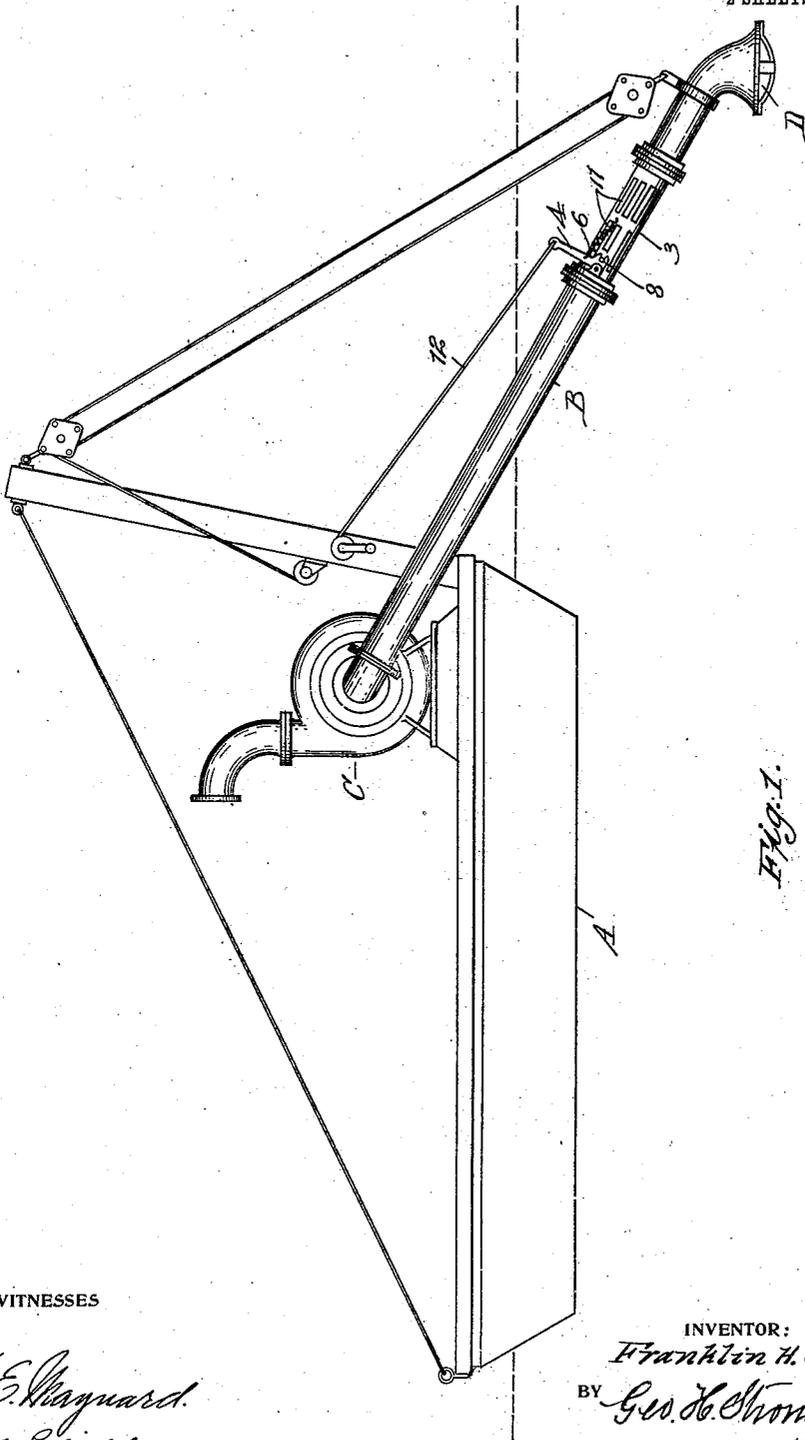


F. H. JACKSON,
SUCTION DREDGE OR THE LIKE.
APPLICATION FILED MAY 26, 1908.

906,234.

Patented Dec. 8, 1908.

