No. 671,185. Patented Apr. 2, 1901.

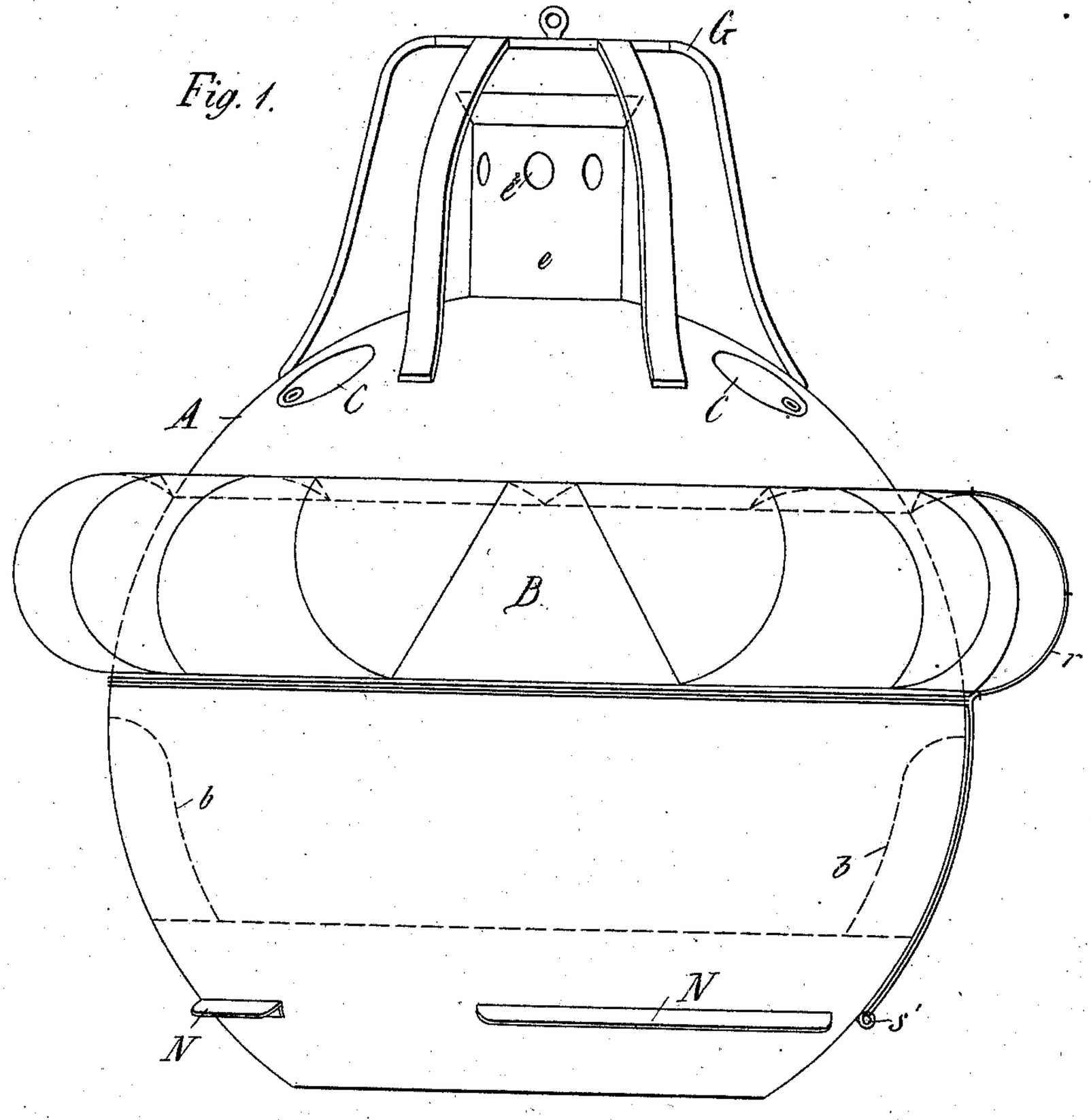
J. M. DÖNVIG.

LIFE SAVING APPARATUS.

(Application filed July 9, 1900.)

(No Model.) 10 Sheets—Sheet 1.

Fig. 1.



Witnesses:
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J. Buehler.

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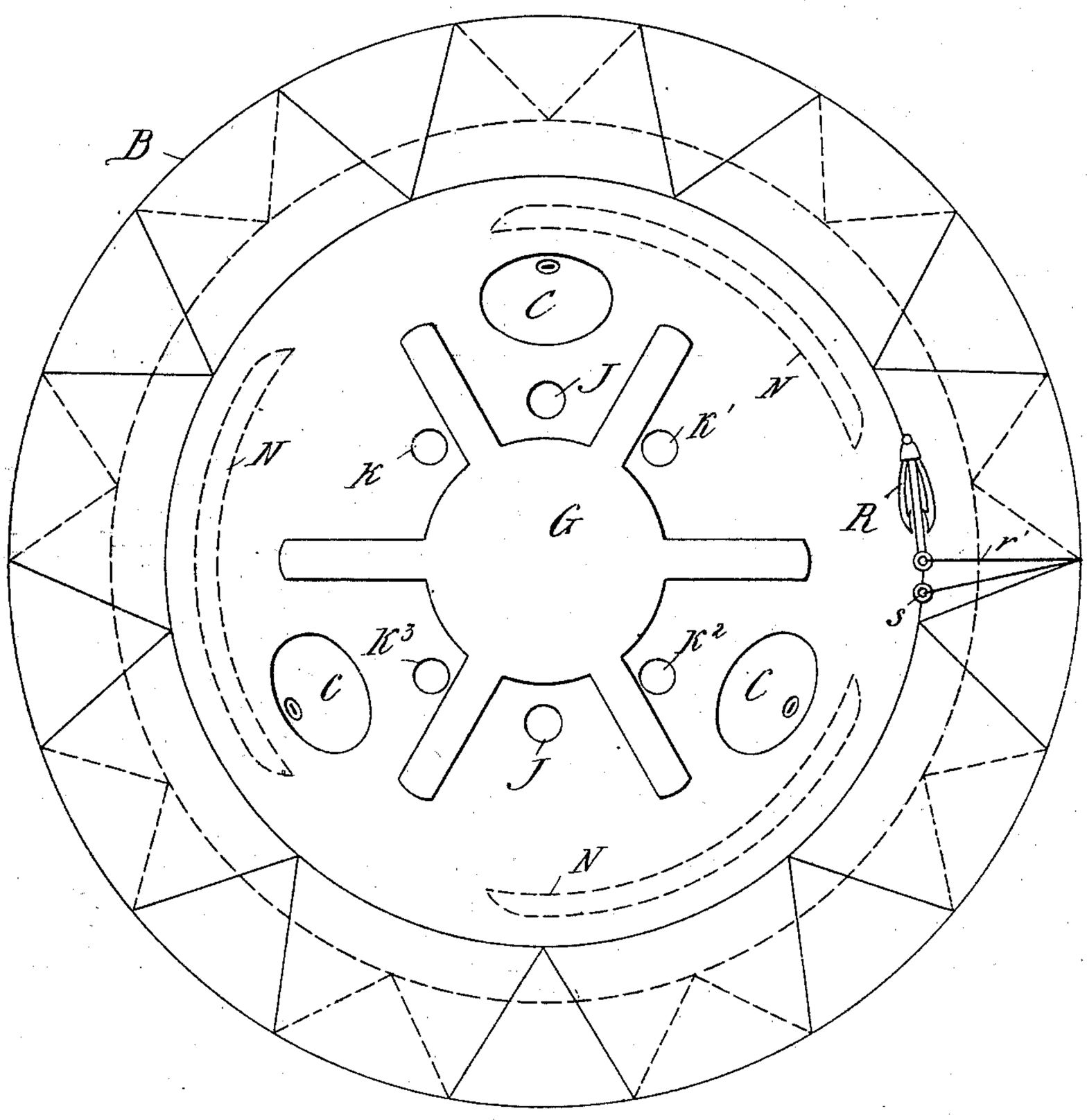
Fig. 2.



