No. 725,755 PATENTED APR. 21, 1903.

A. J. MUNDY.

AUTOMATIC MEANS FOR PRODUCING SOUND VIBRATIONS IN WATER.

APPLICATION FILED APR. 23, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

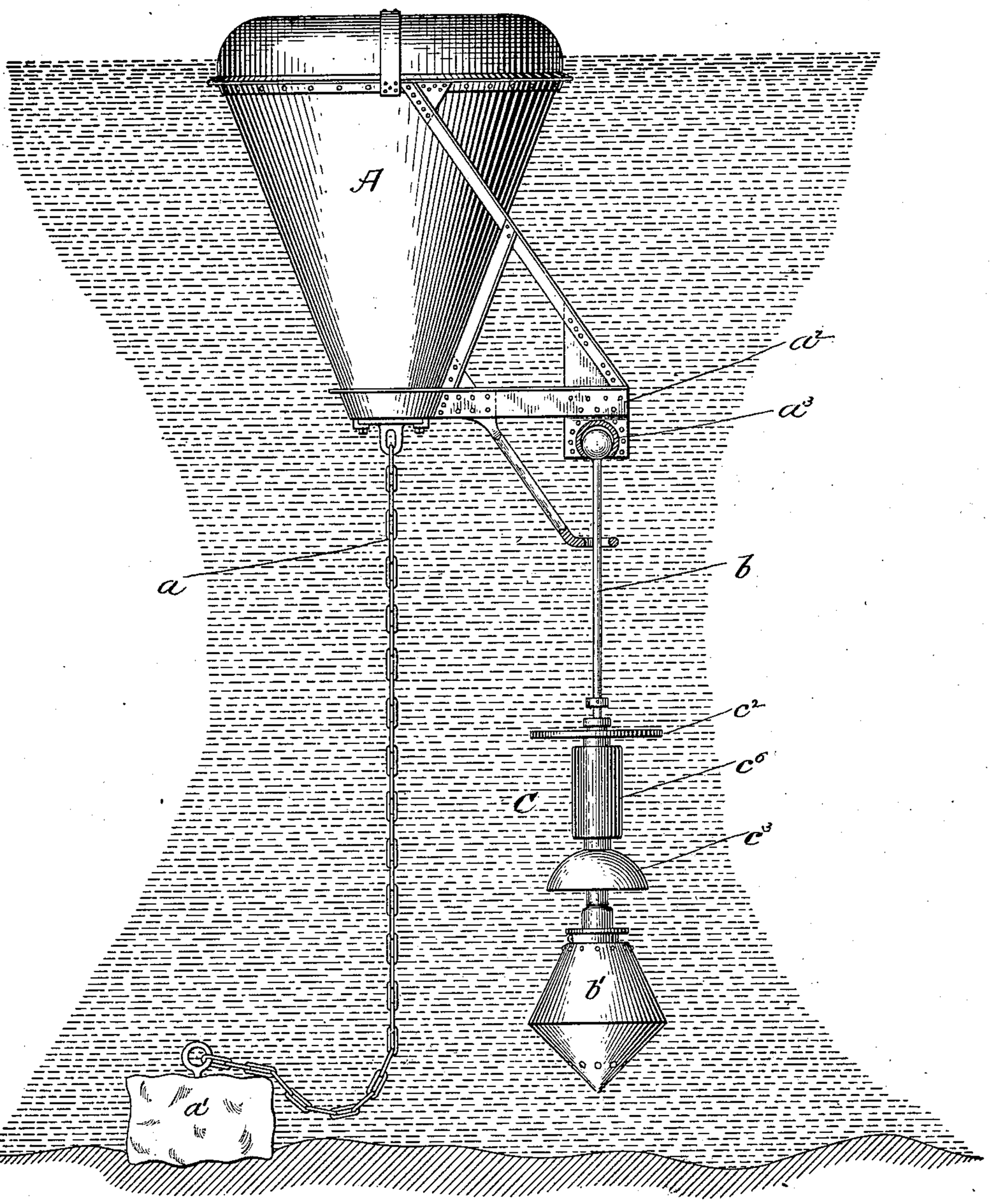

Fig. 1.

WITNESSES:
J. M. Dolan.
Saul Sippenstein

INVENTOR:
Arthur J. Mundy.

