Dec. 20, 1960 E. A. MERCEREAU 2,964,769

APPLICATOR ROLLER ASSEMBLY

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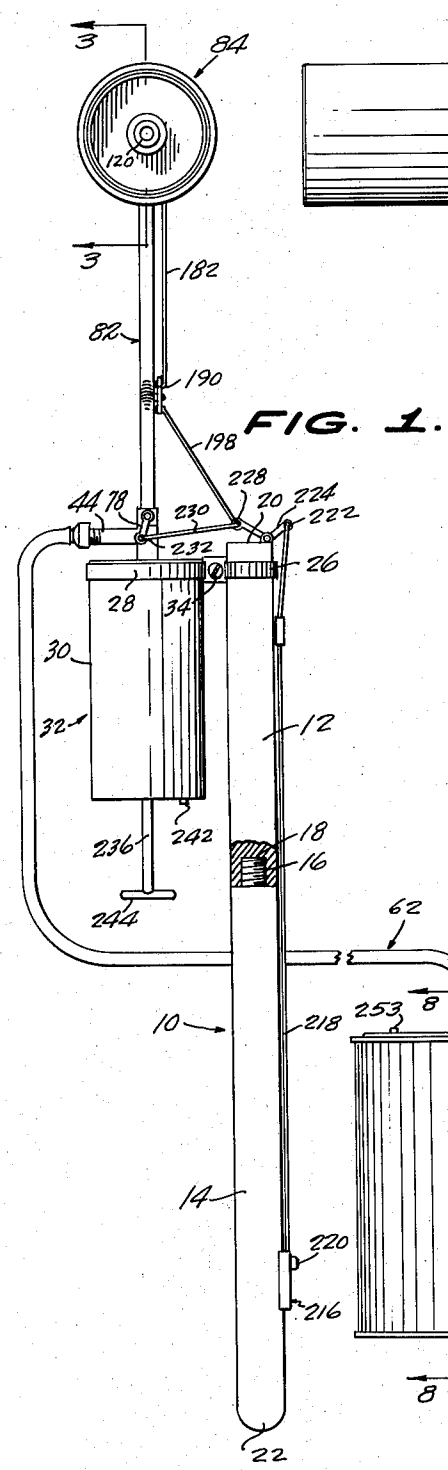


FIG. 1.

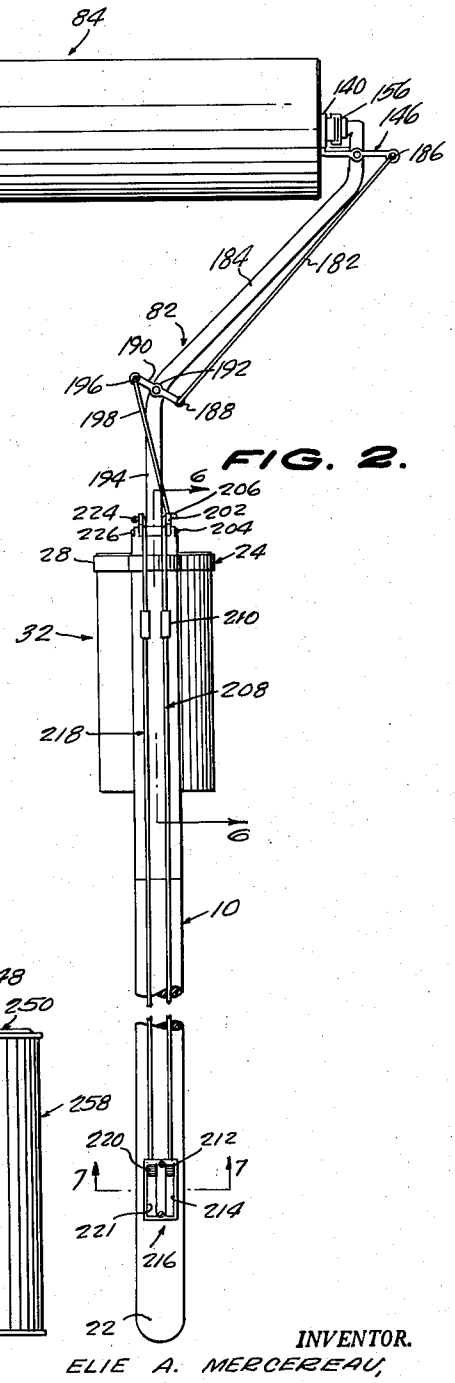


FIG. 2.