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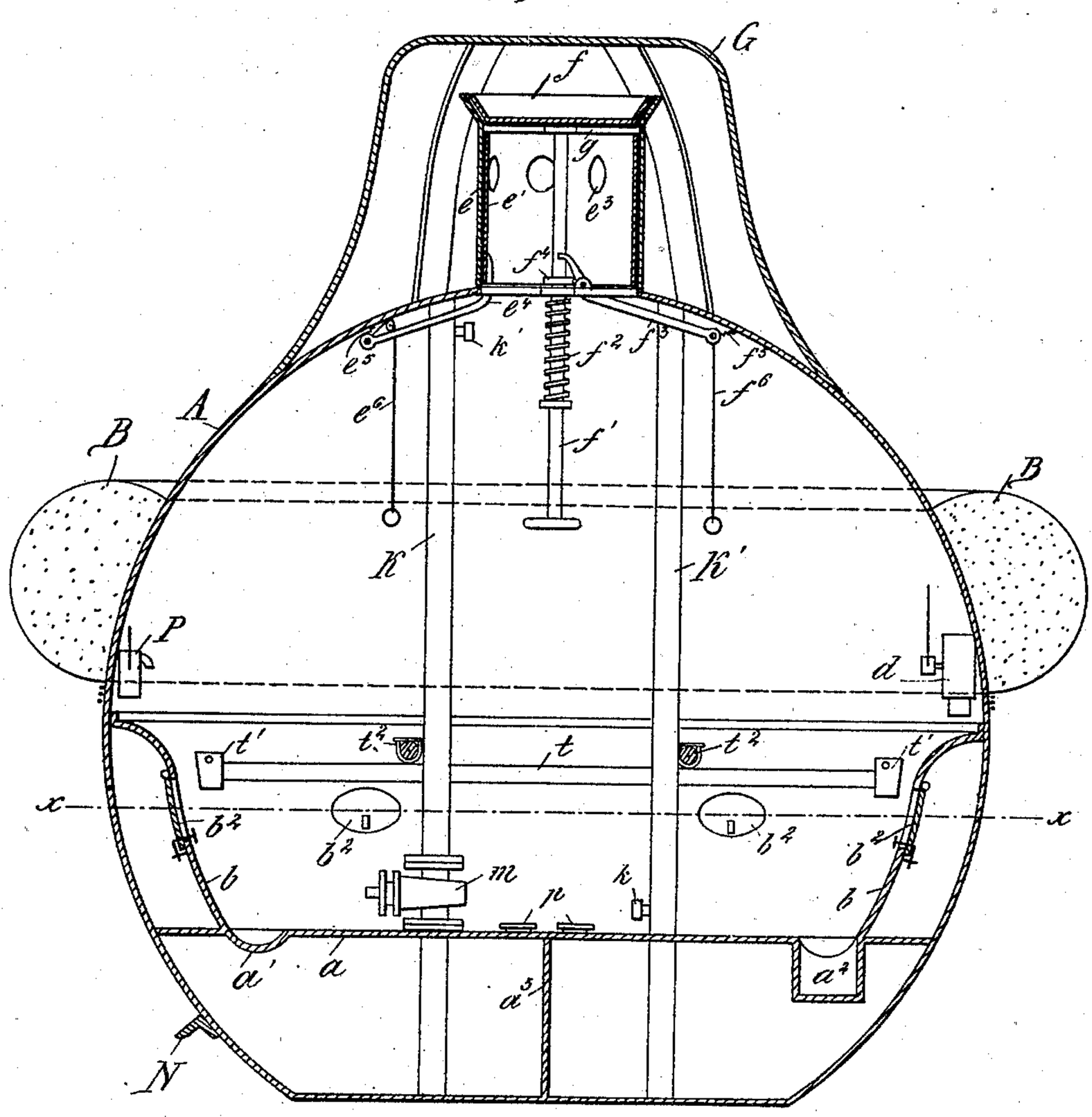
10 Sheets—Sheet 3.

Fig. 3.



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10 Sheets—Sheet 4.

Fig. 4.

