

[54] **CLEANING, SPINDRYING AND FLUFFING
PAINT ROLLER DEVICE**

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[56] **References Cited**

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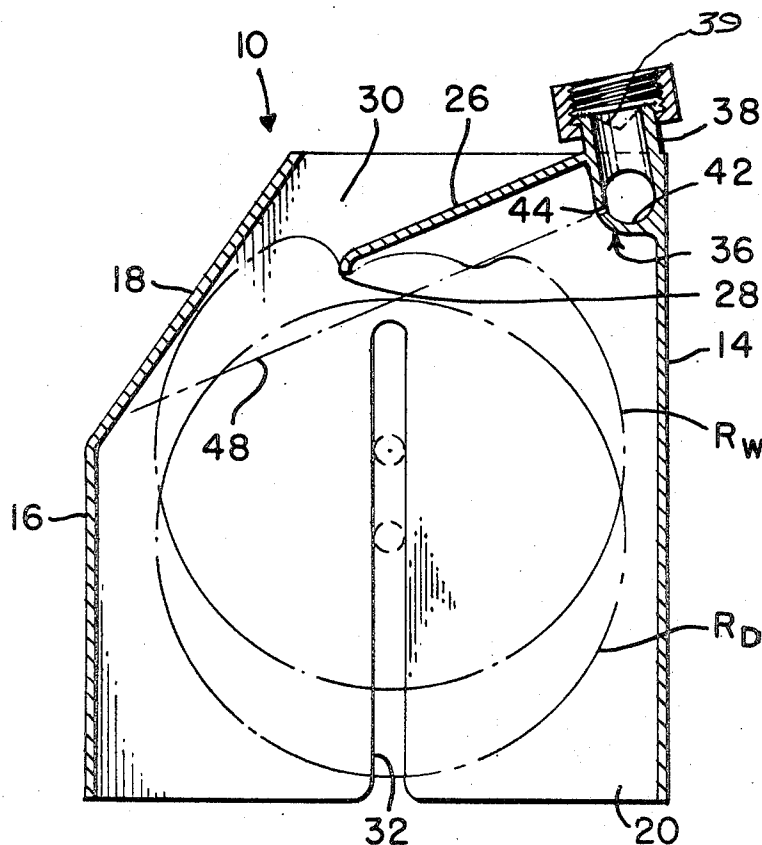
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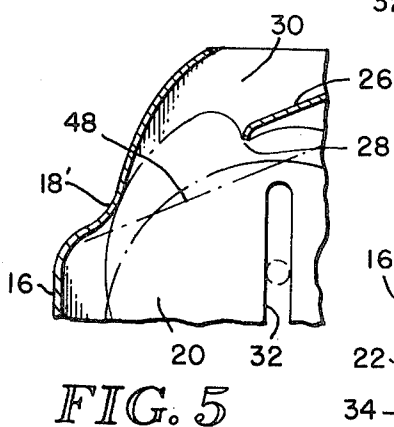
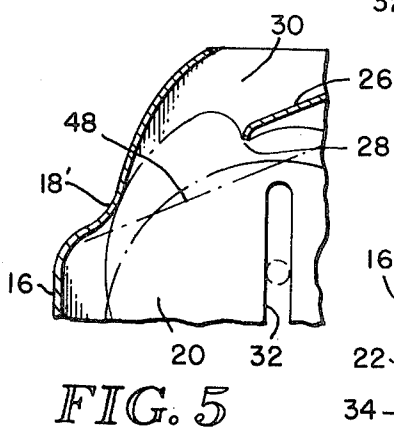
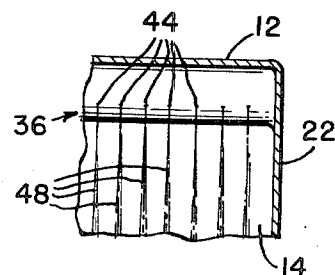
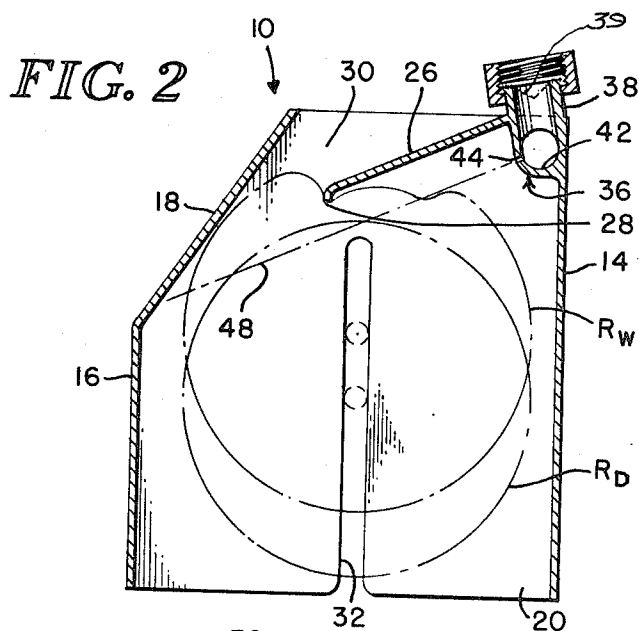
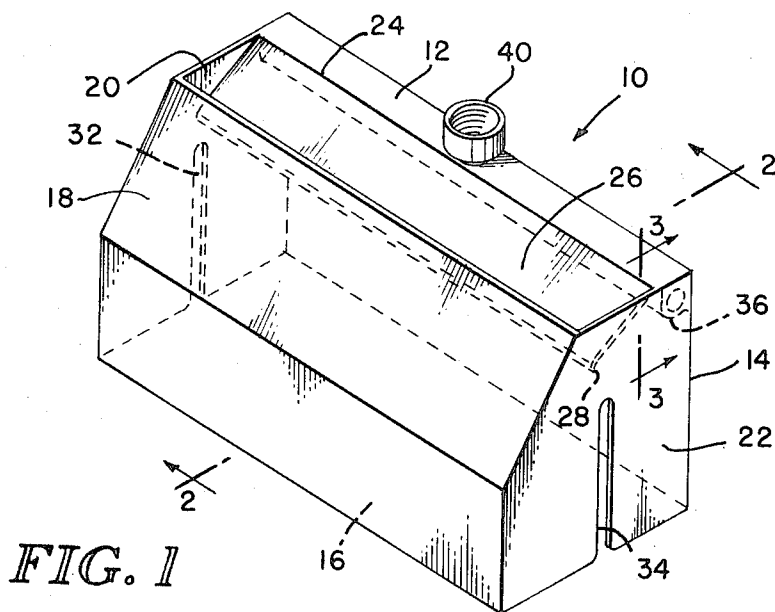
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[57] **ABSTRACT**

