

No. 846,736.

PATENTED MAR. 12, 1907.

A. ELGAR.  
SUBMARINE TORPEDO BOAT.  
APPLICATION FILED JUNE 12, 1905.

2 SHEETS—SHEET 1.

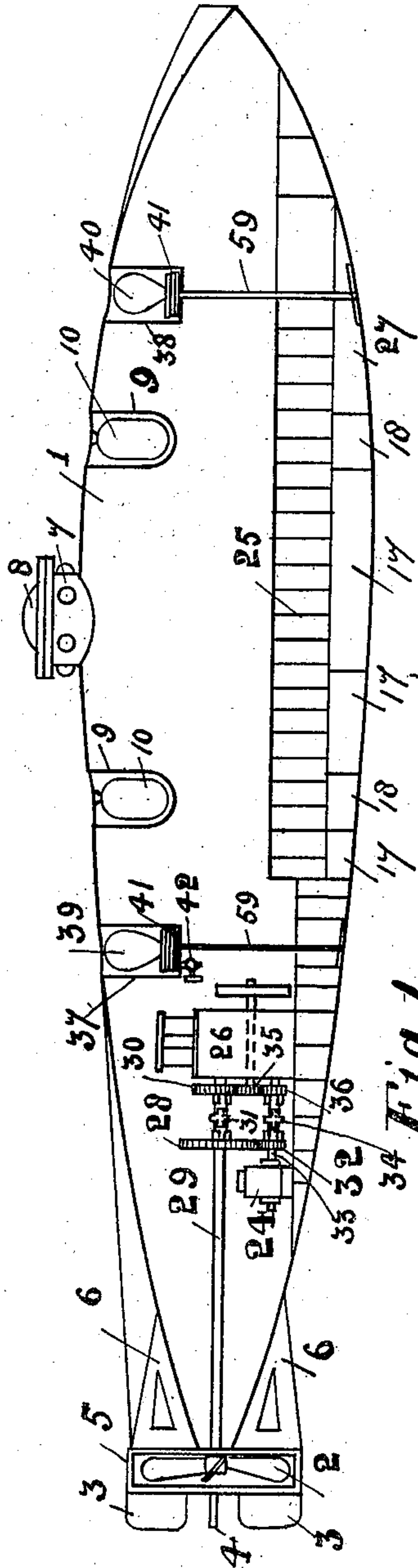


Fig. 1.

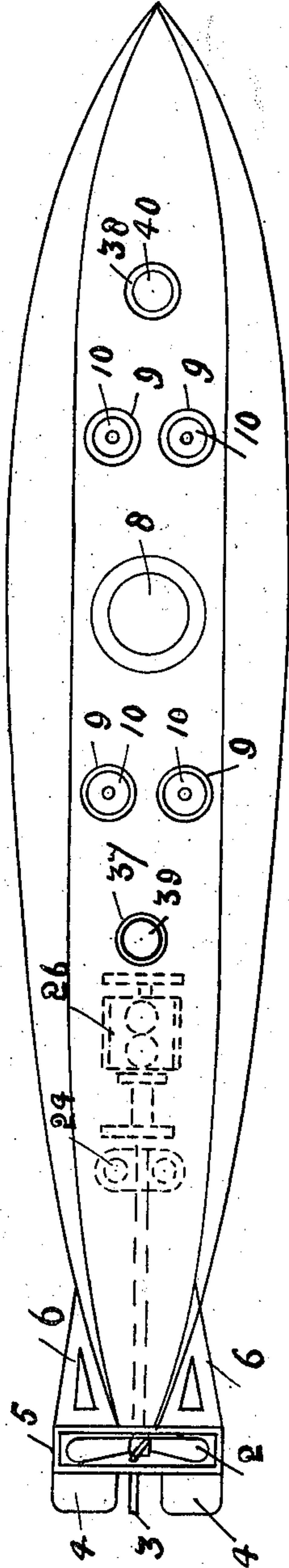


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 6.

