

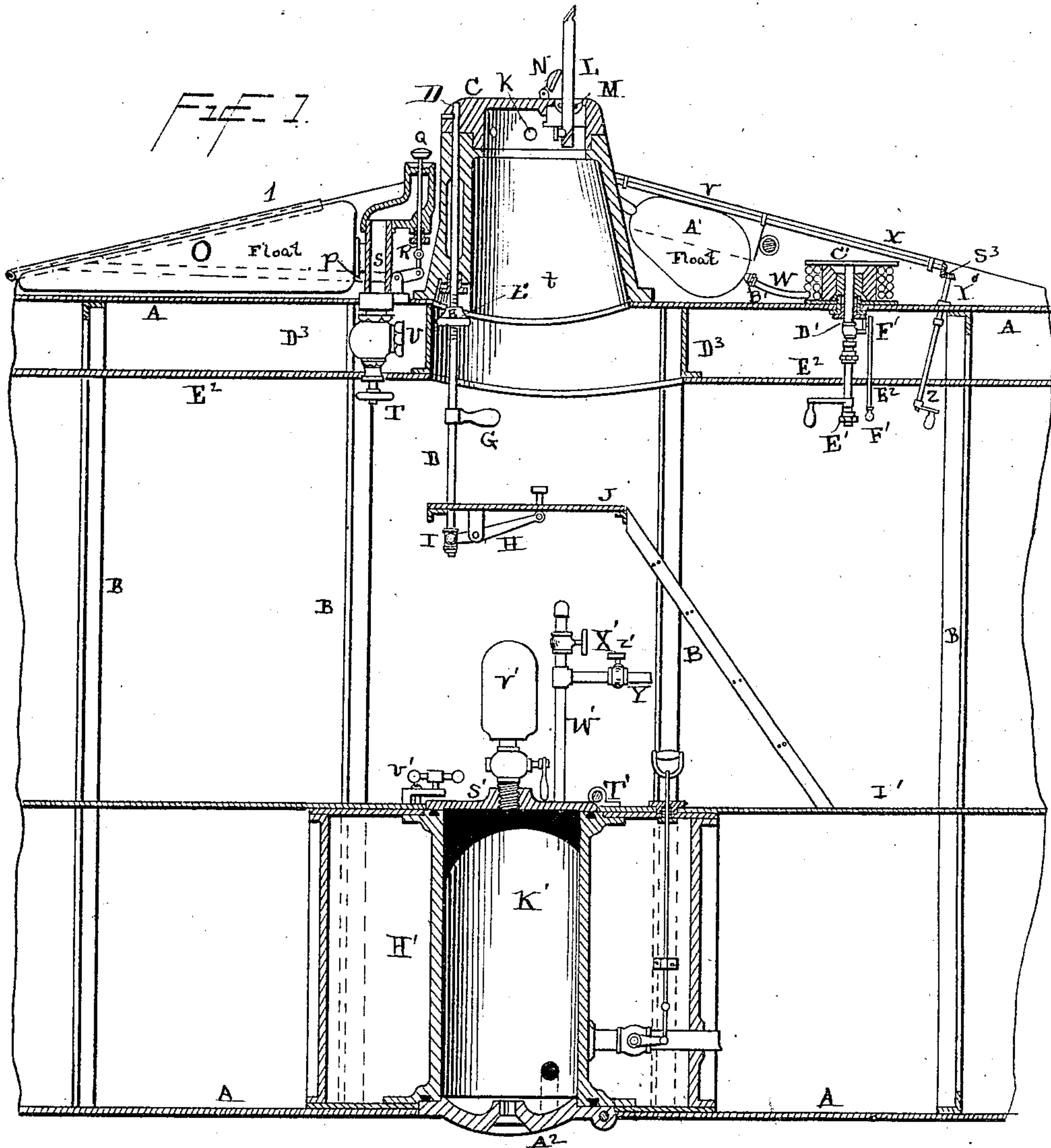
(No Model.)

4 Sheets—Sheet 1.

J. P. HOLLAND.
SUBMARINE TORPEDO BOAT.

No. 522,177.

Patented June 26, 1894.



Witnesses
Norris A Clark
L. J. Bartlett.