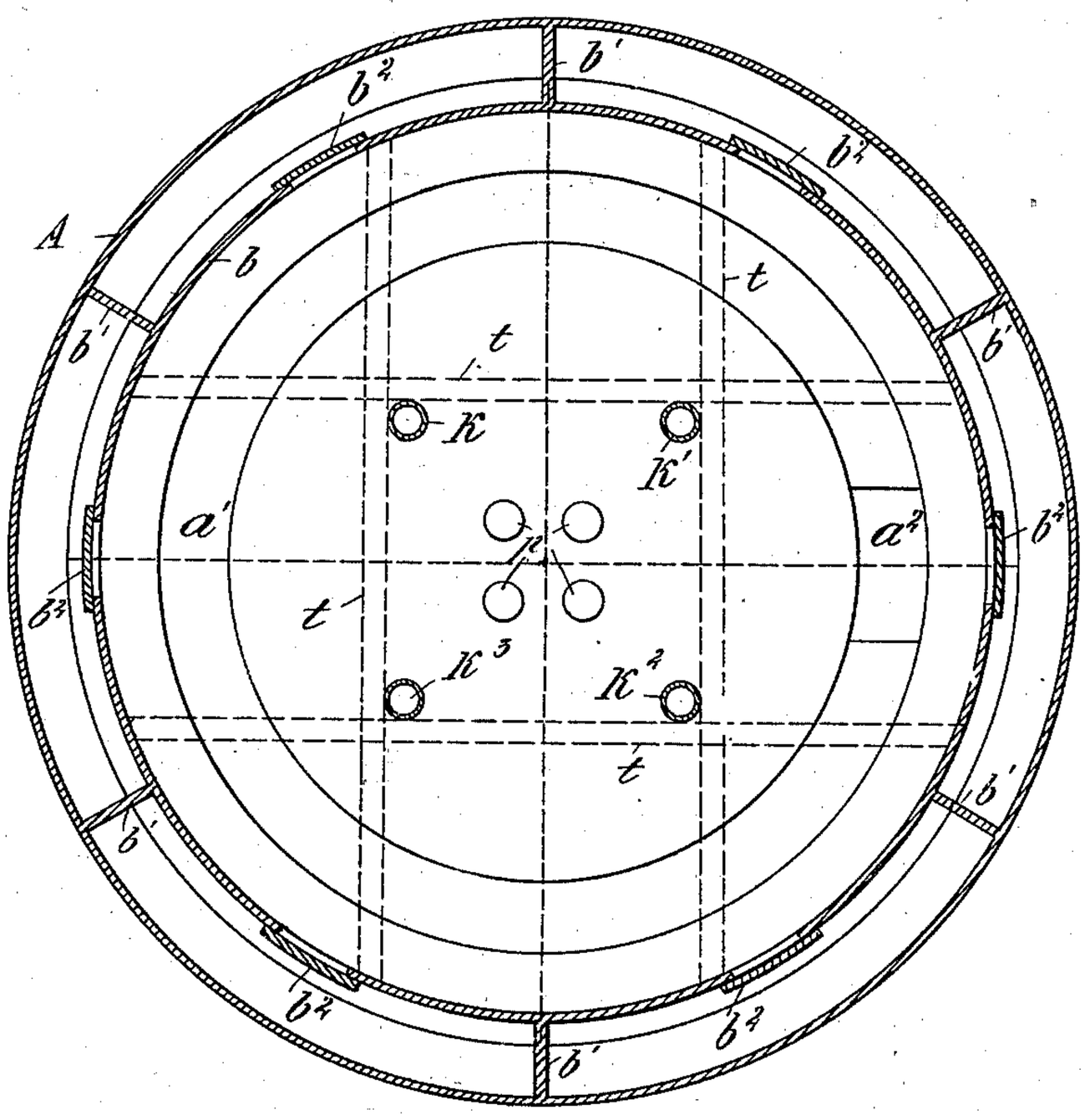

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Fig. 5.

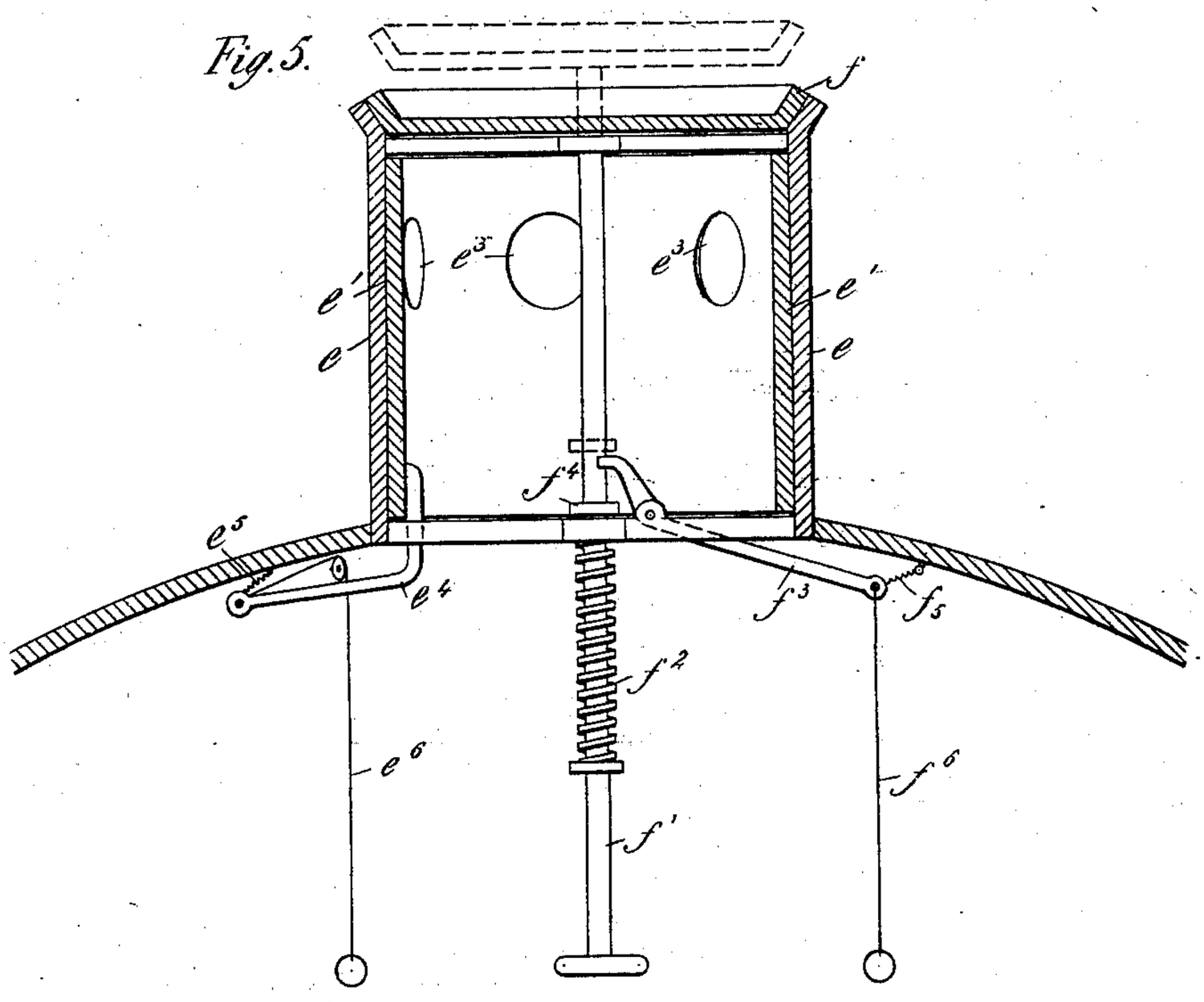
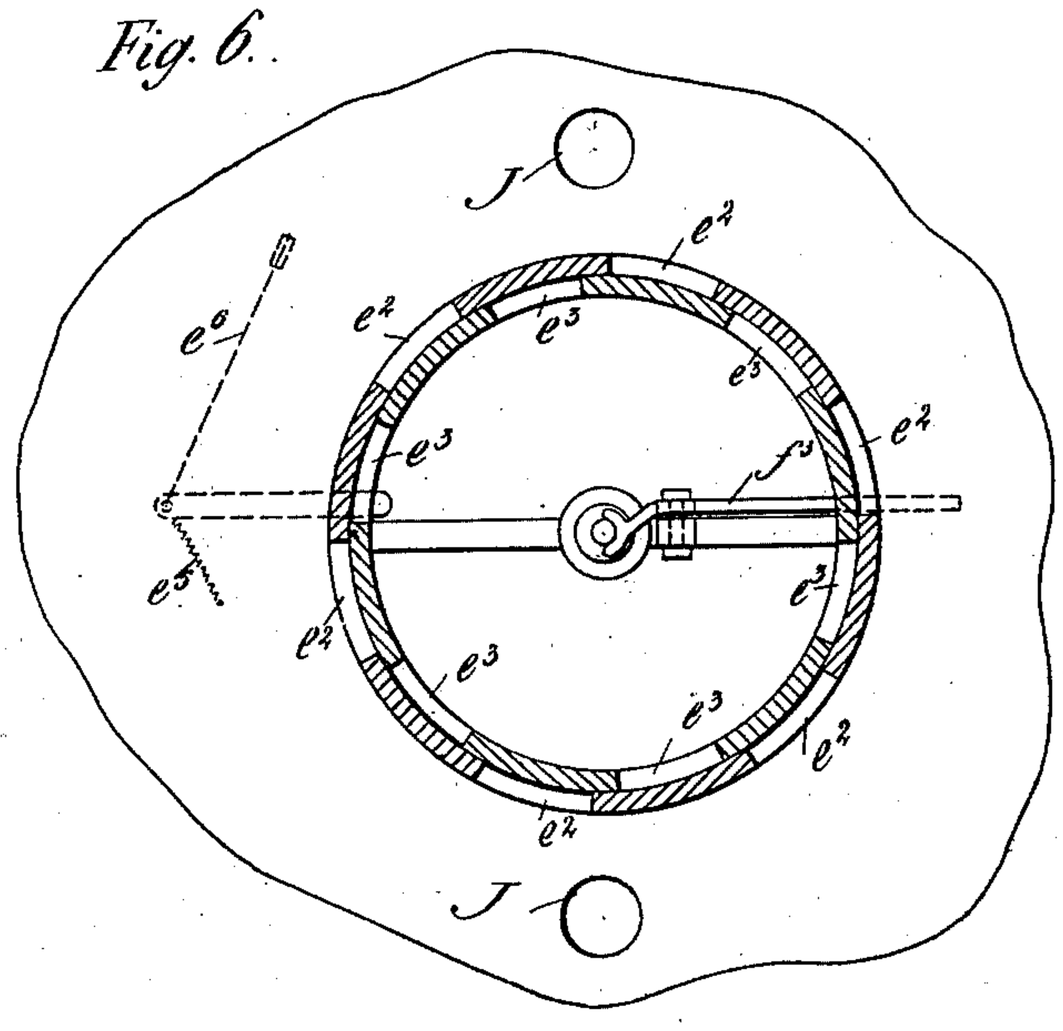


