May 14, 1963 J. D. ROBBINS ETAL 3,089,325

DRY CLEANING SYSTEM

Filed Dec. 10, 1959 3 Sheets-Sheet 1

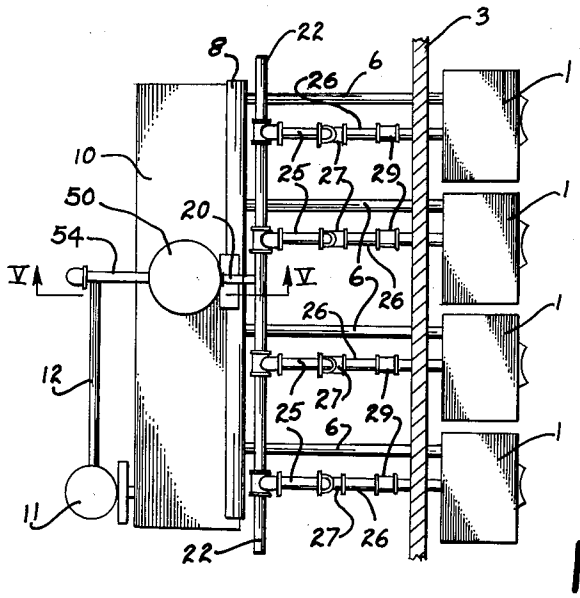


FIG. 1

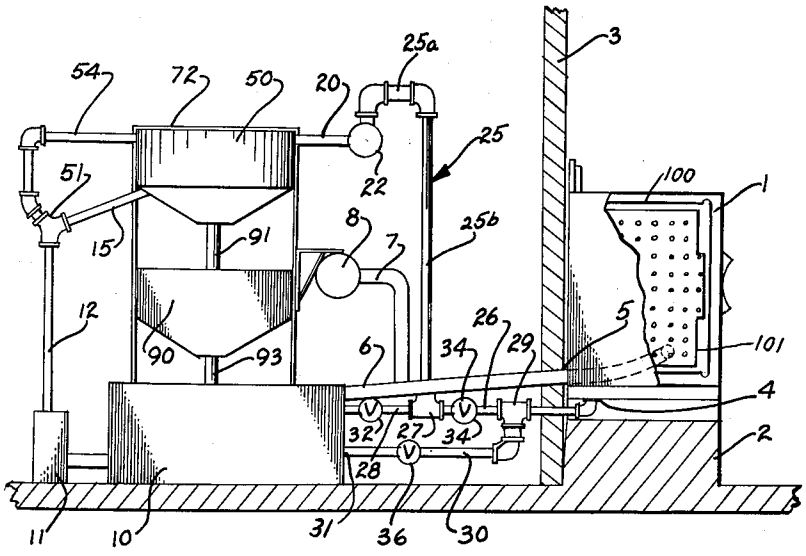


FIG. 2

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DRY CLEANING SYSTEM

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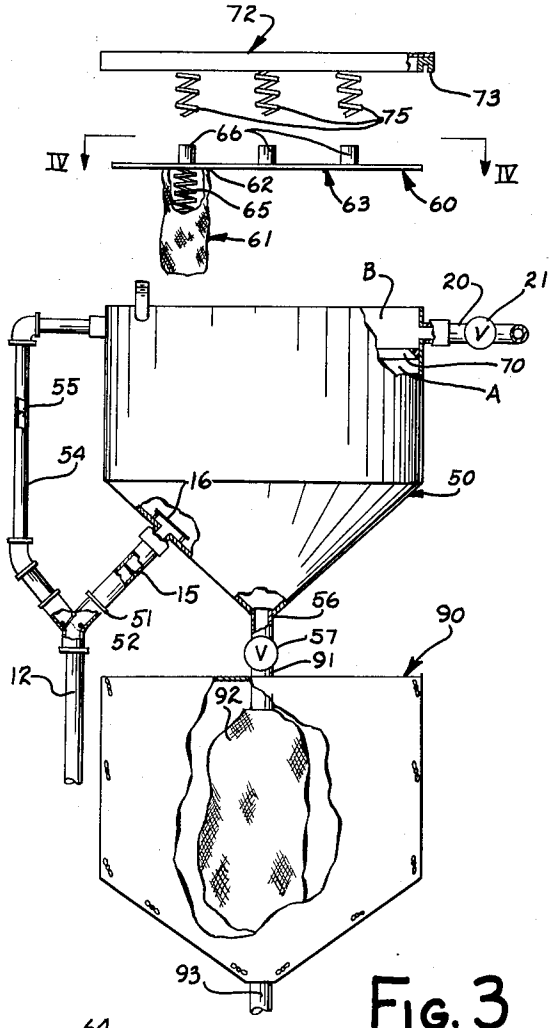


