

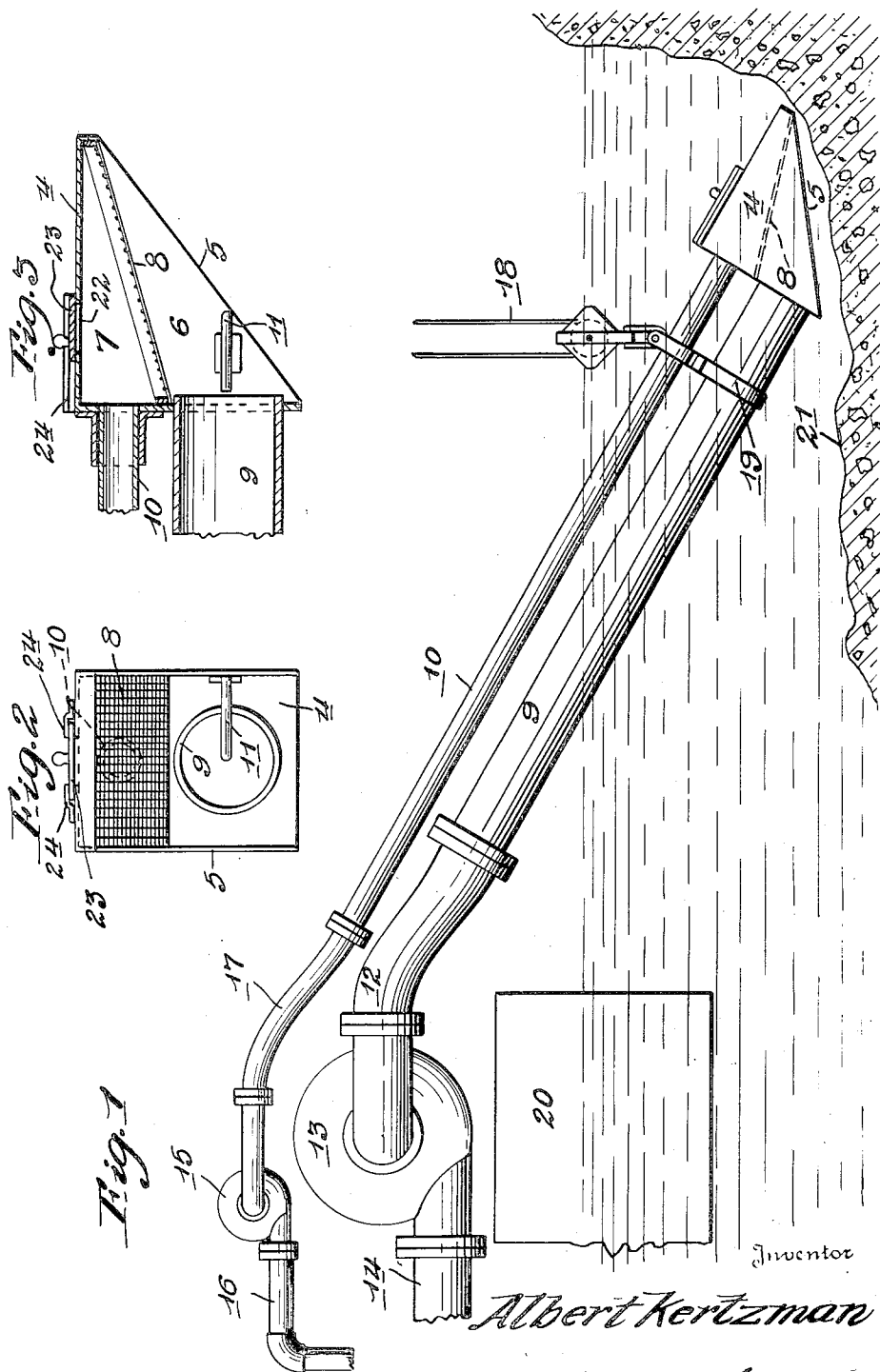
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A. KERTZMAN

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HYDRAULIC DREDGE

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Inventor

Albert Kertzman

Stephens & Stephens

Attorneys

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HYDRAULIC DREDGE

Albert Kertzman, Winona, Minn.

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8 Claims. (Cl. 37—58)

It is the object of this invention to provide an hydraulic dredge with novel means for separating much of the finer excavated material from the coarse material.

A particular object is to provide a dredge with an intake hood, a plurality of suction pipes connected to said hood and means in the hood for excluding the coarser excavated material from one of said pipes so that there is a separation of the coarser from the finer material within the hood and the different classes of material are conveyed to suitable places of disposal through separate pipes.

In the recovery of sand and gravel it is frequently found that an excess of sand over gravel is present in the pit and heretofore the operations of separating the excess sand from the coarser material and disposing of such sand have been relatively expensive and wasteful operations. With my improved dredge I effect substantial economies by separating the excess sand from the coarser material at the intake hood of the dredge and dispose of such excess by means of an auxiliary conduit and pump which are adapted to deposit the fine material, separate from the coarse material, at any convenient place.

The invention will be best understood by reference to the accompanying drawing in which, Fig. 1 is a diagrammatic view illustrating my improved dredge;

Fig. 2 is an end view of the intake hood, and

Fig. 3 is a central, vertical section through the hood and adjacent portions of the conduits for the different classes of material.

