

H. J. HEDDERWICK.

LIFE BOAT.

APPLICATION FILED AUG. 20, 1904.

2 SHEETS—SHEET 1.

FIG:1.

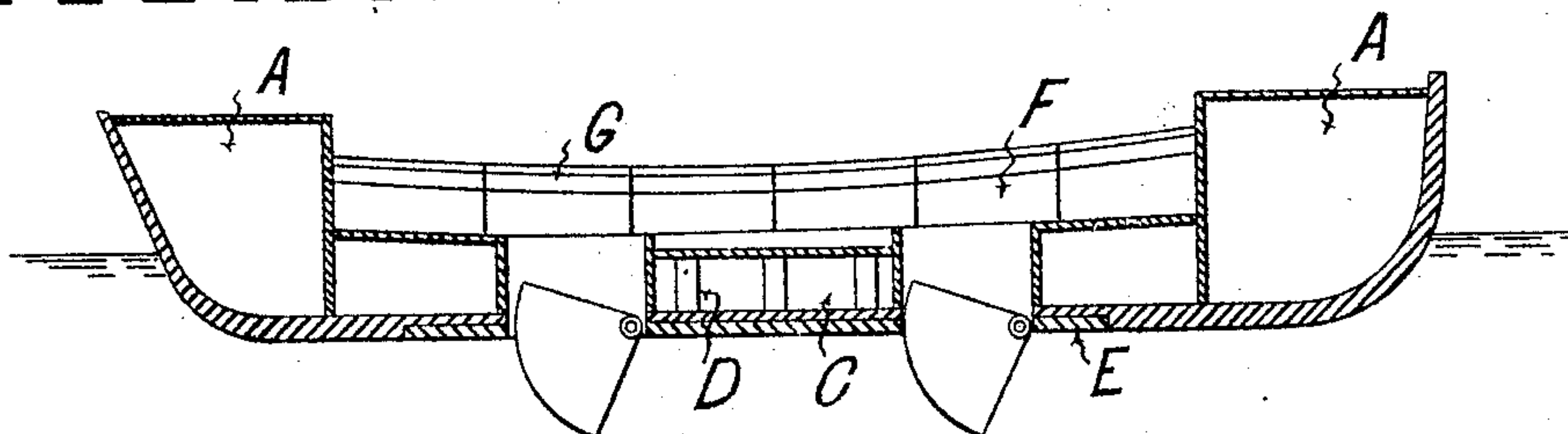


FIG:2.

