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Dokter et al.

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[54] **CLEANING SYSTEM AND METHOD**

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[52] **U.S. Cl.** **210/79,** 210/110, 210/125, 210/162, 210/413

[51] **Int. Cl.** **B01d 29/04**

[58] **Field of Search** 210/65, 66, 79, 98, 106, 210/107, 167, 400, 196, 110, 125, 129, 159, 162, 413

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[57] **ABSTRACT**

A cleaning system and method includes a screen for removing lint and other large solids from cleaning solvents. The dirty solvent is discharged from the cleaning receptacle at a location spaced from the screen and the lint and other solids accumulate upon the screen while the solvent passes through the screen where it is collected in a sump. At least a portion of the solvent in the sump is returned to the cleaning receptacle and control means controls the discharge rate of the solvent from the receptacle, either in response to the liquid level in the sump or to the flow rate of the liquid being returned to the receptacle, to maintain the solvent in the sump out of contact with the screen. Periodically the lint which has accumulated on the screen is scraped from the screen and discharged by way of a trash conveyor.

36 Claims, 4 Drawing Figures

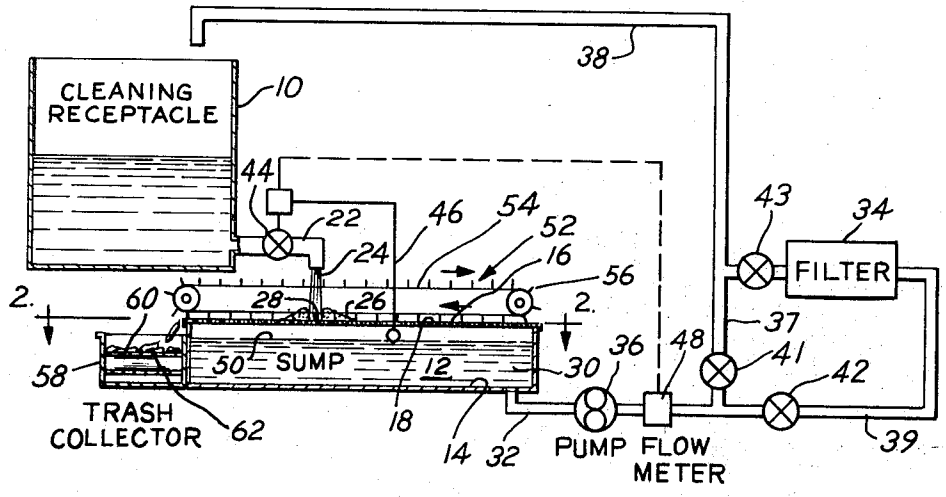


Fig. 1

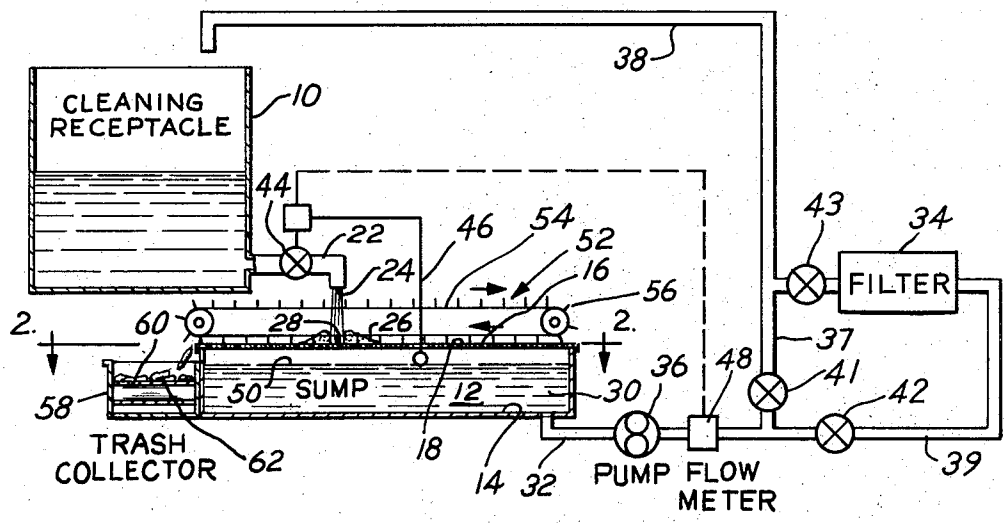

38
CLEANING RECEPTACLE
10
44
22
46
54
52
16
24
56
43
34
FILTER
2.
60
28
26
2.
37
58
50
SUMP
12
30
36
48
41
42
TRASH COLLECTOR
62
18
14
32
PUMP
FLOW METER
39