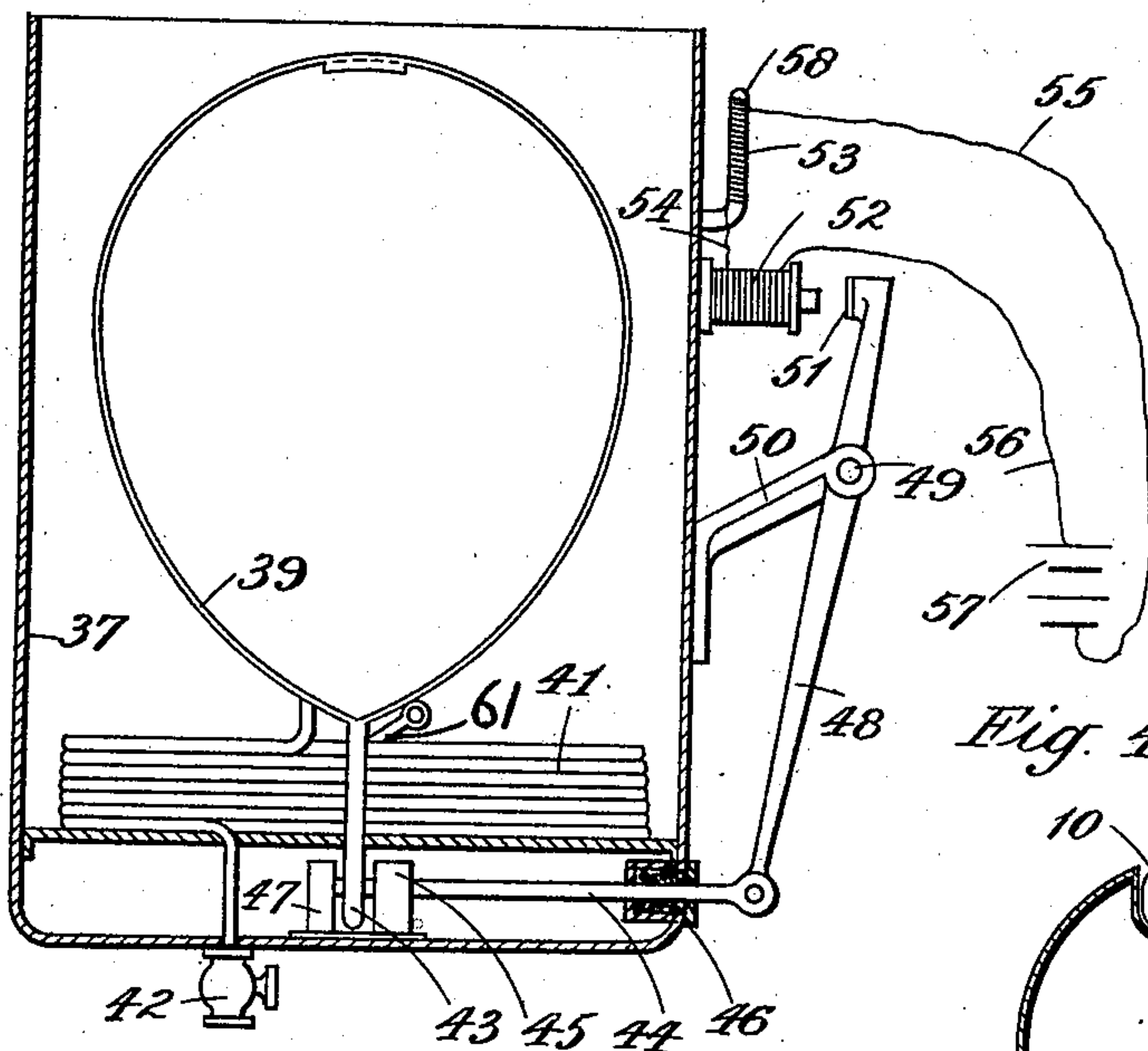


Fig. 4.