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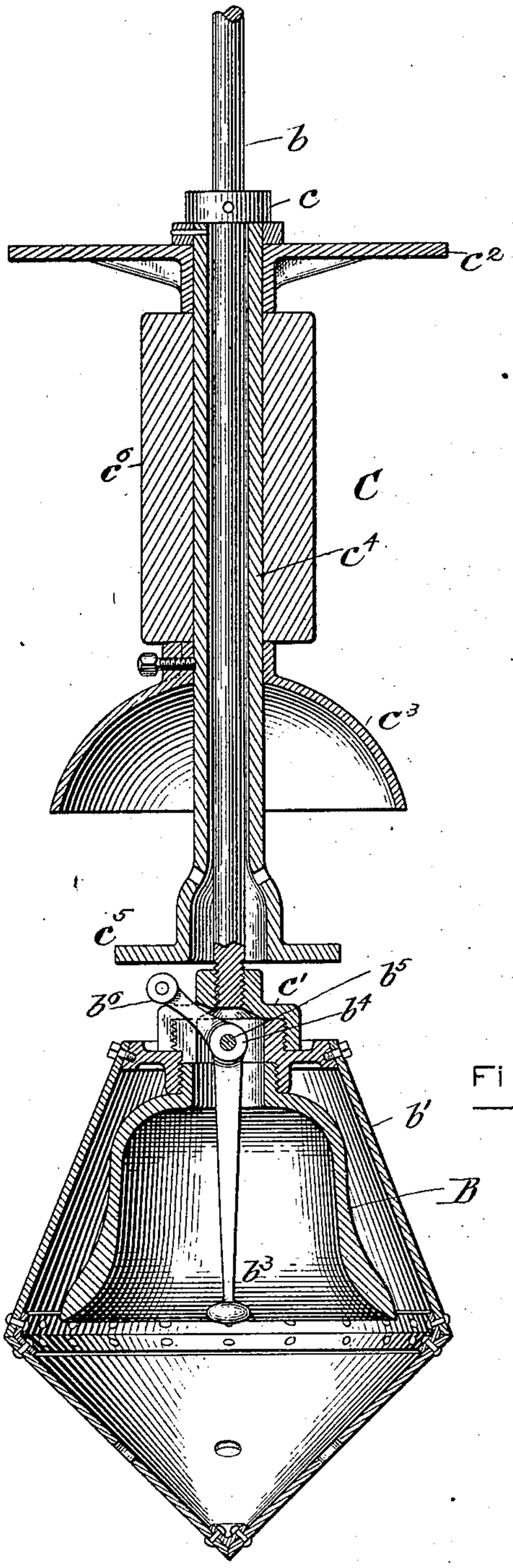

Fig. 2.

WITNESSES:

J. M. Dolan.

Paul Sippenstein.

INVENTOR:

Arthur J. Mundy.

UNITED STATES PATENT OFFICE.

ARTHUR J. MUNDY, OF BOSTON, MASSACHUSETTS.

AUTOMATIC MEANS FOR PRODUCING SOUND-VIBRATIONS IN WATER.

SPECIFICATION forming part of Letters Patent No. 725,755, dated April 21, 1903.

Application filed April 23, 1902. Serial No. 104,303. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR J. MUNDY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Automatic Means for Producing Sound-Vibrations in Water, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to means for producing in natural bodies of water sound-vibrations which are adapted to be received and transmitted by the water and which means are automatically actuated by the motion or movement of the water. The said means form what may be termed the "signal-station" or end of a system of submarine telephony.

In an application for Letters Patent of the United States executed of even date herewith, Case A, I have described such a system and have also referred to the means herein described for automatically producing sound vibrations or signals as a part or element of a system of sound transmission by water, and therefore need not further describe specifically the system here, it being sufficient to say that the sounds automatically communicated to the transferring medium by the movement or motion of the medium itself are in due course received by a submerged electrical transmitter and electrically transmitted by it to a receiver. There are of course many ways by which a submerged sound or vibration transferrer may be automatically operated by the movement or motion of the water in which it is submerged, and I do not pretend to describe herein all such ways, but only sufficient to point a feasible way of carrying the invention into effect.

I would say that the sound or vibration-producing device may be combined with a visual instrumentality or device like a buoy.

