H. L. MILLER & N. P. NIELSEN.

VALVE.

APPLICATION FILED APR. 3, 1915.

1,229,772.

Patented June 12, 1917.

2 SHEETS—SHEET 1.

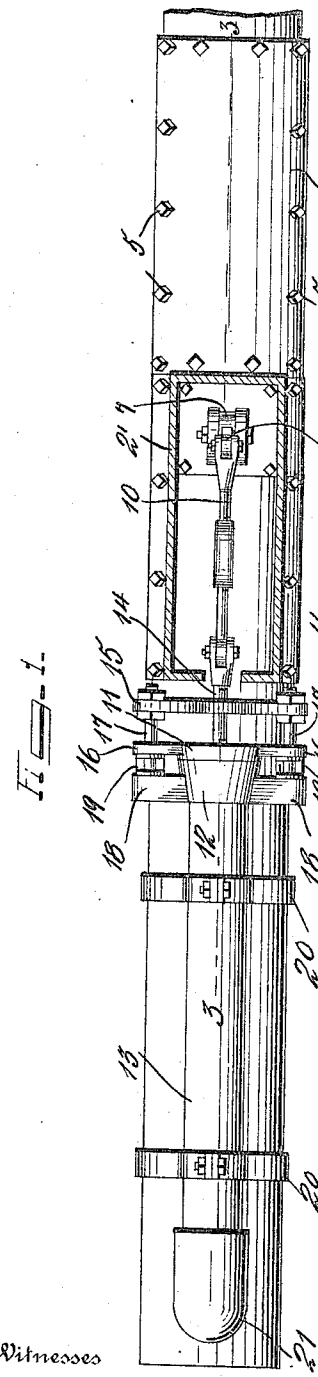


Fig. 1.

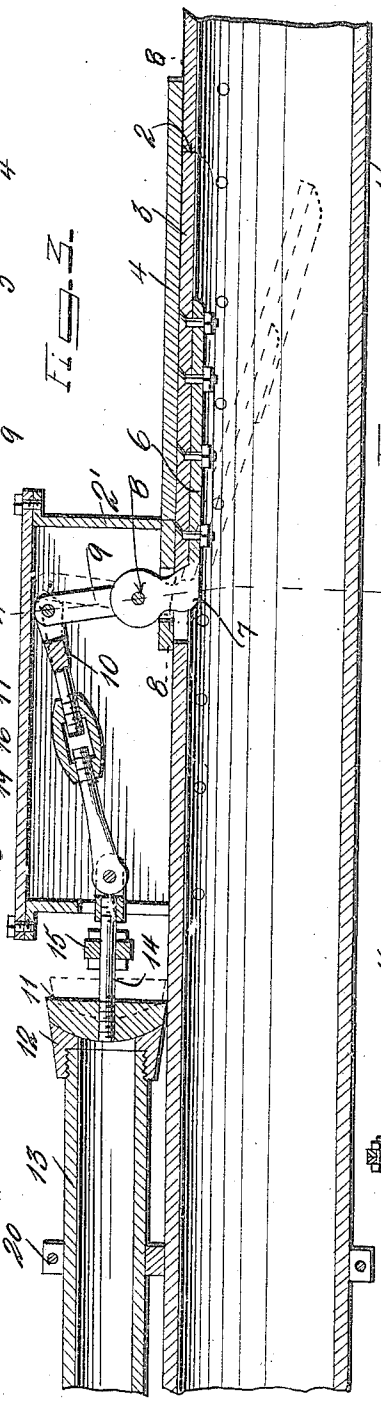


Fig. 2.

