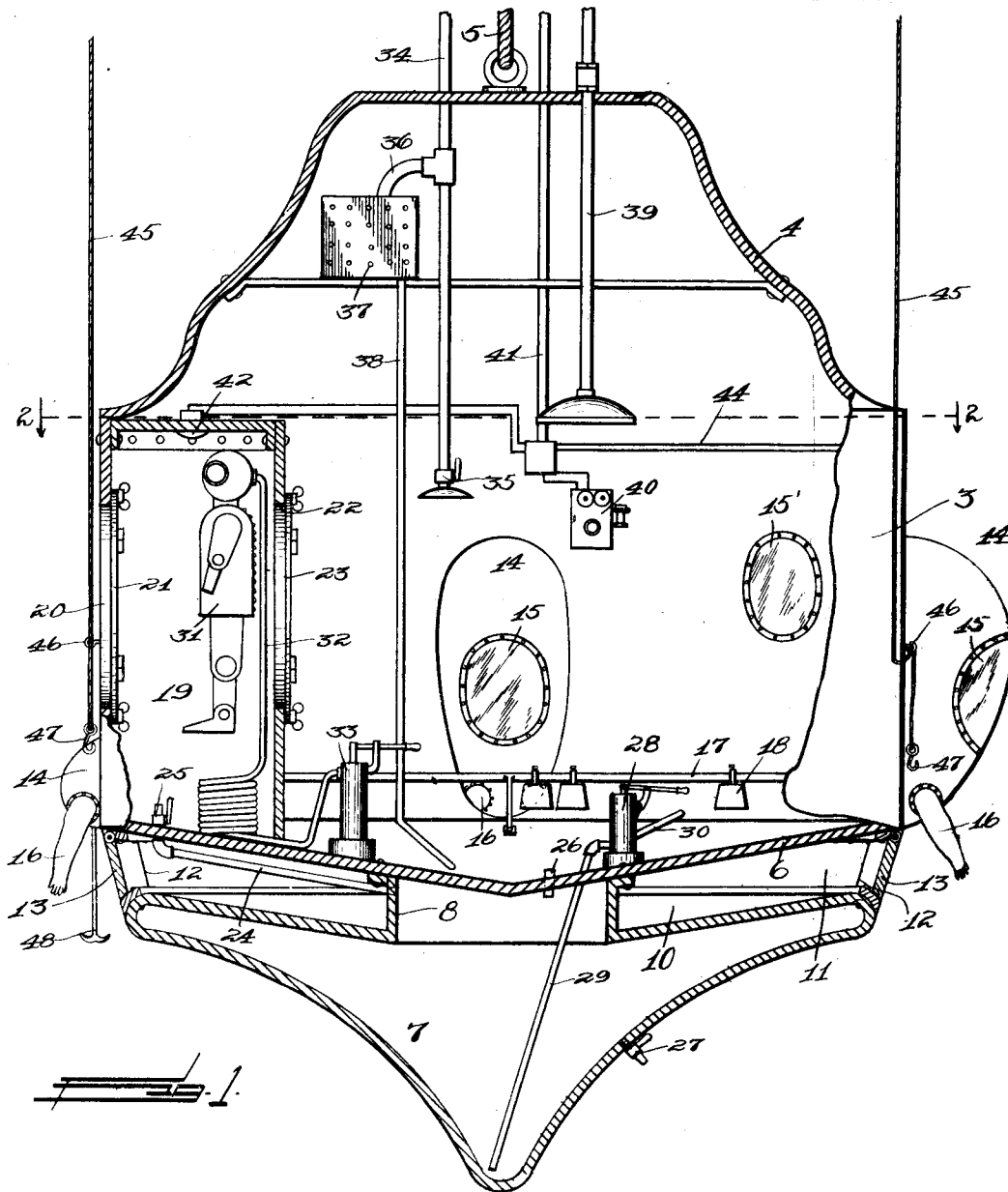


D. K. KARAMANOS.
DIVING APPARATUS.
APPLICATION FILED MAY 1, 1913.

1,068,433.

Patented July 29, 1913.