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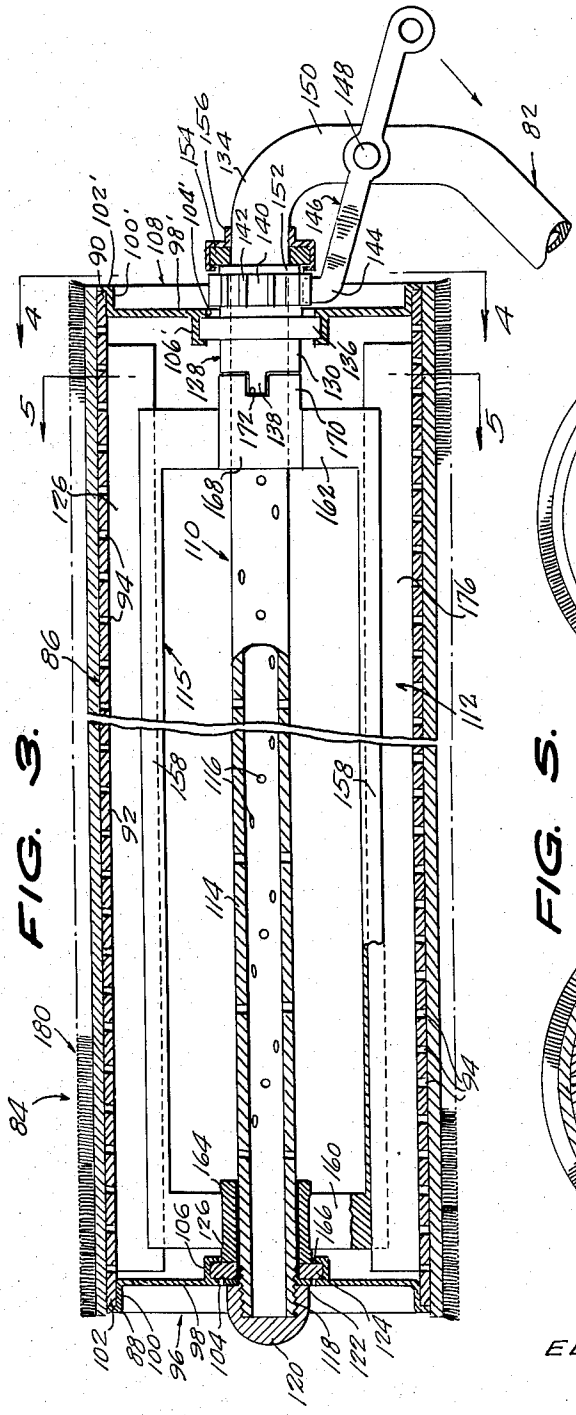


FIG. 3.

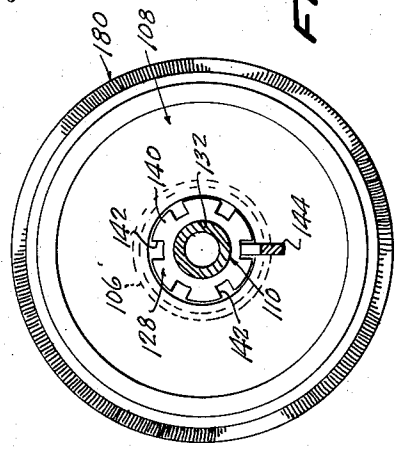


FIG. 4.

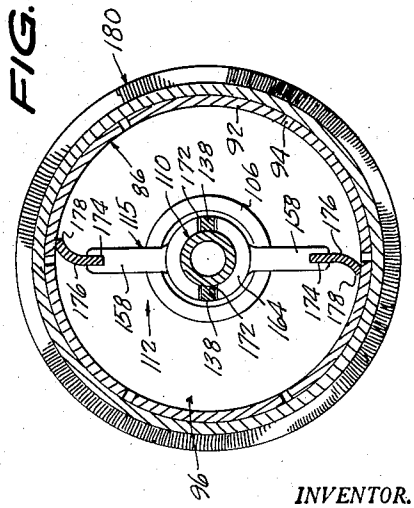


FIG. 5.

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FIG. 6.

