Jan. 25, 1966 J. R. YOUNG 3,231,324

DRY CLEANING METHOD

Filed Feb. 12, 1962

FIG-1

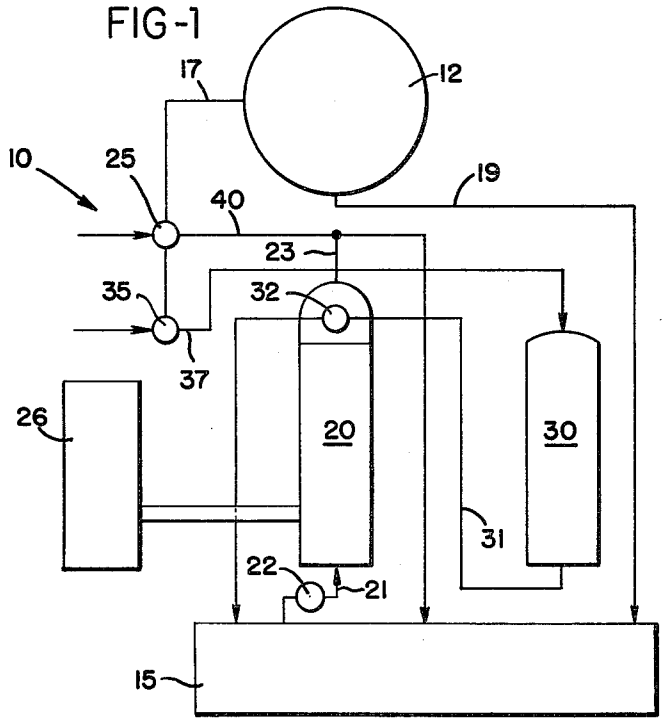


FIG-2

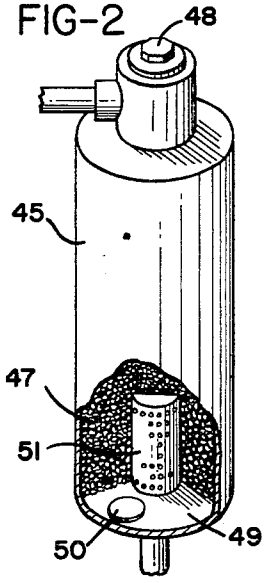


FIG-3

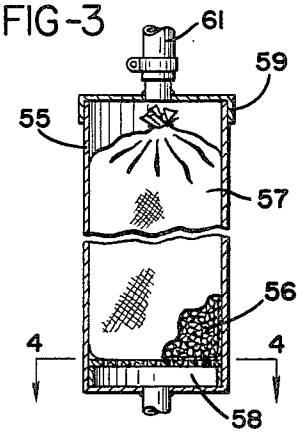


FIG-4

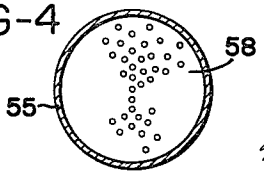
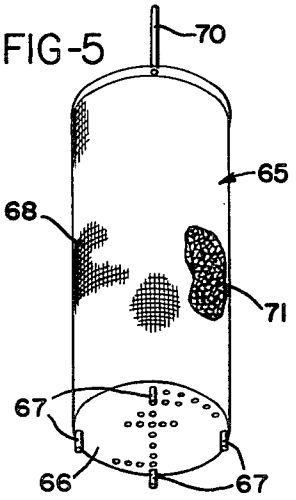


FIG-5



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DRY CLEANING METHOD

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9 Claims. (Cl. 8—142)

This application is a continuation-in-part of U.S. application S.N. 92,915, filed March 3, 1961, now abandoned.

This invention relates to dry cleaning apparatus and more particularly to a coin operated dry cleaning apparatus incorporating an improved assembly for maintaining the discoloration of the dry cleaning solution or solvent to a minimum.

