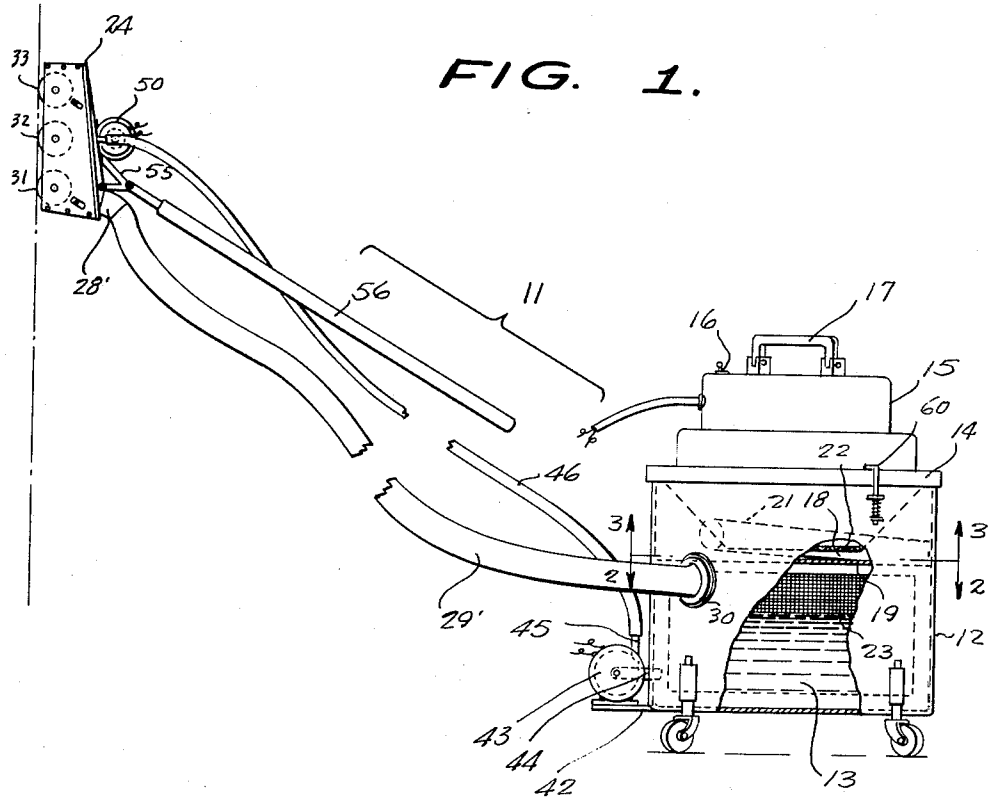
April 19, 1960 R. J. O'CONNOR 2,932,844

ELECTRIC WALL AND CEILING WASHER

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FIG. 1.



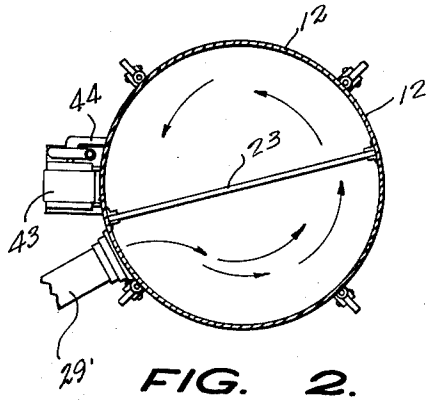


FIG. 2.

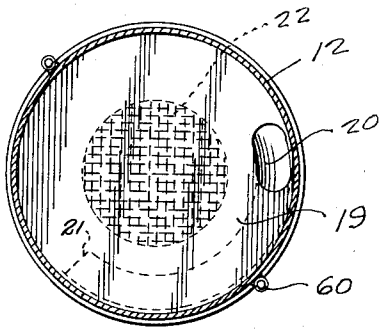


FIG. 3.

