

(No Model.)

J. H. BACON.
SUCTION DREDGE.

2 Sheets—Sheet 1.

No. 567,443.

Patented Sept. 8, 1896.

Fig. 1.

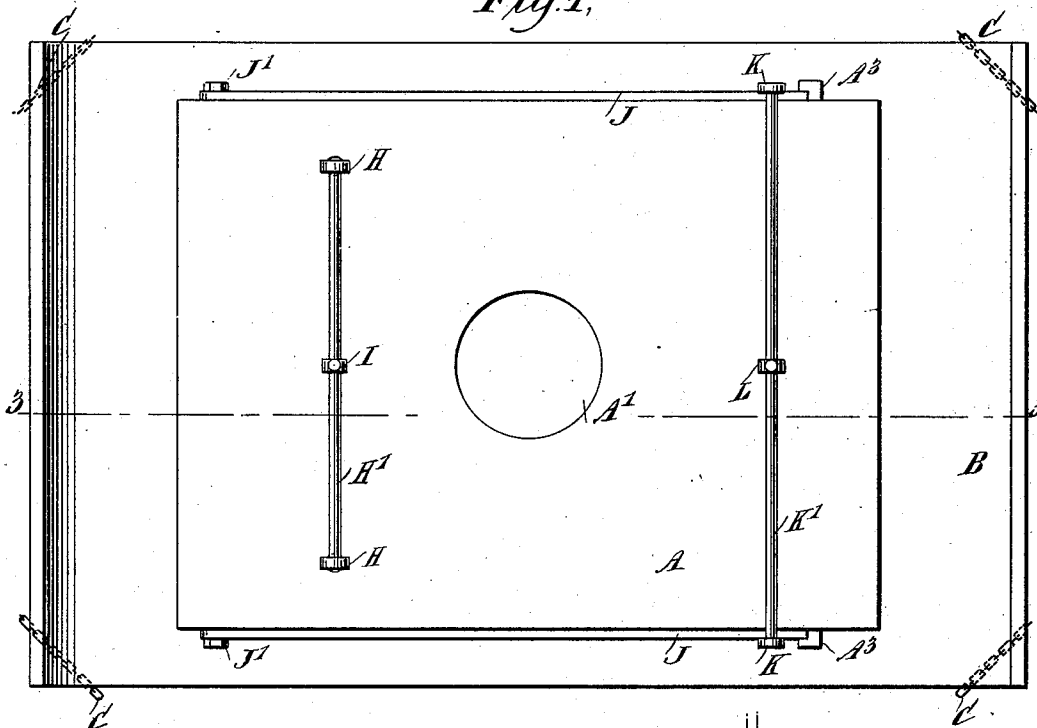
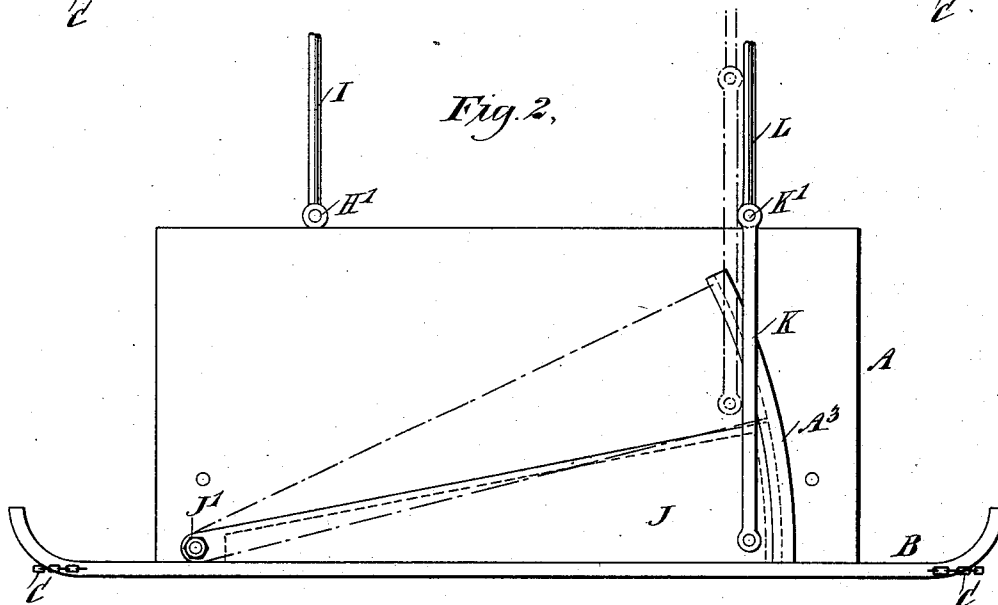


Fig. 2.



WITNESSES:

Edward Thorpe
Geo. G. H. H. H.