Coin operated dry cleaning equipment in contrast to the larger commercial units utilized in dry cleaning plants generally consists of a dry cleaning tub or closed receptacle and a supply of dry cleaning solvent which through appropriate conduits and connections is introduced into the drum. The dry cleaning drum is rotated with a suitable motor and the entire assembly is provided with a suitable timer control for controlling the sequence of the cleaning operation. Unlike conventional coin-operated washing equipment utilizing water and soap or detergents, the cleaning solvent utilized in dry cleaning is reused for a given number of cleaning operations and provision is generally made to remove discoloring or odor bearing ingredients from the dry cleaning solvent.

In dry cleaning operations generally, discoloration of the dry cleaning solvent is a result of bleeding of the dye from some of the fabrics being cleaned. Such discoloration is objectionable since it may cause a change in color or staining of the relatively light colored fabrics which may absorb some of the dark dye present in the cleaning solution. Moreover, discoloration of the solvent may be caused by solvated dirt which is removed from the fabrics, and this source of discoloration in addition to that produced by solvating or leaching some of the dye may cause the cleaning solution to become quite dark.

Additionally, the articles being cleaned may contain odor bearing solids or semi-solids such as fatty acids and the like which are soluble in the cleaning solvent. Such odor bearing material, as it dissolves in the solvent, tends to discolor it to some extent, and may impart noticeable odor thereto which may then in turn deposit and remain on some of the articles.

The small dry cleaning units, as for example coin operated units generally utilize between about 20 and 55 gallons of dry cleaning solvent which is introduced into the cleaning drum in accordance with a predetermined sequence as controlled by the timer. While the cleaning operation with the smaller units generally involves separation of the articles to be cleaned in accordance with their color, occasionally a garment is introduced into the dry cleaning drum and "bleeds" because of the nature of the dye utilized therein. If this should occur, the dye is carried into the cleaning solvent and carried into a storage tank and may seriously discolor articles being cleaned in a subsequent cleaning operation or cycle.

One method of removing the discoloration attributable to soluble dyes and other objectionable color and odor bearing materials involves intermixing the solvent with a finely divided carbonaceous material such that the discoloring ingredients are absorbed by the relatively fine particles. In such a system, there is dynamic inter-mixture or agitation of the cleaning solution and the finely divided carbon. In coin operated machines, this is generally accomplished by introducing a quantity of relatively fine powdery type carbon into a chamber wherein the

solvent is maintained in contact with the carbon, the latter ultimately being deposited on a filter unit. Normally this operation is performed at the start of one cycle or the end of a cleaning cycle such that the solvent is in relatively clean condition for the forthcoming cleaning operation.

The disadvantage of the clean up operation above described is the fact that the relatively finely divided material is difficult to handle due to its finely divided nature and the tendency of the finely divided material to become colloidally dispersed in the solvent to form a stable dispersion. Once a stable dispersion is formed, it may be difficult to remove the suspended carbon without running the solvent through a filter of some type. Apart from this however, the filter must be cleaned periodically because heavy deposits are formed on the filter which tend to restrict the flow of solvent therethrough. As can be understood, such a system requires considerable maintenance and is generally an untidy operation to carry out.

A primary object of this invention is the provision of an improved dry cleaning apparatus of the coin operated type wherein the dry cleaning solution is maintained in a condition such that the discoloration of the dry cleaning solution is maintained at a relatively low level by a solvent cleaning apparatus containing an agent which is maintained in a static condition during the solvent clean up operation.

Another object of this invention is the provision of an improved coin operated dry cleaning apparatus including an assembly for removing a material amount of the discoloration from the dry cleaning solution, and where the clean up operation of the dry cleaning solution takes place during an operating cycle of the machine whereby all of the dry cleaning solvent is circulated through the solvent clean up assembly such that the discoloration of the solvent is at a minimum for a subsequent dry cleaning operation.

Still another object of the present invention is the provision of an improved color absorption assembly containing a granular cleaning agent which is maintained in static condition during the clean up operation of the dry cleaning solvent thereby preventing contact between the cleaning agent and fabrics or articles to be cleaned which are present in the cleaning apparatus.

A further object of the present invention is the provision of an improved method of removing objectionable discoloration from the dry cleaning solution such that the level of discoloration thereof is maintained at a minimum level for each of a sequence of cleaning operations.

A further object of the present invention is the provision of a granular clean up agent for dry cleaning solvent which maintains the fatty acid content thereof to a relatively low level while removing a considerable amount of the discoloring ingredients therein.

