

No. 868,680.

PATENTED OCT. 22, 1907

J. E. MARTIN.
VALVE FOR SUCTION PUMPS.
APPLICATION FILED JULY 25, 1906.

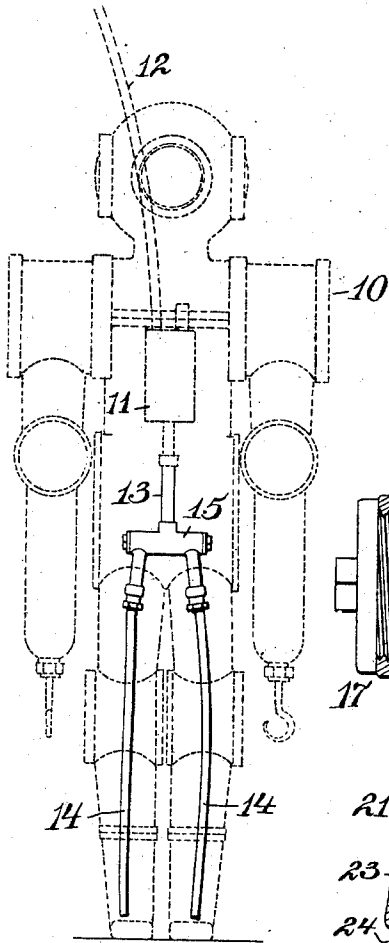


Fig. 1

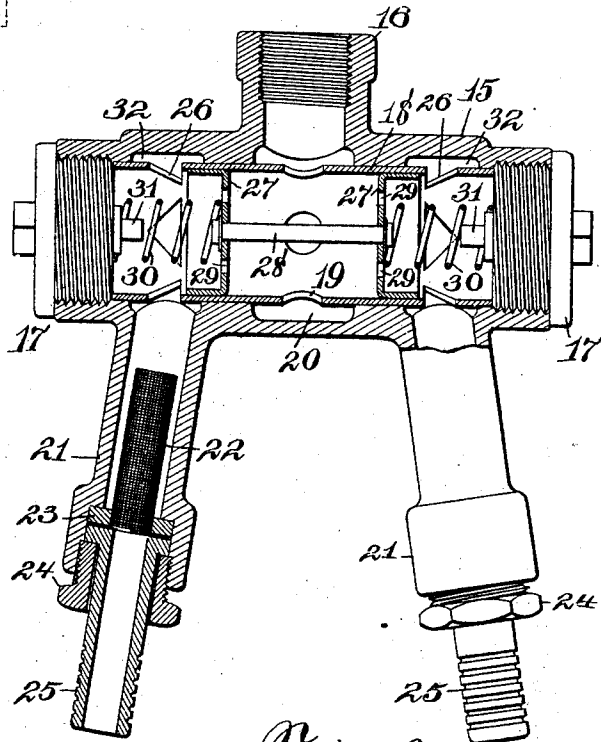


Fig. 2

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VALVE FOR SUCTION-PUMPS.

No. 868,680.

Specification of Letters Patent.

Patented Oct. 22, 1907.

Application filed July 25, 1906. Serial No. 327,608.

To all whom it may concern:

Be it known that I, JOSEPH E. MARTIN, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Valves for Suction-Pumps; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

This invention relates to a means for regulating or equalizing the pumping or lifting by the same source of vacuum from two or more sources, and to equalize this pumping automatically so that the liquid having the greater hydrostatic head will be delivered first or in larger quantities, thereby prevent a draft on the lesser head, pumping it dry, and thus taking air and losing the vacuum while there is still liquid in the source of greater hydrostatic head.

The invention is designed for any purpose, such as mining or any situation where it requires pumping from a number of sources by the same pump, and is also adapted for use in metallic diving suits, where the joints are bound to leak a little, and is necessary to supply a pump to keep them dry.

The invention is illustrated in the accompanying drawings, in which

Figure 1 shows the device installed in a metallic diving suit, and Fig. 2 is a section of the equalizing valve.

