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Palmer(10) **Pub. No.: US 2007/0113418 A1**(43) **Pub. Date: May 24, 2007**(54) **MOPPING SYSTEM METHOD OF USE**

(57)

ABSTRACT(76) Inventor: **Robert Palmer, Artesia, CA (US)**

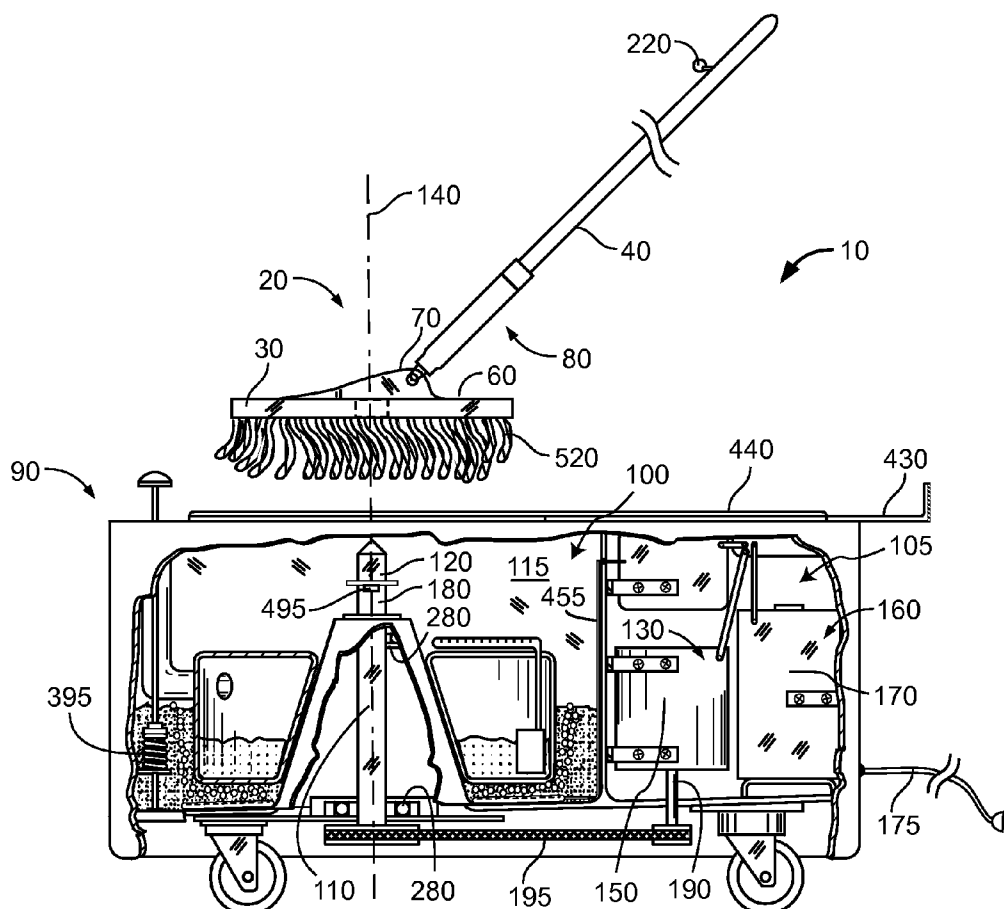
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QUICKPATENTS, INC.**31877 DEL OBISPO****SUITE 202****SAN JUAN CAPISTRANO, CA 92675 (US)**(21) Appl. No.: **11/620,578**(22) Filed: **Jan. 5, 2007****Related U.S. Application Data**

(62) Division of application No. 11/204,550, filed on Aug. 16, 2005, now Pat. No. 7,174,601.

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Methods for using a novel mopping system are disclosed. A mop assembly includes a mop head that is adapted to be spun around a generally vertical rotational axis thereof when the mop head is fixed within a mop head spinning means of a bucket assembly. When the mop head is spun at a relatively high rate of rotational speed, water retained in the mop is forcefully dispelled from the mop by centrifugal force. The water leaves the mop and is retained within a spin chamber of the bucket assembly. A drain plunger is included to allow the collected water to be drained from the bucket assembly. An ozone generator may be included for introducing ozone gas into the collected fouled water in the spin chamber. A clean water tank with a pump and spraying means, mounted within the spin chamber just below the mop head spinning means, is preferably included to allow introduction of clean water to the mopping surface of the mop head. The mop assembly may include a lever means for selectively detaching the mop head from the handle. A control circuit controls the spraying of clean water onto the mop head, the ozone generator, and the activation and speed of the mop head spinning means, such that various wash-dry cycles are available.