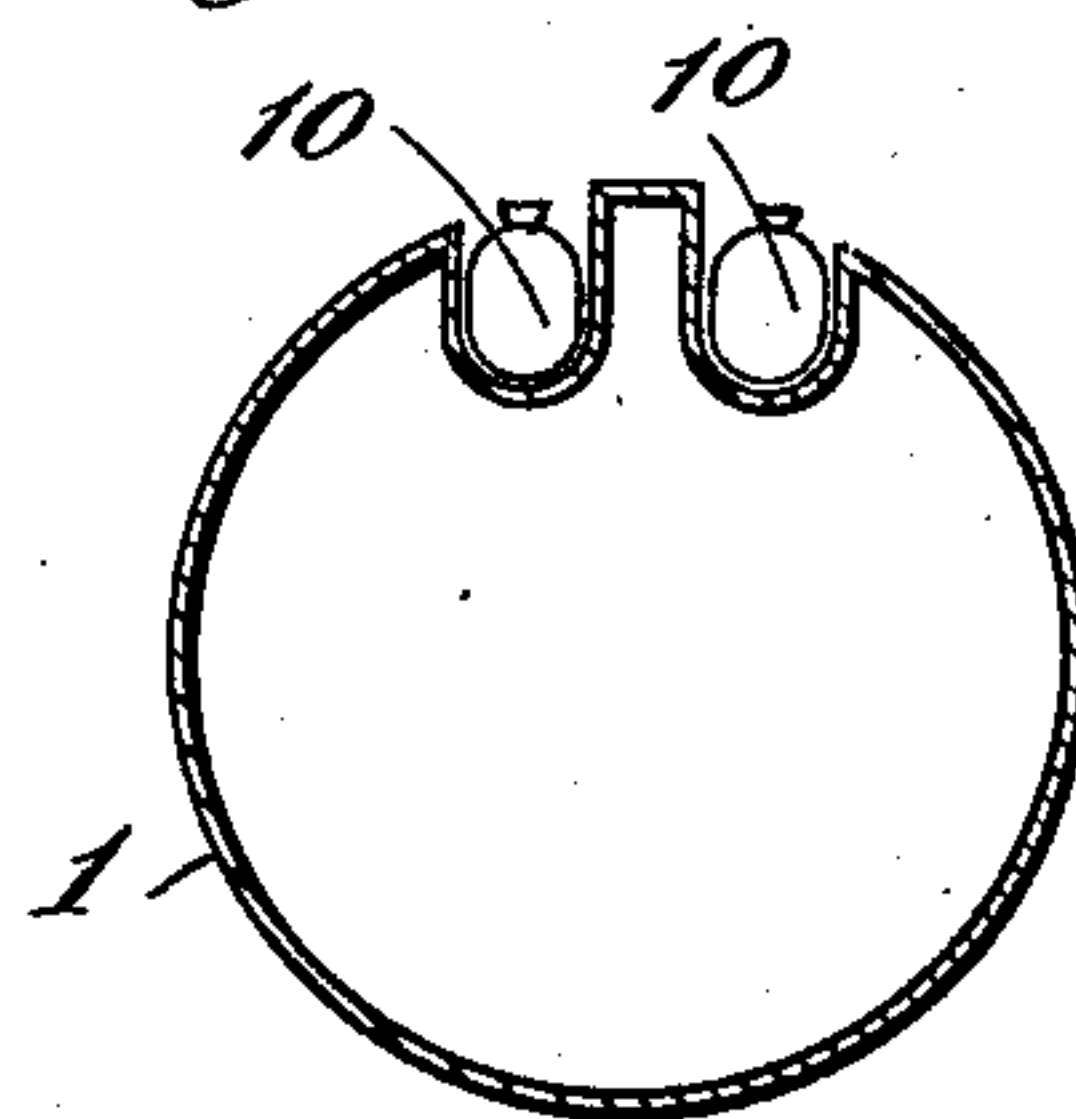


Fig. 7.

