

A. J. GRIFFIN.

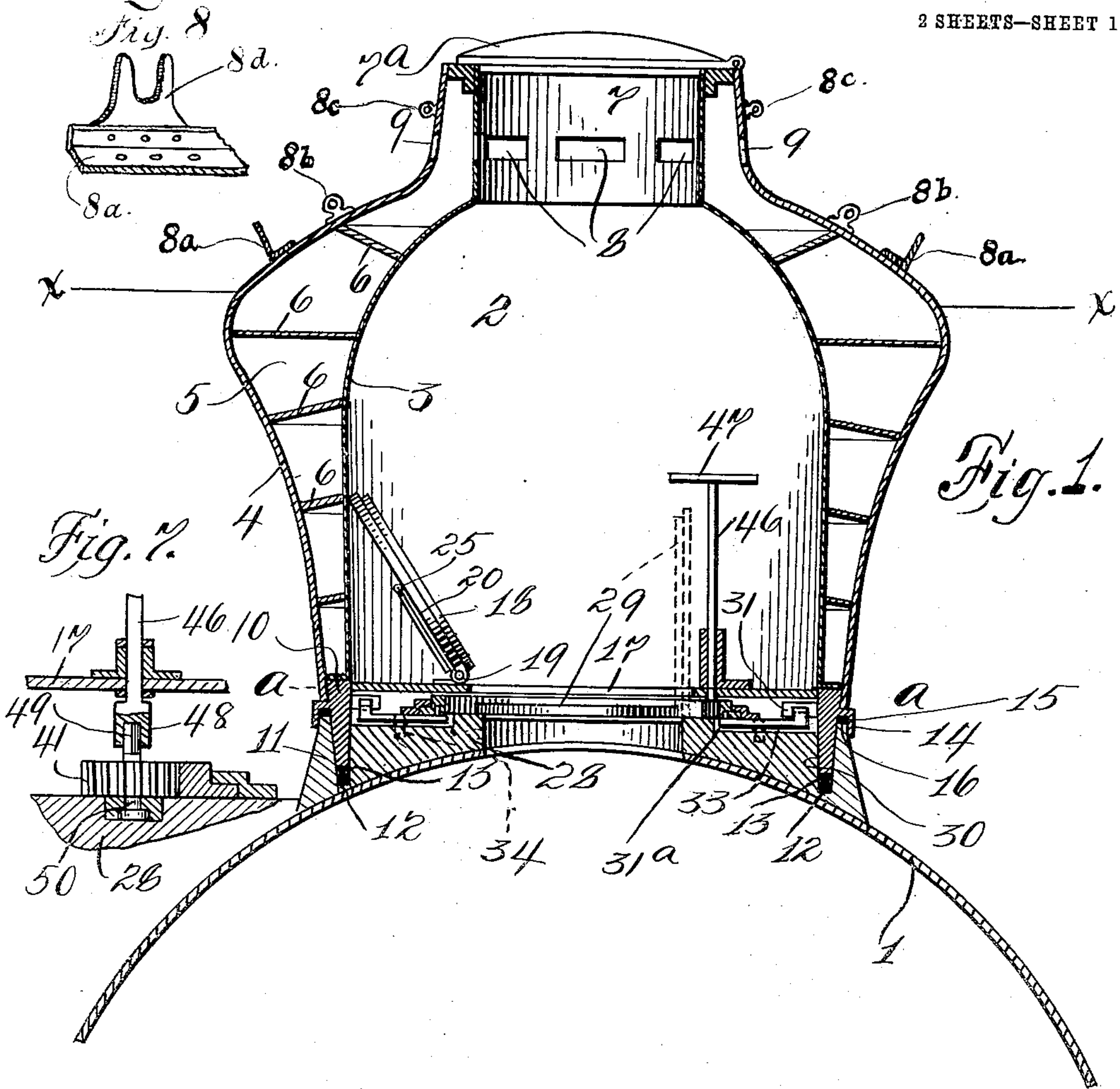
SUBMARINE VESSEL.

