No. 829,381. PATENTED AUG. 28, 1906.

S. A. BEYLAND.

ELECTRIC BELL.

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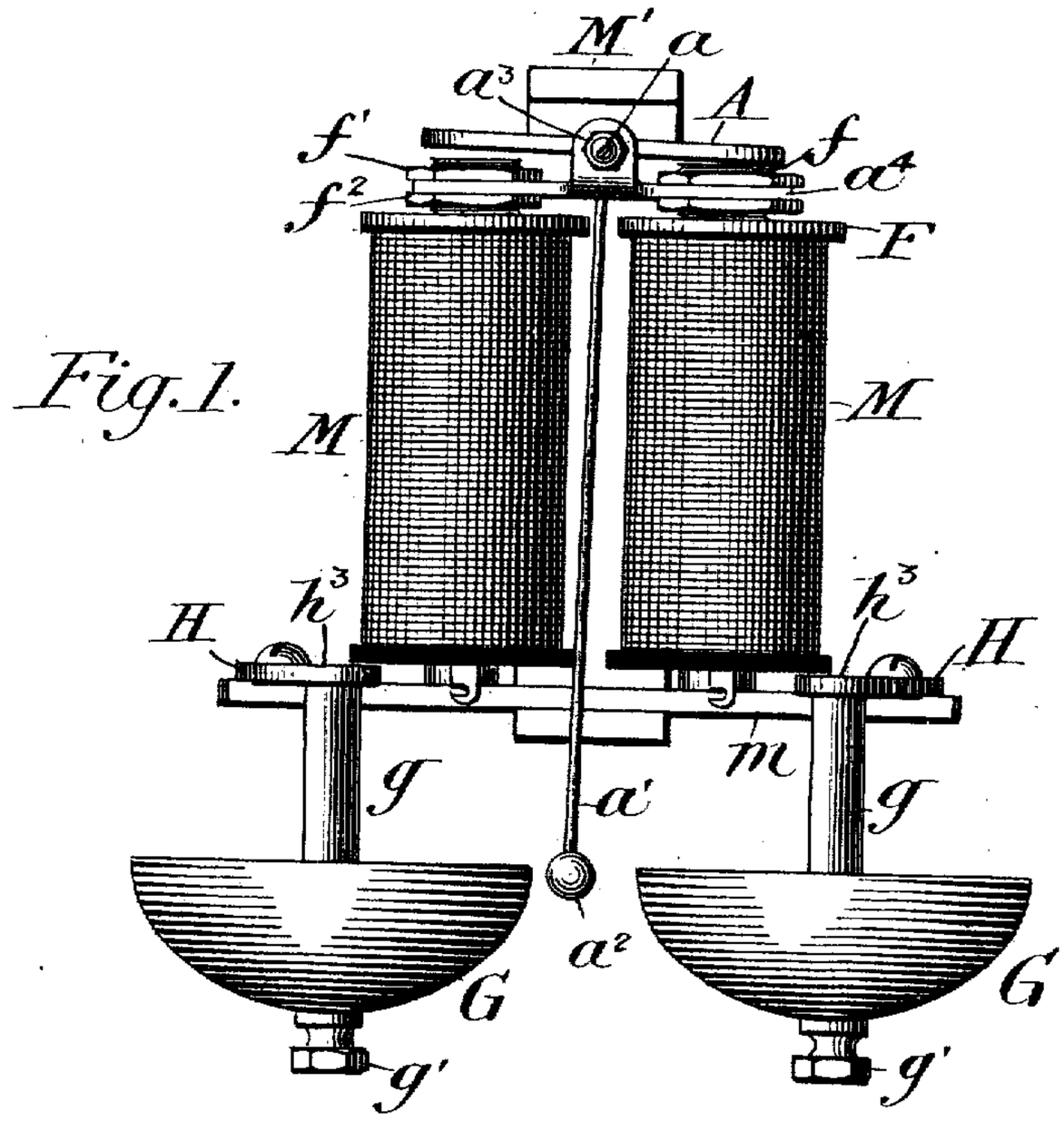
Fig. 1.



