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(54) **SURFACE CLEANING APPLIANCE WITH
MOTORIZED WAND**

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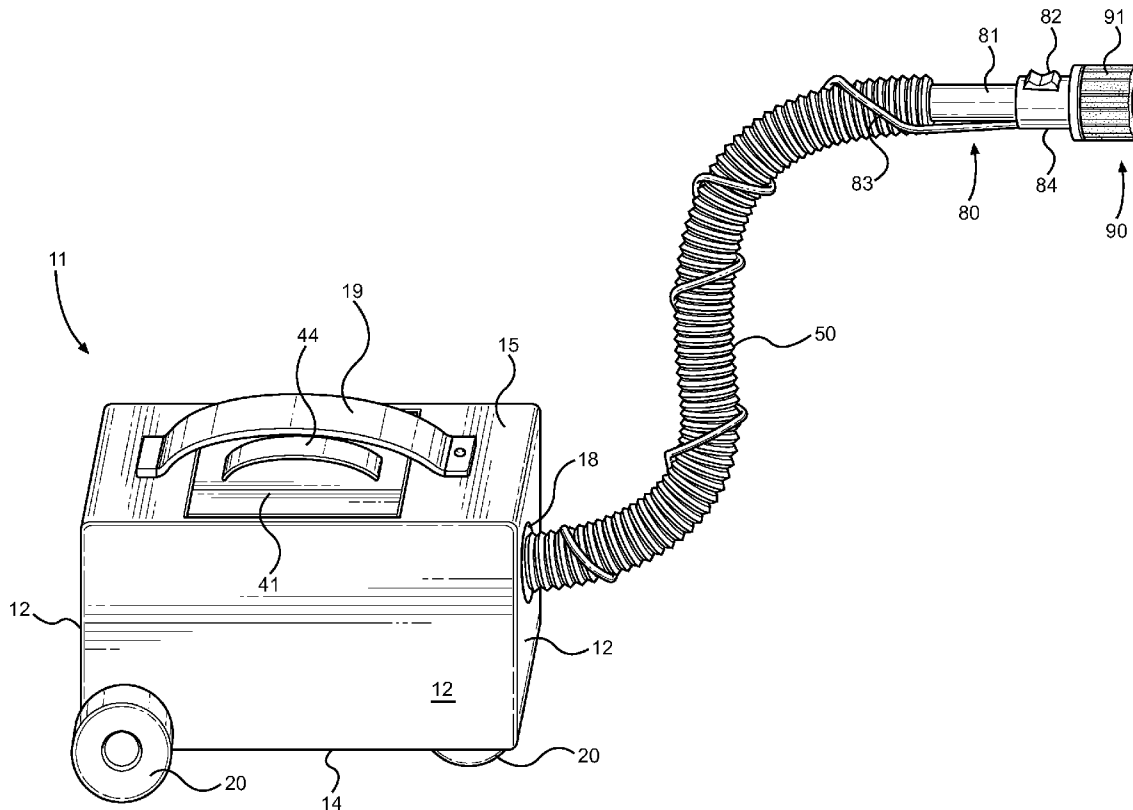
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(57) **ABSTRACT**

A floor cleaning appliance is provided that assists cleaning surfaces using an appliance housing and a handheld wand with a motorized brush head. The appliance housing includes a wheeled assembly with a fluid reservoir for supporting a cleaning solution. A pump drives the cleaning solution into a fluid tube that connects to a handheld wand. The handheld wand includes user controls, a handle grip, and a rotating brush head that is used in conjunction with the cleaning solution to break up dirt while cleaning surfaces. The user presses the bristles against the surface as he or she controls the rotational speed and fluid flow from the wand via the user controls. Dirt is released from the surface, whereafter it can be wiped clean.



