No. 628,506. Patented July 11, 1899.

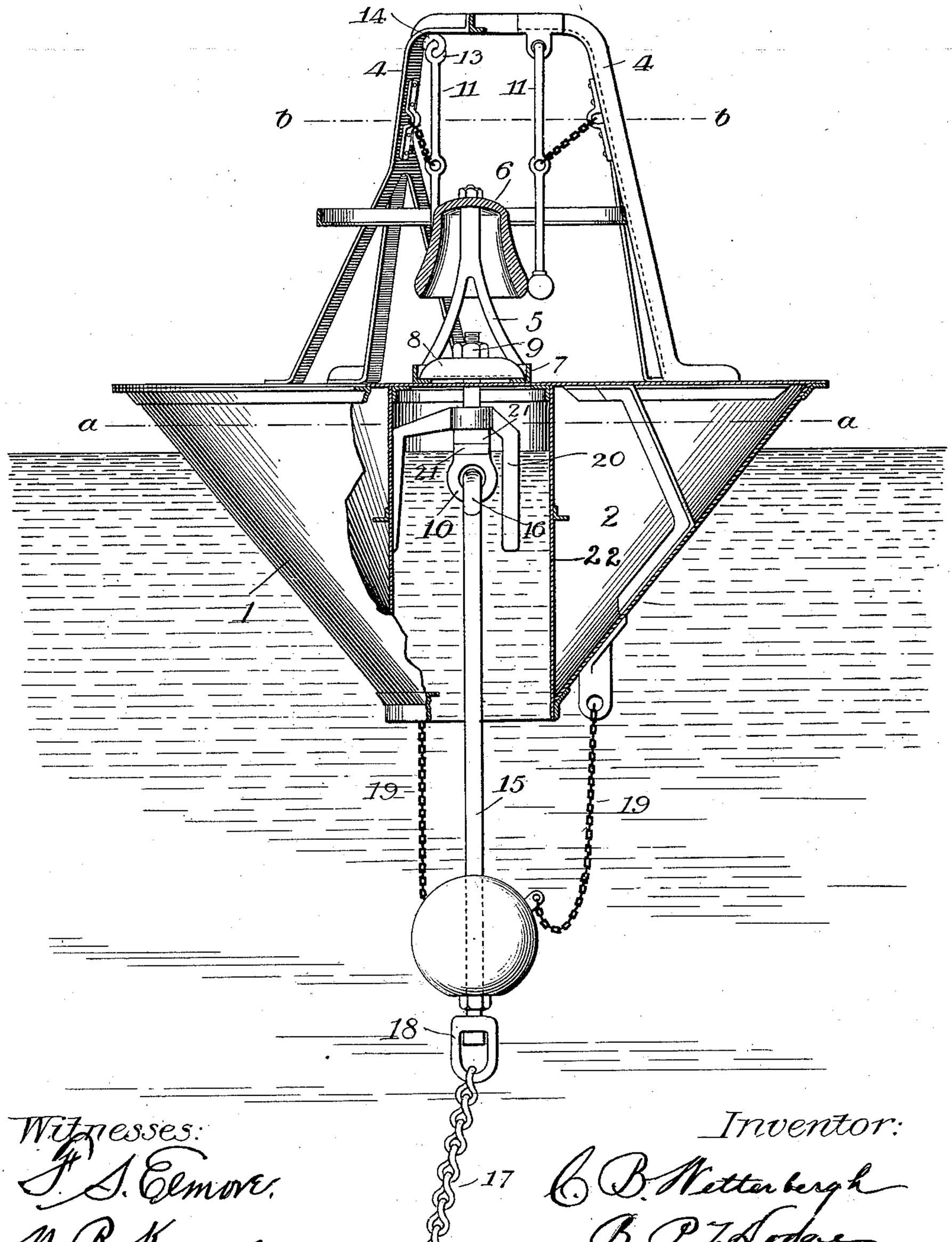
C. B. WETTERBERGH.

BUOY.

(Application filed July 18, 1895.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses:
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2 Sheets—Sheet 2.

Fig. 2.