2 SHEETS—SHEET 1.



WITNESSES

H. E. Hayward.
C. B. Field.

INVENTOR:

Franklin H. Jackson;

BY *Geo. H. Strong.*

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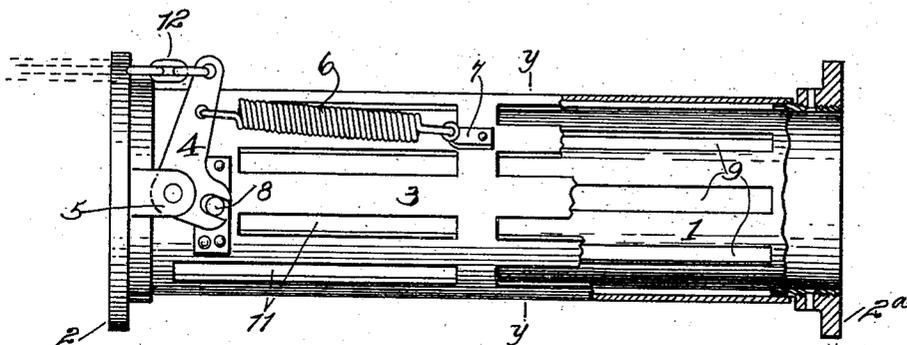


Fig. 2.

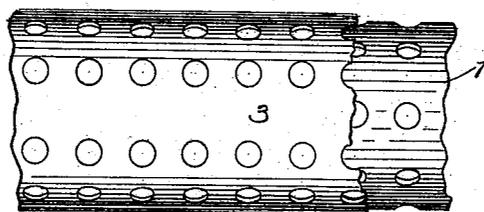


Fig. 4.

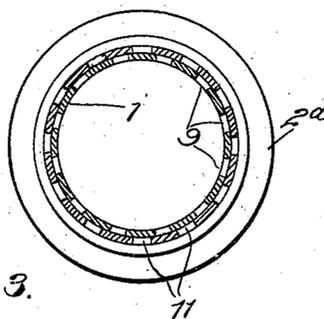


Fig. 3.

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UNITED STATES PATENT OFFICE.

FRANKLIN H. JACKSON, OF BERKELEY, CALIFORNIA, ASSIGNOR TO BYRON JACKSON IRON WORKS, OF WEST BERKELEY, CALIFORNIA, A CORPORATION OF CALIFORNIA.

SUCTION-DREDGE OR THE LIKE.

No. 906,234.

Specification of Letters Patent.

Patented Dec. 8, 1908.

Application filed May 26, 1908. Serial No. 435,022.

To all whom it may concern:

Be it known that I, FRANKLIN H. JACKSON, citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented new and useful Improvements in Suction-Dredges or the Like, of which the following is a specification.

My invention relates to a relief valve for hydraulic and like pumping apparatus.

It consists in a combination of parts, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a general view of my apparatus. Fig. 2 is an elevation and partial section. Fig. 3 is a transverse section on $y-y$ Fig. 2. Fig. 4 shows circular openings.

The object of my invention is to construct a relief valve to be connected with the suction pipe of a centrifugal dredge pump where cutting devices are not used. In pumps of this character it often occurs that material too large to pass through the suction pipe, is caught and held at the entrance by the inward rush of water. This necessitates the shutting down of the pump, or elevating the suction pipe to the surface to remove the obstructing material. In my invention I obviate this difficulty by opening water-ways into the suction pipe above the receiving end and thus I reduce the entrance velocity so that material will drop off by gravity.

A further object is to provide a balanced valve, novel in design, compact, light in weight, and simple in operation, said valve being so applied that the inner surface of the pipe retains the diameter of the main portion, and presents a practically smooth inside when the valve is closed, affording large induction ports when opened.

As shown in the drawing, A is a scow or float upon which an ordinary dredging pump is mounted; power being applied through a suction pump C, and the pump is connected by a pipe B with a suction nozzle D of any suitable or desired character. The valve 3 is applied upon the outside of a slotted inner cylinder 1, and is turnable between flanges 2 and 2^a, which serve to unite sections of the main pipe. The valve is also perforated or slotted, having ports as at 11, while the inner cylinder has corresponding ports 9. The relation of these ports is such that when the cylindrical valve 3 is turned to a certain po-

sition with relation to the inner cylinder, the solid intermediate portions of the valve register with the openings of the inner cylinder, and thus form a closure therefor, and in this condition the apparatus may be employed for its usual work; drawing in material from the bottom through the nozzle D, and discharging it from the pump in the usual manner.

