

A. B. SALIGER.
BURROWING MACHINE.
APPLICATION FILED SEPT. 5, 1919.

1,372,318.

Patented Mar. 22, 1921.

Fig. 1.

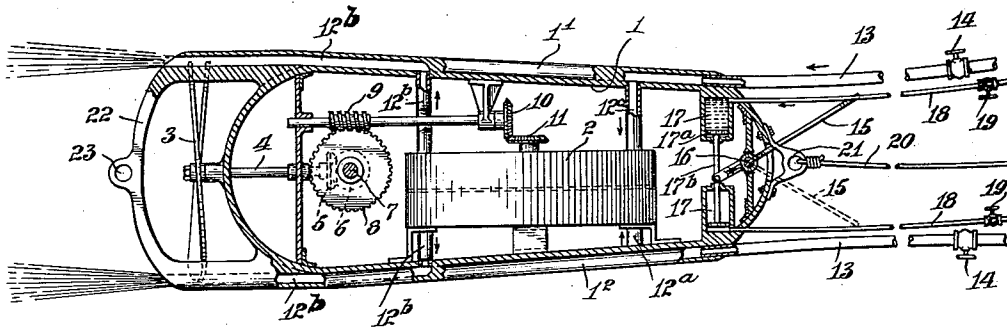


Fig. 2.

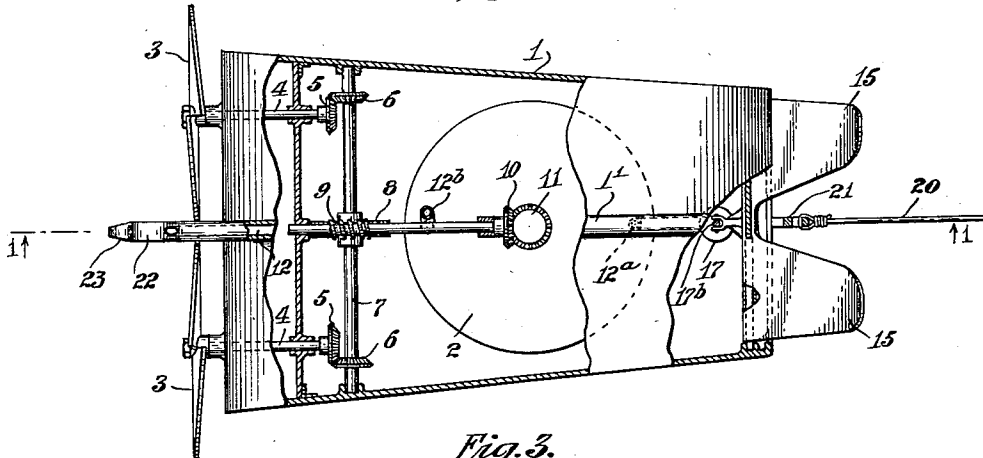
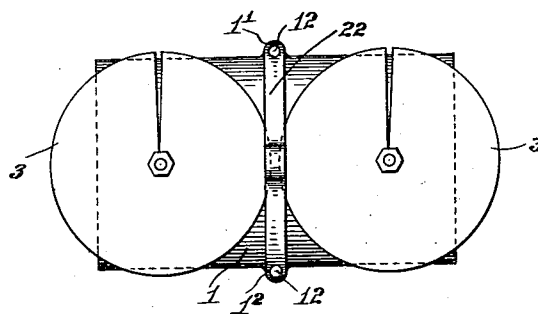


Fig. 3.



WITNESS

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BURROWING-MACHINE.

1,372,318.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ALOIS B. SALIGER, a citizen of the United States, residing at New York, county and State of New York, have invented certain new and useful Improvements in Burrowing-Machines, of which the following is a specification.

My invention relates to apparatus for penetrating or burrowing into the ground being more particularly applicable to burrowing into submerged or otherwise not readily accessible ground, as for instance for the purpose of passing under the hull of a sunken vessel so as to pass a chain or rope thereunder in connection with efforts to salvage the same.

The object of my invention is to provide a burrowing apparatus which shall be simple in construction, durable, efficient in operation, and which shall be capable of being operated and guided from a distance at the will of the operator.

The invention consists in the novel construction, arrangement and combination of various devices and parts, as set forth in the claims forming part of this specification, one embodiment of such apparatus being herein described and illustrated in the accompanying drawings.

In the accompanying drawings, Figure 1 is a side elevation along the line 1—1 of Fig. 2 showing an apparatus embodying my invention; Fig. 2 is a top view of the same, a part of the casing being broken away to show the interior; and Fig. 3 is a front end view.

In carrying my invention into effect in the embodiment thereof which I have selected for illustration in the accompanying drawings and for description in this specification, I provide a body or casing 1, in which is mounted a suitable motor indicated at 2. In the front of said casing are disposed as shown a plurality of screw propellers, 3, 3, which are secured to the shafts, 4, 4. These shafts are rotatably mounted as shown and are adapted to be rotated by said motor through and by means of the gears and shafts, 5, 6, 7, 8, 9, 10 and 11. In the drawings a hydraulic or pneumatic motor is indicated and 12^a and 12^b represent the intake and outlet pipes, respectively. 13, 13, are flexible tubes through which liquid or gas under pressure is supplied to the motor from any suitable source

of supply, not shown in the drawings, but which may be a pressure pump or air compressor. 14, 14, are valves by means of which the motor may be regulated.

