

Jan. 25, 1966

J. A. FLIPPEN

3,230,570

FLUID APPLICATION DEVICE

Filed Nov. 9, 1964

5 Sheets-Sheet 1

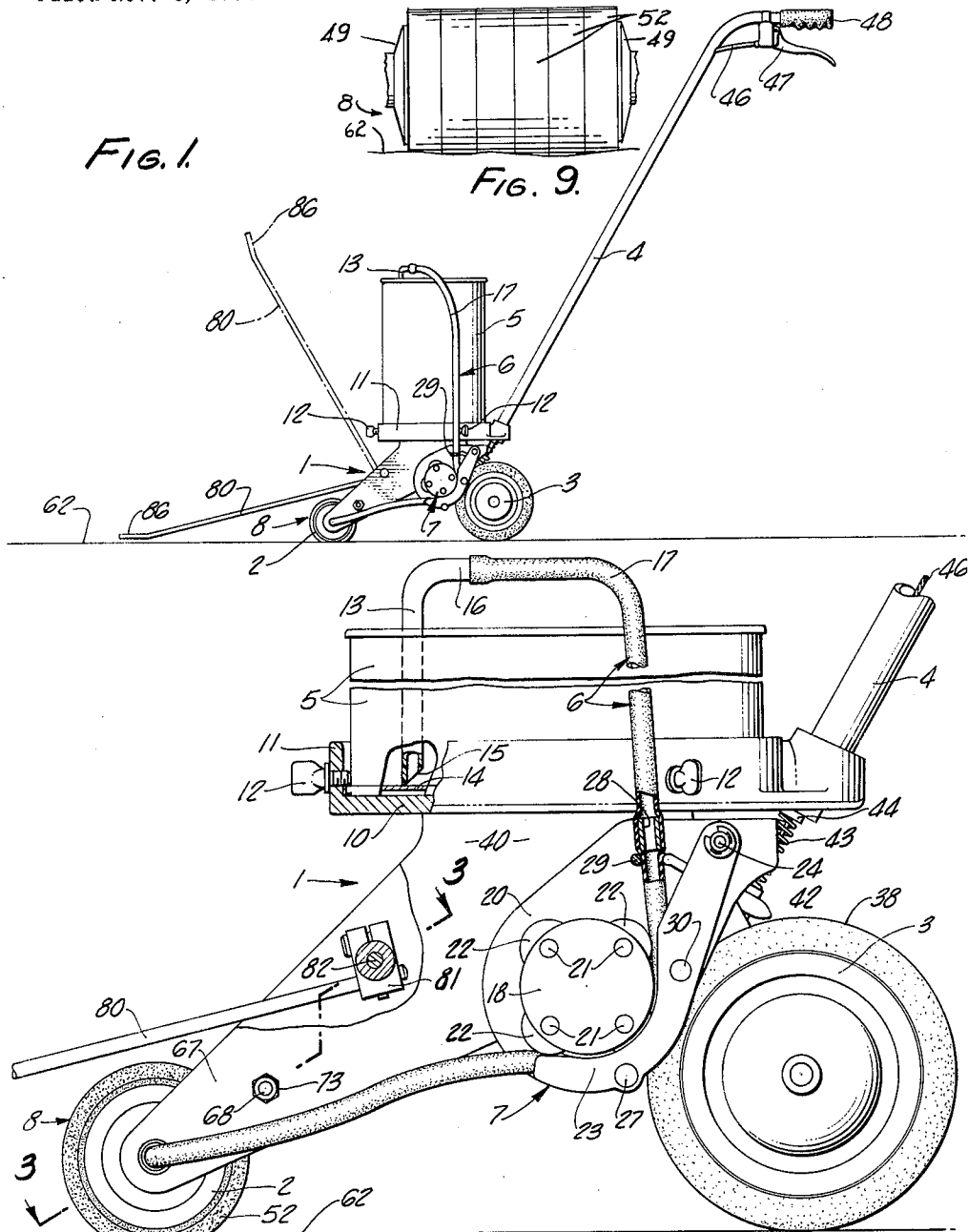


Fig. 2.

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FIG. 3.

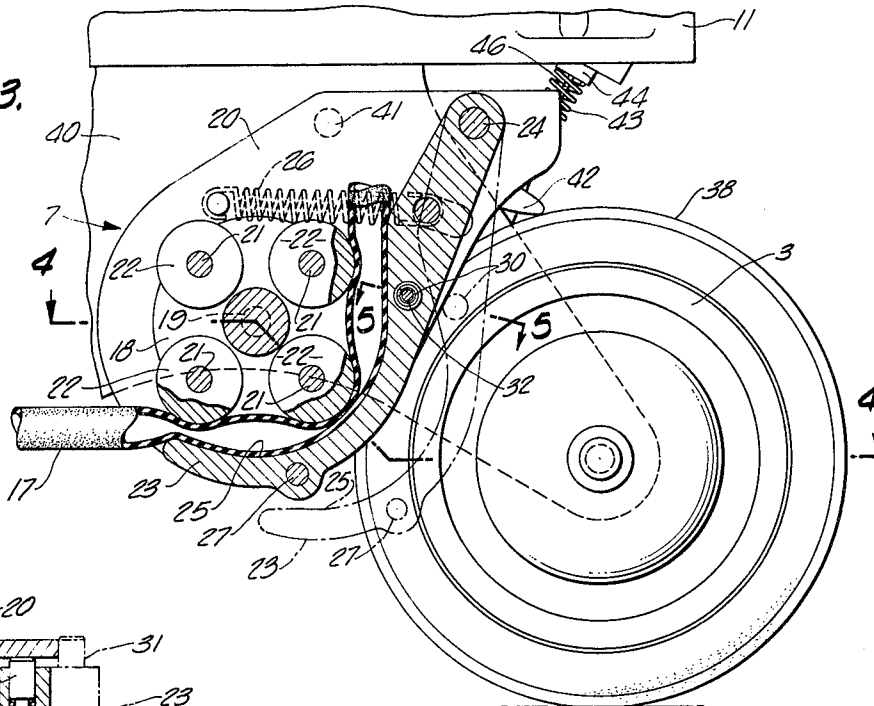


FIG. 5.

