J. GILLIS.

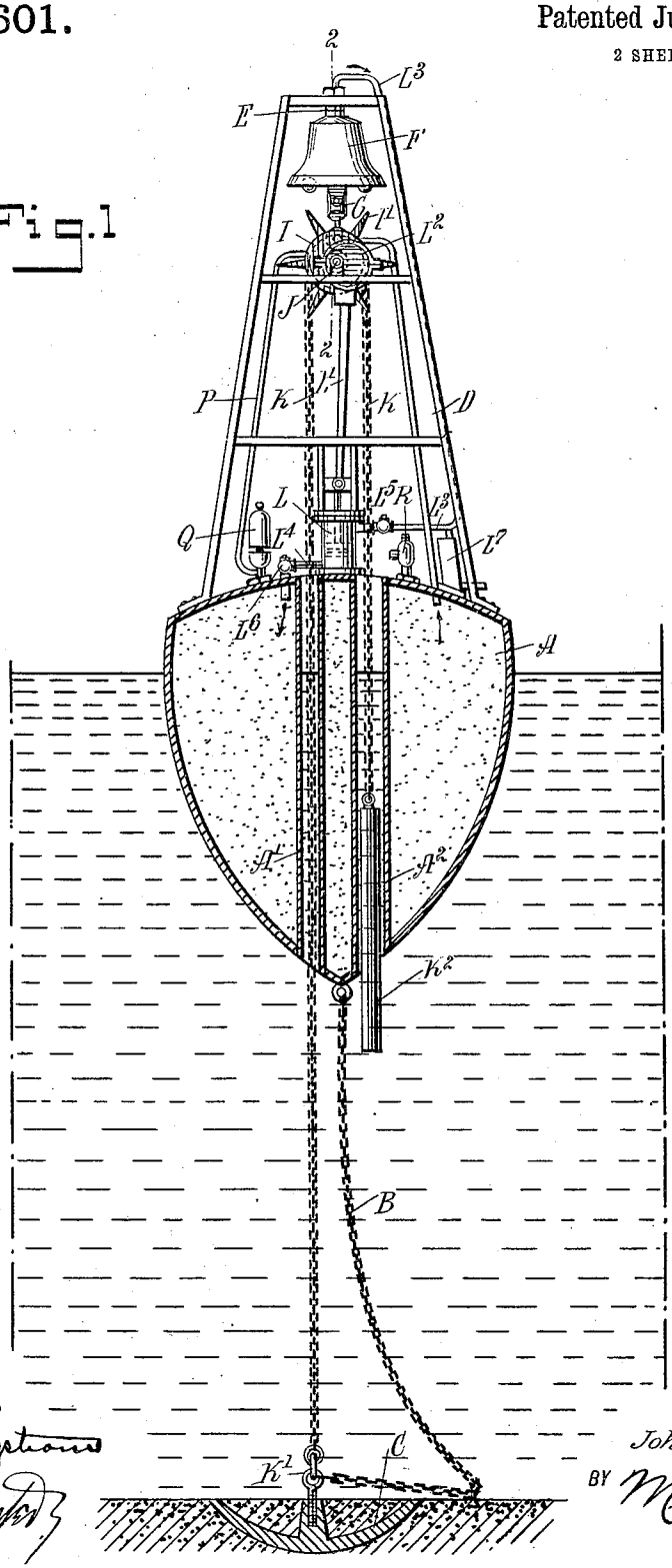
BELL BUOY.

APPLICATION FILED NOV. 1, 1911. RENEWED JUNE 3, 1913.

1,067,601. Patented July 15, 1913.