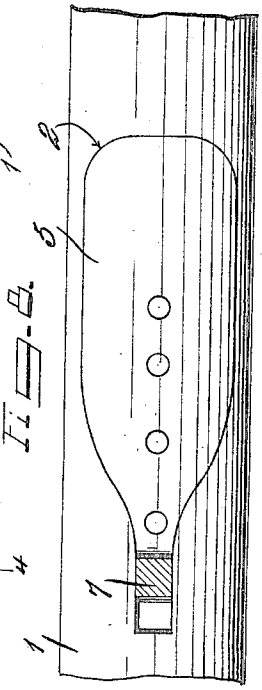


Fig. 4.

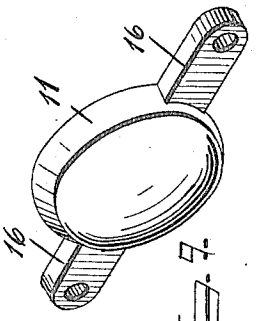


Fig. 7.

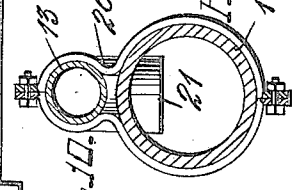


Fig. 10.

Witnesses

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2 SHEETS—SHEET 2.

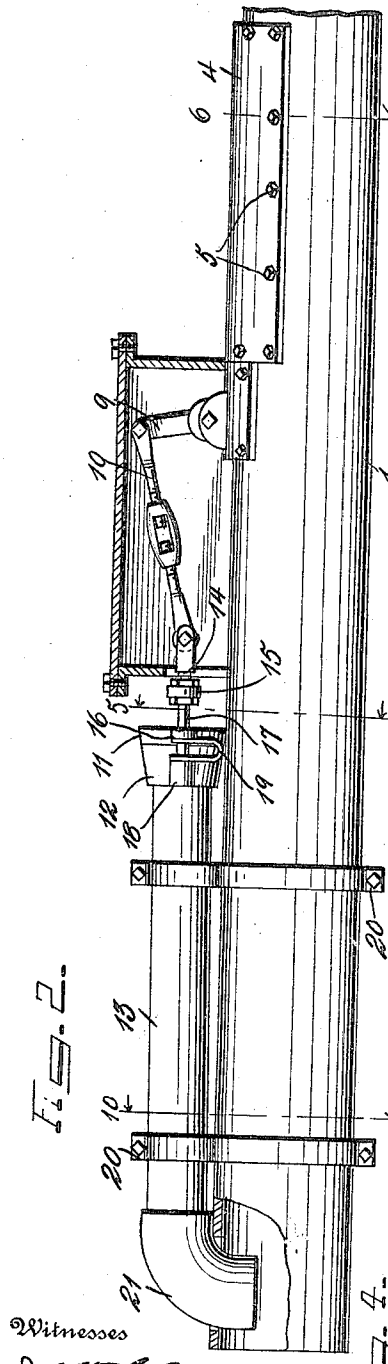


Fig. 2.

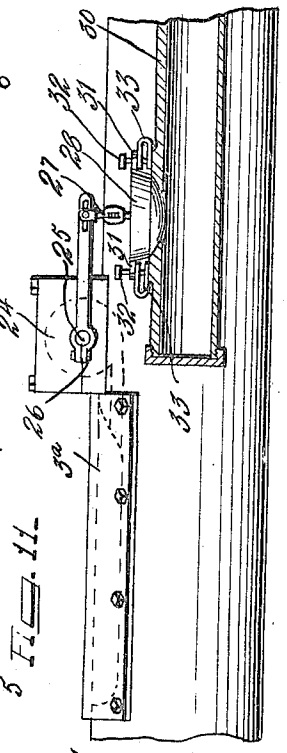


Fig. 11.

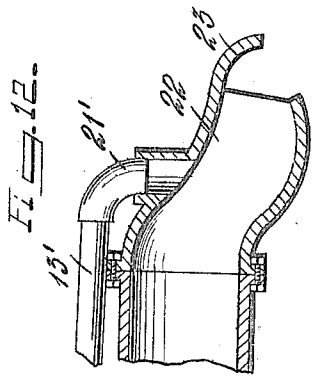


Fig. 12.