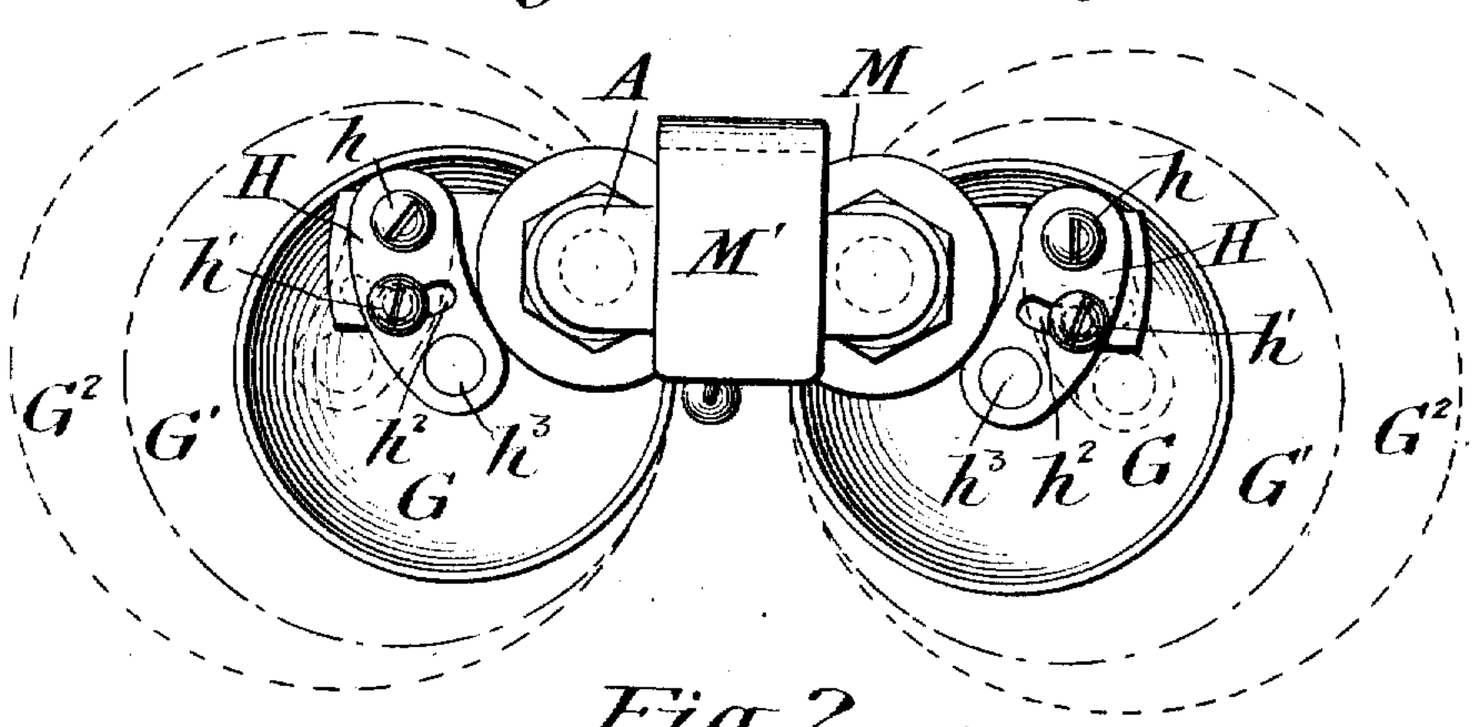


Fig. 2.

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UNITED STATES PATENT OFFICE.

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ELECTRIC BELL.

No. 829,381. Specification of Letters Patent. Patented Aug. 28, 1906.

Application filed April 22, 1904. Serial No. 204,399.

To all whom it may concern:

Be it known that I, SIDNEY A. BEYLAND, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Electric Bells, of which the following is a specification, reference being had herein to the accompanying drawings.