2 SHEETS—SHEET 1.

Fig. 1



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2

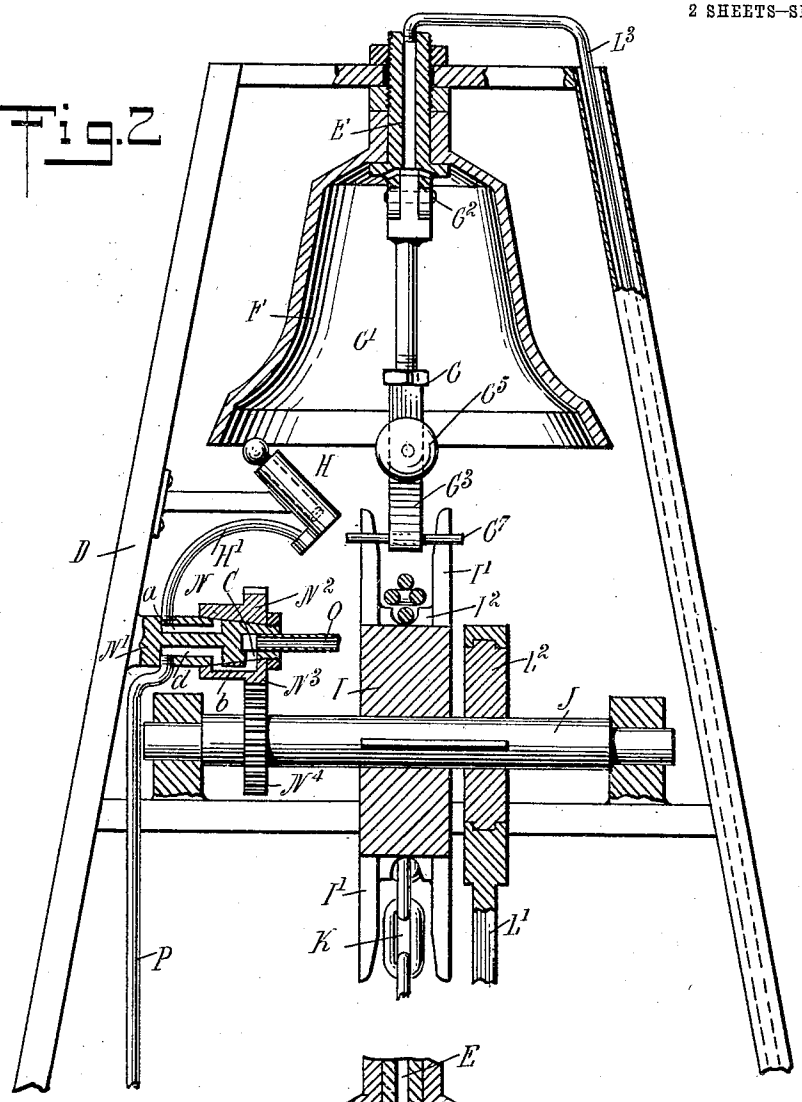
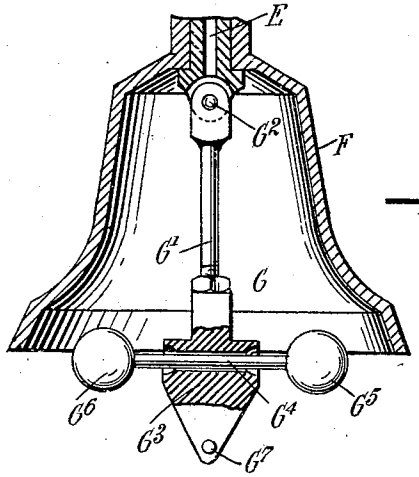


Fig. 3



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BELL-BUOY.

1,067,601. Specification of Letters Patent. Patented July 15, 1913.

Application filed November 1, 1911, Serial No. 657,940. Renewed June 3, 1913. Serial No. 771,530.

To all whom it may concern:

Be it known that I, JOHN GILLIS, a citizen of the United States, of the United States Navy, at present at Portsmouth, in the county of Rockingham and State of New Hampshire, have invented a new and Improved Bell-Buoy, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved bell buoy, arranged to give desired marine signals when the water is calm or is agitated.

For the purpose mentioned use is made of a buoy carrying a revoluble actuator for the striker of the bell supported on the buoy, and a chain engaging the said actuator for turning it and having one end fixed and the other end provided with a counterweight so that the actuator is turned and the striker actuated according to the movement of the buoy. Use is also made of a pneumatic sounding means periodically actuated by compressed air stored in an air chamber supplied with air from an air compressor actuated through the movement of the buoy.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional elevation of the bell buoy; Fig. 2 is an enlarged cross section of the same on the line 2—2 of Fig. 1; and Fig. 3 is an enlarged sectional elevation of the bell.