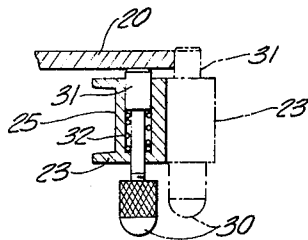
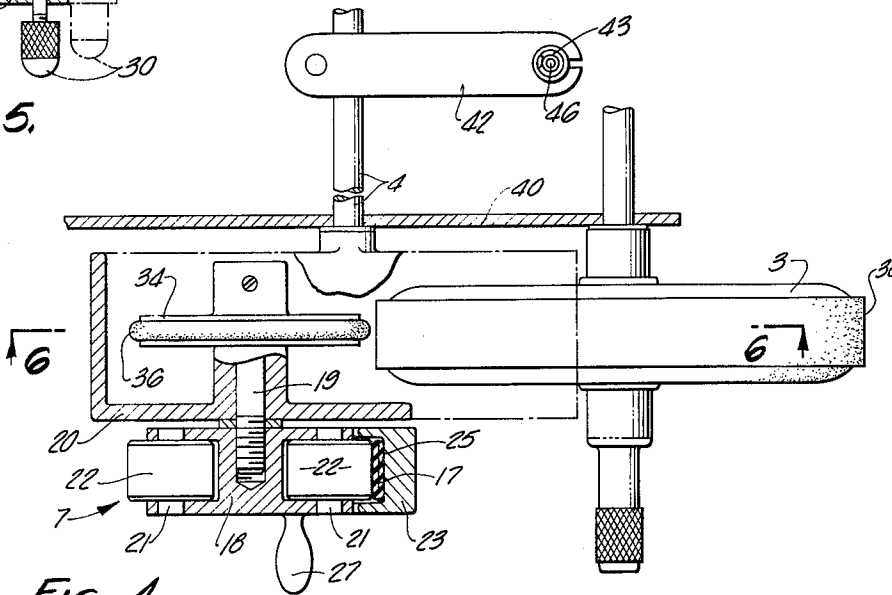


FIG. 4.

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FIG. 7.

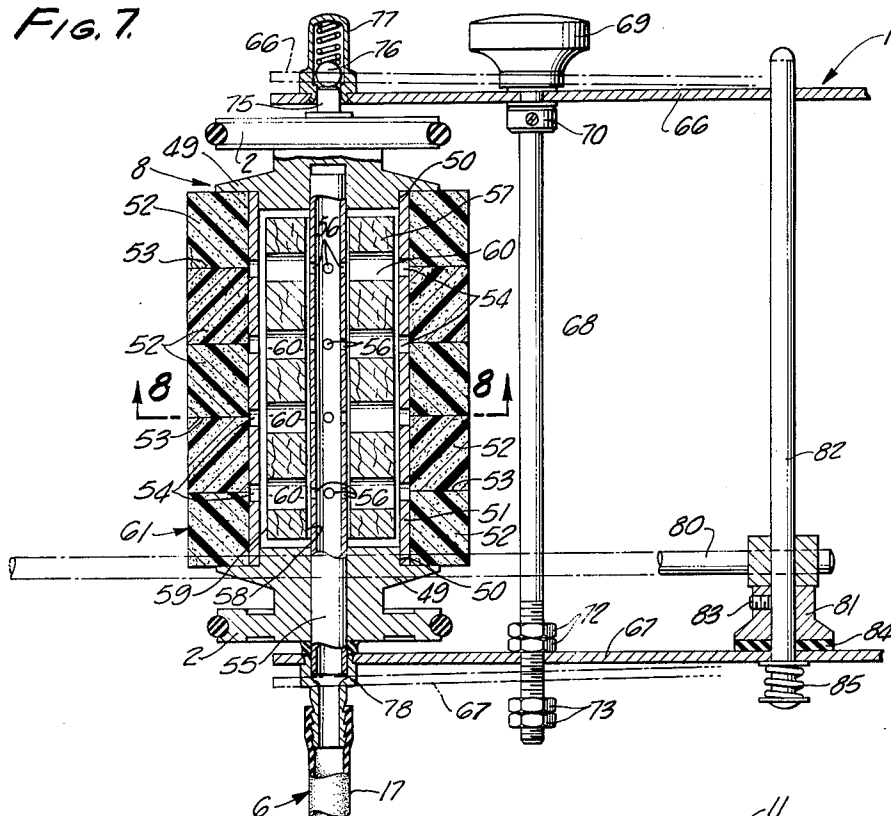


FIG. 6.

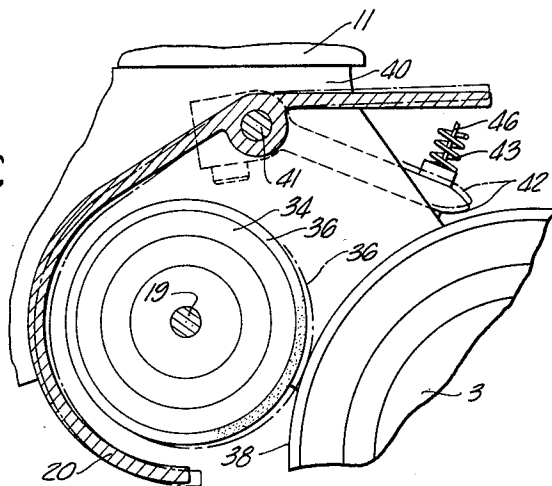
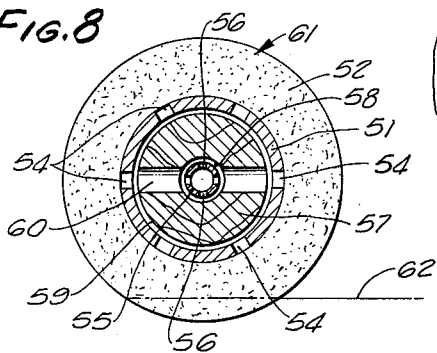


FIG. 8.



