(No Model.) 2 Sheets—Sheet 1.

L. HUSSEY.

STEAM VACUUM DREDGE.

No. 526,530. Patented Sept. 25, 1894.

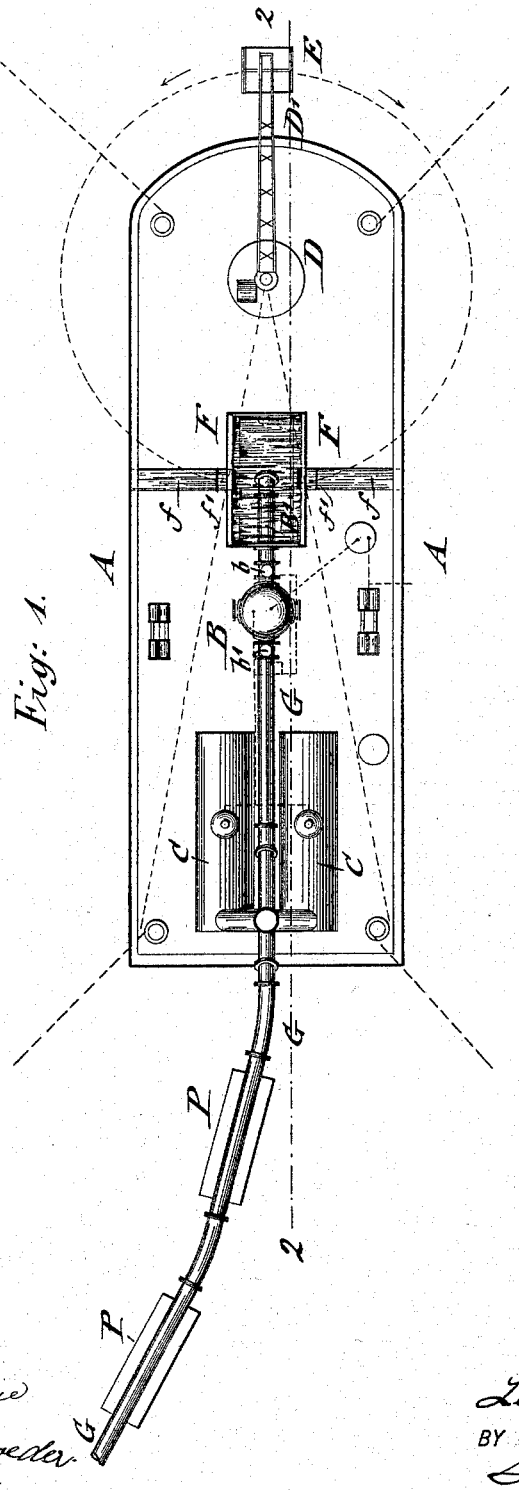

Fig. 1.

WITNESSES:
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(No Model.) 2 Sheets—Sheet 2.

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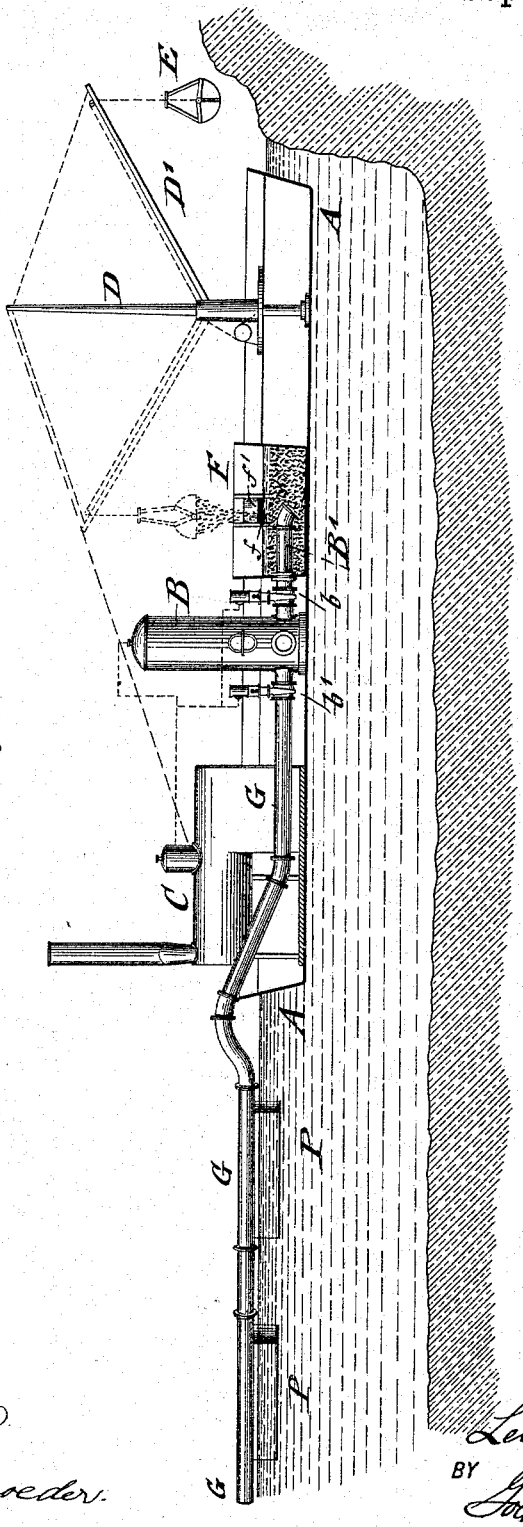

Fig. 2.

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UNITED STATES PATENT OFFICE.

LEVI HUSSEY, OF NEW YORK, N. Y., ASSIGNOR TO THE MINING AND DREDGING POWER COMPANY, OF WEST VIRGINIA.