An elongated generally rectangular housing having an open bottom. The device has a top wall, front and back walls, and end walls. A view slot is provided in the top wall. A portion of the rear wall forms an anti-splash control section. A baffle wall extends rearwardly either horizontally or downwardly at an angle from the top wall. A manifold is located in the area of the top front corner and directs a curtain of jet spray rearwardly across the upper portion of the housing, which impinges on the anti-splash control portion of the rear wall when it is not impinging on the roller. End wall slots are provided so that the roller mounting shaft of the paint roller handle can be inserted to raise the paint roller upwardly into the jet spray curtain for cleaning and spin-drying.

13 Claims, 5 Drawing Figures





CLEANING, SPINDRYING AND FLUFFING PAINT ROLLER DEVICE

BACKGROUND OF INVENTION

This invention relates generally to the art of paint roller cleaners, and more particularly to a paint roller cleaner employing a jet spray curtain to clean, spin dry and fluff the fibers of the roller cover.

Those skilled in the art realize that hand cleaning of paint rollers is not really effective. The job of hand cleaning rollers is time consuming, messy, and rarely thorough. The fibers tend to become matted, and the base or mounting core of the roller fibers gradually builds up dry paint accumulation. Another problem is that after hand cleaning, the nap is wet, so that the roller must be set aside to dry over a period of time. Thus, the roller is usually not available for immediate re-use, because it cannot be dried sufficiently in a short time. Hand cleaned rollers also have a tendency, if they are not sufficiently dried, to run thin paint upon immediate re-use. Furthermore, if they are not thoroughly cleaned, they can bleed colors. Dried paint accumulations are not water soluble, so the hardened paint can only be removed by soaking the roller in solvent.

