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1,479,217

W. H. BRADLEY

ELECTROMAGNETIC BELL

Filed Dec. 26, 1918

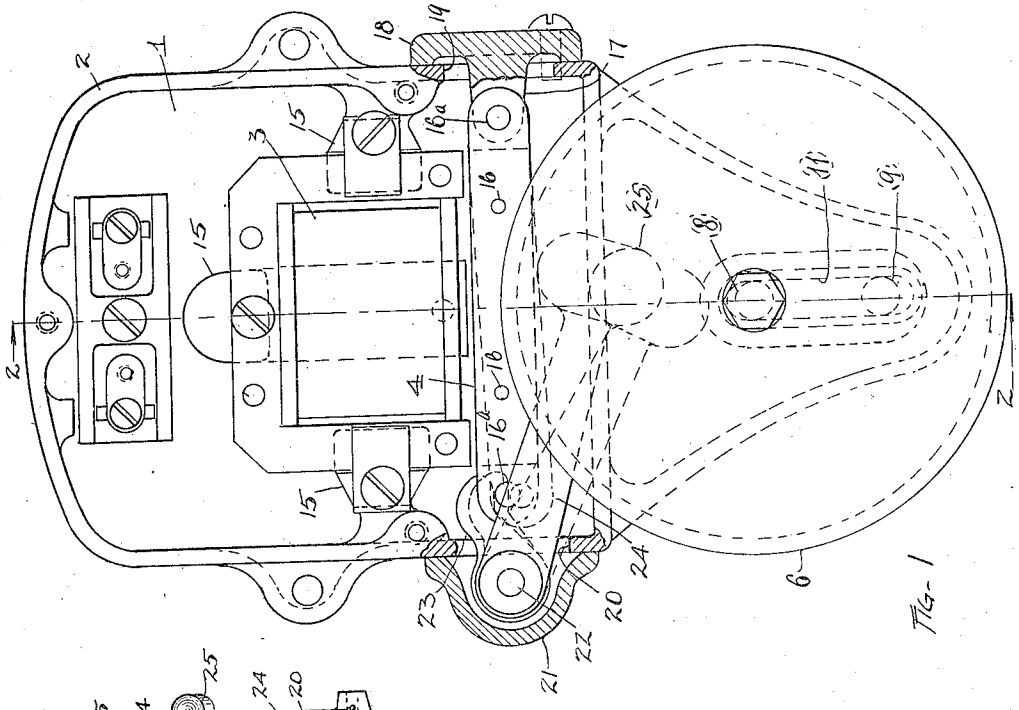

FIG. 1

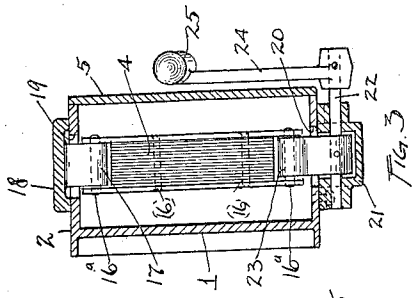

FIG. 3

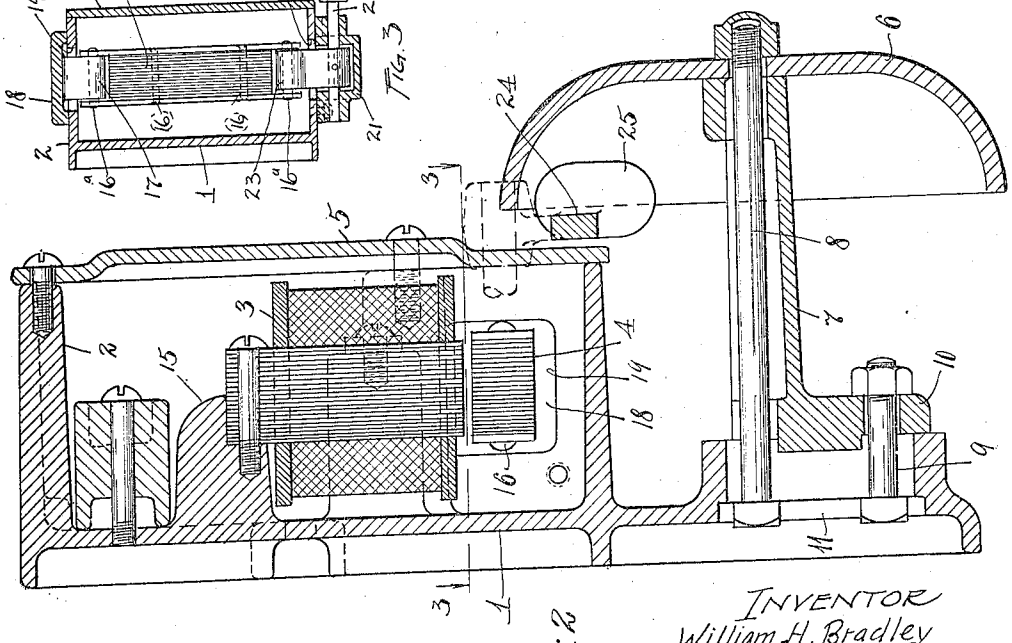

FIG. 2

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UNITED STATES PATENT OFFICE.

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ELECTROMAGNETIC BELL.

Application filed December 26, 1918. Serial No. 268,236.

To all whom it may concern:

Be it known that I, WILLIAM H. BRADLEY, a citizen of the United States, and a resident of Shelby, county of Richland, and State of Ohio, have invented a new and useful Improvement in Electromagnetic Bells, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The object of the present invention is the provision of a bell of the type indicated, which will be simple and compact in construction and involve a minimum of operative parts, whereby the bell is rendered specially suitable for use in call and alarm systems. A further object is to arrange the parts so that the electro-magnet and armature may not only be safely housed, but so disposed that moisture collecting either on the housing or on the gong cannot readily enter within such housing.

To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims, the annexed drawing and the following description setting forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing:—

Fig. 1 is a front elevation of my improved bell, with a portion of the casing broken away or shown in section; Fig. 2 is a vertical transverse section of the bell taken on the plane indicated by the line 2—2, Fig. 1; and Fig. 3 is a horizontal transverse section on a somewhat reduced scale, taken on the plane indicated by the line 3—3, Fig. 2.

The various operative parts of the bell are all carried on a back or base plate 1, preferably of metal, from the upper portion of which projects a deep integral flange 2 that forms the side walls of the casing, in which the electro-magnet 3 and armature 4 are housed. A plate 5 secured to the face of this side wall by means of screws (see Figs. 2 and 