2 SHEETS—SHEET 1.



Inventor
Demetrios K. Karamanos,

Witnesses
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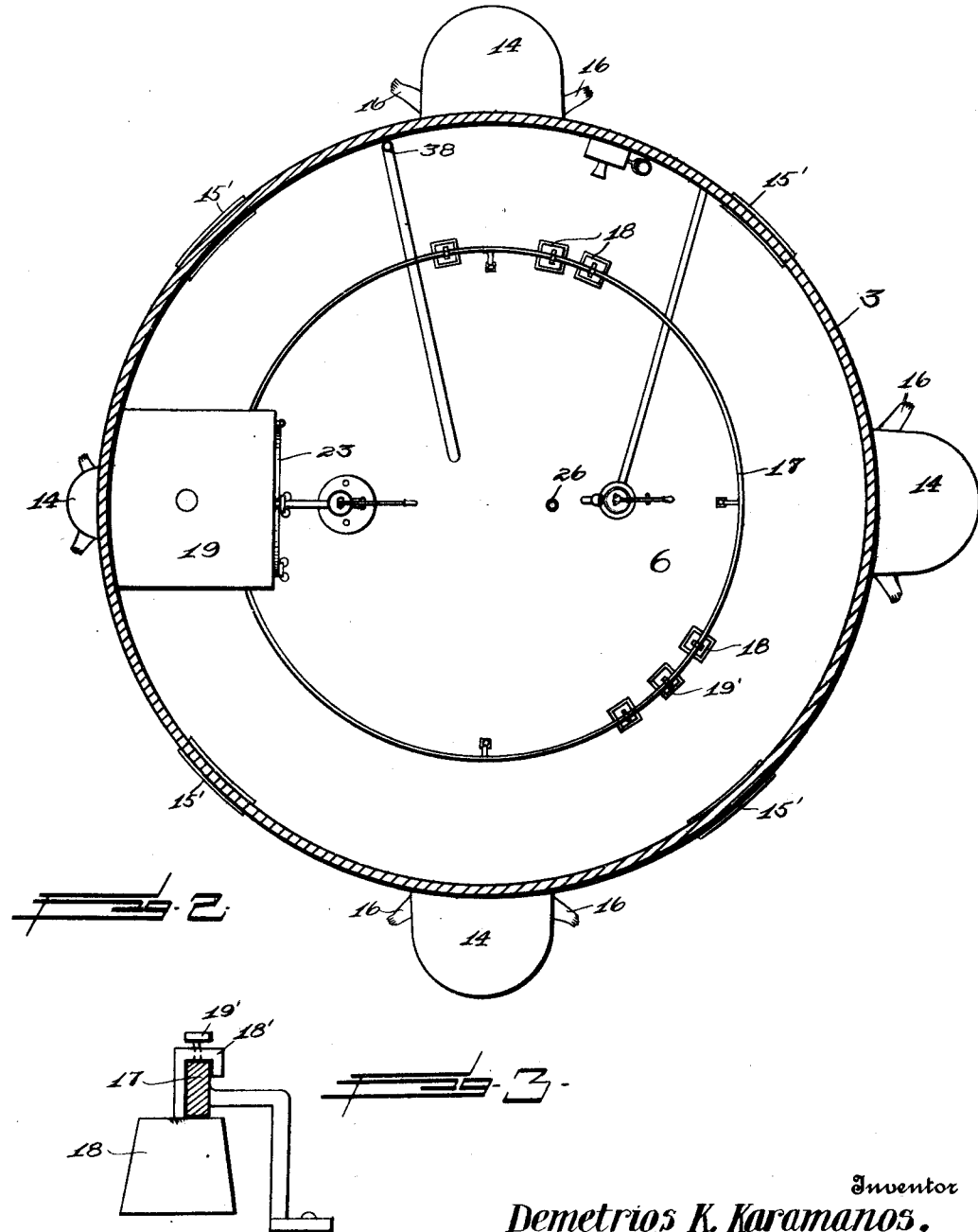
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Attorney

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UNITED STATES PATENT OFFICE.

DEMETRIOS K. KARAMANOS, OF COUNCIL BLUFFS, IOWA.