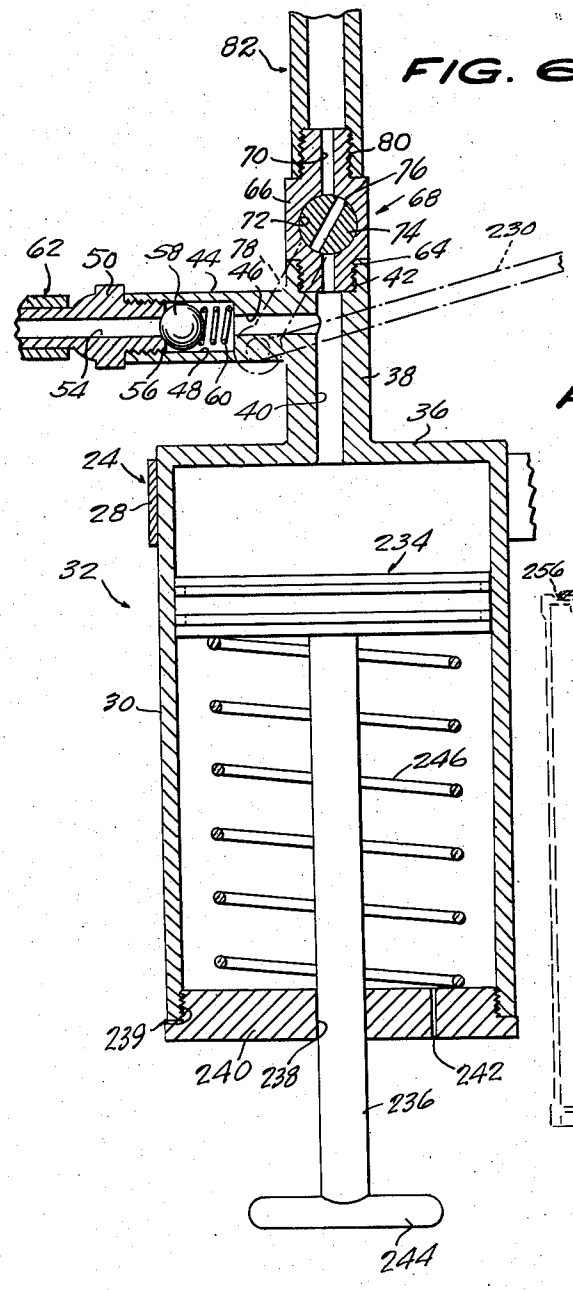


FIG. 7.

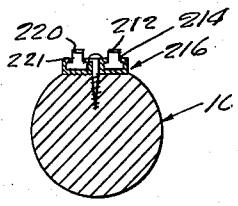
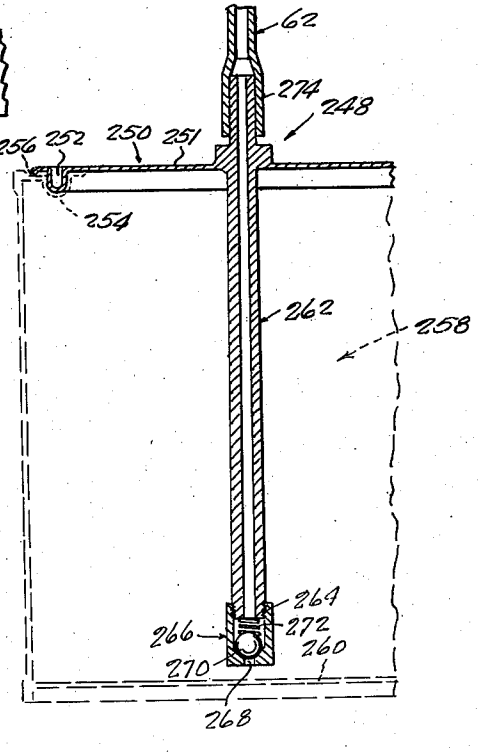


FIG. 8.



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APPLICATOR ROLLER ASSEMBLY

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3 Claims. (Cl. 15—128)

This invention relates to a novel and improved paint applicator roller assembly, with pressure paint supply.

The primary object of the invention is the provision of a more practical and easily used assembly of the kind indicated, which is more efficient and reliable, and which enables more rapid and substantially uninterrupted application of paint, enamel, or other liquid coating material, to relatively large surfaces.