APPLICATION FILED JULY 29, 1905.

958,742.

Patented May 24, 1910.

2 SHEETS—SHEET 1.



WITNESSES:
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2 SHEETS—SHEET 2.

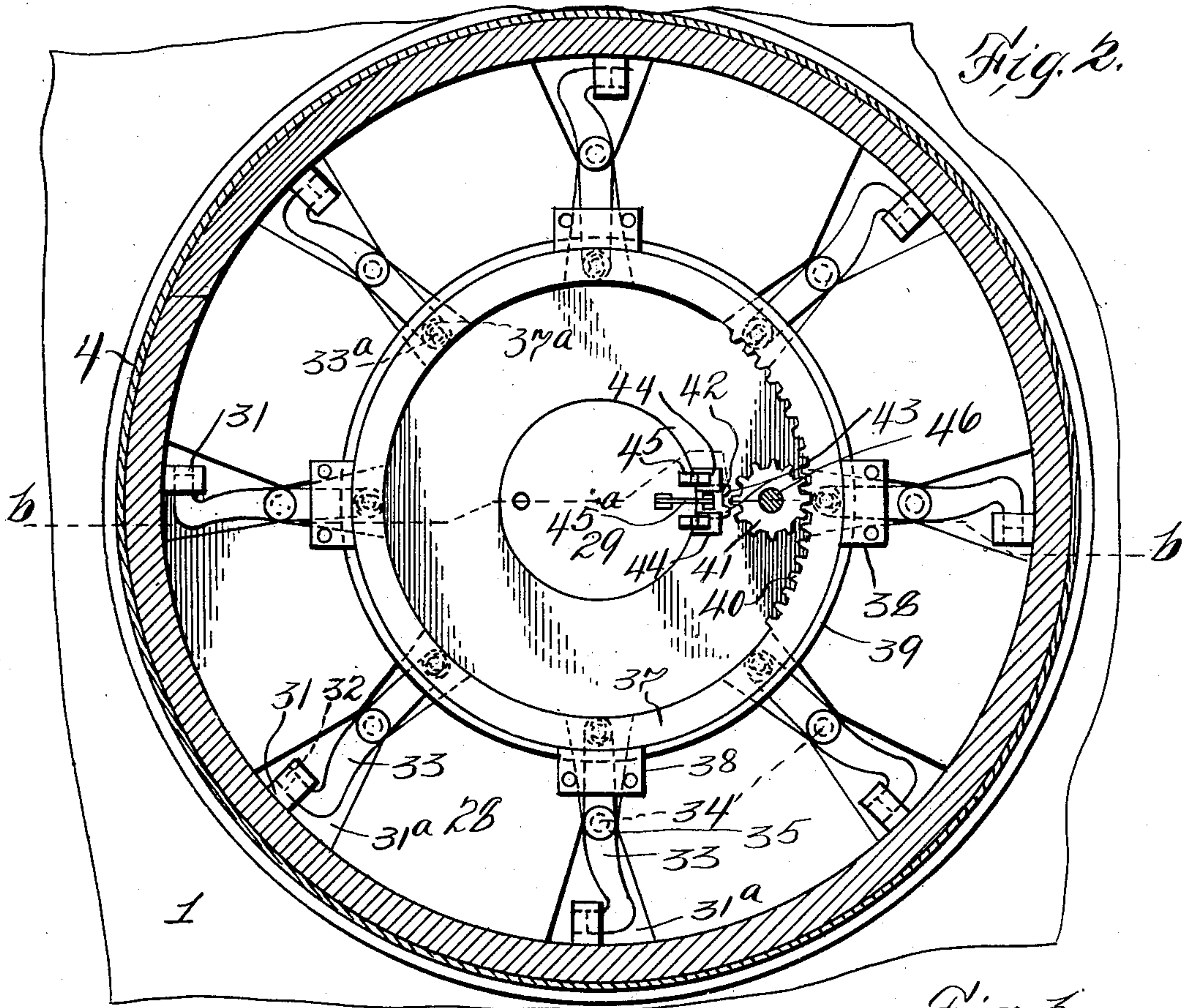


Fig. 2.

