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ALTERNATING CURRENT BELL

Filed March 26, 1929

2 Sheets-Sheet 1

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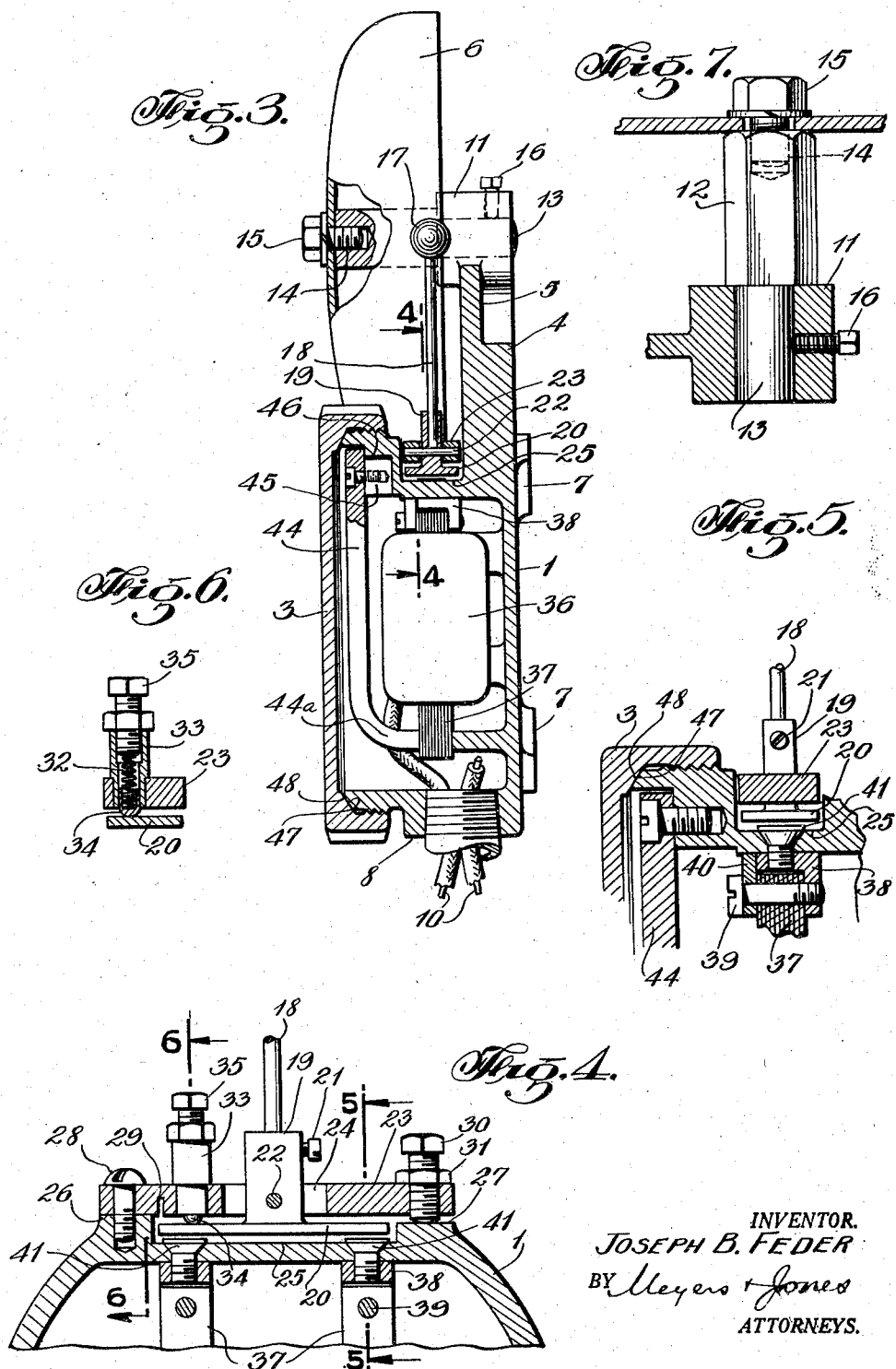
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UNITED STATES PATENT OFFICE

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ALTERNATING-CURRENT BELL

Application filed March 26, 1929. Serial No. 350,086.

This invention is an improvement in alternating current bells, and more particularly in bells of this type designed for marine use.

One of the primary objects of the present invention is the provision of a bell of the class described, wherein all of the operating parts of the bell which are susceptible to injury by moisture are within a water-tight casing.

Another object is the provision in such a bell of a striker so connected with the armature, and so mounted, that the striker and armature are balanced, so that water pressure, for instance, is the same on both ends of the armature, and there is no tendency on the part of such pressure to disturb the operation of the striker.