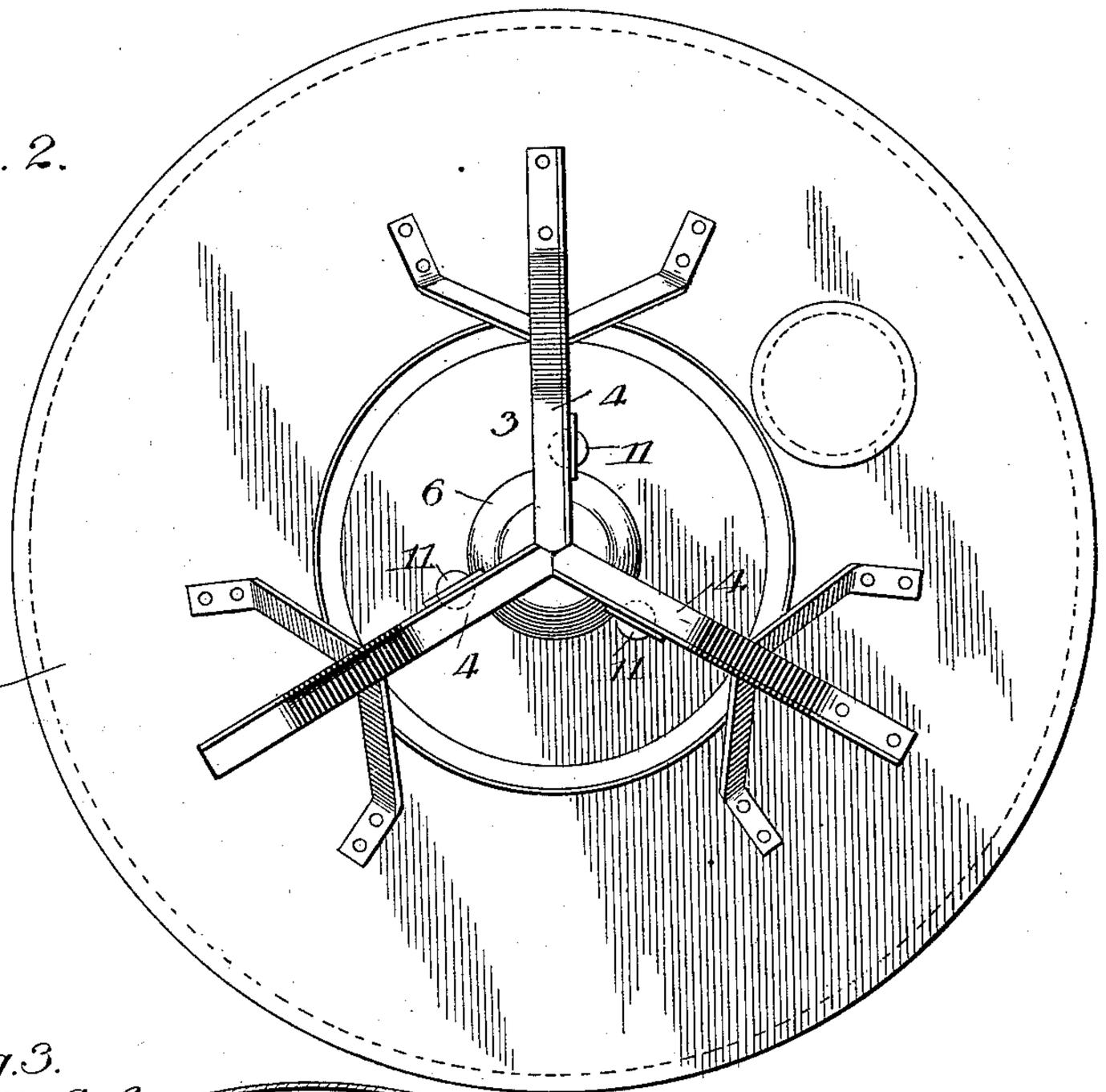


Fig. 3.
on line a-a.