FIG. 3

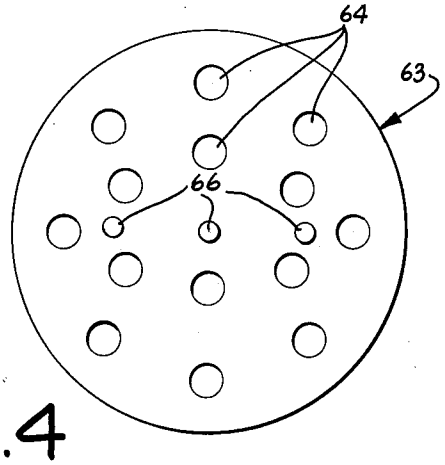


FIG. 4

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DRY CLEANING SYSTEM

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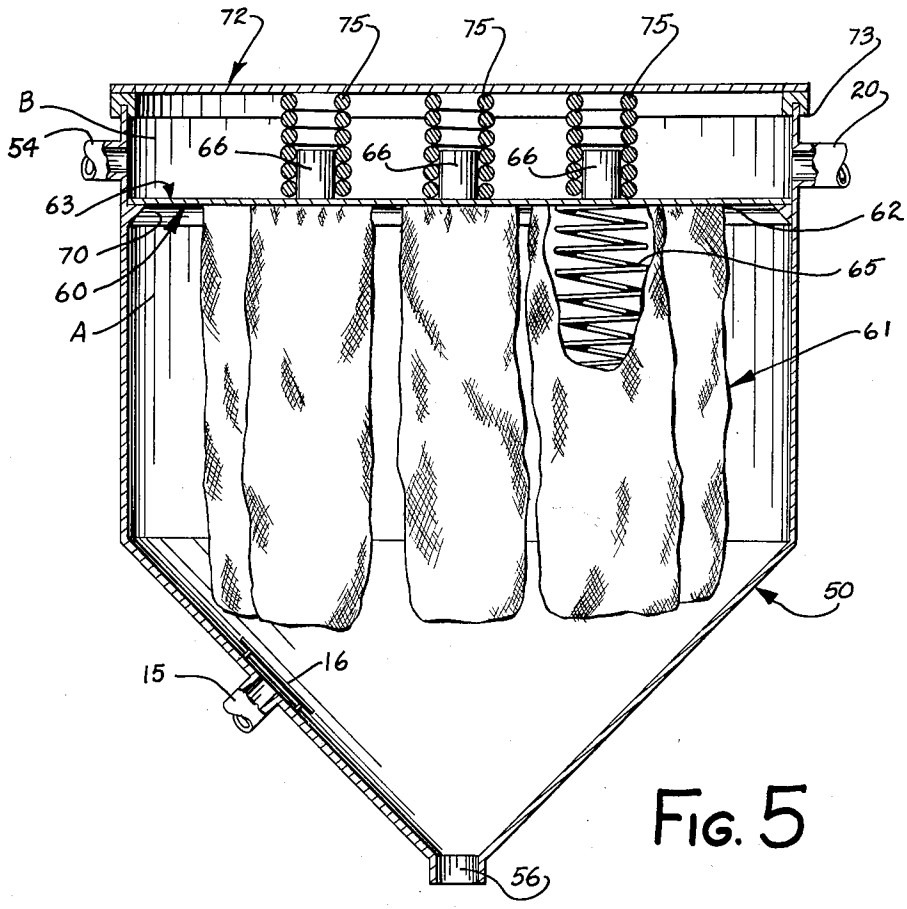


FIG. 5

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3,089,325

DRY CLEANING SYSTEM

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Filed Dec. 10, 1959, Ser. No. 858,765
6 Claims. (Cl. 68—18)

This invention relates to a multiple-unit dry cleaning system, and also to a dry cleaning filtering system. More particularly this invention relates to a multiple-unit dry cleaning system which is especially adapted for use in establishments utilizing coin operated machines used by the public.

This application is a continuation-in-part of our co-pending application entitled "Home Dry Cleaner," Serial No. 670,093, filed July 5, 1957, now abandoned. In that application, a home dry cleaning unit which is completely automatic and cleans garments as well as any traditional dry cleaning establishment was disclosed. It was pointed out that a satisfactory home dry cleaning unit had never been designed. The need for such a unit has existed for some time because the cost of dry cleaning has skyrocketed causing it to become a luxury rather than a necessity. The high cost of professional dry cleaning has caused many families to go without dry cleaning when needed. Garments are worn too long between cleanings, making it very difficult to remove spots and soiling which have accumulated through time.