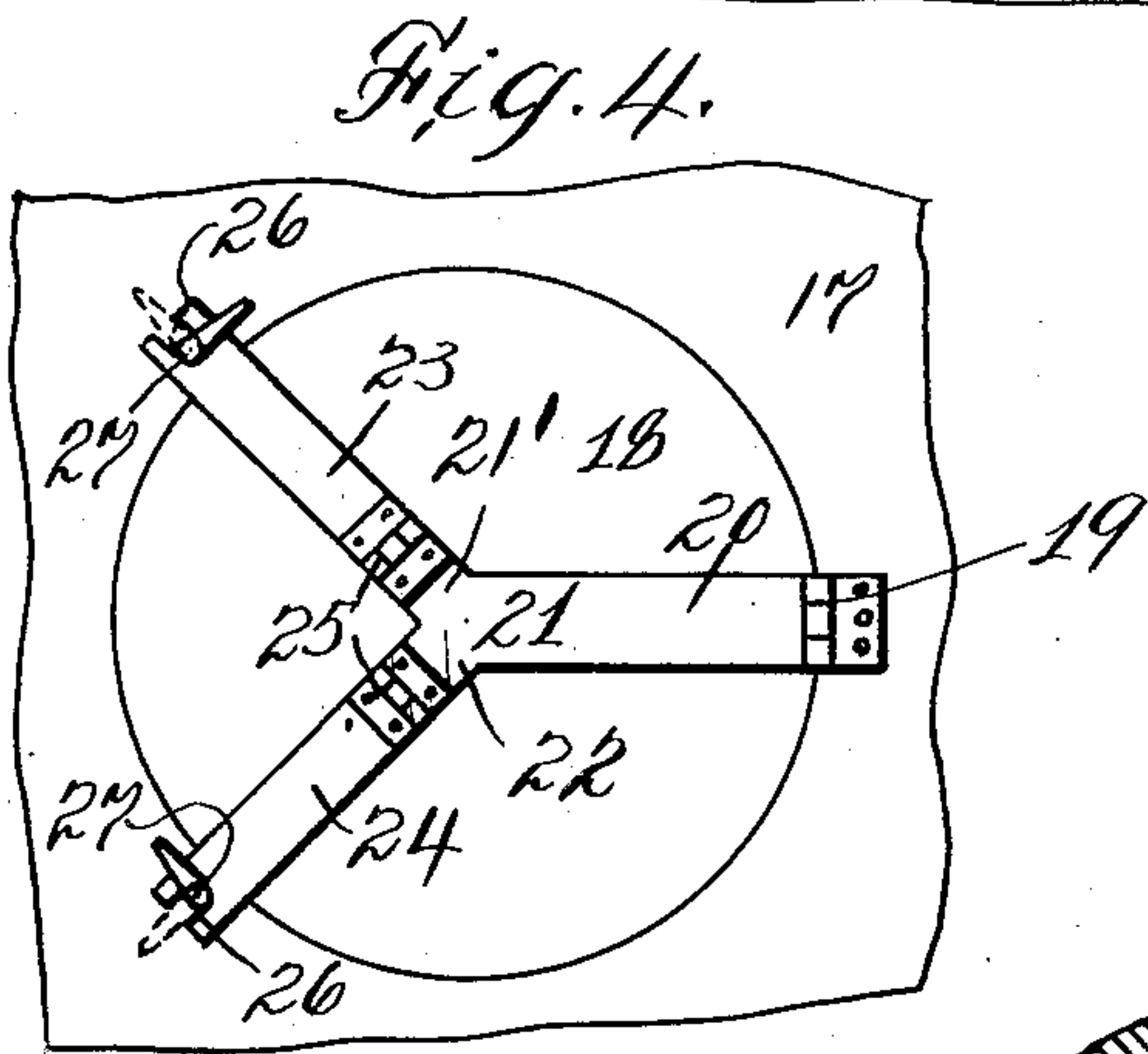


Fig. 4.

