stated, the object of my invention is the provision of an improved and highly-efficient electric bell, and a special object is to provide an improved construction and arrangement for adjusting the armature relatively to the cores of the electromagnet and whereby said armature may be adjustably supported upon the bracket or cross-bar by which the two magnet-cores are rigidly connected together, and it is also an object, of course, to provide certain details and features of improvement tending to increase the general efficiency and serviceability of an electric bell of this particular character.

To the foregoing and other useful ends my invention consists in the matters hereinafter set forth and claimed.

In the accompanying drawings, Figure 1 is a front elevation of an electric bell embodying the principles of my invention, the gongs or resonating portions being shown removed for convenience of illustration and certain portions of the electromagnet and the bracket or cross-bar being shown broken away and in section. Fig. 2 is a side elevation of the device shown in Fig. 1, certain portions of the electromagnet being shown broken away. Fig. 3 is a top plan of the device shown in Fig. 1. Fig. 4 is an enlarged detail vertical section of the adjustable connection provided between the armature and the bottom bracket or cross-bar of the electromagnet.

As thus illustrated the bell or ringer comprises an electromagnet consisting of a pair of straight cores A, provided with coils a and connected at their lower ends by the supporting-bracket or cross-bar B. The said cores can be secured to the bracket or

cross-bar by means of screws b, inserted through the said bracket and into threaded sockets or openings in the ends of the said magnet-cores. By means of said bracket or cross-bar the bell or ringer as a whole can be secured to a suitable support. The permanent magnet C has its lower pole secured to the under side of the said bracket or cross-bar by means of a screw c. As shown, the upper pole of said permanent magnet extends across the top of the device and is provided with a recess c'. The vibratory armature D is positioned between the upper pole of the permanent magnet and the cores of the electromagnet. Preferably and as illustrated the said armature is carried by a yoke or armature-mounting E, provided with openings e, through which the cores of the electromagnet extend and having a stem or lower portion e'. This stem or upright portion of the said armature-mounting is adjustably secured to the upright standard or vertical portion b' of the bracket B. Said armature is supported by cone-shaped bearings d d', inserted through ears e² on the armature-mounting. It will be seen that the bearing d' consists of a pointed screw adapted to be held in any desired condition of adjustment by means of a lock-nut d². Any suitable means can be employed for adjustably connecting the armature-mounting with the bracket B. For example, and as a simple and efficient arrangement, the upright portion b' of the said bracket is provided with guides b², between which the portion e' may slide up and down. The said portion e' of the armature-mounting is provided with a slot e⁶ and with a threaded opening e³. A clamping-screw e⁴ extends through the slot e⁶ and engages a threaded opening b³ in the upright portion of the said bracket. An adjusting-screw e⁵ engages the threaded opening e³ and is provided with a tapered end portion adapted to engage the lower beveled surface of a tapered opening b⁴ in the bracket portion b'. The striker F is secured to the central portion of the armature and extends upwardly through the notch or recess c' in the permanent magnet.

With the foregoing construction the operation is as follows: The screw e⁴ is loosened sufficiently to allow the armature D to be brought down upon the cores of the electromagnet. The screw e⁵ is then tightened or

screwed inwardly until the said armature acquires the proper or desired distance from the ends of the electromagnet-cores. It will be seen that this adjustment is of an accurate and delicate character, inasmuch as the rotation of the screw e^5 causes the tapered end portion to gradually ride up the incline provided by the lower surface of the tapered opening b^4 . After the proper adjustment has been secured in this manner the screw e^4 can then be tightened for the purpose of clamping the portions b' and e' against further relative adjustment.

One of the objects of the foregoing construction is to secure a bell or ringer of a simple, compact, and economical character and adapted to give efficient service. It will also be seen that with the construction shown the three elements—to wit, the permanent magnet, the electromagnet, and the armature—are each mounted upon or carried by the main supporting-bracket B. In other words, the permanent magnet is secured directly to the said bracket and does not serve to support any other part of the device. The electromagnet is mounted directly upon the said bracket and does not support any other part of the device, although it does of course serve as a means for guiding the yoke E in its up and down movements, and the said armature is carried by the said bracket B and not by the permanent magnet or the electromagnet. Consequently the permanent magnet can be removed without removing any other portion. The construction is such that it facilitates the manufacture and proper adjustment of the different parts. It also facilitates the substitution and repair of the different parts, and in addition it will be seen that all of the parts with the exception of the two magnets can be stamped out of sheet metal.

It will be understood, of course, that the electric bell or ringer thus constructed can be mounted in different positions.

What I claim as my invention is—

1. An electric bell comprising a bracket, a permanent magnet secured to said bracket, an electromagnet also secured to said bracket, a mounting adjustably secured to said bracket, a vibratory armature carried by said mounting, said mounting being adapted to engage and slide upon the cores of said electromagnet, whereby the said armature will remain connected with the bracket when either the permanent or the electromagnet is removed, a striker secured to said armature and extending through the end portion of said permanent magnet, the said bracket and striker being disposed at opposite ends of said electromagnet, the said electromagnet comprising two coils sufficiently separated to afford access between them to the adjustable connection between the bracket and armature, for purposes of adjustment of the latter, the

entire adjusting means being located in a plane between the upper and lower ends of the electromagnet, and at a point close to the inner side of the permanent magnet, an adjusting-screw disposed at a right angle to the inner side of the permanent magnet, and means whereby the endwise movement of said screw shifts the armature in a direction at a right angle to such endwise movement.