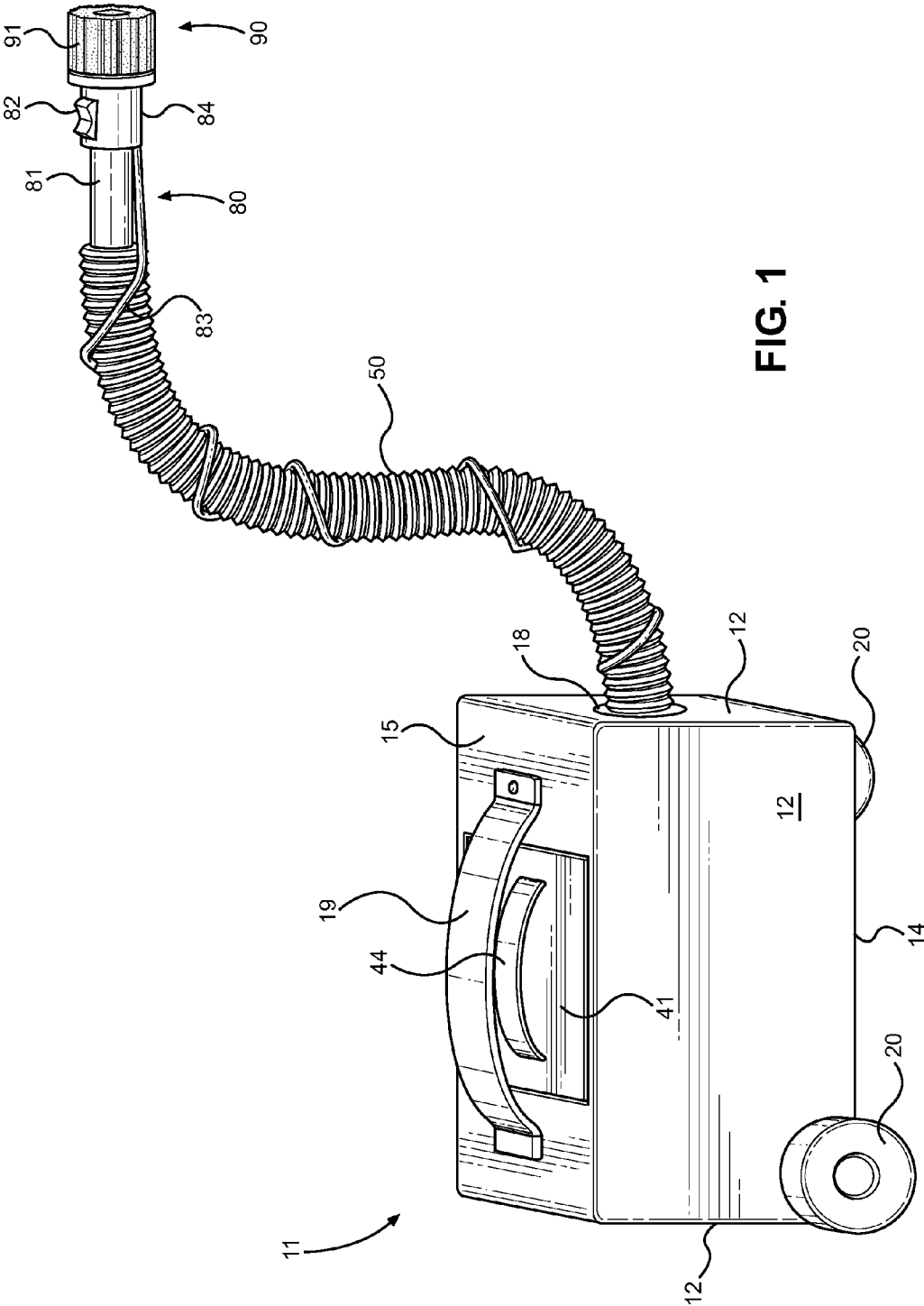


FIG. 1

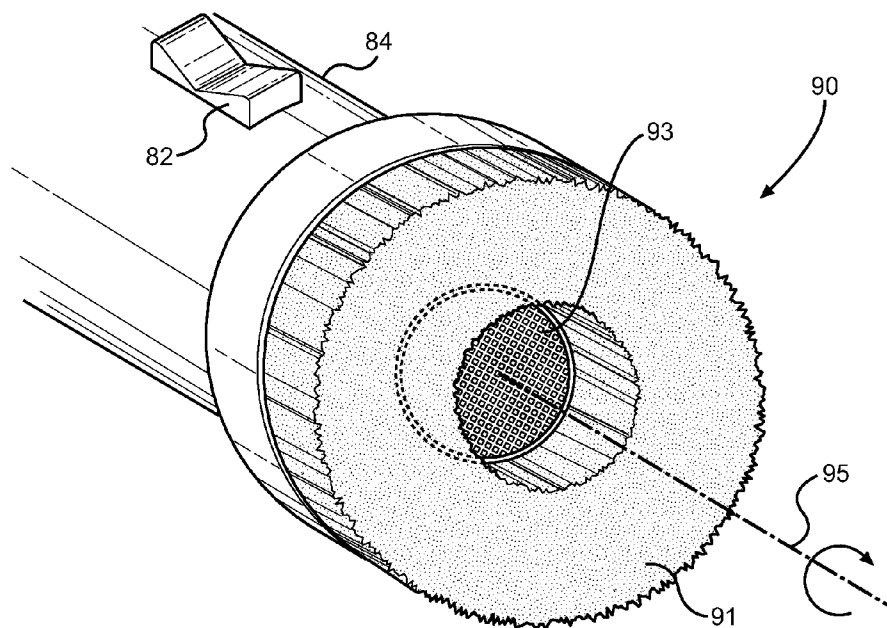


FIG. 2

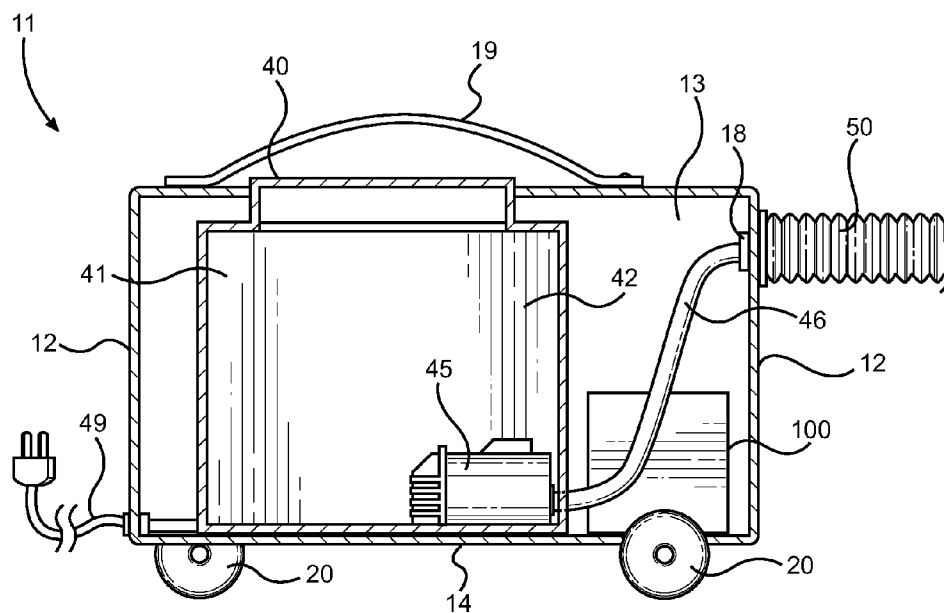


FIG. 3

SURFACE CLEANING APPLIANCE WITH MOTORIZED WAND

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims the benefit of U.S. Provisional Application No. 62/076,947 filed on Nov. 7, 2014. The above identified patent application is herein incorporated by reference in its entirety to provide continuity of disclosure.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present invention relates to hard surface cleaners and scrubbers. More specifically, the present invention relates to a cleaning appliance that includes a reservoir of cleaning fluid, a fluid pump, a handheld wand, and a powered scrubber implement on the wand for cleaning hard surfaces.

[0003] Cleaning hard surfaces such as bathroom floors and laminate can be difficult. For particularly dirty surfaces, cleaning often requires hand tools and a bucket, and furthermore requires the individual to exert considerable effort while kneeling on the floor. Particularly harsh cleaners and simple hand tools (e.g., brushes, mops, etc.) may assist with this cleaning exercise; however use certain chemicals may be undesirable and generic cleaning tools may be inadequate to break up and release dirt on the floor. A need therefore exists for an appliance that assists cleaning hard surfaces, in which cleaning solution is provided and a motorized implement assists with physically breaking up and releasing dirt from the floor surface.

[0004] The present invention substantially fulfills these and other needs. In particular, the present invention provides a wheeled appliance that includes a handheld wand, whereby the handheld wand provides cleaning solution and a motorized brush head for cleaning dirt from floor surfaces. The appliance includes wheeled housing having a reservoir for water and cleaning solution, a fluid pump, wheels and a handle. Extending from the wheeled housing is a fluid tube connecting to the handheld wand. Along the distal end of the wand are user controls, a fluid outlet, and rotatable bristles forming the motorized brush head. The user applies the motorized brush head to clean dirt from floors and grout lines, while controlling the flow of cleaning fluid and the rotational speed of the bristles using the controls on the wand. Overall, the assembly provides a new and novel cleaning appliance.