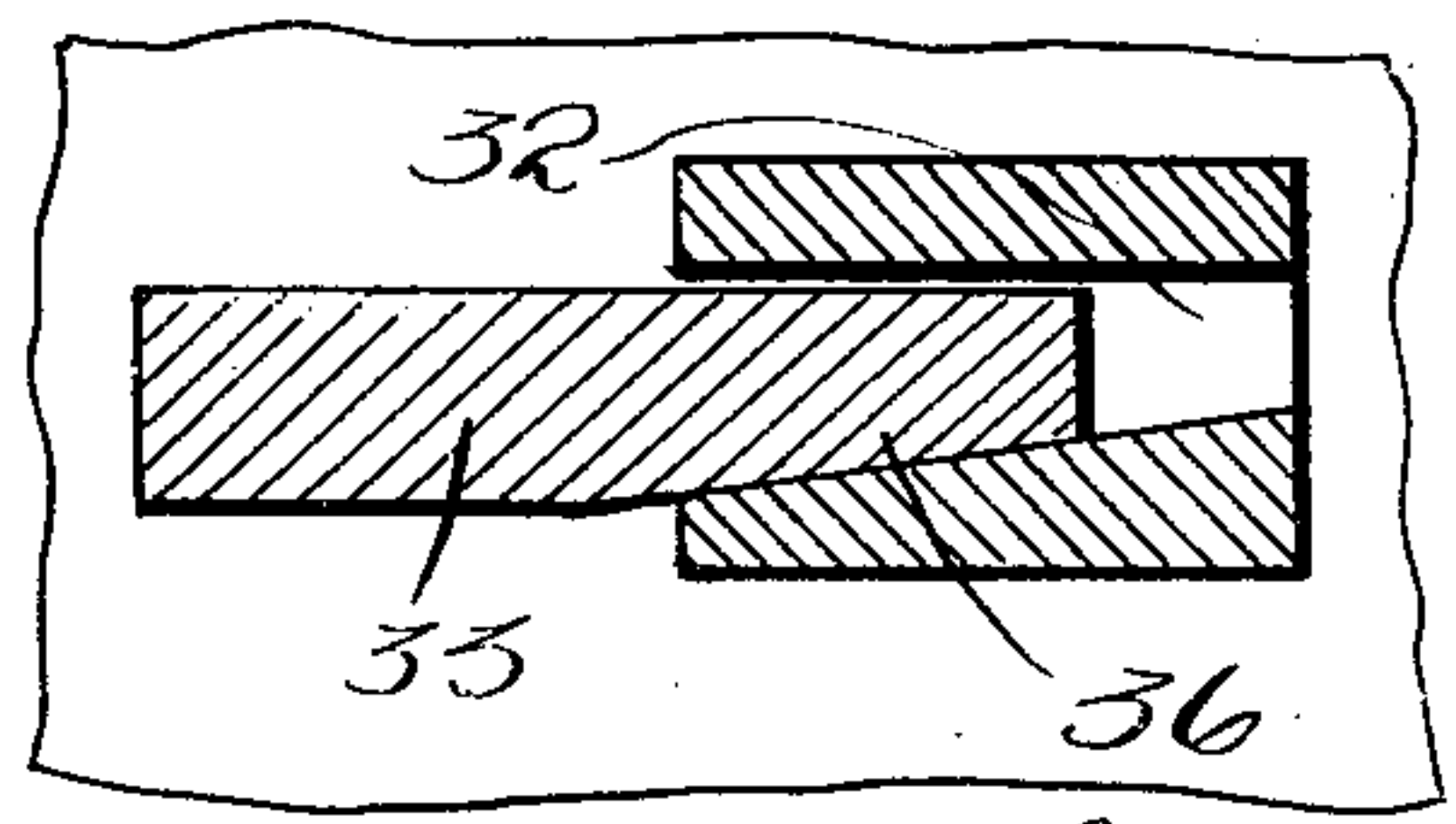


Fig. 5.