Inventor
John P. Holland
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Attorney

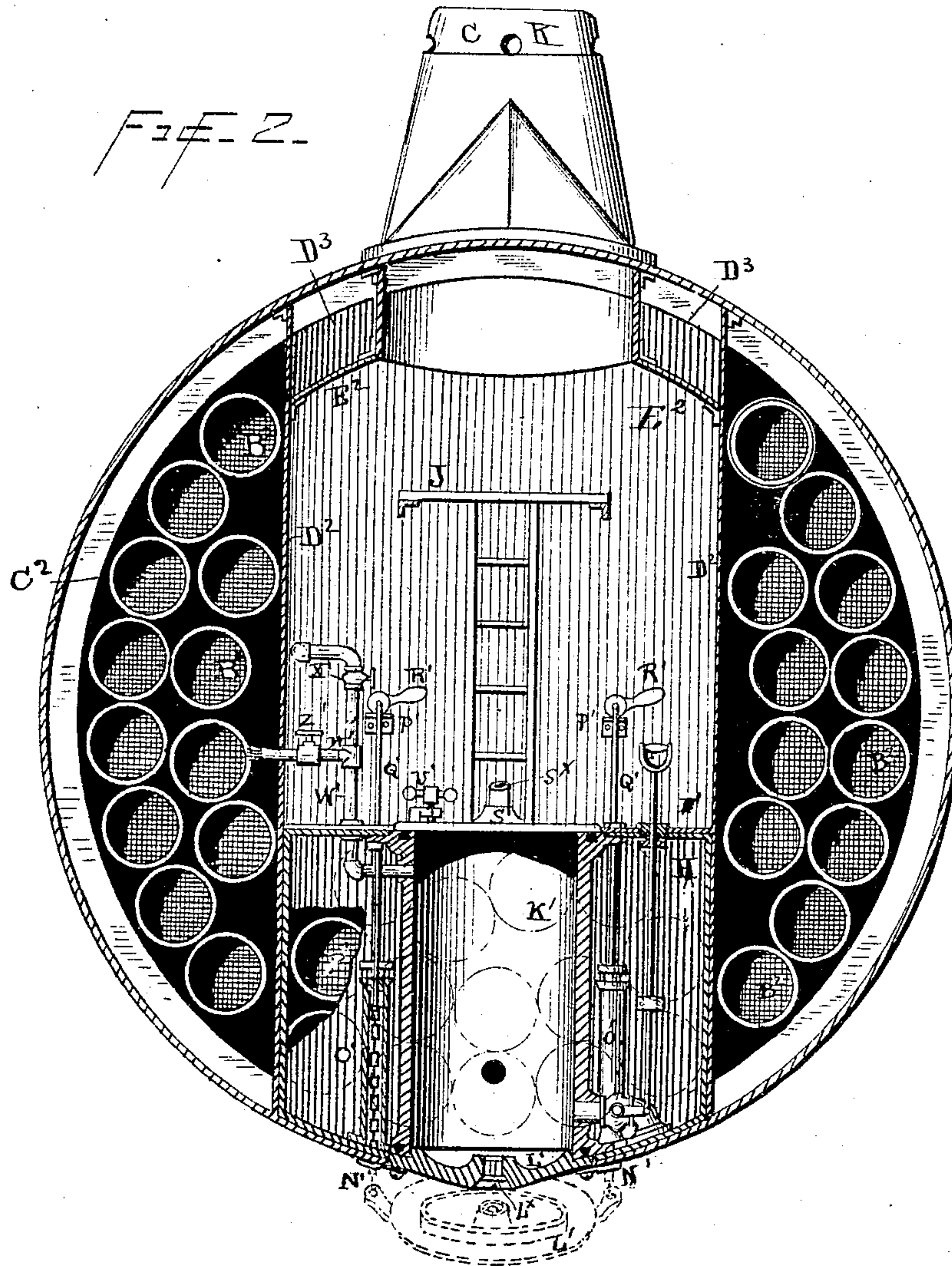