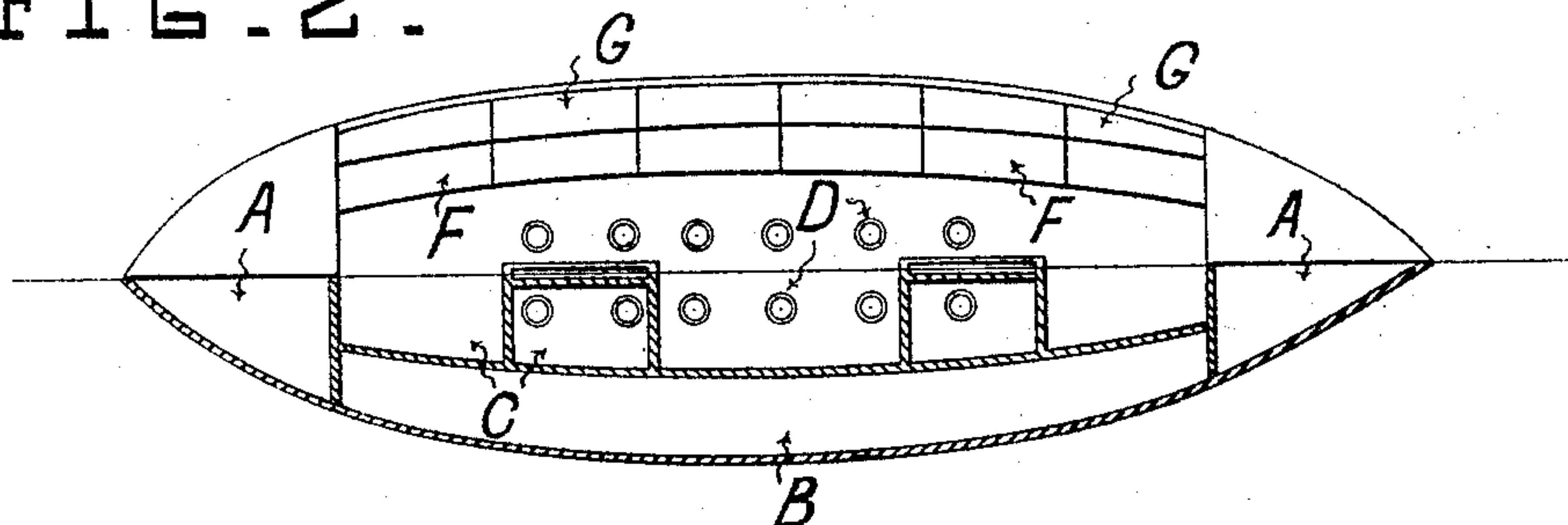
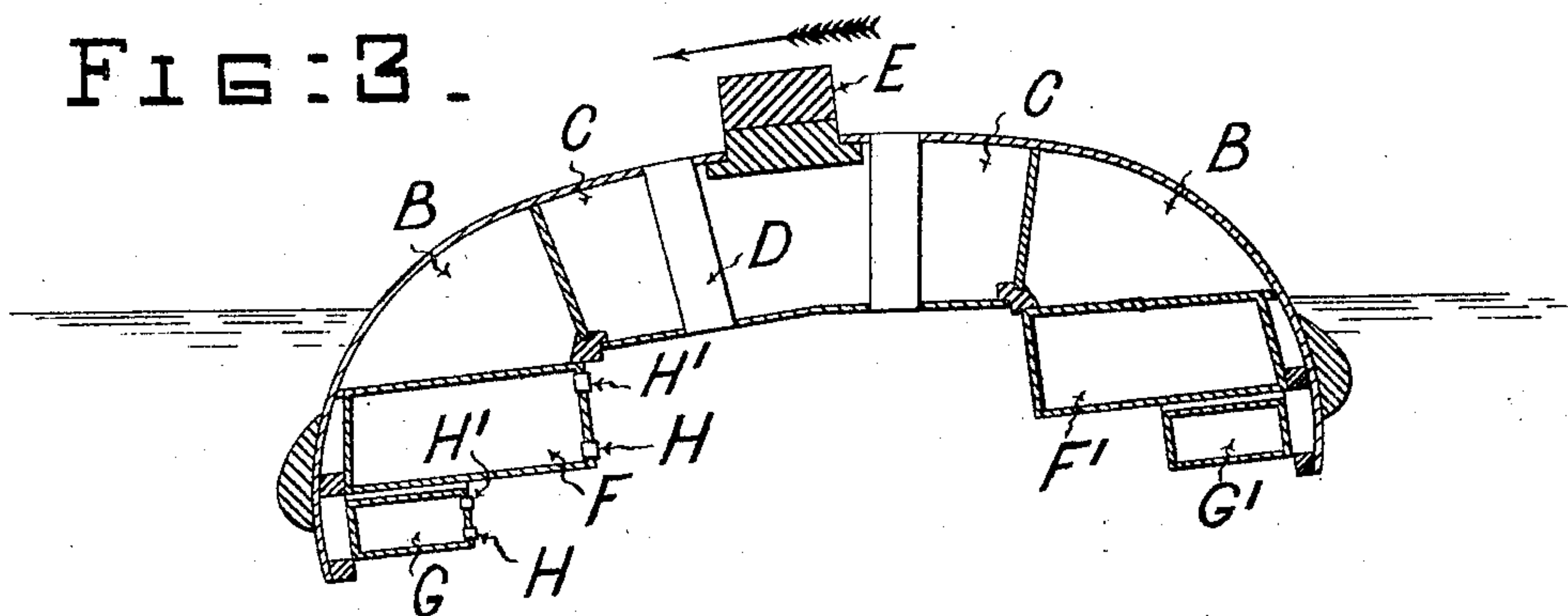


FIG:3.