Another object of the invention is to provide an applicator assembly of the character indicated above which comprises a manipulating handle, on which a roller, a hand pump, and control valve means for controlling passage of paint, under pressure, from the pump to the roller, the pump having a spring-pressed piston which applies pressure to the paint after having been manually retracted to draw paint, by suction, from a supply to the pump, the supply being an ordinary paint can, and the applicator assembly having a paint supply conduit which is connected to the pump and to a special paint can lid, which replaces the usual paint can lid.

A further object of the invention is to provide, in an applicator assembly of the character indicated above, a hollow perforated roller cylinder, into one end of which paint is fed under pressure from the pump, and a rotary wiper assembly within the cylinder which is in wiping contact with the interior of the cylinder, and external manual means, operable from the handle, for holding the wiper assembly stationary while the cylinder is rotated by contact with the work, and for releasing the wiper assembly to rotate with the cylinder.

Other important objects and advantageous features of the invention will be apparent from the following description and the accompanying drawings, wherein, for purposes of illustration only, a specific form of the invention is set forth in detail.

In the drawings:

Figure 1 is a schematic end elevation, portions being contracted and in section, showing an applicator roller assembly of the present invention, and a pint can connected thereto;

Figure 2 is a front side elevation of Figure 1, with the paint can omitted;

Figure 3 is an enlarged and contracted vertical longitudinal section taken on the line 3—3 of Figure 1, the wiper assembly locking means being in engaged position;

Figures 4 and 5 are transverse vertical sections taken on lines 4—4 and 5—5, respectively, of Figure 3;

Figure 6 is an enlarged fragmentary vertical transverse section taken on the line 6—6 of Figure 2;

Figure 7 is an enlarged horizontal section taken on the line 7—7 of Figure 2; and

Figure 8 is an enlarged and fragmentary vertical transverse section taken on the line 8—8 of Figure 1, showing the paint supply conduit assembly in full lines and an associated paint can in phantom lines.

Referring in detail to the drawings, wherein like numerals designate like parts throughout the several views, the illustrated applicator roller assembly comprises an

elongated handle 10 which is preferably sectional, for convenience in storing the handle, and to provide for use, alone, of its shorter upper section 12 when disconnected from the lower section 14, the sections being separably connectible, as by means of a threaded pin 16 and a socket 18, as shown in Figure 1. The handle 10 has a squared upper end 20 and a preferably rounded lower end 22.

Fixed to and extending laterally from a side of the handle 10, near the upper end 20 thereof, is a bracket 24 which can comprise an inner ring 26 circumposed on the handle, and a larger outer ring 28 which is clamped around the upper end of the vertical cylinder 30 of a manual paint pump 32, the bracket 24 being in the form of a continuous band, with a clamping bolt 34 extending through opposed flights of the band, at a location between the cylinder 30 and the handle 10.

As shown in Figure 6, the pump cylinder 30 has a closed top wall 36 upon which is centrally fixed an upstanding nipple 38 having a bore 40 opening through the top wall and a threaded socket 42 in its upper end. A lateral arm 44 on the nipple 38 has a horizontal bore 46 which opens to the nipple bore 40 and to the inner end of an enlarged diameter valve chamber 48. Threaded, as indicated at 50 in the outer end of the arm 44 is a hose nipple which has an axial bore 54 whose inward end defines a valve seat 56 for a ball check valve 58 located in the chamber 48 and pressed to the seat 56 by a helical spring 60, for preventing back-flow, from the cylinder 30, of paint drawn thereinto, from a supply, by manual operation of the pump 32. A paint supply hose 62, which is part of a paint supply assembly, hereinafter described, is connected on the hose nipple 50.

Threaded, as indicated at 64, into the socket 42 in the upper end of the nipple 38 is the lower end of the body 66 of a paint control valve 68, which is provided for limiting or shutting off flow of paint from the pump 32 to the applicator roller, hereinafter described. The valve body 66 has a vertical axial bore 70 therethrough which is expanded, intermediate its ends, to provide a transverse cylindrical chamber 72 in which a valve core 74 turns, which has a transverse passage 76 therethrough, and an external radial lever 78 to be turned to register and unregister the passage 76 with the bore 70. Threaded on the upper end of the control valve body 66, as indicated at 80, is the lower end of a rigid upstanding applicator roller support and feed pipe 82.