There are known devices for spin drying, but they are expensive, and may not be part of any washing apparatus. Thus, washing is a separate hand operation, or it might have to be done in a separate washing apparatus. Numerous prior art devices exist, and they are not necessarily costly. The primary difficulty with known devices is that they do not perform the whole job; that is, a combined cleaning, spin-drying and fluffing operation. These devices do not use an evenly and closely distributed screen of water, nor do they prevent back-splash from rewetting the roller during, for instance, a final spin or withdrawal. In some cases the prior art cleaning devices are bulky. Some require longitudinal insertion of the roll into the device, so that if they are removed while the roller is spinning, there is the problem of throwing water over floors, walls and cabinets. And as with hand cleaning, known devices frequently leave the roller cover incompletely cleaned. New roller covers must be purchased frequently because the life span thereof is short due to matting of fibers and build-up of paint in the roller.

Among the prior art patents to be considered are the following: U.S. Pat. Nos. 2,831,488; 2,938,368; 2,985,178; 3,428,060; 3,577,280; 2,741,857; 3,037,516; 3,075,534; 3,126,899; 3,139,891; 3,422,828; 3,472,251; 3,587,599. None of the above patents show applicant's unique combination of structural elements and functional relationships. Accordingly, they are of interest but are not particularly pertinent to the instant device.

SUMMARY OF INVENTION

Paint roller cleaner, spin dryer and fluffer which can be connected to hoses, laundry or kitchen sink taps, or to other water outlet sources. The device is an elongated generally rectangular housing, having a top wall, front and rear wall, and end walls. It is open on the bottom. The top wall provides a viewing slot for visual observation of the roller cover as it is being washed and dried. A baffle wall extends rearwardly toward the rear wall. A manifold is located on the inside in the general area of the juncture of the front and top walls, and includes a straight line series of spaced-apart orifices. An

inlet connection to the manifold directs liquid under pressure into the manifold and the liquid is ejected in a fine curtain below the baffle toward the rear wall which has an angled anti-splash control section upon which the spray curtain impinges so that splash is directed downwardly and not upwardly through the view opening. The end walls contain slots into which the mounting shaft of the roller handle can be fitted, so as to move the paint roller up into the jet spray curtain.

Accordingly, it among the many objects, advantages and features of the instant device to provide a paint roller cleaner which washes, spin dries, conditions and fluffs the roller. The device provides a jet spray curtain of water of maximum velocity which is evenly and closely distributed over the entire length of the roller. The housing is so designed that the entire roller is subjected to the curtain of water, in order that all fibers are washed without introducing any longitudinal motion to the roller. The curtain of water ejected from the manifold can be either on a horizontal plane or at an angle to the horizontal. The plane of the curtain of water when not in contact with the roller impinges upon the anti-splash control section of the rear wall to direct the high velocity water out of the housing without splashing back on the roller while it is being removed during the spin dry cycle or without random splattering through the view opening. Residue spray from the curtain or the manifold and from the spinning roller is redirected downwardly toward the open bottom. In this way, the water is controlled. The velocity of the water in the jet spray curtain and the absence of appreciable voids therein enables the curtain to give a thorough cleaning action both to the nap and to the roller cover base. No longitudinal entry, exit, or movement of the roller is necessary with the instant device. The roller spin dry operation moves the roller at such a rapid spin that it is not rewetted by dripping of water off the inside surfaces of the housing. In short, there is no rewetting of the roller whatsoever upon its withdrawal from the housing.

The view slot, through which there is no back splash or random splatter, is necessary to permit the operator to observe the position of the roller and see that it is properly aligned either for washing or for spin drying. During the wash operation the baffle wall is in contact with the roller and keeps it from turning too fast, allowing the water to penetrate the core or base of the fibers. It serves also as a dam to pile water behind the baffle wall to insure complete penetration of the water into the fibers and into the core. Hence, there is no rapid spinning during the washing, only sufficient rotation so that the washing action is thorough. The baffle wall also acts as a stop member to prevent the roller from entering the curtain too far, which would cause impacting of the fibers or driving of the fibers into the roller core. The axis of the roller is never coincident with the plane of the water curtain. Finally, the device may be attached to any device or source of water and held in any position which directs the spray from the housing away from the user.