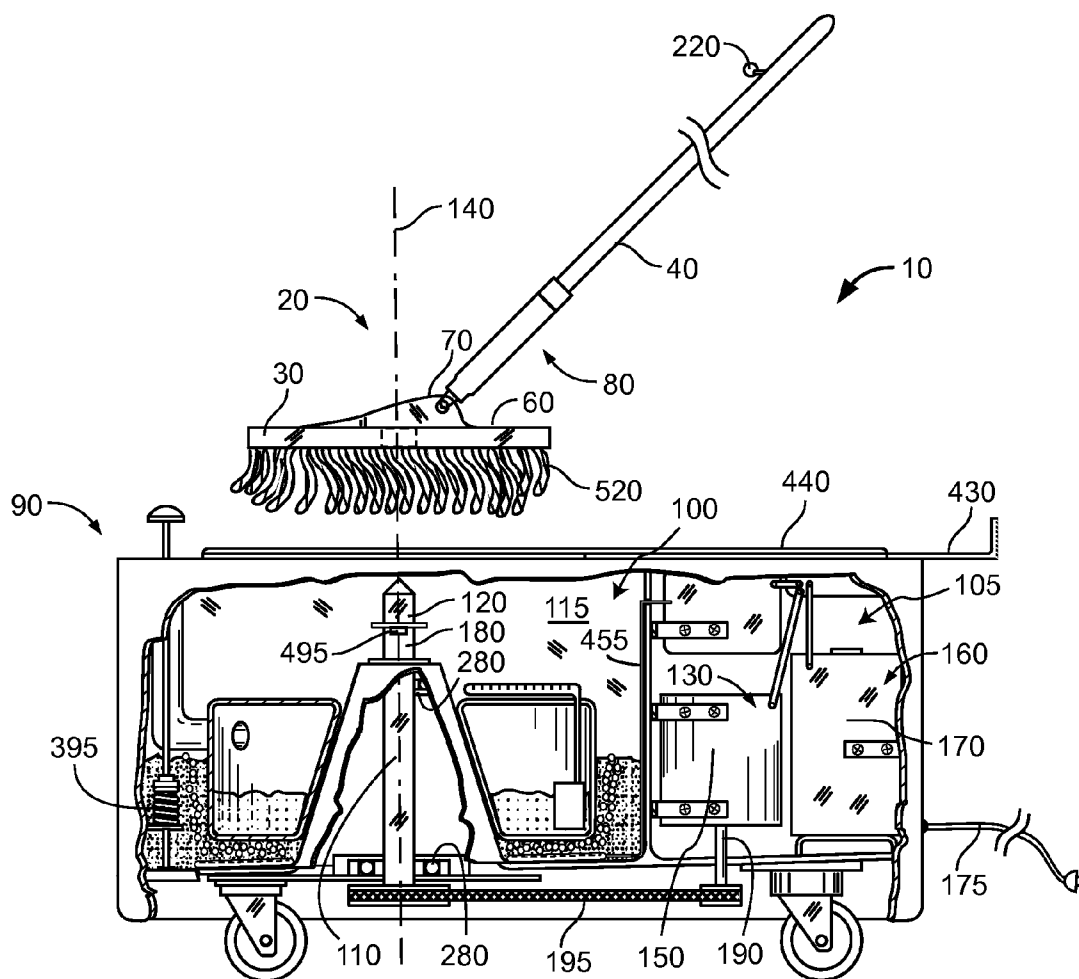


FIG. 1

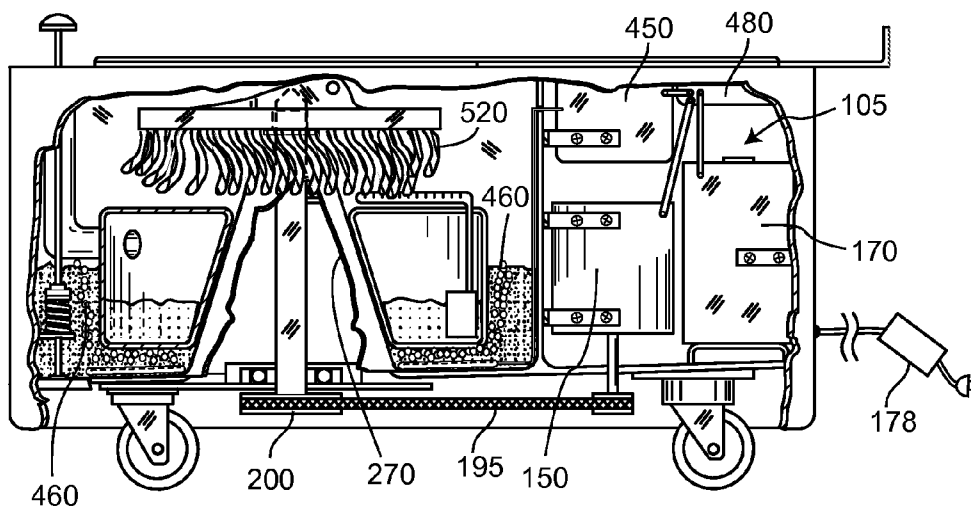


FIG. 2

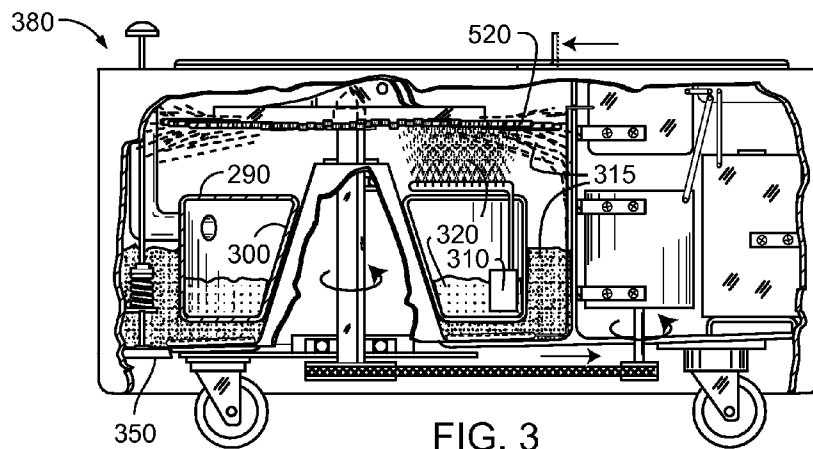


FIG. 3