In case of the adherence of any large masses which would be drawn against the nozzle by powerful suction, and where divers are at work in conjunction with such apparatus, they are sometimes caught and held by the inrush of water, the valve would then be opened, and such a body of water admitted into the tube above the nozzle that the pressure at the nozzle would be so reduced that any adhering object would readily drop away. In order to conveniently operate such a valve, I have shown a lever 4 fulcrumed on a supporting lug 5. The fulcrum of the lever may be at the angle, the short arm of the lever being slotted as shown to receive a pin 8, which projects from a plate fixed to the side of the valve, near one end. The long arm of the lever is connected by a chain or equivalent device 12, with a crank or lever by which the chain may be drawn upon, and through the lever act to rotate the valve until the ports in the valve and the pipe register with each other.

6 is a sufficiently powerful spring, one end of which is connected with the lever arm 4, and the other with a lug or attachment 7 so that after the valve has been opened, by pulling upon the chain or connection 12, the relaxation of the pull allows the spring to act, and again close the valve and place the apparatus in condition for its ordinary use.

By means of this apparatus, any desired variation, or regulation of the inlet pressure through the nozzle may be effected. The construction of the valve and its relation with the ports of the pipe are such that it is perfectly balanced, the pressure being equal upon all sides, and it is thus easily opened and closed.

It will be understood that any suitable or desired form of ports may be employed, without altering the character of my invention.

Such modification is shown in Fig. 3, where the ports are circular instead of rectangular.

Having thus described my invention, what

I claim and desire to secure by Letters Patent is—

1. The combination with a dredge, and the tubular suction pipe thereof, of a valve 5 guided and turnable upon the exterior of the pipe, said valve having alternate ports and closed spaces, corresponding ports in the suction tube, and means by which the valve ports may be registered with those of the 10 pipe.

2. In an apparatus of the character described, a suction dredge pipe having a circular section, the interior of which registers 15 substantially with the interior of the main pipe, and exterior flanges at each end, an exterior inclosing tube with peripheral ports, said tube fitting and turnable between the flanges of the first named tube, and means by 20 which the exterior tube may be turned about the inner tube.

3. In a dredging apparatus of the character described, a suction pipe having openings made through it at a point above the inlet end, flanges fixed upon the pipe above 25 and below the openings, a tubular section guided and turnable between the flanges, having openings adapted to register with the openings in the pipe, a fulcrumed lever, means for engaging said lever with the turn- 30 able section, and a connection between the opposite end of said lever extending to the pipe support, and means by which the lever is actuated to open communication through the outer and inner ports.

4. In a dredging apparatus of the character 35 described a suction pipe having a nozzle at its outer end, and openings made through the pipe at a point above the inlet end, guide flanges above and below the openings, a tu- 40 bular section guided and turnable between

the flanges, said section having openings capable of registering with those of the inner tube, a lever fulcrumed upon the outer tube having the short arm slotted, a pin carried 45 by the outer tube with which the slot in the lever engages, a spring connecting with the long arm of the lever, and acting to normally close communication through the ports, a chain leading from the lever to an operative 50 point, and means by which the chain and lever may be moved to revolve the outer section and open the ports.

5. In a dredging apparatus of the character described, a float having a suction pump, a pipe journaled to said pump having the 55 outer end provided with a nozzle, and capable of raising and lowering with relation to the surface beneath the water, said pipe having openings made through it at a point between the suction nozzle and the pump, a 60 turnably guided sleeve fitting over said openings and having corresponding openings capable of registering with those of the inner tube, a bell crank lever having a fixed ful- 65 crum, connections between the short arm of said lever and the turnable sleeve, a spring connection with the long arm of the lever whereby the sleeve is normally held in position to close the ports of the inner tube, a 70 chain leading from the long arm of the lever to the scow, and means by which the chain and lever may be operated to open the ports.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRANKLIN H. JACKSON.

Witnesses:

GEO. H. STRONG,
CHARLES EDELMAN.