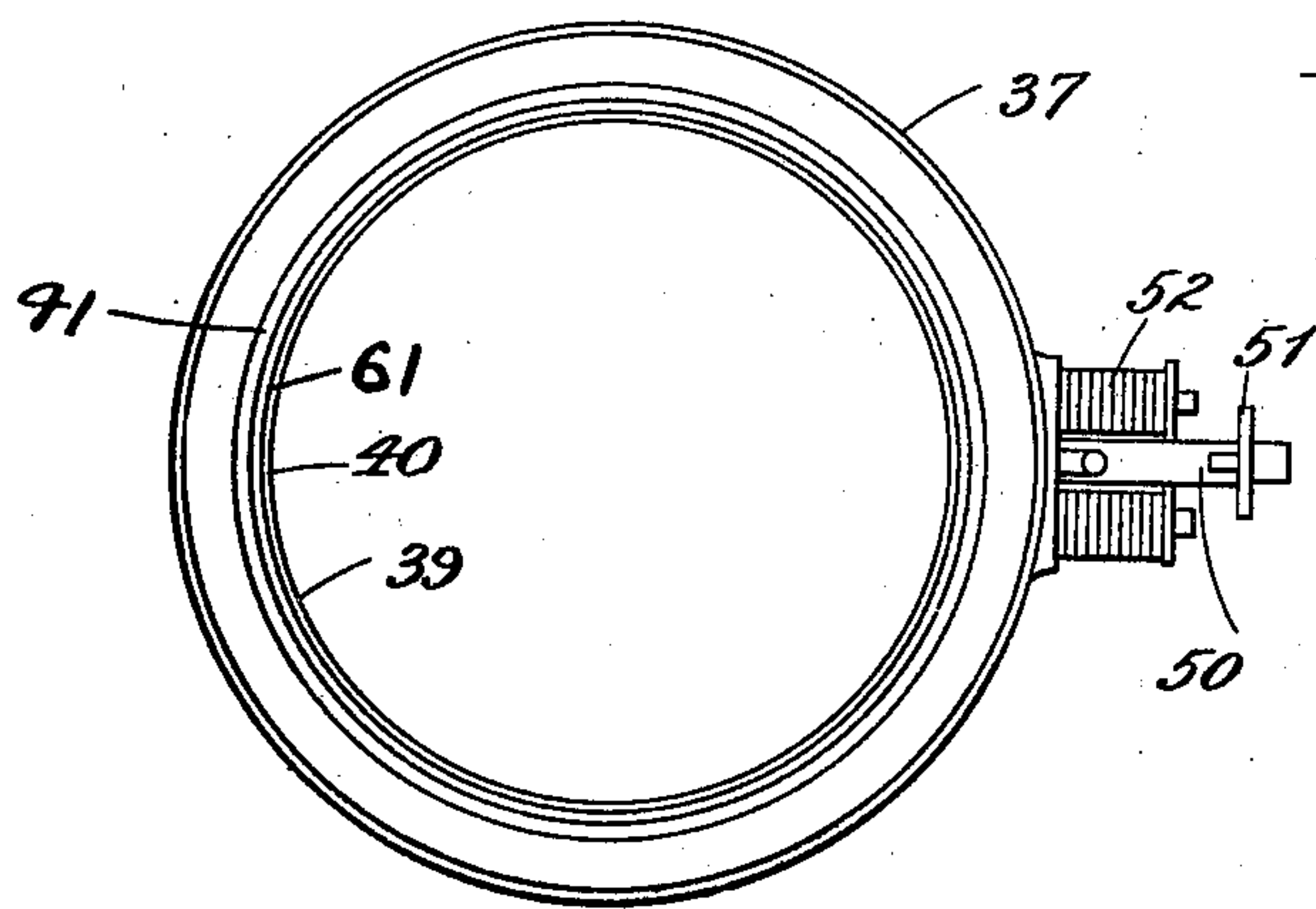


Fig. 5.