Witnesses
Charles Smith
Joseph Lee

Inventor
Harold J. Hedderwick
Per Harold Terrell atty.

H. J. HEDDERWICK.

LIFE BOAT.

APPLICATION FILED AUG. 20, 1904.

2 SHEETS—SHEET 2.

FIG:4.

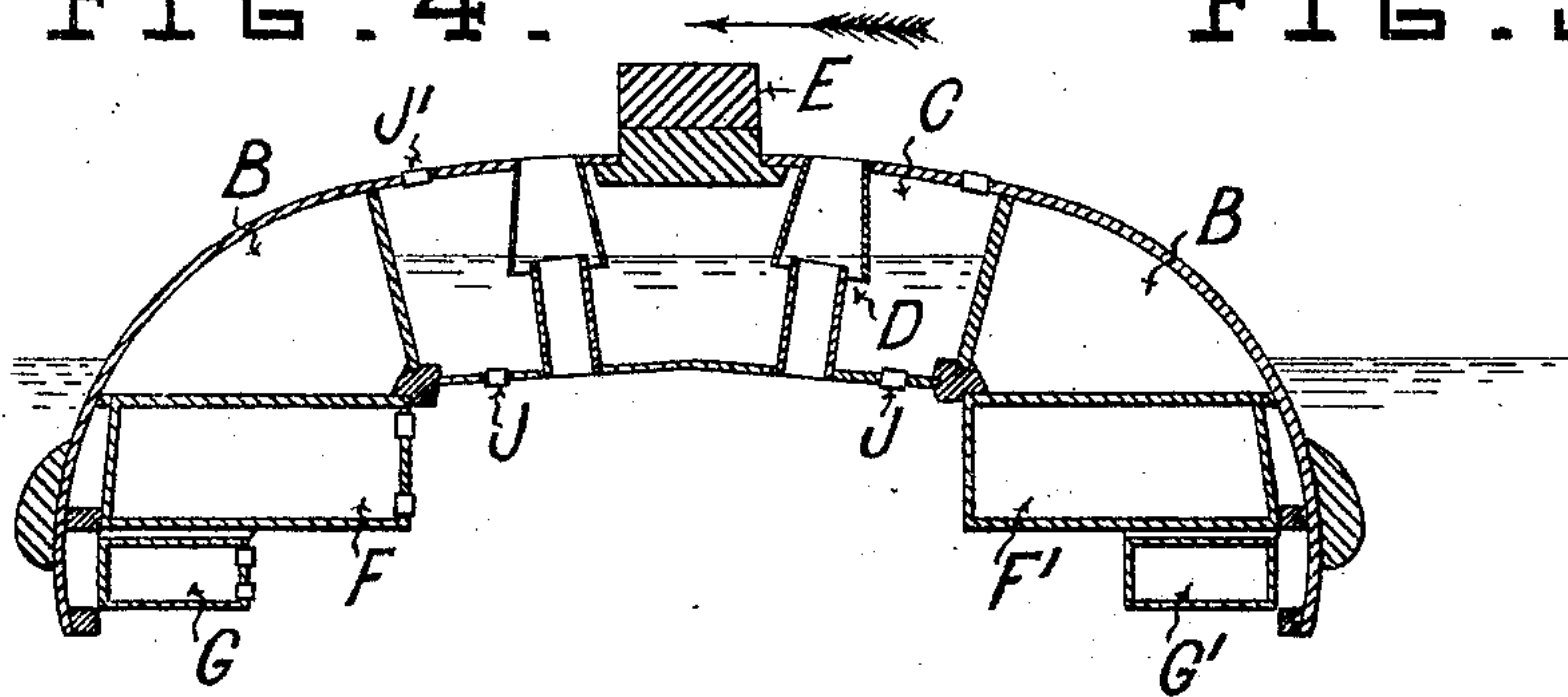


FIG:5.