The present invention discloses a system whereby clothes may be dry cleaned in a coin operated machine much the same as clothes are washed in coin operated machines in Laundromats presently in existence. The number of dry cleaning units used is limited only by the amount of solvent flow available and the amount of solvent available is controlled by the size of the filtration system. Such a system for facilitating the dry cleaning of clothes in a coin operated machine saves the cost of professional services and handling, thus measurably reducing costs. Further, it allows an individual to have clothes dry cleaned at precisely the time dry cleaning is desired, there being no wait for professional service and handling. This system is especially well adapted to be put in use and operated in conjunction with units presently installed in existing Laundromats. The range of services thus offered by such an establishment becomes very broad, as an individual can both launder and dry clean his clothes at the same establishment. Further, when utilizing our washer-dry cleaner unit disclosed in co-pending application Ser. No. 808,083 entitled Combination Laundry and Dry Cleaner Apparatus, filed April 22, 1959, issuing on April 19, 1960, as U.S. Patent No. 2,932,961, the clothes can be washed and dry cleaned in the same coin operated machine. Only slight modifications are needed on conventional washers or washer-dryers presently in these establishments when utilizing the system disclosed in this application.

By using an existing washer-dryer combination, the cost of the investment is reduced over the commercial machines, the cost comparison being at least fifty percent (50%) less than existing machines. It is not necessary to invest in a complete filtration system for each washer, as the main unit will service any predetermined number of washers. If an investor starts out with a four (4) unit installation, it is very simple to add additional washers as business warrants.

The advantages apply not only to customer and operator but also to the appliance manufacturers, plumbers, electricians, etc., by the increased need for these trades in installation and manufacturing.

This invention also discloses a new and novel self-cleaning filtering system which is well adapted to be used in conjunction with the dry cleaning system disclosed in this application. In the past, filtering systems have been such that they must be frequently cleaned, requiring time and effort consumed in removing and cleaning or replacing the solvent filters. The filtering system to be described in this application may be cleaned by merely reversing the direction of solvent flow within the system after certain valve means have been manipulated. No filtering system known heretofore has been so effective, yet requiring so little maintenance in keeping the filter clear.

It is therefore an object of this invention to provide a multi-unit dry cleaning system of the type described, the system especially being well adapted to be used in establishments having self-operated coin receiving machines. In a narrower aspect of this invention the system facilitates the selective use of a unit as a washer or dry cleaner.

Another object of this invention is to provide a dry cleaning filtering system of the type described, the filtering system being self-cleaning and requiring a minimum of time and effort in keeping the filter clear.

Other objects of this invention will become obvious to those skilled in the art of washing and dry cleaning upon reading the following specification in conjunction with the accompanying drawings, wherein:

FIG. 1 is a plan view of the combination washing and dry cleaning system comprising this invention;

FIG. 2 is a side elevational view of the apparatus shown in FIG. 1;

FIG. 3 is an enlarged, exploded view of the filtering system shown in FIG. 2, certain parts thereof being broken away to better show the parts of the invention; and

FIG. 4 is a cross sectional view taken along the plane IV—IV of FIG. 3;

FIG. 5 is a cross sectional view of the filter tank taken along the plane V—V of FIG. 1.

Briefly, this invention relates to a multi-unit dry cleaning system which includes a battery of cleaning units. Each unit has a cleaning tank for containing a fluid dry cleaning medium, means for agitating clothes in the fluid medium in the cleaning tank, an inlet means for flowing a fluid medium into the cleaning tank and an outlet means for discharging a fluid medium therefrom. A single dry cleaning solvent storage tank or a storage tank for each unit is provided, the storage tank or tanks each having an inlet means. A filter is communicably connected with the solvent tank or tanks, a supply conduit leading from the filter. A pump means pumps solvent from the solvent tank through the filter and into the supply conduit. A manifold is connected to this supply conduit. Coupling means connect the manifold to the inlet means of the cleaning units and coupling means connect the inlet means of the solvent tank or tanks to the outlet means of the cleaning unit. Thus, solvent may be pumped from the storage tank or tanks through the filter, through the supply conduit and into the manifold from where it then flows into any one of the cleaning units wherein the clothes may be agitated in the solvent. When sufficiently agitated, the solvent flows from the cleaning unit and back into the solvent storage tank or tanks. Within the narrower aspects of this invention the same cleaning unit may be used for the conventional washing of clothes, the solvent not being involved in this case. Therefore, each individual coin operated unit may be selectively operated as a dry cleaning unit or a washing machine.