INVENTOR

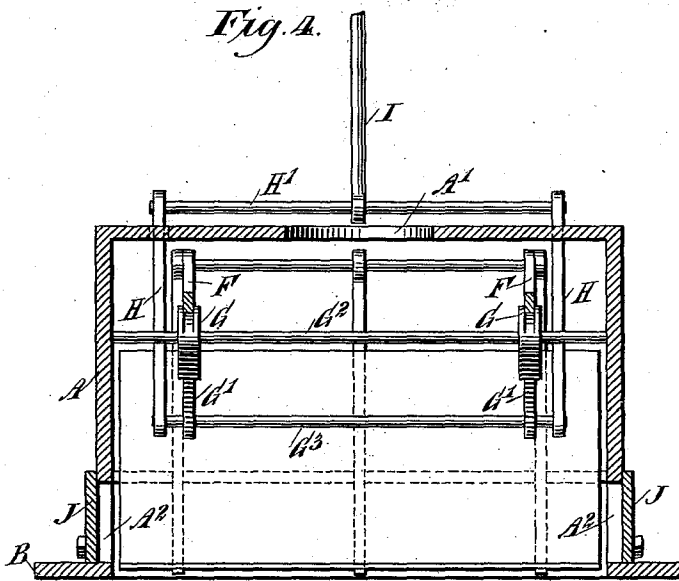
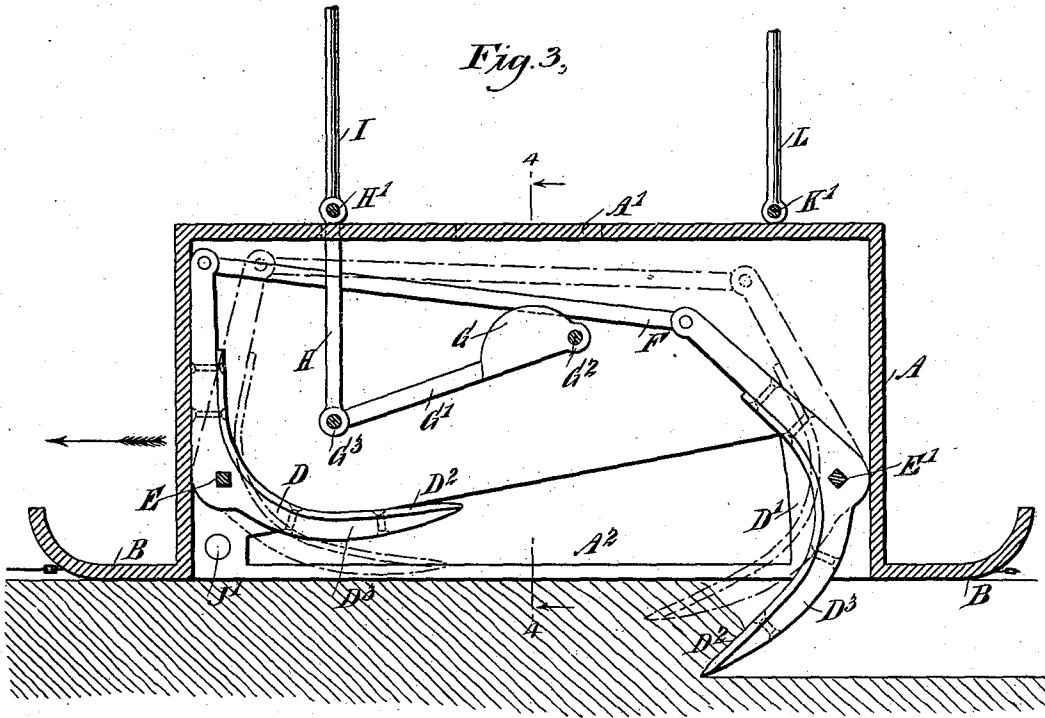
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UNITED STATES PATENT OFFICE.

JAMES H. BACON, OF WILMINGTON, NORTH CAROLINA.

SUCTION-DREDGE.

SPECIFICATION forming part of Letters Patent No. 567,443, dated September 8, 1896.

Application filed November 25, 1895. Serial No. 570,077. (No model.)

To all whom it may concern:

Be it known that I, JAMES HAYWARD BACON, of Wilmington, in the county of New Hanover and State of North Carolina, have
5 invented certain new and useful Improvements in Suction-Dredges, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful improvements in suction-dredges, whereby the material is readily
10 loosened to be in proper condition and the amount to be drawn up is regulated according to the capacity of the suction-pump.

The invention consists of certain parts and
15 details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification,
20 in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional side elevation of the same on
25 the line 3 3 of Fig. 1, and Fig. 4 is a cross-section of the same on the line 4 4 of Fig. 3.

The improved device is provided with a suction-box A, open at the bottom and formed at its lower edge with an annular flange B,
30 adapted to rest on the sand or other material at the bottom of the river or other waterway to prevent the box from sinking too far into the sand when dragging the box along the bottom of the waterway. In the top of the
35 box A is formed an opening A', opening into the suction-pipe extending to the dredge or other vessel floating on the top of the water, the suction-pipe being connected with a suitable suction-pump, so as to draw the material
40 contained in the box into the dredge. On the corners of the flange B are held the bridles C, connected with suitable machinery for dragging the suction-box across the cut in the bottom of the waterway.

