T. WRIGHTSON.

FLOATING MINE.

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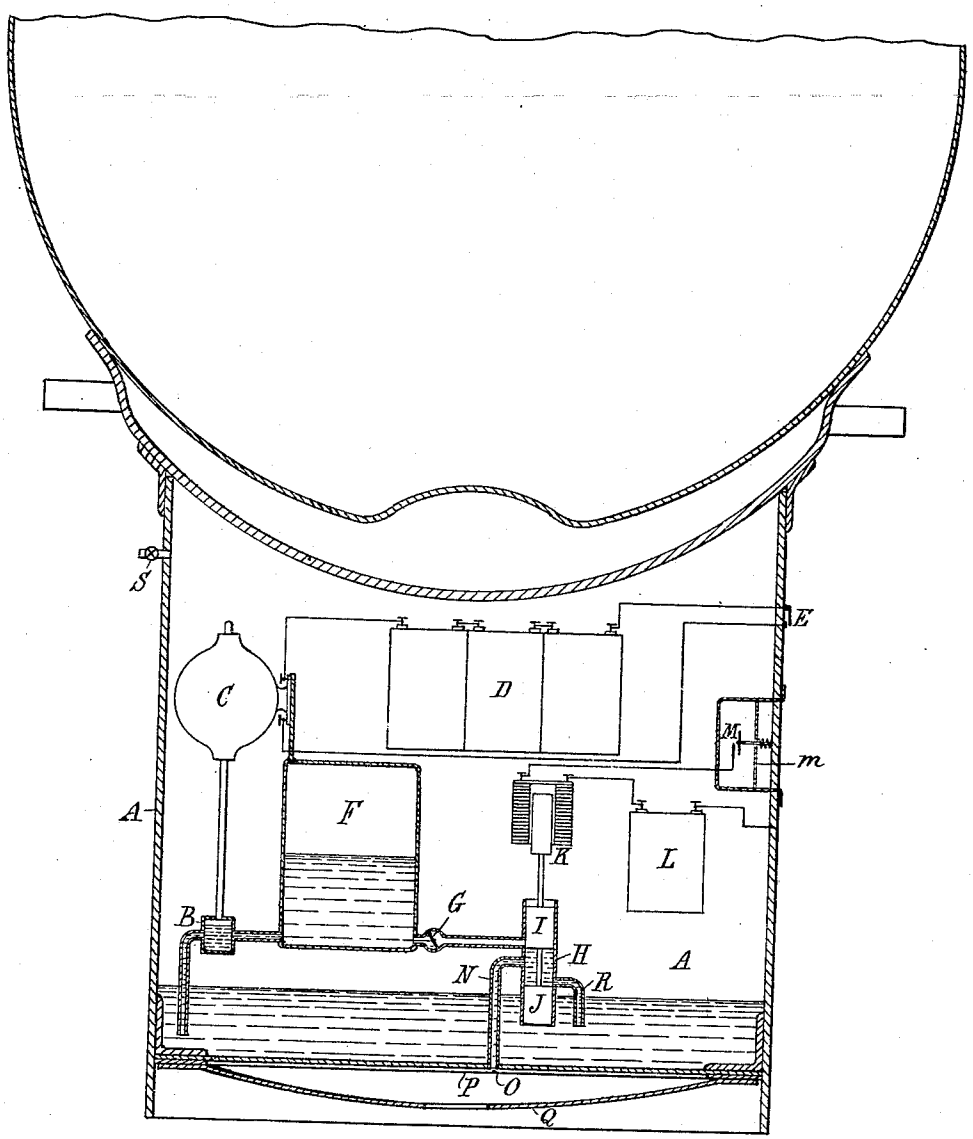
1,298,142.

Patented Mar. 25, 1919.



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UNITED STATES PATENT OFFICE.

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FLOATING MINE.

1,298,142. Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed August 7, 1917. Serial No. 184,861.

To all whom it may concern:

Be it known that I, Sir THOMAS WRIGHTSON, Bart., a subject of the King of Great Britain, residing at Teesdale Iron Works, Thornaby-on-Tees, England, have invented a new and useful Improvement in Floating Mines, of which the following is a specification.

The object of this invention is to provide a mine or the like having preferably a positive buoyancy of variable amount with means whereby it is enabled to adjust its specific gravity to approximately that of the water and thereafter to float freely at or about a predetermined depth below the surface.

My invention is illustrated by the accompanying drawing which shows more or less diagrammatically a section of part of a mine.

The mine casing contains a supply chamber A partly filled with water. Within the casing is mounted a pump B which can be continuously driven by an electric motor C operated by a battery D, the motor being started before the mine is placed in the water by means of the switch E. The pump delivers water from the chamber A to an intermediate chamber preferably in the form of an accumulator F, the delivery pipe of which is provided with a check valve G and leads to a valve casing H in which works a valve composed of two pistons I, J. This valve is controlled by a solenoid K energized by a battery L when its circuit is closed through a switch M controlled by a diaphragm *m* exposed to the external pressure. The valve casing H has opening from it two pipes of which the one N leads to a chamber O having a flexible wall P exposed to the pressure of the surrounding water but shielded for the greater part of its surface by a guard Q, while the other R opens into the interior of the casing A. S is a blow-off valve.

When the mine is put into the water, the pump B pumps water from the bottom of the casing A into the accumulator F. The mine having sunk to a predetermined depth, the switch M is closed by the pressure of the water and the solenoid K raises the valve I, J, so that water passes from the accumulator F through the casing H and pipe N to the chamber O, distending the flexible wall P and therefore increasing the displacement of the mine which accordingly rises. The consequent fall in the external pressure causes the switch M to open, the valve drops to the position shown, the piston I stopping the flow of water from the accumulator and the piston J uncovering the pipe R, so that water in the chamber O flows back through the pipe N, casing H and pipe R, into the interior of the casing A, thus diminishing the displacement of the mine, which accordingly sinks again and the operations are repeated; the mine thus alternately rises and falls for a short distance so long as the motor C continues to work.

What I claim is:—

1. In a floating mine having a liquid supply chamber, the combination of an expansion chamber connected with the supply chamber, an intermediate chamber connected with the supply chamber and the expansion chamber, and means for transferring liquid from the intermediate chamber to the expansion chamber and from the expansion chamber to the supply chamber.

2. In a floating mine having a liquid supply chamber, the combination of an expansion chamber connected with the supply chamber, an intermediate chamber between the liquid supply chamber and the expansion chamber, a pump for transferring liquid from the supply chamber to the intermediate chamber, valve mechanism controlling the passage of liquid from the intermediate chamber to the expansion chamber and the passage of liquid from the expansion chamber to the supply chamber.

3. In a floating mine, the combination of a chamber having a flexible exterior wall, an accumulator, a pump adapted to force water from the interior of the mine into the accumulator, means for driving the pump, a valve controlling the flow of water from the accumulator to the chamber and from the chamber to the interior of the mine and means adapted to be actuated by the pressure of the water surrounding the mine for controlling the valve.

4. In a floating mine, the combination of a chamber having a flexible exterior wall, an accumulator, a pump adapted to force water from the interior of the mine into the accumulator, means for driving the pump, a valve casing, a pipe leading from the accumulator to the casing, a second pipe

leading from the casing to the chamber, a third pipe leading from the casing to the interior of the mine, a valve adapted to put the second pipe into communication with the first pipe or with the third pipe, a solenoid adapted to move the valve and means controlled by the pressure of the water surrounding the mine for energizing the solenoid.

In testimony that I claim the foregoing as my invention I have signed my name this 11th day of July 1917.

THOMAS WRIGHTSON.