

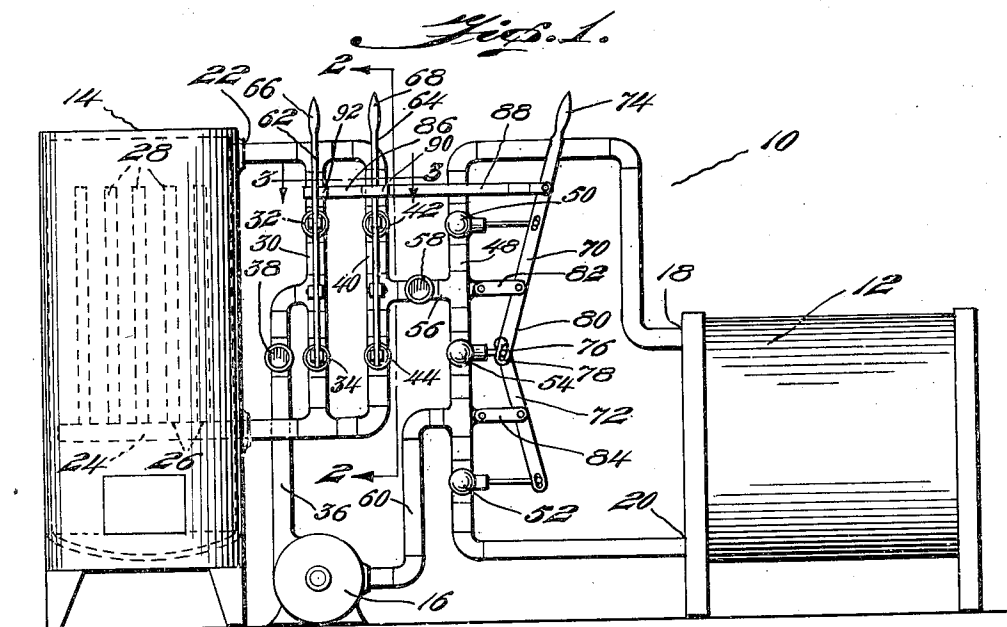
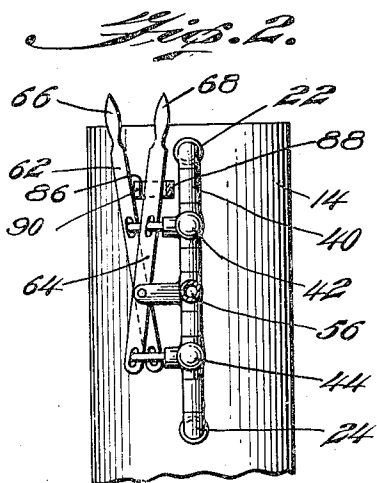
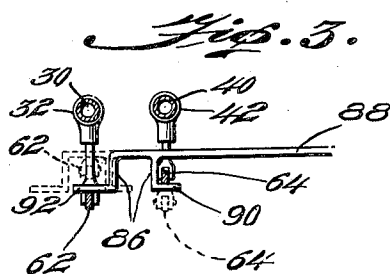
June 16, 1942.

N. MONSARRAT

2,286,432

CLOSED DRY CLEANING SYSTEM

Filed Dec. 28, 1938



Inventor
Nicholas Monsarrat
By Thomas A. Janches
Attorney

UNITED STATES PATENT OFFICE

2,286,432

CLOSED DRY CLEANING SYSTEM

Nicholas Monsarrat, East Providence, R. I., assignor to Pantex Pressing Machine, Inc., Central Falls, R. I., a corporation of Delaware

Application December 28, 1938, Serial No. 248,044

6 Claims. (Cl. 210-62)

My invention relates to improvements in closed dry cleaning systems of the type comprising a washer, a filter, preferably one of the reversible flow type, and a circulating pump.