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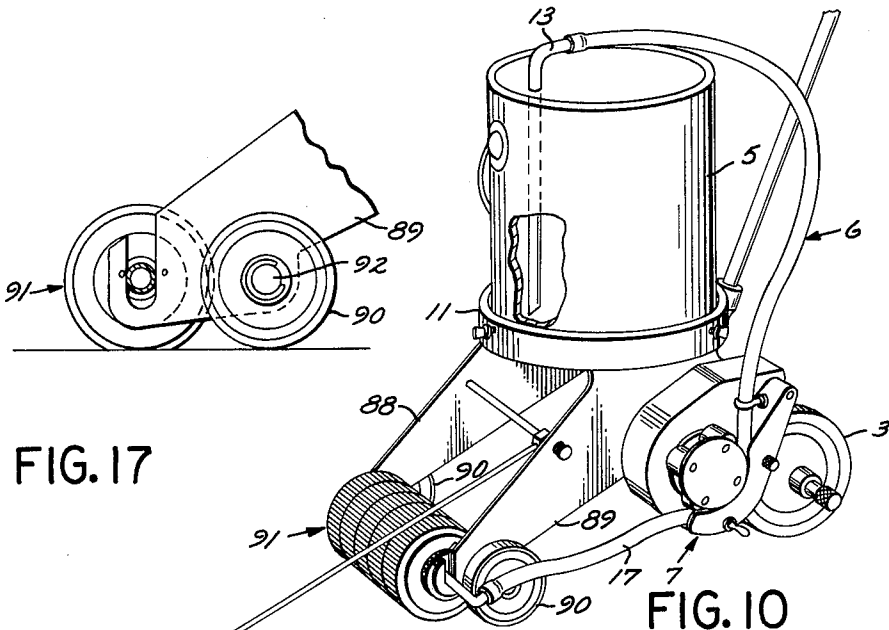
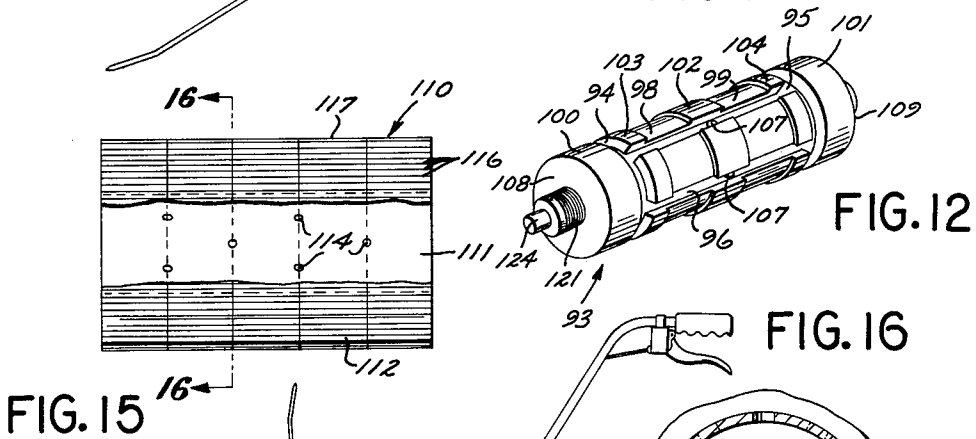
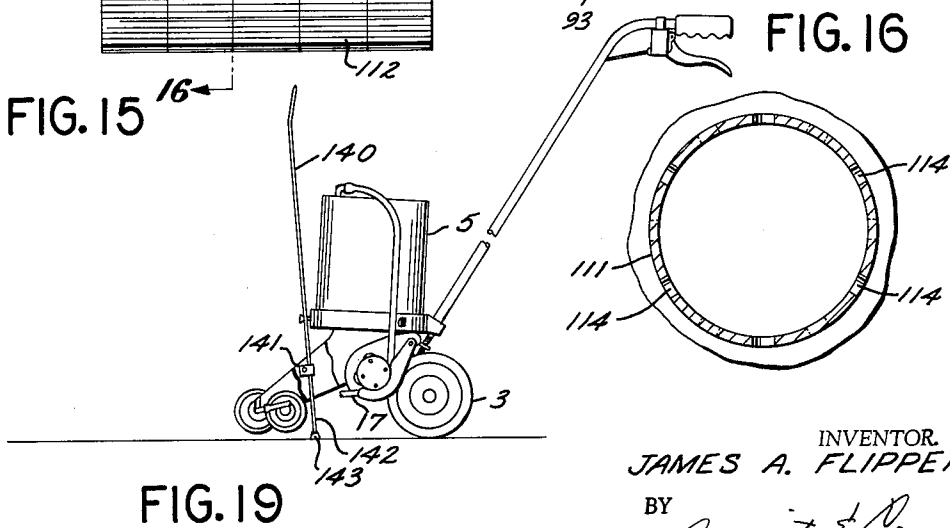
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FIG. 11