INVENTOR.
ROBERT J. O'CONNOR,
BY
McMorrow, Berman & Davidson
ATTORNEYS.

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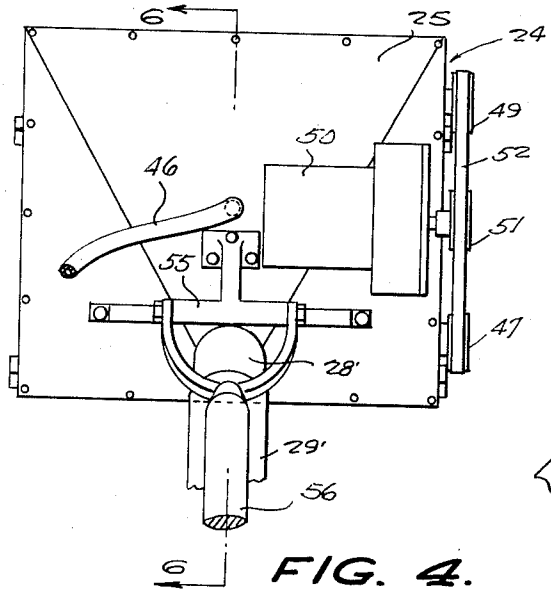


FIG. 4.

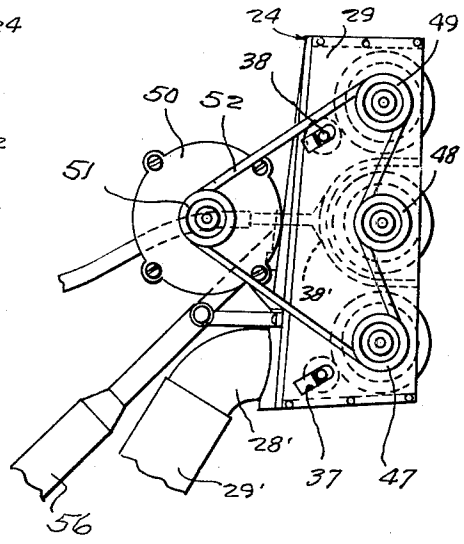


FIG. 5.

FIG. 7.

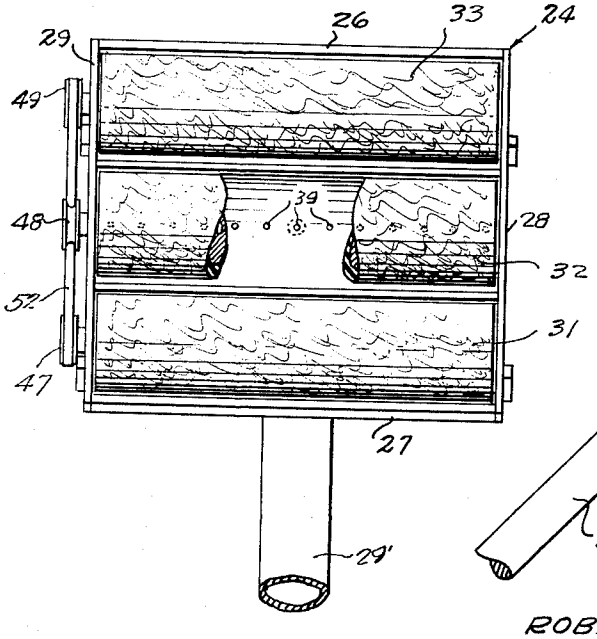
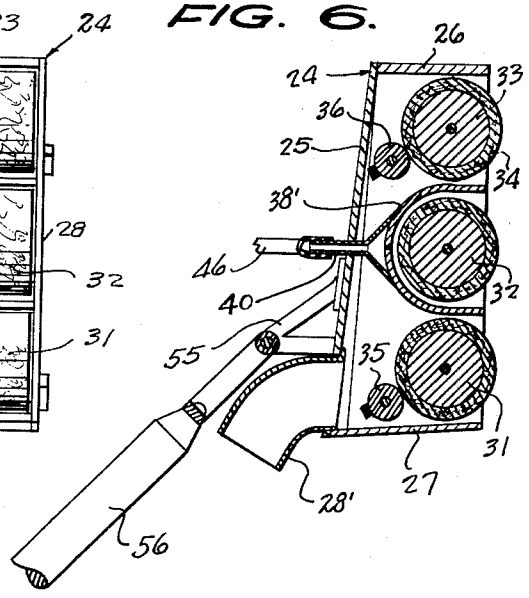