My invention particularly relates to a novel construction for backwashing the filter, preferably while bypassing the washer so that it will be impossible to carry dislodged filter cake into the washer.

A further object of my invention relates to improved means I preferably employ for bypassing the washer, as is often desirable in loading or unloading and for other purposes, whether or not the filter be provided with means to backwash it.

A further object of my invention is to provide a novel type of means for backwashing the filter, irrespective of whether or not the washer be simultaneously bypassed.

A further object of my invention is to provide a novel structure wherein it is impossible to backwash the filter unless the washer is bypassed.

I am aware that others have provided connecting pipe and valves for backwashing the filter in such a dry cleaning system. Great difficulty has been experienced, however, in having a single operative open and close the four necessary valves for this purpose in quick enough fashion and in correct sequence to either (1) prevent the carrying forward of the filter cake or (2) prevent excess pressure from being built up at any point of the system with the usual damage to the motive means for the pump or other parts of the system.

I am also aware that others have provided pipes and valves for bypassing the washer, but great difficulty has also been experienced in simultaneously turning off and on the required three number of valves at the same time to provide a continuous flow through the filter. If such a continuous flow has not been provided it has been found that the filter cake has tended to drop off the filter plates and thus disintegrate to roil or foul the flowing stream, which often requires a complete refilling of the system, and if the washer be again connected it sometimes results in damage to the goods. Where such a system has employed both a bypass for the washer and a backwash for the filter, it has been practically impossible for a single operative to change all the valves simultaneously. My invention includes means movable by the operative to close or open a plurality of valves at once, thus greatly shortening the time formerly thought necessary to make the aforesaid connections and

positively precluding any chance of error in the manipulating of the valves in such a system.

A further object of my invention is to provide a novel structure which will also bypass the filter.

These and such other objects of my invention as may hereinafter appear will be best understood from a description of an embodiment thereof, such as is shown in the accompanying drawing which diagrammatically illustrate a clothes dry cleaning system constructed in accordance with my invention.

In the drawing, Fig. 1 is a diagrammatic side elevation of such a dry cleaning system constructed in accordance with my invention.

Fig. 2 is a vertical sectional view taken along the line 2-2 of Fig. 1.

Fig. 3 is a vertical sectional view taken along the line 3-3 of Fig. 1.

In the drawing, wherein like characters of reference indicate like parts throughout, 10 generally indicates a closed dry cleaning system constructed in accordance with my invention. Dry cleaning systems of this type usually include a washer 12, a filter 14 and a circulating pump 16, and suitable means connecting said pump to said filter, said filter to said washer and said washer to said pump to permit a continuous flow of solvent therethrough. The washer 12 is provided with an inlet 18 and an outlet 20. The reversible flow type of filter 14 commonly employed is provided with inlet means 22 and a filter discharge pipe 24 therein and discharging outwardly through the wall thereof having holes 26 therein for the mounting thereon of hollow filter plates 28. Said hollow filter plates preferably have the side walls thereof constructed of a pervious material capable of collecting a filter cake from the solvent usually employed in such a system on the exterior thereof in the normal circulation of the solvent through the filter and adapted to discharge the filter cake therefrom on the reverse flow of solvent from the hollow interiors of said plates. The filter cake is preferably made up of a suitable powder inserted in the solvent which builds up on the exterior of said pervious surfaces and does the actual filtering and to save the expense of replacing the filter cake it is desirable to keep it on the filter plates as long as it is usable. As stated hitherto, suitable pipe means have hitherto been provided to connect the parts in the manner explained, being so arranged and provided with the desired number of hand-operated valves therein to bypass the washer and/or to backwash the filter on the suitable manipulation thereof. My invention par-

ticularly relates to a novel arrangement of pipes and types of sliding stem or gate valves and operating levers I preferably employ to operate a plurality of valves at once to more quickly and positively accomplish these results.

