G. Howell,

Dredging Machine,

No. 70,849, Patented Nov. 12, 1867.

Fig. 1.

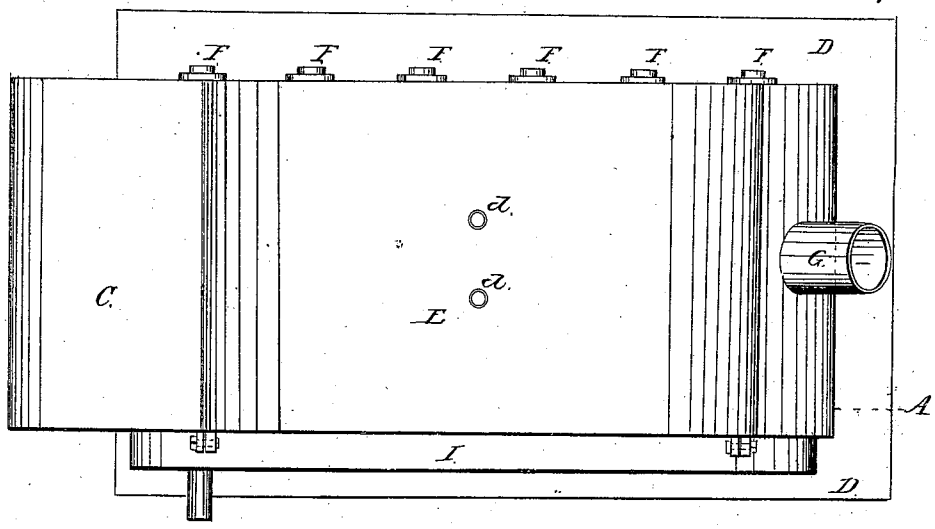


Fig. 2.

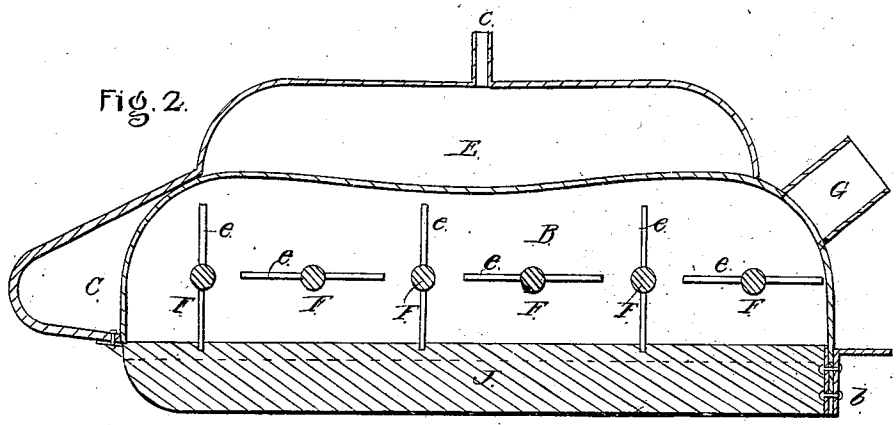
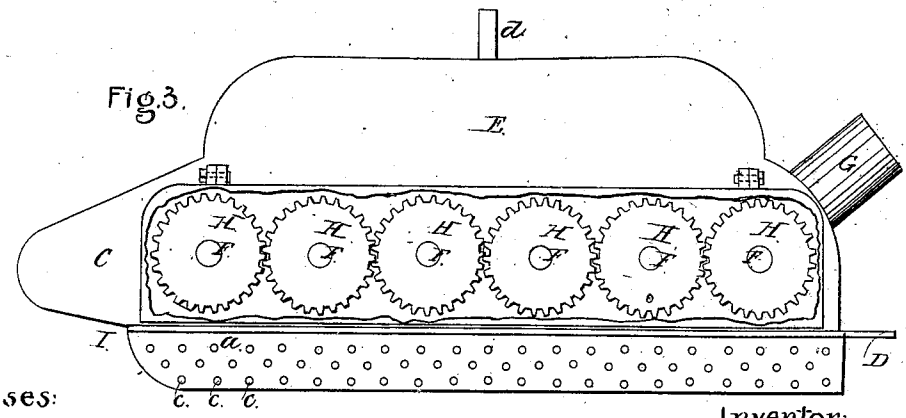


Fig. 3.