The applicator roller, generally designated 84, comprises, as shown in Figure 3, an elongated rigid outer cylinder 86, of uniform diameter and having first and second open ends 88 and 90, respectively. The side wall 92 of the cylinder is formed therealong with paint passing perforations 94. A first pan-shaped sheet metal head 96 comprises a flat web 98 having a compound peripheral member which comprises a lateral flange 100 having a secure pressed fit into the first end of the cylinder and a radial flange 102 which bears extremely against the end 88. At its center the web 98 has an opening 104 which is surrounded by a channel flange 106 extending on the inward side of the web 98. A similar second head 108 is engaged in the second end 90 of the cylinder 86 and has similar components designated by primed numerals. The heads 96 and 108 serve to close the ends of the cylinder 86 against the escape of paint from the cylinder, and as mountings for an axial, stationary perforated paint feeding tube 110, and for a paint scraper assembly 112 which is journaled on the tube 110.

The paint feeding tube 110 has a side wall 114 which is formed with a single spiral row of perforations 116 extending therealong and therearound. The tube 110 has a first end which is threaded, as indicated at 118, and receives thereon a cap nut 120 which bears, through the web opening 104, against a stop washer 122, which

is secured in place by the threads 118, and bears against the outward side of a seal type of bearing washer 124. The bearing washer 124 has its outer edge supportably confined in the channel 106 of the first roller cylinder head 96, and has a central opening 126 through which the smooth tube side wall 114 is supportably journaled.

At the second end of the roller cylinder 86, a rotor 128 is journaled through the second cylinder head 108. The rotor 128 comprises a tubular body 130 having an axial bore 132 which is securably circumposed on the second end of the paint feeding tube 110. The second end of the tube 110 is suitably fixed in communication with an arm 134 on the upper end of the feed pipe 82. The tubular body 130 has a lateral annular bearing flange 136, spaced from its ends, which is journaled in the channel flange 106' of the second cylinder head 108. On the inward end of the body 130 is a pair of diametrically opposed lugs 138. The body 130 extends outwardly through the head opening 104', where the body 130 is formed with an enlarged annulus 140 which is formed with circumferentially spaced peripheral detent notches 142, with which is selectively engageable a dog 144 on the inward end of a locking lever 146 which is pivoted intermediate its ends, as indicated at 148, on a side of a vertical portion 150 of the paint feed pipe 82, below the arm 134. Circumposed on the arm 134 and bearing against the outward end 152 of the rotor 128, is a sealing washer 154, which is fitted on the arm 134, and is held in place by a cap 156 which is fixed on the arm 134.

The scraper assembly 112 comprises an elongated open rectangular frame 115, which is shorter than the distance between the cylinder heads 96 and 108, and has longitudinal side bars 158 which are equally spaced parallel from opposite sides of the perforated paint feeding tube 110, and first and second end cross members 160 and 162, respectively, which extend between related ends of the side bars 158. At the middle of the first cross member 160 is a journal bearing 164, which is journaled on the feeding tube 110, and has an outer end 166 which bears against the seal and bearing washer 124, through the opening of the channel flange 106. At the middle of the second frame cross member 162 is a second journal bearing 168, which is journaled on the feeding tube 110. The second journal bearing 168 has an outer end portion 170 which is formed in its outer end with a pair of diametrically opposed notches 172, which receive the lugs 138 on the inward end of the rotor body 130, so that the scraper frame 115 is connected to the feeding tube 110 so as to be stationary therewith, when the locking lever 146 is positioned with its detent dog 144 engaged in one of the detent notches 142 of the rotor 128, as shown in Figure 3.

The scraper assembly 112 further comprises slots 174 formed in and extending along the outer edges of the frame side bars 158, in which are suitably secured the inner edges of flat, elongated flexible scraper blades 176, which have free outer edges 178 which are flexed and engaged with the inner surface of the roller cylinder side wall 92, as indicated in Figure 5, so that, with the scraper assembly 112 held stationary on the feeding tube 110, as above described, rotation of the applicator cylinder 86 relative to the tube 110, by application of the roller to a work surface, produces scraping action by the blades 176 which serves to scrape excess paint from the cylinder side wall 92, and at the same time, force paint through the roller cylinder side wall perforations 94, into any suitable porous paint applying jacket 180 which may be provided around the outside of the cylinder 86.