My invention relates to bells, and particularly to those in which it is necessary to adjust the position of the gongs with relation to the clappers or other parts.

It is the object of my invention to provide means for such adjustment which shall be simple, efficient, and easy to manipulate and which at the same time shall permit of a considerable variation in the size or position of the gongs.

I attain my object by mounting each gong upon a pivoted support, preferably attached to the frame of the bell, and making this support irregular in shape, so that it will afford a certain play in one direction and when reversed will afford the same amount of play in the other direction. A double amount of motion is thus secured without changing the parts and without sacrificing delicacy of adjustment.

In all bells it is essential that a certain amount of adjustment shall be provided for between the clapper or striker and that part of the gong upon which it impinges. While I recognize the fact that my invention is thus applicable to bells which are operated by mechanical means as well as to those in which the energy is applied electrically, I have designed it for the latter class in particular, and in the present case I shall illustrate and describe it as embodied in a polarized electric bell of the type employed in telephone systems. Such a bell is usually mounted upon a subscriber's telephone set, affording means of advertising a call for his station. Bells of the same kind are also used for divers purposes in central stations—as, for instance, in connection with what are known as "gong-boards," whereon bells of different tones replace the ordinary annunciator-drops. On such a board gongs of different sizes and tones are employed, sometimes to the number of thirty or forty, including those of such different types as sleigh-bells, cow-bells, domed bells, and flat gongs. Since their diameters vary as widely as their types and tones, it follows that it has been difficult or impossible to provide a standard mounting to take all of them. Again, at subscribers' stations it is frequently necessary or desirable to vary the tones of the gong; as in party-line work, or in cases where there are several telephones in one place. In party-line work where selective signaling is practiced, employing currents of different frequencies, gongs of correspondingly different sizes and tones are often employed. A due regard for economy forbids the provision of a different mounting for every gong, and yet it has been found impossible heretofore to provide a standard mounting that would take all the sizes interchangeably.

My present invention obviates all the difficulties stated, with many others, and renders it possible to employ one standard set of parts for the ringer, uniform in their assembling and uniform in size, even to the gong-posts, gongs of widely-varying size and shape being supported by these gong-posts interchangeably, provided only that the striking-points are approximately the same distance from the bases. Even this is not necessary, however, if clapper-rods of proper corresponding lengths are provided.

In describing my invention hereinafter I shall assume that plain gongs of standard type and of diameters from two to three inches each are to be employed. As this is a purely arbitrary assumption, I do not, of course, limit myself thereby, although these are the dimensions most frequently met with in practice.

My invention is fully illustrated in the accompanying drawings, wherein—

Figure 1 is a side view of a polarized electric bell embodying my invention, and Fig. 2 is a top plan view thereof with gongs of different sizes indicated in dotted lines.

In the drawings, M indicates a pair of electromagnets mounted upon a yoke bar or base *m*, which carries also the permanent magnet M′, by whose influence the cores and armature A are maintained polarized, so that the armature moves in response to alternating or reversed currents only. This armature carries a clapper-rod *a*′ and a clapper

a^2, the latter playing between gongs G and striking each in turn as the armature oscillates upon its pivots a. Each gong is secured upon a post g, preferably by means of a cap-nut g'. Each gong-post is riveted or otherwise rigidly attached at h^3 to one end of a curved plate H, which is pivoted at its other end upon a screw h, tapped into the yoke-bar m. The plate H is provided with a transverse slot h^2 for the accommodation of a limiting set-screw h', which is also tapped into the yoke-bar m. The slot h^2 is preferably curved, the center of curvature being in the axis of the screw h; but this is not essential, provided the width of the slot is made a little greater than the diameter of the shank of the screw h'. In connection with this form of adjuster I have illustrated in the drawings a method of armature adjustment which I prefer to use. The armature is pivoted at a between upturned ears a^3 on a yoke a^4. This yoke has its ends perforated, forming rings which encircle flanges f, secured to the upper spool-heads F of the electromagnets M. The flanges f are screw-threaded, and suitable adjusting and locking nuts f' f^2 are fitted thereon, lying, respectively, above and below the ends of the yoke a^4.