Other objects and advantages of the invention will be apparent from the following description, the accompanying drawing and the appended claims.

In the drawing:

FIG. 1 is a somewhat diagrammatic view of a coin operated dry cleaning apparatus constructed in accordance with the present invention;

FIG. 2 is a view perspective with parts thereof broken away of the color removal assembly constructed in accordance with the present invention;

FIG. 3 is a view partly in section and partly in elevation of another form of the color removal assembly of the present invention;

FIG. 4 is a view taken along the line 4—4 of FIG. 3; and

FIG. 5 is a view of one form of a container for the

color removal agent utilized in accordance with the present invention.

Referring to the drawing, which illustrates a preferred embodiment of the present invention, FIG. 1 shows a cleaning assembly **10** of the coin operated type including a cleaning drum **12** which receives the articles to be cleaned and a storage tank **15** for the dry cleaning solution. Dry cleaning solutions or solvents which may be utilized include perchloroethylene or Stoddard solvent and the like having a detergent present therein in amounts between 0.2% to 4% in addition to about 0.05 to .5% water in order to promote better cleaning. In the case of perchloroethylene, about 2% of a neutral salt of a petroleum sulfonate, such as Petrosol #745, may be utilized as a detergent, while in the case of hydrocarbon solvents about 4% of detergent produces satisfactory results.

The dry cleaning drum **12** is provided with an inlet conduit **17** and an outlet conduit **19** which form means for circulating the dry cleaning solvent into the drum **12** and back to the storage tank **15**. The unit also includes a pump, not shown, for urging the dry cleaning solvent into the drum, and a motor for rotating the drum. A gear assembly of a conventional type may be utilized for varying the speed of the drum as controlled by the timer. Such assemblies are individualy well known and of a conventional type.

A filter assembly **20** is incorporated in the assembly **10** for removing solid material which may have become dispersed in the dry cleaning solvent. Such solid material may include, for example, lint and dirt particles which have not become solvated by the dry cleaning solvent but carried away from the article during the cleaning action taking place in the cleaning drum **12**. Interconnecting the storage tank **15** and the filter **20** is a short conduit **21** including a sight glass **22** such that dry cleaning solvent is pumped into the filter **20** and out through conduit **23** and into conduit **17** as controlled by a solenoid operated valve **25**, to be described more fully hereinbelow.

A supply of diatomaceous earth or other coating material is maintained in the pre-coat unit **26** which is operatively connected to the filter **20** such that during each cycle, either at the beginning or end thereof, a measured quantity of diatomaceous earth is introduced into the filter **20** in order to take out any solid material carried in the solvent. In the normal operation of the cleaner, dry cleaning solvent is urged through conduit **21** into the filter **20** through conduit **23** into line **17** and from there into the dry cleaning drum **12** where it is intermixed with the garments or articles to be cleaned. The drum **12** may be of the tumbler type conventionally used in cleaning assemblies. The solvent is then circulated through conduit **19** back into the storage tank **15**, and thus a closed loop system is utilized for circulating dry cleaning fluid through the cleaning drum during the actual cleaning cycle.

In accordance with the present invention, a color removal device **30** is present in the system and operates to absorb or take out any of the color or odor bearing materials which are present in the dry cleaning solvent. It is preferred that a granular material be utilized in the color removal device **30** and the unit arranged such that the flow of solvent is downward through the granular material. In this way, a good flow rate is maintained through the unit, and dispersion of the granular material is prevented due to the fact that the material preferably has a specific gravity the same as or slightly higher than the solvent. Accordingly, the granular material is maintained in a static condition during its operation as opposed to becoming dispersed in the solvent as may be the case with finely divided carbon material heretofore employed. The solvent leaving the color removal device through conduit **31** is circulated back into the storage tank **15**, and a sight glass **32** may be utilized in order to enable visual observation of the solvent color.