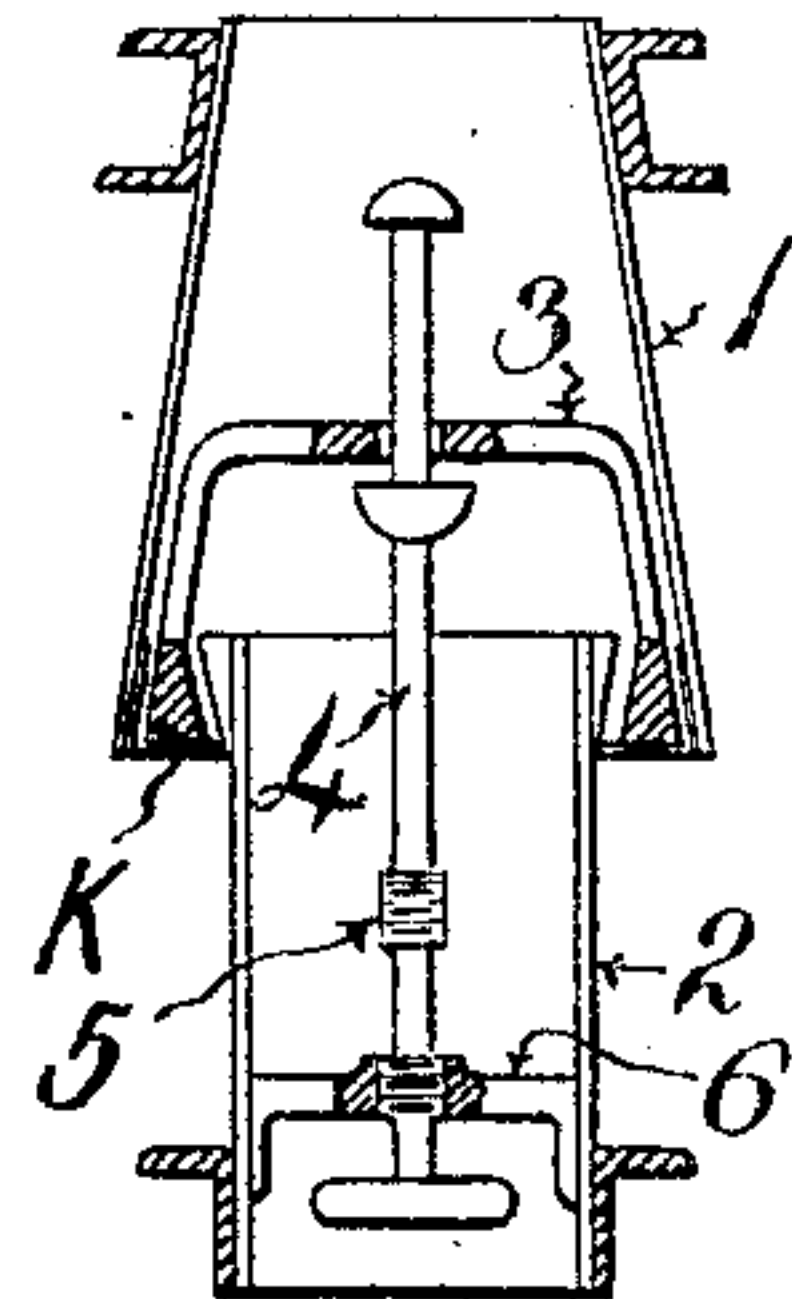


FIG:6.