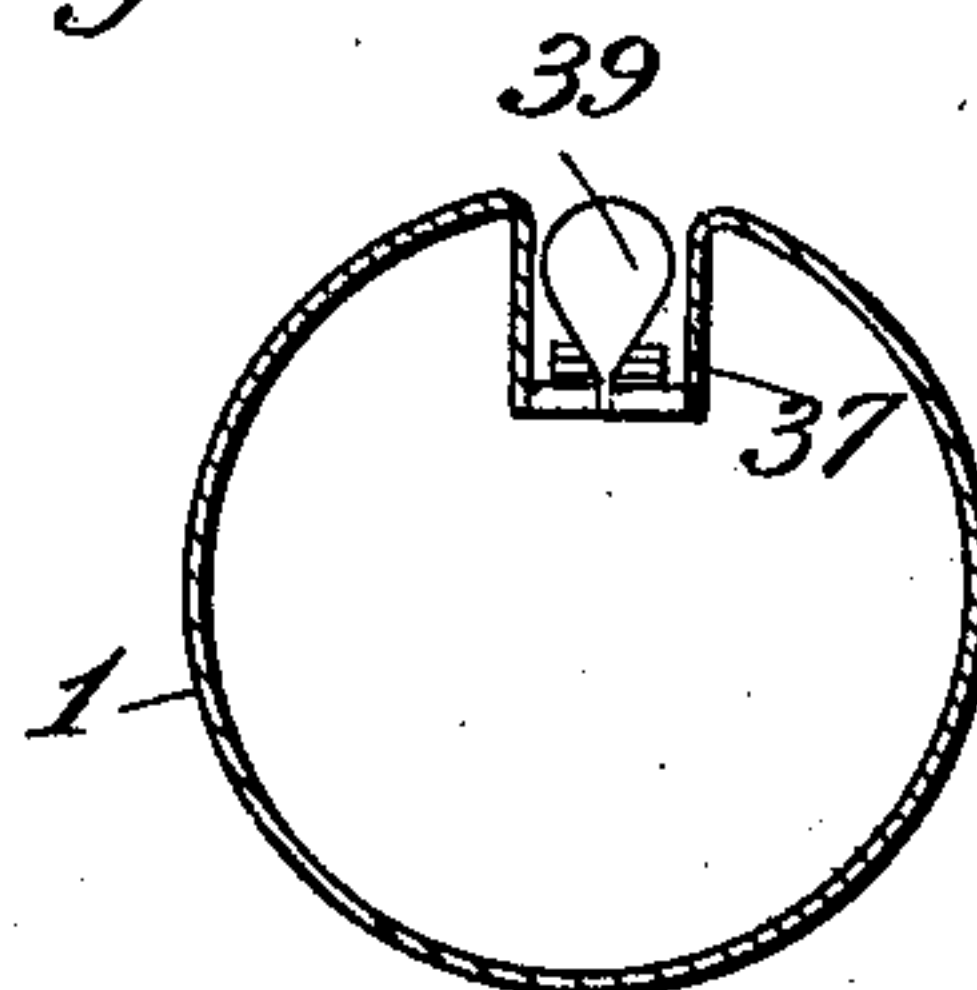
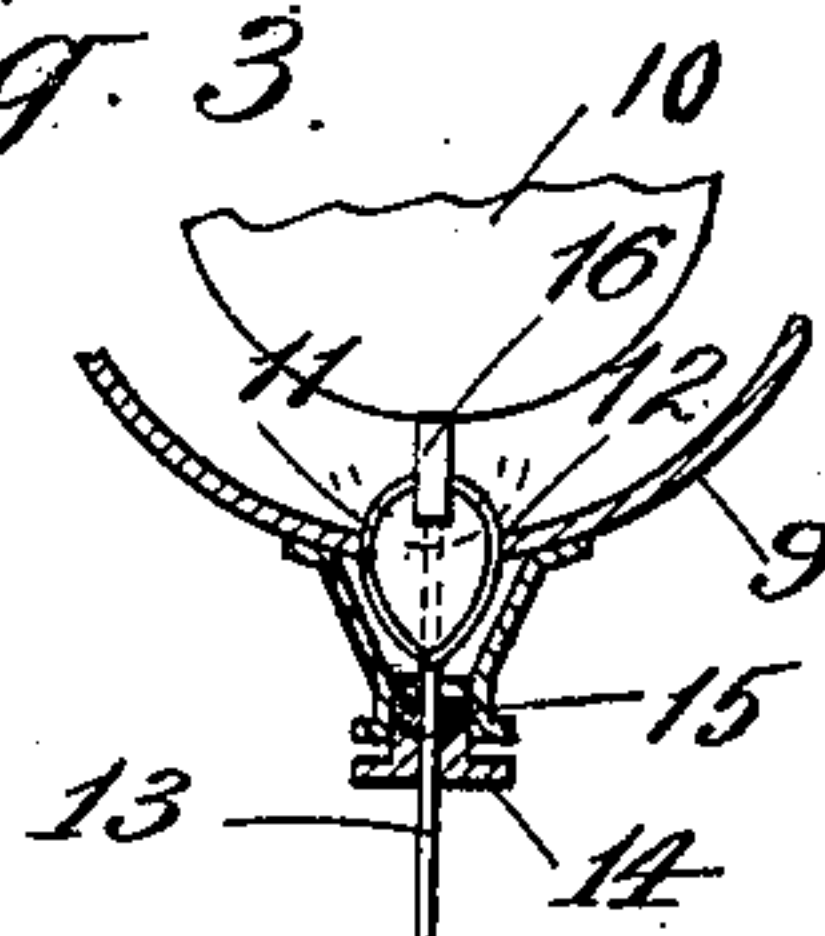


