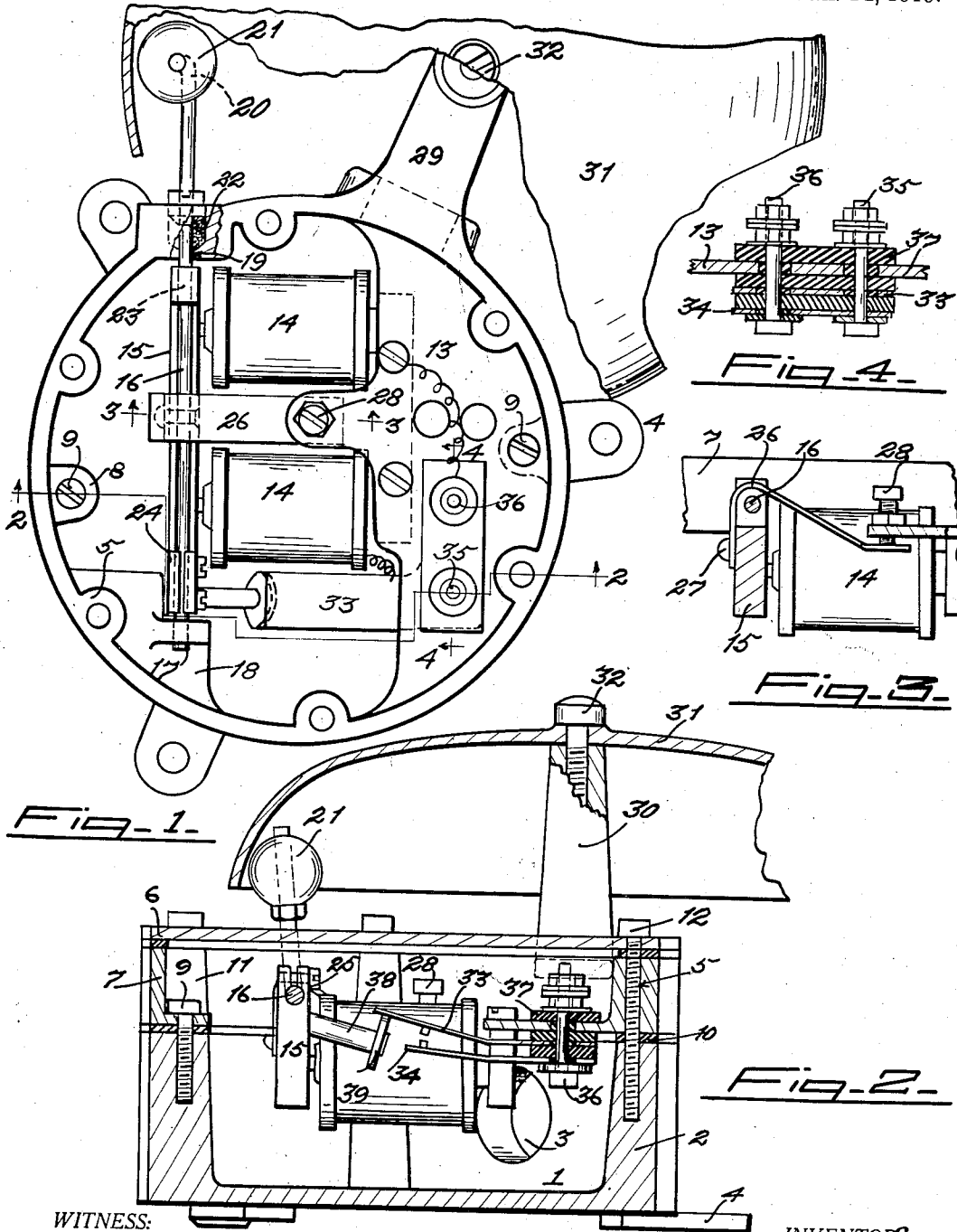


P. C. & C. F. BUTTE.
 WATER TIGHT ELECTRIC BELL MECHANISM.
 APPLICATION FILED JAN. 17, 1918.

1,290,901.

