

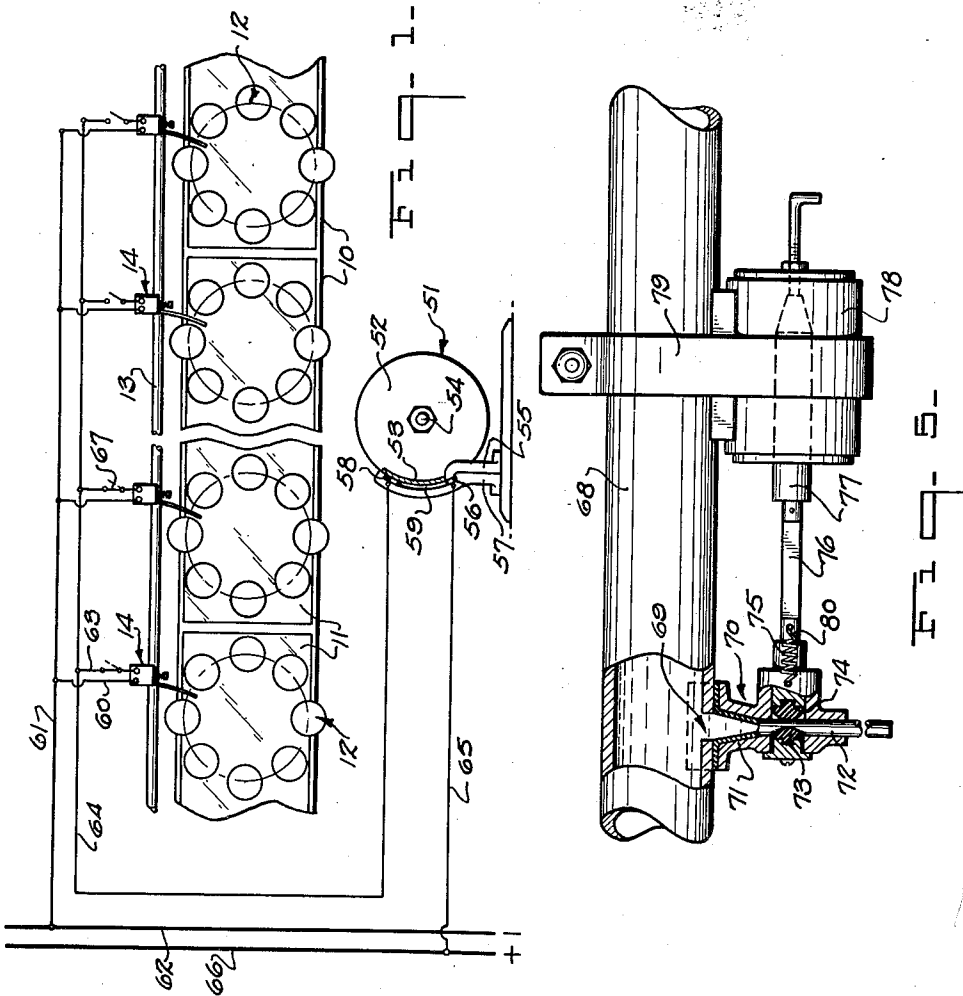
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MEANS FOR SUPPLYING A POLISHING MEDIUM TO POLISHING MACHINES

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MEANS FOR SUPPLYING A POLISHING MEDIUM TO POLISHING MACHINES

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5 Claims. (Cl. 137-139)

The present application constitutes a division of my application for Means for supplying a polishing medium to polishing machines, filed March 11, 1929, Serial No. 346,093.

This invention concerns improved means for supplying a polishing medium or material, such as rouge or the like, to one or a series of polishing machines, and particularly to those machines used for polishing plate glass, although the invention is, of course, not necessarily restricted to such use.

In the polishing of plate glass, the length of time required for the polishing operation and the quality of finish given to the glass is dependent to a large extent upon the polishing medium application to the sheet. The principal object of the present invention, therefore, resides in the provision of novel means for supplying the polishing medium to the glass in an effective and efficient manner and in such manner that a desirable finish may be obtained.

Another object of the invention resides in the provision of means of the character above described, whereby the desired quantity of polishing medium may be automatically supplied to the polishing machine or machines at substantially predetermined intervals.

