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FLOOR CLEANER

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FLOOR CLEANER

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My present invention relates to a new and improved floor cleaner having the particular advantage of washing and drying a floor or other surface simultaneously and successively, with a single operation of the apparatus.

One of the objects of my present invention is to provide a cleansing apparatus whereby a floor or other surface to be cleaned, is scrubbed with soapy water or other suitable cleansing fluid and is rapidly freed from the cleansing fluid so that it is left in a dry or practically dry condition when the apparatus moves over it. Another object of the present invention is to provide an apparatus of the character described which can wash a floor, remove the dirty wash water, and can also direct a current of dry air against the washed floor in order to thoroughly dry the same.

A further object of my invention is to provide an apparatus for the purposes aforesaid which will be simple and compact in structure, easy to operate and durable in use. Other objects and advantages of my invention will be pointed out in more detail hereinafter, and will in part be apparent to those skilled in the art to which the present invention relates.

With the above objects in view my present invention consists of the novel features of construction, arrangement, and combination of parts hereinafter described and illustrated in the accompanying drawing. It is, however, to be clearly understood, that my invention is not limited to the specific embodiment thereof herein described and shown in the accompanying drawing by way of illustration only.

Reference will now be had to the accompanying drawing forming a part of this specification, wherein like reference characters indicate corresponding parts throughout the several views.

Fig. 1 is a perspective view of an apparatus constructed in accordance with my present invention,

Fig. 2 is a side sectional view of the apparatus along the lines 2—2 of Fig. 3,

Fig. 3 is a front sectional view along the lines 3—3 of Fig. 2, and

Fig. 4 is a detail view in section.

The apparatus as illustrated in the drawing comprises a casing 10 which is amounted upon suitable wheels 11 and is provided with a bracket 12 to which is connected a handle 13 by means of which the carriage may be readily moved upon the floor F in any desired direction. The bottom of the casing 10 is slightly above the surface of the floor. The casing 10 is divided into lateral compartments 14, 15 and 16 of various sizes.

The compartments 14 and 15 are open at the bottoms thereof while the compartment 16 is closed at its bottom. The compartment 16 communicates with compartment 15. The compartment 14 is provided with a brush B mounted upon a suitable shaft 17 and the compartment 15 is provided with a brush B' mounted upon a suitable shaft 18. A brush B'' is also mounted on a shaft 19 within the casing 10 in such manner that the bristles of the brush B'' will mesh with the bristles of the brush B'. The compartment 16 is provided with a trap at the bottom thereof and the bottom wall of said compartment 16 has a plug P by means of which any water in the trap may be drained out when desired. The upper wall of the compartment 16 is provided with a separator 20 communicating with the compartment 16 by means of an opening 21, as illustrated in detail in Fig. 4. The moist air in compartment 16, which is subjected to air suction as hereinafter described, is freed of the moisture in passing over the vanes 22, shown in Fig. 4 and the moisture drips down through perforations in the bottom of the separator 20 into the trap in the compartment 16.

A motor M, which may be an electric motor of any suitable type is mounted on the casing 10. The shaft 23 of the motor M has two suction devices mounted thereon such as fans S and S', of any suitable type, which are enclosed in casings 24 and 25 respectively. As illustrated in Fig. 3, the shaft 23 is suitably geared to a vertical shaft 26 mounted on the side of the casing 10, as indicated at 27. The shaft 26 is in turn suitably geared to the shaft 18 as indicated at 28. A pinion 29 on the shaft 18 meshes with a gear mounted on the shaft 19. The motion of the motor M is in this manner transmitted to the brushes B and B' causing the two brushes to be rotated in opposite directions. While the system of transmission as described and illustrated is preferred, it will be understood that any other suitable means of transmission may be employed with the same effect.

Mounted on the casing 10 are two tanks T and T' as illustrated in Fig. 1 and Fig. 2. The tank T is provided for holding a supply of clean water which may be mixed with soap or any other suitable cleanser, and the tank T' serves as a reservoir for the waste or dirty wash water. The clean liquid tank T is connected by means of the pipe 30 to a lateral pipe 31 within the compartment 14 above the brush B. The pipe 31 is perforated at the bottom thereof, so that the clean washing liquid is allowed to drip in a suitably regulated

manner upon the brush B. The pipe 30 is provided with a suitable valve V by means of which the flow of clean liquid may be regulated and shut off at any desired time. The waste tank T' is provided with a pipe 32 which leads into the compartment 16 and extends into the trap in the bottom thereof. The top of the tank T' is also connected to the fan casing 24 by means of a pipe 33. The tank T' may be provided at the bottom thereof with any suitable outlet valve V' for draining off the waste water. Similarly the separator 20 in the top of compartment 16 is connected to the fan casing 25 by means of a pipe 34. The fan casings 24 and 25 may be provided with outlets O and O' respectively for delivering the exhaust air into the atmosphere.

When the motor is operated and the device is moved forward upon the floor to be cleaned, the floor is subjected to a vigorous scrubbing action because of the rapid revolution of the brush B to which the clean wash water is supplied. Since the bottom of the brush B moves toward the rear of the casing, the dirty wash water is moved toward compartment 15, where it is raised from the floor by the revolving brush B', and its action is assisted by the suction which is maintained in compartment 15 as hereinafter described. The waste water raised from the floor by the brush B' is thrown into the trap in the bottom of compartment 16 by the brush B'' which meshes with the brush B'. In order to further ensure the delivery of the dirty wash water into the compartment 16, a longitudinal rod 35 may be provided against which the bristles of the brush B'' are moved so that the droplets of water accumulating on the brush B'' are thereby positively thrown in to the compartment 16.