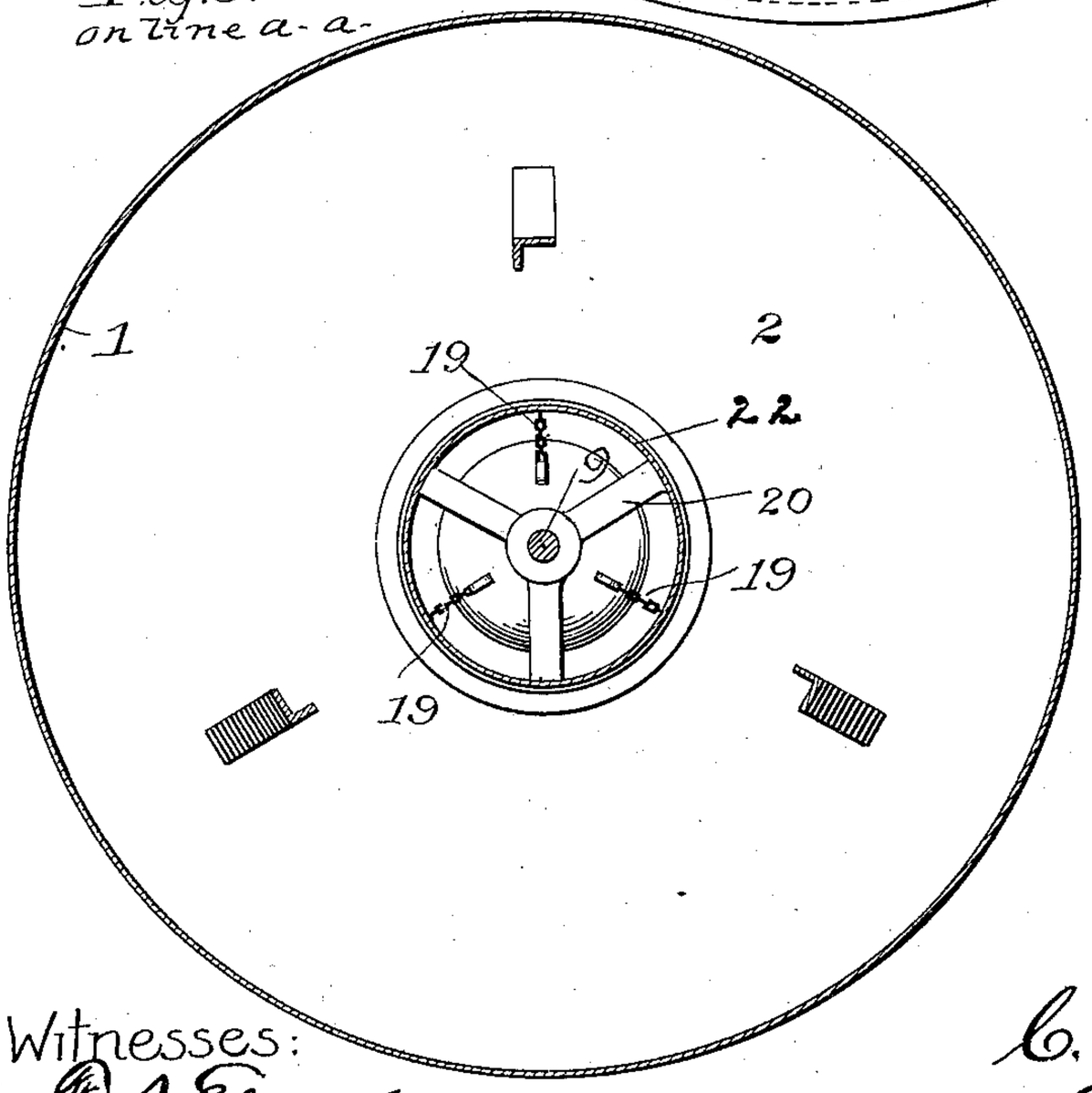
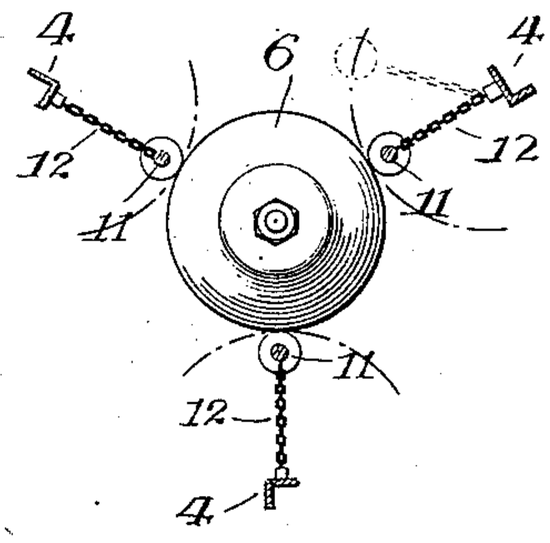


Fig. 4.
on line b-b.