2. An electric bell comprising a bracket, an electromagnet secured to the bracket, a permanent magnet also secured to the bracket, an armature-mounting adjustably connected directly with and carried by said bracket, said mounting being adapted to slide on the cores of the electromagnet, a vibratory armature mounted upon the said armature-mounting, whereby the said armature may remain mounted upon the said bracket when the two magnets are removed, a striker secured to said armature and extending through the end portion of said permanent magnet, the said bracket and striker being disposed at opposite ends of said electromagnet, the said electromagnet comprising two coils sufficiently separated to afford access between them to the adjustable connection between the bracket and armature, for purposes of adjustment of the latter, the entire adjusting means being located in a plane between the upper and lower ends of the electromagnet, and at a point close to the inner side of the permanent magnet, an adjusting-screw disposed at a right angle to the inner side of the permanent magnet, and means whereby the endwise movement of said screw shifts the armature in a direction at a right angle to such endwise movement.

3. An electric bell comprising a bracket, a permanent magnet having one pole secured to the outside of said bracket, an electromagnet secured to the inner surface of said bracket, an armature-mounting provided with an integral stem adjustably connected with an integral portion of said bracket, the said integral portion of the bracket extending toward the armature, and a vibratory armature mounted upon said armature-mounting, together with adjusting means comprising a screw applied to said integral portion and disposed at a right angle thereto, the said electromagnet comprising two coils sufficiently separated to afford access between them to the adjustable connection between the bracket and armature, for purposes of adjustment of the latter, the entire adjusting means being located in a plane between the upper and lower ends of the electromagnet, and at a point close to the inner side of the permanent magnet, and means whereby the endwise movement of said screw shifts the armature in a direction at a right angle to such endwise movement.

4. An electric bell comprising a bracket provided with an integral central upturned

vertical portion, an electromagnet secured to said bracket, a permanent magnet also secured to said bracket, an armature-mounting adapted to slide upon the cores of said electromagnet and provided with an integral stem portion adjustably connected with the said vertical portion of the bracket, and a vibratory armature mounted upon said armature-mounting, together with adjusting means comprising a screw applied to said integral portion and disposed at a right angle thereto, the said electromagnet comprising two coils sufficiently separated to afford access between them to the adjustable connection between the bracket and armature, for purposes of adjustment of the latter, the entire adjusting means being located in a plane between the upper and lower ends of the electromagnet, and at a point close to the inner side of the permanent magnet, and means whereby the endwise movement of said screw shifts the armature in a direction at a right angle to such endwise movement.

5. An electric bell comprising a bracket, an electromagnet secured to said bracket, a permanent magnet secured to said bracket, said bracket having a bevel, an armature-mounting provided with a threaded opening, a screw inserted in said threaded opening and having its end engaging said bevel, and an armature carried by said armature-mounting, said armature being adjustable relatively to the electromagnet cores by adjusting said screw.

6. An electric bell comprising a magnet, a support, a vibratory armature, and an adjustable connection between said armature and support, said connection comprising a screw carried by one part and adapted to engage a beveled surface on another part, whereby the adjustment of said screw effects an adjustment of the armature relatively to said magnet.

7. An electric bell comprising a bracket provided with an upturned vertical portion having guides, an electromagnet secured to said bracket, a permanent magnet also se-

cured to said bracket, an armature-mounting provided with a stem adapted to slide up and down between said guides, the said upturned portion of the bracket being provided with a bevel, and the said stem having a screw adapted to engage said bevel, another screw for clamping the stem and upturned vertical portion of the bracket tightly together, and an armature carried by said armature-mounting.

8. An electric bell comprising a bracket, an electromagnet, a permanent magnet, a yoke positioned between the electromagnet and the adjacent pole of the permanent magnet, said yoke being adapted to slide upon the cores of said electromagnet, and the adjacent pole of the permanent magnet having a recess or opening, an armature pivotally mounted upon said yoke, the armature being located between the yoke and the adjacent pole of the permanent magnet, a striker carried by the said armature and projecting through the said recess or opening in the permanent magnet, the said bracket and striker being disposed at opposite ends of said electromagnet, the said electromagnet comprising two coils sufficiently separated to afford access between them to the adjustable connection between the bracket and armature, for purposes of adjustment of the latter, the entire adjusting means being located in a plane between the upper and lower ends of the electromagnet, and at a point close to the inner side of the permanent magnet, an adjusting-screw disposed at a right angle to the inner side of the permanent magnet, and means whereby the endwise movement of said screw shifts the armature in a direction at a right angle to such endwise movement.

Signed by me at Chicago, Cook county, Illinois, this 25th day of October, 1904.

MICHAEL SETTER.

Witnesses:

A. E. KEITH,
R. C. GIFFORD.