The float A of the bell buoy is of the usual size and shape and shackled to an anchor chain B connected with an anchor C held on the bottom of the water-way on which the bell buoy is located. On the top of the float A is erected a suitable framework D supporting at its upper end a hollow tube E on which is fastened the apex of a bell F adapted to be sounded by a striker G and by a pneumatic hammer H, as hereinafter more fully described. The striker G consists of a shank G′ pivoted at G^2 to the tube E, and the free end of the striker G′ is provided with a head G^3 in which is mounted to slide a stem or a rod G^4 carrying at its ends balls G^5, G^6 adapted to strike against the bell so as to sound the same. The head G^3 is provided with a pin G^7 adapted to be engaged by arms I′ of a wheel I secured on a shaft J journaled in suitable bearings arranged on the frame D. The wheel I is provided with a chain pulley I^2 over which passes a chain K extending through passageways A′ and A^2 arranged vertically in the float A, one end of the chain K being connected at K′ to the anchor C and the other end of the chain supporting a counterweight K^2, which extends partly in the guideway A^2 so as to guide the counterweight in its up and down movement.

When the float A sways sidewise by wind or current or rises and falls with the tide, then the chain K imparts a turning motion in one direction or the other to the pulley I^2 and the wheel I, so that the arms I′ thereof engage the pin G^7 to swing the striker G′ to one side and finally release the same so that the striker sounds the bell F. It is understood that when the striker G is swung, say to the left, then the ball G^6 sounds the bell and the rod G^4 slides to the right in the head G^3 whereby the ball G^5 is caused to finally sound the bell F on the return movement. When the striker G′ is moved from the left to the right then the ball G^5 first sounds the bell F and the bar G^4 slides to the left, and on the return movement, after being released by the corresponding arm I′, the ball G^6 strikes the bell F at the other side and again sounds the same. It is understood that the rod G^4 is usually in an end position so that the striker G′ is out of plumb position to insure easy movement of the striker when actuated by the corresponding arms I′ of the wheel I.

On the top of the float A and its framework D is mounted an air compressor L, of any approved construction, and connected by an eccentric rod L′ and an eccentric L^2 with the shaft J so that when the latter is turned on turning the wheel I by the action of the chain K, as previously explained, then the air compressor L is actuated to pump air into the float A thus using the latter or a part thereof as an air chamber for storing the compressed air with a view to utilize this compressed air to actuate the pneumatic hammer H. The inlet pipe L^3 for the air compressor L extends up through one of the hollow posts of the frame D and terminates in the tube E so that the air inlet pipe is protected by the bell against water, and consequently the air compressor is not liable to be choked with water. The outlet pipe L^4 of the air compressor L discharges into the float A and the pipes L^3 and L^4 are provided with check valves L^5, L^6, and the pipe L^3 is

also provided with a drain cup L^7 for receiving any water that may accidentally get into the pipe L^3 and which water is drained out of the pipe prior to reaching the check valve L^5.

The pneumatic hammer H is of any approved construction and mounted on the frame D in close proximity to the bell F so that when the hammer is actuated it strikes and sounds the bell F. The inlet pipe H′ of the pneumatic hammer H is provided with a valve N having a plug N' fixed to the framework D, and the plug N is provided with a port *a* adapted to register with a U-shaped port *b* formed in a revoluble member N^2 mounted to turn on the plug N', the said port *b* being also adapted to register with a port *c* formed in the end of the plug N' and connected with a pipe O leading to the interior of the float A or other chamber in which the compressed air is stored. The revoluble member N^2 of the valve N is provided with a gear wheel N^3 in mesh with a gear wheel N^4 secured on the shaft J, so that when the latter is rotated a rotary motion is given to the valve member N^2 to alternately connect the ports *c* and *a* with each other by way of the port *b* to permit compressed air to periodically pass from the float A by way of the pipe O and the registering ports *c*, *b*, *a* to the pipe H′ and to the pneumatic hammer H to actuate the same and thus sound the bell F. As shown in Fig. 2, the plug N' of the valve N is also provided with another port *d* adapted to register with the port *b* on rotating the member N^2 and this port *d* is connected by a pipe P with a whistle Q mounted on the float A and sounded by compressed air whenever the port *b* registers with the ports *d* and *c*. It is understood that the ports *a*, *d* are preferably arranged diametrically opposite each other so that only one of the ports *a* or *d* is in register at the time with the port *b*.