The locking lever 146 is operated by means of which comprises an upper link 182, which extends along a diagonal portion 184 of the paint feed pipe 82, and is pivoted at its upper end, as indicated at 186, to the outward end of the lever 146, and is pivoted, at its lower end, as indicated at 188, to an end of a toggle lever 190. The toggle lever 190 is pivotally mounted intermediate its ends, as indicated at 192, on the side of the pipe 82, where the diagonal portion 184 joins the upper end of a perpendicular portion 194 at the lower end of the pipe 82. To the other end of the toggle lever 190 is pivoted, at 196, the upper end of a lower link 198, which is pivoted at its lower end, to an end of a toggle lever 202 which is pivotally mounted, as indicated at 204, on the upper end 20 of the handle 10, the other end of the toggle lever 202 being pivoted, as indicated at 206, to the upper end of a slide rod 208 extending downwardly along a side of the handle 10. The slide rod 208 works through a sleeve 210 fixed on the upper part of the handle 10 and has a finger button 212 on its lower end which is slidably confined in a vertical slot 212 of a fitting 216 secured to the lower part of the handle 10.

Positioned alongside of the locking lever operating slide rod 208, is a similarly mounted control valve operating slide rod 218, having a button 220 operating in a vertical slot 221 in the fitting 216. The slide rod 218 is pivoted at its upper end, as indicated at 222, to one end of a toggle lever 224 which is pivotally mounted interminate its ends, as indicated at 226, on the upper end 20 of the handle 10. The other end of the toggle lever 224 is pivoted, at 228 to one end of a horizontal link 230 which is pivoted at its other end, at 232, to the control valve lever 78. Shifting the slide rod 218 upwardly and downwardly, by means of its button 220, opens and closes the control valve 68.

As shown in Figure 6, the pump 32 has a flat, sealed piston 234 working in its cylinder 30 which has a fixed piston rod 236 which works through an opening 238 which is formed in a removable lower cylinder head 240, which is threaded at 239 into the lower end of the cylinder 30, and is provided with an eccentric vent hole 242. The piston rod 236 has a handle 244 on its lower end, below the cylinder 30, which is adapted to be grasped and pulled downwardly, against the resistance of a strong helical expansion spring 246, which surrounds the piston rod 236 and is compressed between the piston 234 and the lower cylinder head 240. Pulling the piston 234 downwardly in the cylinder 30 in this manner serves to open the ball valve 58 and draw paint into the cylinder 30, above the piston 234, through the supply hose 62, from a paint supply assembly 248, to which the hose 62 is connected. When the handle 244 is released, after being depressed, the spring 246 expands and pushes the piston 234 upwardly in the cylinder 30 so as to close the valve 58 and force paint upwardly through the feed pipe 82 into the feeding tube 110 and into the interior of the applicator roller cylinder 86, and out of the perforations 94 thereof.

The paint supply assembly 248, as shown in Figure 8, comprises a special paint can cover 250 which comprises a flat plate 251 which is formed with an annular concentric channel indentation 252 to seat conformably and frictionally in the channel 254 in the top flange 256 of a conventional paint can 258, having a bottom 260. A vent 253 is provided in the cover plate 251, and suitably fixed at the center of the cover plate 251, and preferably integral therewith, is a vertical rigid suction tube 262 which extends downwardly from the cover plate to a level near to the can bottom 260. Threaded, as indicated at 264, on the open lower end of the tube 262, is a hollow check valve housing 266 having a valve seat 268 opening through its lower end, and a ball check valve 270 in the housing 266 is pressed against to close the seat 268, by a spring 272. On the upper end of the suction tube 262, above the cover plate 251 is an upstanding nipple 274 onto which the lower end of the flexible supply hose 62 is engaged. It is obvious that the paint supply assembly 248 enables elimination of a special paint supply container, and enables the economical and convenient use of ordinary paint cans, and the

trouble of transfering paint from an ordinary paint can into a special container.

Although there has been shown and described herein a preferred form of the invention, it is to be understood that the invention is not necessarily confined thereto, and that any change or changes in the structure of and in the relative arrangements of components thereof are contemplated as being within the scope of the invention as defined by the appended claims.