SUMMARY OF THE INVENTION

[0005] The following summary is intended solely for the benefit of the reader and is not intended to be limiting in any way. The present invention provides a new surface cleaning appliance that can be utilized for providing convenience for the user when cleaning bathroom floors and other surfaces with a rotatable brush head and cleaning solution.

[0006] It is therefore an object of the present invention to provide a new and improved surface cleaning appliance that has all of the advantages of the prior art and none of the disadvantages.

[0007] It is another object of the present invention to provide a surface cleaning appliance

[0008] Another object of the present invention is to provide a surface cleaning appliance that comprises a wheeled appliance housing, a handheld wand, and a cleaning implement on

the handheld wand that dispenses cleaning fluid and providing a rotating cleaning brush for releasing dirt from surfaces.

[0009] Another object of the present invention is to provide a surface cleaning appliance, whereby the wheeled appliance housing forms an enclosure having sidewalls, wheels for rolling the appliance housing along a surface, and an interior volume. The wheeled appliance housing is adapted to remain on the floor and pulled along as a user handles the handheld wand while cleaning.

[0010] Another object of the present invention is to provide a surface cleaning appliance, whereby the appliance housing further comprises a fluid reservoir within its interior volume. The fluid reservoir has an inlet and an outlet, whereby a fluid pump is configured to pump fluid from within the fluid reservoir and through the outlet when the fluid pump is energized.

[0011] Another object of the present invention is to provide a surface cleaning appliance, whereby a hose extends from one of the sidewalls of the appliance housing. The hose receives fluid pumped from the reservoir outlet via the fluid pump, whereby the fluid is communicated through the hose and to the handheld wand while cleaning.

[0012] Another object of the present invention is to provide a surface cleaning appliance, whereby the handheld wand is disposed along a distal end of the hose. Fluid enters a proximal end of the handheld wand and is communicated through a valve therein before being disposed onto the cleaning implement of the handheld wand.

[0013] Another object of the present invention is to provide a surface cleaning appliance, whereby the handheld wand has a grip area, controls, and the cleaning implement. The cleaning implement comprises a rotatable brush head that is powered by an electric motor and is rotatable relative to the wand while in use.

[0014] Another object of the present invention is to provide a surface cleaning appliance in which the handheld wand receives fluid from the hose, and whereby the fluid is directed onto the rotatable brush head when the pump is energized.

[0015] Another object of the present invention is to provide a surface cleaning appliance, whereby the valve disposed within the distal end of the handheld wand controls dispensing of the fluid onto the rotatable brush head. The valve is one of a passive valve that operates when the fluid is forced through the valve by the fluid pump, or one that is active and operably opens based on user input on the handheld wand controls.

[0016] Another object of the present invention is to provide a surface cleaning appliance, whereby the controls on the handheld wand control operation of the pump and optionally the active valve therein.

[0017] Another object of the present invention is to provide a surface cleaning appliance, whereby the wheeled appliance housing further comprises a handle along an upper surface thereof for lifting the same.

[0018] Another object of the present invention is to provide a surface cleaning appliance, whereby the fluid reservoir is removable from the interior volume for cleaning the same.

[0019] Another object of the present invention is to provide a surface cleaning appliance, whereby the fluid pump is an electric pump powered by an electrical power source. The power source is one of a rechargeable battery power source, or preferably outlet power received via a power cord extending from the wheeled appliance housing.

[0020] Another object of the present invention is to provide a surface cleaning appliance, whereby an electrical cord extends along the hose and connects the handheld wand to the electrical power source.

[0021] Another object of the present invention is to provide a surface cleaning appliance, whereby the valve in the handheld wand further comprises a pass valve such as a one way valve, or an active valve such as an energizable solenoid valve.

[0022] Another object of the present invention is to provide a surface cleaning appliance, whereby the controls in the handheld wand further control operation of the active valve within the handheld wand.

[0023] Another object of the present invention is to provide a surface cleaning appliance, whereby the hose is disconnectable from the housing for cleaning the same after use.

[0024] Other objects, features and advantages of the present invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTIONS OF THE DRAWINGS

[0025] Although the characteristic features of this invention will be particularly pointed out in the claims, the invention itself and manner in which it may be made and used may be better understood after a review of the following description, taken in connection with the accompanying drawings wherein like numeral annotations are provided throughout.