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UNITED STATES PATENT OFFICE.

CARL BERNHARD WETTERBERGH, OF MALMO, SWEDEN.

BUOY.

SPECIFICATION forming part of Letters Patent No. 628,506, dated July 11, 1899.

Application filed July 18, 1895. Serial No. 556,342. (No model.)

To all whom it may concern:

Be it known that I, CARL BERNHARD WETTERBERGH, of Malmo, Sweden, have invented a new and useful Improvement in Buoys, of which the following is a specification.

This invention has reference to bell-buoys which consist of a buoyant frame or body sustaining a bell which is rung to give an audible signal by the rocking of the body due to the motion of the water. It is usual to anchor buoys of this character by means of a chain or equivalent fastening connected to the bottom or the sides of the body at a point removed from its true center of gravity. Hence the body in attempting to rock on an axis located at its center is resisted and retarded by the chains, the weight of which, owing to their connection at a point outside of the center of gravity, must be carried by the body. This resistance interferes materially with the free movement of the body, which is necessary to its effective and proper action. To obviate this objectionable resistance to its motion and to secure the free movement of the body under the influence of the motion of the water, I connect the anchoring devices to the body at a point within the same coincident with its true center of gravity, the result being that the motion of the body when it is rocked being around this point as an axis the weight of the connecting devices is not borne by the body, and hence there is practically no obstruction by these devices to its free and unlimited movement.

The invention consists also in the details of construction and combination of parts hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a buoy having my invention embodied therein. Fig. 2 is a top plan view of the same. Fig. 3 is a horizontal section on the line *a a* of Fig. 1. Fig. 4 is a horizontal section on the line *b b* of Fig. 1.

In the drawings, 1 represents an inverted conical hollow body, preferably of sheet metal and containing a closed annular chamber 2, rendering the body buoyant. The upper side of the body is flat and has firmly fixed to it an arched frame 3, consisting of bars 4, having their lower ends firmly fixed to the top of the body and their upper ends united at a central point, the said bars being held rigidly in position by suitable braces, as plainly shown in Fig. 2. Rising from the center of the body within this frame is a standard 5, to the top of which is firmly fixed a bell 6, the bottom of the standard being formed with an inwardly-extending annular flange 7, seated upon the top of the conical body and held down by a disk or washer 8, seated on the flange and perforated to receive a fastening-bolt 9, which extends downward through the top of the body, its lower end being formed with an eye 10, the purpose of which will presently appear.

From the upper ends of the bars 4 I loosely suspend three bell-tappers 11, each provided at its lower end with a tapping-head in position to contact with the peripheral edge of the bell as the latter is rocked back and forth by the motion of the sustaining-body. About midway of their length the tappers are connected to the inner ends of chains 12, which have their outer ends connected to the three bars comprising the arched frame, as plainly shown in Fig. 1. The purpose of these chains is to prevent the tapping-heads from "lying against" the bell and deadening its sound. By reason of the fact that the tappers are capable of a free universal movement their connection by the chains will cause them to move in an arc of a circle adjacent to the edge of the bell, as indicated by dotted lines in Fig 4, the result being that they contact with the bell at one point only.

I prefer to connect the upper ends of the tappers (to admit them to move universally) by forming thereon eyes 13, which are interlocked with similarly-formed eyes 14, fixed to the frame-bars, as shown. It is understood, of course, that any other form of joint may be adopted to insure their proper action.