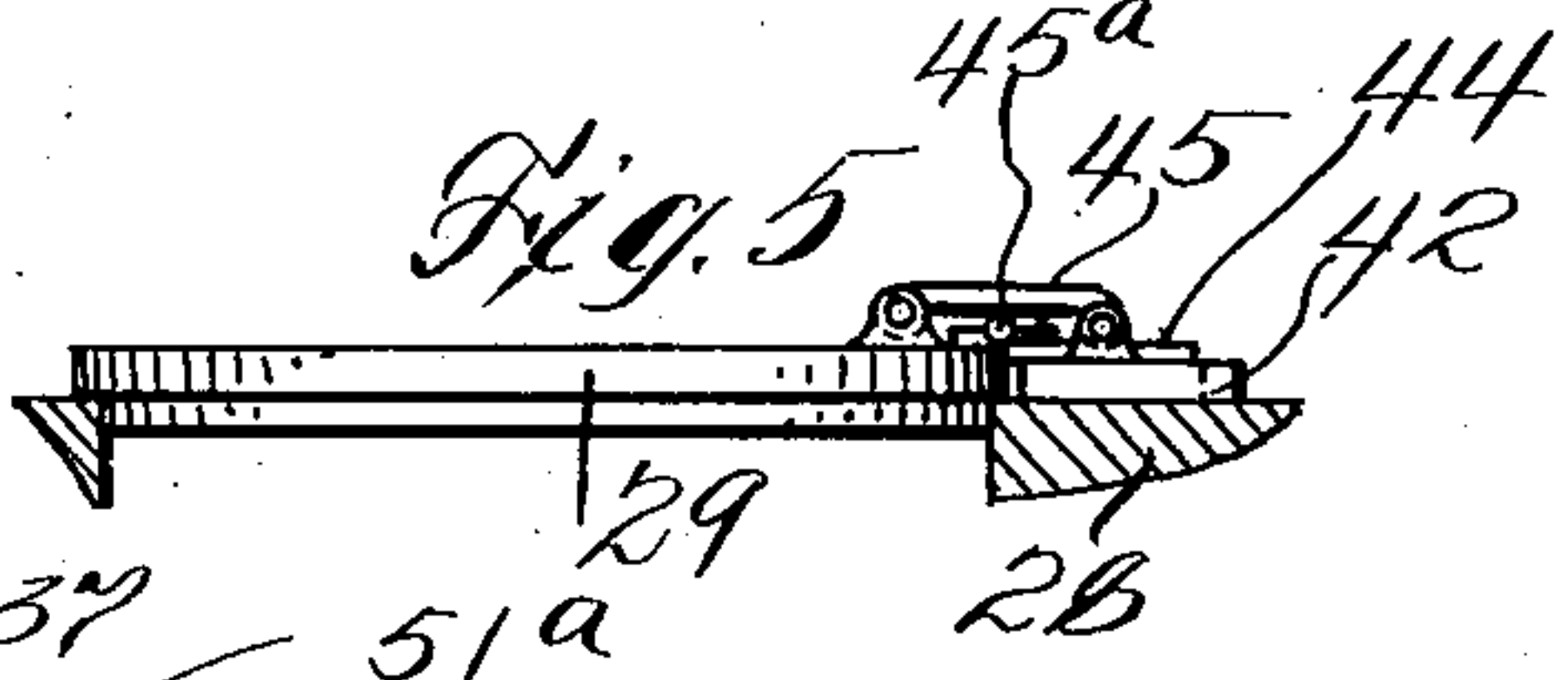


Fig. 6.

