S. G. WIGELIUS.

MINE OR THE LIKE.

APPLICATION FILED MAY 22, 1914.

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Fig. 1.

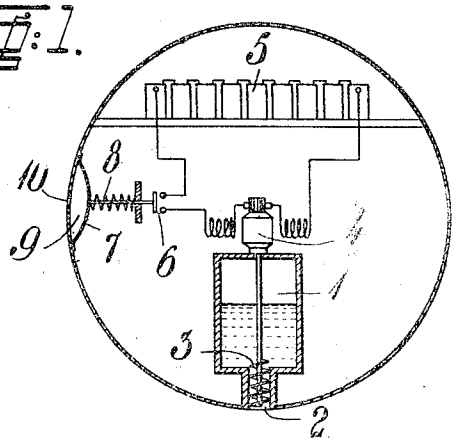
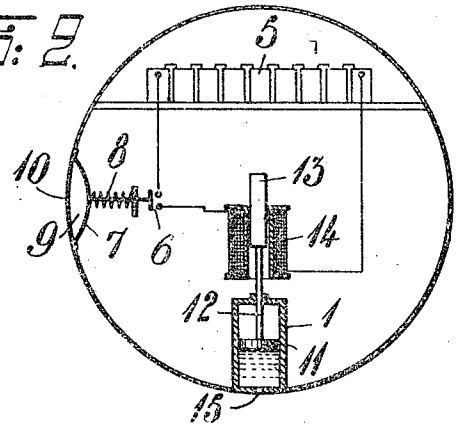


Fig. 2.



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SVEN GUSTAF WIGELIUS, OF GOTTENBORG, SWEDEN, ASSIGNOR TO ARON ANDERSSON, OF STOCKHOLM, SWEDEN, AND THOR CARLANDER, OF GOTTENBORG, SWEDEN.

MINE OR THE LIKE.

1,138,269. Specification of Letters Patent. Patented May 4, 1915.

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To all whom it may concern:

Be it known that I, SVEN GUSTAF WIGELIUS, a citizen of the Kingdom of Sweden, residing at Gottenborg, Sweden, have invented new and useful Improvements in Mines or the like, of which the following is a specification.

The present invention relates to mining torpedoes, torpedo-mines, torpedoes and similar subfloating bodies which, after having performed their forward motion, tend to assume an oscillating position of equilibrium below the surface of the water, a hydrostat provided in the mine controlling the filling or emptying of a depth-regulating chamber thus causing the mine to descend or ascend.

The invention has for its object to provide a reliable and cheap device for maintaining the oscillating movements of the mine.

The invention consists chiefly in this that the depth-regulating chamber is constructed in the form of or combined with a pump actuated by means of an electromotor which is supplied with current from a battery provided in the mine and controlled by the hydrostat of the mine.

The invention is illustrated in the accompanying drawing in which—

Figures 1 and 2 show diagrammatically sectional views of two embodiments of the invention, such details of the mines that do not constitute any part of the invention, being omitted.

Referring first to Fig. 1, 1 designates the depth-regulating chamber connected continuously, by means of a channel 2 in the lower part of the mine, with the outside water which, when the mine has been launched can enter the chamber 1 and seclude a certain quantity of air in the upper part of said chamber. Placed in the channel 2 is a screw, centrifugal pump or the like 3 driven by means of an electromotor 4. The motor is supplied with current from a primary or secondary battery 5 provided in the mine, the circuit of the motor being closed and broken by a switch 6 controlled by a hydrostat. The latter may be of any suitable construction and is, for the sake of simpleness, indicated on the drawing as a resilient diaphragm 7 actuated on the one side by a spring 8 and on the other side by the outside water pressure, the water having access through an opening 10 to a chamber 9 formed between said diaphragm and the wall of the mine body.

The mine described operates as follows. When the mine is launched the water enters the depth regulating chamber 1 through the channel 2 thus compressing the air in the upper part of said chamber and causing the mine to descend slowly in the water. When the mine has reached a certain depth of submersion, the hydrostat closes the switch 6, and the motor 4 is started so that the water is forced out of the chamber 1 by means of the screw 3. The expulsion of the water is facilitated by the air inclosed in the chamber 1, and on account thereof the motor need only develop a small quantity of energy. According as the water is forced out, the mine becomes lighter and ascends, until it reaches a certain position below the surface of the water in which position the hydrostat opens the switch 6 so that the motor is made currentless and stops. Owing thereto the water again enters the chamber 1 thereby causing the mine to descend, whereafter the play commences anew. When the battery is exhausted the motor stops and the mine descends definitively, or a time switch may be provided breaking the circuit of the motor at a certain time after the launching of the mine and causing the mine to descend definitively.

The mine shown in Fig. 2 differs from the mine shown in Fig. 1 chiefly in this that the depth regulating chamber 1 is constructed as a cylinder containing a piston 11 movable up and down. The piston rod 12 is connected with the core 13 of a solenoid 14 supplied with current from a battery 5, the supply of current being controlled by a switch 6 which is closed and opened by a hydrostat in the same manner as in Fig. 1. In the bottom of the cylinder 1 is an inlet opening 15 for the outside water. This device operates as follows: When the mine is launched the water enters the cylinder forcing the piston 11 inward. Owing thereto the mine descends so that the hydrostat is pressed inward thereby closing the switch 6. The solenoid now attracts its core so that the piston 11 is forced downward thereby expelling the water from the cylinder 11. The speed at which the water enters the cylinder and is forced out of the same may be regulated by adjusting the size of the opening 15, or by arranging the upper end of the cylinder as

an air or liquid brake, or by combining the upper end of the core with a suitable brake. When a certain quantity of water has been expelled, the mine commences again to ascend, and when the mine has reached a certain depth, the switch 6 is opened so that the solenoid becomes currentless. On account thereof, the outside water enters again through the opening 15, thereby forcing the piston 11 upward until the mine again commences to descend, and the play is iterated until the battery is exhausted or the circuit of the battery is broken by means of any suitable time switch.

The constructive details of the invention may apparently be varied in different manners without deviating from the essential features of the invention. Thus, for instance the pump may be constructed as a bellows actuated by the core of a solenoid or a rotating electromotor.

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

1. In a subfloating body adapted to assume an oscillating position of equilibrium below the surface of the water, the combination of a chamber arranged to regulate the depth of immersion of said body and communicating continuously with the outside water, electrically actuated means for emptying said chamber, an electric battery arranged to supply said means with electric current, and a hydrostat arranged to close and break the circuit of said means, said emptying means being arranged to be actuated by the outside water, so as to permit automatic filling of the said chamber when the circuit is broken, substantially as and for the purpose set forth.

2. In a subfloating body adapted to assume an oscillating position of equilibrium below the surface of the water, the combination of a cylindrical chamber arranged to regulate the depth of immersion of said body and communicating continuously with the outside water, a piston movable in said chamber for emptying the same, electric means for actuating said piston, an electric battery arranged to supply said means with electric current, and a hydrostat arranged to close and break the circuit of said means, said piston being arranged to be actuated by the outside water so as to permit automatic filling of the said chamber when the circuit is broken, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

SVEN GUSTAF WIGELIUS.

Witnesses:
OTTO HALMQVIST,
KNUT TSUGRATH.