The dry cleaning filtering system disclosed in this invention includes a dry cleaning solvent storage tank

means and a filter tank communicating therewith. A filter means divides the filter tank in two compartments. A means is provided for circulating solvent from the storage tank into either of the compartments of the filter tank. A sludge tank is communicably connected between one of these compartments and the solvent storage tank, sludge receiving means provided in the sludge tank. A valve means selectively directs solvent to either of the compartments of the filter tank. In one position of this valve filter aid and waste material collects on the filter means as solvent passes from the one compartment to the other. In the second position of this valve this filter aid and waste material collected on the filter element is flushed as the flow of the solvent is reversed.

The battery of cleaning units utilized in the system comprising this invention are of the same general type shown and described in our co-pending application, mentioned hereinbefore, of which this application is a continuation-in-part. It is believed that units of this type are shown and described in sufficient detail in that application so that further description thereof would be repetitious. Basically, these units are of a type having a cleaning tank for containing a fluid dry cleaning medium, a means for agitating clothes in the fluid medium in the cleaning tank, an inlet means for flowing a fluid medium into the cleaning tank and an outlet means for discharging a fluid medium therefrom. In a more limited aspect, this inlet and outlet means is arranged to provide an overflow system whereby the fluid medium flows into the cleaning tank through the inlet means and at a predetermined level in the cleaning tank discharges therefrom through the outlet means. In a still more limited aspect, the unit may be the washer-dry-cleaner machine disclosed in our patent application Serial No. 808,083.

Referring more specifically to the drawings, each reference numeral 1 designates an individual unit of the type having a tank 100 in which is located a rotatable, perforated drum or basket 101 (FIG. 2). The reference numeral 10 designates a dry cleaning solvent storage means which is either a single tank or a plurality of tanks, one for each machine, which all communicate together. Communicating with the solvent tank 10 is the filter tank 50, the particular structure of which will be described hereinafter in more detail.

The units 1 are positioned upon the raised platform 2 so that gravity flow is utilized in the system. The wall 3 separates the units 1 from the remaining parts of the system, thereby making the establishment neat in appearance and allows the system to be serviced out of view of the customers. This battery coin operated installation allows the piping and all mechanical equipment, filtration system, pumps, etc., to be placed in back of either a permanent or pre-fabricated partition. The front of the partition exposes only the neat dry cleaner and lends beauty to the coin operated installation. Other cleaning installations are huge and bunglesome, requiring large cabinets to cover all piping and mechanical means. All maintenance in these cases must be performed in view of all customers, with the removal of accumulated dirt very unattractive and detrimental to store cleanliness. This is not so in our installation as all cleaning-up, maintenance, etc., is done back of the units in the utility room. This type installation also allows variable installation layouts. The dry cleaners may be placed on a main floor with piping and filtration system in a basement, cleaners in front of a store while filtration system is in back. Installations are possible, even around corners. This, in itself, makes it more readily applicable to use without the revamping of the building, as is necessary with most large units. This equipment will pass through a standard commercial door easily for assembly on premises. Other units require moving walls or door casings to allow entrance.

Each unit 1 is provided with an inlet means and an outlet means, this being the common opening 4 in the bottom of each unit 1 in the embodiment shown in the drawing. In the embodiment shown, an overflow outlet means 5 is provided at the back of each unit 1, the overflow conduit 6 being connected thereto. Exhaust means 7 is connected between each unit 1 and the vent 8 which carries fumes away from the system.

The solvent tank means 10 is of a size such that it stores and handles an amount of dry cleaning solvent sufficient to allow all of the units in the system to dry-clean clothes at the same time. The tank means could be comprised of a plurality of tanks, one for each unit, all communicating together. Connected to the solvent tank 10 is the means 11 for circulating solvent out of the tank and through the system. The pumping means 11 shown, pumps or circulates the solvent through the pipe 12 and into a first inlet conduit 15 and into the filter tank 50 where the solvent is filtered. The solvent leaves the filter tank 50 by means of a first supply conduit 20, which is connected to a manifold 22. Thus, the pumping means 11 pumps solvent from the storage tank 10, through the filter 50, into the first supply conduit 20 where the solvent enters the manifold 22 where it is maintained under pressure for supplying solvent to each of the individual units 1.