The float A is provided with a relief valve R to permit escape of excessive pressure in case the float A is charged with compressed air beyond a predetermined pressure.

From the foregoing it will be seen that signals are given by the bell buoy whether the water is calm or is agitated; that is, when the water is agitated the bell is sounded by the striker G and also by the pneumatic hammer H, and the whistle Q is also sounded, but in quieter weather the movement of the float A is not sufficient to cause the wheel I to actuate the striker G, but sufficient turning motion is given to the shaft J to turn the valve N for connecting the pneumatic hammer H or the whistle Q with the compressed air storage chamber to sound either the bell F or the whistle Q.

It is understood that a bell buoy striking above water can be detected port or starboard, as the case may be, due to the vibrations of the bell being transmitted to the buoy and to the water with very little depreciating effect, and hence the bell buoy will serve as a warning buoy to aid navigation both for transmitting service and submarine signals.

Although I have shown the usual anchoring chain B in connection with the chain K, it is evident that the chain B may be omitted and the chain K used as the anchoring chain on account of being connected with the anchor C.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A bell buoy provided with an anchored float, a framework on the float, a bell mounted on the framework, a revoluble shaft carrying a pulley and mounted on the said framework, a chain passing over the pulley and fixed at one end, a weight at the other end of the chain, an air compressor driven from the said shaft and discharging into the float, and a pneumatic hammer for sounding the bell and driven by the compressed air in the float.

2. A bell buoy provided with an anchored float, a framework on the float, a bell mounted on the framework, a revoluble shaft carrying a pulley and mounted on the said framework, a chain passing over the pulley and fixed at one end, a weight at the other end of the chain, an air compressor driven from the said shaft and discharging into the float, a pneumatic hammer for sounding the bell, a valve for controlling the said pneumatic hammer and connected with the said float, and means for actuating the said valve from the said shaft.

3. A bell buoy provided with an anchored float, a framework on the float, a bell mounted on the framework, a revoluble shaft carrying a pulley and mounted on the said framework, a chain passing over the pulley and fixed at one end, a weight at the other end of the chain, an air compressor driven from the said shaft and discharging into the float, a pneumatic hammer for sounding the bell, a valve connected with the said float and with the hammer, and means for actuating the said valve from the said shaft.

4. A bell buoy, comprising a float, a bell mounted thereon, an air compressor mounted on the said float, and having an inlet connected with the interior of the bell at the apex thereof, the said air compressor discharging into the said float, means for driving the said air compressor, and pneumatic means for sounding the said bell and driven by compressed air from the said float.

5. A bell buoy, comprising a float, an air compressor mounted on the said float and discharging into the same, driving means actuated by the movement of the float and

connected with the said air compressor to drive the same, a sounding device mounted on said float, and a valve actuated by the driving means for controlling the passage of air from the said float to the sounding device.

6. A bell buoy, provided with a float, a framework on the float, a driving shaft mounted to turn on the said framework, means for actuating the driving shaft by the movement of the float, an air compressor driven from the said shaft and discharging into the float, a sounding means on the float, a valve connected with the said float and with the sounding means, and means for actuating the said valve from the said shaft.

7. A bell buoy, comprising a float, driving means actuated by the movement of the float, an air compressor driven by the said driving means, a sounding device mounted on the float, means for storing the compressed air, and means actuated from the said driving means for periodically controlling the flow of the compressed air to the said sounding means.

8. A bell buoy, comprising an anchored float, a bell mounted thereon, driving means actuated by the movement of the float, an air compressor driven by the said driving means, a compressed air chamber into which discharges the said air compressor, a pneumatic sounding means connected with the said chamber for sounding the said bell, and controlling means actuated from the said driving means and periodically controlling the flow of compressed air from the said chamber to the said sounding means.

9. A bell buoy, comprising a float, a sounding device mounted thereon, a shaft mounted to turn, means actuated by the movement of the float for driving said shaft, an air compressor, means for actuating the air compressor from said shaft, the said air compressor discharging into the interior of the float, a passage connecting the said float with the sounding device, a valve having a revoluble member for controlling the passage of air from the float to the sounding device, and means for driving the revoluble member of the valve from said shaft.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN GILLIS.

Witnesses:
EDWARD H. ADAMS,
MAE L. WARREN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."