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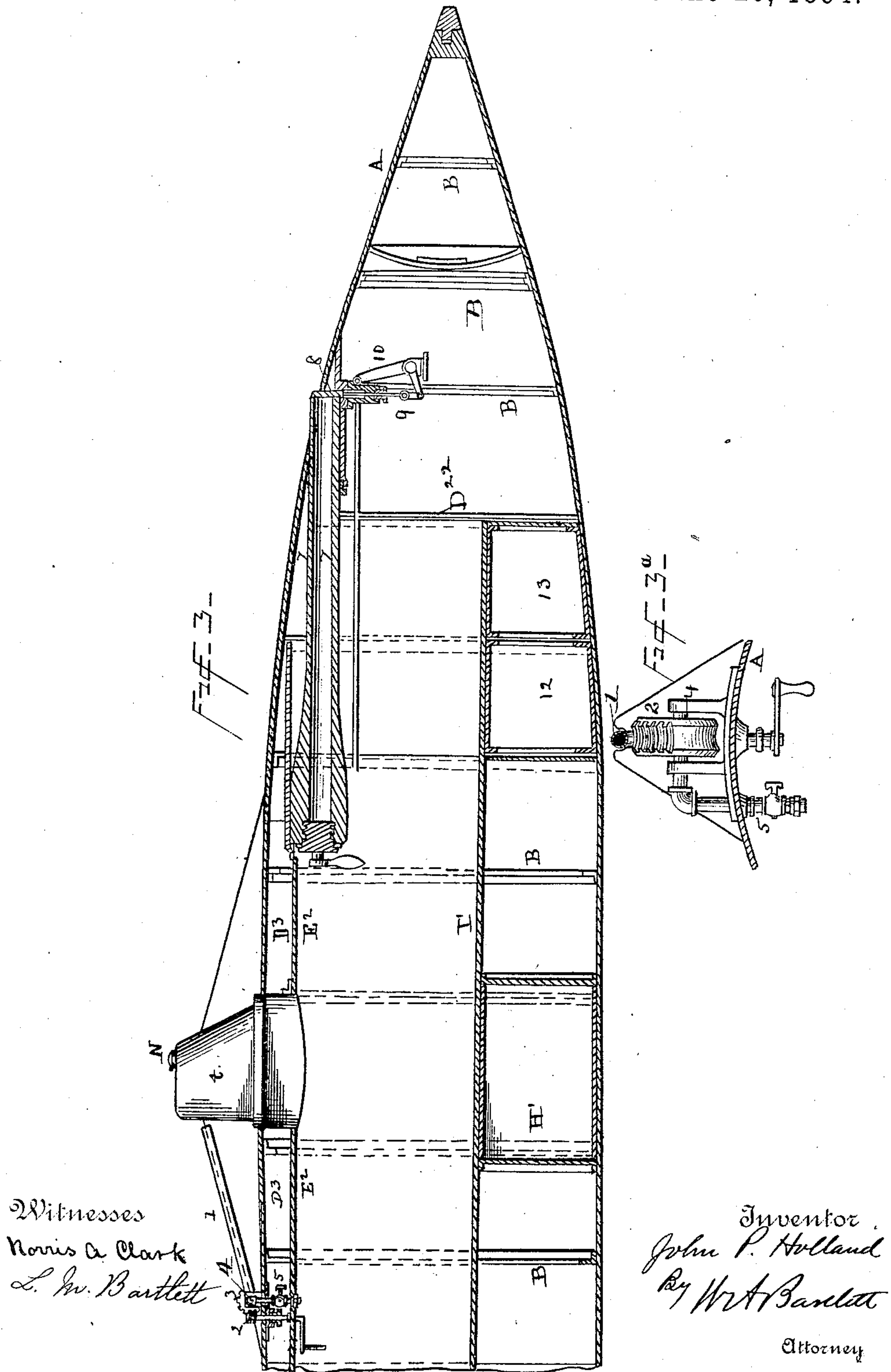
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