Fig. 2

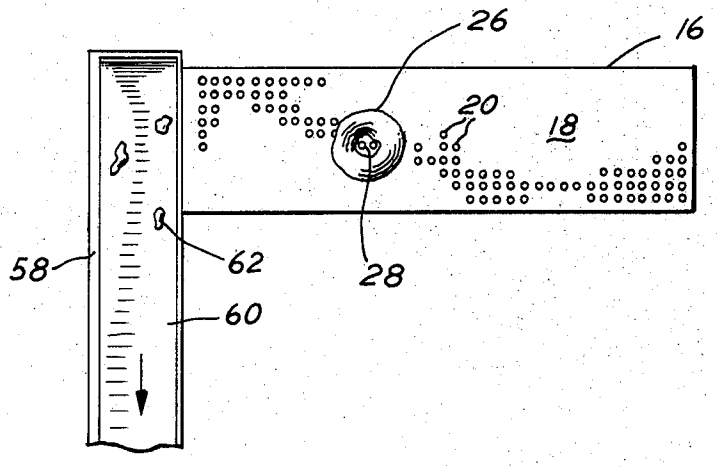
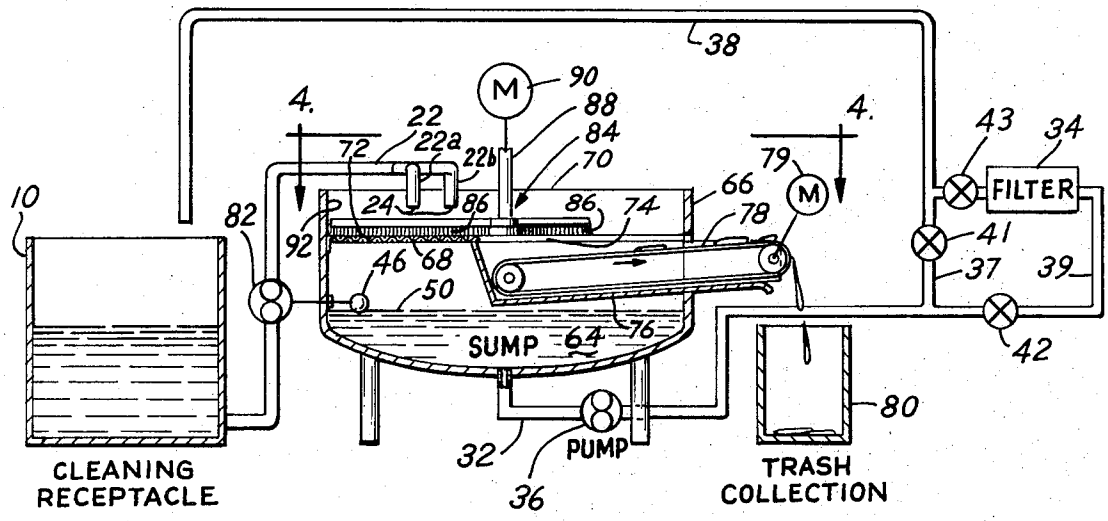

26
16
20
18
58
62
28
60

Fig. 3


38
M
90
88
84
70
4.
22
22a
22b
72
24
86
74
66
78
79
M
4.
43
34
FILTER
41
37
39
42
10
82
92
46
68
50
SUMP
64
76
80
32
36
PUMP
CLEANING RECEPTACLE
TRASH COLLECTION