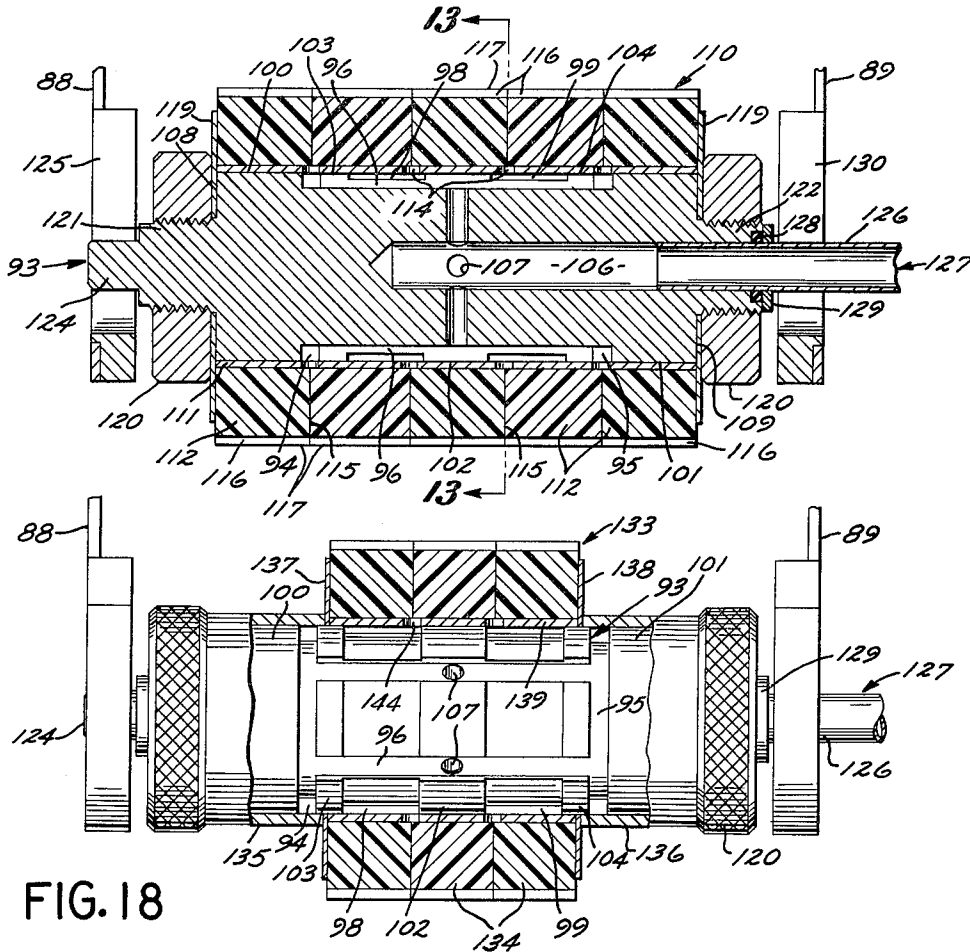
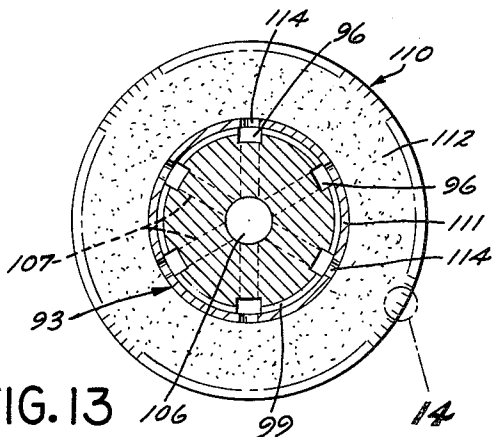


FIG. 18



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FLUID APPLICATION DEVICE

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Filed Nov. 9, 1964, Ser. No. 411,179

28 Claims. (Cl. 15-503)

This is a continuation-in-part of my copending application Serial No. 297,243, filed July 24, 1963, for Fluid Application Device now abandoned.

This invention pertains to the application of fluid, such as a coating material, and more particularly to painting by means of a roller.

One important field for the device of this invention is in the painting of stripes, although its principles are of more general utility. Paint striping, of course, is prevalent for marking parking areas and for many other purposes. The arrangement of this invention provides a manually operable device which provides an improved uniform stripe, while being more easily operated and requiring less labor than conventional designs. This is accomplished by means of a chassis that carries the paint roller between the front wheels, and supports a paint can from which is pumped the paint to supply the roller. The roller includes a plurality of foam plastic annular members providing passageways in between their adjacent edges for the paint to be fed outwardly. The pump is driven by the wheels of the unit, and a hand control governs the operation of the pump. This provides a constant supply of paint when desired, and completely cuts off the paint flow when the unit is stopped.

Accordingly, it is an object of this invention to provide an improved arrangement for applying paint by a roller.

Another object of this invention is to provide a roller that has an internal feed to apply the paint uniformly and in a clearly delineated stripe.

A further object of this invention is to provide a painting unit in which most of the components that contact the paint are disposable, thereby reducing the required amount of labor.

An additional object of this invention is to provide a portable painting device that includes a pump driven by manipulation of the unit.

Yet another object of this invention is to provide a paint roller that will conform to uneven surfaces.

A still further object of this invention is to provide a paint striper having a positive cut off of paint supply when desired, and which is more easily operated than conventional units.

These and other objects will become apparent from the following detailed description taken in connection with the accompanying drawings in which:

FIGURE 1 is a side elevational view of the painting device of this invention;

FIGURE 2 is an enlarged fragmentary side elevational view, partially in section, of the painting device;

FIGURE 3 is an enlarged fragmentary elevational view, partially in section, of the pump portion of the invention;

FIGURE 4 is a sectional view taken along line 4-4 of FIGURE 3 further illustrating the pump construction;

FIGURE 5 is a fragmentary sectional view taken along line 5-5 of FIGURE 3, showing how the feed tube can be released;

FIGURE 6 is a sectional view taken along line 6-6 of FIGURE 4, illustrating the pump mounting that permits it to assume either a driven or an inactive position;

FIGURE 7 is an enlarged transverse sectional view taken along line 7-7 of FIGURE 2;

FIGURE 8 is a transverse sectional view taken along line 8-8 of FIGURE 7, illustrating the roller construction;

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FIGURE 9 is an elevational view showing how the roller conforms to uneven surfaces;