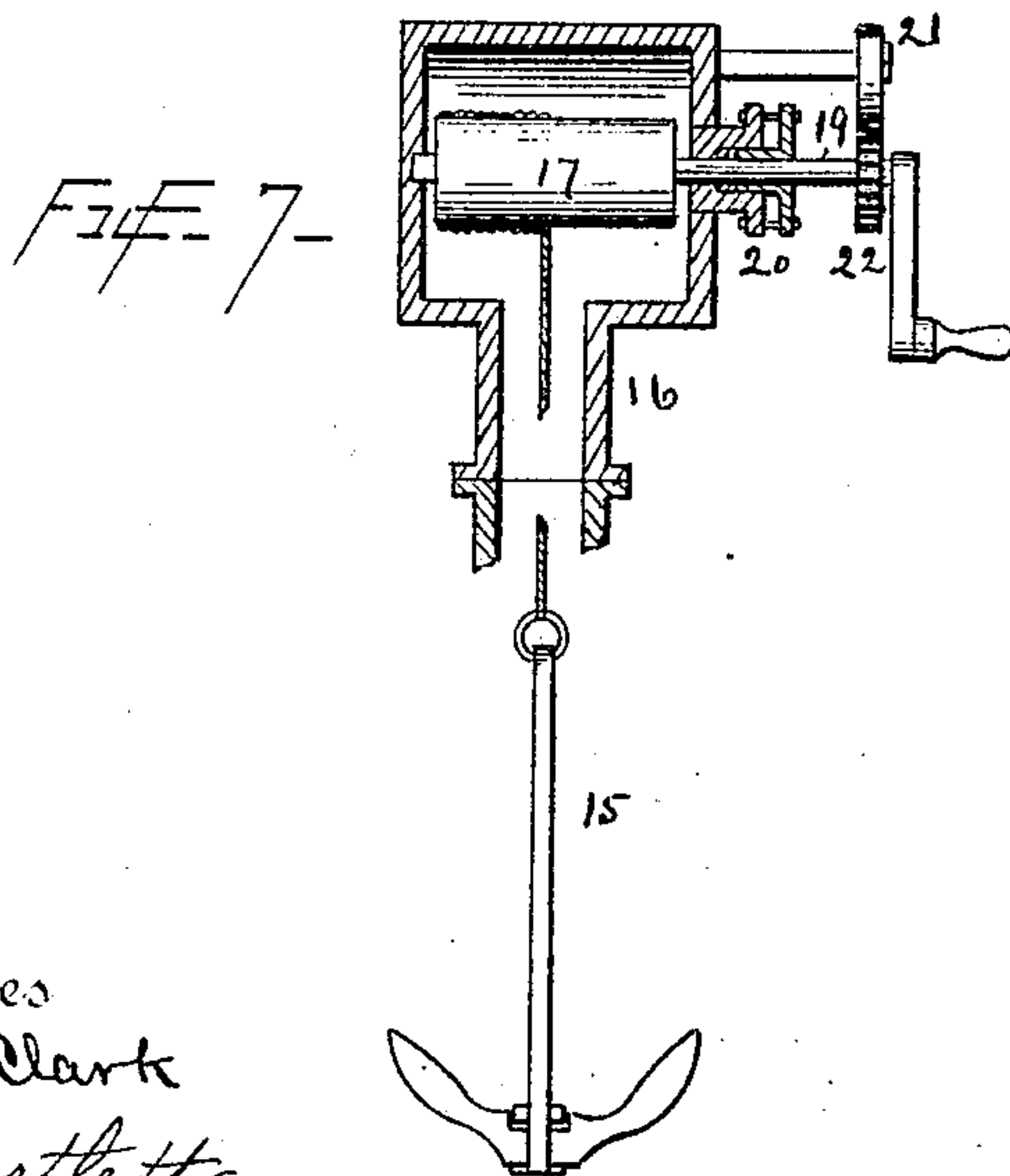
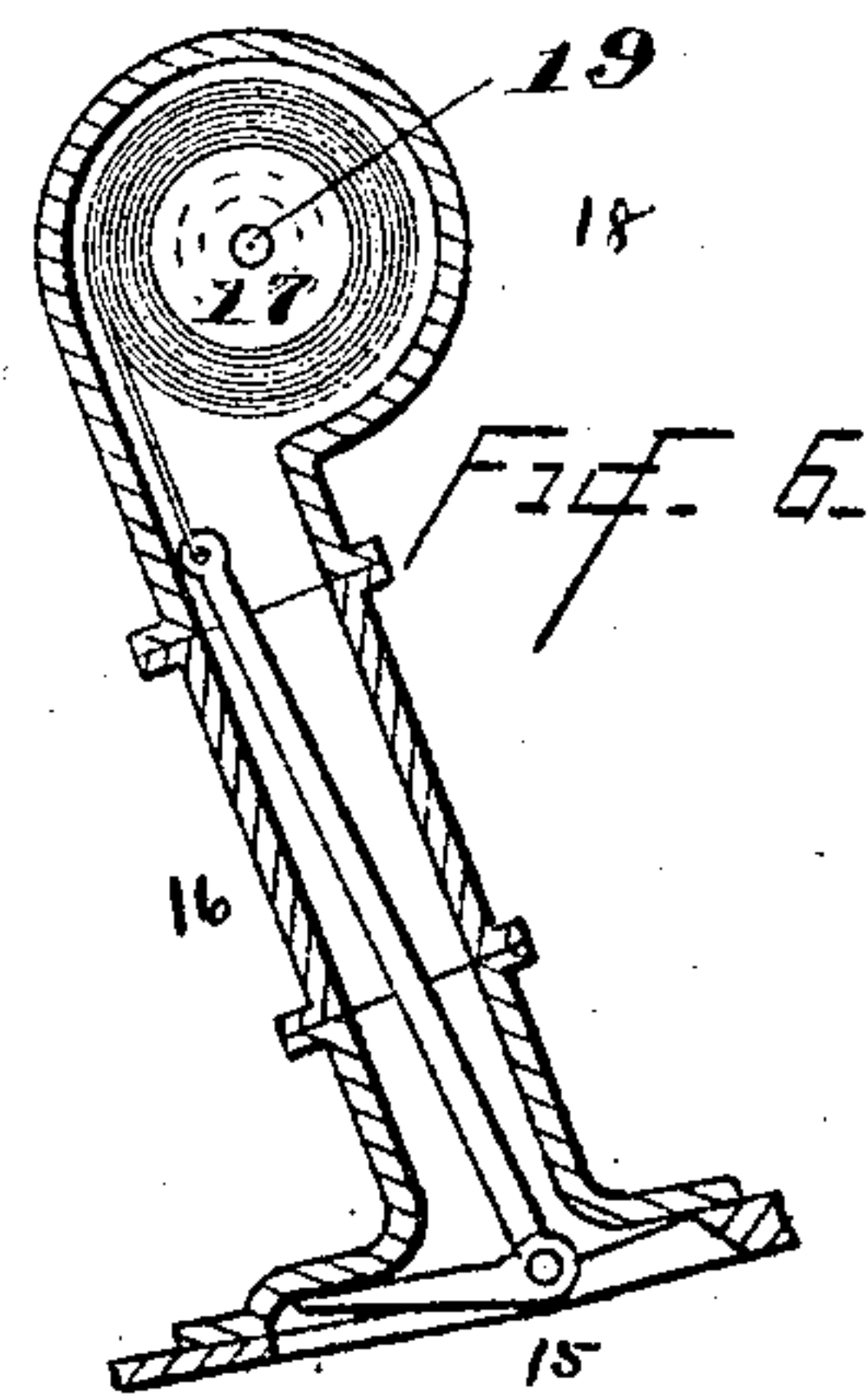
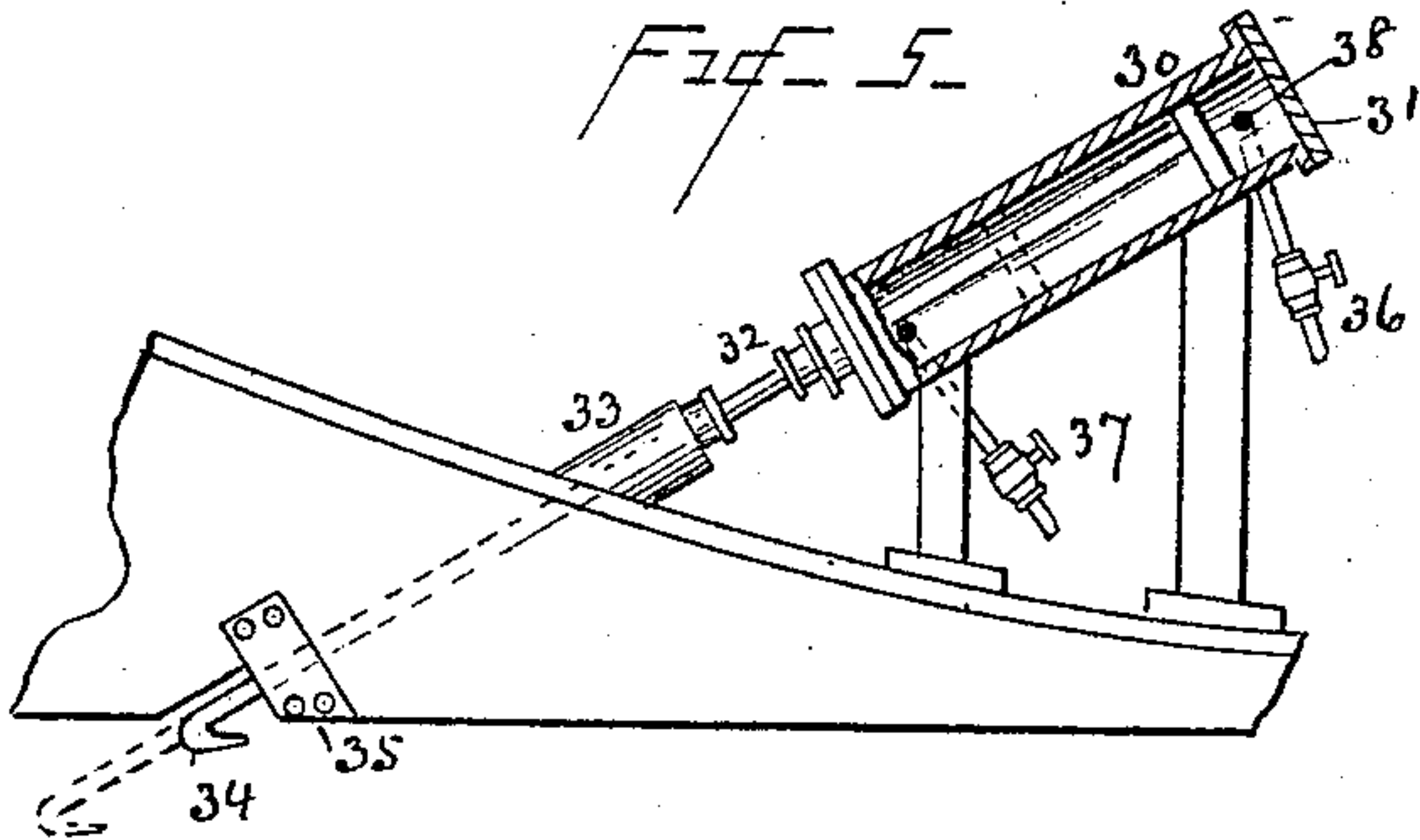