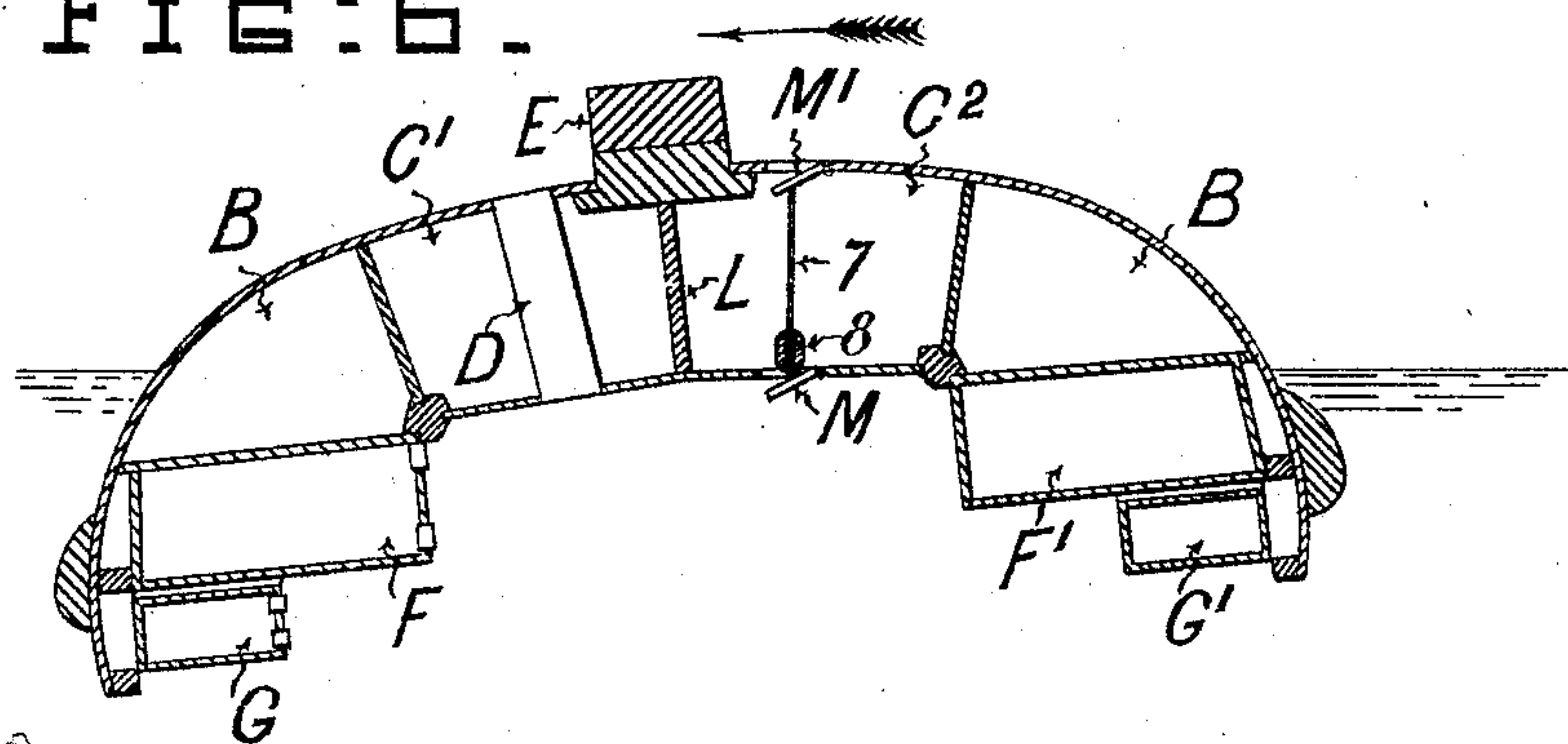
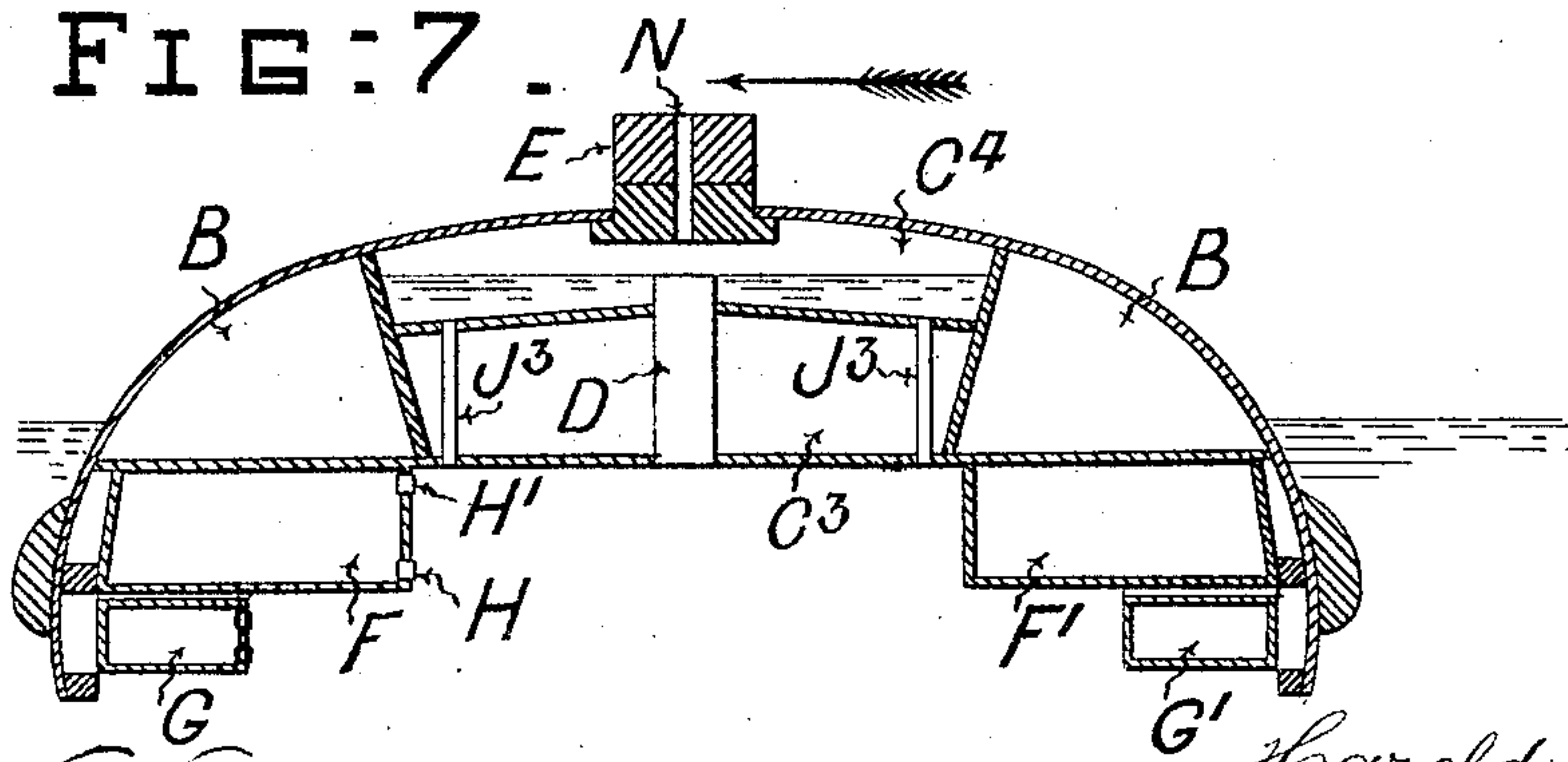


