No. 875,875. PATENTED JAN. 7, 1908.

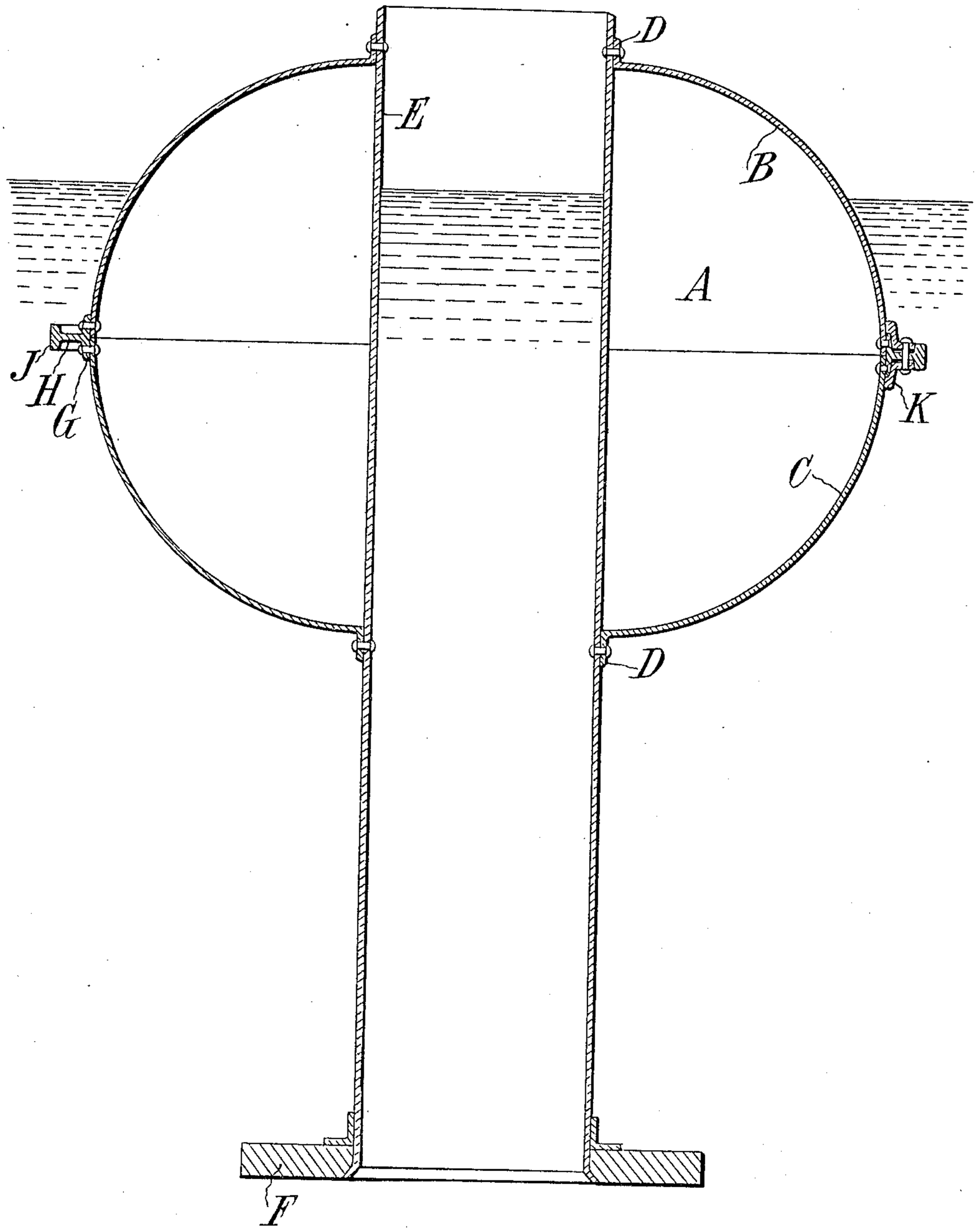
T. L. WILLSON.

BUOY.

APPLICATION FILED DEC. 11, 1905. RENEWED NOV. 16, 1907.

3 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:
Fred White
Rene' Bruine.