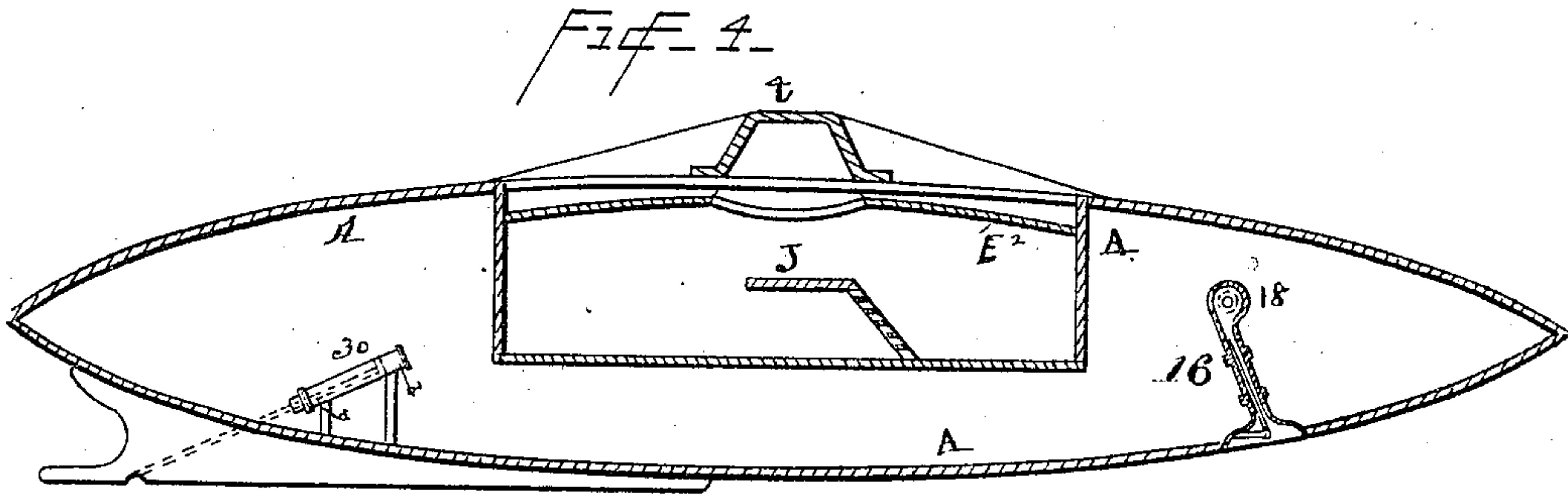
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UNITED STATES PATENT OFFICE.

