Aug. 16, 1949. J. DIAMOND 2,479,217

DIVING BELL

Filed March 5, 1946

FIG. 1

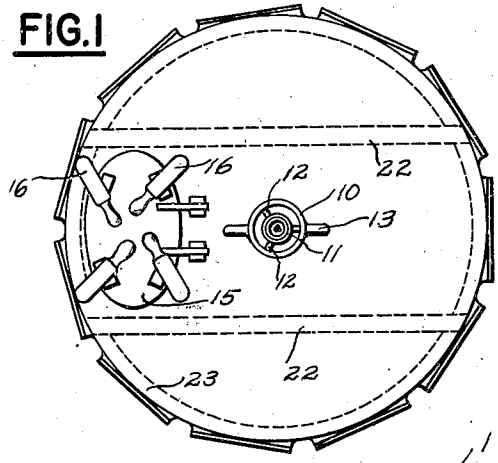


FIG. 3

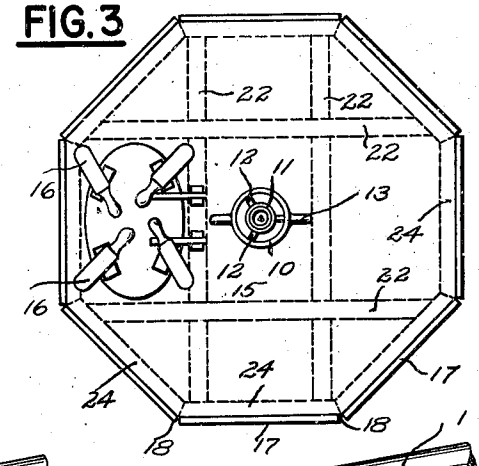


FIG. 2

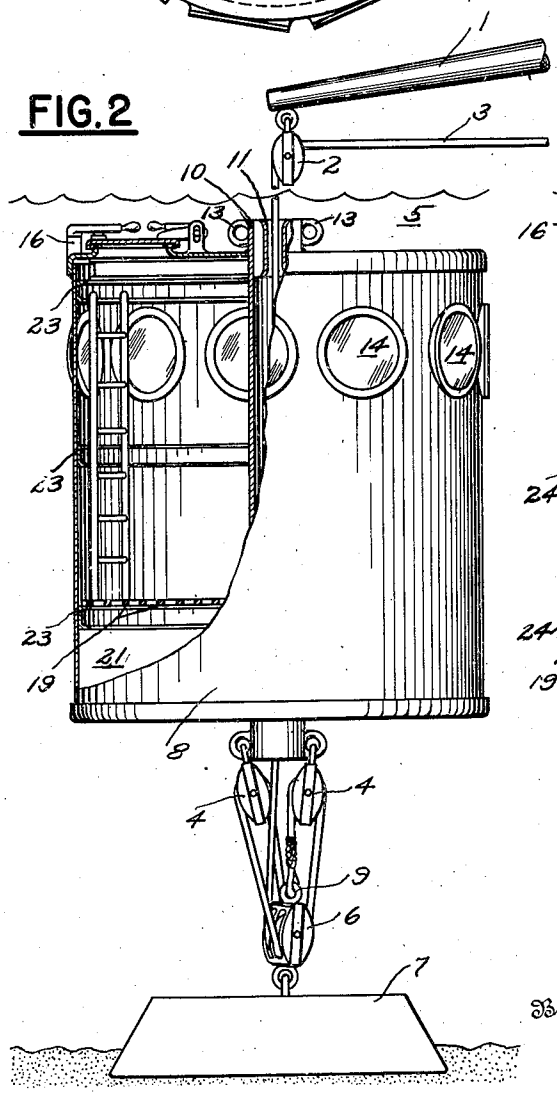
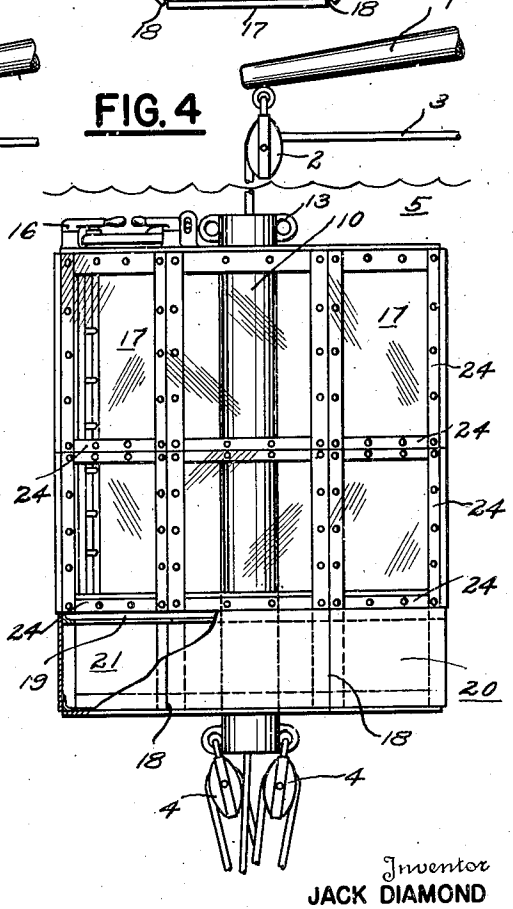


FIG. 4



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DIVING BELL

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1 Claim. (Cl. 61—69)

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This invention relates generally to diving bells and more particularly to portable diving bells, which may be utilized for purposes of entertainment and instruction.

It is an object of the invention to provide a device of the above character which shall be attachable to a counter-weight or other object affixed below the surface of the water.