FIG. 6.



INVENTOR.
ROBERT J. O'CONNOR,
BY
McMorrow, Berman & Davidson
ATTORNEYS.

United States Patent Office 2,932,844 Patented Apr. 19, 1960

2,932,844

ELECTRIC WALL AND CEILING WASHER

Robert J. O'Connor, Boise, Idaho

Application August 22, 1958, Serial No. 756,650

3 Claims. (Cl. 15—321)

This invention relates to cleaning devices, and more particularly to a device for washing and scrubbing walls, ceilings and similar surfaces.

A main object of the invention is to provide a novel and improved wall and ceiling cleaning device which is simple in construction, which is relatively easy to use, and which enables a person to efficiently and thoroughly clean walls and ceilings without damage to furniture or other objects in the room.

A further object of the invention is to provide an improved wall and ceiling cleaning device which is relatively inexpensive to manufacture, which is durable in construction, and which requires a minimum amount of exertion on the part of the operator.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a side elevational view, partly in cross section, of an improved electric wall and ceiling washer according to the present invention.

Figure 2 is a horizontal cross sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a horizontal cross sectional view taken on the line 3—3 of Figure 1.

Figure 4 is an enlarged rear elevational view of the washing head of the wall and ceiling washing apparatus of Figures 1 to 3.

Figure 5 is a side elevational view of the washing head shown in Figure 4.

Figure 6 is a transverse vertical cross sectional view taken on the line 6—6 of Figure 4.

Figure 7 is a front elevational view, partly broken away, of the washing head of Figures 4, 5 and 6.

Referring to the drawings, 11 generally designates a wall and ceiling washing apparatus according to this invention. The apparatus comprises a wheeled reservoir 12 adapted to contain a quantity of suitable cleaning liquid, such as soapy water 13, or the like. Detachably secured on the container 13 is a top cover 14 on which is mounted a suction blower assembly 15 which comprises a power unit driven by an electric motor contained in the top portion of the cover, said top portion being provided on its upper wall with a control switch 16 connected in the energizing circuit of the blower motor. A carrying handle 17 is similarly provided on the top wall of the power unit. The intake port of the suction blower 15 communicates with a chamber 18 formed in the lower portion of the cover assembly, said chamber having the horizontal bottom wall 19. The bottom wall 19 is formed with an intake aperture 20 which comprises the end of an arcuate conduit 21 disposed in the chamber 18 and opening thereinto. A screen 22 is provided between the main portion of the chamber 18 and the intake port of the blower 15, so that dust particles will be trapped in the chamber 18 whereas air will pass through the screen 22 and through the blower 15.

Mounted diametrically in the reservoir 12 is a vertical screen 23 which provides an initial filtering action on material returned to the reservoir, as will be presently described. As shown in Figure 1, the screen 23 is of sufficient height to extend a substantial distance above the level of the liquid 13 in the reservoir whereas a substantial portion of the screen is immersed in the liquid.

Designated generally at 24 is the washing head employed with the reservoir 12. The washing head comprises a housing 25 of any suitable shape, for example, generally rectangular shape, having the rear wall 25, the top wall 26, the bottom wall 27, and the side walls 28 and 29. Connected to the lower portion of rear wall 25, as viewed in Figures 4, 5 and 6, is a rigid arcuate conduit member 28'. The conduit member 28' is connected by a flexible hose 29' to a suitable conduit fitting 30 provided on the upper portion of the wall of reservoir 12, whereby the hose 29' communicatively connects the housing 24 to the reservoir 12.