I will now describe my invention in connection with the drawings, forming a part of this specification, in which—

Figure 1 is a view in elevation of a submerged means for automatically producing sound-vibrations in contact with the transmitting water. Fig. 2 is a view, mainly in vertical section, enlarged, of the parts mounted upon and depending from the rod *b*, hereinafter referred to, and comprising particularly the bell, its case, the sea-anchor, and means for ringing or sounding the bell.

Referring to the drawings, in Fig. 1 A is a metal buoy of the usual type and which is anchored in any desired place by an anchoring-chain *a* and anchor *a'*. It supports a bracket a^2, from which is suspended, by means of a ball or jointed connection a^3, a rod *b*. This rod carries at its lower end a bell B, which may be inclosed in a protecting-case *b'*, attached to the flanged collar b^2, secured to the neck of the bell. This case is preferably of galvanized iron and incloses the bell upon its sides and bottom, but does not come in contact with them, the purpose being to prevent the bell and its hammer from being fouled by seaweed or other things. It is not intended to form a water-tight compartment, however, and it is provided with holes by means of which the water may enter and fill it, and thus be brought into contact with the bell. The rod carries a sea-anchor C, which is attached thereto in a manner to permit of its movement and that of the bell with relation thereto, the movement being restricted in one direction by a collar *c*, attached to the rod, and in the other direction by the sleeve *c'*, by which the bell is secured to the rod.

The sea-anchor may be of any usual type, and I have represented one provided with the wide circular flange c^2 and with the bell-shaped flange c^3. They are both attached to a long sleeve c^4, through which the rod extends and which sleeve has a wide flange c^5 at its lower end. The sea-anchor also carries a buoy c^6 below the flange *c* and for the purpose of sustaining its weight.

The bell has a hammer b^3, which is attached to the collar at b^4 by a rock-shaft b^5, having an arm b^6, which projects outside the bell to a position beneath the flange c^5.

Upon the movement of the buoy A the rod suspending the bell is moved and caused to rise or fall with respect to the sea-anchor, and when it rises it causes the arm b^6 of the bell-hammer rock-lever to come into contact with the sleeve-flange c^5, and thus cause the hammer to be swung against the bell and deliver to it a stroke which produces sound-

vibrations, and which sound-vibrations are delivered to the surrounding water and transmitted by it. As the buoy A is swung or moved by the movement of the water in which it is, these movements continue to cause variations in position between the sea-anchor and the bell, whereby the bell is caused to be rung as the two approach each other.

It will be understood that normally the sea-anchor is sustained by its buoy, so that it rests, if at all, but little upon the arm that actuates the hammer of the bell. It is not, however, readily movable in the water in either direction, but permits the buoy to move the bell with respect to it, so that the movement of the bell by the buoy causes the bell-hammer arm to be brought into contact with the depending part of the sea-anchor, and thereby operate the bell-hammer to strike the bell. Every movement of the main buoy is thus communicated to the bell and bell-hammer. While, however, the sea-anchor thus acts it may be changed in position by the main buoy gradually as it is dragged by it; but this does not affect or change its operative relation to the bell and bell-hammer as above expressed.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A submerged sound-producing signaling device for imparting sound-vibrations to water by which they are conducted, and means for automatically actuating it by the movement of the water.

2. A submerged sound-producing signaling device automatically actuated by the movement of the water with relation to it.

3. A submerged automatic sound-producing signaling device for imparting sound-vibrations to water by which they are conducted, means operated by the water for actuating the device comprising a buoyant support by which the device is suspended in the water, and an interposed mechanism between it and the sound-producing device whereby a change in the relation of the two produced by movement of the water will cause the sound-producing device to be actuated.

4. A buoy or other visual buoyant support, and a submerged sound-producing device suspended therefrom and operated thereby.

5. A buoy or other buoyant support, a submerged bell, and means connecting the buoy and bell whereby upon the movement of the buoy the bell is caused to be rung.

6. A buoy or other buoyant support, a submerged bell suspended from it, a sea-anchor upon the suspending means, movable with relation to each other, and a bell-hammer operated by such relative movements.

ARTHUR J. MUNDY.

Witnesses:
F. F. RAYMOND, 2d,
J. M. DOLAN.