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UNITED STATES PATENT OFFICE.

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SUBMARINE VESSEL.

958,742.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed July 29, 1905, Serial No. 271,725.

To all whom it may concern:

Be it known that I, ANTHONY J. GRIFFIN, a citizen of the United States, residing in the city of New York, borough of the Bronx, county and State of New York, have invented certain new and useful Improvements in Submarine Vessels, of which the following is a specification.

My invention relates to an improved form of submarine vessel, and has for its object to provide the same with a detachable buoyant safety chamber, which may be used as a conning-tower, or may be distinct therefrom. In case of accident to the submarine vessel, such as failure to rise to the surface, or the like, the crew of the vessel will enter the safety chamber, which is thereupon released from the vessel proper, and being buoyant, will rise to the surface. To accomplish these results, I provide special means for releasing the safety-chamber from the hull of the vessel.

My invention further consists in the novel details of construction and combination and arrangement of parts which will hereinafter be described and claimed.

A practicable embodiment of my invention is disclosed in the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a vertical cross-section of my improved submarine vessel, the section being taken on a line *b—b* in Fig. 2; Fig. 2 is a sectional plan view thereof, taken on a line *a—a* in Fig. 1; Fig. 3 is a detail view of the end of the latches and of the catch; Fig. 4 is a detail view of the safety-chamber hatch-locking means; Fig. 5 is a detail view of the locking device for the pinion; Fig. 6 is a modified form of latch-operating means; Fig. 7 is an enlarged detail view of the connection between the pinion spindle and pinion-operating shaft; and Fig. 8 is an enlarged detail view of an oar-lock attached to the upper portion of the safety-chamber.

Similar characters of reference are intended to indicate corresponding parts in the several views.

Referring to the drawings, and at this time particularly to Fig. 1, the numeral 1 indicates the hull of a submarine vessel, and 2 indicates, as a whole, my improved releasable turret and safety-chamber. Said chamber is composed of an inner shell 3 and an outer shell 4. Between said two shells a space 5 is left, which is divided into water-tight compartments by bulkheads 6, 6

fastened to the inner and outer shells. At the top of the chamber or turret 2 a lookout or conning tower 7 is formed, and same is provided with the usual windows 8, 8 in the inner shell, which align with the windows 9, 9 in the outer shell. The lookout or conning tower 7 is provided with the usual hatch 7^a. The bottom of the chamber 2 terminates in a wedge-like formation, a casting or frame member 10 being employed, in this instance, to hold the shells 3 and 4 together. The frame member 10 is designed, at its lower perimeter or bottom edge, to enter a retaining groove 11, which is rigidly attached to the hull 1, and in the bottom of the groove a packing 12, of suitable material, is placed; the bottom edge of the member 10 being also provided with a packing 13, which may be of a tire-like formation, and which abuts the packing 12. An overhanging lip 14 is formed upon the frame 10, in which a packing 15 is placed, said packing abutting the top edge 16 of the socket member 11. The said packings will be forced into contact with each other by the locking device which will be hereinafter explained, so as to provide a watertight connection.

Adjacent to the bottom of the chamber 2, I place a floor 17, in which a hatch 18 is placed, the same being hinged to the floor 17, as at 19, and preferably removable to be out of the way when not in use; the hinge forming part of one member 20 of a triple locking device 21. The member 20 has, at the end opposite to the hinge 19, two radially extending arms 21', 22 (see Fig. 4), and to said arms, secondary arms 23, 24 are hinged, as at 25, the outer ends of said arms being provided with a slot 26, and when it is desired to fasten said hatch, the slots 26, when said arms 23, 24 are lowered, will embrace a swivel lever 27 (see dotted lines Fig. 4) which can then be turned as shown by the full lines, Fig. 4, so as to bring the lever 27 over the arms 23, 24, thus securely fastening same. When the hatch 18 is raised (as in Fig. 1), the arms 23, 24 will be folded back upon the member 20 of the locking device 21, as in Fig. 1.