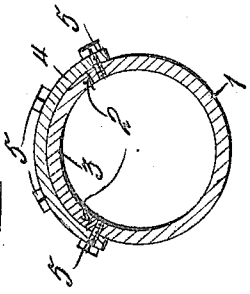


Fig. 6.

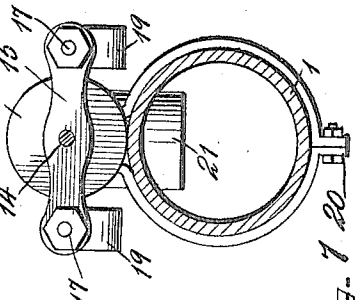


Fig. 5.

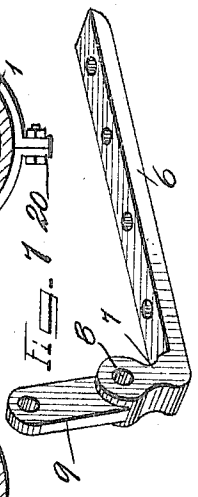


Fig. 7.

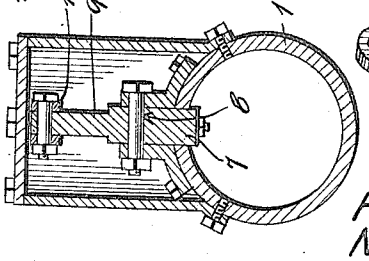


Fig. 4.

Witnesses

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# UNITED STATES PATENT OFFICE.

HENRY L. MILLER AND NIELS P. NIELSEN, OF PORT ARANSAS, TEXAS.

## VALVE.

1,229,772. Specification of Letters Patent. Patented June 12, 1917.

Application filed April 3, 1915. Serial No. 19,034.

*To all whom it may concern:*

Be it known that we, HENRY L. MILLER and NIELS P. NIELSEN, citizens of the United States of America, residing at Port Aransas, in the county of Nueces and State of Texas, have invented certain new and useful Improvements in Valves, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an automatic valve for use upon hydraulic or suction dredges to prevent soft material such as clay, sand and mud from preventing the efficient use of the dredge due to the clogging of heavy material in the mouth of the dredge.

The principal object of the invention is the production of a simple and efficient means for supplying water to the mouth of the dredge for the purpose of dislocating any foreign substance or clogged matter from the mouth of the dredge.

Other objects and advantages of the present invention will appear throughout the following specification and claims.

In the accompanying drawings:—

Figure 1 is a top plan view of a portion of the dredge, a portion of the housing being shown in section.

Fig. 2 is a side elevation of the structure shown in Fig. 1.

Fig. 3 is an enlarged longitudinal section through the device taken on line 3—3, of Fig. 1.

Fig. 4 is a section taken on line 4—4, of Fig. 3.

Fig. 5 is a section taken on line 5—5, of Fig. 2 looking in the direction of the arrow.

Fig. 6 is a section taken on line 6—6, of Fig. 2.

Fig. 7 is a detail perspective view of the fin supporting arm.

Fig. 8 is a section taken on line 8—8, of Fig. 3.

Fig. 9 is a detail perspective of the valve used for controlling the passage of water through the auxiliary water supply tube.

Fig. 10 is a section taken on line 10—10, of Fig. 2.

Fig. 11 is a side elevation of an embodiment of the present invention, the auxiliary water supply tube being shown in section.

Fig. 12 is a longitudinal section of an embodiment of the nozzle which may be used in connection with the present invention.