In such a system be equipped with suitable means for backwashing the filter, I preferably employ two lines preferably arranged parallel to each other and preferably extending in a vertical direction to permit their installation in a small compass and thereby closely adjacent to each other for the more facile manipulation of their respective valves. One line 30 comprises a filter inlet line 30 having one end thereof connected to the filter inlet means 22 and having a filter inlet valve 32 therein and the other end thereof connected to the filter discharge pipe 24 and having a filter backwash inlet valve 34 therein, said pump 16 being connected to said filter inlet line 30 between said valves 32 and 34 by the line 36 preferably having a sight glass 38 therein, and the other line comprising a filter discharge line 40 having one end thereof, when the lines are parallel a similar end, connected to the filter inlet means 22 and having a filter discharge valve 42 therein and its other end, a similar end if said lines are parallel, connected to the filter discharge pipe 24 and having a filter backwash discharge valve 44 therein. If it be desired to bypass the washer another line comprising the washer line 48 may be provided, preferably parallel to said filter inlet line 30 and said filter discharge line 40. Where employed, said washer line 48 has one end thereof connected to the washer inlet 18 and has a washer inlet valve 50 therein and its other end connected to the washer outlet 20 and has a washer outlet valve 52 therein, said washer line also having a bypass valve 54 substantially centrally thereof intermediate said inlet valve 50 and outlet valve 52. In the embodiment shown, employing both means to backwash the filter end means to bypass the washer, I provide the pipe means 56 having a sight glass 58 therein, connecting the portion of said filter discharge line 40 between the valves 42 and 44 to said washer line 48 intermediate said inlet and bypass valves 50 and 54, and I provide pipe means 60 connecting said washer line 48 intermediate said bypass and outlet valves 54 and 52 to said pump 16. If it be desired to eliminate the bypass feature, the pipe 56 may be directly connected to the washer inlet 18 and the pipe 60 may be directly connected to the washer outlet 20. If it be desired to eliminate the structure which permits the backwashing of the filter, the line 36 may be connected directly to the filter inlet means 22 and the pipe 56 may be connected directly to the filter discharge pipe 24.

In accordance with my invention, all of said valves 32, 34, 42, 44, 50, 52 and 54 comprise sliding stem or gate valves each preferably having a plate or other type of closure within the pipe for positively stopping the flow there-through and an integral stem projecting outwardly therefrom. I pivotably mount the handle operated levers 62 and 64 on said filter inlet and filter outlet lines 30 and 40 respectively, substantially centrally of said valves 32 and 34 and 42 and 44 respectively and pivotally connect them to the respective valve stems above said valves to simultaneously alternately open and close the valves at their respective lines, as shown in Fig. 2, the levers being provided with the operating handles 66 and 68 so that as the lever 62 is raised

to open the filter inlet valve 32 and close the filter backwash inlet valve 34, its preferably parallel and opposite lever 64 may be correspondingly lowered to close the filter backwash discharge valve 42 and open the filter discharge valve 44, it being obvious that when the positions of the respective levers 62 and 64 are reversed that the positions of the respective valves are reversed to permit the filter 14 to be backwashed. It is also obvious that if said levers are raised or lowered simultaneously that the valves will be moved to positions bypassing the filter and instantaneously stopping flow within the filter to render it quiescent. Thus at any instant, if the filter cake be stirred up as indicated by a sight glass, the flow through the filter can be instantly stopped by merely changing the position of one lever.

