AUTOMATIC WASHING MOP AND FLOOR DRYER

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4 Claims. (Cl. 15--98)

The present invention relates to improvements in an automatic washing mop and floor dryer. It consists of the combinations, constructions, and arrangement of parts, as hereinafter described and claimed.

An object of my invention is to provide an automatic washing mop and floor dryer, which is adapted to be used for rapidly cleaning a floor and drying the latter, with the minimum amount of effort being required by the operator. Moreover, the device is adapted for reaching into rather crowded spaces, such as between two pieces of furniture or the like, or cleaning underneath a relatively low piece of furniture. Also, the device is arranged so that the lower portions of walls may be cleaned.

Other objects and advantages will appear as the specification proceeds. The novel features will be set forth in the claims hereto appended.

Drawings

For a better understanding of the invention, reference should be had to the accompanying drawings, forming part of this specification, in which:

Fig. 1 is a top plan view of an automatic washing mop and floor dryer made in accordance with my invention;

Fig. 2 is a side elevation view thereof;

Fig. 3 is a sectional view taken along the line 3--3 of Fig. 1, and showing a wringer attachment;

Fig. 4 is a vertical transverse sectional view taken along the line 4--4 of Fig. 2;

Fig. 5 is a horizontal sectional view taken along the line 5--5 of Fig. 2, and showing a screen that I employ;

Fig. 6 is a sectional view taken along the line 6--6 of Fig. 5, and illustrating a horizontal auxiliary cleaning member;

Fig. 7 is a top plan view of the main floor-cleaning member; and

Fig. 8 is a vertical sectional view taken along the line 7--7 of Fig. 7, showing a lower part of a wall being cleaned by the detachable auxiliary cleaning member.

While I have shown only the preferred form of my invention, it should be understood that various changes, or modifications, may be made within the scope of the annexed claims without departing from the spirit thereof.

Detailed description

Referring now to the drawings in detail, I have shown a main frame which is indicated generally at A. This frame is supported on a pair of rear wheels 10 and a pair of front dolly wheels 11. The frame A comprises longitudinal members 12 that are spaced apart and secured to transverse members 13 (see Fig. 1). Brackets 14 are fastened to the longitudinal members 12, and rotatably carry an axle 15 to which the rear wheels 10 are fastened. The dolly wheels 11 are carried by a pair of tubes 16 which are secured to the longitudinal members 12.

It will be apparent from Fig. 2 that the main frame A is disposed at a suitable elevation above the floor B over which the wheels 10 and 11 are adapted to roll. Of course, the elevation of this frame above the floor may be changed to suit requirements.

With particular reference to Figs. 2 and 4, it will be noted that a cradle frame C is arranged between the main frame A and the floor B, and the cradle frame is mounted for up and down adjustments. For this purpose, the cradle frame C has four uprights 17 secured thereto, and these uprights extend upwardly through openings 18 that are fashioned in the longitudinal members 12 (see Fig. 1). Latches 19 are slidably carried by the members 12 and are adapted to be engaged with selected notches 20 formed in the uprights 17. Thus the cradle frame C may be raised or lowered with respect to the floor B and then held in adjusted position by engaging the latches 19 with the appropriate notches 20.

The cradle frame C has a portion C' projecting in front of the main frame A and adjacent to the floor B at a low elevation so as to be movable underneath a piece of furniture D, as suggested in Fig. 2. Moreover, a T-shaped horizontal screen E is supported by the cradle frame C for longitudinal reciprocation. For this reason, the cradle frame C is made from a pair of spaced parallel and longitudinally extending box beams 21 having longitudinal slots 22 formed therein (see Fig. 4). Axles 23 are secured to the screen E and carry rollers 24 that are disposed to ride along the interiors of the box beams 21, with the axles 23 projecting through the slots 22, as shown in Fig. 4.

In order to reciprocate the screen E rectilinearly back and forth, I have provided a motor F, the latter being mounted on a base 25. This base may be supported on bars 26 that are secured to the transverse members 13 of the main frame A (see Fig. 1). As shown in Figs. 1 and 2, a transverse shaft 27 is mounted to extend across the bars 26, and this shaft has a pair of discs 28 secured thereto. Pitmans 29 have their rear ends connected to the discs 28 by journal pins 30, while the front ends of these pitmans are swingably attached by pins 31 to brackets 32. These brackets are fastened to an angular bar 33 that surrounds the screen E. A pulley 34 is fastened to the motor shaft 35, and this pulley is connected by a belt 36 to a second pulley 37, the latter being fixed to the shaft 27. Thus the turning of the motor F will result in reciprocating the screen E back and forth and lengthwise relative to the cradle frame C.