The operation of the motor also actuates suction fans S and S'. The suction fan S forces the air out of the top of the waste tank T' and simultaneously produces enough suction in the pipe 32 to drain the water out of the trap in compartment 16 and cause the water to pass into the waste tank T'. The suction fan S' draws up air from the compartments 15 and 16 which are in communication with each other and through the separator 20 which connects with the fan casing 25, thereby assisting in the drying of the floor and the brushes B' and B''.

If desired, the device could be employed with the brush B removed, so that it could be operated to dry any wet surface. While the device is operating little or no water will collect in the trap in compartment 16, because the suction through the pipe 32 moves most of the water up through said pipe 32 into the waste tank T'. When, however, the operation of the device is interrupted as for example at the end of a period of use, the water in the pipe 32 will flow back and collect in the trap in the bottom of compartment 16.

I have thus described and illustrated a preferred embodiment of my invention, but it is desired to be understood that numerous changes may be made in the details of construction without departing from the spirit of the invention.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a floor cleaning apparatus, substantially as described, the combination of a casing adapted to be moved along a floor, means located within said casing and adapted to raise the wash water from said floor, means located within said casing and adapted to separate the wash water from said water raising means and to deliver

same to a compartment in said casing, and suction means associated with said casing, having a connection with said compartment and adapted to draw upon said separating means to remove the moisture therefrom.

2. In a floor cleaning apparatus, substantially as described, the combination of a casing adapted to be moved along a floor, said casing having a compartment therein, water raising means located within said casing, means located in said compartment contacting with said water raising means and adapted to separate the wash water therefrom and to deliver same to said compartment, and suction means associated with said casing having a connection with said compartment and adapted to draw upon said separating means to remove the moisture therefrom.

3. In a floor cleaning apparatus, substantially as described, the combination of a casing adapted to be moved along a floor, said casing having a compartment therein, a rotatable brush located within said casing and adapted to raise the wash water from said floor, a rotatable brush located in said compartment contacting with said water raising brush and adapted to separate the wash water therefrom and to deliver same to said compartment, suction means associated with said casing having a connection with said compartment and adapted to draw upon said separating brush to remove the moisture therefrom, and power drive means associated with said casing and adapted to actuate simultaneously said water raising brush separating brush and suction means.

4. In a floor cleaning apparatus, substantially as described, the combination of a casing adapted to be moved along a floor, said casing having a compartment therein, water raising means located within said casing, means located in said compartment contacting with said water raising means and adapted to separate the wash water therefrom and to deliver same to said compartment, and suction means associated with said casing having a connection with said compartment and adapted to suck upon said separating means to remove the moisture therefrom, said compartment having means intermediate said separating means and the inlet to said suction means to separate the water from the current of air forced therebetween.

5. A floor cleaning apparatus comprising a casing having three aligned compartments, said casing being adapted to be moved along a floor, washing means located in the first compartment, a tank of clean washing liquid associated with said casing and connected to said first compartment, water raising means located in the second compartment, means located in the third compartment contacting with said water raising means and adapted to separate the water therefrom and to deliver same into the third compartment, a collecting tank for dirty wash water associated with the casing and connected to a water trap in said third compartment, suction means associated with the casing and connected to said collecting tank to create a vacuum therein, whereby the dirty wash water will be caused to flow from the third compartment into said collecting tank, and suction means associated with said casing and connected to said third compartment whereby the moisture will be removed from said separating means.

6. A floor cleaning apparatus comprising a casing having three aligned compartments, said casing being adapted to be moved along a floor,

washing means located in the first compartment, a tank of clean washing liquid associated with said casing and connected to said first compartment, water raising means located in the second compartment, means located in the third compartment contacting with said water raising means and adapted to separate the water therefrom and to deliver same into the third compartment, a collecting tank for dirty wash water associated with the casing and connected to a water trap in said third compartment, suction means associated with the casing and connected to said collecting tank to create a vacuum therein whereby the dirty wash water will be caused to flow from the third compartment into said collecting tank, suction means associated with the casing and connected to said third compartment whereby the moisture will be removed from said separating means, and means located in the third compartment intermediate said separating means and the inlet to said last mentioned suction means to separate the water from the current of air subjected to said suction means.

7. A floor cleaning apparatus comprising a casing having three aligned compartments, said casing being adapted to be moved along a floor, a rotatable brush located in the first compartment and adapted to scrub the floor, a tank of clean washing liquid associated with the casing and adapted to supply water to said scrubbing brush, a rotatable brush located in the second compartment and adapted to raise the wash water from the floor, a rotatable brush located in the third compartment contacting with said water raising brush and adapted to separate the water therefrom and to deliver same into the third compartment, power drive means associated with the casing and adapted to actuate said three brushes, a collecting tank for dirty wash water associated with the casing and connected to a water trap in said third compartment, suction means associated with the casing and connected to said collecting tank to create a vacuum therein whereby the dirty wash water will be caused to flow from the third compartment into said collecting tank, suction means associated with the casing and connected to said third compartment whereby the moisture will be removed from said separating brush, and means located in the third compartment intermediate said separating brush and the inlet to said last mentioned suction means to separate the water from the current of air subjected to said suction means.

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