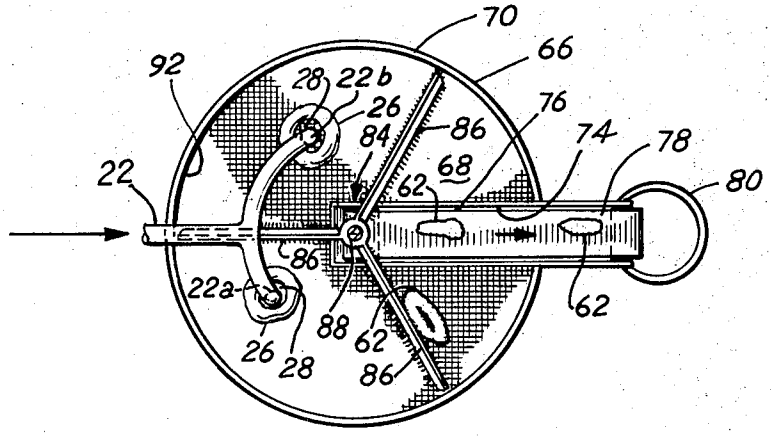

70
66
92
28
22b
26
84
86
76
74
78
80
22
68
62
86
22a
88
62
26
28
86
62

Fig. 4

CLEANING SYSTEM AND METHOD

BACKGROUND AND SUMMARY OF THE INVENTION

This invention relates to a cleaning system and method and, more particularly, to a system and method in which lint and other large solids are removed from the cleaning system.

In conventional cleaning systems, components have been provided for separately removing lint, hair, buttons and other large solid particles from the cleaning solvent prior to passing the solvent through the system filter. The advance removal of these large solids from the solvent prolongs the operating cycle of the filter employed in these systems by reducing the need for frequent flushing and cleaning of the latter and also prevents damage to pumps and other moving parts in the system. In the past, such solids removing components generally have comprised a lint trap which functions satisfactorily where the quantity of lint and other large solids is not excessive. However, such traps have been found to be inadequate for use in certain modern cleaning processes in which the quantity of lint is frequently 25 to 100 times greater than the conventional cleaning systems, such as where the system is to be employed in the cleaning of heavily solid and linty articles, for example workmen's uniforms and cleaning mops. In practice, it has been found that in systems in which lint is present in excessive amounts that the lint rapidly mats in these prior lint traps necessitating frequent cleaning in order to maintain an adequate flow of solvent through the system.

In the present invention, lint, hair and other large solids are readily removed from the cleaning solvent without excessive matting or plugging of the screen of the present invention and may be automatically and completely removed from the system and discharged to a trash receptacle. Thus, the system and method of the present invention readily provides for cleaning of the cleaning solvent even where the solvent is to be employed in cleaning operations in which excessive lint and other large solids are present. Moreover, in a system and method incorporating the principles of the invention, the level of solvent in a collecting sump, from which the lint and other large solids have been removed, may be readily controlled such that the level of the solvent in the sump does not contact the screen, thus preventing matting of the lint and other large solids on the screen and minimizing the amount of deliquifying of the trash needed prior to discarding the trash. Moreover, in the system and method incorporating the principles of the present invention, "pump down"and "pump up" of the receptacle may be periodically accomplished automatically to enhance the cleaning of the solvent and the articles.

In a principal aspect of the invention, a cleaning system includes an article cleaning receptacle adapted to contain a cleaning solvent for cleaning the articles therein, screen means for removing lint and other large solids from the solvent, and sump means for receiving the solvent from the screen means. Conduit means is connected to the receptacle for discharging at least a portion of the cleaning solvent onto the screen means and control means controls the flow of the solvent through the conduit means to maintain the solvent in the sump out of contact with the screen means.

In another principal aspect of the invention, the solvent discharged from the conduit means is discharged at a location spaced above the screen means and cleaning means is provided for removing the lint and other large solids which have accumulated on the screen means.

In still another aspect of the invention, a method of removing lint and other large solids from the cleaning solvent of an article cleaning system includes discharging at least a portion of the solvent from the cleaning receptacle upon screen means and at a location spaced from the screen means, flowing the discharged solvent through the screen means while retaining the lint and other large solids on the screen means, collecting the solvent which flows through the screen means in a sump, and controlling the rate at which the solvent is discharged from the receptacle so as to maintain the cleaning solvent in the sump out of contact with the screen means.

In still another aspect of the invention, the method further includes periodically removing the lint and other large solids from the screen means.