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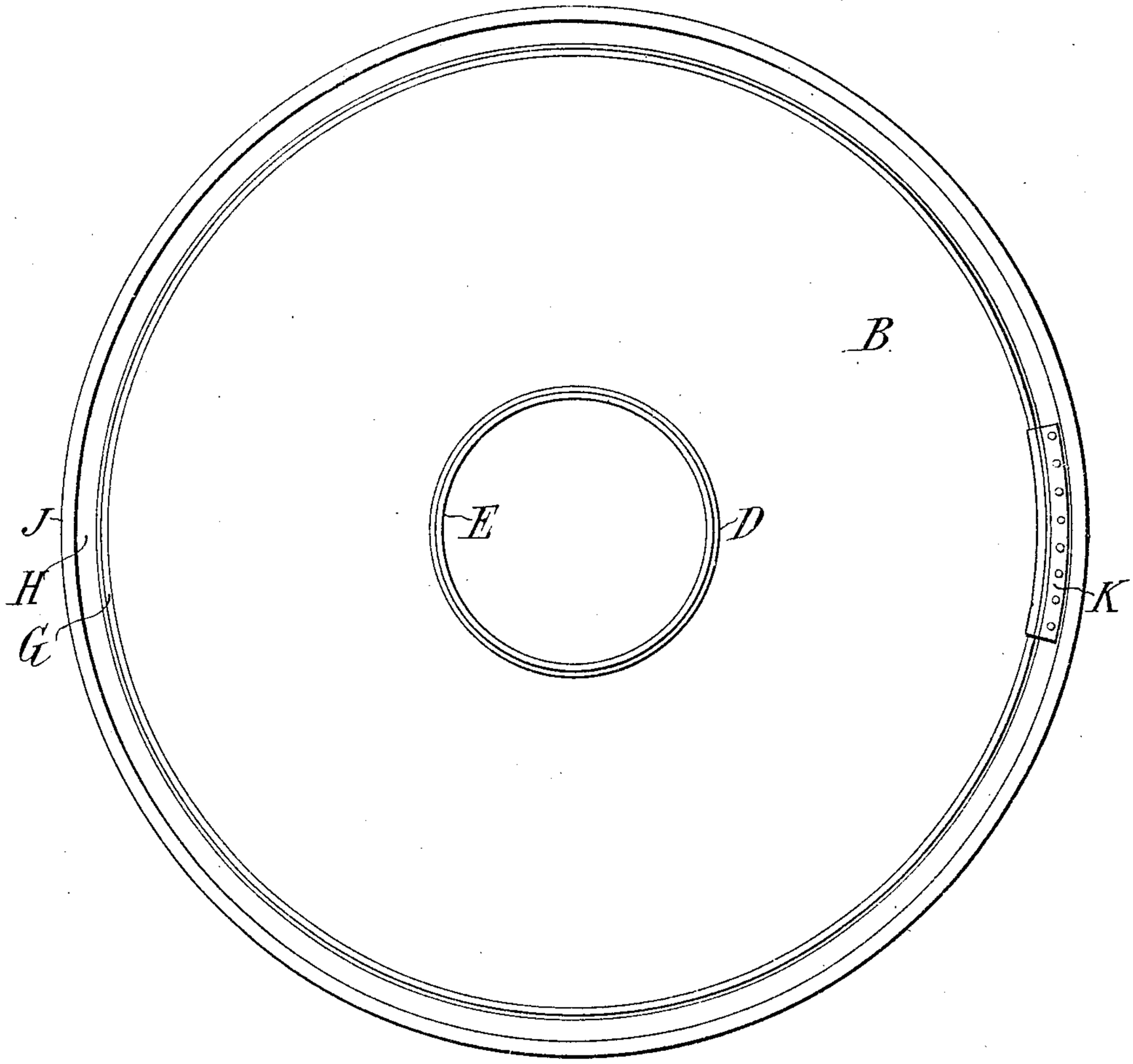
3 SHEETS—SHEET 2.

FIG. 2.