Inside of the box A are arranged the cutters D and D', held on transversely-extending shafts E and E', respectively, journaled in suitable bearings in the sides of the box A. Each of the cutters D and D' is provided
50 with a transversely-extending blade D², curved, as shown in Fig. 5, and riveted or oth-

erwise secured to L-shaped arms D³, secured on the shafts E or E'. The upper ends of some of the arms D³ are connected with each other by links F to connect the cutters with
55 each other, so that when one cutter is in active position and extends below the bottom of the box into the material to be dredged, as shown to the right hand of Fig. 3, then the other cutter is in an inactive uppermost
60 position and confined within the box. Now when the box is dragged in the direction of the arrow a', the cutter D' is active and the cutter D is inactive, and when the box is
65 pulled in the inverse direction of the arrow a', then the curved back of the cutter D', by its contact with the material, is caused to swing upward, so that the links F cause the
70 cutter D to swing with its blade D² downward into a cutting position. In order to regulate the depth the cutter-blades D² are to enter into the material, I provide the following device: The lower edges of the links
75 F rest on the peripheries of cams G, held or formed on cam-levers G', having their pivots G² journaled in suitable bearings in the sides of the box A. The free ends of the
80 cam-levers G' are connected with each other by a cross-rod G³, engaged at its outer ends by links H, extending upwardly through suitable openings in the top of the box A.

The outer ends of the links H are connected with each other by a cross-rod H', connected by a link I with a suitable mechanism on the
85 top of the dredge, so that an up-and-down movement is given to the link I, and consequently the links H, to impart a swinging motion to the cam-levers G' and cause the
90 cams G to form a stop for the links F to limit the downward swinging motion of the cutters D and D', thereby regulating the depth of the cutting. By their action on the bottom the
95 cutters D and D' are swung in opposite directions, as previously explained, and their cutting-blades D² extend below the bottom of the box A to cut into the material directly
100 beneath the box, and by reason of their scoop form lift the material into the box. When the suction-pump is at work, the thus loosened material is drawn up out of the box and discharged upon the dredge or scow by the suction-pump. The cams G are preferably

flanged to engage the sides of the links F and prevent displacement of the links on the cams.

When it is desired to flush the suction-pipe leading from the box upward, I use valves J, fulcrumed on the sides of the box at J' and normally closing openings A² in said sides. The free ends of the valves J are pivotally connected with the links K, extending upwardly and connected with each other by a transverse rod K' over the top of the box A. The link L extends from this rod K' to the dredge to connect with suitable machinery and permits of swinging the valves J into an uppermost position (see dotted lines in Fig. 2) to open the openings A² and permit the water surrounding the box to pass into the interior thereof, the water being sucked up by the pump to flush the suction pipe and pump as well as the box. The free ends of the valves J are guided in segmental guide-ways A³, held on the sides of the box A. Now it will be seen that by the arrangement described the cutters D and D' within the suction-box are automatically actuated to loosen the material and lift the latter into the box, and the box can be at any time flushed by opening the valves J to prevent clogging.

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

1. A suction-dredge provided with a suction-box open at the bottom and oppositely-arranged cutters mounted to swing in said box and automatically actuated on dragging the box along the bottom of the waterway, the said cutters being connected with each other, whereby when one cutter is in active position below the box, the other cutter is in an inactive position within the box, substantially as shown and described.

2. A suction-dredge comprising a suction-box open at the bottom, oppositely-arranged cutters mounted to swing within the box and connected by links, the said cutters being adapted to pass with their cutting edges below the bottom of the box and adjustable stops for limiting the swinging motion of said cutters operated from the deck of the dredge, substantially as set forth.

3. A suction-dredge, provided with a suction-box open at the bottom, cutters mounted to swing in said box, and valves in the sides of the box and adapted to be actuated from the deck of the dredge, to flush the box, substantially as shown and described.

4. A suction-dredge comprising a suction-box, cutters pivoted in said box and connected with each other by links, and cam-levers fulcrumed in the box and engaging said links, to limit the swinging motion of the cutters, substantially as shown and described.

5. A suction-dredge comprising a suction-box, cutters pivoted in said box and connected with each other by links, cam-levers fulcrumed in the box and engaging said links, to limit the swinging motion of the cutters, and means for actuating the said cam-levers from the deck of the dredge, substantially as shown and described.

6. A suction-dredge, provided with a suction-box open at the bottom and having side openings, and valves for normally closing said side openings and adapted to be actuated from the deck of the dredge, substantially as shown and described.

JAMES H. BACON.

Witnesses:

JNO. H. FARRINGTON,
JNO. S. ROGERS.