These and other objects, features and advantages of the present invention will become evident upon consideration of the following detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

In the course of this detailed description, the drawings will frequently be referred to in which:

FIG. 1 is a cross sectioned elevation view of a linear article cleaning system constructed in accordance with the principles of the invention,

FIG. 2 is a plan view of the lint screen and trash conveyor taken substantially along line 2—2 of FIG. 1;

FIG. 3 is a cross sectioned elevation view of a circular embodiment of lint screen and trash conveyor constructed in accordance with the principles of the invention; and

FIG. 4 is a plan view of the lint screen and trash conveyor taken substantially along line 4—4 of FIG. 3.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIG. 1, a linear embodiment of cleaning system, such as might be employed in the cleaning of cleaning mops and the like is shown which includes an article cleaning receptacle 10 which is adapted to contain a certain amount of cleaning oil or solvent. The receptacle is of standard construction and will not be described in detail, except that the receptacle is preferably a rotatabe drum having a suitable aperture through which the mops to be cleaned may be introduced and removed from the drum.

Periodically it becomes necessary to clean the cleaning solvent in the receptacle to remove lint, hair, buttons and other large solid articles, as well as dirt and other contaminants which may have been introduced to the solvent during the cleaning operation. Filters of the type which employ a filter aid, such as diatomaceous earth, have been employed in the past to thoroughly filter the solvent. Prior to introducing the cleaning solvent to these filters, however, it is desirable to first pretreat the dirty solvent to some extent in order to remove large contaminants such as lint, buttons and other large solids, which might otherwise cause early plugging of the filter and damage to any pumping components in the system or the filter itself.

In the present invention a sump, generally **12,** is defined by an open top vessel **14** which is adapted to receive the solvent therein from which the lint and other large solids have been removed. The open top of the sump is closed by a perforated plate or screen **16,** which is preferably planar so as to define an elongate planar upper surface **18** upon which the lint and other large solids may accumulate. The perforations **20** in the screen are preferably on the order of 0.050 inch, being large enough to allow the continuous and ready drainage of solvent through the perforations, but small enough to retain lint and other large solids on the upper surface **18** of the screen.

A conduit **22** is connected to the receptacle **10** and is adapted to drain a portion of the solvent from the receptacle and discharge this dirty solvent upon the upper surface **18** of the screen. This draining is accomplished by gravity if the positioning of the system components permits. If this positioning of components does not permit, the solvent may be drained from the receptacle and discharged to the screen by way of a pump. In either event, the conduit discharge **24** is preferably spaced somewhat above the upper surface **18** of the screen **16** such that the dirty solvent impinges the screen so as to form a ring of lint and large solids **26** encircling the area of impingement **28** upon the screen as shown in FIG. **2,** which ring progressively closes as the accumulation of lint increases. The formation of ring **26** substantially reduces premature matting of the lint which might otherwise plug the screen perforations **20.**

The solvent **30** which passes through the screen **16** is collected in the sump **12** and a conduit **32** communicates with the vessel **14** adjacent its bottom for removal of a portion of the solvent from the sump to return the solvent to the receptacle **10,** either directly or preferably by way of a filter **34.** Conduit **32** includes a pump **36** for drawing solvent from the sump. The pump **36** is preferably operated continuously, but may be operated intermittently. The pump discharge may either be passed directly through a filter bypass conduit **37** and returned to the receptacle by way of return conduit **38** or it may be passed to the filter conduit **39** and the filter **34** for further removal of minute solids and other contaminants the latter being preferred. From the filter **34** the filter liquid is returned to the receptacle **10** by way of return line **38.** It will be seen that by opening valve **41** and shutting valves **42** and **43,** direct return will be effected, and by shutting valve **41** in the bypass and opening valves **42** and **43,** filtration will occur.

An important feature of the present invention resides in the fact that the screen **16** is continuously drained of the solvent and is never submerged in the solvent **30** and hence matting of accumulated lint is substantially reduced and the accumulated lint is ready at all times for removal from the screen without further extension deliquification and with a minimum expenditure of mechanical energy. In order to prevent flooding of the screen **16** and to control the flow rate in the system, a valve **44** is located in gravity conduit **22** and suitable controls are provided to control the opening and closing of the valve **44** which, in turn, controls the rate at which the solvent is discharged from the receptacle. The controls may include either a liquid level control **46** in the sump itself or a flow meter **48** positioned in the pump discharge path which senses the flow rate of solvent from the pump. Either control automatically opens or shuts the valve **44** as necessary. These controls are particularly important to maintain the maximum solent level **50** in the sump **12** at a level such that the screen **16** is not flooded and to effect pump up-pump down as will be more fully explained later.