[0026] FIG. 1 provides a side view of the surface cleaning appliance of the present invention.

[0027] FIG. 2 shows a close-up view of the handheld wand and brush head of the surface cleaning appliance.

[0028] FIG. 3 shows an internal view of one embodiment of the surface cleaning appliance of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0029] Reference is made herein to the attached drawings. Like reference numerals are used throughout the drawings to depict like or similar elements of the surface cleaning appliance of the present invention. For the purposes of presenting a brief and clear description of the present invention, the preferred embodiment will be discussed as used for cleaning floor surfaces and other hard surfaces using a powered handheld wand and a cleaning solution dispensed from a cleaning appliance housing. The figures are intended for representative purposes only and should not be considered to be limiting in any respect.

[0030] Referring now to FIGS. 1 through 3, there are shown views of the surface cleaning appliance of the present invention. The cleaning appliance is one that is used to scrub and release dirt from floors or surfaces preferably having a hard outer surface. That is, cleaning bathroom tile surfaces, linoleum surfaces, stone surfaces, and others. The assembly includes a handheld wand that is applied to the floor surface, in conjunction with a cleaning fluid, to release dirt therefrom. The cleaning fluid and dirt can then be lifted from the surface using towels, a mop, or other means of picking up the dirt and fluid from the surface. The appliance breaks up dirt and uses the cleaning solution to emulsify and lift dirt from the floor surface before being wiped clean.

[0031] Specifically, and referring to FIGS. 1 and 3, the surface cleaning appliance comprises a wheeled appliance housing 11 forming an enclosure with one or more sidewalls

12, wheels 20 for rolling the appliance housing 11 along a surface, and an interior volume bounded by the sidewalls 12. The housing 11 is a standalone structure that is placed near the user while cleaning an adjacent surface. A handle 19 and the wheels 20 of the applicant facilitate movement thereof. Extending from the housing 11 is a hose 50 and a handheld wand 80 that includes a cleaning implement 90 thereon. The handheld wand 80 is gripped by the user and the cleaning implement 90 is pressed against the floor while the appliance is energized. The handheld wand 80 may be shortened as presented in the figures, or may be elongated to allow use while the user is standing over the floor surface.

[0032] Within the appliance housing 11 is a fluid reservoir 41 that is supported within the interior volume 13 thereof. The fluid reservoir 41 is an internal container within the housing 11 that is adapted to receive a cleaning solution or water therein. The reservoir 41 forms a sealed container that may be removable from the housing 11 using a handle 44, facilitating cleaning of the reservoir and filling the same with water and/or cleaning solution. The fluid reservoir 41 has an inlet that is used for filling, and an outlet that is used to communicate the solution in the reservoir to the hose 50. The hose 50 connects to the outlet of the reservoir 41 along the sidewall 12 of the housing, and is preferably removable therefrom for separate cleaning and draining thereof.

[0033] The reservoir 41 connects to a fluid pump 45 to evacuate fluid from within the reservoir 41 and to the hose 50. The fluid pump 45 is one that forces fluid from the reservoir outlet and to an internal conduit 46, which is connected to the external fluid hose 50 of the appliance. The fluid pump 45 may be disposed within the interior 41 of the reservoir 41 as shown in FIG. 3, or optionally the pump 45 may be disposed outside of the reservoir interior 42 and within the interior volume 13 of the housing 11. In either embodiment, the pump 45 is connected to the outlet of the reservoir 42 and forces fluid therethrough when energized using an impeller or similar fluid motion element.

[0034] The hose 50 extends of the appliance extends from one of the sidewalls 12 of the appliance housing and through an outlet 18 thereof. The hose 50 receives fluid pumped from the reservoir 41 outlet via the fluid pump 45, and communicates the fluid to the handheld wand 80 at the distal end of the hose 50. The handheld wand 80 preferably has a grip area 81, controls 85, and a cleaning implement 90 extending therefrom. The cleaning implement 90 preferably comprises a rotatable brush head 91 that is rotatable relative to the grip area 81, and is powered by an electric motor within the handheld wand 84. An outlet is provided along the distal end of the wand to dispense the fluid communicated from the reservoir and to the wand. The user therefore grips the handle area 81 and presses the rotating brush head 91 against a surface to be cleaned as fluid is communicated onto the brush and onto the surface.