DIVING APPARATUS.

1,068,433.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DEMETRIOS K. KARAMANOS, a subject of the King of Greece, residing at Council Bluffs, in the county of Pottawattamie and State of Iowa, have invented certain new and useful Improvements in Diving Apparatus, of which the following is a specification.

My invention relates to diving apparatus and has particular reference to a diving shell or casing, by means of which one or more operators may be lowered beneath the water, for doing certain work while remaining within the shell or casing, such as gathering sponges or the like, and if desired, leave the shell or casing and subsequently return therein to be elevated thereby to the surface of the water, without the introduction of the water into the shell or casing.

An important object of this invention is to provide apparatus of the above mentioned character, which is so constructed that the same may be readily lowered beneath the water in proximity to a sponge bed or colony, the operator or operators therein, by suitable means, gathering the sponges and placing them in a collecting receptacle or compartment without leaving the shell or casing of the apparatus.

A further object of this invention is to provide apparatus of the above mentioned character which is so constructed that the same may be vertically tilted or swung in all directions or rolled, upon its lower end, when submerged, by means operated from the interior thereof, whereby the operator or operators therein will be brought into suitable proximity to the sponges or other material to be gathered.

A further object of this invention is to provide novel means whereby the operator may pass from the interior of the main shell or casing of the apparatus, equipped with a diving suit or armor, into the water, and return to the interior of the shell or casing, without the entrance of the water into the same.

Other objects and advantages of this invention will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a central vertical sectional view through the apparatus, Fig. 2 is a horizontal sectional

view taken on line 2—2 of Fig. 1, and, Fig. 3 is a detail view of the balancing means and support therefor.

In the drawings, wherein for the sake of illustration is shown a preferred embodiment of my invention, the numeral 3 designates a preferably cylindrical shell or casing, having its upper end closed by means of a tapered head 4, which decreases in diameter upwardly, as shown. A rope or cable 5 is attached to the upper end of the head 4, by means of which the entire apparatus is raised and lowered. The main shell or casing 3 is provided with port holes which are spanned by sections of glass 15', as shown. The lower end of the main shell or casing 3 is closed by a normally inclined floor or bottom 6, portions of which are adapted to assume a horizontal position when the apparatus is tilted.

Disposed below the floor or bottom 6 is a tapered water collecting shell or casing 7, decreasing in diameter downwardly, as shown. At its upper large end this water collecting shell 7 is provided with an upstanding annular flange 8, which is rigidly connected with the floor or bottom 6, as shown. An annular collecting receptacle or compartment 10 occurs between the floor or bottom 6 and the upper end of the water collecting receptacle 7. The annular collecting receptacle or compartment 10 is surrounded by a ring 11, rigidly connected to the water collecting shell 7 and the floor or bottom 6, the same being provided with openings 12, which are normally closed by vertically swinging doors 13.

The main shell or casing 3 is provided above and adjacent the doors 13 with outwardly extending bay-windows 14, having sight openings formed therethrough, which are spanned by sections of glass 15, as shown. Attached to these bay-windows are flexible hand-arm casings 16, formed of rubber or the like and extending outwardly and downwardly from the same. The operator within the main shell or casing 3, inserts his hands and arms within the hand-arm casings 16, whereby he may open the door 13, gather the sponges or the like, insert them within the collecting receptacle or compartment 10, and subsequently close the door 13, without leaving the main shell 3.

When the apparatus is suitably submerged, the same is supported or rests upon

the lower contracted or pointed end of the water collecting shell or casing 7, whereby the same may swing in all directions or roll. To cause this swinging or rolling movement and to properly control the same, I provide within the main shell or casing 3, a circular track 17, which is suitably supported and upon which is longitudinally movably mounted a suitable number of weights 18. It is thus seen that when these weights are shifted adjacent one of the bay-windows 14, the entire apparatus will be tilted in that direction and held in such tilted position until the weights are again shifted. As more clearly shown in Fig. 3, each weight 18 is provided with a hook 18', which engages the track 17, and carries a clamping bolt 19', whereby the weight may be locked to the track in adjustment at desired positions.