FIGURE 10 is a perspective view of the device of this invention incorporating a different roller mounting arrangement;

FIGURE 11 is a longitudinal sectional view of the roller of FIGURE 9;

FIGURE 12 is a perspective view of the core of the roller assembly separated from the remainder of the unit;

FIGURE 13 is a transverse sectional view of the roller taken along line 13-13 of FIGURE 11;

FIGURE 14 is an enlarged fragmentary view taken at line 14 in FIGURE 13, showing the slots formed in the periphery of the roller discs;

FIGURE 15 is an elevational view, partially broken away, of the outer sleeve of the roller;

FIGURE 16 is a transverse sectional view of the sleeve taken along line 16-16 of FIGURE 15;

FIGURE 17 is a fragmentary elevational view, partially in section, showing the attachments of the wheel and roller at one side of the forward portion of the chassis;

FIGURE 18 is a longitudinal elevational view of the roller, partially in section, illustrating the use of spacers to accommodate a shorter sleeve for painting a narrower stripe; and

FIGURE 19 is an elevational view showing how the guide rod can be used in supporting the front of the chassis with the roller off the ground.

With reference to the drawings, as seen in FIGURE 1 the device of this invention includes a chassis 1 provided with a pair of front wheels 2 and a pair of larger rear wheels 3. A handle 4 inclines upwardly from the rear portion of the chassis so that the unit can be operated manually over any desired surface. A supply reservoir 5 on the chassis holds the paint which is drawn through tube 6 by a pump 7 and directed into an interior of the roller 8 that is mounted between the front wheels 2.

With reference now to FIGURE 2, it may be seen that the chassis 1 includes a horizontal plate 10 that is adapted to receive the paint reservoir 5. A flange 11 projects upwardly from the surface 10 and thumb screws 12 are threadably received in the flange for engagement with the lower wall of the container 5.

One of the advantages of the arrangement of this invention is that the reservoir 5 may be an ordinary paint can supplied by the paint manufacturer. In other words, the paint can in which the paint normally is distributed serves as the supply source for the unit. This obviates any need for pouring the paint into a special container. Even more importantly, it eliminates cleanup of the reservoir portion of the unit because the paint can is discarded when empty. It is a simple matter, therefore, to dispose of the paint can 5 on the plate 10 where it is held in place firmly by the thumb screws 12, and there is no handling of the paint by the operator of the unit of this invention.

The lid of the paint can need not be removed, and instead a hole is punched into it. This is to complementarily receive the rigid end 13 of the tube assembly 6. This tube is inserted down to the bottom end wall 14 of the paint can, and the end 15 of the tubular section 13 is scarfed so that an entrance to the tube is assured. The other end of tube 13 includes an angularly bent section 16 over which is slipped one end of flexible tube 17. The latter tube passes through the pump 7 extending to the axis of the roller 8 to supply the paint to the interior of the roller.

With particular reference now to FIGURES 3 and 4, the pump 7 includes disc 18 rotatable about the axis of stud 19 passing through support plate 20. The disc 18

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by means of pins 21 carries a plurality of rollers 22. These rollers project outwardly beyond the periphery of the disc. The pins 21 are mounted about an imaginary circle that is concentric with the axis of the disc 18, and are parallel to the disc axis. The tubular element 17 extends around one side of the circumference of the disc 18, hence being engageable by the rollers 22 upon rotation of the disc. On the opposite side of the tubular section 17 adjacent the disc 18 is a channel 23. This member is pivotally held to the support 20 by means of a pin 24. The channel 23 includes an arcuate surface 25 having a radius slightly greater than that of an arc described by the periphery of the rollers 22 upon rotation of the disc 18. Consequently, when the channel 23 is in the solid-line position of FIGURE 3, rotation of the disc 18 will cause the rollers 22 to successively flatten the tube locally as they move across the tube's outer surface toward the roller 8. There will be pockets of undeflated portions of the tube intermediate the rollers providing a space for paint in the tube 17. Hence, the rollers, cooperating with the backing provided by the channel 23, cause the paint to be sucked through the tube 6, entering the rigid portion 13 and thence passing into the flexible section 17. Preferably, the tubular portion 13 is made of clear plastic so that there will be a visible indication of operation of the pump.

The channel 23 is maintained in the solid-line position adjacent the disc 18 by means of a tension spring 26 connecting to the channel 23 and the support plate 20. This spring holds the channel 23 adjacent disc 18 to assure that the flexible tube 17 will be compressed by the rollers 22, but limits the positioning force so that the tube 17 will not be worn unduly as the pump operates. A short rigid tube 28 in the flexible tube 17 above a restriction formed by a hook 29 prevents the tube 17 from being drawn downwardly as the rollers 22 move over it.

The use of a spring urging the channel 23 toward the circumference of revolution of the disc 18 and its rollers 22 has a further advantage in limiting the pressure that can be exerted by the pump. If the back pressure in the tube 17 becomes excessive, the spring 26 will allow the channel 23 to move outwardly away from the rotor so that the rollers 22 will no longer fully compress the tube 17. This occurs because the pressurized fluid in the tube 17 will cooperate with the rollers 22 to force the channel 23 in a counterclockwise direction, pivoting it about its shaft 24. In other words, when a downstream resistance is met, the pressure will build up in the tube 17 to where, instead of compressing the tube as shown in FIGURE 3, the rollers will merely rotate the back-up channel 23 away from the disc 18 an amount sufficient to reduce or substantially eliminate the compression of the tube. This, in turn, decreases or even stops the pumping action. The tension of spring 26 may be selected to set the back pressure at which the back-up channel 23 will be pivoted away from the rotor in this manner. As a result, the maximum pressure of the pump can be established. This protects against rupturing the feed tube or causing other damage in the event that the roller assembly or other downstream portion of the device should become clogged with dried paint or otherwise obstructed.

