

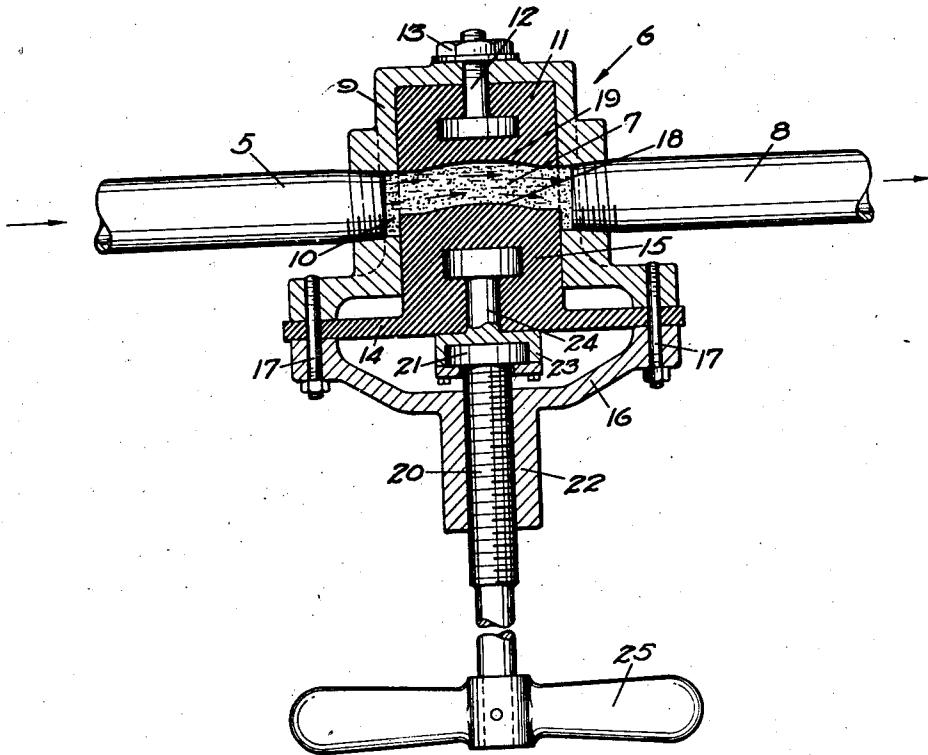
Dec. 17, 1929.

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1,740,004

DIAPHRAGM VALVE

Filed June 29, 1925



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DIAPHRAGM VALVE

Application filed June 29, 1925. Serial No. 40,129.

The present invention relates to a valve, and has particular reference to a valve comprising a housing having a plurality of ports therein; said valve including a diaphragm arranged within the housing and adapted to control the effective opening of the ports.

An important object of the invention is to provide a valve including a diaphragm clamped within a housing in a manner that the amount of fluid permitted to flow through the valve can accurately be controlled, the said diaphragm being mounted so that the valve cannot leak after it has become slightly worn.

Still another object of the invention is to provide a valve particularly well-adapted for use in abrasive systems, said valve being so constructed that the detrimental action of the moving abrasive will not seriously affect the operativeness of the valve for a considerable length of time.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings wherein like numerals are employed to designate like parts throughout the same,

The figure is a vertical longitudinal section through one form of valve.

This valve is primarily designed for use in an abrasive circulating system adapted to supply abrasive to sheet glass surfacing machines. The abrasive used in the grinding and polishing of plate glass is usually a hard granular substance maintained in suspension in water, and in the particular system in which this valve is used the abrasive is circulated at a relatively high rate of speed, being tapped off at frequent intervals for use. This continuous circulation of the abrasive creates a severe cutting action on the parts of the system containing the same.

Trouble has been experienced with the ordinary type of valves, especially when the valves are left in a partially opened position for any length of time as the abrasive cuts away the valve so that it is impossible to entirely close the same, thus permitting leakage. Although this valve is primarily de-

signed for this particular use, it may be used in any place that a valve is required.

The numeral 5 designates a supply pipe which is tapped off of a main conduit, the valve 6 being provided in the pipe line 5 to control the amount of abrasive 7 flowing through the pipe 8 which goes to the machine.

The valve 6 comprises a housing 9 having inlet and outlet ports 10 intermediate its ends. Arranged in one end of the housing 9 on one side of the ports is a valve seat 11 which is held in position by means of a headed stud 12 and nut 13. The valve seat 11 is preferably formed from a compressible rubber composition, although it may be formed from any other desirable material. A diaphragm 14 formed with an enlarged portion or head 15 is clamped between the housing 9 and the cap 16 by means of bolts 17. The diaphragm 14 and head 15 are also preferably formed from a compressible rubber composition, the said diaphragm being adapted to be adjusted so that the end 18 of the head and the socket 19 of the seat 11 can be firmly pressed together to close the ports and entirely stop the flow of abrasive from the pipe 5 to the pipe 8.

To control the position of the diaphragm, a valve stem 20 carrying the plate 21 thereon is screw-threadedly mounted through the sleeve 22 of the cap 16. The plate 21 is received within a suitable socket 23 formed in the end of the pin 24 embedded within the diaphragm 14. An operating lever 25 is keyed to the end of the valve stem 20 whereby the stem may be screwed in or out of the sleeve 22, thus moving the diaphragm toward or away from the valve seat 11, the diaphragm cooperating with the ports for controlling the effective opening thereof. As the edge of the diaphragm 14 is firmly clamped between the housing 9 and the cap 16, no leakage will occur from the bottom of the valve. Any adjustment can be had by proper manipulation of the valve stem so that an accurate control of the flow of abrasive to a machine can be had. The valve seat and diaphragm, being preferably formed from a compressible rubber composition, may be pressed together to form a

very tight connection so that an effective closing of the pipe line will be had.

It is to be understood that the form of the invention herewith shown and described is to be taken as the preferred embodiment of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

10 Claims:

1. A valve of the character described, comprising a housing having oppositely disposed substantially aligned ports therein, and a diaphragm within the housing cooperating with said ports for controlling the effective opening thereof.

2. A valve of the character described, comprising a housing having oppositely disposed substantially aligned ports therein positioned intermediate the opposite ends thereof, and a diaphragm clamped within the housing and cooperating with the ports for controlling the effective opening thereof.

3. A valve of the character described, comprising a housing having a plurality of ports therein positioned intermediate the opposite ends thereof, a valve seat arranged within the housing at one side of the ports, and a diaphragm within the housing adapted to be positioned at the opposite side of said ports and adapted for cooperation with the seat and ports for controlling the effective opening of the latter.

4. A valve of the character described, comprising a housing having a plurality of ports positioned intermediate the opposite ends thereof, a compressible valve seat arranged within the housing at one side of the ports, and a compressible diaphragm also within the housing adapted to be positioned at the opposite side of said ports and adapted for cooperation with said seat and ports to prevent the passage of a medium through the housing.

45 Signed at Toledo, in the county of Lucas, and State of Ohio, this 26th day of June, 1925.

JOSEPH P. CROWLEY.

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