The numeral 19 designates a dressing room, which is air tight, the same being provided with an outer man-hole 20, which is completely closed by a detachable door 21 and an inner man-hole 22, which is completely closed by a detachable door 23. A drain pipe 24 leads into the lower end of the dressing room 19, and is provided therein with a cut-off valve 25, the opposite end of the drain pipe 24 leading into the flange 8, to discharge therein the water from the chamber 19, upon the valve 25 being opened. A pipe 26 serves to establish communication between the upper end of the water collecting shell or casing 7 and the lower end of the main shell or casing 3, whereby as the water is being fed into the shell or casing 7, the air contained therein will pass through the pipe 26 into the main shell or casing 3. The water collecting shell or casing 7 is provided exteriorly thereof with an outlet valve 27, to empty the same when the entire apparatus is elevated above the water. In order that this collecting shell or casing may be emptied while the same remains submerged, I provide a pump 28, arranged upon and above the floor or bottom 6, such pump being connected with an inlet pipe 29, extending through the floor or bottom 6 into the lower end of the collecting shell or casing 7. The discharge or outlet end of the pump 28 is connected with an outlet pipe 30, which passes through the side wall of the main shell or casing 3 to discharge the water into the water surrounding the apparatus. The pump 28 may be of any well known or preferred type and is adapted to be manually operated.

The numeral 31 designates a diving armor which is preferably detachably hung within the dressing room 19, the same having connection with an air supply pipe or hose 32, extending into the main shell or casing 3 and connected therein with a manually operated air pump 33. When it is desired

that the operator should leave the main shell or casing 3 while the same is submerged, he opens the door 23 and enters the dressing room 19, the operator within the main shell or casing 3 again closing the door 23. The operator within the dressing room 19 now puts on the diving armor 31, while the operator within the shell or casing 3 operates the pump 33. The operator having on the diving armor opens the door 21, whereby the dressing room 19 becomes filled with water. The diver may then pass through the outer man-hole 20. Upon his return to the dressing room 19, he closes the door 21, and opens the valve 25, whereby the water contained within the dressing room 19 will flow into the water collecting chamber 7. The diver then removes the armor and upon opening the door 23, he returns to the interior of the main shell or casing 3. When the apparatus is elevated above the level of the water, the collecting shell or casing may be emptied by opening the valve 27 or the same may be emptied while submerged, by the operation of the pump 28.

Air is supplied to the interior of the main shell or casing through a pipe or hose 34, the same being provided at its free end with a valve 35. Connected with the pipe 34 is a branch pipe 36, discharging into an ice containing box 37 having its side walls perforated, whereby the air is cooled before passing into the shell or casing 3. A drain pipe 38 is connected with the imperforate bottom end of the ice box 37, and discharges into the lower end of the shell or casing 3, as shown. The foul air is removed from the interior of the main shell or casing through the outlet pipe 39, the pipes 34 and 39 extending to the surface of the water and having connection with suitable pumps or the like.

The numeral 40 designates a telephone whereby communication may be had with persons at the surface of the water, the telephone circuit extending within a conduit 41.

The numeral 42 designates an electric lamp disposed within the dressing room 19, the same being connected in a suitable circuit 44, it being understood that any suitable number of electric lamps (not shown) may be connected in the circuit 44 and disposed within the main shell or casing.

The numeral 45 designates cables, detachably connected with the main shell or casing, as shown at 46, and carrying at their lower ends hooks 47, disposed adjacent the hand-arm casings 16, whereby sponges or the like may be connected with the hooks 47 and subsequently elevated to the surface of the water.

The numeral 48 designates a suitable tool, which is detachably connected with the main shell or casing adjacent the hand-arm casings 16.