Upon the hull 1 is a platform 28, which is provided with a hatch 29, which may be opened or closed from the chamber, the outer edge 30 of said platform cooperating with the socket 11 in effecting a retainer for the chamber 2. Various devices may be em-

played for detachably securing the chamber 2 to the hull of the vessel, and I do not wish to limit myself to the particular means about to be described. In this instance, for detachably securing the safety-chamber 2 to the hull 1, I provide upon the inner face of the shell 3 any desired number of catches 31 (see Fig. 2), the catches being provided with openings 32, as shown in Fig. 3, the openings having a tapered bottom. Upon the platform 28 I rotatably secure latches 33 in such a manner as to prevent their displacement; in this instance, a pin 34, suitably fastened to the platform 28 and having a head 35, being employed. The latches 33 are provided with tapered ends 36 (Fig. 3) to match the openings 32 in the catches 31. The latches 33 work within recesses 31^a in the platform 28. For operating the latches 33, I employ a ring 37, which is rotatably secured to the platform 28 by brackets 38, the ring having an annular projecting lip 39, which passes under the brackets 38, said brackets preventing the ring from coming up and away from the platform, but do not prevent the rotation of the ring. A portion of the inner surface of the ring 37 is provided with teeth 40, into which a pinion 41 meshes for the purpose of rotating the ring, to force the ends 36 of the latches 33 into the catches 31, or to draw them out in order to release the safety chamber 2 from the hull 1.

In order that the safety-chamber 2 cannot be released from the hull 1 until the hatch 29 is closed, I provide a special means, which is controlled by the movement of said hatch 29. Said means comprises a slidable block, 42, having teeth 43, in the end thereof, for fitting the teeth of the pinion 41. Said block is fitted to guides 44 carried by the platform 28, and is of a well-known construction. The hinges 45 of the hatch 29, in this instance, are carried by the guides 44. Connecting the block 42 with the hatch 29 is a rod 45^a. When the hatch 29 is closed, the block 42 will be out of mesh with the pinion 41, and consequently said pinion can be rotated; but when the hatch 29 is raised (as in Fig. 1) the block 42 will engage the pinion 41, thereby preventing rotation. It will thus be seen that the safety-chamber 2 cannot be released until the hatch 29 is closed. This will prevent mischievous interference or accident, as the hull of the submarine would be flooded if the hatch 29 was not closed before the chamber is released. For the purpose of operating the pinion 41, I provide a shaft 46, which is controlled by a hand-wheel 47 from the interior of the chamber 2. When the chamber 2 leaves the hull, the shaft 46 will separate from the pinion 41, by virtue of the connection, as shown in Fig. 7, which is a socket 48 carried by the shaft 46, said socket fitting

the squared end 49 of the pinion spindle 50. When the chamber 2 leaves the hull, the shaft 46 will leave the pinion spindle 50, and the pinion 41 will then remain behind with the hull 1.

The modified form shown in Fig. 6 shows slots 51 in the ring, in which the end of one lever or latch 33 is engaged, operating lips 51^a, 52, being located upon either side.

To assist in towing the safety-chamber, after it has risen to the surface, I provide upon the outer surface thereof what I term grappling rings 8^b, any suitable number of which may be employed; and I also provide the safety-chamber at the upper portion thereof with rings 8^c, the same being intended for use for insertion of life lines or the like. I have also provided the safety-chamber upon the outer surface thereof with a foot-rest 8^a, running around the upper surface of the shell 4. To this foot-rest, at suitable points, are attached oar-locks 8^d (Fig. 8), the foot-rest being intended for use by the occupants of the chamber when same is afloat.