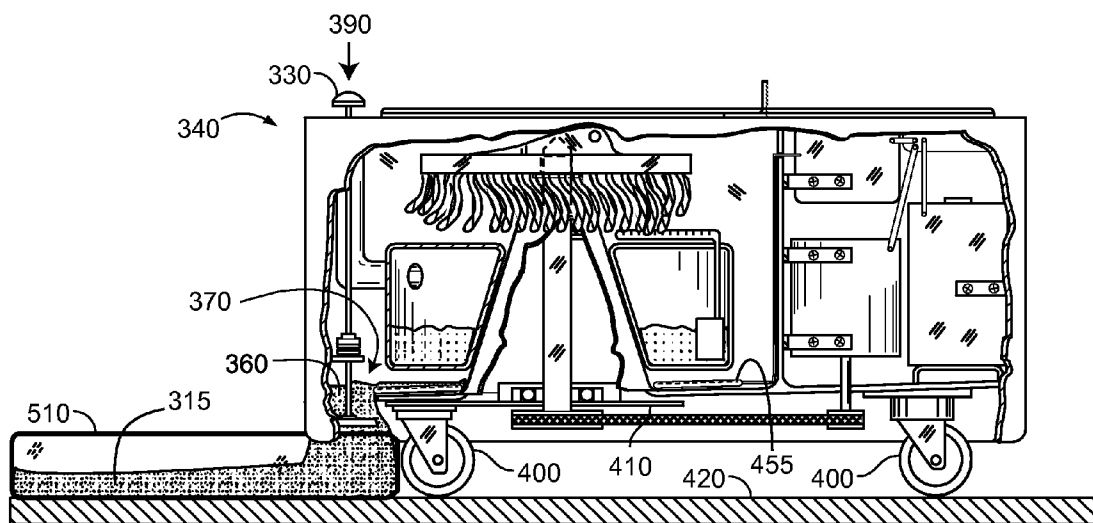


FIG. 4

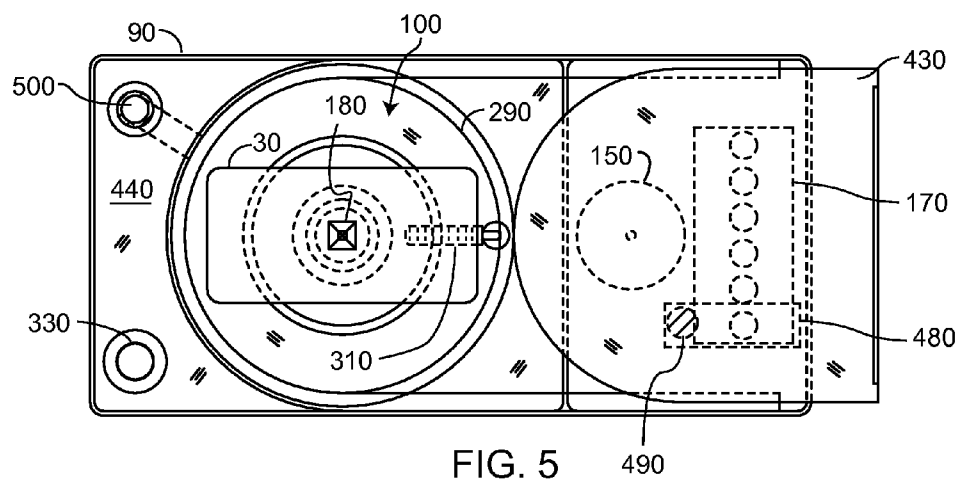
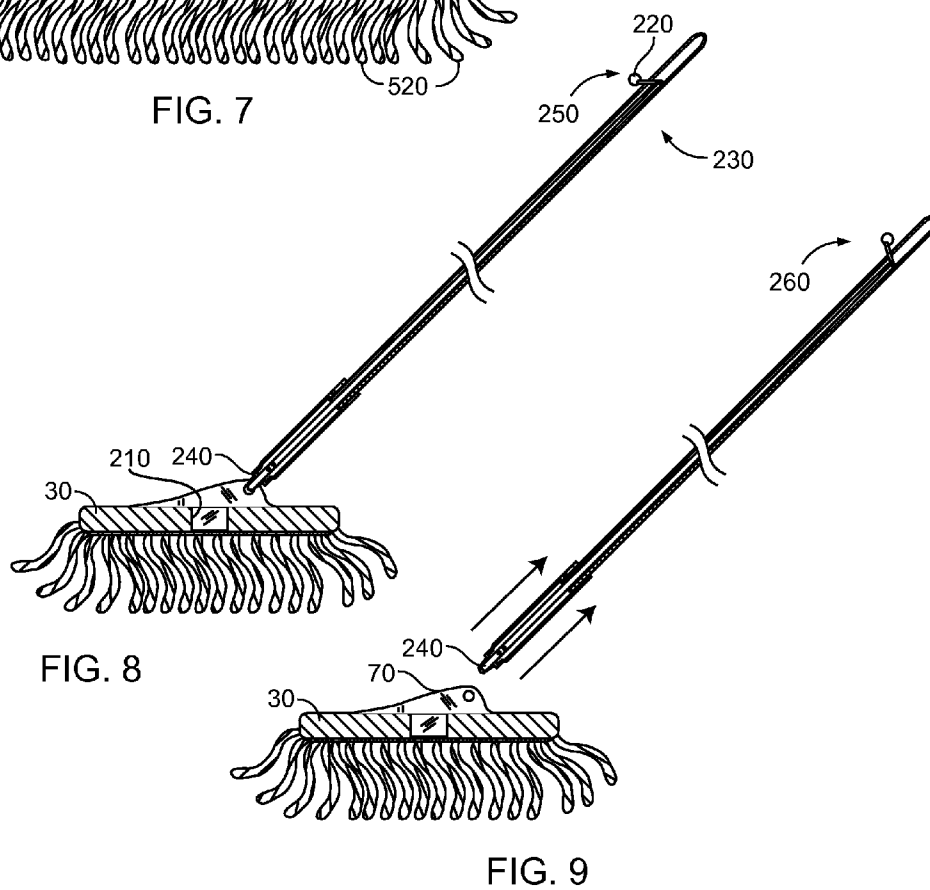
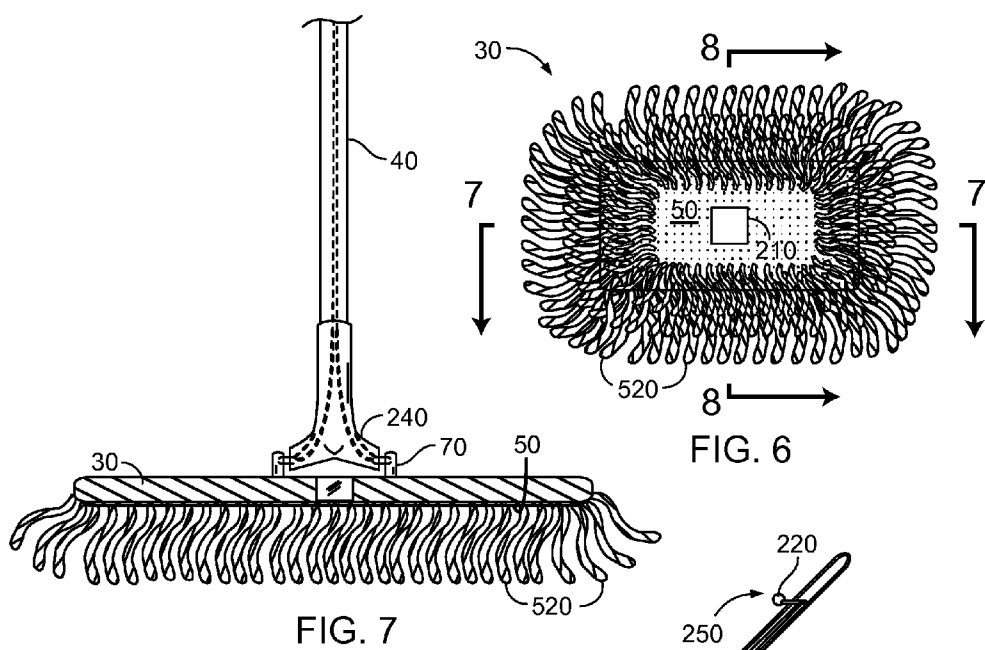