Control of the valve **44** is preferably accomplished in an on-off manner and results in the desired pump up-pump down action in the receptacle **10.** The mechanical agitation and flooding of the dirty articles in the receptacle **10** which are enhanced by the wide solvent level variations in the receptacle during pump up-pump down, improves the cleaning performance of the present invention.

Screen cleaning means, generally **52,** is also provided in the present invention which may take the form of an endless drive chain **54** upon which a plurality of spaced scrapers **56** are carried, such that the scrapers **56** of one of the flights contact and move linearly across the upper surface **18** of the screen. The scrapers are preferably continuously energized so as to slowly sweep the lint across the surface **18** of the screen where the lint is further deliquified and the lint is then discharged into a trash collector **58.** The trash collector **58** preferably takes the form of a moving conveyor belt **60** which conveys the lint and other large trash **62** away from the screen.

Although the screen **16** is shown in FIG. **1** to be substantially horizontal, it may be desirable to incline the screen somewhat away from the trash collector to prevent flow of the solvent toward the trash collector.

Referring to FIGS. **3** and **4,** a second preferred circular embodiment of cleaning system is shown in which the lint removing screen is generally circular in shape and the solvent from the cleaning receptacle is pumped to the circular screen, rather than drained by gravity. Since many of the components of the embodiment of system shown in FIGS. **1** and **2** are substantially identical to the embodiment of system shown in FIGS. **3** and **4,** like reference numerals will be employed to designate like components.

Referring particularly to FIG. **3,** the sump, generally **64,** is defined by an open topped circular vessel or tank **66** which is adapted to receive the solent from which the lint and other large solids have been removed. A generally circular planar screen **68** is positioned in the vessel **66** adjacent, but slightly below, its top **70** and defines a generally circular planar upper surface **72** upon which the lint and other large solids are deposited and accumulated.

An elongate radially extending opening **74** is formed in the screen **68** and a conveyor housing **76** depends downward beneath the screen **68** and under the opening **74.** The trash conveyor of the present embodiment of invention comprises a moving endless belt conveyor **78** which is positioned in the housing **76** beneath opening **74** and which is movable in the direction indicated by the arrows in FIGS. **3** and **4** by motor **79.** The trash **62** which is removed from the upper surface **72** of the screen **68** drops upon the belt **78** and is conveyed to a suitable trash receptacle **80.**

The solvent from the cleaning receptacle is periodically discharged through conduit **22** by way of a pump **82,** rather than the valve **44** as previously described since, as shown in FIG. **3,** the liquid level in the cleaning receptacle **10** is located below the discharge points **24** at which the solvent is discharged to the screen. Thereby, in the present embodiment drainage from the

cleaning receptacle by gravity is impossible and the solvent must be pumped to its discharge point **24** above the screen. However, as with the valve **44** in the previously described embodiment, the pump **82** is preferably controlled by way either of a flow meter (not shown) or a float **46** as shown in FIG. **3**, to turn the pump off and on as frequently as necessary to insure that the level **50** of solvent in the sump is maintained within a predetermined range below the screen **68.** Pump **82** is preferably a constant flow rate pump which, when actuated, delivers solvent through conduit **22** at a given flow rate which is greater than the maximum flow rate through conduit **32.**

As shown in FIGS. **3** and **4**, conduit **22** is preferably branched so as to define a pair of spaced delivery extensions **22***a* and **22***b*, the discharge ends **24** of which are elevated above the screen surface **18** as previously described. Accordingly, when solvent is delivered through conduit **22**, it is discharged upon the screen at two spaced locations so as to form a pair of expanding rings of lint **26** as previously described.

In the present embodiment of cleaning system, the screen cleaning means, generally **84**, takes the form of a rotating set of brushes **86** each of which extend radially from a drive shaft **88** which, in turn, is rotated by a motor **90.** Each of the brushes **86**, three in number as shown in FIG. **4**, extend from the drive shaft **88** to a point adjacent the interior wall **92** of the vessel and the brushes are continuously in contact with the upper surface **72** of the screen. Thus, it will be seen that as the brushes are rotated by motor **90** in, for example, the counterclockwise direction as viewed in FIG. **4**, the lint **62** which has accumulated upon the surface of the screen will be swept across the screen to the edge of the opening **74** where it will fall through the elongate opening in the screen upon the conveyor belt **78** and will be conveyed to the trash receptacle **80.**