[0035] The electric motor within the wand 84 powers the rotating brush element 91 and is controlled by the user via the wand controls 82. Power is delivered to the controls and the electric motor of the wand via a cord 83 extending along the length of the hose 50. Similarly, the fluid pump 45 within the housing 11 is powered by a power source, which is preferably outlet power via a power cord 49. A pump controller, motor controller, and optional electrical elements such as transformers and the like are housed 100 within the interior of the housing 11 and/or the wand 80. Any necessary control circuit

or microprocessor for controlling the fluid pump and the handheld wand are provided in the housing and the wand.

[0036] Referring to FIG. 2, there is shown a close-up view of the handheld wand of the present invention. The handheld wand receives fluid from the hose 50, which connects to the proximal end of the wand. The fluid is communicated through the wand interior and to the distal end thereof. The distal end of the wand supports the rotating cleaning implement 90, whereby the fluid is directed onto the implement 90 when the pump is energized. In a preferred embodiment, the implement 90 is a rotatable brush head 91. A valve is disposed adjacent to the outlet 93 within the distal end of the handheld wand to control dispensing of the fluid onto the rotatable brush head 91. As the fluid is pumped into the wand, the valve allows fluid to pass onto the brush head 91 as it rotates 95. Operation of the pump and the rotating head are controlled on the handheld wand via a controller or switch 82 as the user handles the wand by the grip area 84.

[0037] The user controls the flow of fluid onto the cleaning implement 90. In one embodiment, operation of the fluid pump and the implement are controlled together. In another embodiment, the fluid pump and the implement are independently controlled, such that the head can rotate without dispensing fluid, and vice versa. Moreover, the valve disposed within wand and adjacent the outlet 93 thereof is one of a passive or active valve. A passive valve allows fluid to pass through the valve and the wand outlet when the pump is activated and the fluid pressure presses the valve open. This may be embodied in a one-way valve with a set pressure limit before opening. In another embodiment, the valve is actively controlled by the user via separate electronic input. In this latter case, the valve is one that opens when an electrical signal is passed from the user controls 82 and to the valve. Embodiments include solenoid valves, relays, and other electronically activated switches and valves.

[0038] It is submitted that the instant invention has been shown and described in what is considered to be the most practical and preferred embodiments. It is recognized, however, that departures may be made within the scope of the invention and that obvious modifications will occur to a person skilled in the art. With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

[0039] Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

I claim:

- 1) A surface cleaning appliance, comprising:
 - a wheeled appliance housing forming an enclosure having sidewalls, wheels for rolling the appliance housing along a surface, and an interior volume;
 - a fluid reservoir within the interior volume of the appliance housing;
 - the fluid reservoir having an inlet and an outlet;
 - a fluid pump configured to pump fluid within the fluid reservoir through the outlet when the fluid pump is energized;
 - a hose extending from one of the sidewalls of the appliance housing, the hose receiving fluid pumped from the reservoir outlet via the fluid pump;
 - a handheld wand along a distal end of the hose;
 - the handheld wand having a grip area, controls, and a cleaning implement;
 - the cleaning implement comprising a rotatable brush head that is rotatable relative to the wand and powered by an electric motor within the handheld wand;
 - the handheld wand receiving fluid from the hose through a proximal end thereof, to a pathway through the handheld wand to the distal end thereof, whereby the fluid is directed onto the rotatable brush head when the pump is energized;
 - a valve disposed within the distal end of the handheld wand to control dispensing of the fluid onto the rotatable brush head;
 - whereby the controls on the handheld wand control operation of the pump.
- 2) The surface cleaning appliance of claim 1, wherein the wheeled appliance housing further comprises a handle along an upper surface thereof for lifting the same.
- 3) The surface cleaning appliance of claim 1, wherein the fluid reservoir is removable from the interior volume.
- 3) The surface cleaning appliance of claim 1, wherein:
 - the fluid pump is an electric pump powered by an electrical power source;
 - the electrical power source comprising outlet power received via a power cord extending from the wheeled appliance housing.
- 4) The surface cleaning appliance of claim 3, further comprising an electrical cord extending along the hose and connecting the handheld wand to the electrical power source.
- 5) The surface cleaning appliance of claim 1, wherein the valve in the handheld wand further comprises a one way valve.
- 6) The surface cleaning appliance of claim 1, wherein:
 - the controls in the handheld wand further control operation of the valve within the handheld wand;
 - the valve further comprising a solenoid valve.
- 7) The surface cleaning appliance of claim 1, wherein the hose is disconnectable from the housing.

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