It will be noted that a T-shaped main floor-cleaning member G is removable attached to the underneath surface of the screen E for engaging with the floor B. This cleaning member may be made from any suitable material, such as fabric, and may be reinforced by longitudinal and transverse bars 38 and 39, respectively, as disclosed in Figs. 4 and 7. Hooks 40 may be swingingly secured to the screen E so as to be engageable with the bars 38 in the manner shown in Fig. 4 to thus detachably connect the main cleaning member G to the screen E. Any other suitable means may be employed for securing the cleaning member to the screen.

In order to deliver a cleaning liquid, such as water and detergent, to the main cleaning member G, I provide a tank H. This tank may be supported at the desired elevation on the main frame A. A header pipe 41 leads from the tank H and has a valve 42 arranged therein to control outflow of the liquid from the tank. An upper sprinkler pipe 43 communicates with the header pipe 41, and it may be supported on the bars 26 in the manner shown in Figs. 1 and 4. A lower sprinkler pipe 44 communicates with the forward end of the header pipe 41 so as to overlie the front part of the screen E. Obviously, the liquid from the tank H will be delivered through the pipes 43 and 44 to the screen E for downward flow into the main floor-cleaning member G.

Particular attention is called to the fact that the main
The cleaning member G is provided with wing portions G' at its forward end (see Fig. 7). Likewise, the screen E has wing portions E' at its forward end. The wing portions E' and G' project laterally beyond the wheel 10 and 11, whereby these wing portions may be used for cleaning a floor adjacent to a wall. Both the screen E and the cleaning member G define body portions that extend longitudinally of the cradle frame C (see Figs. 5 and 7). It will be apparent from Figs. 5 and 7 that the screen E and cleaning member G are identical in size and shape.

Referring now to Figs. 1, 2, 5 and 6, it will be noted that I provide an auxiliary cleaning member J which is detachably secured to the forward end of the screen E so as to extend horizontally in front of the screen. The cleaning member J has less width than the screen E so as to be movable into a crowded space between two pieces of furniture K, or like, as suggested in Fig. 1, for cleaning such space during reciprocation of the screen. It will be observed that I have provided brackets 45 that are fixed to the cleaning member J. These brackets have notches 46 therein which are adapted to fit over a flange of the angle bar 33 in the manner shown in Fig. 6. A set-screw 47 may be provided in each of the brackets 45 for engaging with the flange 33' of the bar 33 so as to firmly hold the cleaning member J to the screen E.

As shown in Figs. 1 and 8, the auxiliary cleaning member J may be detachably secured to either side wing portion E' of the screen E so as to extend vertically and engage with a wall L for cleaning the engaged portion of the wall during reciprocation of the screen E. At this time, the brackets 45 have notches 48 that will fit over the flanges 33' of the angle bar 33 in the manner shown in Fig. 8. A second pair of set-screws 49 may be used for firmly attaching the vertical brackets 45 to the flange 33'. Of course, any other suitable means may be resorted to for detachably connecting the auxiliary cleaning member J to the screen, either at the front of the screen or at either lateral side of the screen.

In order to remove liquid from the cleaning members G and J after cleaning the floor B or the wall L, respectively, I have provided a wringer that is designated generally at W in Fig. 3. This wringer has end walls 50 which are shaped to fit into the tank H, the latter having an open top 51. Lugs 52 are formed on the end plates 50 so as to slip over the rear wall 53 of the tank H (see Fig. 3). A stationary front wall 54 extends between the end walls 50 of the wringer, while a swingable wall 55 has its lower end attached to the end walls 50 by pins 56.

Any suitable mechanism may be provided for swinging the wall 55 toward the stationary wall 54 so as to squeeze out liquid from the cleaning members G or J, when interposed between the walls 54 and 55. For this purpose, I have provided a handle 56 on the swingable wall 55, and this handle has a link 57 connected thereto. The forward end of this link is swingably connected to a disc 58, the latter being driven by a stub shaft 59 that may be connected by a clutch 60 to one end of the motor shaft 35 (see Fig. 1). The handle 56 and link 57 may be arranged at one end of the tank H so as to leave the major length of the tank unobstructed. Thus the wringer W is operated by the motor F.