A brief description of the operation of the invention is as follows:

The mops or other articles which are to be cleaned are introduced to the cleaning receptacle **10** which also contains a certain amount of cleaning solvent. As the articles are cleaned, a portion of the cleaning solvent will be discharged, by gravity as shown in FIG. **1** or by pump **82** in the event that gravity drain is not feasible, from the receptacle through conduit **22** and is dropped from a location **24** spaced above the screen **16** in FIGS. **1** and **2** or **68** in FIGS. **3** and **4** onto the upper surface of the screen. Where draining through conduit **22** is by gravity as shown in FIG. **1**, the drainage rate from the receptacle will be controlled by the opening and closing of valve **44.** Where drainage is by pump **82** as shown in FIGS. **3** and **4**, the pump will be turned on and off in response to either the float **46** or the flow meter (not shown).

As the dirty solvent impinges the screen in area **28**, the lint and other large solids will form the ring **26** about the area of impingement, which ring progressively closes as more solids accumulate upon the screen. The solvent itself freely drains through the perforations in the screen and is collected in sump **12** in FIG. **1** or **64** in FIG. **3.**

A portion of the solvent in the sump is continuously withdrawn through conduit **32** by pump **36** and is preferably passed through open valve **42** and the filter **34** where more minute contaminants are removed. The filtrate then passes through open valve **43**, and is returned through return conduit **38** to the receptacle **10** where it replenishes the solvent which has been removed from the receptacle.

Since pump **36** is preferably continuously operated, a certain amount of solvent **30** will be continuously removed from sump **12** or **64** and passed through the filter **34** from where this cleaned solvent is returned to the receptacle **10.** It will be appreciated, however, that the flow rate through filter **34**, and thus the rate at which the solvent is removed from the sump, will vary between a maximum when the filter **34** has just been cleaned to a minimum just before cleaning. In either event, when the liquid level in sump **12** or **64** has dropped to a predetermined minimum level which is lower than level **50** and which is determined by the setting of the float control **46**, the receptacle **10** will contain the maximum amount of solvent and will be in the "pumped up" condition in which the articles are flooded.

When the solvent level in the sump **12** further drops below this predetermined minimum level, the float control **46** will open valve **44** in FIG. **1** or will start pump **82** in FIG. **3** to commence rapid draining of the receptacle **10.** When valve **44** is opened or pump **82** is energized, solvent will be drained from the receptacle **10** faster than it is removed from the sump **12** or **64** by pump **36.** This rapid draining of the receptacle effects "pump down" of the receptacle **10**, since the solvent is being removed through conduit **22** at a faster rate than it is returned to the receptacle through return conduit **38.**

When enough solvent has been drained to the sump **12** or **64** through conduit **22** to raise the solvent level in the sump to the predetermined maximum level **50** which is still below screen **16** in FIG. **1** or screen **68** in FIG. **3**, the float control **46** will shut valve **44** or stop motor **82** and the receptacle **10** will be in its "pumped down" condition. The volumetric capacity of the sump and the elevation difference between the maximum and minimum solvent levels in the sump are selected relative to the volume of the receptacle **10**, such that the volume of solvent remaining in the receptacle when it is fully "pumped down" is preferably at least fifty percent less than the volume of solvent in the receptacle when it is fully "pumped up."

Since scrapers **56** or brushes **86** are preferably continuously energized, the lint and other large solids which accumulate on the screen will be slowly, but continuously moved off the screen to the trash collector **58** in FIG. **1** or **78** in FIG. **3** where they will be conveyed away from the system.

It will be appreciated that although the operation of the system has been described in terms of the float control **46**, that the flow meter **48** may also be employed, in control of the system, since the level of solvent in the sump is a function of the rate at which solvent is removed from the sump. Moreover, it will also be appreciated that the pump employed in the embodiment shown in FIG. **3** may be employed in place of the valve **44** shown in FIG. **1** and vice versa. Moreover, although the screen cleaning scrapers or brushes are preferably continuous in operation they may be operated intermittently in response to a build up of lint and other foreign matter.

Finally, it will be understood that the embodiments of the present invention which have been described are merely illustrative of a few of the applications of the

principles of the invention. Numerous modifications may be made by those skilled in the art without departing from the true spirit and scope of the invention.