I also provide the levers 70 and 72 pivotably mounted on said washer line 48, the lever 70 being mounted substantially centrally between said washer inlet valve 50 and bypass valve 54, and the lever 72 being pivotably mounted substantially centrally of said bypass valve 54 and outlet valve 52. One of said levers in the embodiment shown, the lever 70, is provided with the handle 74 and the inner ends of said levers are loosely pivotably joined together such as by means of the pin 76 mounted on the end of the valve stem of the bypass valve 54 registering within an elongated slot 78 in each inner end of said levers 70 and 72 to form a toggle 80. The lever 70 is pivotably mounted between said valves 50 and 54 on a link 82 pivotably mounted on said washer line 48 in the embodiment shown substantially opposite or adjacent the connection of the pipe 56 connected to the filter discharge line 40 and the lever 72 is pivotably mounted on a link 84 pivotably mounted on said washer line 48 substantially opposite or adjacent the connection of the pipe 60 connected to said circulating pump 16. In the embodiment shown the levers 70 and 72 are mounted in a plane at a right angle to the plane of said filter inlet and outlet levers 62 and 64, it being obvious that the levers 70 and 72 may be mounted on said washer line 48 in any desired fashion if a safety interference means 86, later to be described, be not employed, or if it be not rigid from its point of connection to the lever 70 to the points where it interferes with the operation of the levers 62 and 64. The links 82 and 84 are pivotably mounted at the above points on said washer line to freely give to permit the free straight line up-and-down movement of the valve stems for the washer inlet and outlet valves 50 and 52, the pin 76 riding within the respective elongated slots 78 to permit the valve stem for the bypass valve 54 to reciprocate in a straight line up and down.

It is apparent that my improved type of lever means for reversing the flow in the filter with its respective pipes 30 and 40 suitably arranged, preferably in a close parallel fashion for the more facile manipulation of said valves, for operating two valves in a line at once is novel. It is also apparent that my improved type of lever toggle means for actuating three valves in the washer line 48 to simultaneously open and close the inlet and outlet valves 50 and 52 and alternately close or open the bypass valve 54 is also novel in the combination shown.

In my preferred embodiment, however, I preferably so mount the toggle means 80 in relation to the lever means 62 and 64 and provide interference means 86 movable with said washer bypass toggle 80 to lock said filter inlet and

outlet valves in inlet flow position only, said interference means 88 being also movable only after motion of said washer bypass toggle 80 to bypass said washer to permit the reverse motion of said filter inlet and outlet levers to backwash the filter in the manner hitherto described. In the embodiment shown, with the toggle mounted in a plane at right angles to the planes of said levers, the interference means comprises an inverted U shaped member 86 provided with diverging locking lugs 90 and 92 at the ends of its U legs, the lug 92 being adapted to overlie the operating lever 62, and the lug 90 being adapted to underlie the operating lever 64 to maintain the respective backwash valves in a position to permit a continuous flow through the filter 14 and positively prevent any backwash flow while the washer 12 is connected in the system. When, however, the handle 74 is moved to move the toggle 80 to bypass the washer 12, the rod 88 connected to said interference member 86 will move said interference member 86 to the left to permit the lever 64 to be operated to the dotted line position shown and the lever 62 to be operated within the U to the dotted line position shown to reverse the flow through the filter inlet line and filter outlet line to backwash the filter. It is apparent, therefore, that the means for actuating the gate or sliding stem valves to reverse the flow of the filter to backwash the filter is connected to said operating means to be operable only to reverse the flow when said operating means is moved to a position to bypass the washer. As stated hitherto, if desired, the interference means 86 may be omitted and my improved means for bypassing the washer or my improved means for backwashing the filter may be employed independently of the other. It is apparent, therefore, that I have provided a novel type of clothes cleaning system with the advantages explained above.

It is understood that my invention is not limited to the specific embodiment shown and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What I claim is:

1. A closed dry cleaning system, comprising a washer having an inlet and an outlet, a reversible flow filter having inlet means, a filter discharge pipe therein and hollow filter plates mounted on said filter discharge pipe, a circulating pump, three conduits, one of said conduits comprising a filter inlet conduit having one end thereof connected to the filter inlet means and having a filter inlet valve therein, and the other end thereof connected to the filter discharge pipe and having a filter backwash inlet valve therein, and pipe means connecting said pump to said filter inlet conduit intermediate said valves, the second of said conduits comprising a filter discharge conduit having one end connected to the filter inlet means and having a filter discharge valve therein and its other end connected to the filter discharge pipe and having a filter backwash valve therein, the third of said conduits comprising a washer conduit having one end thereof connected to the washer inlet and having a washer inlet valve therein and its other end connected to the washer outlet and having a washer outlet valve therein and having a bypass valve intermediate said inlet and outlet valves, pipe means connecting said filter discharge conduit between said valves to

said washer conduit intermediate said inlet and bypass valves, and pipe means connecting said pump to said washer conduit intermediate said bypass and outlet valves, levers including handles pivotably mounted on said filter inlet and filter outlet conduits intermediate said valves and pivotally connected to the respective valves to simultaneously actuate the valves in such manner that one valve in each conduit is open while the other valve is closed and vice versa, said levers having the handles thereof extending in the same direction and so closely spaced to each other that each may be grasped by a hand of a single operator, levers pivotally mounted on said washer conduit intermediate said valves having their inner ends loosely pivotally joined together over said bypass valve to form a toggle, pivotally connected to the respective valves to simultaneously actuate said washer inlet and outlet valves and said bypass valve in such manner that when the washer inlet and outlet valves are open the bypass valve is closed, and vice versa, one of said levers having a handle, and interference means connected to said washer conduit bypass toggle to move from a position locking said filter inlet and outlet conduit valves in inlet flow position when the washer is connected in said system to a position permitting reverse movements of said filter inlet and outlet levers to backwash the filter only when the washer is bypassed.

2. A closed dry cleaning system, comprising a washer having an inlet and an outlet, a reversible flow filter having inlet means, a filter discharge pipe therein and hollow filter plates mounted on said filter discharge pipe, a circulating pump, two conduits, one of said conduits comprising a filter inlet conduit having one end thereof connected to the filter inlet means and having a filter inlet valve therein and the other end thereof connected to the filter discharge pipe and having a filter backwash inlet valve therein, and pipe means connecting said pump to said filter inlet conduit intermediate said valves, the second of said conduits comprising a filter discharge conduit having one end connected to the filter inlet means and having a filter discharge valve therein and its other end connected to the filter discharge pipe and having a filter backwash discharge valve therein, pipe means connecting the portion of said filter discharge conduit between said valves to said pump, and levers including handles pivotably mounted on said filter inlet and filter outlet conduits intermediate said valves and pivotally connected to the respective valves to simultaneously actuate the valves in such manner that one valve in each conduit is open while the other valve is closed and vice versa, said levers having the handles thereof extending in the same direction and so closely spaced to each other that each may be grasped by a hand of a single operator.

3. A closed dry cleaning system, comprising a washer having an inlet and an outlet, a filter having inlet means, a filter discharge pipe therein and hollow filter plates mounted on said filter discharge pipe, a circulating pump, a washer conduit having one end thereof connected to the washer inlet and having a washer inlet valve therein and its other end connected to the washer outlet and having a washer outlet valve therein and having a bypass valve intermediate said inlet and outlet valves, pipe means connecting said pump to said filter inlet means, pipe means connecting said filter dis-

charge pipe to said washer conduit intermediate said inlet and bypass valves, and pipe means connecting said pump to said washer conduit intermediate said bypass and outlet valves, and levers pivotably mounted on said washer conduit intermediate said valves having their inner ends loosely pivotally joined together over said bypass valve to form a toggle, pivotally connected to the respective valves to simultaneously actuate said washer inlet and outlet valves and said bypass valve in such manner that when the washer inlet and outlet valves are open the bypass valve is closed, and vice versa, one of said levers having a handle.