In the center of the hollow conical body I introduce and firmly fix a tube 22, which has its upper end closed by the top of the hollow body and its lower end open, as shown in Fig. 1. The purpose of this tube is to admit of the connection of the anchoring devices at a point within the body coinciding with its true center of gravity; and in the present instance I have shown the buoy anchored by means of a rod 15, extending upward into the tube and having its upper end in the form of

an eye 16, which is interlocked with the eye 10 on the bolt 9 before alluded to, this connection permitting a free movement of the body at this point (the true center of gravity of the body) with respect to the anchoring-rod. The lower end of the rod extends beyond the tube, where it is suitably weighted, and is connected to the usual anchoring-chain 17 by a swiveling joint 18. By reason of the connection of the anchoring-rod at a point within the body coincident with the center of gravity of the same it will be observed that as the motion of the body is around that point it is not compelled to carry the weight of the chains or other connections, as would be the case if they were joined to the body at a point beyond the center of gravity.

In order to prevent the edge of the tube from being injured by striking the rod as the body rocks back and forth, I provide chains 19 to limit the motion of the body with respect to the rod and connect these chains at their opposite ends to the body and to the rod, as plainly shown in Fig. 1.

While it is possible to calculate to a certainty the true center of the body, it has been found that a simpler plan is to approximate this center and to thereafter adjust the parts until by trial the correct center is found. With this end in view I so mount the bolt 9, to which the anchoring-rod is jointed, that the former may be adjusted vertically, and this I accomplish by fixing to the inner side of the tube a frame 20, through which the bolt passes near its lower end, and to the bolt, between this frame and the eye 10, I apply a series of removable washers 21. By removing one or more of these washers and screwing up the nut on the end of the bolt the latter may be moved bodily vertically, the result being that the point of connection between the body and the anchoring-rod is correspondingly elevated. By applying additional washers it will be understood, of course, that this point may be lowered in a corresponding manner.

While I have in the drawings illustrated and in the specification described a construction which I prefer to adopt and which has been found in practice to answer satisfactorily the ends in view, it will be understood that the details may be modified within reasonable limits without departing from the spirit of my invention, the essence of which resides in connecting the anchoring devices to the buoyant body within the same at a point coincident, or substantially so, with its true center of gravity.

What I claim as my invention is—

1. In a bell-buoy the inverted conical body having a central tube or opening in combination with a bell and striking mechanism mounted thereon and an anchoring connection jointed to the body at or about the center of gravity of the buoy.

2. In a bell-buoy the combination of a buoyant body a bell mounted centrally thereon, an overhead framework also mounted on the body and provided with pendent strikers to act externally on the bell and an anchoring connection loosely jointed within the body at the center of gravity.

3. In a bell-buoy the combination of the following elements: a buoyant body having a central opening, a bell and striking mechanism mounted on said body, a weighted anchor-rod 15 loosely jointed at its upper end to the body at the center of gravity of the buoy and an anchoring connection to the lower end of said rod; whereby the body is caused to rock with freedom in order to effect the sound of the bell and the anchor-rod maintained normally in a vertical position so that it does not prevent the motion or chafe against the body.

4. In a bell-buoy the combination with the buoyant body having the central tube, of the bell and striking connections mounted on said body, the anchor-rod having its upper end jointed loosely within the body at or near the center of gravity, and the series of chains 19 limiting the motion of the buoy in relation to the rod.

5. In a bell-buoy a buoyant body having a central opening in combination with a bell and striking mechanism mounted thereon, a rod, a jointed connection between said rod and the body located at or near the center of gravity, and means substantially as described for vertically adjusting said connection; whereby the rocking motion of the body and the action of the bell may be modified at will.

6. In a bell-buoy the buoyant body in the form of an inverted cone with a central tube or opening, in combination with a bell, gravitating strikers mounted thereon, the weighted anchor-rod, the eyebolt 10, a bearing for said bolt in the body, and nuts and washers for securing and effecting vertical adjustment of the eyebolt, substantially as described.

7. In combination with a buoyant body, a bell fixed thereto, an arched frame sustained by the body and extending over the bell-tappers jointed at their upper ends to the frame and movable universally, and connecting devices jointed to the frame and to said tappers.

In testimony whereof I hereunto set my hand, this 8th day of May, 1895, in the presence of two attesting witnesses.

CARL BERNHARD WETTERBERGH.

Witnesses:

JULIUS KEIDING,

BROX FLENSBURG.