Fig. 3.



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# UNITED STATES PATENT OFFICE.

ALFRED ELGAR, OF NORTH BRIXTON, ENGLAND.

## SUBMARINE TORPEDO-BOAT.

No. 846,736.

Specification of Letters Patent.

Patented March 12, 1907

Application filed June 12, 1905. Serial No. 264,938.

*To all whom it may concern:*

Be it known that I, ALFRED ELGAR, a subject of the King of Great Britain, residing at 45 Cowley Mansions, North Brixton, in the county of London, England, have invented a new and useful Submarine Torpedo-Boat, of which the following is a specification.

This invention, which relates to submarine or submersible torpedo-boats, has for its objects to enable submarine or submersible torpedo-boats to carry and release buoyant torpedoes, self-attaching or otherwise operated or directed either in a vertical or in a horizontal direction; to enable such boats to cut or otherwise destroy the cables attached to moored torpedoes or submarine mines; to enable such boats to carry externally four or more torpedoes vertically directed ready for immediate use, and to carry also other torpedoes to be horizontally directed; to enable submarine or submersible boats equipped with buoyant torpedoes to be carried by a battle-ship from which said boats can operate as a base; to enable submarine or submersible boats, if sunk, to indicate their position by means of buoys automatically released; to enable such boats to be fitted with eyes or hooks to which attachments may be made for readily raising a sunken boat; to enable submarine or submersible boats to be used to place submarine mines in any desired field for harbor or coast defence and other purposes.

My invention is illustrated by the accompanying drawings, in which—

Figure 1 represents longitudinal section of a submarine or submersible torpedo-boat constructed according to this invention. Fig. 2 is plan of same. Fig. 3 shows torpedo-releasing gear to an enlarged scale. Fig. 4 is section through torpedo-wells. Fig. 5 is section through buoy-wells. Fig. 6 is section through buoy-well to an enlarged scale, showing automatic buoy-releasing gear.

The same numerals denote the same parts in all the figures.

1 is the hull of the boat, which is of the usual cigar or fish shape.

2 is the propeller.

3 3 are the vertical steering-rudders.

4 4 are the horizontal diving or submerging rudders.

5 is the banjo-frame surrounding the propeller and to which the rudders are attached.

6 6 are gussets securing the banjo-frame to the hull.

7 is the conning-tower, which is fitted with a water-tight door 8 at the top to allow of ingress to and egress from the boat.

9 9 9 9 are wells in the upper part of the boat, in which are stored buoyant torpedoes 10. These wells may either be open at the top, as shown, or closed by a lid or cover, which may be opened and closed from inside the boat in the manner commonly adopted for opening and closing the covers of submerged torpedo-tubes.

The torpedoes are preferably held in the wells and released therefrom by the mechanism shown in detail in Fig. 3.

In the bottom of each torpedo-well is an aperture to receive a pair of jaws 11 and 12, which are pivoted to a rod 13, which is raised and lowered by a lever or other suitable means inside the boat.