Journaled in the housing 24 between the side walls 28 and 29 thereof are the respective rollers 31, 32 and 33, the roller 32 being located substantially midway between the uppermost roller 33 and the lowermost roller 31. The rollers 31, 32 and 33 are generally similar in size and construction, each roller being provided with a relatively deformable, porous, liquid-absorbent outer facing 34. Said facing may, for example, comprise felt or other similar porous absorbent, relatively durable yieldable material.

Journaled in the housing 24 between the side walls 28 and 29 rearwardly adjacent the respective upper and lower rollers 33 and 31 are the respective squeezing rollers 35 and 36 which are spring-biased against the surfaces of the respective rollers 31 and 33 so as to exert a squeezing action thereon. As shown in Figure 5, the shafts of the rollers 35 and 36 are slidably mounted in inclined slots 37 and 38 provided in the side walls 28 and 29, and suitable spring means is provided in the slots to urge the squeezing rollers 35 and 36 against the deformable facings 34 of their associated rollers 31 and 33. Thus, the rollers 31 and 33 act as drying rollers, since they pick up moisture from the surface being cleaned and release the moisture by the action of their squeezing rollers 35 and 36.

Mounted in the housing 24 is an auxiliary housing 38' which covers the intermediate roller 32, except for the open forward side thereof, the walls of the auxiliary housing 38' terminating at the same plane as the forward edges of the respective top, bottom and side walls of the main housing 24. As shown in Figure 6, the respective rollers 31, 32 and 33 project forwardly from said plane so as to be engageable with a surface to be cleaned.

The auxiliary housing 38' is formed with uniformly spaced, horizontally aligned apertures 39, as shown in Figure 7, and communicate with a conduit member 40 rigidly secured to the rear portion of the auxiliary housing 38' and extending through the rear wall 25 of the main housing 24.

Rigidly secured to and projecting horizontally from the bottom portion of the reservoir 12 is a supporting plate 42 on which is mounted an electrically driven pump 43, the intake port of said pump being connected by a conduit 44 to the lower portion of reservoir 12. The outlet conduit 45 of pump 43 is connected by a flexible hose 46 to the conduit member 40 of the cleaning head 24. Thus, the electric pump 43 elevates the cleaning liquid 13 through the hose 46 and transfers the liquid into the auxiliary housing 38' through the spaced apertures 39, whereby the cleaning liquid is sprayed onto the cleaning roller 32.

As shown in Figures 4, 5 and 7, the shafts of the respective rollers 31, 32 and 33 project through the side wall 29 and are provided with the respective pulleys 47, 48 and 49. An electric motor 50 is mounted on the

rear wall 25 of the cleaning head 24, the shaft of the motor being provided with a drive pulley 51. A belt 52 couples the drive pulley 51 to the respective roller pulleys 47, 48 and 49, as shown in Figure 5, whereby the top and bottom rollers 33 and 31 are driven in one direction whereas the washing roller 32 is driven in the opposite direction. Thus, the top and bottom rollers may be driven clockwise whereas the washing roller 32 will be driven in a counterclockwise direction, as viewed in Figure 5.

Pivoted to a suitable bracket 55 secured on the lower portion of rear wall 25 above the conduit fitting 28' is an elongated supporting handle 56, enabling an operator to move the washing head 24 along a wall or ceiling surface to be cleaned.

