

(No Model.)

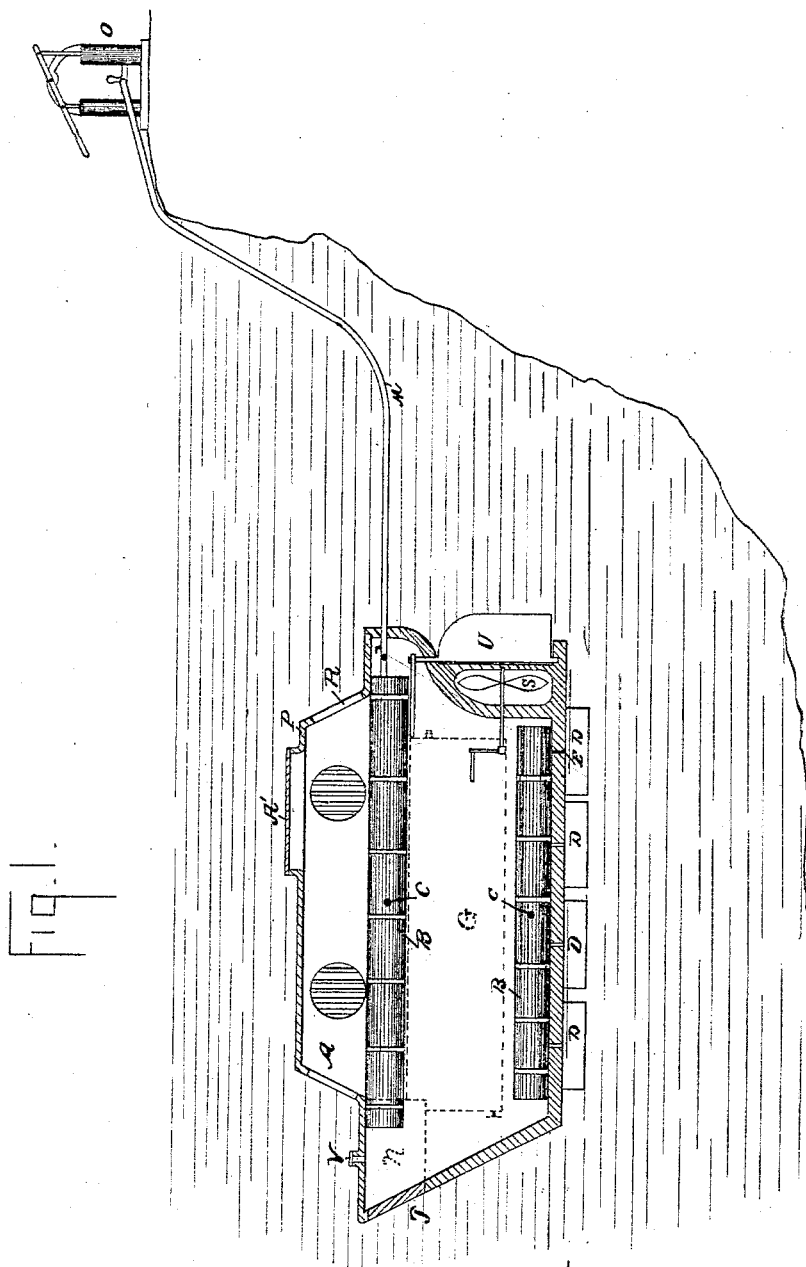
2 Sheets—Sheet 1.

W. HAMMOND.

KEEL FOR SUBMARINE BOATS.

No. 303,843.

Patented Aug. 19, 1884.