Fig. 6.



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(No Model.) 10 Sheets—Sheet 6.

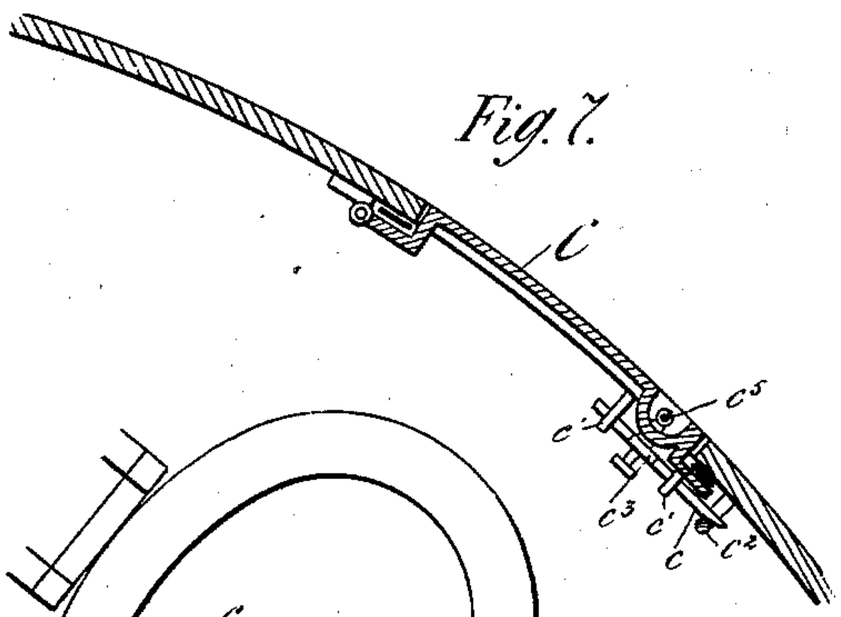


Fig. 7.

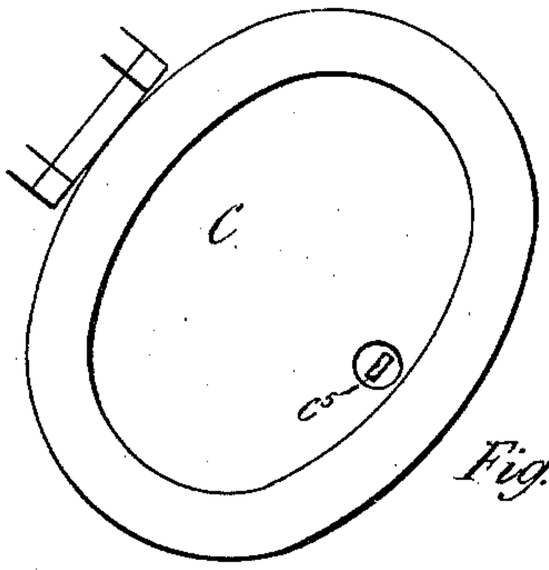


Fig. 8.

Fig. 9.

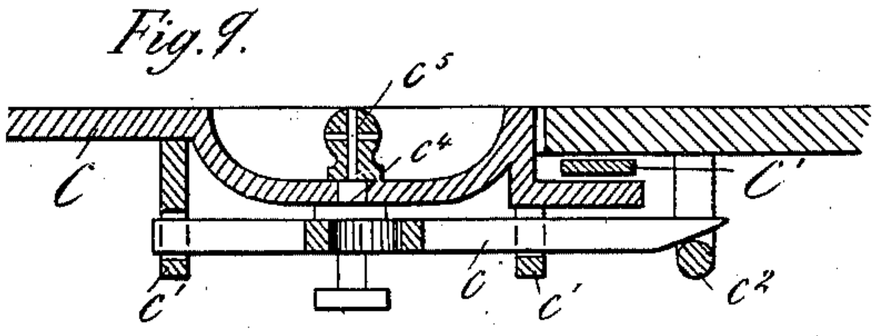


Fig. 10.

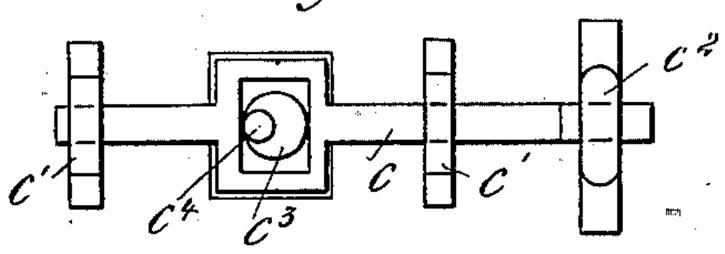


Fig. 11.

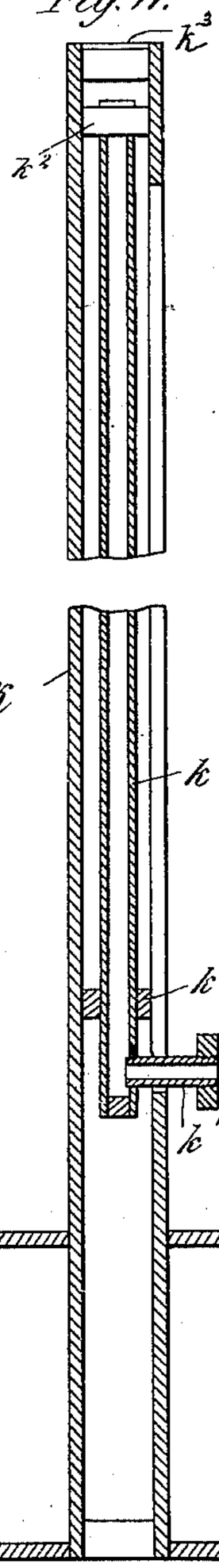
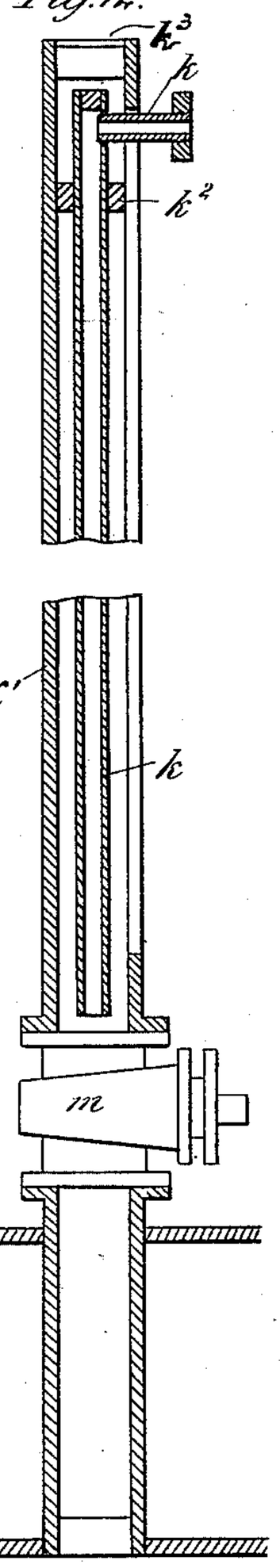


Fig. 12.