By referring to the drawings it will be seen that 1 designates the main suction or dredge tube which is provided with an auxiliary housing 2′ formed thereon for the purpose of shielding or protecting the connecting links for actuating the auxiliary valve. The tube 1 is provided with an aperture 2 formed upon the upper face thereof, within which aperture 2 the fin 3 is adapted to fit when the velocity of water is greatest. This aperture 2 is normally closed upon the top thereof by means of a detachable plate 4, which plate 4 is held in engagement with the tube by means of the bolts 5 as clearly illustrated in Figs. 1 and 6. By means of having the fin 3 fitting in the aperture 2 when the velocity of water within the tube is greatest it will be seen that the fin will not act as an obstruction against the passage of material through the dredge or suction tube 1. This fin 3 is supported by means of a fin engaging arm 6, which arm is provided with an upwardly projecting neck 7 being pivotally supported upon a supporting pin 8 which passes through the opening 8′ shown in Fig. 7. The arm 7 is provided with a projecting neck 9, which neck is pivotally connected to a turnbuckle link 10, the turnbuckle link 10 being in turn pivotally connected to an auxiliary valve 11. This auxiliary valve 11 is adapted to snugly fit upon the valve seat 12 carried by the auxiliary water supply tube 13. The valve 11 is provided with a valve stem 14, which valve stem 14 passes through the transversely extending link 15. The valve 11 is provided with the laterally extending arms 16, which arms support the bolts 17, these bolts 17 being carried by the laterally extending ears 18 of the valve seat 12. Flat springs 19 are interposed between the ears 18 and the laterally extending arms 16 for normally urging the valve 11 out of engagement with the valve seat 12.

It should be understood that the auxiliary water supply pipe 13 is firmly held in engagement with the main tube 1 by means of the clamping bands 20.

The auxiliary water supply tube 13 is provided with a discharge nozzle 21 which communicates with the intake end of the tube 1, and it should be understood that should the velocity of the water within the tube 1 decrease, the force then exerted by the impact of the moving water upon the fin 3 will be decreased and, therefore, the fin 3 will drop to the position shown in dotted lines and draw the valve from its seat 12 and

permit the passage of water through the auxiliary tube 13 and permit water to be discharged into the intake end of the tube 1 and in this manner dislocate any matter which may have become packed within the discharge end of the tube 1, thereby constituting an efficient automatic cleaning device for the tube 1.

As clearly illustrated in Fig. 12 it should be understood that the tube 1 may be provided with a nozzle 22 with which the auxiliary tube 13′ may communicate by means of an elbow 21′. The nozzle 22 is provided with an overhanging lip 23 for the purpose of shielding the same, and it should be understood that any suitable or desired nozzle may be attached thereto without departing from the spirit of the invention.

In Fig. 11 there is shown an embodiment of the invention, wherein the tube $1^a$ is provided with the fin $3^a$, shown in dotted lines, and is provided with an upwardly extending end 24 also shown in dotted lines, which is supported by means of a shaft 25 having a crank arm 26 secured thereto. This crank arm 26 is connected to a valve 28 for facilitating the lifting of the valve 28 from the valve seat 29 formed in the tube 30.

By carefully considering Fig. 11 of the drawings it will be seen that the arm 26 is connected to the valve 28 by means of a link connection 27. This valve 28 is provided with a plurality of laterally extending ears 31, through which ears project the anchoring pins 32. The springs 33 are interposed between the top of the tube 30 and the lower face of the ears 31 for normally urging the valve 28 from off its seat.

When the apparatus is in operation it is submerged in a river or other stream where it is desired to dredge the channel or deepen the harbor. A high pressure suction is applied to the tube 1 so as to draw mud, sand, clay, and like soft material therethrough, these elements being drawn into the tube 1 adjacent the nozzle 21 and through this tube with great velocity under normal conditions. When the force of the velocity of water passing through said tube 1 is decreased because of clogging adjacent the intake end thereof, the fin 3 will fall, as above set forth, so as to remove the valve 11 from the valve seat 12. Since the supply tube 14 is also submerged it will be filled with water when the valve 11 is removed from its seat. The suction within the main tube 1 will cause the water to be expelled from the supply tube and nozzle 21 into the suction tube 1 with considerable force. Since the nozzle will expel the water into said suction tube at right angles to the passage through the tube 1, the water from the supply tube 13 will strike the bottom of the suction tube with sufficient force to wash away sand, clay, and mud which may be clogging the intake of the tube 1. The action of the inflow of water into the tube 1 is similar to the manner sides of hills are sometimes washed by streams from hose lines for washing out metals.

