

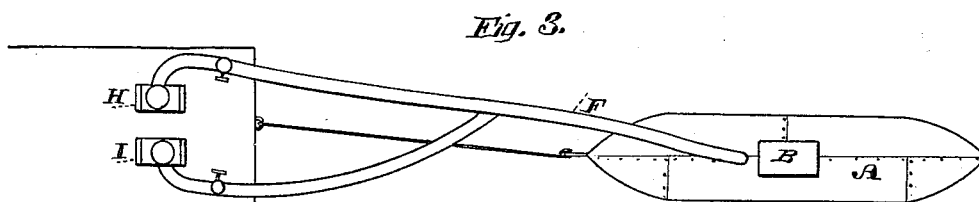
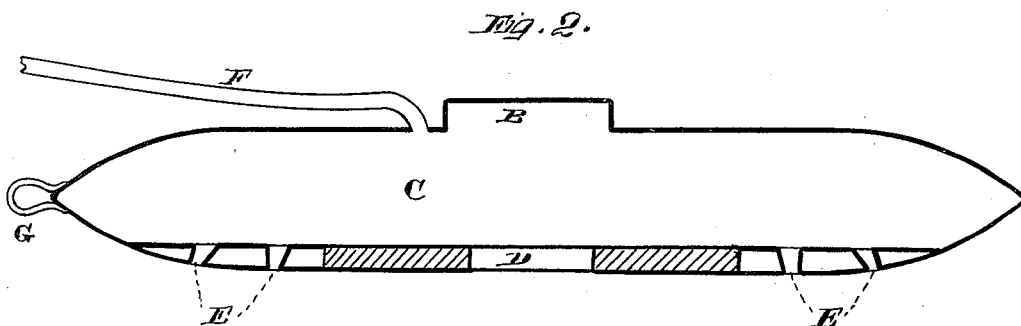
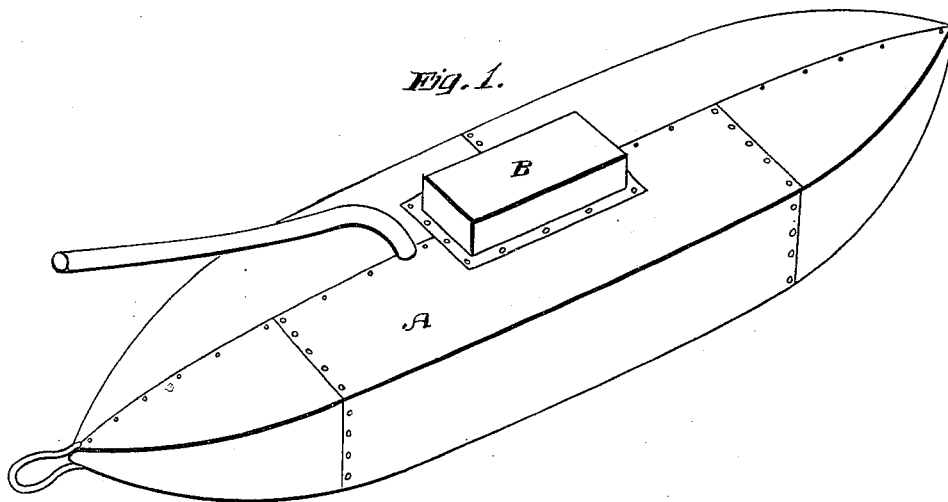
(No Model.)

H. L. PIKE & A. W. FERGUSON.

HYDRAULIC DREDGER.

No. 263,429.

Patented Aug. 29, 1882.



Witnesses,
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UNITED STATES PATENT OFFICE.

HERVEY L. PIKE AND ALBERT W. FERGUSON, OF ASTORIA, OREGON.

HYDRAULIC DREDGER.

SPECIFICATION forming part of Letters Patent No. 263,429, dated August 29, 1882.

Application filed May 22, 1882. (No model.)