FIG. 5



MOPPING SYSTEM METHOD OF USE

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a divisional application of U.S. patent application Ser. No. 11/204,550, filed on Aug. 16, 2005, incorporated herein by reference.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH AND DEVELOPMENT

[0002] Not Applicable.

FIELD OF THE INVENTION

[0003] This invention relates to mops, and more particularly to a mop that has a mop head adapted for spin drying within a motorized bucket assembly.

DISCUSSION OF RELATED ART

[0004] Conventional mops used in retail and commercial locations such as restaurants, shopping malls, and the like are typically of the type having an elongated handle and a string cloth mop head. A wheeled bucket is usually included that contains either one compartment for a clean water solution, or two compartments for holding the clean water solution and fouled water. A wringer may be included to wring-out the mop into the fouled water compartment.

[0005] In use, the mop is wrung-out and submerged into the clean water solution so as to absorb a quantity thereof. Such clean water may also include a cleaning agent such as bleach, or the like. The mop is then applied to the floor where it deposits a layer of the clean water solution and, simultaneously, picks-up dirt, grease and other water-fouling material. The mop, now contaminated, is then wrung-out, and the mop is once again submerged into the clean water solution. However, at this point not all of the contaminants have been removed from the mop in the wringing process, and a significant amount of water fouling material is deposited into the clean water compartment. As a result, it is not long before there is little distinction between the two compartments, both containing fouled water.

[0006] In prior art mop buckets with only a single bucket compartment, the problem is compounded by the fact that dirt that is removed from the mop and wrung-out into the water compartment can be immediately picked-up again by the mop and re-applied to the floor surface that is being mopped. Mopping with such prior art buckets quickly becomes an exercise in futility, as applying contaminated water to a contaminated floor does little to clean the floor. Further, often the employees who are charged with mopping the floor are indifferent as to whether or not the process actually cleans the floor, the result being poor sanitary conditions throughout the establishment.

[0007] Moreover, to make conditions worse, in practice many mop buckets are not emptied for days, the same fouled water sitting stagnant, a perfect media for bacteria and other biologically active organisms to thrive and multiply. Instead of cleaning the floors in a retail establishment, mopping with such a universal mopping bucket can often do more to contaminate the floors with dangerous biological agents than not mopping at all.

[0008] Several improved wringing devices have been invented that attempt to overcome the aforementioned drawbacks with the prior art. Such devices strive to more thoroughly clean the mop during the wringing process. For example, U.S. Pat. Nos. 4,464,809 and 4,344,201, issued on Aug. 14, 1984 and Aug. 17, 1982, both to Trisolini, disclose a mop with a rotating head that cooperates with a rotating mop wringer that is spun by a motorized bucket. The mop wringer takes the form of a perforated basket, and strands of the mop are thrown against the side walls thereof, whereby water and dirt are extracted from the mop. However, the perforated basket of such a device applies not only centrifugal force to the strands of the mop, but also centripetal force, which serves to keep particles of dirt and debris in the mop head. The force of the strands against the perforations of the basket can actually block water and dirt flow out of the mop strands. Thus, while such a device is better at removing dirt and water from the mop, it is by no means optimal at such. A further drawback to the Trisolini devices is that they are somewhat tall in their profile, and are therefore more difficult to store and maneuver. Further, such prior art mop assemblies are heavy due to the hollow cleaning fluid chamber therein, and as such a person mopping with such a device can quickly become exhausted.

[0009] Another prior art device, also to Trisolini, is described in U.S. Pat. No. 4,561,141 issued on Dec. 31, 1985. This device incorporates a motor and a wringing basket into the mop assembly, for providing a self-wringing mop. The main drawback with such a device is, again, the mop of such a device is heavy and quickly becomes exhausting to use. The motor of such a device, as well as the batteries to power it, are extra weight that the user is forced to propel around the floor while mopping.