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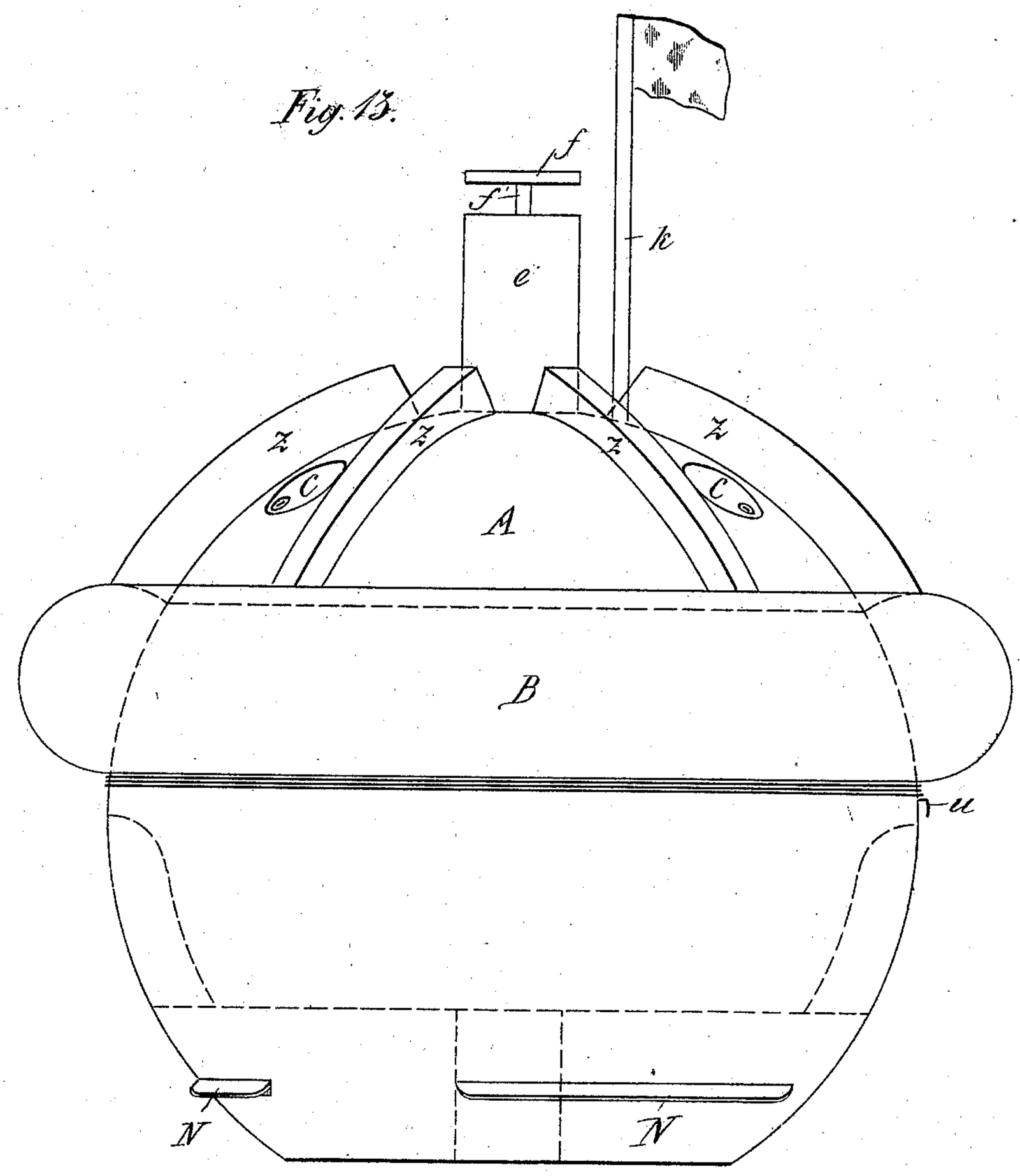
(No Model.) 10 Sheets—Sheet 7.

Fig. 13.



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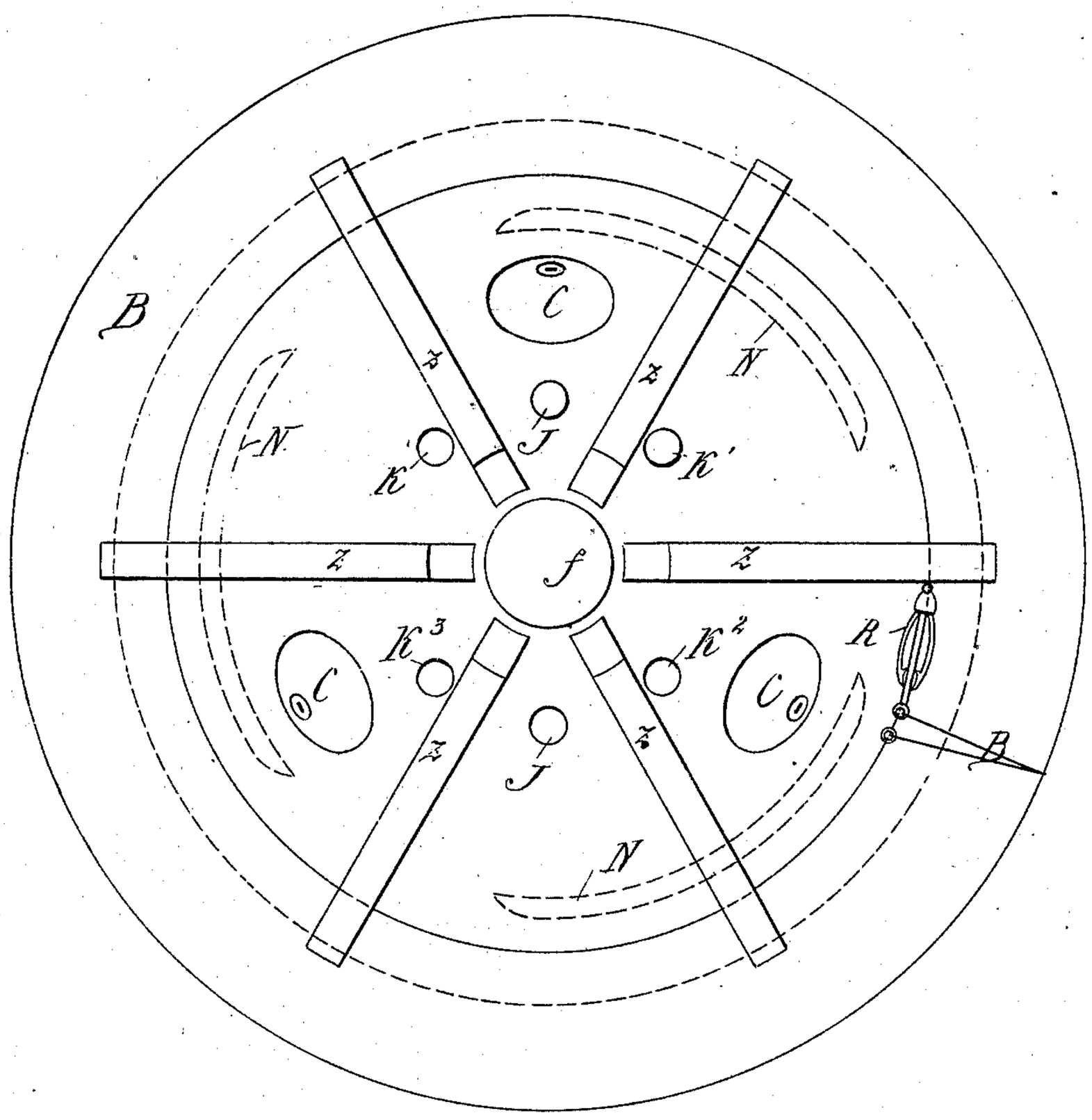
LIFE SAVING APPARATUS.