Channel 23 may be shifted to the phantom-line position of FIGURE 3 where it is spaced from the tube section 17, thereby allowing the tube assembly 6 to be removed from the pump for replacement or cleaning. The channel 23 is moved to the released position by pulling on short handle 27 projecting from the side of the lower portion of the channel 23, rotating the channel about the pin 24 in a counterclockwise direction as seen in FIGURE 3. Carried by the channel 23 is a plunger 30, shown in detail in FIGURE 5. The plunger has an end 31 biased against support member 20 by means of a compression spring 32. Therefore, when the channel is

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moved back to where the end 31 passes the outer edge of the support element 20, the plunger moves past the edge, precluding the channel from moving in a clockwise direction toward the disc 18. The channel 23 may be returned to its original position by pulling axially on the plunger 30, whereupon the spring 26 moves the channel back into the position of adjacency with the periphery of the disc 18.

Rotation of the disc 18 and hence the operation of the pump is accomplished by means of a drive wheel 34 which, by stud 19, connects to the disc and is rotatable therewith. The drive wheel 34 carries an annular projecting element 36 of a suitable material having a relatively high coefficient of friction, such as rubber, which is adapted to engage the circumferential surface 38 of one of the rear wheels 3 of the unit. Hence, there is a friction drive from the wheel 3 to the drive pulley 34 which, in turn, rotates the disc 18. This sets the pump in operation at the time that the device is rolled over the pavement or other supporting surface.

The wheel 34 normally is maintained slightly spaced from the periphery 38 of the wheel 3 so that the pump is not in operation. This position is shown in solid lines in FIGURE 6. The member 20 that supports the pump and the pulley 34 is pivotally carried on the fixed frame section 40 of the device by means of a shaft 41. A lever 42 extends outwardly from the shaft 41, engaged on its upper surface by a compression spring 43. The opposite end of spring 43 contacts a fixed sleeve 44. Hence, the spring force biases the lever 42 in a clockwise direction as the invention is illustrated, tending to rotate the member 20 also in this direction, which moves the pulley 34 away from circumference 38 of the support wheel 3.

A flexible cable 46 connects to the lever 42 extending upwardly through spring 43 and the tubular handle 4 where it connects to the end of a pivotal bell crank element 47 adjacent the handgrip 48 (see FIGURE 1).

Thus, to cause the unit to pump, the operator rolls the device across the supporting surface so that the rear wheels 3 are set in motion. By pressing the crank 47 toward the handgrip 48 the cable 46 is pulled upwardly, thereby rotating the bell crank 42 and the support 20 in a counterclockwise direction. This brings the peripheral member 36 of the drive pulley 34 against the circumferential surface 38 of the wheel 3 so that the disc 18 is driven.

In this manner it can be seen that there is a precise control over the pumping of the paint through the tube 6. The pump operates only upon movement of the crank 47 so that the operator can commence the applying of paint to the roller at exactly the desired time. When the crank 47 is released no pumping action takes place so that there is no flow whatsoever through the tube 6. No valves are needed in cutting off the flow to the roller. This contrasts with the usual construction of paint strippers which rely upon a gravity feed and require the closing of valves to stop the paint flow and prevent leakage. The valves also are vulnerable to clogging, and frequently lead to malfunctioning when plugged up.

With reference to FIGURES 7 and 8, the front wheels 2 are integral with radial flanges 49 which are spaced inwardly from the wheels. The flanges act as hub portions of the roller assembly, providing shoulders 50 which position the roller inwardly away from the wheels. This assures that the wheels 2 will not be contacted by the paint on the roller 8. The hubs 49 carry a tube 51 which may be a pasteboard member. Bonded on the exterior of tube 51 is a plurality of annular flexible members 52, preferably made of foam plastic. At the locations of the junctures 53 between the radial walls of the aligned annular members 52 are openings 54 through the tube 51.

A rigid tube 55 extends through the axis of the roller assembly interconnecting the wheels and connecting at its outer end to the lower end of the tubular section 17.

Within the space between the flanges 49 the tube 55 is provided with openings 56.

Around the exterior of the tube 55 and within the tube 51 is a cylinder 57, which may be made of wood. Its inner circumferential wall 58 is slightly larger than the outside diameter of the tube 55, while its outer wall 59 is smaller than the inside of the tube 51. Similarly, the length of the cylinder 57 is less than the spacing between the inner surfaces of the flanges 49. Relatively large radial openings 60 extend through the cylinder 57 between the inner and outer walls 58 and 59.

In operation of the unit, therefore, the pump 7 supplies paint to the interior of the tube 55 at the axis of the roller 8. This paint can pass outwardly through the openings 56 and continue in the radial direction toward the tube 51. The cylinder 57 is loose within the space inwardly of the tube 51 and allows the paint to pass through the large radial openings 60. The openings 56 and 60, therefore, need not be in registry. The cylinder 57 acts solely as a filler block, occupying a considerable volume within the central portion of the roller so that the roller will contain less paint within it than otherwise would be required. This, in turn, assures that when the unit is stopped there is practically no likelihood of leakage through the roller 8.

The paint from the interior of the roller will reach the openings 54 in tube 51. This supplies a quantity of paint at each juncture 53 between the radial walls of the annular foam elements 52. The paint then feeds outwardly through the restricted paths between the radial walls of the adjacent annular members 52. It does not pass through these members, but is fed to the exterior of the roller through the slits defined by the radial walls of the elements 52. It may be noted in passing that the members 52 may be of a material that will absorb a certain amount of paint as would a sponge. A resilient open-cell foam plastic is of this nature. However, the paint will not flow through the very high resistance of the cellular foam members, but instead will follow the passageways provided between the radial walls of the adjacent members 52. Thus, the members 52 need not be entirely impervious to the passage of paint, but in effect they are substantially so.