The operation of the apparatus is as follows:—The main shell or casing 3 being above the level of the water, the doors 21 and 23 are opened, whereby the operators 5 may pass therethrough into the main shell or casing. The door 21 is now closed, subsequently to which the apparatus is lowered or submerged in the water, until the lower contracted end of the water collecting shell 10 or casing 7 engages or rests upon bottom. The main shell or casing is lowered into proximity to the sponges or other material to be gathered, subsequently to which the same may be tilted in the desired direction, 15 whereby the operator by using the hand-arm casings 16, may gather the material and store the same within the compartment 11. This tilting is accomplished by moving the weights 18 longitudinally of the track 20 17, toward that side of the shell or casing 3, in the direction of which the same is to be tilted. It is obvious that the clamping bolts 19' will securely lock the weights 18 in adjustment at desired positions upon the track 25 17. When it is desired that the operator leave the main shell or casing 3 while the same is submerged, he passes through the opening 22, the operator who remains within the shell or casing 3 closing the door 23. 30 The operator within the chamber 19 now puts on the diving armor, air being supplied to him from the pump 33, which is now being operated. The operator equipped with the diving armor now opens the door 21, 35 whereby the chamber 19 becomes filled with water, and the operator is allowed to pass therefrom through the opening 20. Upon the return of the operator within the chamber 19, he closes the door 21, subsequently 40 to which he opens the valve 25, allowing the water within the chamber 19 to pass into the shell 7 through pipe 24. The door 23 being now removed the operator within the chamber 19 can pass into the main shell 45 or casing 3. When the apparatus is submerged, the collecting shell 7 may be emptied of the water by operating pump 28, or when the same is elevated above the water level, by opening the valve 27. Air is 50 supplied to the pipe 34 and associated elements, and passes out through pipe 39, as hereinabove described.

It is to be understood that the form of my invention herewith shown and described 55 is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the sub- 60 joined claims.

Having described my invention, I claim:—

1. In apparatus of the character described, the combination with a main shell, of a contracted support connected with the 65 lower end thereof and serving as a pivot

upon which the shell swings in a vertical plane, and balancing means operated from the interior of the main shell for tilting the same in the desired direction.

2. In apparatus of the character described, the combination with a main shell 70 adapted to be vertically tilted when on bottom, of balancing means connected therewith and adapted to be operated to tilt the main shell in the desired direction.

3. In apparatus of the character described, the combination with a main shell provided with a contracted lower end serving as a pivot upon which the main shell 75 swings in a vertical plane when the same is on bottom, of a track connected with the main shell, and a weight adjustably mounted upon the track to be moved longitudinally thereof.

4. In apparatus of the character described, the combination with a substantially cylindrical main shell provided with a contracted lower end serving as a pivot 80 upon which the main shell swings in a vertical plane when the same is on bottom, of a substantially horizontal longitudinally curved track connected with the main shell and being substantially concentric with relation thereto, and a weight mounted upon 85 the curved track to be moved longitudinally thereof.

5. In apparatus of the character described, the combination with a substantially cylindrical main shell provided with a contracted lower end serving as a pivot 90 upon which the same swings in a vertical plane upon being on bottom, of a substantially circular horizontal track suitably mounted within the lower portion of the main shell in concentric relation thereto, a 95 suitable number of weights mounted upon the track to be moved longitudinally thereof, and means to lock each weight to the track in adjustment at a desired position.

6. In apparatus of the character described, a main shell, a tapered shell spaced 100 from and rigidly connected with the lower end of the main shell for forming a compartment therebetween, hand-arm casings connected with the main shell and extending 105 exteriorly thereof suitably near the compartment, and means to tilt the main shell in the desired direction.

7. In apparatus of the character described, a main shell provided near its lower 120 end with a circumferential material receiving compartment, and hand-arm casings connected with the main shell and extending outwardly thereof and being suitably near 125 the compartment.

8. In apparatus of the character described, the combination with a main shell, of a tapered water collecting shell disposed 130 below and connected with the lower end thereof, a dressing chamber formed within

the main shell, a valved conduit establishing communication between the dressing chamber and the water collecting shell, and means to tilt the main shell.

- 5 9. In apparatus of the character described, the combination with a main shell, of an air supply pipe leading into the same, and means for receiving the air discharging from the supply pipe and cooling the same

and subsequently discharging it into the 10 main shell.

In testimony whereof I affix my signature in presence of two witnesses.

DEMETRIOS K. KARAMANOS.

Witnesses:

C. L. PARKER,

B. P. FISHBURN.

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