What is claimed is:

1. In a cleaning system,
an article cleaning receptacle adapted to clean articles with a cleaning solvent contained therein,
screen means for removing lint and other large solids from the cleaning solvent,
discharge means on said receptacle for discharging said cleaning solvent from said receptacle onto said screen means,
receiving means including an outlet for receiving cleaning solvent from which said lint and other large solids have been removed from said screen means, and
control means controlling the flow of said cleaning solvent through said discharge means in response to the level in said receiving means of the solvent from which said lint has been removed to continuously maintain the solvent from which said lint and other large solids have been removed out of contact with said screen means.

2. In the system of claim 1, wherein said cleaning solvent is discharged from said discharge means onto said screen means at a location spaced above said screen means.

3. In the system of claim 1, wherein said discharge means for removing cleaning solvent comprises sump means, said control means maintaining the level in said sump means out of contact with said screen means.

4. In the system of claim 3, wherein said control means comprises float valve means responsive to the level of cleaning solvent in said sump to control the flow of cleaning solvent through said discharge means.

5. In the system of claim 1, including sump means and second discharge means communicating said sump means with said receptacle for returning cleaning solvent to said receptacle, and means to control the rate that said cleaning solvent is discharged to said screen means such that it is greater than the rate that said cleaning solvent is returned to said receptacle.

6. In the system of claim 5 wherein said control means includes means capable of stopping the flow through the discharge means.

7. In the system of claim 1, including screen cleaning means for removing lint and other large solids which have accumulated on said screen means.

8. In the system of claim 7 wherein said screen cleaning means comprises means which moves the accumulated lint and other large solids to an edge of said screen means, and collecting means for removing the lint and other large solids from said edge.

9. In the system of claim 7 wherein said screen means comprises a stationary flat perforated member having a planar surface facing said discharge means, and said screen cleaning means comprises scraping means movable across said planar surface to at least periodically remove accumulated lint and other large solids from said surface.

10. In the system of claim 7 wherein said screen means is circular and said screen cleaning means rotates relative to said circular screen means.

11. In the system of claim 1 wherein said receiving means comprises sump means, conduit means for removing solvent from said sump means and returning said solvent to said receptacle at a predetermined maximum flow rate, and wherein said control means controls the discharge rate of said solvent from said receptacle such that said discharge rate is greater than said predetermined maximum flow rate when said solvent is being discharged to said screen means, but to maintain the solvent level in said sump means out of contact with said screen means.

12. In the system of claim 11 including filter means in said conduit means between said sump means and said receptacle.

13. In the system of claim 11 wherein said control means initiates discharge of said solvent from said receptacle when the level of the solvent in said sump is at a predetermined minimum level and stops said discharge when the level of the solvent in said sump is at a predetermined maximum level at which maximum level the solvent is out of contact with said screen means.

14. A method of removing lint and other large solids from the cleaning solvent of an article cleaning system, comprising the steps of:
discharging at least a portion of the cleaning solvent from the cleaning receptacle upon screen means and at a location spaced from said screen means,
flowing the discharged solvent through said screen means while retaining the lint and other large solids on said screen means,
removing the cleaning solvent which flows through said screen means from said screen means, and
controlling the rate at which the cleaning solvent is discharged upon the screen means from the receptacle in response to the level and flow rate of the solvent which has flowed through said screen means to continuously maintain the cleaning solvent which is removed from said screen means out of contact with said screen means.

15. The method of claim 14 including at least periodically removing the lint and other large solids from said screen means by moving said lint and other large solids across said screen means, and collecting the removed lint and other large solids at a location spaced from the portion of said screen means upon which said cleaning solvent is discharged from said receptacle.

16. The method of claim 14 wherein the solvent which is removed from said screen means is collected in a sump, and the rate at which the cleaning solvent is discharged from said receptacle is controlled in response to the level of solvent collected in said sump.

17. The method of claim 14 including returning at least a portion of the cleaning solvent which passes through said screen means to said receptacle, and wherein the rate at which the cleaning solvent is discharged from said receptacle when it is being discharged is greater than the maximum rate at which said solvent is returned to said receptacle, whereby the amount of solvent in the receptacle varies.