Due to the fact that the coin operated machines of the type above described generally utilize a relatively small amount of dry cleaning solvent, means are provided to circulate all the solvent through the color removal device **30** during a portion of the cleaning cycle. To this end, solenoid **25** and a pressure switch **35** are provided in conduit **37** which interconnects the color removal device and forms a T-connection between conduits **23** and **17**. In normal operation, the pressure switch **35** is closed with solenoid **25** remaining open thereby enabling the solvent to flow through conduit **21** through the filter **20** out conduit **23** through conduit **17** into the drum as previously described. Under the control of a suitable timer, solenoid **25** is closed thereby shutting off flow of solvent through conduit **17** and allowing the solvent to move into conduit **37**. As the pressure in this line increases, the pressure actuated switch **35** is opened allowing fluid to flow through conduit **17** into the top of unit **30** through conduit **31** and into the storage tank. From there, the solvent is pumped through conduit **21** through the filter unit **20** through conduit **23** and back through conduit **37**. In this manner, the entire flow of solvent is through the color removal device **30** for at least a portion of the total cleaning operation. During the sequence in which the solvent is flowing through the color removal device **30**, no solvent is being introduced into the cleaning drum.

As illustrative of the sequence of operations taking place during the cleaning cycle, the following is offered as representative. Subsequent to introduction of the articles into the cleaning drum, about a four minute filter pre-coat operation takes place in which diatomaceous earth or other finely divided filtering material is moved from the pre-coat unit **26** into the filter unit **20**. During this operation, the pump for the solvent has not yet become activated, however, the cleaning drum **12** is tumbling the clothes as a preparatory treatment. Subsequent to the pre-coat operation, a nine minute wash cycle takes place at which time solenoid **25** is opened allowing solvent to flow through the filter **20** from the storage tank and into conduit **23** and from there to conduit **17** and into the drum **12** and back to the tank as previously described. Subsequent to this cycle, the drum **12** goes into a spin operation to remove the solvent from the articles present in the cleaning drum, and at the same time solenoid **25** is closed and pressure switch **35** is opened allowing solvent to flow from the filter unit into the color removal assembly and back into the storage tank. Generally this solvent clean up cycle lasts for between 6 and 29 minutes depending on the capacity of the storage tank, although it is understood that other time sequences could be employed in order to provide suitable solvent clean up. In a unit having a solvent capacity of approximately 23 gallons, it has been found that a 29 minute circulation through the color removal device **30** operates to provide satisfactory results and significant reduction of discoloration of the solvent.

It has found advantageous to utilize an air vent line **40** connected to conduit **23** leading from the filter **20** in order to take the air out of the system thereby increasing the flow rate by decreasing any back pressure which tends to accumulate. While a vent line is desirable, it may be eliminated in instances where accumulation of air pockets present no noticeable restriction in the flow rate of the solvent during operation of the unit.

The color removal assembly **30** preferably includes a cylindrical tank or container **45**, as shown in FIG. 2, fabricated of a liquid impervious material which is chemically inert with respect to the solvent and possesses a sufficient amount of mechanical strength to support the weight of the granular color removal agent **47** and solvent which substantially fills the tank **45**. The color and odor removal agent **47** may be any material capable of removing color and odor from the solvent by ab-

sorption or adsorption, and should be coordinated and correlated as to be unaffected by the solvents employed or any of the components thereof such as detergents and the like. Typical color removal agents which may be employed are magnesium silicate, cellulosic fibers, clays, partially calinated clays, fuller's earth and carbon materials. In the preferred form, the color removal agent is in the form of granules preferably larger than about 60-mesh in size and smaller than 4-mesh, and it is to be noted that commercially available materials normally include a distribution of particles of several sizes and having an average particle size distribution falling within the above range.

Located in the top of the column or tank **45** is a removable bung **48** which facilitates introduction of the granular material into the column. In the base **49** of the column there is provided a removable plug **50** utilized to provide access for withdrawing the spent color adsorption agent. It is a relatively simple matter to recharge the column or introduce a new charge of color removing agent by removing the plug **50** and allowing the granules to come out through the base of the column. The plug is reinserted and tightened and an additional charge is inserted through the removal bung **48** located at the top of the column.