Another object of the invention resides in the provision of independent means acting automatically to periodically supply the polishing medium simultaneously to a plurality of polishing machines at substantially predetermined intervals, said means being operable from a common control mechanism, preferably provided with an adjustment for varying the intervals between the periodic supply of the polishing medium to the polishing machines.

A further object of the invention resides in the provision of an electrically operated valve of a novel and improved construction, including means for varying the effective opening there-through so as to control the amount of polishing medium passing to the polishing machine when the valve is open.

Other objects and advantages of the invention will become more apparent during the course of the following description when taken in connection with the accompanying drawings.

In the drawings forming a part of this application and wherein like numerals are employed to designate like parts throughout the same,

Fig. 1 is a diagrammatic plan view of apparatus constructed in accordance with the present invention and illustrated in association with a plurality of polishing machines.

Fig. 2 is a transverse section through the polishing medium supply conduit and one of the valves provided by the present invention.

Fig. 3 is a front elevation of the valve.

Fig. 4 is a rear elevation thereof, and

Fig. 5 is an elevation partially in section of a modified valve construction.

While not restricted to use in connection with any particular process for surfacing sheet glass, the present invention is primarily adapted for use in the continuous system wherein a plurality of glass supporting trucks or tables are adapted to carry a plurality of glass sheets mounted thereupon first beneath a series of grinding machines, (not shown) and then beneath a series of polishing machines, a plurality of which are illustrated diagrammatically in Fig. 1 and designated 12. These polishing machines may be of any conventional or preferred construction.

Arranged along one side of the line of polishing machines 12 is a supply pipe or conduit 13 adapted to contain the rouge or other polishing medium. Carried by the conduit 13 are a plurality of electrically operated, automatic valves 14, one being provided for each polishing machine and adapted to control the supply of polishing medium thereto as will be more clearly hereinafter apparent.

Referring now more particularly to Figs. 2, 3 and 4, the supply conduit 13 is provided with a plurality of spaced lateral outlet openings 15, and it is with these openings that the valves 14 are associated. Each valve comprises a supporting bracket member 16 cut out or recessed as at 17 so as to fit over the conduit. The valve is adapted to be clamped onto the conduit by means of one or more set screws or the like 18 passing through the part 19 of the bracket member and engaging said conduit. The bracket member 16 is also formed with a valve casing or housing 20 having a central bore 21, the inner end of which is substantially cone shaped and adapted to register with the respective outlet opening 15 in conduit 13 when the valve is secured in position thereon.

The valve housing 20 is adapted to contain a removable hollow compressible member or liner 22 preferably of rubber or some other suitable resilient material which provides the regulatable passage for fluid through the valve. This liner may be inserted into the housing through the enlarged inner end thereof and the inner end of the liner may be clamped between the housing and conduit as indicated at 23. Thus, that portion 23 of the liner which is clamped between the housing and conduit serves also as a packing

to prevent leakage of the valve so that even though the outer surface of the conduit be somewhat uneven or roughened, the liner can be readily compressed to provide a tight fit. The liner 22 extends entirely through and outwardly beyond the valve housing and is adapted to convey the polishing medium to the polishing machines 12.

The numeral 24 designates the operating or rocker arm or lever provided at its lower end with a laterally enlarged body portion 25 having an opening 26 therein to receive the outer end of valve housing 20. Otherwise stated, the lower end of the rocker arm is so constructed as to surround the valve housing and is pivoted thereto by means of the pivot pins 27. The body portion 25 of arm 24 carries or has formed integral therewith an inwardly directed foot 28 provided at its inner end with the valve head 29. This valve head is preferably formed with an undercut groove within which is removably secured the resilient compressing member or pad 30 formed of relatively soft rubber or the like and operable through an opening 31 in the valve housing to compress the liner 22 when the rocker arm is actuated about its pivot.

The valve housing 20 is further provided with a second opening 32 positioned opposite the opening 31 and having inserted therein the plate 33 removably secured to the housing by a plurality of screws or other fastening elements 34. The inner surface of plate 33 is also provided with an undercut groove within which is removably secured the resilient compressing member or pad 35 similar to and adapted to cooperate with the first compressing member or pad 30 to control the effective opening through the valve. The second compressing member 35, like the first member 30, is secured in position by the resilient nature thereof.