Patented Jan. 14, 1919.



WITNESS:

Wm F. Drew

INVENTORS

Paul C. Butte

BY *Charles F. Butte*

Acker & Tollen
 ATTORNEYS.

UNITED STATES PATENT OFFICE.

PAUL C. BUTTE AND CHARLES F. BUTTE, OF SAN FRANCISCO, CALIFORNIA.

WATER-TIGHT ELECTRIC-BELL MECHANISM.

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Specification of Letters Patent.

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Application filed January 17, 1918. Serial No. 212,202.

To all whom it may concern:

Be it known that we, PAUL C. BUTTE and CHARLES F. BUTTE, citizens of the United States, residing at the city and county of San Francisco and State of California, have invented certain new and useful Improvements in Water-Tight Electric-Bell Mechanism, of which the following is a specification.

10 The present invention relates to improvements in electric bells, and more particularly to that type of bells commonly termed water-tight, designed for use in marine work, particularly war vessels.

15 In the installation of bells of this type, it is a common practice to install the conduits during the construction of the vessel, and then at the designated points to connect an outlet box therewith, the box being closed during such construction by a removable cover plate. On the completion of the installation, it is the present practice to remove this temporary cover plate and to close the outlet box by a plate carrying the bell and operating mechanism, this being connected in circuit to the controlling wires extended into the outlet box through the conduit. In adjusting the bell operating mechanism of an installation of this type, it is necessary to remove the cover in order to obtain access to the mechanism carried on the underface of the same, and in this operation the electric connection becomes loose and broken, often causing an interruption of the bell service at a time most desired.

20 The present invention relates to a construction of this type, and the principal objects of the same are to provide a frame or a ring for attachment to the outlet box or shell, the frame carrying the entire bell mechanism, and closed by a cover plate for closing the outlet box; thus to make adjustment of the mechanism it is only necessary to remove the cover plate therefrom without disturbing or removing the bell mechanism from the outlet box, and at the same time enabling the cover plate to be directly secured to the outlet box when the bell mechanism is removed therefrom. A further object is to provide a novel hammer rod construction and mounting, whereby the construction of a bell of this type is materially simplified, bringing the parts into a

very compact form which is a desired feature on board ship, and its cost materially reduced.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings and pointed out in the claims hereto appended; 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 or sacrificing any of the advantages of the invention.

To more fully comprehend the invention, reference is directed to the accompanying drawings, wherein—

Figure 1 is a view in plan partly in section of the preferred embodiment of our invention, with the cover plate removed from the ring or frame.

Fig. 2 is a sectional view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a sectional view through the binding posts, taken on line 4—4 of Fig. 1.

Referring more particularly to the drawings, wherein like characters of reference designate corresponding parts, 1 indicates a suitable open topped shell or outlet box having a peripheral upstanding side wall 2 provided with an opening 3 therein through which the conduit or armored cable extends. The outlet box is provided with arms 4 which facilitate the attachment of the same to any desired support. The wall 2 is provided on its interior with the threaded bosses 5, and when it is desired to close the open top of said outlet box a cover plate 6 having openings to register with the threaded bosses 5 is adapted to be positioned in contact with the peripheral edge of the wall 2 and be secured in position thereon by the retaining screws for reception in said threaded bosses 5. To complete the installation, the cover 6 is removed from the outlet box 1 and over the open top of said box is positioned an open ring or frame 7, preferably of the configuration of the wall 2, and the same is provided with suitable lips 8 for registering with certain of the threaded bosses 5 of the

outlet box and through which pass retaining screws 9 for detachably securing the ring or frame to the peripheral edge of the box.