Positioned in the base **49** of the column **45** is a finger **51** in the form of a mesh screen supported by suitable reinforcing members, or a self-supported plate through which the solvent may flow after it has passed through the color removal agent **47** in the tank. The mesh size or the size of the apertures in the plate or finger should be small enough to prevent substantial amounts of the granular material from leaving the tank **45**. The apertures or mesh size should also be sufficiently large so as to allow substantially unobstructed flow. A 40-mesh screen, for example, produces satisfactory results with granular particles having a size distribution from 8 to 30-mesh. The conduit **37** is connected to the top of the column while conduit **31** is connected to the lower end of the column. Since the granular color clarification agent is larger in mesh size than the openings in the finger, little if any of the granular material is carried into the line **31** or intermixed and carried into the system by the solvent. If some of the dust-like residue present in the color removal agent should be carried through, it is circulated into the storage tank **15** and trapped as the solvent is pumped through the filter unit **20**.

It is preferred because of the flow characteristics of the solvent that the flow through the clarification unit **30** be downward so that the color laden solvent will contact a maximum number of granular particles contained in the column. To this end, the column is arranged at 90° with respect to the horizontal, although it is understood that the column may be arranged at 45 or 30° with respect to the horizontal if installation conditions require such an arrangement.

Excellent results have been achieved in removing color and odor bearing materials from the solvent by utilizing granular carbon materials having a surface area between 600 and 1300 square meters per gram, a molasses value or number of 150 to 400 and a CWS hardness or abrasion resistance of 50 to 98. The molasses value and the CWS hardness may be measured as described in the patent to Zabor 2,763,580 issued September 18, 1956.

In a preferred form, the carbon has a surface area of about 950 to 1050 square meters per gram, a molasses value of between 200 and 250 with a CWS hardness of about 80 to 90. It is preferred that a material having a bulk density of between .43 and .50 gram per cc. be utilized since such a material is sufficiently hard to be unaffected by the solvent and particularly to remain non-dispersed or in a static condition as the solvent flows through the column and around the granular material.

Another important feature of the present invention is the fact that the granular material is capable of removing a noticeable portion of the fatty acids which have become dissolved in the solvent. Tests have indicated that the accumulation of fatty acids in the solvent may be reduced and maintained at a level not exceeding about .25% even in those instances in which the efficiency of the granular agent as a color removal medium has been markedly reduced due to the prolonged use thereof. Such removal of the fatty acids is believed possible due to the presense of oxides or silicates of magnesium, calcium, and/or aluminum in granular carbon.

In any event, it is desirable in accordance with the present invention to utilize the sweetener or a fatty acid removal material having an alkalinity range of from pH of 7.4 to a pH of about 9.5 as measured by a pH electrometer using approximately 5 grams of the metal compound in about 50 grams of distilled water. Typical alkaline materials which have been found satisfactory are the oxides, hydrated oxides and silicates of magnesium, calcium, and/or aluminum either individually or mixed with one another. The sweetener material, which is preferably granular in form, may be added and intermixed with the granular carbon material in amounts between 2 and 50% by weight, although it is preferred that 4 to 15% of the sweetener be added such that the color removal characteristics of the resultant composition are maintained at a relatively high level. In this manner, the fatty acid content in the dry cleaning solution may be maintained at a level of about .09% and not exceeding about .25%. A sweetener is utilized having a hardness not less than 1½ as determined by Mohs' scale of mineral hardness and preferably having a particle size from about 4- to 60-mesh. The resultant mixture of sweetener and granular carbon material possesses a bulk density such that it will remain in a static condition during periods of contact with the solvent, and thus, the granular color and odor removal agent will not become dispersed in the solvent

Tests have indicated that by cycling the total flow of solvent through the color removal agent during a portion of the cycle of operation of the machine, a noticeable amount of the objectionable color and odor is withdrawn, and solvent of reduced color and ordor content is returned to the storage tank **15**. The period of circulation of solvent through the odor and color removal agent depends to some extent on the amount of solvent in the system, and it is preferred that the cycle of passage through the column **45** be such that substantially all of the solvent is circulated through the granular color and odor removal agent.

Experience has indicated that in normal use, it is necessary to recharge the column once about every three weeks with about 20 to 25 pounds of a color and odor removal agent of the type above described.