The rod 13 passes through a gland 14 and stuffing-box 15, the latter of which is riveted or bolted to the bottom of the well 9, suitable packing being inserted in the stuffing-box to prevent water from entering the boat.

The torpedoes are fitted with rings 16 at the bottom to engage with the jaws 11 and 12. As shown by Fig. 3, the rod 13 is pulled as far as it will go inboard, and the jaws 11 and 12 are drawn partly into the aperture in the bottom of the well, closing them over the ring 16 and securing the torpedo in the well.

As soon as the rod 13 is pushed outward the jaws fall apart, as shown by dotted lines, and the torpedo immediately rises out of the well and attaches itself to the bottom of the ship attacked, if a self-attaching torpedo is used; but if the torpedo is not self-attaching the torpedo will remain in contact with the bottom of the ship before exploding a sufficient length of time to allow the submarine to get out of range from the effects of the explosion.

It will be understood that as the torpedoes carried in the wells rise vertically when released the submarine boat from which they are launched must be vertically under the bottom of the ship to be attacked before a torpedo is released.

17 17 are the usual water-ballast tanks to trim the boat and to submerge her when stationary, the usual ejectors being provided to empty the tanks.

18 18 are small water-ballast tanks normally filled with water, the contents of which may be ejected to compensate for the



loss of buoyancy caused by the release of a torpedo.

The water is ejected by compressed air, the ejector being put in action by the movement of the same lever which releases the torpedo in such a manner that as soon as the torpedo is released the water is ejected from the tank nearest the well from which a torpedo has been released, thus leaving the buoyancy unchanged.

If the boats are provided with two torpedo-wells only, the wells are situated on the center-line of the boat.

24 is the electric motor for propelling the boat when submerged, the said motor being preferably a dynamo, so as to enable it to be used for charging the accumulators 25 when the boat is stationary.

26 is the oil or spirit motor for propelling the boat when not submerged.

27 is the tank to contain the oil or spirit for the motor 26.

28 is a spur-wheel running loose on the propeller-shaft 29, and 30 is a spur-wheel also running loose on the shaft 29.

The wheels 28 and 30 are capable of being locked to the shaft 29 by the sliding clutch 31, the clutch being so arranged that when one wheel is locked to the shaft the other wheel is free, or both wheels may be free at the same time, although it is impossible to lock both wheels at the same time. The wheel 28 gears with a pinion 32, which runs loose on the shaft 33, the said pinion being locked to the shaft when required by the sliding clutch 34. The wheel 30 gears with a pinion 35 on the crank-shaft of the motor 26. The pinion 35 also gears with a pinion 36 running loose on the shaft 33, but capable of being locked thereto by the clutch 34, the said clutch either releasing both pinions 32 and 36 from the shaft 33 or locking them one at a time to the said shaft.

When the pinion 32 and wheel 28 are locked to their respective shafts, the motor 24 drives the propeller. When the wheel 30 is locked to the shaft 29, the oil-motor drives the propeller. When the wheels 28 and 30 are unlocked from the shaft 29 and the pinion 36 is locked to the shaft 33, the motor 26 may be used to drive the dynamo 24 to charge the accumulators 25, or the dynamo may be used to start the motor 26.

In order to allow the whereabouts of a submarine boat which has been accidentally sunk, or which is from any other reason unable to rise to the surface, to be at once indicated, I form wells 37 and 38 in the boat, in which wells are secured buoys 39 and 40, the buoys being automatically released when the boat sinks too far below the surface of the water—in the case of accident, for example. Attached to each buoy is an india-rubber or other suitable tube 41, the other end of the said tube being attached to the bottom of the

well or to the hull of the boat, the inboard opening being closed by a suitable valve 42. The tubes are coiled down in the wells and afford a means of communication between the interior of the buoys and the interior of the boat. At the top of each buoy is a flap or other suitable valve opening inward, the said valves being normally closed by air-pressure, compressed air being pumped into the buoy and tube for this purpose.