To maintain a water tight connection between the meeting edges of the outlet box wall 2 and frame 6, a flexible packing 10 is positioned between the same. The ring or frame is formed with suitable interiorly threaded bosses 11 for registering with certain of the bosses 5 of the outlet box and with the opening in the cover plate, enabling screws 12 to pass through the openings in the cover plate, the bosses 11 and into the bosses 5, securing the cover plate and ring 15 or frame to the outlet box of the casing 1.

The ring or frame 7 is provided on its interior with a supporting wall 13 which carries suitable magnet coils 14, and coöperating with which and extending transversely across the ends thereof is an armature 15. The armature is secured at its upper edge to a hammer rod 16 which extends transversely across the ring or frame, said rod being fulcrumed at its rear end, as at 17, in a seat 18 extending interiorly of the frame 7. The opposite end of said hammer rod 16 projects through an opening 19 in the side wall of the frame 7 and is bent at right angles, as at 20, said bent portion carrying on its end a hammer 21.

To maintain the opening 19, through which the hammer rod passes, water-tight, a packing gland 22 is formed in the outer end thereof.

The armature 15 is formed on its upper edge adjacent one end with an opening 23 through which freely passes the hammer rod 16, and the opposite end of said upper edge is provided with a slotted opening 24 through which passes the rod 16, said armature being clamped in adjusted position axially of said rod by set screws 25 passing through the walls at opposite sides of said slotted opening 24.

By mounting the hammer rod as above described, with the armature secured thereto adjacent its inner fulcrumed end, the energizing of the magnet coils will attract the armature and the axial movement of said rod will be arrested by the contacting of the armature with the coils prior to the hammer 21 striking the bell, whereby the inertia of the hammer, due to the sudden arresting of the axial movement of the rod 16 at its end, will create a torsional strain on said rod throughout its length enabling the hammer to strike the bell a sudden blow. To assist in the removal of said armature from contact with said magnet coils, there is provided a suitable spring arm 26 secured as at 27 to the outer face of the armature 15 and extending upwardly over the same to a point between the magnet coils 14, the free end of said spring contacting with the ad-

justable tension screw 28 carried by the wall 13. The adjustment of said screw 28 increases or decreases the tension placed on the spring 26 and thus varies the action of the armature 15.

Extending laterally from the ring or frame 7, preferably at a point above the opening 3, is an arm 29 upwardly from which extends a gong post 30, supporting a suitable gong 31 of a diameter to extend over the hammer 21, said gong being supported on the post by the screw 32.

The circuit to the magnet coils 14 is made through the spring arms 33 and 34, said arms being L-shape in plan and supported at a point beneath the wall 13 by the binding posts 35 and 36, one of which passes through the respective openings in the L-shaped portion of said arms. This construction holds the spring arms firmly in place and makes the same non-turning. It has the advantage of simplicity and compactness, in that the same screws serve as binding posts, and are used to fasten the spring contacts in place.

Insulating material 37 separates the binding post 35 and the plate 33 from the wall 13 and the post 35 is in contact with the lower spring 34, as in Fig. 4 of the drawings. The binding post 36 passes through the respective springs 33 and 34 but is insulated therefrom by any suitable insulating material, said post being connected to one of the terminals of the magnet coils.

Carried by the armature 15 and extending angularly therefrom is a circuit breaker arm 38, mounting on its free end a disk of insulating material 39 for contacting on the oscillation of said armature 15 with the upper spring member 33 and adapted to raise and lower the same, whereby the circuit between the source of electric energy and the magnet coils through the arms 33 and 34 is intermittently interrupted on the completion of the same exteriorly of the shell or outlet box.

It will be apparent on the oscillation of the hammer rod 16, the arm 38 will be moved up and down, permitting a make and break of the spring arms 33 and 34, said arms making and breaking contact with a wiping action, thereby maintaining the same clean.