15 is a rudder pivotally mounted in the said casing, 1, at 16. This rudder is adapted to be operated by means of the piston arrangement shown at 17 and 17^a. 18, 18, are supply tubes to the piston chambers, 17, 17, and serve alternately as both inlet and outlet. 19, 19, are three-way valves in said supply tubes 18, 18. It will be apparent that the rudder may be deflected in either of two directions by forcing fluid under pressure into one of the oppositely disposed piston chambers, while at the same time releasing the pressure in the opposing one by means of the valve, 19. 21 is a suitable ring or hook secured to the casing, 1, as shown, and which forms a suitable means of attachment for the cable, 20. 22 is a fender-shaped projection of the casing, 1, and 23 is an annular opening in same which forms a suitable means of attaching to said burrowing machine for the purpose of handling same. 1¹, 1², are ribs running lengthwise on opposite sides of the outside of casing 1, and are preferably integral with it. They serve to keep the machine on a straight, lateral course and also as convenient chambers for the intake and outlet pipes 12^a and 12^b.

As shown in the drawings, the propellers are adapted to be used in pairs having right and left hand screw pitch and to rotate in opposite directions.

It is obvious that more than one set of propellers might be employed, also that different kinds of motive power may be substituted, such as a suitable electric motor, also that the shape of the machine may be changed from that shown in the drawings, and also that a rudder might be disposed at right angles to the one shown and provided with similar means of actuating same, for the purpose of giving the machine lateral control, without departing from the spirit of my invention or sacrificing its advantages.

In use, as for instance when a cable is to be drawn under a sunken vessel which is resting on a sandy or muddy bottom, the burrowing machine is lowered into position and pointed in the desired direction. The motor in the machine is then started and

the rotating propellers draw the whole machine forward. The up and down direction of the machine is controlled by means of the rudder while the machine is under ground, and as soon as the propellers are out of the ground on the other side of said sunken ship the whole burrowing machine may easily be hoisted by suitable lifting means. Before being so hoisted, the tubes 13 and 18 are disconnected. In case where a hydraulic engine is used, the exhaust from same still under considerable pressure, may be used to sluice an opening through which the machine may travel more easily, as is indicated in Fig. 1. Also in case where another type engine is used this sluicing arrangement may still be maintained, where conditions require it, independently of the engine.

What I claim as new and desire to secure by Letters Patent is:

1. In a burrowing machine the combination with a housing, of devices adapted to propel the machine and devices adapted to control the direction of the machine: said controlling devices being operable from a distance.

2. In a burrowing machine the combination with a housing, of devices adapted to propel the machine and devices adapted to control the direction of the machine: said controlling devices being operable by impulses communicated thereto from a distance.

3. In a burrowing machine the combination with a housing, of devices adapted to propel the machine, devices adapted to control the direction of the machine, and means adapted to operate said controlling devices from a distance: whereby the course and operation of the machine may be directed and controlled by an operator at a distance, independent of a fixed guiding support extraneous to the machine.

4. A burrowing machine, comprising a housing, a screw propeller so arranged as to draw the machine forward when rotated, a suitable motor within said housing to rotate said propeller, and a rudder adapted to change the course of said machine, and a means of controlling the position of said rudder from a distance, substantially as shown and described.

5. A burrowing machine comprising a

housing, a plurality of screw propellers disposed in said housing and so arranged as to draw the machine forward when rotated, a suitable motor within said housing to rotate said propellers, a means for sluicing out the path in which the machine is to travel, a rudder adapted to change the course of said machine, and a means for controlling the position of said rudder from a distance, substantially as shown and described.

6. A burrowing machine comprising a housing, a means for propelling said machine, and a means by which the course of the machine may be directed from a distance at the will of the operator substantially as shown and described.

7. A burrowing machine comprising a housing, a means for propelling said machine, and a means by which the course of the machine may be directed from a distance at the will of the operator independent of any fixed guiding support.

8. A burrowing machine, comprising in combination a housing, a shaft journaled in said housing and extending outside of the same, a propeller on the outer end of said shaft, a motor in said housing operatively connected to said shaft, a rudder, means adapted to operate said rudder, and means adapted to supply power to said motor and to said rudder operating means.

9. A burrowing machine, comprising in combination a housing, a shaft journaled in said housing and extending outside of the same, a propeller on the outer end of said shaft, a motor in said housing operatively connected to said shaft, a rudder, means adapted to operate said rudder, and means adapted to supply power to said motor and to said rudder operating means: said rudder operating means comprising a cylinder, a piston therein, and a rod operatively connecting said piston and said rudder.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses, this 3rd day of Sept., 1919.

ALOIS B. SALIGER.

Witnesses:

R. KEARNS,
JOSEPH A. ZINWER.