In the drawings, 10 is a diving suit, and a pump 11 is shown attached thereto, this pump being operated by means of air, preferably, supplied through a pipe 12, and the exhaust from the air pump is fed into the diving suit to supply the diver. A pipe 13 connects with the pump 11, and also with the equalizing valve 15, the pipes 14 leading from the valve, one down into either leg of the suit. This general idea is not new, but at present, if one leg becomes half filled with water, and the other has none in it, the air from the empty one will destroy the suction, and the water will not be pumped up until the inlets of both pipes 14 are covered. To obviate this, my valve is installed, and it comprises the cylindrical casing 15 which has the outlet 16, and is provided on either end with the screw-plugs 17, these holding between them a sleeve 18. The sleeve 18 is provided with openings 19 communicating with the annular chamber 20 supplying the outlet 16. The two inlet pipes 21 are arranged to be connected with feed pipes, by means of the washer 23, and the screw-plug 24 holding the pipe 25 which can be attached to the inlet pipe. A suitable strainer 22 can also be installed to prevent dirt getting into the pump or the valve.

Near each end of the sleeve 17 are the perforations 26, preferably made triangular, as shown in Fig. 2, these communicating with the annular chambers 32, which are supplied by the inlet pipes 21. Between these two series of openings 26 are arranged a pair of pistons 27 spaced apart, and held to move together by a piston rod 28. Each of these pistons is supplied with the series of perforations 29, and a spring on either side of the valve, one end resting on the piston 27 and the other over the pin 31 normally hold these pistons equidistant from the center.

The operation of the valve is as follows: When the pumping begins, if one of the sources from which liquid is being pumped is under a greater hydrostatic head than the other, it will give more pressure against its respective piston 27, and the two pistons will be carried over so that the other piston will gradually close the inlets 26 on that side of the valve, and therefore partially shut off the supply from that source until the two sources are under the same head, when the valve would again be in its normal position.

The apparatus is arranged with enough space between the pistons and the central perforations 19, so that when the pistons are slid over so that one piston will cover the inlet ports 26, the other piston will not effect the outlet ports 19.

I find in operating this valve, that the movement of the piston is caused by the pressure of water against the piston, and is not apt to be effected by the speed of the flow of water. The ports 26 are made triangular, so as to nicely regulate the admission of fluid through them, but they may be made in other shapes.

The particular details of the valve might be changed somewhat, and equivalents might be installed to make a better construction, if desirable.

Having thus described my invention, what I claim is:—

1. A valve to be placed between a suction pump and a pair of inlet pipes, the valve operating to close the inlet pipe having the least hydrostatic head and being operated by the flow of liquid passing to the pump.
2. A valve adapted to be arranged between a suction pump and a pair of inlet pipes, this valve being operated by the fluid from the inlet having the greater hydrostatic head to close the inlet with the lesser head the flow of liquid alone operating the valve.
3. A valve to be arranged between a suction pump and a pair of inlet pipes comprising a casing having an inlet pipe attached to each end, a centrally arranged outlet leading to the pump, and a pair of connecting sliding perforated pistons in the casing to be operated by the fluid in the inlet pipe having the greater hydrostatic head.
4. A valve to be arranged between a suction pump and a pair of inlet pipes comprising a cylindrical casing having an inlet pipe attached to each end, a centrally arranged outlet leading to the pump, a pair of pistons one between the outlet and each inlet and working in unison, these pistons having perforations, and springs between the end of the casing and the pistons to normally hold the pistons equidistant from the center.

5. A valve of the kind described, comprising a casing having an outlet pipe centrally located, an inlet pipe near each end, plugs in the ends of the casings, a pair of perforated pistons, a piston rod connecting the pistons, and
5 springs on either side of the pistons and bearing on the plugs to hold the pistons equi-distant from the center.

6. A valve of the kind described, comprising a casing having a centrally arranged outlet pipe, and an inlet pipe near each end, a sleeve in the casing, the casing having
10 an annular chamber to connect with the outlet pipe, and an annular chamber for each inlet pipe, a sleeve within the casing, the sleeve having perforations to connect with

each of the annular chambers, a perforated piston on each side of the outlet pipe and working in the sleeve, a piston rod to connect the pistons, and springs arranged between
15 the pistons and the plugs to normally maintain the pistons away from the inlet ports.

In testimony, that I claim the foregoing, I have hereunto set my hand this 23rd day of July 1906.

JOSEPH E. MARTIN.

Witnesses:

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WM. H. CAMFIELD.