[0010] Several improvements have been devised for sterilizing germs that may be present in the mop bucket or on the mop itself. For example, U.S. Pat. No. 4,135,269 to Marston on Jan. 23, 1979, teaches a mop bucket that includes an ultraviolet light sterilizing system. Japanese Patent Application JP11206666A2 to Akihiro on Aug. 3, 1999 teaches a bucket including an ozone generator for bubbling ozone up through the liquid contained in the mop bucket. Both such prior art inventions may accomplish their goals, but neither patent is directed towards a device for cleaning both the fouled water contained in the bucket and the mop head simultaneously. Further, such prior art devices do not include intelligent controlling means for shutting-off the sterilizing device if the bucket is empty or is not being used. Thus, one can easily inadvertently leave such a device activated, both wasting energy and possibly over-exposing the mop and surrounding areas to UV light and ozone.

[0011] Therefore, there is a need for an improved mopping system that allows for convenient, quick and thorough cleaning and drying of a mop head. Such a needed device would allow clean water or a cleaning solution to be applied to the mop head easily, and would not allow cross-contamination between the clean water solution and the fouled-water container. Moreover, such a needed device would provide for easy sterilization of the mop head and the fouled water to prevent biological growth therein, and would facilitate emptying of the fouled water. The needed device would be self-contained and easily portable from location to location as needed. Further, such a needed device would greatly improve the sanitary conditions of mopped floors, substan-

tially eliminating re-contamination thereof by a fouled mop head. The present invention accomplishes these objectives.

SUMMARY OF THE INVENTION

[0012] The present device is a mopping system comprising a mop assembly and a bucket assembly. In the preferred embodiment, the mop assembly includes a mop head that is detachably fixed to a lower end of an elongated handle. The mop head is adapted to be spun around a generally vertical rotational axis thereof when the mop head is fixed within a mop head spinning means of the bucket assembly. As such, when the mop head is spun at a relatively high rate of rotational speed, water retained in the mop is forcefully dispelled from the mop by centrifugal force. The fouled water leaves the mop and is retained within the spin chamber, where it collects at the bottom thereof. A drain plunger is preferably included to allow the collected fouled water to be drained from the spin chamber into either a floor drain or a drain water container included with the invention. An ozone generator may be included for introducing ozone gas into the collected fouled water in the spin chamber, thus sterilizing any biologically active organisms contained therein.

[0013] A clean water tank with a pump and spraying means is preferably included to allow introduction of clean water to the mopping surface of the mop head. Such a clean water tank is preferably mounted within the spin chamber just below the mop head when the mop head is engaged with the mop head spinning means. The clean water tank is sealed so that fouled water dispensed from the mop head during rotation does not contaminate the clean water or other cleaning fluid contained in the clean water tank.

[0014] The mop assembly may include a lever means for selectively detaching the mop head from the handle. As such, the user does not have to bend down to engage the mop head with the mop head spinning means of the bucket assembly. Alternately, the mop head may be rotationally fixed to the elongated handle such that it can only spin around its rotational axis when engaged with the mop head spinning means.

[0015] The present invention is an improved mopping system that allows for convenient, quick and thorough cleaning and drying of a mop head. The present device allows clean water or a cleaning solution to be applied to a mop head easily, and prevents contamination between a clean water solution and a fouled-water container. Moreover, the present invention provides for easy sterilization of the mop head and the fouled water to prevent biological growth therein, and allows for easy, hands-free emptying of the fouled water. The invention is self-contained, easily portable from location to location as needed, and greatly improve the sanitary conditions of floors mopped therewith, substantially eliminating re-contamination thereof by a fouled mop head. Other features and advantages of the present invention will become apparent from the following more detailed description, taken in conjunction with the accompanying drawings, which illustrate, by way of example, the principles of the invention.

DESCRIPTION OF THE DRAWINGS

[0016] FIG. 1 is a cut-away left-side elevational view of the invention, illustrating a mop assembly of the present

invention in a position to engage a mop head thereof with a bucket assembly of the present invention;

[0017] FIG. 2 is a cut-away left-side elevational view of the invention, illustrating the mop head as engaged with a mop head engagement means of the bucket assembly;

[0018] FIG. 3 is a cut-away left-side elevational view of the invention, illustrating a spinning mop head rotated by a mop head spinning means of the invention, and further illustrating dirty water being flung away from the mop head while clean water is sprayed to an underside of the mop head;

[0019] FIG. 4 is a cut-away left-side elevational view of the invention, illustrating a drain plunger being actuated to drain a spin chamber of the invention of dirty water;

[0020] FIG. 5 is a top plan view of the invention, showing a mop head as engaged with a non-circular shaft of the mop head spinning means;

[0021] FIG. 6 is a bottom plan view of the mop head of the invention, illustrating a lower surface thereof and a plurality of water absorbing strands;

[0022] FIG. 7 is a cross-sectional view of the invention, taken generally along lines 7-7 of FIG. 6, illustrating a handle attachment means of the mop head and a mop head attachment means of an elongated mop handle;

[0023] FIG. 8 is a cross-sectional view of the invention, taken generally along lines 8-8 of FIG. 6, illustrating in more detail the handle attachment means of the mop head and the mop head attachment means of the elongated mop handle; and

[0024] FIG. 9 is a cross-sectional view of the invention, taken generally along lines 8-8 of FIG. 6, illustrating the mop head being detached from the elongated handle.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0025] FIG. 1 illustrates a mopping system 10 of the present invention. In its simplest form, the mopping system 10 comprises a mop assembly 20 and a bucket assembly 90. The mop assembly includes a mop head 30 preferably pivotally attached to an elongated handle 40. The mop head 30 includes a floor-engageable lower surface 50 (FIG. 7) and an opposing upper surface 60. The mop head 30 includes a handle attachment means 70, preferably on the upper surface 60, for attaching the mop head 30 to a lower end 80 of the handle 40 (FIGS. 7-9). The handle attachment means 70 could also be provided on a peripheral edge of the mop head 30 (not shown).