To all whom it may concern:

Be it known that we, HERVEY L. PIKE and ALBERT W. FERGUSON, of Astoria, county of Clatsop, State of Oregon, have invented a Hydraulic Dredger; and we hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to an apparatus for dredging bars and shallow places in harbors, rivers, and other places; and it consists of a pneumatic and hydraulic tank having nozzles which are so placed that they will discharge a current or currents of water forcibly downward from the bottom when pressure is applied. The upper part of the tank is provided with an air-chamber, and a flexible pipe has one end opening into the tank, while the other is led forward to a vessel by which the tank is towed from place to place. Upon this vessel are two sets of pumps, one for air and the other for water. Each of these pumps is connected with the flexible hose, and a suitable valve or cock enables the operator to use either at will. When the tank is to be moved air is forced in to float it. When it arrives at the place to be dredged water is admitted, (the air escaping,) and it settles upon the bottom or bar, being ballasted for the purpose. The air-connections being then shut off and that with the water-pump opened, the pressure forces the water out through the nozzles in the bottom and loosens the mud, so that it will be carried away by the current.

Referring to the accompanying drawings for a more complete explanation of our invention, Figure 1 is a perspective view. Fig. 2 is a longitudinal vertical section. Fig. 3 shows connection with pump.

A is a tank, which may be made of any suitable dimensions, size, and material. We have shown it in the present case made of boiler or other iron plates riveted together so as to be water-tight, and having an air-chamber, B, upon the top, at or near the center. This tank is divided into two compartments, C and D, the upper one connecting with the air-chamber B and with the inlet and discharge openings. The lower compartment, D, contains the ballast, which is preferably of metal, although water-ballast may be employed in some cases, if desired.

Nozzles E extend from the compartment C

through the compartment D, and open through the bottom, so as to discharge downward. These nozzles are made of such shape as to deliver their stream with the best effect when the pressure is applied.

From the top of the tank a pipe, F, leads. This pipe is flexible and extends forward to a vessel which conveys the apparatus to the point where it is to be used.

A suitable connection, G, is made upon the tank, from which towing-hawser leads forward to the vessel.

Two pumps, H I, are fixed upon the vessel, the pump H being an air-pump and I a water-pump. Both of these pumps connect with the main flexible pipe F, and suitable valves or cocks are provided at points where communication with either one or the other may be cut off.

The operation will thus be as follows: When the apparatus is to be used the air-pump is set in motion and air forced into the tank until it floats, the water escaping through the nozzles E in the bottom. The tank is then towed to the point where it is to be used, and a valve near the pump H, or in some part of the pipe F, is opened to allow the air to escape from the tank. The water rushes in through the nozzles E and fills the tank, which settles upon the surface to be operated upon. The passage to the air-pump being closed, that to the water-pump is opened, and that pump is set in motion, forcing a stream of water into the tank and acting to drive the water forcibly through the nozzles E against the sand or mud composing the bottom. The ballast and the weight of the tank will be sufficient to keep it upon the bottom, and a steady current of water will thus be forced through the nozzles, tearing up the sand and mud, so that the current will carry it off.

In some cases it will be found desirable to move the apparatus slowly over the bottom while the pump is at work, so as to work continuously; and in others the work may be done at short intervals, and the current will do the rest.

The apparatus is simple, effective, and cheap.

It will be manifest that any number of either air or water pumps may be employed with suitable connections, so that the rate of work may be regulated.

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

1. A dredging or scouring apparatus consisting of the tank A, having the discharge-nozzles E, opening downward through its bottom, and a supply-pipe, F, through which water may be discharged into the tank under pressure, substantially as and for the purpose
10 herein described.

2. In a dredging or scouring apparatus, the tank A, having water and ballast compartments C and D, an air chamber, and the nozzles E, discharging through the bottom, in combination
15 with the flexible pipe F for air or water, and the air and water supply pumps H and I, with their cocks or valves, substantially as herein described.

3. The means herein described for dredg-

ing or scouring harbor-bars or other obstructions, consisting of a compartment-tank having numerous discharge-nozzles in the bottom and a supply-pipe at the top, through which water may be introduced under pressure, substantially as shown. 20

4. In a dredging or scouring apparatus consisting of a tank having discharge-nozzles through its bottom, the means for floating and adjusting the draft of said apparatus, consisting of the air-chamber and the connecting-
25 pipe and air-pump, substantially as herein described.

In witness whereof we hereto set our hands.

HERVEY L. PIKE.

ALBERT W. FERGUSON.

Witnesses:

A. CROSBY,

H. O. HIPPLE.