(Application filed July 9, 1900.)

(No Model.) 10 Sheets—Sheet 8.

Fig. 14.



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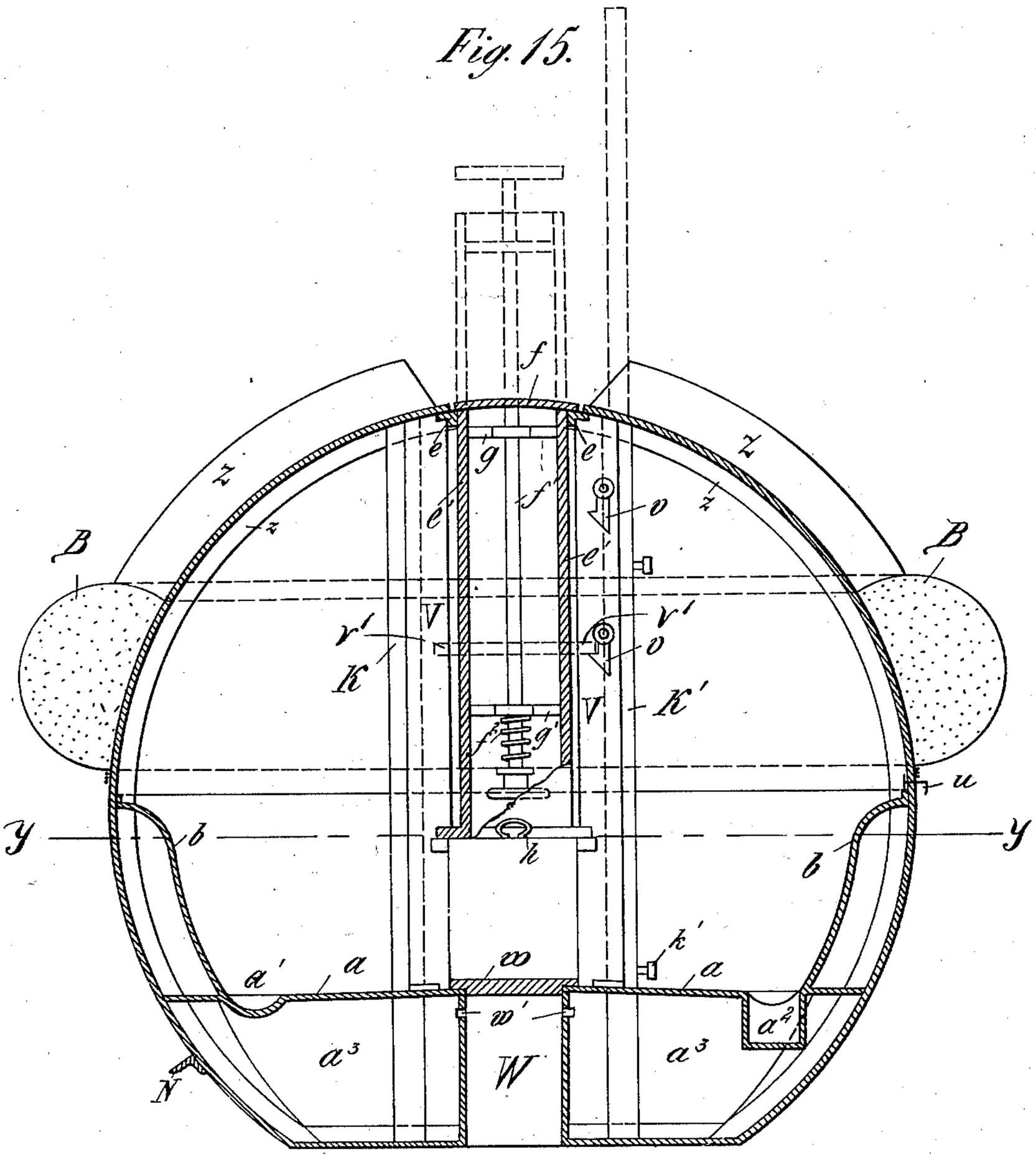
(No Model.) 10 Sheets—Sheet 9.

Fig. 15.



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J. M. DÖNVIG.

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(No Model.) (Application filed July 9, 1900.)

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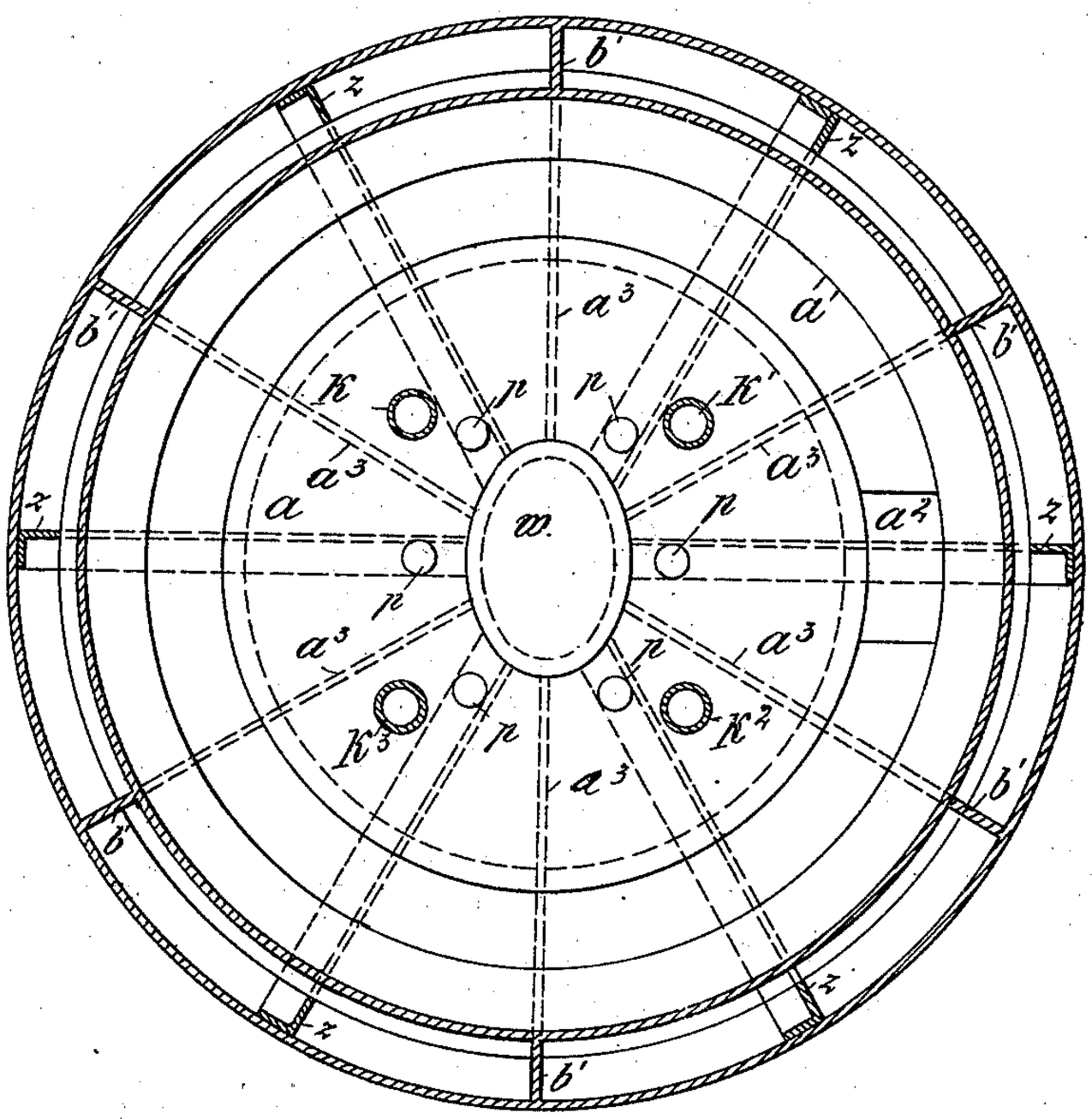
Fig. 16.