Consequently, a properly metered amount of paint reaches the circumference 61 of the roller 8, where it is distributed evenly along the circumferential surface and applied to any adjacent object which the roller contacts. This is a vastly improved technique from prior designs where there have been efforts to feed the paint through the roller material rather than along radial surfaces as in this design. Such prior arrangements were characterized by an uneven distribution of paint and localized surges of paint to the roller exterior. This caused these units to paint stripes of varying widths without uniformity. Previous designs have been particularly unsatisfactory for viscous paint, which is applied without difficulty by the roller of this invention.

Another advantage accrues from the use of the plurality of separate annular members 52 by facilitating the painting of uneven surfaces. Thus, as seen in FIGURE 9, the members 52 may move independently into the depression in the surface 62, while at the same time maintaining the path for the paint through the adjacent radial walls of these members.

Also, it may be observed that the foam plastic members 52 can be flattened without increasing in width. Being cellular in nature, there is no necessity to displace material laterally when they are compressed. Therefore, the line being painted remains a precisely constant width despite the weight of the paint in the reservoir 5, or whether the roller is applying paint over an uneven surface.

The arrangement of this invention is constructed so that the roller may be removed and cleaned or discarded very readily. The front plates 66 and 67 that mount the

roller are interconnected by a transverse rod 68 which is located inwardly of and parallel to the roller 8.

The rod 68 includes a knob 69 on the outside of the sheet 66, and a collar 70 on the inner face of the member 66. The opposite end of the cross rod 68 is threaded and threadably received within an aperture in the other side plate 67. Pairs of nuts 72 and 73 form stops at this end of the rod 68. Accordingly, in order to remove the roller 8, the knob 69 is rotated, thereby moving the plate 67 relative to the shaft by virtue of the threaded connection. This causes the plates to assume the position illustrated in phantom in FIGURE 7. Short axle 75 of the roller then drops out of its opening in plate 66, being biased away from the plate 66 by a spring loaded ball 76 in a housing 77. The outer end of the tube 55 at the opposite end of the roller slides out of the fitting 78 at the location where the flexible tube connects to the roller. The hubs 49 then merely are pulled out from the cylinder 51 so that this cylinder and its associated annular members 52 may be separated from the filler block 57 and the tube 55.

As pointed out above, the assembly of the annular members 52 and the cylinder 51 are of such low cost construction that generally it is preferred to discard these items after each use rather than to attempt to clean them. Labor is reduced to a minimum, and the cleaning operation virtually is eliminated.

The unit is assembled as readily as it is dismantled with the hub ends being fitted into the cylinder 51 being installed, the roller axles being inserted into their receptacles, and the knob 69 rotated appropriately to move the plates 66 and 67 together. Hence, the unit is taken apart and reassembled in just a few moments of time.

Also in the cleanup procedure it is preferred normally to discard the entire tube assembly 6 and replace it with a new unit for the next operation. Of course, as previously noted, the receptacle 5 for the paint normally will be the container supplied by the manufacturer so that it, too, will be thrown away when empty. Thus, there is practically no cleaning to be done in connection with the use of the painting device of this invention, and the savings in time and labor become of major significance.

In assisting in the painting of an accurately directed line, it may be preferred to include a guide rod 80 with the unit. This member is received at its inner end by a fitting 81 on a transverse shaft 82. The fitting is rotatable with shaft 82 by virtue of the set screw 83 coupling these items together. A friction washer 84 is interposed between the end of the fitting 81 and the side plate 67, while a compression spring 85 on the opposite side of this plate urges the fitting 81 toward the side plate. Consequently, there is a resistance to the rotation of the shaft 82 and, as a result, the rod 80 will stay in any desired position. When not in use, it may be pulled upwardly to the phantom-line position of FIGURE 1, or it may be moved downwardly so that its bent end portion 86 is substantially parallel and adjacent the surface which is being painted. The end 86 thereby acts as a convenient means for following some previously established marking to assure that the line will be exactly in the desired location.

It should be understood that the device of this invention can be used for painting other than striping as for the embodiment described herein. The roller 8 can be used wherever a pressurized feed is available. For wall painting in which the unit will not be rolled about the floor, a power-operated pump may be included to supply the roller rather than the pump 7 which is driven by the wheel of the unit. All the advantages of rapid and even paint application, together with the low cost and disposal of the parts contacting the paint, are retained.

The roller 8 is readily adapted to paint lines of various widths. This may be accomplished without altering any of the other components of the machine. For a narrower line, fewer annular members 52 may be included on the tube 51. Of course, the opening 54 will be made only at

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the junctures between the radial walls of the annular members as before. With fewer annular elements on the cylinder 51, the line will be narrower, but the hubs will firmly hold and position the roller as before by engaging the outer ends of the cylinder 51.

When constructed in the manner illustrated in FIGURES 10 through 19, the invention provides even better performance in painting stripes over rough and uneven surfaces. Also, roller installation is simplified and, with the same basic components, the length of the roller can be varied so as to permit painting stripes of different widths. According to this embodiment of the invention, the chassis and the pump are basically the same as in the previously described arrangement. However, the parallel side plates 88 and 89 projecting forwardly of the chassis mount a pair of front support wheels 90, which are independent of the paint roller 91. Short axles 92 rotatably connect the wheels 90 in their positions on the outside of the plates 88 and 89 and slightly to the rear of the roller 91 so that the wheels 90 bear the weight of the front of the device. This permits the roller to be held separately with provision for complete vertical floating movement, as will be described below.

At the axial center part of the roller 91 there is a core 93 of elongated generally cylindrical construction, this member being shown by itself in FIGURE 12. On the periphery of the core 93 inwardly of its ends are annular grooves 94 and 95. These grooves are interconnected by a plurality of longitudinally extending slots 96. In a typical example, there will be six of the slots 96 spaced equally about the periphery of the core 93. In between the annular grooves 94 and 95 are additional wider annular recesses 98 and 99 which may be shallower than the end grooves 94 and 95. This provides the core 93 with end cylindrical parts 100 and 101, a relatively wide central land 102, and narrower end lands 103 and 104 adjacent the grooves 94 and 95.