It is a further object of the invention to provide a diving bell which shall be submersible under the control of a cable and from a position at the surface of the water.

It is still a further object of the invention to provide a diving bell which shall be readily transportable from one point to another.

Another object of the invention is to provide a diving bell constructed largely of transparent plastic material, to permit easy observation of scenes and occurrences taking place externally of the diving bell.

Still a further object of the invention is to provide a diving bell which shall be submersible by means of a tension responsive mechanism comprising a cable, and in which the cable itself provides a guiding means for the bell during its submersion and ascent.

The above and still further objects of the invention will become evident upon study of the following detailed description when taken in conjunction with the accompanying drawings, wherein like characters of reference are applied to the same parts in the several views, and wherein:

Figure 1 is a plan view of one embodiment of the invention;

Figure 2 is a front elevational view corresponding to Figure 1;

Figure 3 is a plan view of a second embodiment of the invention; and

Figure 4 is a front elevational view corresponding to Figure 3.

Referring now to the drawings in detail, the reference numeral 1 denominates a boom supported by a lighter or other suitable craft (not shown.) Suspended from the boom over a pulley 2 is a cable 3 which may be tensioned by a winch, or other suitable mechanism located in the lighter.

The cable extends downwardly into the water 5, preferably in a vertical direction, and passes to a block 6, preferably having a plurality of sheaves, and which is secured to a concrete block 7 or other body firmly secured at the bottom of the body of water within which the bell is to be submerged. In some instances the concrete block may be dispensed with, if there should be available a suitable rock formation or the wreck of a vessel available to act as an anchor for the block.

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The block and tackle arrangement is provided for the purpose of attaining sufficient mechanical advantage to enable submersion of the bell 8 without the application of undue force to the cable 3.

A cooperating block, or blocks 4, may be secured to the bottom of the bell 8, and the cable 3 ultimately is secured to the block 6 by means of ring 9, whereby to enable exertion of a downward pull thereon.

The cable 4, in its downward extension from the boom 1 passes through an axial tube 10 provided in the bell 8. Secured internally of the tube 10, at the upper and lower surfaces of the bell, are guide tubes 11 welded to the tube 10 internally thereof by means of a spider construction 12. The guide tubes 11 are provided for the purpose of preventing rubbing contact between the cable 3 and the tube 10. Secured to the top of the bell 8 are a pair of grapnels 13, which may be utilized for hoisting the bell 8 clear of the water, when it is desired to transport same.

The bell 8 itself may be constructed of steel or other suitable material, as in Figures 1 and 2 of the drawings, and may be constructed in the shape of a right circular cylinder, suitably braced internally thereof, and provided with a series of glass portholes 14, to enable viewing of the scene external to the bell.

Suitable provision is made for entrance into the bell, in the form of a door 15, provided with dogs 16 for tightening same to water-tight condition. While the location of the door 14 is preferably in the upper wall of the bell 8, other suitable locations may of course be preferred, in the proper circumstances.

In Figures 3 and 4 of the drawings is illustrated a form of bell 20 having a novel construction, in that the bell is constructed in octagonal shape, and the walls 17 of the octagon are fabricated of transparent plastic material, suitably sealed at the common edges 18 thereof. In this form the general construction and mode of operation is similar to that provided in the embodiment of Figure 1 of the drawings. The use of transparent plastic sides for the bell, however, provides a structure providing clear visibility in all directions, with a minimum of difficulty on the part of the persons occupying the bell.

The bells 8 and 20 are provided each with a lattice flooring 19, at a position raised with respect to the bottom of the bell, the space 21 between the flooring 19 and the bottom of the bells being utilized for the purpose of carrying ballast,

and there may be placed within the space 21 suitable ballast in the form of pig iron, concrete or other dense material, whereby to counterbalance to a large degree the natural buoyancy of the bells when submerged. In this manner the force required to submerge the bell to the required depth may be reduced to a practical minimum value.

Suitable cross braces 22 may be provided for the bells to prevent collapse thereof due to external pressure of the water in which the bell may be submerged. Additionally, in the embodiment illustrated in Figures 1 and 2 of the drawings a series of circular frame members composed of suitably bent channels 23 may be provided for the bell 8, and in Figures 3 and 4 the framework may be likewise constructed of suitable channels 24 riveted together to form a frame of octagonal cross section and to which the plastic sheets may be secured.

It is to be understood that, although I have illustrated in Figures 3 and 4 an embodiment of the invention having an octagonal shape, that more or less than eight sides may be found desirable.

It is further deemed obvious that the upper and lower surfaces of the bells 8 may be not only flat, as illustrated and described, but conical in shape, if desired.

The embodiments of the invention herein described and illustrated in the accompanying drawings may be modified in respect to the general arrangement of the parts, or the details of constructions, without doing violence to the spirit of the invention, as defined in the appended claim.

What I claim and desired to secure by Letters Patent of the United States is:

In a device of the character described, the combination of a hollow bouyant diving bell, anchoring means located at the bottom of a body of water, supporting means adjacent the surface of said body of water above said anchoring means, a flexible cable having a first end secured to said supporting means, a passage for said cable extending vertically through said bell, pulley means secured to said anchoring means, coupling means secured to said bell for mechanically coupling said cable to said bell, said cable secured to and extending from said supporting means through said passage and thence about said pulley means and to said coupling means, said pulley means, said cable, and said means mechanically coupling being adapted to exert force tending to effect downward motion of said bell against the buoyance of said bell in response to force applied to said first end, said cable and passage serving as a sole guide means for said diving bell during said downward motion.

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