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Inventor,

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by B. Singer.

Att'y.

UNITED STATES PATENT OFFICE.

JÖRGEN MARTINIUS DÖNVIG, OF CHRISTIANIA, NORWAY.

LIFE-SAVING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 671,185, dated April 2, 1901.

Application filed July 9, 1900. Serial No. 22,971. (No model.)

To all whom it may concern:

Be it known that I, JÖRGEN MARTINIUS DÖNVIG, a subject of the King of Norway and Sweden, residing at the city of Christiania, Norway, have invented new and useful Improvements in Life-Saving Apparatus, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention has for its object the construction of a life-saving buoy serving as refuge for the passengers and the crew in cases of emergency instead of the present life-boats.

In the accompanying drawings, Figure 1 is an elevation of the buoy. Fig. 2 is a plan view of the same. Fig. 3 is a vertical section through the center of the buoy. Fig. 4 is a plan sectional view on the line $x\ x$ in Fig. 3. Fig. 5 is an enlarged sectional elevation of the ventilating arrangement. Fig. 6 is a plan sectional view of the same. Fig. 7 is a section through the manhole. Fig. 8 is a plan view of the manhole-cover. Figs. 9 and 10 are details of locking mechanism of the manhole-cover. Fig. 11 is an enlarged sectional view of one of the pillars containing the upward-movable telescopic tube. Fig. 12 is an enlarged sectional view of one of the pillars containing the downward-movable telescopic tube. Fig. 13 is an elevation of a modified construction of the buoy. Fig. 14 is a plan view of the same. Fig. 15 is a vertical section through the center of the buoy. Fig. 16 is a plan sectional view on the line $y\ y$ in Fig. 15.

The buoy or globe A, which is built of plates of iron, steel, or other suitable material, is preferably provided with a flat bottom in order to have a base to stand on if landing on a flat shore. At a suitable distance from the bottom the globe is provided with a water-tight floor a, thereby forming a room between said floor and bottom for the reception of ballast, which properly might consist of fresh water. The said room should be divided by partition a^3 in compartments, so that as soon as one compartment is emptied of fresh water it may be filled with sea-water, and by this arrangement only one compartment at a time will be less than full. The more compartments the less will be the effect of one being empty or partly empty. The filling of the compartments with sea-water may be carried out in any convenient way—for instance, by means of a hose connected to a valve on the side wall of the globe and to the connecting-piece p (one for each compartment) on the floor.

Above the floor an annular wall b is joined water-tight to the floor and to the side of the globe, thus forming along the side a storage-room in which may be stored supplies of food, tools, and other implements necessary for the voyage. This room is also divided by partitions b' into several compartments, which are accessible through openings closed water-tight by covers b^2.

The floor is sloping in all directions toward a gutter a', running at the foot of the wall b. The said gutter empties into a basin a^2, which gathers any waste (water, &c.) and from which the waste may be drawn by laying a hose from the basin up to a sucking and forcing pump d, placed inside the globe for this purpose and which sends the waste out through the wall of the globe into the sea.

A ventilating arrangement is provided for at the top part of the globe. The said arrangement consists of an outer cylinder e, (see enlarged view, Figs. 5 and 6,) fastened to the globe. Inside this cylinder is mounted another cylinder e', which turns in the first one. Both cylinders are provided with apertures $e^2\ e^3$, which correspond in a certain position of the inner cylinder. The outer cylinder e has its upper edge somewhat widened, and it is covered by a lid f, fitting water-tight into the said widened part of the cylinder e. The said lid is mounted on the top end of a rod f', guided in two cross-pieces $g\ g'$ and having a spring f^2, by which the lid f is kept closed. The cylinder e' is provided with an arm e^4 and is kept closed by a spring e^5, being fastened to the end of said arm and to some place within the globe. e^6 is a cord by means of which the cylinder e' can be turned so that its apertures e^3 will correspond with the apertures e^2 in the cylinder e. It will be seen that the cylinders and the lid f are normally kept closed by springs. Should it, however, be desirable to keep the lid f open for a time, a catch-lever f^3 is journaled on the lower cross-piece g' and made to engage a collar f^4 on the rod f'. The spring f^5 will secure the engagement of the lever with the collar f^4, and by

pulling the cord f^6 the lever is disengaged. The ventilating arrangement is protected by means of a cage or open casing G.

The globe is outside provided with a girder of cork B, which will serve as a fender.

Just above the girder B are provided entrance-openings which are closed by covers C, opening inwardly. Said covers are shut by an efficient locking device, Figs. 9 and 10, consisting of a latch *c*, which slides in guides *c' c'* and engages a cramp-iron c^2. The latch *c* is moved by means of an eccentric c^3 on the handle-bar c^4. The outer handle c^5 is placed in a recess in the lid C, so as to protect it from being knocked off. The lid C is provided with a packing-ring C' in order to obtain water-tight closure of the opening.

J J are light-openings, in which are mounted thick panes of glass.

The globe is internally provided with a number of vertical hollow pillars or columns K K' K^2 K^3, intended in the first place to strengthen the globe; but they are also intended to receive telescopic tubes *k*, which are movable by means of tubular handles *k'*, projecting through slots in the pillars. The ends of the pillars or outer tubes are closed by plugs k^3, which are easily removable when projecting the tubes *k*. In two of the pillars—for instance, the two diametrically opposite each other—the telescopic tubes are arranged to be moved upward through the top of the globe, while the tubes in the other two pillars are arranged to be moved downward through the bottom of the globe. To secure against any inlet of water, the latter pillars are provided with a valve *m*.

k^2 represents packing-rings, of which the ones next to the handles *k'* are fixed on the tubes and serve as guides, while the other ones are fixed in the pillar and should prevent any inlet of water.