FIG:7.



Witnesses

Chas. H. Smith
Leopold Herr

Inventor

Harold J. Hedderwick
Per Harold Serrell atty.

UNITED STATES PATENT OFFICE.

HAROLD JAMES HEDDERWICK, OF GLASGOW, SCOTLAND.

LIFE-BOAT.

No. 799,378.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed August 20, 1904. Serial No. 221,466.

To all whom it may concern:

Be it known that I, HAROLD JAMES HEDDERWICK, a subject of the King of Great Britain and Ireland, of the "Citizen" office, St. Vincent street, Glasgow, in the county of Lanark, Scotland, have invented new and useful Improvements in Life-Boats, (for which I have made application for a patent in Great Britain, No. 18,209, bearing date August 24, 1903,) of which the following is a specification.

The object of this invention is to construct a life-boat which when capsized will regain its normal position by reason of an adjustment of stability due to a preponderance of water ballast being automatically established in chambers on one side of the boat when it capsizes, the water ballast being subsequently equalized as the boat regains its upright position.

Some examples of the application of this invention are illustrated in the accompanying sheets of drawings.

Figure 1 is a longitudinal section. Fig. 2 is a plan view, partly in section, and Fig. 3 is an inverted midship-section, illustrating a life-boat fitted with keel-ballast constructed with improvements in accordance with this invention. Fig. 4 is an inverted midship-section illustrating a life-boat provided with central compartments for the reception of water ballast constructed and fitted in conjunction with improvements in accordance with this invention, and Fig. 5 is a detail view of a drain-pipe and valve. Fig. 6 is an inverted midship-section illustrating a life-boat provided with centrally-divided compartments for the reception of water ballast constructed and fitted in accordance with this invention. Fig. 7 is an inverted midship-section illustrating a form of life-boat provided with central bottom compartments for the reception of water ballast constructed and fitted in conjunction with improvements in accordance with this invention.