Carried by the bracket member 16 is a solenoid 36 of any conventional or preferred construction and including a coil 37 within which operates the horizontally disposed plunger 38. As is well known, when the coil 37 is energized, the plunger 38 will be drawn inwardly due to the magnetism exerted thereupon by the coil and maintained in such position until the coil is deenergized and the holding attraction broken. The inward movement of the plunger may be limited by an adjusting bolt 39 threaded within a block 40.

The plunger 38 of solenoid 36 is provided at its forward end with a pair of spaced ears 41 between which is received one end of the bolt 42 secured to the plunger by the transverse securing pin 43 passing therethrough and also through said ears. Threaded upon the outer end of bolt 42 is a block 44 and threaded within the opposite end of said block is a bolt 45 pivoted at its outer end as at 46 to rocker arm 24. Thus, the block 44 and bolts 42 and 45 constitute, in effect, a turn-buckle so that upon rotation of block 44, the bolts will be threaded inwardly or outwardly with respect thereto to vary the degree of rocking movement of arm 24 and the effective opening through the valve or, otherwise stated, the maximum size of the opening in the liner 22 between the compressing pads 30 and 35.

Also carried by the bracket member 16 is a compression spring 47 bearing at its outer end against a head 48 fitted within a recess in arm 24 and at its opposite end against the thumb nut 49 carried by a bolt 50 intermediate the ends thereof. The inner end of bolt 50 is threaded within the bracket member while the outer end

extends into and is surrounded by the spring 47.

In the operation of the valve, when the solenoid 36 is deenergized, the spring 47 will act to normally urge the arm 24 outwardly so as to rock the same about its pivot to the position indicated by the broken lines in Fig. 2. When moved to such position, the valve head 29 will be moved inwardly and the compressing member 30 engaging the liner 22 will function to compress the same so as to prevent the passage of the polishing medium therethrough. Upon energization of the solenoid 36, however, the plunger 38 thereof will be drawn inwardly so as to rock the arm 24 in the opposite direction against the action of spring 47. When this is done, the compressing member 30 will be moved outwardly or away from member 35 so as to effect the opening of the liner 22 and permit the passage of the polishing medium therethrough to the polishing machine. When the solenoid is deenergized, the spring 47 will act automatically to again move the arm outwardly to effect the closing of the valve. Thus, the valve is held normally closed by means of the spring 47 and is opened upon energization of solenoid 36 and maintained in such open position only so long as the solenoid is energized. Therefore, the valve can be opened and closed at substantially predetermined intervals to allow periodic passage of the polishing machine by first energizing and then deenergizing the solenoid.

The present invention also embodies a common control means for the individual valves 14 of the several polishing machines whereby the said valves may be simultaneously actuated at substantially predetermined intervals to effect the discharge of the desired amount of polishing medium to the polishing machines. In order that this might be readily and conveniently effected, the valves 14 are connected in series with a master contactor designated in its entirety by the numeral 51 and comprising a rotatable disc 52 carrying upon its periphery an arcuate metal contact plate 53, said disc being mounted upon a shaft 54 and driven in any suitable manner. Positioned at one side of disc 52 is a bracket support 55 carrying the fixed contact finger 56 adapted to engage contact plate 53. Positioned at the opposite side of disc 52 is a second bracket support 57 carrying a movable contact finger 58 also adapted to engage contact plate 53. Contact finger 58 may be adjustably mounted within an arcuate slot 59 in support 57 and may be secured in desired position by any suitable means.

Leading from the solenoid 36 of each valve 14 is a wire 60 connected with the lead wire 61 which is in turn connected with the main line 62. Also leading from each solenoid is a second wire 63 connected to lead wire 64 running to movable contact finger 58. Secured to and leading from fixed contact finger 56 is a wire 65 connected with the second main line 66. Interposed within the wire 63 leading to each valve is a switch 67 and upon opening of any one or more of these switches the corresponding valve or valves may be cut out of the circuit and the supply of polishing medium to the respective machine or machines stopped. However, when the switches 67 are closed and the disc 52 of the master contactor is rotated, the contact plate 53 carried thereby is brought upon rotation thereof into engagement periodically with the contact fingers 56 and 58. When the contact plate is in such a position that it engages both contact fingers, the circuit through the valves is closed whereupon the solenoids 36 will be energized to draw the plungers 38 inwardly