An alternate form of a color removal assembly is seen in FIGS. 3 and 4 wherein a cylindrical tank **55** is provided of material which is liquid impervious and substantially chemically inert with respect to the solvent. The tank or column is preferably fabricated of a material which possesses a sufficient amount of mechanical strength to support the weight of the color removal agent **56** which is contained within a liquid pervious sack type container **57**. Positoned in the lower portion of the column is a perforated plate **58** having apertures therein between 4 and 60-mesh as previously described. This mesh or plate performs a function similar to the finger **51** shown in FIG. 2. The upper portion of the cylindrical tank **55** includes a removable cover **59** and a series of swing bolts (not shown) utilized to secure the cover **59** to the tank section **55**. In this form, a section of flexible conduit **61** is utilized at the top of the column thereby facilitating removal of the top section **59**.

The advantage of the unit above described is the fact that once the color and odor removal characteristics of the granular material have been reduced due to prolonged use thereof, recharging the column is a relatively simple

operation involving removal of the head **59** and removal of the sack **57** containing the granular material **56**. Thereafter a second or new charge may be inserted by merely introducing a sack of the granular material into the tank. The solvent pervious sack itself may be constructed of any of several materials for example nylon or other synthetic fabrics or muslin which possess the sufficient strength and are unaffected by dry cleaning solvents. It is also possible to utilize a fine metallic mesh container.

In the modification shown in FIG. 5, a basket type arrangement **65** is utilized wherein the base portion **66** of the basket is an apertured plate similar to **58** shown in FIG. 5. Attached to the base portion of the plate **66** are a plurality of legs **67** which act to support the basket within the cylindrical tank. The cylindrical section **68** of the basket **65** may be formed of self-supporting mesh or a relatively rigid perforated plate which is formed into a cylindrical shape. Affixed to the top of the basket **65** is a handle **70** which may be turned down on the inside of the cylindrical section when the basket is in the tank, and which is utilized to remove the granular material **71** from the interior portion of the color removal assembly. As mentioned previously, the apertures in the cylindrical section as well as the base portion **66** are coordinated and correlated such as the size thereof is sufficiently small to prevent the granular material from leaving the column while being sufficiently large to permit a substantially unrestricted flow through the column.

As will be apparent from the above description, the primary advantage of the apparatus constructed in accordance with the present invention is the uniform low level of discoloration and odor of the solvent, and the fact that during the solvent clean up operation, the granular agent is maintained in a static condition. In this way, the granular agent is maintained out of contact with the cleaning drum and because of the hardness of the granular agent, little erosion thereof takes place. By eliminating erosion and dispersion of the carbon in the solvent as a colloidal dispersion, flow rates are increased and heavy cake-like deposits on the filter are eliminated. In this way, there is eliminated any danger that a broken filter element will result in discoloration or other deleterious effects to the articles present in the cleaning drum.

Another advantage of the above system is the fact that it may be installed in existing coin operated dry cleaning units in a relatively simple manner or it may be incorporated into newly constructed units. The static nature of the granular material in the tank offers the advantage of maintaining the color removal agent out of contact with the articles being cleaned, and does not depend on being dispersed to effect clean-up of the solvent. By employing a color clarification agent which is granular in form and which need not be replenished at daily intervals, considerable advantages are achieved by minimizing shut-down, and handling obnoxious finely divided powders as has been above described.

While the methods and forms of apparatus herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to these precise methods and forms of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. Dry cleaning apparatus comprising a cleaning assembly receiving articles to be treated with a dry cleaning solution, said solution including a small amount of water and a relatively small percentage of detergent, means for storing a quantity of dry cleaning solution, said assembly having inlet and outlet means through which said solution is flowed, a filter unit for removing the solid material present in said solution, recirculating means and conduits connected between said cleaning assembly and said filter providing a closed loop system for flow of a solution through said filter and said cleaning assembly, timer means for controlling the sequence of operation of said apparatus, a color removal assembly including a decolorizing and purifying material maintained in static condition and operative to remove decoloring ingredients from said solution, means connecting said color removing assembly to said closed loop system, means operative in response to said timer to divert the flow in said closed loop in said color removal assembly, and means for returning the solution from said color removal assembly to said storage means.