Witnesses:

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United States Patent Office.

GEORGE HOWELL, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 70,849, *dated November* 12, 1867.

IMPROVED MACHINE FOR FILLING MARSHES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, GEORGE HOWELL, of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and improved Mode of Filling up Marshes, &c.; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists, in the first place, in filling up marshes and other low lands by means of an open-bottom boat, which is provided with a pipe or hose which leads to the land to be reclaimed, the said boat being floated to a convenient point or points of a river or other sheet of water, and sunk to close in the earth or mud beneath the former. The improvement in the second place consists in stirrers, on a series of revolving shafts, which mix up the mud and water beneath the boat into a mass sufficiently thin to be forced through the hose to its place of destination. And in the third place, in air-tight compartments for lightening the boat, the air being pumped into them to give buoyancy to the boat when it is desired to float it.

The construction and operation will be understood by the following description. In the accompanying drawings, which make a part of this specification—

Figure 1 is a plan of the boat and apparatus.

Figure 2 is a vertical section of the same.

Figure 3 is a side elevation.

Like letters in all the figures indicate the same parts.

A is a boat, which has a water-tight compartment, B, throughout its whole length, open at the bottom. Projecting downwards from said compartments or chambers there are side plates *a a* and end plate *b*, the former having perforations *c* to let water and mud pass through from each side of the boat, as hereinafter described. At the front end of the boat there is an air-tight chamber, C, for the purpose of giving buoyancy thereto to facilitate the forward movement of the boat. When the boat is sunk for the removal of the mud beneath it, the bottom of this chamber and the horizontal side plates D D rest upon the mud, and the vertical side plates *a a* and end plate *b* sink into it. Over the body of the boat, throughout its whole length, there is an air and water-tight chamber, E, which is provided with vertical pipes *d d*, to which are connected pumps, one for supplying the chamber with water for sinking the boat and for removing water therefrom when it is to be floated. The other pump is for the purpose of pumping air out of and into the chamber, conversely with the action of the water-pump, the air being removed from the chamber as the water is pumped into it, and supplied to it as the water is removed therefrom. There is a series of revolving shafts, F, across the chamber B, which are provided with radial arms *e* for stirring the mud and mixing it with the water above, that it may be forced through the exhaust pipe G at the rear end of the boat, the said pipe G being provided with a pipe or hose that extends to the land to be reclaimed. The said shafts F are connected together by means of spur-wheels H. The front shaft is connected with a driving-shaft by means of bevel or other gearing, in any convenient manner. The wheels H are protected by the hinged cover I. There is aplurality of longitudinal plates, J, the under edges of which are on a line, or nearly so, with the perforated side plates *a a* and plate *b*. They are confined permanently at one end to said end plate, and at their other end to the bottom of the chamber C. As the boat is moved along, as hereinafter described, these plates assist the action of the stirrers *e* by separating the mud as the boat moves forward.

The operation is as follows: The boat A is floated to any convenient part of the river or sheet of water from whose bed the mud is to be removed, by means of a steam-tug or otherwise, and sunk by filling the chamber E with water, as above described, and the rear end of the hose leading from the exhaust pipe G is placed over the land to be reclaimed. The stirrer-shafts F are then made to revolve, as above described, with sufficient velocity to mix up the mud beneath the boat with the water, so as to bring it into a condition to be readily forced through the exhaust pipe G, and hose in connection therewith, which is effected by means of a pump in connection with the hose, arranged in any convenient manner. During this operation the boat is drawn forward just as fast as the mud and water are commingled and removed from the chamber B. The vertical end plate *b*, in the forward movement of the boat, drags the mud before it and prevents its escape.

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

1. An excavating-boat, constructed for partial and varied submergence, having the chamber B, pipe G, side plates *a*, and with or without the inner plates J, substantially as described and for the purpose set forth.

2. In combination with such a boat I claim the air-tight reservoirs and pipes connected therewith, substantially as and for the purpose set forth.

3. I claim, in combination with such a boat, the stirrers *e* on the shafts F, substantially in the manner described and for the purpose specified.

In testimony that the above is my invention, I have hereunto set my hand and affixed my seal this third day of July, 1867.

GEORGE HOWELL. [SEAL.]

Witnesses:

STEPHEN USTICK,

JOHN WHITE.