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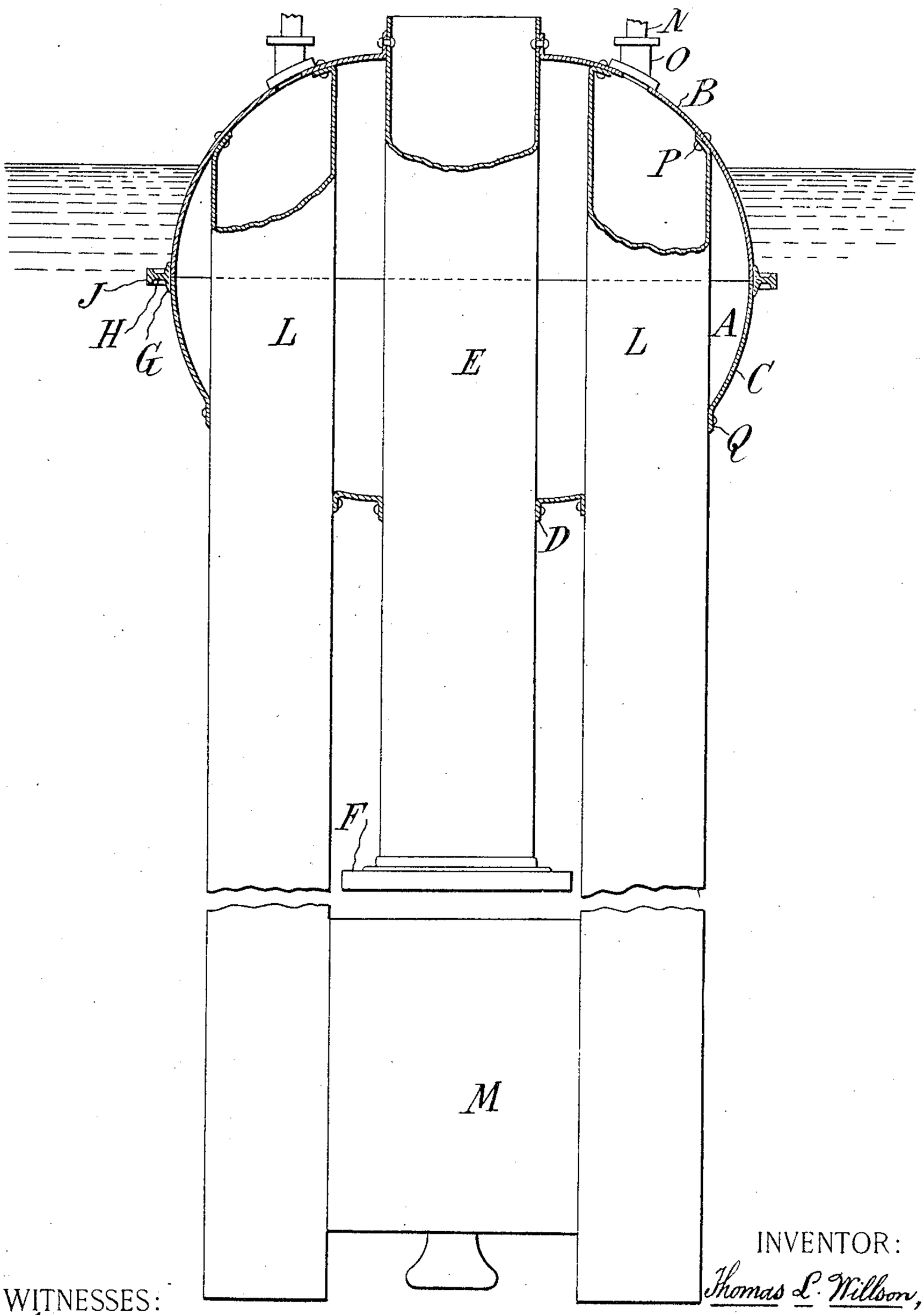
3 SHEETS—SHEET 3.

FIG. 3.



WITNESSES:
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UNITED STATES PATENT OFFICE.

THOMAS L. WILLSON, OF OTTAWA, ONTARIO, CANADA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO UNITED STATES MARINE SIGNAL COMPANY, OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

BUOY.

No. 875,875. Specification of Letters Patent. Patented Jan. 7, 1908.

Application filed December 11, 1905, Serial No. 291,238. Renewed November 16, 1907. Serial No. 402,533.

To all whom it may concern:

Be it known that I, THOMAS L. WILLSON, a subject of the King of Great Britain, residing at Ottawa, in the Province of Ontario, Canada, have invented certain new and useful Improvements in Buoys, of which the following is a specification.

This invention aims to provide certain improvements in the structure of a buoy whereby it is made of the greatest strength and simplicity and consequently durability, and whereby it freely sheds water and ice which, upon buoys of other construction sometimes accumulates to such an extent as to considerably submerge the buoy or capsize it. To this end the upper portion, preferably the entire upper half is formed of a single plate of spheroidal shape to freely shed water and ice, the entire flotation chamber being composed substantially of two pieces, the upper plate referred to and a similar lower plate, each of the plates being pressed into a dished or hemispheroidal shape. These two plates are united at their circumferences to each other, preferably along a horizontal plane, and each is connected to a vertical portion, preferably a tube passing through the center of the flotation chamber. This central portion preferably extends below the flotation chamber and is provided with a weight at its lower end for holding the buoy upright. The tubular form of the central member contributes considerable lateral stiffness.

The simplicity and strength of the construction enable the buoy to resist the severe blows and strains which it receives and make it of the greatest value in buoys of extremely large sizes such, for example, as large signaling buoys carrying bells, lanterns or horns or other signaling devices. Preferably also the flotation chamber is stiffened by a member extending around the circumferential joint between the two plates, forming a complete circle and preferably on the outside, thus constituting also a fender for saving the buoy from injury by floating ships, wreckage, or the like.

Other improvements are referred to in detail hereinafter.

The accompanying drawings illustrate an embodiment of the invention.

Figure 1 is a vertical longitudinal section; Fig. 2 is a plan; Fig. 3 is a vertical section of part of another buoy.