Witnesses:
E. F. Murdoch
A. M. Murray

Inventor:
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Attys.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

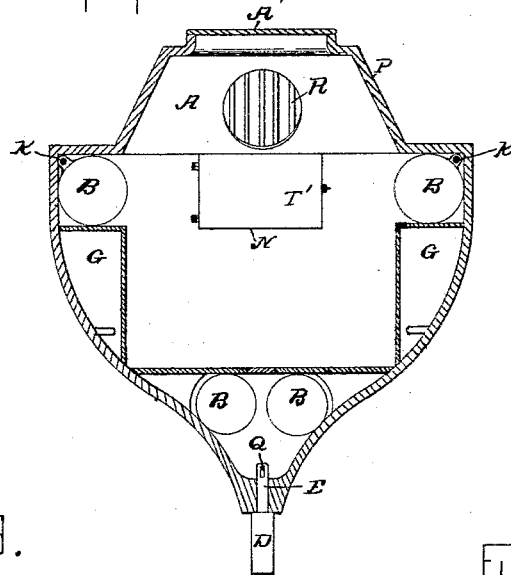


Fig. 3.

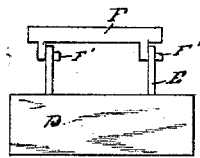


Fig. 4.

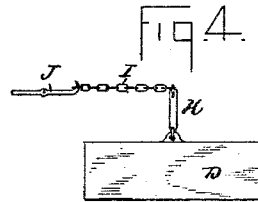


Fig. 6.

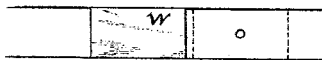
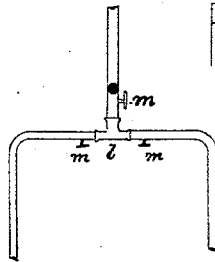


Fig. 5.



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UNITED STATES PATENT OFFICE.

WALTER HAMMOND, OF BALTIMORE, MARYLAND.

KEEL FOR SUBMARINE BOATS.

SPECIFICATION forming part of Letters Patent No. 303,843, dated August 19, 1884.

Application filed January 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, WALTER HAMMOND, a citizen of the United States, and a resident of Baltimore, county of Baltimore, State of Maryland, have invented new and useful Improvements in Keels of Submarine Boats, of which the following is a full and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to improvements in keels of submarine boats; and it consists in providing cylinders or air-tubes, water-tanks, a detachable keel, a propeller, a rudder, and a torpedo-box, all adapted to work together and to be operated and controlled by attendants within the boat; and the objects of my improvements are, first, to provide means for sinking the boat to any depth required; second, to raise the boat in the water to any height required; third, to sustain the boat at any point under water; fourth, to move the boat while under water to any point desired in order to examine or attack an object below the water-line. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of my submarine boat. Fig. 2 is a cross-section. Figs. 3 and 4 are alternate methods of suspending the detachable keel. Fig. 5 is a duplex cock for introducing air into cylinders, water-tanks, and boat. Fig. 6 is a cut-off to cover perforations made to admit the lug of detachable keel when the keel is dropped.

Similar letters refer to similar parts throughout the several views, in which—

A is the hull or frame of the boat, and may be built of wood, iron, steel, or other suitable material, and may be built in any shape desired with perforations in keel to admit the lug of the iron weights suspended.

B B are air tubes or cylinders suspended by means of bracket-bars, hooks, ropes, or other suitable contrivance through the length, breadth, or on the inside or outside of boat, and may be made of india-rubber, rubber-lined cloth, canvas, or other suitable material, and are capable of inflation and discharge at will by attendants within the boat, and are provided with vents and valve-cock C C, so that the air from cylinders may be admitted into boat and used for purposes of respiration.

D D is a detachable iron keel, and may be constructed of one or more parts provided with lugs, which pass through slots or perforations made in keel of boat, and are suspended by means of pins passing through slot in lugs, as shown in drawings, Fig. 3, a modification of which is shown in Fig. 4, in which H is a pin attached to the iron weight D, and is made to pass through a slot in keel. I is a chain attached to the pin H and the hook-lever J, and may be detached instantly by striking the bar F in Fig. 3, or by tripping the hook-lever J in Fig. 4. E E are the lugs of detachable keel, which pass through the slots or perforations made in the keel of boat, and are provided with slots in which the pins F' F' move to suspend the keel. G G are the water-tanks provided with valves to admit and discharge the water and hose-couplings to admit the air, and are used in combination with the air-tubes and detachable keel to raise and lower the boat in the water. H I J are a combination of lever, pin, and chain to act as an alternate means of suspending the detachable keel.