STEAM VACUUM-DREDGE.

SPECIFICATION forming part of Letters Patent No. 526,530, dated September 25, 1894.

Application filed April 5, 1892. Renewed January 29, 1894. Again renewed August 17, 1894. Serial No. 520,615. (No model.)

To all whom it may concern:

Be it known that I, LEVI HUSSEY, a citizen of the United States, and a resident of New York city, in the county and State of New York, have invented certain new and useful Improvements in Steam Vacuum-Dredges, of which the following is a specification.

This invention relates to an improved dredge by which the banks or bottoms of rivers, lakes, canals, and other water courses may be enlarged or deepened in such a manner that the work is accomplished in a quick, cheap and more effective manner than by the dredges, excavators or other means heretofore employed for this purpose, and the invention consists of a barge provided with a tank having lateral channels on a level and communicating with the water of the lake or other water course, a vacuum or other pump on said barge, a derrick having a swinging arm on which a dredging fork is supported for loosening the ground and transferring it to said tank in which the ground supplied by the fork is mixed with water and sucked up by the pump and conveyed by the discharge pipe of the same to any suitable point where the ground is to be deposited.

In the accompanying drawings, Figure 1 represents a plan of my improved steam vacuum-dredge, and Fig. 2 is a vertical longitudinal section on line 2 2, Fig. 1.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a barge, which is moored in a river, lake, canal or other body, the banks or bottoms of which are to be enlarged or deepened. On the barge A is mounted a vacuum-pump B, of any approved construction, preferably of that class for which Edward Harson has made an application for Letters Patent, Serial No. 391,480, filed May 5, 1891, and allowed November 5, 1891.

In place of a vacuum-pump, a centrifugal pump may be used especially when the ground to be removed is not mixed with heavy stones or other débris.

The pump B is operated by steam from boilers C, which are also mounted on the barge and by which the steam for operating the gate-valves of the vacuum-pump, as well as the pump itself, is supplied. On the opposite end of the barge A is erected a derrick D, from the swinging arm D′ of which is suspended by suitable chains a grappling-fork or bucket E that takes up the ground, gravel and other débris from the bank or bottom of the lake, river, canal or other water course. As soon as the bucket is filled with material, it is raised and swung with the arm of the derrick around until it arrives over a tank F that is constructed in the barge between the pump B and the derrick D said tank being connected by horizontal or inclined channels *f f* which extend through the hull of the barge and which are arranged on a level with the water in which the barge is floating, and provided with gates *f′*, so as to close the channels entirely when the barge is to be moved from place to place, or partly, when it is desired to regulate the supply of water to the tank. When the grappling-fork or bucket E arrives above the tank F, it is opened and the contents of the same discharged into the tank which is filled with water up to the level of the water from the surrounding lake or other body of water. As the tank is gradually filled with earth, gravel, &c., dropped into the same by the bucket, the water in the tank is gradually forced out through the channels *f f*, sufficient water remaining in the tank for permitting the effective suction action of the pump on the liquid mixture by suction pipe B′ which is extended into the tank. When the tank is filled sufficiently with earth and débris, the pump is operated, the contents of the tank being either removed by one operation of the pump as in the case of a vacuum-pump or by the continuous action of the same, as in the case of a centrifugal pump, the ground being readily sucked into either pump owing to the lubricating action of the water mixed with the ground. When the pump-chamber has sucked in the contents of the tank, the gate-valve *b* on the suction pipe is closed and the gate-valve *b′* on the discharge-side opened and steam admitted into the pump-chamber so that the entire contents of the same are forced through the discharge pipe G to the place of deposit. The discharge pipe G is conducted over the end or side of the barge and on suitable pontons

P that are floating in the lake or other body of water to the point where the liquid mixture of earth and gravel with water is to be deposited. The contents of the tank are thus discharged by the action of the steam vacuum-pump, and thereby the ground is removed from the bank and conveyed off in a quick and effective manner, as all the operations are carried on on the water and as the water is made use of to facilitate the efficient removal of the ground from the barge to the point of deposit at any distance from the point of removal. As the enlarging and deepening of the bank of the body of water is progressing, the barge is gradually moved by changing its moorings, the pontons that carry the discharge-pipe being correspondingly moved so as to provide for the change of location of the barge.

In the case of operations near the banks, as in cutting canals, on which banks the dredged material is to be deposited, pontons are not required, the discharge-pipe being supported by suitable means on the barge and carried upward and over the bank to the point of deposit.

By the means described, mainly by the creation of an artificial tank in the barge and the employment of a steam pump for removing the material dropped into the tank, the operations of enlarging the area of lakes and similar bodies of water and of deepening the same, can be carried on in a much cheaper manner than by the means heretofore known to the engineering profession, as the building of dams, employment of excavators and like apparatuses may be entirely dispensed with and the material composing the bank be removed in the most simple manner and conveyed to and deposited at any desired distance from the point of attack.

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

1. The combination of a barge, a mixing tank thereon, a water channel on a level with the water and connecting said tank with the water on which the barge floats, a gate in said channel for regulating the admission or discharge of water to or from said tank, and separate means for supplying said tank with dredged material, substantially as described.

2. A barge provided with a mixing tank, having lateral channels on a level with the water, and gates in said channels for regulating the supply of water to and from said tank, substantially as described.

3. In a dredging barge the combination of a derrick, a swinging arm having a grappling fork or bucket supported thereon, a mixing tank for receiving the contents of said grappling fork or bucket, said tank being provided with lateral channels on a level with the water line, and gates in said channels for regulating the supply of water to and from the tank, substantially as described.

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

LEVI HUSSEY.

Witnesses:
OSCAR F. GUNZ,
PAUL GOEPEL.