2. Dry cleaning apparatus comprising a cleaning assembly receiving articles to be treated with a dry cleaning solution, said solution including a small amount of water and a relatively small percentage of detergent, means for storing a quantity of dry cleaning solution, said assembly having inlet and outlet means through which said solution is flowed, a filter unit for removing the solid material present in said solution, recirculating means and conduits connected between said cleaning assembly and said filter providing a closed loop system for flow of a solution through said filter and said cleaning assembly, timer means for controlling the sequence of operation of said apparatus, a color removal assembly including a decolorizing and purifying material maintained in static condition and operative to remove decoloring ingredients from said solution, said purifying material being granular in nature and including a sweetener for effecting removal of dissolved fatty acids and the like from said solvent, means connecting said color removing assembly to said closed loop system, means operative in response to said timer to divert the flow in said closed loop in said color removal assembly, and means for returning the solution from said color assembly to said storage means.

3. Dry cleaning apparatus comprising a cleaning assembly receiving articles to be treated with a dry cleaning solution, said solution including a small amount of water and a relatively small percentage of detergent, means for storing a quantity of dry cleaning solution, said assembly having inlet and outlet means through which said solution is flowed, a filter unit for removing the solid material present in said solution, recirculating means and conduits connected between said cleaning assembly and said filter providing a closed loop system for flow of a solution through said filter and said cleaning assembly, timer means for controlling the sequence of operation of said apparatus, a color removal assembly including a decolorizing and purifying material maintained in static condition and operative to remove decoloring ingredients from said solution, said color removal assembly including tank means containing said material, said material being a hard granular material having a particle size between about 4- and 60-mesh, screen means positioned in the base of said tank and having apertures therein sufficiently small to prevent passage of substantial amounts of said material therethrough and being sufficiently large to enable substantially unrestricted flow through said tank, means connecting said color removing assembly to said closed loop system and effecting a generally vertical flow of solvent through said column, means operative in response to said timer to divert the flow in said closed loop in said color removal assembly, and means for returning the solution from said color removal assembly to said storage means.

4. A coin operated dry cleaning apparatus comprising a cleaning assembly receiving articles to be treated with a dry cleaning solution, said solution including a small amount of water and a relatively small percentage of detergent, means for storing a quantity of dry cleaning solution, said assembly having inlet and outlet means through which said solution is flowed, a filter unit for removing the solid material present in said solution, recirculating means and conduits connected between said cleaning assembly and said filter providing a closed loop system for flow of a solution through said filter and said

cleaning assembly, timer means for controlling the sequence of operation of said apparatus, a color and odor removal assembly for receiving said solvent to effect removal of a substantial amount of color and odor bearing materials dissolved therein, means connecting said color and odor removing assembly to said closed loop system, said removal assembly including container means receiving a charge of a hard, granular color and odor removal agent of particle size between 4 and 60-mesh, said container means being provided with means to remove said granular agent for allowing introducing of a new charge therein, said container means being connected to said closed loop such that the flow therethrough is in a generally vertical direction, means operative in response to said timer to divert the flow in said closed loop in said color removal assembly, and means for returning the solution from said color removal assembly to said storage means.

5. A coin operated dry cleaning apparatus comprising a cleaning assembly receiving articles to be treated with a dry cleaning solution, means for storing a quantity of dry cleaning solution, said assembly having inlet and outlet means through which said solution is flowed, a filter unit for removing the solid material present in said solution, recirculating means and conduits connected between said cleaning assembly and said filter providing a closed loop system for flow of solution through said filter and said cleaning assembly, timer means for controlling the sequence of operation of said apparatus, a color removal assembly for receiving said solution to effect removal of a substantial amount of color bearing materials dissolved therein, switch means controlled by said timer and positioned in said inlet means for diverting the flow of solution in said closed loop through said removal assembly in response to the operation of said timer means, said color removal assembly including a generally cylindrical tank containing therein a charge of granular material having a particle size between 4 and 60-mesh, means positioned within said tank containing said granular material and being apertured for passage of said solvent therethrough, the apertures in said last named means being correlated and coordinated with the particle size of said granular material to maintain said granular material therein while allowing substantially unobstructed flow of said solution therethrough, and means connecting said cylindrical tank to said storing means for returning thereto the solution passed through said removal assembly.