JOHN P. HOLLAND, OF NEWARK, NEW JERSEY.

SUBMARINE TORPEDO-BOAT.

SPECIFICATION forming part of Letters Patent No. 522,177, dated June 23, 1894.

Application filed May 23, 1892. Serial No. 433,870. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. HOLLAND, residing at 185 Court street, Newark, New Jersey, have invented certain new and useful Improvements in Submarine Torpedo-Boats, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to submarine boats of the character intended to carry a crew, and to be controllable as to depth of immersion.

The invention consists in certain constructions and combinations of parts whereby the internal mechanism is made compact, the boat made controllable, and the offensive weapons governed and actuated.

In the drawings: Figure 1 is a vertical longitudinal section of the central portion of a submarine boat, illustrating the principles of operation of my ventilating devices and compensating tank, parts being omitted. Fig. 2 is a central cross-section of the boat. Fig. 3 is a longitudinal section of the forward portion of the boat, showing parts omitted in Fig. 1. Fig. 3^a is a detail. Fig. 4 is a longitudinal central section of the boat, many of the parts being omitted, showing the position of the anchor reel and the torpedo cable cutter. Fig. 5 is a detail section showing cable cutter. Fig. 6 is a longitudinal section through the anchor well and reel. Fig. 7 is a cross section of anchor well and reel.