4. A closed dry cleaning system, comprising a washer having an inlet and an outlet, a reversible flow filter having inlet means, a filter discharge pipe therein and hollow filter plates mounted on said filter discharge pipe, a circulating pump, three conduits, one of said conduits comprising a filter inlet conduit having one end thereof connected to the filter inlet means and having a filter inlet valve therein, and the other end thereof connected to the filter discharge pipe and having a filter backwash inlet valve therein, and pipe means connecting said pump to said filter inlet conduit intermediate said valves, the second of said conduits comprising a filter discharge conduit having one end connected to the filter inlet means and having a filter discharge valve therein and its other end connected to the filter discharge pipe and having a filter backwash valve therein, the third of said conduits comprising a washer conduit having one end thereof connected to the washer inlet and having a washer inlet valve therein and its other end connected to the washer outlet and having a washer outlet valve therein and having a bypass valve intermediate said inlet and outlet valves, pipe means connecting said filter discharge conduit between said valves to said washer conduit intermediate said inlet and bypass valves, and pipe means connecting said pump to said washer conduit intermediate said bypass and outlet valves, levers including handles pivotably mounted on said filter inlet and filter outlet conduits intermediate said valves and pivotally connected to the respective valves to simultaneously actuate the valves in such manner that one valve in each conduit is open while the other valve is closed and vice versa, said levers having the handles thereof so closely spaced to each other that each may be grasped by a hand of a single operator, levers pivotably mounted on said washer conduit intermediate said valves having their inner ends loosely pivotally joined together over said bypass valve to form a toggle, pivotally connected to the respective valves to simultaneously actuate said washer inlet and outlet valves and said bypass valve in such manner that when the washer inlet and outlet valves are open the bypass valve is closed, and vice versa, one of said levers having a handle, and interference means connected to said washer

conduit bypass toggle to move from a position locking said filter inlet and outlet conduit valves in inlet flow position when the washer is connected in said system to a position permitting reverse movements of said filter inlet and outlet levers to backwash the filter only when the washer is bypassed.

5. A closed dry cleaning system, comprising a washer having an inlet and an outlet, a reversible flow filter having inlet means, a filter discharge pipe therein and hollow filter plates mounted on said filter discharge pipe, a circulating pump, two conduits, one of said conduits comprising a filter inlet conduit having one end thereof connected to the filter inlet means and having a filter inlet valve therein and the other end thereof connected to the filter discharge pipe and having a filter backwash inlet valve therein, and pipe means connecting said pump to said filter inlet conduit intermediate said valves, the second of said conduits comprising a filter discharge conduit having one end connected to the filter inlet means and having a filter discharge valve therein and its other end connected to the filter discharge pipe and having a filter backwash valve therein, pipe means connecting the portion of said filter discharge conduit between said valves to said pump, and levers including handles pivotably mounted on said filter inlet and filter outlet conduits intermediate said valves and pivotally connected to the respective valves to simultaneously actuate the valves in such manner that one valve in each conduit is open while the other valve is closed and vice versa, said levers having the handles thereof so closely spaced to each other that each may be grasped by a hand of a single operator.

6. A closed dry cleaning system, comprising a washer having an inlet and an outlet, a filter having inlet means, a filter discharge pipe therein and hollow filter plates mounted on said filter discharge pipe, a circulating pump, a washer conduit having one end thereof connected to the washer inlet and having a washer inlet valve therein and its other end connected to the washer outlet and having a washer outlet valve therein and having a bypass valve intermediate said inlet and outlet valves, pipe means connecting said pump to said filter inlet means, pipe means connecting said filter discharge pipe to said washer conduit intermediate said inlet and bypass valves, and pipe means connecting said pump to said washer conduit intermediate said bypass and outlet valves, and levers pivotally mounted on said washer conduit intermediate said valves having their inner ends loosely pivotally joined together over said bypass valve to form a toggle, pivotally connected to the respective valves to simultaneously actuate said washer inlet and outlet valves and said bypass valve in such manner that when the washer inlet and outlet valves are open the bypass valve is closed, and vice versa, one of said levers having a handle.

NICHOLAS MONSARRAT.