6. A coin operated dry cleaning apparatus comprising a cleaning assembly receiving articles to be treated with a dry cleaning solution, means for storing a quantity of dry cleaning solution, said assembly having inlet and outlet means through which said solution is flowed, a filter unit for removing the solid material present in said solution, recirculating means and conduits connected between said cleaning assembly and said filter providing a closed loop system for flow of solution through said filter and said cleaning assembly, timer means for controlling the sequence of operation of said apparatus, a color and odor removal assembly for receiving said solution to effect removal of a substantial amount of color and odor being materials dissolved therein, switch means controlled by said timer and positioned in said inlet means for diverting the flow of solution in said closed loop through said removal assembly in response to the operation of said timer means, said color and odor removal assembly including a generally cylindrical tank containing therein a charge of granular color and odor removal material therein, container means for said granular material positioned within said tank and being apertured for passage of said solvent therethrough, the apertures in said last named means being correlated and coordinated with the particle size of said granular material to maintain said granular material in a static condition therein while allowing substantially unobstructed flow of said solution therethrough, and means connecting said cylindrical tank to said storing means for returning thereto the solution passed through said removal assembly.

7. A coin operated dry cleaning apparatus comprising a cleaning assembly receiving articles to be treated with a dry cleaning solution, means for storing a quantity of dry cleaning solution, said assembly having inlet and outlet means through which said solution is flowed, a filter unit for removing the solid material present in said solution, recirculating means and conduits connected between said cleaning assembly and said filter providing a closed loop system for flow of solution through said filter and said cleaning assembly, timer means for controlling the sequence of operation of said apparatus, a color and odor removal assembly for receiving said solution to effect removal of a substantial amount of color and odor bearing materials dissolved therein, switch means controlled by said timer and positioned in said inlet means for diverting the flow of solution in said closed loop through said removal assembly in response to the operation of said timer means, said color and odor removal assembly including a generally cylindrical tank containing a charge of granular material therein having a particle size between 4 and 60-mesh, means positioned within said cylindrical tank containing said granular material and being apertured for passage of said solvent therethrough, the apertures in said last named means being correlated and coordinated with the particle size of said granular material to maintain said material therein while allowing substantially unobstructed flow of said solution therethrough, and said material including carbon and about 2 to 50% of a sweetener for removing color and odor bearing materials dissolved in said solution, and means connecting said cylindrical tank to said storing means for returning thereto the solution passed through said removal assembly.

8. A process for removing discoloring ingredients from the dry cleaning solution wherein said solution is circulated through a first filter for a first predetermined time period to effect removal of solid materials suspended therein, and thereafter exposed to articles containing discoloring ingredients and solid materials capable of being dissolved by and dispersed in said solution, which comprises the steps of flowing substantially the entire amount of said solution through a color and odor removal assembly having contained therein granular material, and maintaining said granular material in a static and non-dispersed condition within said assembly during passage of said solvent therethrough whereby dispersion and suspension of said color and odor removal agent in said solvent is substantially eliminated, said granular material having a surface area of between 600 and 1300 square meters per gram, a molasses value of between 150 and about 400, and a CWS hardness of between about 50 and 98, said granular material including between about 2 to 50% by weight of a sweetener selected from the group consisting of oxides, hydrated oxides, and silicates of magnesium, calcium, aluminum and mixtures thereof.

9. Assembly for removing colors and odor from dry cleaning solvent comprising a chamber portion having inlet and outlet means for flowing the solvent therethrough, decolorizing and purifying materials positioned in said chamber and maintained therein in a static condition during flow of said solvent through said chamber, said decolorizing and purifying material being a granular activated carbon having a surface area between 600 and 1300 square meters per gram, a molasses value of 150 and about 400 and a CWS hardness of between about 50 and 98, and said granular activated carbon including between about 2 to 50% by weight of a sweetener selected from the group consisting of oxides, hydrated oxides and silicates of magnesium, calcium, aluminum and mixtures thereof.

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