3) completes such housing. The gong 6 is carried on a bracket 7 attached to the lower portion of the back or base plate by means of the long bolt 8, that secures the gong to said bracket, and a supplemental shorter bolt 9 passing through a depending lip 10 on the bracket. The heads of these bolts are held in a vertical slot 11 in the portion of the base plate referred to, whereby a certain limited amount of adjustment of the gong in a corresponding direction is rendered possible; and, if desired to accommodate a larger size gong than that illustrated in the several figures of the drawing, the position of the bracket 7 may be reversed, so that the lip 10 projects upwardly, and the axis of the gong brought to coincide approximately with the axis of the shorter bolt, as illustrated in the figures in question. By the foregoing means, gongs of various sizes may be used without substitution of other parts.

The electro-magnet 3, which is of more or less familiar construction, is secured to the portion of the base plate enclosed by the side walls 2 previously described through the medium of short studs or lugs 15 projecting from such plate. As shown in Fig. 2, the core of the magnet is of laminated construction, as is also the movable armature 4, although either or both may be of solid construction, if desired. In the illustrated construction, the armature comprises a plurality of intermediate plates and two side plates of somewhat greater length, whereby they are caused to project at each end, solidly riveted together, and in addition to the rivets 16, that serve this purpose, other rivets or pins 16^a pass through such ends, so as to be clear of the intermediate plates, as shown in Fig. 3. One such rivet 16^a (the one at the right-hand in the position of parts shown in Fig. 1) is pivotally held in a lug 17, that projects inwardly from a plate 18 through an aperture 19 in the corresponding side wall of the casing and fits between the side members of the armature. Plate 18 is detachably secured to such side wall, so that upon loosening same the armature can be withdrawn from the casing or inserted, as may be desired.