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a perspective view of the invention, showing details of construction thereof;

FIG. 2 is an elevational cross-section view, taken along the line of 2—2 of FIG. 1, and further illustrating details of its construction;

FIG. 3 is a partial cross-sectional view taken along the line 3—3 of FIG. 1, and further illustrating details of the manifold and orifices therein;

FIG. 4 is a front perspective view of the invention, showing it attached to a source of water, and with a roller in position for cleaning within the housing; and

FIG. 5 is a partial cross-section view, showing an alternative configuration in the anti-splash control wall.

DESCRIPTION OF PREFERRED EMBODIMENT

The paint roller cleaner of this invention, generally identified by the number 10, is essentially a rectangular housing which in its preferred form is open at the bottom. The housing includes a top wall or surface 12, a front wall, 14, a rear wall, 16, and an angled anti-splash control wall, 18. Also included are end walls, 20 and 22.

Top wall, 12, is provided with a view opening into the housing which is defined by the upper edges of end walls 20 and 22, and anti-splash wall 18. An inner edge of top wall 12, as at 24, forms the fourth side of the view opening. Extending generally downwardly and rearwardly at an angle from edge 24 of top surface 12, is a baffle wall 26, which can best be seen in FIGS. 1, 2 and 4. It has an inner edge terminating, in this case, slightly beyond the middle point of the front-to-rear dimension. The inner edge is provided with depending lip 28 which is angled down sufficiently so that water droplets are prevented from being thrown or flipped out through the view slot. The lip 28 will be desirable in most forms of the invention since water has a tendency to be flung off a surface at nearly a right angle to the edge of the surface. In this preferred form it will be seen that if lip 28 is not included, random drops of water would be likely to be flung out the view opening. It will be seen that the actual view opening 30 then is defined by baffle wall 26, end walls 20 and 22, and splash wall 18. This enables the user of the device to observe what is transpiring inside the housing. Note that the view opening 30, and baffle wall 26 and lip 28 extend over substantially the entire length of the housing between side walls 20 and 22. The view slot need not be unobstructed over the full length of the housing but it is preferred that it be so. The baffle wall 26 inclines in this case at an angle from the horizontal. The baffle wall angle from the horizontal can vary or it could be generally horizontal. It will be appreciated that it is the combined relationship of the baffle wall 26, lip 28, roller position, and anti-splash control wall 18 which determines control of the splash and prevents water droplets from coming out the view slot either from the back splash from the jet streams or the water deflected or propelled off the spinning roller. Thus, the angles of the anti-splash control wall section 18, the baffle wall 26, and the lip 28 can vary so long as in combination they serve the functional result expressed above. The baffle wall serves several functions, which will be described hereinafter.

It is to be understood that the top wall, baffle wall and lip could be one element in the form of a single planar surface. The baffle wall and lip might be one element attached to the top wall and the baffle wall and top wall one element with a lip attached. The determining factor is the desired position of the inner edge and the angle of the anti-splash wall as well as the angle of the baffle-lip combination to achieve the functions described above.

The anti-splash control wall 18, as can be seen, extends from rear wall 16 upwardly and forwardly. The anti-splash control wall 18 forms an angle of such a degree with the plane of the curtain of water, so that the curtain of water impinging thereon is directed downwardly free of splash, as will be explained more fully hereinafter. A preferred angle of water curtain plane to anti-splash control wall is about 30° or less. Note that the anti-splash control wall 18 angles off rear wall 16 just slightly below the line along which the spray jet curtain will impinge. The water from the curtain when impinging on anti-splash control wall 18 has a tendency to remain on and run down the rear wall 16. As a result there is no splatter or splash to rewet the roller when it is being removed from the housing.