Another object is the provision of a new and improved type of support for the striker and armature, so constructed as to enable the limited amount of adjustment required, without disturbing the balance of the striker.

Another object is the provision of a new and improved type of support for the bells and the operating parts.

Another object is the provision of a new and improved method of adjustable mounting for the bells, enabling their relative position with respect to each other and the striker to be varied.

With these and other objects in view the invention consists in the construction and novel combination of parts fully described hereinafter, illustrated in the accompanying drawings, and pointed out in the claims appended hereto, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims, may be resorted to without departing from the spirit of the invention.

In the drawings forming a part hereof:—
Fig. 1 is a front view of the improved bell with parts broken away.

Figs. 2 and 3 are sections on the lines 2—2 and 3—3 respectively, of Fig. 1.

Fig. 4 is a section on the line 4—4 of Fig. 3.

Figs. 5 and 6 are sections on the lines 5—5 and 6—6 respectively, of Fig. 4.

Fig. 7 is a side elevation of one of the bell supporting posts.

In the embodiment of the invention shown,

the improved bell includes a substantially cup-shaped casing 1, the open top of which is adapted to be closed by a flanged cover 3, the cover and casing body having threaded engagement as shown. A substantially T or Y shaped extension is integral with the body, the extension comprising a body 4 radial to the casing, and diverging arms 5 to which the bells 6 are connected. The casing has perforated lugs 7 extending radially therefrom at suitable intervals, for enabling it to be connected to a suitable support, by means of screws or the like, passing through the lugs. The casing has an internally threaded nipple 8 opposite the extension 4—5, into which is engaged the conduit 9 carrying the supply wires 10 of the circuit.

Each of the bells is supported by a post of the character shown in Fig. 7. Referring to Fig. 1, it will be seen that each of the arms 5 has two hubs 11, and each of the posts 12 has an eccentric reduced portion 13 engaging one of the hubs 11, the hub engaged depending upon the size of the bell. With bells of the size shown, the posts are engaged with the outer hubs, while with small bells the posts would be engaged with the inner hubs, the eccentric reduced portions 13 of the posts being shaped to fit the hubs.

Each post has an internally threaded axial opening 14 at the end remote from the eccentric reduced portion 13, which is adapted to receive a screw 14 passing through a central opening in a bell, whereby to clamp the bell to the post, and a set screw 16 is provided, passing through the hub 11, and engaging the eccentric portion, to hold it in adjusted position.

The striker 17 is connected to one end of an arm 18, the other end of which is received in a central boss 19 on an armature plate 20 supported in a manner to be later described. The arm may be held in place in the boss by a set screw 21 as shown, or in any other suitable manner, and the entire structure, including the striker, the arm, the armature, the boss and the set screw, are balanced on a pivot pin 22 passing through the boss. The ends of the pivot pin are engaged in openings in an adjusting bar 23, the said bar having a central

opening 24 through which the boss passes. The peripheral surface of the case at the extension 4—5 is shaped to provide a depression 25, having a plane bottom, parallel with a diameter of the case.

5 The depression is formed to provide ledges or shoulders 26 and 27 at opposite ends thereof, and the bar 23 before mentioned, is connected to the shoulder 26, by means of a screw 28, as shown more particularly in Fig. 4. Thus the armature 20 is within the depression, between the bar and the bottom 25 of the depression.

10 Referring to Fig. 4, it will be seen that a transverse notch 29 is provided in the underside of the bar 23, near the shoulder 26, in order to provide resiliency, and at the opposite end the bar has an adjusting screw 30, which bears upon the shoulder 27, and has a lock nut 31. It will be apparent that by turning the screw, the free end of the bar may be adjusted toward or from the case, whereby to adjust the armature 20 with respect to the magnets to be described.

15 A bias spring 32 is provided in connection with the armature, the said spring being arranged in a sleeve 33 held in an opening in the bar 23, near the notch 29, between a button 34 engaging the adjacent end of the armature and an adjusting screw 35 having threaded engagement with the other end of the sleeve. A lock nut, as shown in Fig. 6, is provided for holding the screw in adjusted position. It will be apparent that by turning the screw in the proper direction, the tension of the bias spring, and the pressure of the button on the armature may be varied.

20 The coils indicated at 36 are arranged within the case, being connected to the bottom thereof as shown in Fig. 3, and the cores 37 of the coils are held at their upper ends to the side wall of the case, by means of an angle bracket 38. This bracket is secured to the ends of the cores by means of a screw 39, passing through a plate 40 on the front of the cores, through the cores, and into one of the portions of the angle plate, the other being secured to the side wall of the case by means of screws 41. The screws 41 pass through the case, and the heads thereof, as shown in Figs. 4 and 5, are at the ends of the armature in the depression 25.