K K are bracket-bars, made in any manner to hold in position the air tubes or cylinders.

L is an ordinary union or T joint in combination with the valves *m m m*, to control the introduction of air from the air pump or float.

M is an ordinary hose, connecting the submarine boat with the air-pump.

N is a torpedo-box, and may be used as a place from which to work a drill for the purpose of boring holes into the bottom or side of a ship and introducing explosive material.

O is an air-pump, and may be of any kind required, and can be located on the shore or on board a boat or float, or it may be located in the submarine boat and receive its air from a valve-float attached to the boat.

P P is the armor-plated shell used when the boat is employed as a torpedo-boat.

Q is the elongated slot in the lug of the detachable keel, in which the pin is inserted to suspend the detachable keel.

R R are grated windows used for the purpose of observation.

S is the propeller.

T and T' are water-tight doors to torpedo-box. T' is opened to prepare a Fish or other

suitable torpedo, and when all is in readiness T' is closed and T is opened, and the torpedo floats up into position, and when the boat has moved to a safe distance is exploded.

5 U is the rudder which guides the boat.

V is an air-valve to allow the escape of air from cylinders or boat.

W is a cut-off or slide-valve, which is moved over the slot or perforation in the keel to prevent water from entering the boat when the detachable weights are dropped to allow the boat to rise to surface.

The operation of my invention is as follows: The iron weights, which form the extra keel, being attached, the cylinders or air-tubes are partially inflated to balance the weight of the keel, and the boat is moved forward in the water by means of the propeller to the place where it is desired to sink it. The valves connected with the water-tanks and the vents connected with the air-cylinders are then opened, and as the water-tanks fill and the air escapes from the air-cylinders the boat sinks until the required depth is reached, when the valves and vents are closed and the cylinders or tubes are inflated until a state of buoyancy is attained, and the equipoise of the boat is maintained by the inflation or discharge of the air-cylinders, and may be aided by the introduction and expulsion of water in the tanks. The boat is now in a condition to move forward under water to any position desired by means of the propeller and rudder operated by persons within the boat.

35 As indicating the state of the art in respect to air-receptacles and means for ventilating submarine and other vessels, I am aware that cylindrical wrappers made of strong and thin material and inflated with an air-pump have been used, and do not claim air-cylinders broadly. I am also aware that water-tanks have been used for the purpose of sinking or water-logging vessels, and do not claim water-compartments broadly.

45 I am also aware that air-pumps have been

used for the purpose of compressing air in air-tight compartments, and for the purpose of expelling foul air, and do not claim an air-pump broadly.

I am also aware that a detachable iron keel has been used in a torpedo-boat held by means of electro-magnets, and detached by breaking the circuit, and do not claim a detachable keel held in position by electro-magnets and released by breaking the circuit; but

What I do claim, and desire to secure by Letters Patent, is—

1. In a submarine boat, a heavy keel attached to said boat by means of slotted pins or lugs E, and retained in position by pins passing transversely through the slots in said pins E, substantially as and for the purpose set forth and described.

2. In a submarine boat, a heavy keel attached to said boat by means of the slotted pins E, passing through suitable perforations in keel of said boat, in combination with the bar F, having the dependent angles F', substantially as and for the purpose set forth and described.

3. In a submarine boat, a heavy keel, D, attached to said boat by means of the pin H, chain I, and lever J, substantially as and for the purpose set forth and described.

4. In a submarine boat, a heavy keel being made in sections, each being separately detachable by means of the slotted pin E, and bar F, provided with the dependents F', substantially as and for the purpose set forth and described.

5. The keel D, provided with the pin E, in combination with the cut-off valve W, substantially as and for the purpose set forth and described.

In testimony whereof I have hereunto set my hand this 7th day of January, A. D. 1884.

WALTER HAMMOND.

Witnesses:

E. F. MURDOCK,
A. McMURRAY.