The buoys are held in the wells by means of a suitable catch, which is released by an electric current, contact being made by means of a manometer when the boat reaches a predetermined depth, such a releasing apparatus being shown by Fig. 6.

The buoy 39 has a ring 43 at the bottom thereof, through which passes a bolt 44, the said bolt being guided by a bracket 45 and stuffing-box 46 and engaging with a recess in the bracket or lug 47.

48 is an unequal-armed lever pivoted at 49 to the bracket 50, the long arm of the lever being suitably attached to the bolt 44 and the short arm having an armature 51 thereon.

52 is a horseshoe-electromagnet, which when energized attracts the armature 51 and withdraws the bolt 44, thus releasing the buoy 39.

53 is a manometer-tube containing mercury in metallic connection with the wire 54 from the magnet-coils. The space above the mercury contains a terminal 58, connected to the battery-wire 55, the other battery wire 56 being connected with the magnet-coils.

57 is a battery which may be one or more of the accumulator-cells 25.

When the boat reaches a predetermined depth from any cause, the pressure of the water forces the mercury in the manometer upward until it comes in contact with the terminal 58. The current then passes from the battery through the magnet-coils and manometer, energizing the magnet 52, which attracts the armature 51, moves the lever 48, withdraws the bolt 44, and releases the buoy, or the wells may be fitted with air-tight covers held in place by exhausting the air from the wells. As soon as the boat sinks below a certain depth the pressure of the water bursts the covers, which then float off, and the buoys rise to the surface.

When a buoy is released, it immediately rises to the surface of the water. The valve at the inboard end of the tube is then opened. The compressed air in the buoy escapes. The flap-valve opens and allows fresh air to enter the boat.

Conversation may be carried on by means of the tube between the crew of the submarine and people above.

To the bottom of the boat I attach suitable fixings 59, the upper part of the said fixings being secured to the bottoms of the buoy-wells 37 38. Attached to each fixing within



the buoy-well is a ring or eye, to which may be attached a hawser or chain for raising a sunken boat. Attached to the said ring or eye is a line 61 to serve to retain the buoy and to act as a guide for the divers engaged in salving operations. As the line is somewhat shorter than the tube 41, it serves to relieve the strain on the tube when a buoy is released.

The boat is fitted with the usual water-ballast tanks for diving and other purposes and with the necessary ejectors for emptying the tanks or some of them.

When a boat is to be used for placing submarine mines in a field for defence or other purpose, the buoyant torpedoes are fitted with a device for causing them to explode on contact with a passing vessel. The torpedoes are also fitted with a line and sinker.

The line, which is of the proper length, is coiled down in the well with the torpedo, the sinker being on the outside of the hull. As soon as the torpedo is released the torpedo rises and uncoils the line. The sinker, being no longer held by the torpedo, falls and sinks and when the line is taut carries down the torpedo with it.

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

1. In a submarine boat the combination of wells in which are carried buoyant torpedoes, wells in which are carried buoys to indicate the position of the boat if sunk, said buoys being automatically released when the boat sinks below a certain depth, an extensible spar torpedo fitted in the bow of the boat,

a grapnel normally housed in a chamber at the bottom of the boat for securing and cutting the cables connected to submarine boats, and means for propelling and submerging the boat, all substantially as specified.

2. A submarine boat provided with means for submerging and propelling same, wells in which are carried buoyant torpedoes and buoys for indicating position of boat if sunk, means for holding the torpedoes and buoys in the wells and means for launching the torpedoes and releasing said buoys operated by release-levers within the boat substantially as shown and described.

3. In a submarine boat provided with wells in which are carried buoys for indicating the position of the boat if sunk, a valve opening inward in the top of the buoy, a tube connecting the inside of the buoy with the inside of the boat, a ring at the bottom of the buoy, a bolt passing through said ring, a lever attached to said bolt, an armature secured to short arm of said lever, an electromagnet which attracts said armature when energized and an electric battery and a manometer to close the electric circuit when the boat reaches a predetermined depth as and for the purpose specified.

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

ALFRED ELGAR.

Witnesses:

T. E. HALFORD,  
E. A. NEWMAN.