At Figs. 1 and 2, A designates end compartments, and throughout the drawings B designates side longitudinal compartments, D drain-tubes, and E keel-ballast.

Referring to Figs. 1 to 3, in the type of life-boat illustrated compartments A B and central compartments C are of air-tight construction. At one side of the life-boat, above the compartments B, a series of cases F are provided, surmounted by a second but smaller series of cases G. Each case is formed with top inlets H and base-outlets H' of large

capacity. The inlets H and outlets H' are fitted with suitable check-valves. (Not shown in the drawings.) A second series of cases F' G' are similarly located upon the opposite side of the life-boat; but these series differ from the aforesaid in that they are closed or of permanent air-tight construction.

Referring to Fig. 4, the central bottom compartments C are constructed to receive water ballast and are fitted with air admission and escape apertures J J' in the top and bottom thereof. The drain-tubes D in this construction are formed with passages midway between the top and bottom of the compartments C, each fitted with a control-valve. The construction of drain-tube and control-valve will be better understood on reference to Fig. 5, in which 1 designates a base-tube and 2 a top tube, an annular passage being formed between their adjacent ends, which is adapted to be closed by the annular control-valve K. The valve K is formed with an arched yoke 3, which is slidingly mounted upon a central guide-rod 4, which may be secured in the position indicated, whereby the valve closes the annular passage, or the rod 4 may be drawn in and a threaded portion 5 screwed into the bridge 6, which will allow the valve K to rise and fall on its seating.

Referring to Fig. 6, the central bottom compartments are longitudinally divided by a bulkhead L, producing two independent series of cases C' C'', both adapted to receive water ballast. The cases C' are closed and are permanently charged with water ballast. The cases C'' are formed with top outlets and base-inlets fitted, respectively, with valves M M'. The valves are coupled together by a rod 7, and the base-valve M' is of larger area than the top valve M. A momentum-weight 8 may be fitted upon and adapted to slide freely on the rod 7.

Referring to Fig. 7, upper and lower central chambers C³ C⁴ are formed in the base of the boat. The lower chambers C⁴ are constructed to receive water ballast, and the upper chambers C³ are of air-tight construction. In this instance the drain-tubes D are arranged centrally and extend into the chambers C⁴, terminating about midway between the top and bottom of each chamber. Central slots N are formed through the keel, fitted with means for closing same, if required, and air admission and escape ways J³ are provided in the top of the chambers C⁴.

With the constructions as described in ref-

erence to Figs. 4 and 7 it is to be stated that air-tight compartments, such as A B, and series of cases F G F' G', arranged as described with reference to Figs. 1 to 3, are to be fitted to act in conjunction therewith; but the construction described in reference to Fig. 6 may or may not be so fitted, as it constitutes a complete acting construction in itself, and, further, the cases and compartments are preferably transversely subdivided into series.

In action when the life-boat as described with reference to Figs. 1 to 3 is capsized water will flow into the cases F and G through the inlets H. This will produce a readjustment of stability, acting to turn the boat in the direction indicated by the arrow, and as the boat regains the upright position the water will automatically flow out of the cases by the outlets H', and when the cases F G are drained normal conditions will be reestablished. The check-valves in the outlets H' will prevent ingress of water to the cases when the life-boat is upright.

The action of the life-boat constructed as illustrated at Fig. 4 will be as follows: When capsized, the water ballast will run out of the compartments C, past the annular valves K, to about the level indicated, the cases F G will fill, and as the boat begins to turn over the water remaining in the compartments C will flow to the descending side and produce an additional turning force. This will produce a readjustment of stability, acting to turn the boat in the direction indicated by the arrow. As the boat regains the upright position the compartments C will automatically refill, water flowing in past the valves K, and when the cases F G are drained normal conditions will be reestablished. The valves K will remain closed until the life-boat is almost inverted, so that in other conditions the compartments C will remain fully charged.