The method of assembling and adjusting the bell thus described will now be apparent. The electromagnets and the permanent magnet having been mounted upon the base or yoke m, the armature is first adjusted by moving one end or the other of its yoke up and down until its opposite strokes are equal and of maximum strength. The nuts f' and f^2 are then set up, so as to render this part of the adjustment permanent. Assuming then that two-inch gongs are to be used, as shown in full lines at G in the drawings, the curved plates or horns H are secured to the yoke m, with their ends inclining inward from the pivots, as shown in Fig. 2. Each plate may now be moved upon its pivot-screw h until its gong bears exactly the proper relation to the clapper a^2, when the set-screws h' are tightened to lock the plates against subsequent movement. To render the adjustment more secure, the pivot-screws h may likewise be set up tightly, a double binding effect upon the plates being thus possible. If each slot h^2 is of proper length to permit a motion of one-fourth inch from center to center of the extreme positions of the screw h' therein, the gong-post and gong-centers will then have a play of one-half inch, with the plates H in the positions shown in Fig. 2—that is to say, any size gong from the two-inch shown in solid lines at G to the two-and-one-half-inch shown in dotted lines at G′ can be accommodated and can be adjusted with regard to the clapper. If it be desired to use a still larger gong, I reverse the plates H. If the gong-posts G were detachably secured to the plates, this reversal could be attained by removing the posts and turning the plates upside down. The gong-posts are usually riveted to the plates, however, and the simplest way is to exchange the plates, that shown in full lines upon the right in Fig. 2 being applied as indicated in dotted lines at the left of the same figure, and vice versa. The innermost limit of movement of the gong-post center h^3 is now in the line through the centers of the two screws h h', and the outermost limit is that shown in dotted lines. As this gives a play of one-half inch and as the innermost limit calls for a two-and-one-half-inch gong, any gongs may now be used between the two-and-one-half inch size (indicated at G′) and the three-inch, (indicated at G².) The adjustment with regard to the clapper a^2 is the same in any case through the entire range of movement. The armature adjustment also remains the same throughout the entire range of adjustment of the gongs, and this adjustment is in every case rendered permanent by simply tightening up the screws h' and h, as already stated.

It will be observed that in this bell the number of parts is reduced to a minimum and the design is such that a very rigid frame is produced, composed of the operative parts, all of which are adjustable and all of which are standard and interchangeable throughout. The only parts that need vary in size or style are the gongs themselves.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A ringer comprising a supporting-frame, a gong-supporting member reversably secured thereon and normally adjustable in one direction but when reversed adapted having an equal range of adjustment in the opposite direction which forms with the first movement a continuous path of adjustment from a given point.

2. In a ringer, the combination with a support, of an arc-shaped member reversably pivoted to said support, a gong-post secured to said member, a gong thereon, and means intermediate the pivot and gong-post for adjusting said member when in either position from a given point so as to form a continuous arc of adjustment.

3. A ringer comprising a gong, a clapper and its actuating parts, a gong holder or support having a limited range of movement normally in one direction with respect to the clapper, together with interchangeable connections therefor whereby the direction of movement may be reversed and the range of adjustment continued in the opposite direction and thereby doubled.

4. An electric bell provided with a base or frame, a clapper, a pair of adjustable gong-supports pivotally secured to the base on op-

posite sides of the clapper, and adjusting means intermediate the pivot and the gong-posts, each of said supports having a limited range of travel from a median line through the pivot the adjusting means and the gong-post, toward the clapper when in their initial position, and when reversed or interchanged to have a range of travel from the same median line in the opposite direction or away from the clapper.

In testimony whereof I have affixed my signature in presence of two witnesses.

SIDNEY A. BEYLAND.

Witnesses:

RAY H. MANSON,

WM. W. DEAN.