The object of the arrangement of the upwardly-projectable telescopic tubes is to provide for ventilation in case the above-described ventilating arrangement (the cylinders *e e'*) should get out of gear and in rough weather, as the tubes when projected will let the air have access through the hollow handles *k'* and yet prevent any inlet of water. The tubes movable downward are to be used should the globe be thrown ashore and remain with the bottom up.

For the pumping of fresh water from the ballast-tanks a pump P is placed on the wall of the globe, and the water may be drawn by means of a hose connected to the pump and the nipples *p* on the floor. The globe is further provided internally with rods *t*, Fig. 3, removably mounted in sockets *t'* on the wall *b* and fastened in brackets t^2 on the pillars. These rods will serve as supports or handles for the personnel in rough weather, and they might be made in the shape of oar-handles, the blades being detached when the handles are in place and screwed on when they shall be used to paddle with.

R is an anchor with collapsible fluke arms of the ordinary type, the line *r* of which is coiled around the middle of the globe just under the cork fender B. The line is fastened to an eyebolt *s* and passed through another eyebolt *s'*, placed so that the pull of the line shall not heave over the globe. In order to stop the paying out of the line when desired, a hook *u* is journaled in the side of the globe and provided with a handle by which it may be turned from the inside. The object of the said anchor is to provide means by which the globe may be stopped should the coast not be favorable for landing in stormy weather.

In Figs. 13, 14, 15, and 16 is shown another construction of the globe, specially with regard to the ventilating arrangement, which in this case is placed inside the globe altogether. The outer cylinder *e* is in this case reduced to a small ring, which fits water-tight around the cylinder *e'*. The latter slides in the ring *e* and is closed water-tight at the top by a cover or lid *f*. The cover is mounted on the upper end of a rod *f'*, which slides in cross-pieces *g g'*. The cover is closed normally by means of a spring f^2 and may be opened by forcing the handle of the rod upward. The cylinder *e'* is guided by two guide-rods V and is moved by means of a handle *h*. In order to hold the cylinder in different positions, the rods V are provided with hooks *v*, which engage with the guide-lugs *v'* on the cylinder. By this arrangement there is no danger of destroying the ventilating arrangement, because the cylinder *e'* is not projected before the globe is perfectly clear of the ship. As a further protection of the globe a number of cleats Z are mounted on the upper part of the same. The globe is further provided with a well W between the floor *a* and the bottom of the globe. The well is securely closed by a cover *w*. The object of this well is to provide for an outlet through the bottom of the globe in case it should be thrown ashore with the bottom side up. The well should therefore have an oval shape. By this arrangement an easy way of filling the fresh-water compartments with sea-water is obtained by opening the plugs *w'*. Should it be found that the above-mentioned well W reduces the space for the ballast too much, the bottom of the well may also be closed by a water-tight cover and emptied through an opening in the upper cover *w*. Otherwise this globe is equipped in the same manner as the globe described in connection with Figs. 1 to 12.

Finally, it should be mentioned that the globe is internally provided with frames *z* like a ship and externally with rolling bilge-keels B.

Although the above specification fairly sets forth the object of the invention proper, it should be mentioned that the globe when carried out practically should be furnished with such appliances as will tend to the safety

and convenience of the persons contained therein. Thus, for instance, the walls should be padded inside, and a partition of canvas or netting should be stretched across the space a little distance below the manholes, the object being principally to gather children and weak persons and prevent them from being thrown down violently on the floor in the scramble, and also to prevent harm to persons already inside in case the globe should be upset in launching from the ship. The wall *b* should be built so as to form an annular lounge, and the floor should be covered with a wooden grating, and so on. In fact, every object of hard material should be covered by some soft material, so as not to hurt the persons during the launching of the globe from the ship.

Finally, it should be mentioned that the cork fender B may be extended to cover the whole of the upper surface of the globe, only leaving spaces for the entrance-openings, the ventilating-cylinder and tubes, and the light-openings.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. An improved life-saving buoy formed with an interior life-saving chamber, a ballasted bottom, vertical hollow strengthening-pillars extending upward from said bottom and opening through the top, and ventilating-tubes playing telescopically in said pillars and communicating with the interior of the buoy through hollow handles or knobs projecting through longitudinal slots in said pillars.

2. An improved life-saving buoy formed with an interior life-saving chamber, a ballasted bottom, vertical hollow strengthening-pillars extending between top and bottom and one or more openings through the top and one or more through the bottom, and ventilating-tubes playing telescopically in said pillars and communicating with the interior of the buoy through hollow handles or knobs projecting through longitudinal slots in said pillars.

3. An improved life-saving buoy formed with a globular body, a flat bottom, a floor above said bottom, subdivided water-tanks between said floor and bottom, an inner wall parallel with the outer wall, a storage-compartment between said inner and outer walls, an adjustable and closable ventilator at top, and an annular cork fender surrounding the outer wall.

4. An improved life-saving buoy comprising a globular hull, a flat bottom, a crowning floor above said bottom having a peripheral gutter and well to which such gutter delivers, a subdivided water-ballast tank between said floor and bottom, and a force-pump delivering to the exterior of the hull for emptying said well.

5. An improved life-saving buoy formed with an outer globular wall, a flat bottom, a floor thereabove, a subdivided water-ballast tank between said floor and bottom, an inner wall parallel with the outer wall, a storage-compartment between said walls, hollow strengthening-pillars running vertically through the globe, and ventilating-tubes playing telescopically in said pillars and communicating with the interior of the buoy through hollow handles or knobs projecting through longitudinal slots in said pillars.

6. An improved life-saving buoy formed with an outer globular wall, a flat bottom, a floor thereabove, a subdivided water-ballast tank between said floor and bottom, an inner wall parallel with the outer wall, a storage-compartment between said walls, hollow strengthening-pillars running vertically through the globe and opening some through the top and others through the bottom, and tubes playing telescopically in said pillars, to be projected outward from the buoy and communicating with the interior through tubular arms or handles moving in longitudinal slots in said pillars.

7. In a life-saving buoy the combination with an interior life-saving compartment, of an overhead ventilator, a vertically-movable cap closing the top of said ventilator, a spring-retracted thrust-rod moving in vertical guides, for opening said ventilator, and a spring-held catch-lever for holding said cap in its elevated position.

8. In a life-saving compartment the combination of a globular hull, a ballasted bottom, an interior life-saving compartment, vertical bracing and ventilating pillars extending upward through said compartment, sockets on the walls of said compartment, brackets on said pillars, and oar-looms confined in said sockets and brackets, to afford hand-grasps for the inmates of the compartment.

9. In a life-saving buoy, the combination of a globular hull, a ballasted bottom, an interior life-saving compartment, an anchor having its cable wound horizontally around the hull, and an exterior hook beneath the coils of said cable, revoluble from the inside to regulate the paying out of the cable.

10. In a life-saving buoy, the combination of a globular hull, a ballasted bottom, a vertical cylinder fixed to the top of the globe and having apertures, an inner cylinder closely fitting and revolubly mounted in the first cylinder and having apertures corresponding with the apertures of the first, a lid covering the outer cylinder, and a vertical thrust-rod to elevate said lid.

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

JÖRGEN MARTINIUS DÖNVIG.

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