The construction as illustrated at Fig. 6 will act as follows: When the life-boat is capsized, the water ballast will flow out of the cases C² past the outlet-valves M, the air entering by inlet-valves M'. Water ballast will remain in the cases C'. These conditions will produce a readjustment of stability, acting to turn the boat in the direction indicated by the arrow. As the boat regains its upright position the water will automatically flow into the cases C² past the valve M', and when the compartments C² are again full normal conditions will be reestablished.

The construction as illustrated at Fig. 7 will act as follows: When the life-boat is capsized, the water ballast will run out of the chambers C⁴, through the drain-tubes D, to about the level indicated, the cases F G will fill, and as the boat begins to turn over the water remaining in the chambers C will flow to the descending side thereof and produce an additional turning force. This will produce a readjustment of stability, acting to turn the boat in

the direction indicated by the arrow. As the boat regains the upright position the water will flow in through the slots N, air escaping by the tubes J³, and refill the chambers, and when the cases F G are drained normal conditions will be reestablished.

The series of cases F G preferably only extend in depth down to about the load water-line and in length between the end compartments, as indicated at Fig 2; but it is to be understood that the two separate series are merely given as an illustration of one practical form. Other constructions of divided or undivided or extended series may be adopted, if desired.

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. A life-boat having a series of cases located at one side of the center line of the boat formed with inlets and outlets fitted with automatically-acting valves, in combination with a series of closed cases located at the opposite side of the center line of the boat, arranged and acting substantially as and for the purposes set forth.

2. A life-boat having end, side longitudinal, and central air-tight compartments, in combination with a series of cases with top inlets and base-outlets formed therein located at one side of the boat, together with a series of air-tight cases located upon the opposite side of the boat, fitted and arranged for the purposes substantially as set forth.

3. A life-boat having central bottom compartments provided with air admission and escape apertures and drain-tubes formed with midway passages fitted with control-valves, in combination with a series of cases with top inlets and base-outlets formed therein located at one side of the boat, together with a series of air-tight cases located upon the opposite side of the boat, fitted and arranged for the purposes set forth.

4. A life-boat having end and side longitudinal air-tight compartments, in combination with central bottom compartments having air admission and escape apertures, and drain-tubes, formed with midway passages, fitted with control-valves, together with a series of cases with top inlets and base-outlets formed therein located at one side of the boat, together with a series of air-tight cases located upon the opposite side of the boat, fitted and arranged for the purposes substantially as set forth.

5. A life-boat having a series of water-charged cases located on one side of the center line of the boat and a series of cases, located upon the opposite side, provided with top outlets and base-inlets fitted with valves, coupled together by a rod, in combination with a series of cases with top inlets and base-outlets formed therein located at one side of the boat, together with a series of air-tight cases located upon the opposite side of the boat, fitted

ted and arranged for the purposes substantially as set forth.

5 6. A life-boat having end and side longitudinal air-tight compartments, in combination with, a series of water-charged cases located on one side of the center line of the boat, and a series of cases, located upon the opposite side, provided with top outlets and base-inlets fitted with valves, coupled together by a rod, in combination with a series of cases with top inlets and base-outlets formed therein located at one side of the boat, together with a series of air-tight cases located upon the opposite side of the boat, fitted and arranged for the purposes
15 substantially as set forth.

20 7. A life-boat having upper air-tight central chambers with a lower central water-ballast chamber, drain-tubes extending midway into the lower chamber, central slots in the keel, airways in the top of the lower chamber, in combination with a series of cases with top inlets and base-outlets formed therein located at one side of the boat, together with a

series of air-tight cases located upon the opposite side of the boat, fitted and arranged for the purposes substantially as set forth. 25

8. A life-boat having end and side longitudinal air-tight compartments in combination with lower central water-ballast chambers, drain-tubes extending midway into the chambers, central slots in the keel, airways in the top of the lower chambers, together with a series of cases with top inlets and base-outlets formed therein located at one side of the boat, together with a series of air-tight cases
35 located upon the opposite side of the boat, fitted and arranged for the purposes substantially as set forth.

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

HAROLD JAMES HEDDERWICK.

Witnesses:

J. ALFRED BREWER,
JNO. McFADZEAN.