A plurality of second supply conduits 25, including the standpipe 25*a*, feed pipe 25*b* and feed conduit 26, are suitably connected to the manifold 22, one such second supply conduit 25 supplying solvent to each of the units 1. Connected to each feed pipe 25*b* by the coupling 27 is a return conduit 28, which communicates with the storage tank 10, and also a feed conduit 26 connected with the inlet-outlet opening 4 in a unit 1. Connected to each feed conduit 26 by the couplings 29 are the drainage conduits 30. The overflow conduits 6, described hereinbefore, communicate with the storage tank 10, each overflow conduit sloping downwardly towards the storage tank 10.

Positioned in the return conduits 28 between the storage tank 10 and the couplings 27 are the solenoid actuated valves 32 which operate selectively to direct solvent either back into the storage tank 10 or toward the unit 1. Positioned in each feed conduit 26 between the couplings 27 and 29 are solenoid actuated valves 34 which operate selectively to allow solvent to enter the unit 1 or prevent such entrance. Positioned in each drain conduit 30 between the inlet means 31 of the storage tank 10 and the coupling 29 are the solenoid actuated valves 36 which operate selectively to allow solvent to drain back into the storage tank 10 or prevent passage of solvent thereto. The operation of these valves in combination with the structure described hereinbefore will now be set forth in detail.

It has already been stated that each of the units 1 may be adapted to receive coins for operation thereof.

Placing of a coin in any one of the units 1 causes the system to operate as follows:

The pump means 11 constantly pumps the solvent from the storage tank 10 into and through the filter tank 50, into the first supply conduit 20 and the manifold 22. Valves 34 and 36 are normally closed while valve 32 is normally open. Therefore, the solvent travels from the manifold 22 into each second supply conduit 25, into the return conduits 28, through the valves 32 and back into the storage tank 10. Thus, the solvent is constantly filtered and maintained in a usable condition. Further, the filter aid in the filter unit is maintained in filtering condition.

When a coin is placed into a unit 1, the valve 32 in association with the particular unit selected is closed and the valve 34 is opened, the valve 36 remaining closed. Thus, solvent is directed from the second supply conduit 25 through the opening 4 of the unit 1 and into the unit itself. Solvent continues to flow into the cleaning tank of the unit until at a predetermined level it is discharged through the overflow outlet 5 and into the overflow con-

duit 6 which communicates with the storage tank 10. The garments to be cleaned are agitated in the solvent in the cleaning tank, a continuous supply of solvent entering the cleaning tank of the unit 1 through the opening 4, the solvent above a predetermined level being discharged back into the solvent storage tank 10 by gravity flow. After a predetermined length of time, valve 34 is again closed and valve 32 is opened, thereby directing the solvent in the second supply conduit 25 through the return conduit 28 and back into the storage tank 10. Valve 36 is simultaneously opened, thereby allowing all of the solvent in the unit 1 to drain out through the opening 4, into the drain conduit 30 and into the solvent storage tank 10 by gravity flow. It will thus be noted that clothes have been dry cleaned in a coin operated machine.

Turning to FIGS. 3 and 5 the filtering system comprising a part of this invention will now be described in detail. This filtering system includes the filter tank 50 and the sludge tank 90. Positioned within the filter tank 50 is the filter means 60 which divides the filter tank 50 into two compartments designated as compartment A and compartment B. As stated previously, the filter tank 50 communicates with the solvent storage tank 10, the pumping means 11 pumping solvent from the latter to the former. The solvent may be directed either into compartment A or compartment B. This is accomplished by the Y-shaped coupling 51 secured to the pipe 12, having a diverter valve 52 positioned therein. The diverter valve 52 selectively directs solvent into either the first inlet means 15 (and then into compartment A) or into a second inlet means 54 (and then into compartment B). A check valve 55 is positioned in the second inlet means 54 allowing solvent to only enter into compartment B. A deflector plate 16 is positioned at the end of the first inlet conduit 15, thereby allowing passage of solvent into compartment A only through this conduit.

The first supply conduit 20 communicates with compartment B of the filter tank 50, the purpose and function of the first supply conduit 20 having been already described hereinbefore. Positioned within the first supply conduit 20 is the valve 21, selectively operable to allow solvent to pass into the supply conduit or to close the conduit off.

Positioned in the bottom of the filter tank 50 is the drain outlet 56. The drain outlet 56 includes a valve 57 which selectively operates to open or close the drain outlet. The drain outlet 56 communicates with the sludge tank 90 through the connecting conduit 91. Secured at the end of the conduit 91 is a sludge receiving means 92 which preferably comprises an enlarged fabric filter bag of a porosity such that sludge is held therein and the solvent is not. The conduit 93 extends from the sludge tank 90 and communicates with the storage tank 10. The sludge tank 90 is preferably of a type having easy access thereinto for periodic removal and replacement of the large sludge receiving bag 92.