The reference letter A indicates the shell of the boat. This shell is by preference spindle or cigar shaped, and has a small turret or cupola amidships which is normally just awash, the speed of the boat, or a change in ballast being depended on to secure submersion. The frame is formed of circumferential angle-irons B, and the shell is riveted thereto in the usual manner. The cover C of the turret is secured to a vertical pintle D, which pintle may move in bearings in the turret. The pintle can be pressed and held down by nut or hand wheel E which works on a screw thread on said pintle and has a bearing against an abutment in the boat. When nut E is turned down the pintle D may be raised by means of treadle lever H, which has a socket or swivel I for the lower end of the pintle. When the pintle is raised far enough to lift cover C clear of its seat, the

cover may be moved aside by turning the pintle. A handle G is attached to the pintle. The cover C has a flange which enters the top of the turret, and a water-tight fit is secured by means of a rubber gasket. A platform J is placed beneath the turret, and the steersman stands on this platform, his eyes on a level with dead lights K. A camera obscura L works telescopically through a ball in a socket joint M in the turret cover. A spring cap N turns over the top of the camera when the same is drawn inboard. A ventilating pipe or passage S, for convenience placed just in rear of the turret, opens at mouth U into the boat. The upper end of this ventilating passage is closed by valve Q, which has a spindle R connected to lever P. A float O, is secured to this lever, the float being by preference wedge shaped, as shown, to preserve the contour of the boat. When the boat has its top above water the float O lies on the top of the shell, and operates lever P to open valve Q. When the boat sinks the float rises and thereby closes valve Q. The passage S may be more securely closed, when the boat is submerged, by means of valve T. A locker W in front of the turret has a hinged cover V. This cover is hung on rod X, which rod is hung in bearings and provided at one end with a bevel gear. A shaft Y passes through the shell of the boat in proximity to rod X, and is geared to move the same by bevel gears at S³. By turning crank or handle Z the rod X may be swung and door or cover V opened. A float A' is stored within locker W, when the boat is above water. This float is attached to a hose B', which can be wound on windlass C'. The shaft or axle D' of this windlass is hollow, and the hose communicates with said hollow shaft, which extends inside the boat through a stuffing box, and has a coupling E' at its inner end. The passage through shaft D' is controlled by a cock F'. When the boat is submerged the float A' may be allowed to rise to the surface, and a supply of air can be drawn into the boat by attaching a suction pump to coupling E', the hose, of course, being sufficiently stiff to prevent collapse. A little inside the upper part of the shell proper A, it is advisable to have a steel armor plate E², which should be water-tight, extending some distance forward

and aft of the turret, and athwart-ship from one to the other of the vertical partitions, D². The partitions D² extend fore-and-aft, for perhaps one-half the length of the boat, and with bulkheads D²² form a central water tight compartment in the boat. A deck I' further divides the central space into upper and lower compartments.

Referring now to Fig. 2: B² illustrates strong iron or steel pipes extending lengthwise of the boat, outside the central compartment. These pipes form storage reservoirs for compressed air, from which the crew and engines may be supplied. Directly beneath the turret there is a diving tank K', having a lower cover L' opening outwardly, said cover being the full size of the tank. This cover has chains N' attached to its edges, which chains extend into pipes O'. Draw-rods Q' are attached to the ends of the chains, and clamping handles R' are attached to these draw-rods. The handles rest on brackets P' and hold the cover L' firmly closed when desired. The inner cover S' of the diving tank may be clamped by screws U', as many as may be needed. Water-tight joints will be secured by means of interposed gaskets. An air pipe, W', leads from the compressed air reservoirs to the upper part of tank K'. This pipe W' is controlled by a cock Z', through which compressed air is admitted to the tank K'. By closing cock Z' and opening cock X', air can escape from tank K', through pipes W' to the interior of the boat. A passage in cover L, at L^x, permits the ingress or egress of water. When it is desired to sink the boat by means of the diving tank, the air from said tank is allowed to escape by opening cock X', and water will enter tank K' thus changing the specific gravity of the boat as a whole. By closing cock X' and opening cock Z', compressed air from the reservoirs is allowed to enter the tank, and drive out the water, restoring the buoyancy of the boat. The diving tank is placed exactly under the center of displacement, so that the trim of the boat shall not be altered. The outer cover opening outwardly, and the inner cover opening inwardly, form an air lock of the diving tank, through which a torpedo may be passed from the boat, or a diver may pass out, provision being made, as by a passage at S^x, for the passage of a wire to the torpedo or an air hose to the diver. The diving tank K' is a cylinder, placed in the center of compensating chamber or compartment H'. Water is admitted to compartment H' to compensate for the consumption of air and fuel. This compartment should have a check valve opening outwardly. Water ballast may be admitted to the compartments C², around the pipes B². A hollow rod, like a mast, 1, (Fig. 3,) may be hinged to the shell abaft the turret. This mast has a worm gear 3, with which worm wheel 2 engages, said worm being operated by a crank inside the boat. The worm wheel engaging the gear on the mast serves to turn the

mast up or down. A hollow shaft 4 communicates with the mast, and with a pipe 5 extending into the boat. An air pump connected with this pipe may draw air into the boat when the mast extends above water. The float O may have a groove therein, so as to straddle the mast. A gun, preferably a pneumatic gun 7 may be placed forward of the turret, extending parallel with the axis of the boat. The muzzle of this gun can be covered by a sliding shutter 8, operated by pitman 9 and bell-crank lever 10, to open or close the muzzle. The muzzle of this gun may be elevated by sinking the stern of the boat, so that the flight of the projectile will be mainly above water. The anchor 15 may be drawn into pipe or well 16, entirely within the boat. A windlass 17 having shaft 19 extending through stuffing box 20, serves to wind up the anchor rope or chain, and a dog 21 engaging ratchet 22 locks the same. (See Figs. 6 and 7.)