In operation, cleaning liquid, such as soapy water, or the like, shown at 13 in Figure 1, is pumped through the hose 46 to the auxiliary housing 38', as above described, and is sprayed on to the washing roller 32, which applies the liquid to the surface to be cleaned. The dirt laden liquid is picked up by the drying rollers 31 and 33, the liquid being squeezed out of said drying rollers by the action of the squeezing rollers 35 and 36, which are of rigid non-yieldable material, and falls to the bottom of the head 24, namely, on the downwardly and rearwardly inclined bottom wall 27 of the washing head, which substantially merges with the exhaust fitting 28'. The suction developed in the return hose 29' draws the dirt laden water into the upper portion of the reservoir 12, the dirt laden water being then circulated through the transversely extending vertical screen 23, which removes a substantial part of the dirt. As above explained, the air which produces the movement of the dirt laden liquid then passes upwardly through the aperture 20 and the conduit 21 into chamber 18 and then passes through the screen 22 through the blower unit 15 and is discharged into the atmosphere.

The respective electrically operated portions of the apparatus may be controlled by suitable switches mounted in any convenient location, for example, may be wired in a circuit controlled by the main control switch 16.

As shown in Figure 1, the top cover 14 is detachably secured on the top rim of the reservoir 12, for example, by spring biased hold-down hook elements 60, said hook elements being rotatable so as to disengage from the peripheral portion of cover 14, allowing said cover to be detached from the reservoir. This provides convenient access to the interior of the reservoir for cleaning same and for replenishing the cleaning liquid, whenever necessary.

While a specific embodiment of an improved wall and ceiling cleaning apparatus has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scoped of the appended claims:

What is claimed is:

1. A wall and ceiling cleaner comprising a reservoir containing cleaning liquid, a suction blower mounted in the top of said reservoir and having an intake port communicating with the interior thereof, a cleaning head assembly comprising a vertical main housing, flexible conduit means connecting the lower portion of said main housing to the upper portion of said reservoir, said main housing having one open vertical side, at least three rollers journaled in said main housing and projecting from said open side, an auxiliary housing in said main housing covering an intermediate one of said rollers except at said open side, further flexible conduit means connected to said auxiliary housing, pump means connected between the lower portion of said reservoir and said further conduit means and being constructed and arranged to transmit cleaning liquid from said reservoir to said auxiliary housing, and means simultaneously rotating said intermediate roller in one direction and the remaining rollers in the opposite direction.

2. A wall and ceiling cleaner comprising a reservoir containing cleaning liquid, a suction blower mounted in the top of said reservoir and having an intake port communicating with the interior thereof, a cleaning head assembly comprising a vertical main housing, flexible conduit means connecting the lower end of said main housing to the upper portion of said reservoir, said main housing having one vertical open side, at least three rollers journaled in said main housing and projecting from said open side, drive means mounted on said main housing, an auxiliary housing in said main housing covering an intermediate one of said rollers except at said open side, means drivingly coupling said drive means to said rollers and being constructed and arranged to simultaneously rotate said intermediate roller in one direction and the remaining rollers in the opposite direction, further flexible conduit means connected to said auxiliary housing, and pump means connected between the lower portion of said reservoir and said further conduit means and being constructed and arranged to transmit cleaning liquid from said reservoir to said auxiliary housing.

3. A wall and ceiling washer comprising a reservoir containing cleaning liquid, a suction blower mounted in the top of said reservoir and having an intake port communicating with the interior thereof, a cleaning head assembly comprising a main vertical housing, flexible conduit means connecting the lower end of said main housing to the upper portion of said reservoir, said main housing having one vertical open side, at least three rollers journaled in said main housing and projecting from said open side, drive means mounted on said main housing, an auxiliary housing in said main housing covering an intermediate one of said rollers except at said open side, means drivingly coupling said drive means to said rollers and being constructed and arranged to simultaneously rotate said intermediate roller in one direction and the remaining rollers in the opposite direction, further flexible conduit means connected to said auxiliary housing, an electrically driven pump mounted on said reservoir and communicatively connected between the lower portion of said reservoir and said further conduit means and being constructed and arranged to transmit cleaning liquid from said reservoir into said auxiliary housing, and a vertical screen mounted in said reservoir between said intake port of the suction blower and the connection of said first-named flexible conduit means to said reservoir.

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