[0026] The mop head 30 is preferably detachable from the elongated handle 40 so that the mop head 30 may be easily spun in the bucket assembly 90 without the need to also spin the handle 40. However, such an arrangement is not necessarily required in an embodiment of the invention that allows for spinning the entire mop assembly 20 by aligning the longitudinal axis of the handle with the rotational axis 140 of the mop head.

[0027] Such an embodiment notwithstanding, the preferred embodiment of the invention includes a biased lever means 220 at an upper end 230 of the handle 40 mechanically coupled to a mop head attachment means 240 fixed to

the lower end **80** of the handle **40**. The mop head attachment means **240** of the handle **40** and the handle attachment means **70** of the mop head **30** cooperate to retain the mop head **30** in a pivotable fashion on the lower end **80** of the handle **40** when the lever means is in a normal position **250** (FIG. 8). When the lever means **220** is placed in an actuated position **260** (FIG. 9), the mop head attachment means **240** of the handle **40** and the handle attachment means **70** of the mop head **30** cooperate to mechanically disconnect the mop head **30** from the lower end **80** of the handle **40**. The lever means **220** is preferably a lever as illustrated in FIGS. 8 and 9, however, a biased spring button or knob may also be used, as could a variety of different mechanical couplings. Linkages between the upper end **230** and lower end **80** of an elongated handle **40** are known in the prior art, and the preferred embodiment herein described is just one such known method. The important feature of this embodiment is that the mop head **30** may be easily detached from the handle **40**, preferably without the operating having to bend down.

[0028] The mop head **30** preferably includes a plurality of water absorbing strands **520** attached to the lower side **50** thereof. Such strands **520** may be made from cotton, felt, or other water absorbing material. Such strands **520**, however, are made from a material that will release water when subjected to a strong centrifugal force. The mop head **30** is preferably rectangular in plan view (FIG. 6), but could also be either circular or square or any other suitable shape, provided that the mop head **30** has a center of gravity proximate its longitudinal axis **140** so as to remain balanced when spinning, as described below.

[0029] The bucket assembly **90** preferably includes a spin chamber **100** complete contained therewithin, and a mop head spinning means **110**. The mop head spinning means **110** is engageable with the mop head **30** to rotationally support the mop head **30** within the spin chamber **110**, away from an inner wall **115** thereof (FIG. 3). As such, when spun around the rotational axis **140**, the distance to the edge of the mop head **30** and the centrifugally extended strands **520** must be less than the distance between the shaft **180** and the inner wall **115** of the spin chamber **110**. As such, water in a strand **520** is not constrained by the inner wall **115** and is free to exit the strand **520**.

[0030] It will be appreciated by those skilled in the art that the mop head spinning means **110** can take various forms. Preferably, as illustrated in FIGS. 1-5, the mop head spinning means includes a mop head engagement means **120** such as a shaft **180** having a non-circular cross-section. The non-circular shaft **180** is vertically and rotationally supported within the spin chamber **100** by a pair of bearings **280** each centrally supported by the spin chamber **100**. A rotational driving means **130**, such as an electric motor **150** with a rotating shaft **190**, is connected to the mop head spinning means **110** through a mechanical linkage **195** therebetween (FIG. 1), such as a cog belt **195** with pulleys **200** (FIG. 2) on the shafts **180**, **190**. In this manner the motor **150** may be isolated in a dry chamber **105** (FIG. 2) of the bucket assembly **90**, away from any moisture or standing liquid **315**. Further, the rotational speed of the shaft **180** may be differed as desired from that of the motor **150** through use of varying-sized pulleys.

[0031] In the preferred embodiment of the invention, the spin chamber **100** is generally a toroid-shaped enclosure

open at its top end and having an inverted frustoconical inner wall **270** centrally located therewithin. The bearings **280** are fixed to the lower outer surface of the inner wall **270** and are co-aligned to allow the shaft **180** to be supported co-axially and substantially vertically therewithin. A seal is included on the shaft **180** where the shaft **180** penetrates the inner wall **270** and protrudes into the spin chamber **100**.

[0032] It would be obvious to one skilled in the art to directly couple a motor **150** to the shaft **180** such that the motor is within the inner wall **270**, directly under the mop head **30** when the mop head **30** is engaged to the mop head engagement means **120**. The inner wall **270** would, in such an embodiment, constitute the dry chamber **105**. Other arrangements could be used for the mop head spinning means **110**, as well, as known in the prior art. What is vital to the design, however, is that water is prevented from entering the motor **150** or any other electronic components, as discussed further below.

[0033] Located just below the mop head **30** when the mop head **30** is engaged to the shaft **180** is a generally toroid-shaped clean water tank **290** having an inverted frustoconical aperture **300** formed therein (FIGS. 1-5). The clean water tank **290** rests on the inner wall **270** of the spin chamber **100**, its longitudinal axis coinciding with that of the shaft **180**. The clean water tank **290** includes a pump and spraying means **310** for pumping clean water **320** from the clean water tank **290** and spraying the clean water **320** onto the lower surface **50** of the mop head **30**. The pump and spraying means **310** is preferably an electric pump fixed proximate to the lower inside surface of the clean water tank **290** that pumps clean water **320** up to an inverted spray nozzle fixed to the top outside surface of the tank **290** (FIG. 3). The clean water **320** may obviously be a cleaning liquid as opposed to clean water, per se, but the clean water **320** is isolated from any fouled water **315** leaving the mop head **30** due to the clean water tank **290** being generally sealed. A water inlet port **500** may be included, the water inlet port **500** being in fluid communication with, such as with a hollow pipe, the clean water tank **290** (FIGS. 1-5). The water inlet port **500** preferably exits the bucket assembly **90** at a top side **440** thereof. As such, clean water **320** or other cleaning fluids may be introduced into the water inlet port **500** in order to refill the clean water tank **290** without having to remove the clean water tank **290** from the spin chamber **100**.