The opposite side wall of the casing is formed with a similar aperture 20 likewise covered by a plate 21 detachably secured to such wall, but having the form of a hollow boss, in which suitable transversely aligned bearings are formed for an oscillatory spindle 22. Keyed or pinned to the portion

of this spindle lying within the boss, is a short lever arm 23 of the form best shown in Fig. 1, which projects through the adjacent aperture into engagement with the pin 16[a] on the free end of the armature 4; while on the forward end of the spindle, which extends some distance through the boss, is similarly keyed or pinned a striker or hammer arm 24, the free end of which is formed with an enlarged head 25 and lies in the proper plane to strike the edge of the gong 6 from within, when such gong is secured in proper position on the base plate, in a fashion hereinbefore described.

The armature and striker-arm are thus seen to lie between the gong and electro-magnet, transversely of a line passing through their axes, the striker-arm being pivotally attached to the base on one side of such line and the armature on the other.

The weight of the striker is sufficient normally to depress the same into the position shown in Figs. 1 and 2, in which position the armature 4 is clear of the magnet core, but upon the electro-magnet 3 being energized, said armature is drawn upwardly against the core, whereby its free end, acting on the short arm 23 on the spindle 22, raises the striker head into contact with the gong, so as to sound the latter.

The operation of my improved bell has been sufficiently indicated in connection with the description of the several parts. It should, however, be specially noted that, as illustrated in Figs. 2 and 3, the electro-magnet and armature, as well as the electrical connections with the former, are entirely included within the casing formed by the flange 2 and cover plate 5; yet the armature, as well as the spindle which carries the striker, are so mounted as to render them both readily accessible, not only for the purpose of assembly, but also for examination and repair should this become necessary in the course of use of the bell. Furthermore, such adjustments are provided, particularly for the gong, as render the bell capable of use under a wide variety of conditions. Finally, the gong, being disposed not only wholly without the casing, in which the electro-magnet and other operative parts are housed, but below the same, it is rendered impossible for moisture to collect on such gong, as it is apt to do in damp locations, and, dripping therefrom, to find its way into the interior of the casing.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a device of the character described, the combination of a suitable base, a gong and an electro-magnet mounted thereon, a striker-arm for said gong, and an armature for said electro-magnet operatively connected with said striker-arm, the latter and said armature having pivots disposed on opposite sides of said base and located in a plane extending transversely at right angles to a line passing through the axes of said gong and electro-magnet, and the free end of one of said members extending toward the pivoted end of the other, respectively.

2. In a device of the character described, the combination of a suitable base, a gong and an electro-magnet mounted thereon, the latter above the former, side-walls and a cover-plate encasing said electro-magnet, apertures in the same horizontal plane in opposite side-walls, detachable plates covering such apertures, and a striker-arm and armature pivotally attached at their outer ends to said detachable plates, respectively, and each independently removable from said casing, the inner end of said armature being unattached to but operatively associated with said striker-arm.

3. In a device of the character described, the combination of a suitable base, a gong and an electro-magnet mounted thereon, the latter above the former, side-walls and a cover-plate encasing said electro-magnet, apertures in opposite side-walls, detachable plates covering such apertures, an armature for said electro-magnet pivotally attached at one end to one of said detachable plates and removable therewith from said encasing side-wall, a spindle oscillatory in the other detachable plate and removable therewith from said encasing side-wall, a lever-arm on said spindle lying within said cover-plate and adapted to be directly engaged by the free end of said armature, and a striker for said gong attached at one end to said spindle and lying without said cover-plate.

4. In a device of the character described the combination of a suitable base having an elongated slot adjacent one end, a bell-supporting bracket having an elevated standard with an integral lateral extension at its foot, the base of said bracket being adapted to slidingly engage the edges of the slotted portion of the base with the standard disposed at either end of said slot, a bolt adapted to be engaged with the base and the lateral extension of the bracket, and a second bolt associated with said standard and secured to said base and bell.

Signed by me, this 23d day of December, 1918.

WILLIAM H. BRADLEY.