Within the housing, in the upper front corner adjacent top wall 12 and front wall 14, extends a manifold generally identified by the number 36. It includes an inlet connection 38, having a faucet, tap or hose adapter 40 and a dirt screen 39. Inlet 38 opens into an elongated header cavity 42, extending the entire length of the housing. The inlet connection 38 is shown to be centrally positioned, although it must be recognized that it may be located off-center or at the ends, if desired. Manifold 42 is provided with a series of orifices 44, arranged in a straight line in the header, having a predetermined spacing and a predetermined orifice size. The orifices 44 are positioned so that, as can be seen in FIGS. 2 and 3, they eject a jet stream of water across the top of the housing just below baffle wall 26. The curtain which is created along the plane diagrammatically represented by dash dot line 48 in FIG. 2, and as diagrammatic representations of sprays in FIG. 3. It is desired to have even distribution of the jet sprays making up the curtain so that there is an even distribution of water over the entire length of the roller. The orifices must be of such number, size and spacing as to give maximum velocity which is consistent with sufficient volume of water and still maintain supply pressure in the header. Again, however, the orifices must give a curtain of water which reaches every portion of the roller.

The paint roller, R, mounted on the handle shaft, is easily slipped into the housing. It is introduced through the open bottom and for washing raised to the position shown in dash dot line in FIG. 2, and identified as R_w or roller wash position. To some extent, depending lip 28 acts as a scrubber. However, and more importantly, it is among other things a stop to position the roller for washing with respect to water curtain 48. In acting as a stop, it prevents the roller from moving any further upwardly, so that the high velocity jet sprays forming the curtain do not pound the roller fibers. In short, it prevents the roller from entering the curtain, too far, which would cause impacting of the fibers or driving of the fibers into the roller core. The axis of the roller is not coincident with the plane of the water curtain at any time. Another important feature of the baffle is its function as a brake. It is desirable that the roller turn slowly during washing, but not that it spin. Accordingly, as can be envisioned, the force of the curtain turns the roller R, but the lip 28 prevents it from turning too fast. In this way, water is permitted to penetrate the core or base of the fibers. Also, the lip serves as a dam which piles water up behind the baffle wall to insure complete penetration of the water into the fibers and the roller base.

Also important to the cleaning action is the spacing of the orifices 44 in the manifold. The spacing is no greater than necessary to wash all of the roller without moving it longitudinally. In this way, all fibers are thoroughly washed, simply by inserting the roller and raising it to the Rw position. For instance, and by way of illustration only, the orifices might be 0.025 inches in diameter at spacings of about one-fourth inches on center. It must be recognized that the spacing and size may vary, but the indicated figures are close to optimum. With the view opening 30, the operator is able to watch the cleaning action and to determine if there are any orifices which have become plugged, causing gaps in the curtain. Also, the operator is able to judge when he has the roller in the proper wash position and the proper spin dry and fluff position, as identified in FIG. 2 by Rd. When cleaning or washing is complete, as can usually be determined by the clean water dropping from the housing, the roller is then lowered to the spin dry and fluffing position. Again refer to the dash dot lines in FIG. 2, showing the lower position identified as Rd. The curtain of water 48 hitting or impinging on the roller near the periphery, spins the roller at a very high r.p.m. In order to eliminate random splashing and splatter upward through the viewing opening 30, it has been found desirable to move end wall slots 32 and 34 into such a position that the periphery of the roller in the Rd position is closer to rear wall 14 than to control wall 18 and/or rear wall 16. Because of the high rate of spin of the roller, there would be a certain amount of air movement and pile-up, which would perhaps cause splashing through the view slot. As stated above, there is more space on the rear side of the housing between the inside surfaces of the housing than the roller itself, so that the air-pump tendency of the roller nap is to draw air through the view slot and carry the random water splash downwardly out the bottom. The extreme rotational velocity imparted by the curtain of water is such that upon removing the roller from the housing, it is not rewetted by random dripping of water off the inside of the housing. In fact, there is no rewetting of the roller whatsoever upon withdrawal because of the high velocity spin. The result is a spin dried paint roller which is dry enough for immediate reuse. It will have been thoroughly cleaned and the fibers fluffed, all of which factors contribute to a roller cover having a long life and which is always ready for use.