[0034] A drain plunger **330** protrudes from one end **340** of the bucket assembly **90** and extends down through the bucket assembly **90** to a rubber seal **350**. The rubber seal **350** seals a drain aperture **360** in the lower-most section **370** of the spin chamber **100**. The drain plunger **330** is biased upward such that the rubber seal **350** engages and seals the drain aperture **360** in a normal position **380** thereof (FIGS. 1-3). When the drain plunger **330** is placed in an actuated position **390**, against a biasing element such as a spring **395**, the drain plunger **330** causes the rubber seal **350** to disengage the drain aperture **360** of the spin chamber **100**, resulting in the draining of any fouled liquid **315** from the bucket assembly **90** (FIG. 4).

[0035] Preferably a drain water container **510** is also included, open on its top side and adapted to fit under the drain aperture **360** between the bucket assembly **90** and a floor surface **420**. The bottom inside surface of the spin chamber **100** is slightly tilted towards the drain aperture **360**

so that fouled water **320** within may be completely drained by gravity when the drain plunger **330** is actuated. A plurality of wheels **400** on the bottom surface **410** of the bucket assembly **90** maintain the bucket assembly **90** above the floor surface **420**. Preferably at least two of the plurality of wheels **400** are lockable, such that when the motor **150** is actuated the bucket assembly **90** does not oscillate or otherwise move along the floor surface **420**. The bucket assembly **90** may be conveniently moved about the floor surface **420** by the operator pushing or pulling the elongated handle **40** when same is engaged with the mop head **30** and the mop head **30** is mounted on the shaft **180**.

[0036] The electric motor **150** is electrically connected to a power source **170**, such as a DC battery. An AC/DC adapter **178** (FIG. 2) may be used to recharge the battery, ensuring for safety that only low voltage is proximate to the bucket assembly **90**. However, an AC power cord **175** for plugging into a power outlet (not shown) could also be used (FIG. 1). In either case, the power source **170** is preferably enclosed in the dry chamber **105**.

[0037] The bucket assembly **90** preferably further includes a top cover **430** slidably engaged with the top surface **440** thereof for covering the mop head **30** when the mop head **30** is engaged with the mop head engagement means **120**. As such, fouled water **315** cannot escape the bucket assembly **90** when the cover **430** is closed and the motor **150** is activated. Alternately, the mop head **30** may be both rotationally and pivotally attached to the elongated handle **40**, such that the mop head **30** may spin with respect to the handle **40** while still attached thereto (not shown). In such an embodiment, the mop head **30** remains attached to the elongated handle **40** yet may spin freely in a rotational plane when the mop head **30** is engaged to the rotating shaft **180**. The cover **430** in such an embodiment is either not included, or is provided with a handle slot (not shown) for covering most of the spin chamber **100** while allowing just the handle **40** to protrude therefrom.

[0038] Moreover, in such an embodiment the lever means **220** is not for disengaging the mop head **30** from the handle **40**, but rather rotationally unlocking the mop head **30** from spinning with respect to the handle **40**. With such an arrangement the lever means **220** is actuated only when the mop head **30** is engaged to the shaft **180** and the operator desires the mop head spinning means **110** to be activated. Indeed, such actuation of the lever means **220** may cause the button **490** to become actuated (not shown), thereby starting the washing and drying cycle of the control circuit **480**. In using such an embodiment, a user places the mop head **30** onto the shaft **180** by lifting the mop head **30** with the handle **40**. Once engaged with the shaft **180** the lever means **220** is actuated, and the mop head **30** becomes rotationally unlocked from the handle **40** and the mop head spinning means **110** is activated. Alternately, the act of engaging the mop head **30** onto the shaft **180** may rotationally free the mop head **30** from the handle **40** and actuate the head spinning means **110**, thereby eliminating the need for the lever means **220** completely. A mechanical engineer or others skilled in the art would be able to effect such alternate arrangements of the mop assembly **20** to enable the mop head **30** to rotate only when desired by the operator.

[0039] The bucket assembly **90** preferably further includes an ozone generator **450** fluidly connected to the lower-most

portion **370** of the spin chamber **100** through a tube **455**. As such, when the ozone generator **450** is activated, ozone gas **460** is caused to bubble up through any fouled liquid **315** contained within the spin chamber **100**. Further, ozone gas **460**, upon reaching the surface of the fouled liquid **315**, fills the open space of the spin chamber **100** and helps to sterilize any bacteria and germs located therein, such as on the mop head **30**. Ozone gas **460** is preferred, but alternate sterilizing fluids or gases could be introduced to the fouled liquid **315** without departing from the spirit and scope of the present invention.

[0040] The dry chamber **105** includes a control circuit **480** that electrically connects the power source **170** to the motor **150**, the ozone generator **450**, and the pump and spraying means **310** as needed. Such a control circuit preferably includes a button **490** for activating a washing and drying cycle of the mopping system **10**, wherein the motor **150** is activated to spin the mop head **30** at a relatively low speed, such as between 40 and 60 RPM, while the pump and spraying means **310** sprays the clean water solutions **320** onto the lower side **50** of the mop head **30** to clean the mop head **30**. The ozone generator **450** is also activated. The control circuit then, after a predetermined period of time such as 15 to 30 seconds, deactivates the pump and spraying means **310** and increases the speed of the motor **150** to preferably between 400 and 600 RPM, to force effective centrifugal drying of the mop head **30** and the water absorbing strands **520**. As the strands **520** do not touch the inner wall **115** of the spin chamber **100**, any water **315** therein is quickly expunged therefrom. After a second predetermined period of time, such as 30 to 60 seconds, the motor **150** is deactivated, and then, after a third predetermined period of time, such as five minutes, the ozone generator **450** is deactivated so as not to overly expose the surrounding areas to ozone gas.