What is claimed is:

1. A paint applicator assembly comprising a perforated hollow roller cylinder having first and second ends, a rigid paint feed pipe having a first end and a second end, a lateral perforated feeding tube on the first end of the feed pipe, said roller cylinder being journaled on said feeding tube, a handle on which said feed pipe is supportably fixed at its second end, a control valve in said feed pipe having an external lever, a first operator mounted on said handle and connected to said external lever for opening and closing the control valve, a pump mounted on said handle comprising a cylinder having closed first and second heads, vent means on said second head, a piston rod working through said second head and having an external retracting handle, a piston fixed to said rod and working in the pump cylinder, expanding spring in the pump cylinder and compressed between said piston and the first pump cylinder head, said second end of the paint feed pipe being connected to and opening through said first pump cylinder head, a paint supply conduit having a back-flow check valve therein, said conduit being connected to the paint feed pipe at a point between said control valve and the pump cylinder, a paint scraper assembly within said roller cylinder and journaled on said feed tube, a rotor on said feed tube and connected to said scraper assembly, and means on said feed pipe engageable with means on said rotor to prevent rotation of the scraper assembly on the feed tube while permitting the roller cylinder to rotate freely in opposite directions relative to the scraper assembly as an incident to being rolled against a surface to be painted.

2. A paint applicator assembly comprising a perforated hollow roller cylinder having first and second ends, a rigid paint feed pipe having a first end and a second end, a lateral perforated feeding tube on the first end of the feed pipe, said roller cylinder being journaled on said feeding tube, a handle on which said feed pipe is supportably fixed at its second end, a control valve in said feed pipe having an external lever, a first operator mounted on said handle and connected to said external lever for opening and closing the control valve, a pump mounted on said handle comprising a cylinder having closed first and second heads, vent means on said second head, a piston rod working through said second head and having an external retracting handle, a piston fixed to said rod and working in the pump cylinder, expanding spring in the pump cylinder and compressed between said piston and the first pump cylinder head, said second end of the paint feed pipe being connected to and opening through said first pump cylinder head, a paint supply conduit having a back-flow check valve therein, said conduit being connected to the paint feed pipe at a point between said control valve and the pump cylinder, a paint scraper assembly within said roller cylinder and journaled on said feed tube, a rotor on said feed tube and connected to said scraper assembly, means embodying a detent dog on said feed pipe engageable with detent means on said rotor to prevent rotation of the scraper assembly on the feed tube while permitting the roller cylinder to rotate freely in opposite directions relative to the scraper assembly as an incident to being rolled against a surface to be painted, and a paint supply assembly comprising a vented cover for replacing a paint can cover in a paint can, a suction tube mounted on and extending through said vented cover, said suction tube having an upper end connected to said conduit and an open lower end, and a check valve in said suction tube at the lower end thereof.

3. A paint applicator assembly comprising a perforated hollow roller cylinder having first and second ends, a rigid paint feed pipe having a first end and a second end, a lateral perforated feeding tube on the first end of the feed pipe, said roller cylinder being journaled on said feeding tube, a handle on which said feed pipe is supportably fixed at its second end, a control valve in said feed pipe having an external lever, a first operator mounted on said handle and connected to said external lever for opening and closing the control valve, a pump mounted on said handle comprising a cylinder having closed first and second heads, vent means on said second head, a piston rod working through said second head and having an external retracting handle, a piston fixed to said rod and working in the pump cylinder, expanding spring in the pump cylinder and compressed between said piston and the first pump cylinder head, said second end of the paint feed pipe being connected to and opening through said first pump cylinder head, and a paint supply conduit having a back-flow check valve therein, said conduit being connected to the paint feed pipe at a point between said control valve and the pump cylinder, and a paint scraper assembly within said roller cylinder and journaled on said perforated feed tube, said scraper assembly comprising opposed flexible scraper blades engaged with the side wall of the roller cylinder, a rotor fixed on said feed tube and reaching beyond an end of the roller cylinder, means connecting the rotor to the scraper assembly, a detent lever pivotally mounted on said feed pipe and having a detent dog, said rotor having detent means with which said dog is engageable to prevent rotation of the scraper assembly on the feed tube while permitting the roller cylinder to rotate freely in opposite directions relative to the scraper assembly as an incident to being rolled against a surface to be painted, and an operator mounted on the handle and operatively connected to said detent lever.

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