What is claimed is:

1. Paint roller cleaning, spin drying and fluffing device, comprising:
 - a. a housing having a top, a front wall, a rear wall, and end walls, the bottom thereof being substantially open,
 - b. said top including a view opening extending over substantially the entire length thereof between said end walls,
 - c. a baffle wall extending generally from said top toward said rear wall and also extending over substantially the entire length of said housing between said end walls,
 - d. liquid manifold means, including an inlet connection, located generally in close proximity to the upper, front of said housing between said top and said front wall and extending over substantially the entire length of said housing between said end walls, said manifold having a series of liquid outlet orifices creating a curtain of water generally rear-

- wardly from said manifold beneath said baffle wall to said rear wall substantially over the entire length of said housing between said end walls, and
- e. slot means in at least one end wall extending from the bottom thereof generally upwardly towards said baffle wall so that a paint roller handle having a roller cover applicator may be introduced into said housing and into said curtain of liquid for washing, spin drying and fluffing of the fibers thereof.
2. The paint roller cleaning, spin drying and fluffing device according to claim 1 and in which the upper portion of said rear wall is formed of an angled anti-splash wall extending generally upwardly and forwardly.
3. The paint roller cleaning, spin drying and fluffing device according to claim 2 and in which said manifold is located generally at the inside corner of said top and said front wall and said orifices form a generally straight line series of openings of predetermined size and spacing for creating said curtain of water which impinges on said anti-splash wall.
4. The paint roller cleaning, spin drying and fluffing device according to claim 3 and in which said view opening is defined by said anti-splash wall, said baffle wall and said end walls.
5. The paint roller cleaning, spin drying and fluffing device according to claim 1 and in which said baffle wall extends at an angle downwardly and rearwardly from said top for a distance sufficient to limit upward movement of a paint roller introduced into said housing.
6. The paint roller cleaning, spin drying and fluffing device according to claim 5 and wherein the inner end of said baffle wall is provided with a depending lip means.
7. The paint roller cleaning, spin drying and fluffing device according to claim 5 and wherein said slot means by which a paint roller handle is introduced into said housing is positioned between said front and rear walls so that the paint roller is closer to said front wall than to said rear wall so as to assist in throwing water out the bottom of said housing and to help prevent random splash of water out of said view opening.
8. Paint roller cleaning, spin drying and fluffing device, comprising:
 - a. a housing having a top wall, a front wall, rear wall, and end walls, the bottom thereof being substantially open,
 - b. said top wall including a view opening extending over substantially the entire length thereof between end walls,
 - c. a baffle wall extending from said top wall toward said rear wall for slightly more than half the distance therebetween and also extending over substantially the entire length of said housing between said end walls,
 - d. liquid manifold means, including an inlet connection, located generally at the inside corner of said housing between said top and front walls and extending over substantially the entire length of said housing between said end walls, said manifold having a generally straight line series of liquid outlet orifices of predetermined size and spacing for the purpose of creating a curtain of water generally rearwardly from said manifold beneath said baffle wall to said rear wall to substantially cover the en-

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tire length of said housing between said end walls, and

e. slot means in at least one end wall extending from the bottom thereof generally upwardly towards said top wall so that a paint roller handle having a roller cover applicator may be introduced into said housing and into said curtain of liquid for washing, spin drying and fluffing of the fibers thereof.

9. The paint roller cleaning, spin drying and fluffing device according to claim 8 and in which the upper portion of said rear wall is formed of an angled anti-splash wall extending generally upwardly and forwardly and upon which said curtain of water is impinged.

10. The paint roller cleaning, spin drying and fluffing device according to claim 9 and in which said view opening is defined by said anti-splash wall, said baffle wall and said end walls.

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11. The paint roller cleaning, spin drying and fluffing device according to claim 10 and wherein the inner end of said baffle wall is provided with a depending lip means.

12. The paint roller cleaning, spin drying and fluffing device according to claim 8 and wherein said slot means by which a paint roller handle is introduced into said housing is positioned between said front and rear walls so that the paint roller is closer to said front wall than to said rear wall so as to assist in throwing water out the bottom of said housing and to help prevent random splash of water out of said view opening.

13. The paint roller cleaning, spin drying and fluffing device according to claim 10 and wherein said baffle wall extends at an angle downwardly from said top wall toward said rear wall.

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