From the foregoing description, it will be obvious that in the event of failure to rise on the part of the submarine, the crew can gather in the safety-chamber 2, close the hatch 29, securely fasten it, likewise the hatch 18, whereupon the pinion 41 and ring 37 meshed therewith can be rotated by means of the handwheel 47, thereby bringing the latches 33 out of the catches 31. When this is accomplished, the safety-chamber 2 will float to the surface, the line of submergence being indicated by $x-x$ (Fig. 1). Of course, as a safeguard, it will be understood that suitable means for supplying air to the occupants of the safety-chamber may be provided.

It will be obvious that many of the details of construction hereinabove described and shown in the drawings, may be varied without departing from the spirit of my invention, and it will be understood that the safety-chamber may be of elliptical or other form instead of the form shown in the drawing.

Various methods of connection between the ends of the latches 33 and the ring 37 may be employed. For instance, the end of the latch 33 is provided with a pin 33^a which engages elongated slots 37^a in the ring 37.

Having now described my invention, what I claim and desire to secure by Letters Patent is:

1. A submarine vessel having upon the outer surface of the hull a detachable buoyant safety-chamber, said chamber comprising an inner and outer shell, the space between said shells being divided into watertight compartments, a hatch through which said chamber can be entered from the interior of the hull, means for closing said

hatch at will, and means, operable from within said chamber, for releasing said chamber from said hull.

2. A submarine vessel having upon the 5 outer surface of the hull a detachable buoyant safety-chamber, said chamber comprising an inner and outer shell, the space between said shells being divided into watertight compartments, a floor within said 10 safety-chamber, a closable hatch in said floor, a closable hatch in said hull in alinement with the hatch in said floor, a releasable locking device carried by said hull for holding said safety-chamber and said hull firmly together, and means within said chamber for 15 operating said releasable locking device to release said chamber from said hull.

3. A submarine vessel having upon the outer surface of the hull a detachably secured buoyant safety-chamber, a hatch in 20 said hull through which said chamber can be entered, movable latches mounted upon said hull for engaging catches carried by said chamber, and a manually operable device within said chamber for operating said 25 latches to release said chamber from said hull.

4. A submarine vessel having upon the outer surface of the hull a detachable buoyant safety-chamber, said chamber comprising 30 an inner and outer shell, the space between said shells being divided into watertight compartments, catches carried by said chamber, latches movably mounted upon said hull for engaging said catches, and a 35 manually operable means within said chamber for operating said latches to release said chamber from the hull.

5. A submarine vessel having upon the 40 outer surface of the hull a detachably secured buoyant safety-chamber, means interposed between said hull and said chamber for making the connection watertight, catches carried by said chamber, movable 45 latches mounted upon said hull for engaging said catches, a gear rotatably mounted

upon said hull for operating said latches, a pinion carried by said chamber for operating said gear, and means for operating said pinion.

6. A submarine vessel having a socket 50 upon the outer surface of the hull, a packing in the bottom of said socket, a buoyant safety-chamber detachably secured within said socket, the bottom of said chamber being fitted with a packing for contacting the 55 packing in said socket, catches carried by said safety-chamber, movable latches mounted upon said hull for engaging said catches, a gear carried by said hull for operating said 60 latches, a pinion for operating said gear, and means for operating said pinion from within the chamber.

7. A submarine vessel having a detachably connected buoyant safety-chamber upon the 65 outer portion of the hull, means for keeping the connection between said hull and the safety-chamber watertight, a floor in said chamber, a hatch in said floor, latches upon said hull for engaging catches carried by 70 said chamber, a gear for operating said latches, a pinion for operating said gear, a hatch in said hull in alinement with the hatch in the floor of said chamber, means controlled by the movement of the hatch in 75 the hull for preventing movement of the said pinion until said last-named hatch is closed.

8. A submarine vessel having a detachably connected buoyant safety-chamber upon the 80 outer portion of the hull, means for keeping the connection between said hull and the safety-chamber watertight, said chamber comprising an inner and outer shell divided into watertight compartments by partitions 85 or bulkheads, and means within the safety-chamber for releasing said safety-chamber from the hull at will.

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