[0041] The button **490** may be located through the top surface **440** of the bucket assembly **90**, under the top cover **430** when the top cover **430** is in an open position (FIGS. 1 and 2). As such, the button **490** may not be depressed unless the top cover **430** is closed (FIGS. 3 and 4), ensuring that the motor **150** does not spin when the cover **430** is open for safety.

[0042] Alternatively, a second button **495**, in series with the button **490**, may be included to sense if a mop head **30** has been engaged with the mop head engagement means **120**. If not, the second button **495** remains open, thereby preventing the motor **150** from spinning unless both the mop head **30** is in place on the shaft **180** and the cover **430** is closed. The second button **495** may be mounted proximate the shaft **180** to detect the weight of the mop head **30** thereon, or using some other commonly known button mounting arrangement. Clearly, the second button **495** may be included without button **490**, such that merely engaging the mop head **30** on the shaft **180** starts the washing and drying cycle. In such an embodiment, a delay of several seconds may be introduced to give the operator time to withdraw the handle **40** completely from the mop head **30**. However, preferably, the button **490** is included to ensure that the cover **430** is closed prior to starting the washing and drying cycle.

[0043] In operation, a number of methods of use are preferred. The simplest method is to minimally provide the

mop head **30** and a simplified bucket assembly **90**, engage the mop head **30** to the mop head spinning means **110** of the bucket assembly **90**, and activate the spinning means **110** to dry the mop head **30**. The mop head spinning means **110** in such a case is switchably connected to the power source **170** in a conventional manner, such as directly through a switch or button **490**, or by plugging a power cord into a wall outlet (not shown), and the motor **150** of the mop head spinning means **110** rotates the shaft **180** to spin the mop head **30**. When the button **490** is released, or the power cord is pulled from the wall outlet, the motor **150** is deactivated. Such a simplified embodiment, however, requires the operator to judge when the mop head **30** is dry, and such a judgment may or may not be accurate.

[0044] In such an embodiment, the mop head spinning means **110** may be used over an existing sink (not shown), the sink acting as the spin chamber **100**. Such an embodiment requires that the motor **150** is mounted in some fashion, such as in a dry chamber **105** enclosure resting on a countertop proximate the sink with the shaft **180** provided on a cantilevered arm extending out over the sink (not shown), or the like. Alternatively, the motor **150** may be mounted in an inverted cone dry chamber **105** with the shaft **180** emanating from the top thereof (not shown), the inside of the cone being sealed from the water dripping down from the mop head **30**. While such embodiments are the simplest configurations for the present invention, the safety risk of such embodiments are significantly higher, and the ease of use is considerably less than that of the preferred embodiments, as water spinning off of the mop head **30** is not fully contained and can spray out of the sink in such embodiments. Therefore, while these embodiments fall within the scope of the present invention, these embodiments are not preferred.

[0045] Additional steps of spraying clean water **320** onto the lower surface **50** of the mop head **30** may be included in the method of use of the present invention. Such spraying of clean water **320** may occur either before or after the main drying cycle (wherein the mop head **30** is spun at a relatively high rotational speed to effect centrifugal drying) and such spraying may be termed a wash cycle. Thus, various cycles, such as dry only, wash only, wash-dry, dry-wash, wash-dry-wash, or dry-wash-dry cycles, may be easily incorporated into the invention by altering the programming of the control circuit **480**. Moreover, a plurality of buttons **490** may be included (not shown), each button **490** having a dedicated cycle type, such that the operator may select the desired cycle type based on the requirements of a particular floor cleaning situation.

[0046] While a particular form of the invention has been illustrated and described, it will be apparent that various modifications can be made without departing from the spirit and scope of the invention. For example, the relative con-

figurations of the spin and dry chambers **100,105** may be altered, as may aspects of the mop assembly **20** and how the mop head **30** is attached to the handle **40**. Such modifications do not affect the scope of the invention and do not substantially alter the method of its use. Accordingly, it is not intended that the invention be limited, except as by the appended claims.

What is claimed is:

1. A mop drying method comprising the steps of:

- (a) providing a mop head having a longitudinal axis, and a mop head spinning means;
- (b) engaging the mop head spinning means to the mop head proximate the longitudinal axis thereof; and
- (c) activating the spinning means to spin the mop head about a rotational axis thereof until the mop head is substantially dry.

2. The mop drying method of claim 1 further including the steps of:

- (d) spraying clean water onto the mop head; and
- (e) activating the spinning means a second time to spin the mop head about the rotational axis until the mop head is substantially dry.

3. A mop drying method comprising the steps of:

- (a) providing a mop head having a longitudinal axis, and a mop head spinning means;
- (b) engaging the mop head spinning means to the mop head proximate the longitudinal axis thereof;
- (c) activating the spinning means to spin the mop head about a rotational axis thereof at a first speed;

(d) spraying a clean water solution onto the mop head for a first period of time; and

- (e) activating the spinning means to spin the mop head about a rotational axis thereof at a second speed for a second period of time.

4. A mop drying method comprising the steps of:

- (a) providing a mop and a mop head spinning means, the mop including a mop head detachable from a mop handle;
- (b) detaching the mop head from the handle;
- (c) engaging the mop head to the mop head spinning means;
- (d) activating the spinning means to spin the mop head about a rotational axis thereof until the mop head is substantially dry.

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