The filter means 60 includes a plurality of elongated, tube shaped filter bags 61 (one of which is shown in detail in FIG. 5). The filter bags 61 are secured at their open ends 62 to the plate member 63 which is shaped to divide the filter tank 50 into compartments A and B. A plan view of the member 63 is shown in FIG. 4, clearly showing the plurality of openings 64 spaced throughout its area. Each of these openings 64 communicates with an open end 62 of a filter bag 61. Positioned within each filter bag 61 is a coil spring 65 adapted to keep the filter bag 61 extended and prevent its collapsing. Projections 66 extend from the top of the dividing member 63, the purpose of which will be explained hereinafter.

A gasket 70 is positioned within the filter tank 50. The dividing member 63 sealingly engages and rests upon the gasket 70. The cover 72 of the filter tank 50 includes the means 73 for a sealed engagement with the walls of the filter tank 50. Coil springs 75 depend from the cover 72, the coil springs positioned to slidably envelop the projections 66 of the divider member 63. Thus, the divider member 66 is held against the gasket 70 under pressure by means of the springs 75 which are compressed when the cover 72 is placed on filter tank 50.

The filter means 60 just described completely separates the filter tank 50 into the compartments A and B, the only possible passage from one compartment to the other being through the filter bags 61. Thus, all solvent passing from one compartment to the other must pass through the filter bags 61.

The filtering system just described operates as follows (FIGS. 3, 4, and 5): Pumping means 11 pumps solvent from the storage tank 10 into the pipe 12 and to the Y-shaped coupling 51. The diverter valve 52 normally directs solvent into the first inlet conduit 15, by the deflector plate 16 and into compartment A. The valve 57 normally closes the drain outlet 56 and the valve 21 in the first supply conduit 20 is normally opened. Thus, the solvent flows from compartment A into compartment B through the filter bags 61 of the filter means 60, material filtered from the solvent being gathered on the outside of the filter bags 61 in compartment A. The check valve 55 in the second inlet conduit 54 prevents solvent from entering this conduit and consequently the solvent flows from compartment B into the first supply conduit 20 through the open valve 21 and into the manifold 22 as described hereinbefore.

It should be noted that the filter bags are coated with a filter aid, such as diatomaceous earth, and an absorption agent such as an activated carbon. The diatomaceous earth blocks passage of larger particles of material incapable of passing through the bags and thereby acts as a filtering aid. The activated carbon is primarily an absorption agent which absorbs the fatty oils, dyes and other impurities. The coating of a filter aid and absorption agent on the filter bags requires that they be immersed in dry cleaning fluid at all times in order to prevent destruction of the filtering qualities of the coated bags caused by dehydration. Consequently, solvent is passing through the filter tank 50 at all times.

When it is desired to have the filter bags 61 cleaned, they are flushed out as follows: The diverter valve is operated to direct fluid into the second inlet conduit 54 rather than the first inlet conduit 15. At the same time, valve 21 in the first supply conduit 20 is closed and valve 57 in the drain outlet 56 in compartment A is opened. Thus, solvent flows through the check valve 55 and into compartment B. Since valve 21 is closed, the solvent flows in a reverse direction from compartment B to compartment A through the filter bags 61 of filter means 60. This reverse flow flushes all sludge gathered on these filter bags completely away and into compartment A. Further, the filter aid is rearranged for future use. The deflector plate 16 prevents solvent from flowing into the first inlet conduit 15, thereby forcing all of the fluid through the drain outlet 56, the valve 57 being open. The solvent and the material flushed from the filter bags 61 then passes through the connecting conduit 91 into the enlarged filter bag 92 located within the sludge tank 90. All of the material flushed from filter bags 61 collects in the sludge receiving bag 92, the solvent passing through the bag 92 and back into the solvent storage tank 10 by means of the conduit 93. The bags 61 being thus completely cleaned, the diverter valve 52, the drain outlet valve 57 and the first supply conduit valve 21 are returned to their normal positions so that the system may operate as described previously. By these simple steps, the filter means 60 has been cleaned and is prepared for efficient use once again. After a number of such flushing and cleaning operations, the enlarged filter bag 92 may be removed from the sludge tank 90 and replaced at any time when the system is in normal operation. Such a filtering system saves a great deal of time and effort in maintaining the filtering means in operable condition.

While only certain embodiments of this invention have been shown and described, it is possible that certain other embodiments may be utilized without departing from the spirit and scope of this invention. These other embodiments are all to be included within the spirit and scope of this invention unless the accompanying claims expressly state otherwise.