Having thus described our invention what we claim is new and desire to protect by Letters Patent is:—

1. An electric bell comprising an outlet box or casing, a ring for positioning thereover and for resting on the side walls thereof, a bell and bell mechanism carried by said ring, the bell being positioned exteriorly of the casing and the mechanism being received therein, a cover for the said bell mechanism and detachably secured to said ring, said

cover designed for direct attachment to the casing to close the same on the removal of the ring therefrom.

2. An electric bell comprising an outlet
5 box or casing, a bell mechanism and a cover, said bell mechanism adapted for attachment to or removal from said casing as a unit, said cover adapted for positioning in cooperative relation with the bell mechanism when the
10 same is attached to said casing for closing the same and adapted for detachment from the bell mechanism and for securing directly to the casing when the bell mechanism is removed therefrom, said cover when in
15 the latter position adapted to close the open top of said casing.

3. An electric bell comprising an outlet box or casing, a gong without the casing, a bell mechanism within the casing and including a hammer rod of spring material
20 fulcrumed at one end within said casing and bent at its opposite end at a point exteriorly of the casing to cooperate with the gong, said mechanism including magnetic
25 means adapted when energized to cause a torsional spring movement of said hammer rod to throw the bent end thereof into contact with the gong.

4. An electric bell comprising an outlet
30 box or casing having an open top, a ring for positioning over the open top thereof, a gong post carried by said ring, a gong carried by said post, a cover for removably positioning over the ring to provide a
35 closure for the casing, and bell operating mechanism carried by the ring and including a hammer rod of spring material extending in a plane transversely across said
40 frame, said rod being fulcrumed at one end within said ring and extending at its opposite end through said ring and bent exteriorly thereof to lie in cooperative relation with the gong, said bell operating mechanism also including magnetic coils adapted
45 when energized to cause a torsional movement of said hammer rod, causing the bent end thereof to contact with said gong.

5. In combination with an outlet box or casing, a removable cover for closing the
50 same, a frame for detachably positioning on the peripheral side walls of said box to form a continuation thereof, and an electric bell mechanism carried by said frame and adapted when in position on said outlet box
55 for receiving said cover to provide a closure for the box and to protect said bell mechanism within the same.

6. An electric bell comprising an open
60 frame, a gong post extending outwardly from the surface thereof, a gong secured to

said post, a hammer rod within said frame
65 and extended at its outer end through the same to a point in operative relation with said gong, electrically operated means carried within the frame for operating said
70 hammer rod, an outlet box or casing for receiving said frame and to which the same is detachably secured, and a cover for detachably securing to the frame for closing the opening therein.

7. An electric bell comprising an outlet
75 box or casing, an electric bell mechanism within the same and including a hammer rod of spring material, means for supporting said rod for axial rotation within said casing, the opposite end of said rod extending
80 exteriorly of the casing and angularly bent, a hammer carried by the bent end of said rod, a gong with which said hammer contacts, an armature associated with said hammer rod and extending to one side thereof,
85 and a magnet coil for attracting said armature and for arresting the movement thereof prior to the hammer contacting with said gong whereby the inertia of said hammer creates a torsional strain on said rod
90 throughout its length to vibrate the bent end thereof to enable the hammer to contact with said gong.

8. An electric bell comprising an outlet
box or casing, an electric bell mechanism
95 within the same and including a hammer rod of spring material, means for supporting said rod for axial rotation within said casing, the opposite end of said rod extending
100 exteriorly of the casing and angularly bent, a gong with which said bent end of the hammer rod contacts, an armature associated with said hammer rod and extending to one side thereof, magnet coils adapted
105 when energized for attracting said armature and creating a torsional strain thereon to vibrate the bent end thereof, a pair of flexible spring contact members in circuit with said magnet coils, and a laterally extending
110 arm carrying a disk of insulating material at its end, associated with said armature, and adapted on the movement of the armature toward said magnet coils to separate said spring contact members and deenergize said magnet coil.
115

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

PAUL C. BUTTE,
CHARLES F. BUTTE.

Witnesses:

A. K. DAGGETT,
DAN O'CALLOGHAN.