25 The conductor or lead wires 10 are connected with terminals 42 held in the casing, the terminals being connected with the windings 43 of the coils in the usual manner. In front of the coils is a permanent magnet 44—44' of L shape, one of the arms 44 thereof being secured to a magnet block 45, held in a rabbet 46 in the casing wall, two screws being provided, as shown in Fig. 1. The magnet arm 44 extends down in front of and between the coils, the other arm 44' thereof abutting the lower ends of the cores, as shown.

The screws 41 provide extensions for the cores, and as the alternating current traverses the windings of the coils, the screws will alternate in polarity, imparting a vibrating movement to the armature, which will operate the striker. The striker and associated parts are movable toward and from the heads of the screws 41, by means of the adjusting screw 30, thus permitting a very nice adjustment. When the cover 3 is screwed down tight onto the cup shaped body, the casing is water-tight. Cooperating beveled surfaces 47 on the body and 48 on the cover are provided for making a tight seal.

30 With the cover in place, all of the operating parts of the bell, and all of the parts which might be injured by water or the like, are protected. Whatever the amount of pressure on the armature the striker is not thrown out of balance, since the pressure is equal on opposite sides of the striker. Furthermore, the manner of adjustment permits the striker arm and associated parts to be moved toward and from the core extensions 41 as a unit, and without disturbing the balance of the striker arm and associated parts with respect to their support 23.

35 It will be apparent that the device might be used as a buzzer, with the bells and striker eliminated. The construction and operation is the same, and the armature mounting serves the same purpose, that is, to balance the armature.

What is claimed as new is:—

1. In a device of the class described, including a case, a resilient bar secured at one end to the case and provided at the other end with an adjusting screw engaging the case, said bar having a slot intermediate its ends, and an armature between the bar and the case and provided with a boss extending into the slot and pivoted to the bar, said armature being balanced with respect to the bar for the purpose set forth.

2. In a device of the class described, a striker assembly, including a striker, and an armature in the form of a plate to the center of which the striker is secured, a bar having a slot in which the striker is pivoted with the armature on the opposite side of the bar from the striker, said bar having means at one end for fixedly connecting it to the case, and an adjustment screw at the opposite end for engaging the case, said bar being resilient for the purpose set forth.

3. In a device of the class described, including a water-tight case enclosing an electro-magnet having cores, the case having screws extending through the periphery thereof at the cores, and having an external plane surface through which the screws pass, and a striker mounting at the flattened surface including a bar connected at one end to the case and provided at the other with an adjusting screw, said bar having a central

opening, and a striker provided with a plate-like armature from the center of which the striker extends, pivoted in the opening with the armature between the bar and the case. between the bells, and the assembly being balanced on the pivot.

Signed at New York city, in the county of New York and State of New York, this 25th day of March A. D. 1929.

JOSEPH B. FEDER.

- 5 4. In a device of the class described, a water-tight case, electro-magnets supported therein, the polar extremities of the magnets extending through the wall of the case, said case having a plane surface at the polar extensions, a supporting bar secured at one end to the plane surface and having an adjusting screw at the other for engaging the surface to adjust the bar to and from the case, the bar having an opening, and a striker pivoted in the opening and having an armature extending transversely of the striker and cooperating with the polar extensions between the bar and the case. 70
- 10 5. In a device of the class described, including a case, a resilient bar secured at one end to the case and provided at the other end with an adjusting screw engaging the case, said bar having a slot intermediate its ends, an armature between the bar and the case and provided with a boss extending into the slot and pivoted to the bar, said armature being balanced with respect to the bar for the purpose set forth, adjustable means supported by the bar near its connected end and engaging the armature to bias the same. 75
- 15 6. In a device of the class described, including a water-tight case having a plane surface on the peripheral surface thereof, electro-magnets supported in the case and having the polar extremities thereof extending through the wall at opposite ends of the plane surface, a resilient supporting bar secured at one end to the plane surface and having an adjusting screw at the other for engaging the case to adjust the bar to and from the case, the bar having a central opening, and an armature having a central boss pivoted in the opening, the ends of the armature cooperating with the polar extensions between the bar and the case, said armature and boss being balanced to bias the armature to lie parallel with the plane surface during the adjustment of the bar. 80
- 20 7. In an alternating current bell, including a cup shaped case, provided with a branched bracket extending radially from the case, bells adjustably connected with the branches, said case having a plane portion at the base of the bracket and extending parallel with a diameter of the case, a bar secured at one end to the flattened portion and having an adjusting screw at the other end to raise and lower said end, said bar being slightly resilient, and having a slot extending longitudinally thereof intermediate its ends, a striker pivoted in the slot and provided with an armature between the bar and the casing, said striker being at the center of the armature, and extending upwardly 85
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