and thus open the valves and permit the passage of polishing medium therethrough. When the circuit is closed, the electric current will pass from the positive main 66 through wire 65, contact finger 56, contact plate 52, contact finger 58, wires 64 and 60 to the solenoid, through the solenoid and then outwardly thereof through wires 63 and 61 to the negative main 62. However, as soon as the contact plate 53 passes out of engagement with either one of the contact fingers 56 or 58, the circuit through all of the solenoids will be simultaneously broken so that all of the solenoids previously energized will be simultaneously de-energized. When this occurs, the rocker arms 24 will be automatically moved outwardly by the action of springs 47 to effect the compressing of the liners and the closing of the valves to stop the flow of polishing medium therethrough.

By adjusting the movable contact finger 58 towards or away from fixed contact finger 56, the length of time the said contact fingers engage the contact plate may be varied so as to increase or decrease the length of time the solenoids are energized and the valves held open. It will be readily apparent that if the contact finger 58 is moved closer to contact finger 56, the contact plate 53 will be in engagement with both contact fingers for a longer period of time than if the contact fingers are moved further apart.

In Fig. 5 is illustrated a slightly modified valve construction. In this figure, the main supply conduit extending along the line of polishing machines is designated 68 and is provided with a plurality of outlet openings 69 with each of which is associated a valve designated in its entirety by the numeral 70. This valve includes the valve housing 71 having arranged therein the compressible liner 72 adapted to be compressed by means of the cooperating fixed and movable compressing members 73 and 74 respectively disposed opposite one another. The member 74 is carried at the inner end of the slidable valve head 75 connected by means of an arm 76 to the plunger 77 of solenoid 78 suspended or hung from the pipe 68 by means of a sling or the like 79. The movable compressing member 74 is normally urged toward the fixed member 73 by means of the springs 80 to maintain the liner normally compressed and the valve closed. However, upon energization of the solenoid 78, the plunger 77 thereof will be drawn inwardly and the compressing member 74 moved outwardly against the action of springs 80 to effect the opening of the valve so as to allow for the passage of the polishing medium therethrough to the polishing machines. A plurality of these valves may also be connected in series and actuated from a master contactor as are the valves 14 above described so that the same advantages will be gained from their use.

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.

I claim:

1. A valve including a housing, a compressible liner therein, a member adapted to engage the liner, a pivotal mounting therefor, means for rocking said member in a predetermined direction to normally hold the liner compressed to prevent the passage of fluid therethrough, electrical means operable to automatically render the compressing member ineffective at substantially predetermined intervals to permit the passage of fluid through said valve, and means for varying the rocking movement of said member to regulate the effective opening in said liner.

2. A valve including a housing, a compressible liner therein, an arm pivotally carried by said housing and having a portion thereof engaging the liner, means for rocking the arm about its pivot to normally compress the liner and thereby prevent the passage of fluid therethrough, and electrical means operable to automatically render the compressing means ineffective at substantially predetermined intervals to permit the passage of fluid through said valve.

3. A valve including a housing, a compressible liner therein, an arm pivotally carried by the housing and engaging the compressible liner, spring means for rocking the arm about its pivot to normally compress the liner and thus prevent the passage of fluid therethrough, electrical means operable to automatically rock the arm about its pivot against the action of the spring means to open the valve at substantially predetermined intervals to permit the passage of fluid therethrough, and connections between the electrical means and arm, said connections being adjustable to vary the effective opening through the valve.

4. A valve including a housing, a compressible liner therein, an arm pivotally carried by the housing and having a portion adapted to engage the liner to compress the same, spring means normally tending to rock the arm in one direction to maintain the liner compressed and the valve closed, a solenoid including a plunger, connections between the plunger and arm, and means for energizing the solenoid to effect inward movement of the plunger so as to rock the arm about its pivot against the action of the spring means to effect opening of the valve.

5. A valve including a supporting bracket, a valve housing carried thereby, a compressible liner therein, a rocker arm pivoted to the valve housing and having a valve head operating through an opening therein to compress the liner, a solenoid carried by the bracket and including a movable plunger, connections between the plunger and rocker arm so that upon energization of the solenoid the arm will be rocked in one direction to open the valve and spring means interposed between the bracket and arm for rocking the arm in the opposite direction to close the valve upon deenergization of said solenoid.

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