Referring to the embodiments of the invention illustrated, the flotation chamber or air chamber A is formed of an upper plate B and a lower plate C. These plates are stamped or drawn out of heavy sheet steel into the dished or spheroidal form indicated, each being preferably a hemispheroid as shown, and each having a central opening surrounded by a flange D preferably extending outward to facilitate connection with the vertical member. The vertical tubular member E passes through the chamber and extends considerably below the lower end thereof, carrying at its own lower end a weight F. This tube is connected to the flanges D preferably by means of rivets. The circumferential edges of the plates B and C are faced to make a good joint and are held together by the riveting or otherwise fastening of the plates to the base G of a stiffening member which runs entirely around the flotation chamber. This member is preferably formed of a railroad rail with a web H to give it depth and a head J to receive directly the blows to which the buoy is subjected. Preferably a single rail is used with one joint, which may be made by means of ordinary railway fish plates K. When a floating object is encountered, it strikes the head of the rail, and the pressure is dissipated throughout the entire stiff ring which the rail constitutes, and is transmitted over a considerable area of the flotation chamber and thus lessens the chance of injuring the latter.

The spheroidal flotation chamber may be used independently of the central stiffening member and likewise, this member may be considerably varied in construction, though preferably of the tubular form shown and arranged vertically and centrally. One or more of these features may be omitted without sacrificing all the advantages of the invention.

The member or members connecting the inner portions of the opposite spheroidal plates are not necessarily in the center. Any desired number of such connecting members may be used. For example in Fig. 3 there are shown besides the central member E, two additional members L which serve to assist the central member E in strengthening the structure, the central member serving as a gas chamber and the additional members as compressor tubes for compressing air to operate a whistle or horn, in the manner ex-

plained more fully in my application No. 273,443, filed August 9, 1905, in which the arrangement of these tubes is claimed broadly. In the present application only such features are claimed in connection with these tubes as present modifications of the arrangement described in said prior application.

The lower ends of the tubes L may be braced by a short vertical tube M carrying bell-ringing mechanism, all as described in the aforesaid application. The application of these tubes to the spheroidal flotation chamber A materially assists the central tube in providing the desired stiffness. The construction is simplified in comparison with that prevously proposed by connecting the ends of the air pipes N directly to the upper member B of the flotation chamber, preferably through a thimble O applied to the top of the member B, thus doing away with any internal diaphragm in the compressor tubes. The upper plate B forms the closure or upper wall of the air compression space in the top of the tube L. The tubes L are applied to the upper member B of the flotation chamber by means of inward flanges P on the ends of the tubes. They are connected to the lower member C by means of downward flanges Q similar to the flange D surrounding the central tube.

Though I have described with great particularity in detail a certain specific embodiment of my invention, yet it is not to be understood therefrom that the invention is limited to the particular embodiment disclosed. Various modifications thereof in detail and in the arrangement and combination of the parts may be made by those skilled in the art without departure from the invention.

What I claim is:—

1. A buoy formed substantially of three parts, an axial tubular portion adapted to constitute a gas chamber, and two hemispheroidal plates united circumferentially to each other and each connected to said axial portion and braced thereby.

2. A buoy formed substantially of three parts, two hemispheroidal plates united circumferentially to each other, and an axial tubular portion passing through and outside of both said plates and connected to and bracing said plates.

3. A buoy formed substantially of three parts, an axial tubular portion, and two hemispheroidal plates united circumferentially to each other and each having an opening surrounded by a flange connected to said axial portion.

4. A buoy formed substantially of three parts, an axial tubular central portion E, and two hemispheroidal plates B and C united circumferentially to each other and each connected to said axial portion and braced thereby, said axial portion being extended below the lower plate, and a weight upon the lower end of the axial portion.

5. A substantially three-part buoy comprising in combination an axial tubular portion E, two hemispheroidal plates B and C each connected to said axial portion and braced thereby, and a stiffening member extending around the line of juncture of said plates and connected to each of said plates separately to hold them together and to brace them.

6. A substantially three-part buoy comprising in combination an axial tubular portion E, two hemispheroidal plates B and C each connected to said axial portion and braced thereby, and a stiffening member extending around the line of juncture of said plates and connected to each of said plates separately to hold them together and to brace them, said stiffening member comprising a rail with a base G fastened to said plates, a web H, and a head J.

7. A buoy having a flotation chamber formed of hemispheroidal plates united circumferentially to each other edge to edge, and a stiffening member extending around the line of juncture of said plates, connecting and bracing them.

8. A buoy formed with two hemispheroidal plates united circumferentially to each other, an axial member connected to said plates and bracing the same, and additional members connecting said plates to each other.

9. A buoy having an air compressor tube connected at its upper end to the top plate B of the buoy, and an air pipe N having its end connected to said plate, whereby the top plate B forms the upper wall of the air compression space.

In witness whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

THOMAS L. WILLSON.

Witnesses:
DOMINGO A. USINA,
FRED WHITE.