For cutting a torpedo or telegraph cable, the hooked cutter 34 is provided, a blade 35 being in line therewith at the bottom of the boat. The cutter 34 is at the end of a piston rod 32 passing through stuffing box 33. Rod 32 has a piston head inside cylinder 30, and compressed air may be admitted to either end of said cylinder head 31 by a space 38. The hooked cutter may be thrust out and drag on the bottom until it picks up a cable, when it may be drawn in by a pressure on the piston and cut the cable between cutters 34 and 35.

The inventor expects to cover modifications and equivalents within the scope of his invention. Air under extreme compression is stored in the pipes B². This air is gradually liberated, to maintain a supply in the boat for breathing, and may also drive the engines by direct pressure or be used to support combustion. A check-valve will permit the escape of air should the internal pressure become too great. The boat should preferably float with the turret just above water, when at rest. Thus by means of diving rudders or wings, the boat may be driven under the surface as soon as she has sufficient speed, or by admission of water to the diving tank the same result may be reached.

I claim—

1. The combination with the cover of a torpedo boat, of a universally jointed piece in said cover, and a camera obscura sliding through said piece, all the joints being water tight, substantially as described.

2. The combination with the turret of a submarine boat of a ball-and-socket joint in the shell of said turret, a camera-obscura sliding through the ball, and a spring cover outside the ball, as set forth.

3. The combination with the turret of a submarine boat, of a sliding and oscillating pintle passing into the boat, and a lever within the boat swiveled to the pintle, whereby the cover and pintle may be raised, and the pintle turned on its axis, substantially as described.

4. The combination with the turret of a submarine boat, of a cover, a pintle attached to said cover and passing through the shell of the boat, a lifting lever swiveled to said pintle, and a turning handle and a tightening nut on said pintle, as set forth.

5. A submarine boat, and in combination therewith a ventilating passage having float and valve attachment, said float connected to the valve by a lever, so as to close the valve as the float rises, as set forth.

6. The roof of a torpedo boat having an orifice therein, a stopper valve for said orifice, and a float connected to the valve substantially as described, whereby the valve is opened when the float drops, and is closed when the float is lifted by the water.

7. In combination with the shell of a torpedo boat, a reel attached to said shell, a handle within the boat whereby the reel is operated, a float and hose connecting said float with the reel, and a pipe connection from the interior of the boat to the hose on the reel, substantially as described.

8. In combination with the roof of a submarine boat a hollow ventilating rod pivoted thereto, and having a pipe extending into the boat, and mechanism for elevating and depressing said rod, as set forth.

9. A hollow rod trunnioned to the roof of a torpedo boat, a gear outside the shell of the boat but having its operating handle within the boat, an air tube connecting the interior of the boat with said rod, and a closing valve for said tube, all arranged and combined as set forth.

10. The combination with the hull of a submarine boat and a compensating tank placed amidships of the same boat, of a diving tank centrally inclosed in the same, as set forth.

11. The combination with the shell of a submarine boat of a central cylindrical diving tank built into the structure of the boat and having lower cover of full diameter of tank opening downwardly into the water, and upper cover of full diameter opening upwardly into the boat, as described.

12. The combination with a submarine boat, of a central diving tank built into the permanent structure of the boat and consisting of a vertical cylinder, of a passage opening from said cylinder through the shell, and pipe leading to said tank, by which gas may be forced in and water expelled as set forth.

13. The shell of a torpedo boat having a central compensating tank, a vertical cylinder arranged within the same, a cover outside the boat, and draw-rods and connections by which the same can be operated, passing through the compensating tank.

14. In combination with a submarine boat controllable as to the depth of immersion fixed blade in the bottom of said boat, a movable cutter arranged as described with reference thereto, a shaft from said cutter entering the boat, and mechanism substantially as described within the boat for drawing on said shaft, all substantially as set forth.

15. A submarine boat controllable as to its depth of immersion having a cutting blade fixed to its bottom, and in combination therewith a cylinder, piston and operative connections and hooked cutter driven by said piston, as set forth.

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

JOHN P. HOLLAND.

Witnesses:

HENRY KROFF,
ELIHU B. GURST.