We claim:

1. A multi-unit dry cleaning system, comprising: a plurality of cleaning units, each unit having a cleaning tank for containing a fluid dry-cleaning medium, means for agitating clothes in the fluid medium in said tank, an inlet means for flowing a fluid medium into said tank, an outlet means for discharging a fluid medium from said tank; a dry cleaning solvent storage tank means with an inlet means; a filter communicating with said solvent tank means; a first supply conduit leading from said filter; means for circulating solvent from said solvent tank means through said filter and said first supply conduit; a manifold connected to said first supply conduit; a plurality of second supply conduits connected to said manifold; one of said second supply conduits connected to said inlet means of each of said cleaning units; a return conduit connected to each of said second supply conduits and joining them to said solvent tank means; a valve means positioned in said return conduits for selectively directing solvent from said second supply conduits to said solvent tank means or said inlet means of said cleaning units; and coupling means for connecting said inlet means of said solvent tank means to said outlet means of said cleaning units whereby each of said cleaning units may selectively operate as a dry cleaning unit.

2. A multi-unit dry cleaning system, comprising: a plurality of cleaning units, each unit having a cleaning tank for containing a fluid dry-cleaning medium, means for agitating clothes in the fluid medium in said tank, an inlet means for flowing a fluid medium into said tank, an outlet means for discharging a fluid medium from said tank; a dry cleaning solvent storage tank means with an inlet means; a filter communicating with said solvent tank means; a first supply conduit leading from said filter; means for circulating solvent from said solvent tank means through said filter and said first supply conduit; a manifold connected to said first supply conduit; a plurality of second supply conduits connected to said manifold; one of said second supply conduits connected to said inlet means of each of said cleaning units; a return conduit connected to each of said second supply conduits and joining them to said solvent tank means; a first valve means positioned in said return conduits for selectively directing solvent from said second supply conduits to said solvent tank means or said inlet means of said cleaning units; a second valve means positioned in each of said second supply conduits between said inlet means of said cleaning unit and the point where said return conduits are connected thereto for selectively directing solvent to said return conduits or said inlet means of said cleaning units; coupling means for connecting said inlet means of said solvent tank means to said outlet means of said cleaning units; third valve means for selectively preventing solvent from being discharged through said outlet means of said cleaning units whereby each of said cleaning units may selectively operate as a dry cleaning unit.

3. A multi-unit dry cleaning system, comprising: a plurality of cleaning units, each unit having a cleaning tank for containing a fluid dry-cleaning medium, means for agitating clothes in the fluid medium in said cleaning tank, an inlet means for flowing a fluid medium into said cleaning tank, an outlet means for discharging a fluid medium from said cleaning tank, said inlet and outlet means being arranged to provide an overflow system whereby the fluid medium flows into said cleaning tank through said inlet means and at a predetermined level in said cleaning tank discharges from said cleaning tank through said outlet means; a dry cleaning solvent storage tank means with an inlet means; a filter communicating with said solvent tank means; a first supply conduit leading from said filter; means for circulating solvent from said solvent tank means through said filter and said first supply conduit; a manifold connected to said first supply conduit; a plurality of second supply conduits connected to said manifold; one of said second supply conduits connected to said inlet means of each of said cleaning units; a return conduit connected to each of said second supply conduits and joining them to said solvent tank means; a valve means positioned in said return conduits for selectively directing solvent from said second supply conduits to said solvent tank means or said inlet means of said cleaning units; and coupling means for connecting said inlet means of said solvent tank means to said outlet means of said cleaning units whereby each of said cleaning units may selectively operate as a dry cleaning unit with a continuous flow of solvent circulating through said cleaning tank.

4. A multi-unit dry cleaning system, comprising: a plurality of cleaning units, each unit having a cleaning tank for containing a fluid dry-cleaning medium, means for agitating clothes in the fluid medium in said cleaning tank, an inlet means for flowing a fluid medium into said cleaning tank, an outlet means for discharging a fluid medium from said cleaning tank, said inlet and outlet means being arranged to provide an overflow system whereby the fluid medium flows into said cleaning tank through said inlet means and at a predetermined level in said cleaning tank discharges from said cleaning tank through said outlet means; a dry cleaning solvent storage tank means with an inlet means; a filter communicating with said solvent tank means; a first supply conduit leading from said filter; means for circulating solvent from said solvent tank means through said filter and said first supply conduit; a manifold connected to said first supply conduit; a plurality of second supply conduits connected to said manifold; one of said second supply conduits connected to said inlet means of each of said cleaning units; a return conduit connected to each of said second supply conduits and joining them to said solvent tank means; a first valve means positioned in said return conduits for selectively directing solvent from said second supply conduits to said solvent tank means or said inlet means of said cleaning units; a second valve means positioned in each of said second supply conduits between said inlet means of said cleaning unit and the point where said return conduits are connected thereto for selectively directing solvent to said return conduits or said inlet means of said cleaning units; coupling means for connecting said inlet means of said solvent tank means to said outlet means of said cleaning units; third valve means for selectively preventing solvent from being discharged through said outlet means of said cleaning units whereby each of said cleaning units may selectively operate as a dry cleaning unit with a continuous flow of solvent circulating through said cleaning tank.