18. The method of claim 17 wherein the solvent which is removed from said screen means is collected in a sump, and wherein said cleaning solvent is discharged from said receptacle in response to the level of solvent in said sump, and said solvent in said sump is returned to said receptacle.

19. The method of claim 17 wherein said cleaning solvent is periodically discharged from said receptacle to said screen means and a portion of the solvent is con-

tinuously returned from said sump to said receptacle.

20. The method of claim **14** including forming a ring of lint and other large solids on the screen means about the location that the cleaning solvent is discharged upon said screen means.

21. In a cleaning system,

an article cleaning receptacle adapted to clean articles with a cleaning solvent contained therein,

screen means for removing lint and other large solids from the cleaning solvent,

discharge means on said receptacle for discharging said cleaning solvent from said receptacle onto said screen means,

receiving means including an outlet for receiving cleaning solvent from which said lint and other large solids have been removed from said screen means, and

control means controlling the flow of said cleaning solvent through said discharge means in response to the flow rate from said receiving means of the solvent from which said lint has been removed to continuously maintain the solvent from which said lint and other large solids have been removed out of contact with said screen means.

22. In the system of claim **21,** wherein said cleaning solvent is discharged from said discharge means onto said screen means at a location spaced above said screen means.

23. In the system of claim **21,** wherein said receiving means for removing cleaning solvent comprises sump means, said control means maintaining the level in said sump means out of contact with said screen means.

24. In the system of claim **21,** including sump means and second discharge means communicating said sump means with said receptacle for returning cleaning solvent to said receptacle, and means to control the rate that said cleaning solvent is discharged to said screen means such that it is greater than the rate that said cleaning solvent is returned to said receptacle.

25. In the system of claim **24** wherein said control means includes means capable of stopping the flow through the discharge means.

26. In the system of claim **21,** including screen cleaning means for removing lint and other large solids which have accumulated on said screen means.

27. In the system of claim **26** wherein said screen cleaning means comprises means which moves the accumulated lint and other large solids to an edge of said screen means, and collecting means for removing the lint and other large solids from said edge.

28. In the system of claim **26** wherein said screen means comprises a stationary flat perforated member having a planar surface facing said discharge means, and said screen cleaning means comprises scraping means movable across said planar surface to at least periodically remove accumulated lint and other large solids from said surface.

29. In the system of claim **26** wherein said screen means is circular and said screen cleaning means rotates relative to said circular screen means.

30. In the system of claim **21** wherein said receiving means comprises sump means, conduit means for removing solvent from said sump means and returning said solvent to said receptacle at a predetermined maximum flow rate, and wherein said control means controls the discharge rate of said solvent from said receptacle such that said discharge rate is greater than said predetermined maximum flow rate when said solvent is being discharged to said screen means, but to maintain the solvent level in said sump means out of contact with said screen means.

31. In the system of claim **30** including filter means in said conduit means between said sump means and said receptacle.

32. A method of removing lint and other large solids from the cleaning solvent of an article cleaning system, comprising the steps of:

discharging at least a portion of the cleaning solvent from the cleaning receptacle upon screen means and at a location spaced from said screen means,

flowing the discharged solvent through said screen means while retaining the lint and other large solids on said screen means,

removing the cleaning solvent which flows through said screen means from said screen means, and

controlling the rate at which the cleaning solvent is discharged upon the screen means from the receptacle in response to the flow rate of the solvent which has flowed through said screen means to continuously maintain the cleaning solvent which is removed from said screen means out of contact with said screen means.

33. The method of claim **32** including at least periodically removing the lint and other large solids from said screen means by moving said lint and other large solids across said screen means, and collecting the removed lint and other large solids at a location spaced from the portion of said screen means upon which said cleaning solvent is discharged from said receptacle.

34. The method of claim **32** including returning at least a portion of the cleaning solvent which passes through said screen means to said receptacle, and wherein the rate at which the cleaning solvent is discharged from said receptacle when it is being discharged is greater than the maximum rate at which said solvent is returned to said receptacle, whereby the amount of solvent in the receptacle varies.

35. The method of claim **34** wherein said cleaning solvent is periodically discharged from said receptacle to said screen means and a portion of the solvent is continuously returned from said sump to said receptacle.

36. The method of claim **32** including forming a ring of lint and other large solids on the screen means about the location that the cleaning solvent is discharged upon said screen means.

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