When the main floor-cleaning member G and the auxiliary cleaning member J are being used for scrubbing the floor B, or the latter member is being utilized for cleaning the wall L, these members will be in the nature of a mop and will be made of suitable material, such as fabric. After the floor or wall has been scrubbed, the members G and J may be replaced by sponges so that the floor and wall may be dried.

Upon removing the pins 31 from the pitmans 29, the screen E may be entirely withdrawn from the cradle frame C, since the longitudinal slots 22 extend the full length of the box beams 21. This arrangement will facilitate the changing of the main floor-cleaning member G from a mop to a sponge and vice versa.

In order to facilitate the placing of the cleaning member or mop G in the wringer W, it has been made in two sections which are indicated at 61 and 62. Each section may be connected to parts of the bars 38, the latter being made in two parts, each bar part being engageable by the hooks 48, thus allowing the mop sections 61 and 62 to be separated one from the other.

As shown in Fig. 1, the lower sprinkler pipe 44 may be detachably connected to the header pipe 41 by a union 63, or other suitable fastening means. The sprinkler pipe 44 is long enough to extend over the wing portions E' of the screen E so as to deliver water thereto.

I claim:

1. In an automatic washing mop and floor dryer: a main frame supported on wheels so as to be rolled about over a floor to be cleaned; the main frame being disposed at an elevation above the floor; a cradle frame carried by the main frame and being arranged between the main frame and the floor; the cradle frame having a portion projecting in front of the main frame and adjacent to the floor at a low elevation so as to be movable underneath a piece of furniture or the like; the cradle frame defining a pair of spaced parallel and longitudinally extending beams; a T-shaped horizontal screen having axles secured thereto by the beams of the cradle frame for longitudinal reciprocation; a horizontally disposed T-shaped main floor-cleaning member movably attached to the underside surface of the screen for engaging with the floor; the screen and the main floor-cleaning member being identical in size and shape and both defined by main body portions that extend longitudinally of the cradle frame; both the screen and the main floor-cleaning member being provided with wing portions at their forward ends which project laterally in both directions beyond the wheels, whereby these wing portions may be used for cleaning a floor adjacent to a wall, means operable for reciprocating the screen and the main floor-cleaning member rectilinearly back and forth over the floor in directions extending lengthwise of the cradle frame; and means for delivering a cleaning fluid to the screen for downward flow into the main floor-cleaning member.

2. The automatic washing and floor dryer, as set forth in claim 1; and in which an auxiliary cleaning member is detachably secured to the forward end of the screen so as to extend horizontally in front of the screen; the auxiliary cleaning member having less width than the screen so as to be movable into a crowded space between two pieces of furniture or the like, for cleaning the floor in said space during rectilinear reciprocation of the screen.

3. The automatic washing mop and floor dryer, as set forth in claim 1; and in which an auxiliary cleaning member is provided; brackets carried by the auxiliary cleaning member; and means for selectively and detachably securing the brackets to either side wing portion of the screen so that the auxiliary cleaning member will extend vertically and engage with a wall, whereby the engaged part of the wall may be cleaned during reciprocation of the screen.

4. In an automatic washing mop and floor dryer: a main frame supported on wheels so as to be rolled about over a floor to be cleaned; the main frame being disposed at an elevation above the floor; a cradle frame carried by the main frame and being arranged between the main frame and the floor; the cradle frame having a portion projecting in front of the main frame and adjacent to the floor at a low elevation so as to be movable underneath a piece of furniture or the like; the cradle frame defining a pair of spaced parallel and longitudinally extending box beams, each having a longitudinal slot formed therein; a T-shaped horizontal screen having axles secured thereto which project through the slots;
these axles having rollers that are disposed to slide along the interiors of the box beams; a horizontally disposed T-shaped main floor-cleaning member removably attached to the underneath surface of the screen for engaging with the floor; both the screen and the main floor-cleaning member defining main body portions that extend longitudinally of the cradle frame; both the screen and the main floor-cleaning member being provided with wing portions at their forward ends which project laterally in both directions beyond the wheels, whereby these wing portions may be used for cleaning a floor adjacent to a wall; means operable for reciprocating the screen and the main floor-cleaning member rectilinearly back and forth over the floor in directions extending lengthwise of the cradle frame; and means for delivering a cleaning fluid to the screen for downward flow into the main floor-cleaning member.

**References Cited in the file of this patent**

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