An intake hood 4 has an oblique, open side 5 and is divided into chambers 6 and 7 by a screen 8 adapted to allow the passage of the sand or finer material into the chamber 7 and to exclude the coarser material therefrom. A main dredge pipe 9 communicates with the lower chamber 6 and a smaller pipe 10 communicates with the chamber 7. Secured to one side of the hood 4 is a hook-like arm 11 having its free end approximately at the center point of the intake end of the pipe 9 to guard against the entry of excessively large bodies or rocks into said pipe. The main dredge pipe 9 has a flexible section 12 and communicates with the intake of a power-driven pump 13. An outlet pipe 14 for the pump 13 extends to the place of disposal for the main body of the excavated material.

From the hood 4 the auxiliary pipe 10 extends in parallel relation to the pipe 9 and communicates with an auxiliary pump 15 having an outlet

pipe 16 extending to the place of disposal for the fine material. A flexible section 17 of the pipe 10 and the flexible section 12 of the pipe 9 permit the necessary movements of the suction pipes and hood 4 for dredging. During the dredging the hood 4 and pipes 9 and 10 may be moved about in the usual manner by a crane having connections with the pipes 9 and 10, as indicated by the cable 18 and hanger 19 shown in Fig. 1. The diagrammatic representation of a barge or other dredge support is indicated by the numeral 20 in Fig. 1 and a submerged gravel pit is indicated at 21.

An opening 22 in the top of the hood 4 is arranged to admit water to the chamber 7 under control of a closure 23. This closure is slidable to and from the opening 22 between parallel guide bars 24 and may be moved to various positions to regulate the amount of material drawn through the screen 8.

In the operation of my dredge, the hood 4 is lowered into the water in the pit so as to cause the open side 5 of the hood to rest on the material to be recovered and the pumps 13 and 15 are simultaneously operated to create a partial vacuum in the pipes 9 and 10. The pump 13 supplies the principal power for drawing the material into the hood 4 and the pump 15 is merely required to exert sufficient suction in the upper chamber to draw the desired part of the finer material up through the mesh of the screen 8, leaving the coarser material to be drawn into the pipe 9. The finer material is conducted to any convenient place of disposal through the pipe 16. It is sometimes returned to the body of water back of the dredge. The pipe 14 delivers the gravel or other material to be recovered to the place of disposal or treatment in the usual manner.

It will now be understood that my improvements do not interfere with the normal operation of the main dredge and that the capacity of the apparatus for recovering the selected material is substantially increased while much of the trouble and expense heretofore attendant upon the separation and disposal of the excess of fine material is obviated.

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

1. A dredge having in combination an intake hood, a plurality of conduits for excavated material communicating with said hood, means arranged in said hood to bar the passage of the

coarser excavated material to one of said conduits and means for creating suction in said conduits.

2. In an hydraulic dredge, an intake hood, a plurality of conduits for excavated material communicating with said hood, a screen mounted in said hood to bar the passage of the coarser excavated material to one of said conduits, pumps severally arranged to create suction in said conduits and discharge pipes severally connected to said pumps for disposing of the excavated material.

3. In an hydraulic dredge, an intake hood, two conduits for excavated material communicating with said hood, a main pump for drawing the coarser material into said hood and through one of said conduits, an auxiliary pump connected to the second conduit and means in said hood adapted to bar the passage of the coarser material to said second conduit while allowing the passage of the finer material thereto.

4. In an hydraulic dredge, an intake hood, large and relatively small dredging conduits communicating with said hood, means in said hood for barring the passage of the coarser material to said smaller conduit, a main pump connected to said larger conduit for drawing material into said hood and through said larger conduit and an auxiliary pump connected to said smaller conduit for withdrawing the finer material from said hood and through said smaller conduit.

5. In an hydraulic dredge, an intake hood having a normally lower, open side, a screen dividing said hood into upper and lower chambers, a dredge pipe communicating with said lower chamber, a second dredge pipe communicating

with said upper chamber and means for creating suction in both of said pipes.

6. In an hydraulic dredge, an intake hood having a normally lower, open side, a screen dividing said hood into upper and lower chambers, a main dredge pipe communicating with said lower chamber, an auxiliary dredge pipe communicating with said upper chamber above said screen and pumps for severally creating suction in said main and auxiliary pipes so as to draw the finer excavated material through said screen into said upper chamber and auxiliary pipe and to draw the coarser material through said main pipe.

7. In an hydraulic dredge, an intake hood having a normally lower, open side, a screen dividing said hood into upper and lower chambers, a main dredge pipe communicating with said lower chamber, an auxiliary dredge pipe communicating with said upper chamber, means for creating suction in said main and auxiliary pipes, said upper chamber having an opening for the admission of water thereto, and means for controlling the flow of water through said opening.

8. In an hydraulic dredge, an intake hood, main and auxiliary dredging conduits communicating with said hood, means in said hood for barring the passage of the coarser material to said auxiliary conduit, a main pump connected to said main conduit for drawing material into said hood, an auxiliary pump connected to said auxiliary conduit for withdrawing the finer material from said hood through said auxiliary pipe, a by-pass for admitting water to said hood and auxiliary pipe and means for controlling the flow of water through said by-pass.

ALBERT KERTZMAN.

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