Although the apparatus as herein disclosed is carried adjacent the intake end of the suction tube, it is obvious that it may be used at any position along the suction tube without departing from the spirit of the invention.

Having thus described the invention what is claimed as new, is:—

1. In a device of the class described, the combination of a straight suction tube, a water supply pipe positioned upon said suction tube, said water supply pipe extending throughout its entire length substantially parallel to said suction tube, clamping bands passing about said suction tube and said supply pipe for holding said supply pipe upon said suction tube, one end of said water supply pipe communicating with the interior of said suction tube, the remaining end of said supply pipe being open, a valve seat carried upon the open end of said water supply pipe, a valve movably mounted upon said seat, a fin pivotally mounted within said suction tube, means connecting said fin to said valve, said fin being adapted to normally be retained in an elevated position when the device is in operation due to the force of the impact of the water passing through said suction tube with great velocity, whereby said means will hold said valve upon said seat, the elongated construction of the device facilitating its submerging within a comparatively shallow stream, whereby when the velocity of water within the suction tube decreases said fin will fall so as to cause said means to remove said valve from said seat, thereby permitting water from the stream to pass into the open end of said pipe and then be directed into said suction tube so as to dislodge soft materials which may be clogged within the suction tube.

2. In a device of the class described, the combination of a suction tube, a water supply pipe positioned upon said suction tube, said water supply pipe extending throughout its entire length evenly with said tube, one end of said water supply pipe communicating with the interior of said suction tube, the remaining end of said water supply pipe being open, a valve seat carried upon the open end of said water supply pipe, a valve movably mounted upon said seat, a fin pivotally mounted upon said suction tube, link means adjustably connecting said fin to said valve, said fin being adapted to be held in an elevated position for holding said valve upon said seat when the velocity of water passing through said suction tube is greatest owing to the force of the impact of the

water upon said fin, said fin being adapted to fall when said velocity decreases, whereby said adjustable link means will remove said valve from said seat for permitting water to pass into the open end of said pipe and be directed therethrough into said suction tube so as to dislodge soft material which may be clogged within said suction tube, and a housing carried upon said suction tube, and fitting over said adjustable link means, whereby foreign objects within the stream will not become entangled with the link means or will not engage the same, whereby the device will operate efficiently at all times.

3. In a device of the class described, the combination of a suction tube, a water supply pipe carried upon said suction tube, said water supply pipe extending evenly throughout its entire length with said tube, one end of said supply pipe communicating with the interior of said suction tube, the remaining end of said supply pipe being open and having a valve seat carried thereon, a valve movably mounted upon said seat, a fin pivotally mounted upon said suction tube, an arm connected to said fin, an adjustable link means connected to said arm, said adjustable link means also being connected to said valve, the entire device being adapted to be submerged in a stream of water, said fin being adapted to be held in an elevated position due to the great velocity of the water passing therethrough, whereby said valve at this time will be retained upon said seat, said fin being adapted to fall when the velocity of water decreases, whereby said arm will cause said link means to remove said valve from said seat so as to permit the passage of water into the open end and through said pipe into said suction tube for dislodging soft material therein, and an inclosed housing carried upon said suction tube and fitting over the arm of said fin and said adjustable link means, whereby foreign objects within the stream will not be entangled or engaged by the arm or link means, whereby the device will be in a condition to operate efficiently at all times when in use.

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

HENRY L. MILLER.
NIELS P. NIELSEN.

Witnesses:
LAUCHLEN P. MORRISON,
J. A. ORR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."