5. A multi-unit dry cleaning system, comprising: a plurality of cleaning units, each unit having a cleaning tank for containing a fluid dry-cleaning medium, means for agitating clothes in the fluid medium in said cleaning tank, an inlet means for flowing a fluid medium into said cleaning tank, an outlet means for discharging a fluid medium from said cleaning tank, said inlet and outlet means being arranged to provide an overflow system whereby the fluid medium flows into said cleaning tank through said inlet means and at a predetermined level in said cleaning tank discharges therefrom; a dry cleaning solvent storage tank means with an inlet means; a filter communicating with said solvent tank means; a first supply conduit leading from said filter; means for circulating solvent from said solvent tank means through said filter and said first supply conduit; a manifold connected to said first supply conduit; a plurality of second supply conduits connected to said manifold; one of said sec-

ond supply conduits connected to said inlet means of each of said cleaning units; a return conduit connected to each of said second supply conduits and joining them to said solvent tank means; a first valve means positioned in said return conduits for selectively directing solvent from said second supply conduits to said solvent tank means or said inlet means of said cleaning units; a second valve means positioned in each of said second supply conduits between said inlet means of said cleaning unit and the point where said return conduits are connected thereto for selectively directing solvent to said return conduits or said inlet means of said cleaning units; overflow conduits connecting each of said cleaning units with said solvent tank means; coupling means for connecting said inlet means of said solvent tank means to said outlet means of said cleaning units; third valve means for selectively preventing solvent from being discharged through said outlet means of said cleaning units whereby each of said cleaning units may selectively operate as a dry cleaning unit with a continuous flow of solvent circulating through said cleaning tank.

6. A multi-unit dry cleaning system, comprising: a plurality of cleaning units, each unit having a cleaning tank for containing a fluid dry-cleaning medium, means for agitating clothes in the fluid medium in said tank, an inlet means for flowing a fluid medium into said tank, an overflow outlet means for discharging a fluid medium from said tank; a dry cleaning solvent storage tank means with an inlet means; a filter communicating with said solvent tank means; a first supply conduit leading from said filter; a manifold connected to said first supply conduit; means for circulating solvent from said solvent tank means through said filter, said first supply conduit and into said manifold; a plurality of second supply conduits connected to said manifold; one of said second supply conduits connected to said inlet means of each of said cleaning units; means for connecting said inlet means of said solvent tank means to said outlet means of said cleaning units; a solenoid actuated valve means positioned with respect to each of said second supply conduits for selectively directing solvent from said second supply conduits to said inlet means of said cleaning units whereby each of said cleaning units may be selectively operated as a dry cleaning unit upon opening of said solenoid actuated valve means and whereby during said operation of each dry cleaning unit the fluid passes continuously through said cleaning tank and out of said overflow outlet means to said solvent tank means, said filter and said manifold and back to said cleaning tank; a return conduit communicating with said manifold and said solvent tank means for returning said solvent from said manifold to said solvent tank means thereby providing a continuous flow of fluid through said solvent tank means, said filter and manifold regardless of whether any of said dry cleaning units are being operated; and a drainage conduit connected to said inlet means of said cleaning tank and having a solenoid actuated drain valve for selectively preventing passage of fluid therethrough to said solvent tank during the continuous flow of solvent through said cleaning tank.

References Cited in the file of this patent

UNITED STATES PATENTS

1,698,778	Clark	Jan. 15, 1929
1,871,663	Carroll	Aug. 16, 1932
1,937,093	Newell	Nov. 28, 1933
2,307,254	Bassett	Jan. 5, 1943
2,630,694	Creswick	Mar. 10, 1953
2,656,696	McDonald	Oct. 27, 1953
2,768,869	Creswick	Oct. 30, 1956
2,848,112	Hass	Aug. 19, 1958
2,886,178	Davis	May 12, 1959
2,928,268	Hetzer	Mar. 15, 1960