An axial bore 106 extends into the core 93 from the end adjacent the cylindrical section 101. From this bore 106 extend six radial apertures 107, which communicate with the longitudinally extending slots 96 at the midportion of the core 93 intermediate the segments of the wide center land 102.

Mounted on the core 93 intermediate the radial outer walls 108 and 109 of the cylindrical end portions 100 and 101 is a sleeve assembly 110. The latter unit includes a tube 111, normally made of cardboard, around which are annular flexible members 112. These, as for the elements 52, preferably are made of foam plastic material. In the arrangement of FIGURE 11, there are five of the annular members 112, and the sleeve assembly extends the full length of the core 93 between the end walls 108 and 109 of the core. Openings 114 are provided in the tube 111 at the junctures 115 between the abutting radial walls of the annular members 112. These openings are spaced around the periphery of the tube, and communicate with the annular end grooves 94 and 95 as well as the intermediate annular recesses 98 and 99.

Unlike the members 52 previously described, the elements 112 include radially directed axially extending slots 116 extending inwardly from their outer surfaces 117. These slots are relatively shallow, extending radially considerably less than the full depth of the flexible members 112.

At the outer ends of the sleeve assembly and the core are washers 119 that are held in place by nuts 120 received on threaded portions 121 and 122 that extend axially outward from the ends of the core element 93. This retains the sleeve assembly 110 on the core unit 93.

Projecting beyond the threaded section 121 is a short journal 124. When the roller 91 is mounted on the chassis, the journal 124 fits within a vertical slot 125 in the forward part of the plate 88.

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At the opposite end of the roller 91, one end 126 of an L-shaped tube 127 projects into the bore 106, being sealed by an O-ring 128. A flange 129 is welded onto the tube 127, acting as a stop to position the tube with respect to the core 93. Outwardly of the flange 129, the tube fits within a vertical slot 130 in the side plate 89, corresponding to the slot 125 in the other plate. Beyond this location, the tube 127 connects to the paint feed line 17 coming from the pump 7.

In use of the device, when the roller turns as the chassis is moved, the journal 124 rotates in the slot 125, while the core 93 rotates relative to the tube end 126. As before, the rotating rear wheels 3 operate the pump 7 so that paint is drawn from the container 5. This paint is forced through the flexible tube 17 into the rigid tubular member 127, passing into the bore 106. At the center of the bore the six radial openings 107 carry the paint to the recessed portions of the periphery of the core 93. The paint may flow along the longitudinally extending slots 96 and around the annular recesses 98 and 99 as well as through the end grooves 94 and 95. Hence, the paint can readily communicate with all the perforations 114 through the tube 111 that mounts the foam plastic annular members 112. Therefore, the paint can travel along the juncture 115 between the radial end walls of the elements 112 to reach the peripheral surface 117 of these elements. At the periphery, the axially extending slots 116 permit the paint to travel for the full width of each of the annular members 112. Thus, the paint flows outwardly between the radial walls, and then axially with respect to the roller along the full length of each of the slots 116. This gives complete and uniform distribution of paint at the periphery of the roller.

By reason of its mounting, the roller 91 has full vertical floating movement with respect to the chassis as the device is used. The weight of the chassis will be borne by the wheels 90, while the roller 91 is free to move vertically in the slots 125 and 130 relative to the wheels and the remainder of the unit. Therefore, regardless of any depression or unevenness encountered in the surface being painted, the roller may shift its position appropriately to follow the contour of this surface irregularity so that full contact with the periphery of the roller is assured. Not only may the entire roller assembly move vertically, but the ends of the roller may move upwardly or downwardly relative to each other so that the roller can assume the attitude of the surface being contacted. Compression of the annular foam plastic members 112 is limited by the washers 119 at the ends of the sleeve assembly 110. The relatively heavy metal core 93 assures that there is adequate downward force on the roller 91 so that it paints a solid sharp line as the device is wheeled along. This unit, therefore, is superior to the previously described arrangement in painting uneven surfaces because the roller 91 can float in the manner described, while in the previous embodiment the wheels 2 are an integral part of the hubs of the roller and preclude independent roller movement.

Removal of the roller 91 is even simpler than for the roller 8 of the previously described embodiment. The unit 91 is simply lifted out of the slots 125 and 130, and the tube 127 is pulled out of the bore 106. The knurled nuts 120 then are loosened and the sleeve assembly 110 slipped off the core 93. Thus, cleanup and maintenance are effected rapidly and easily.

This type of construction is particularly adapted for variation in stripe width by utilizing paint rollers of different lengths. As shown in FIGURE 18, a considerably shorter roller 133 is mounted on the core 93, provided with annular elements 134 similar to the members 112 but of a narrower dimension. Thus, the roller 133 has less length and will paint a thinner stripe than that provided by the roller 91. In assembling the paint roller of FIGURE 18, the sleeve unit 133 is fitted on the central part of the core 93 so that its ends are at the lands 103

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and 104. Metal sleeves 135 and 136 fit over the core 93 at the ends of the roller unit 133, extending at their outer edges to the end walls 108 and 109 of the core 93. Radial washers 137 and 138 are interposed between the inner ends of the spacers 135 and 136 in the sleeve assembly. This both positions the sleeve assembly 133 at the central part of the core and covers up the annular grooves 94 and 95.

By this arrangement, therefore, paint entering the recessed peripheral portions of the core through the apertures 107 will be pumped through the perforations 144 and the tube 139 of the sleeve assembly 133 and out between the radial walls of the members 134 similarly to the manner described above. However, the paint at the ends of the recessed part of the core surface, i.e., the paint at the grooves 94 and 95, is blocked by the walls of the sleeves 135 and 136 so that no leakage occurs at that point. It can be seen, therefore, that this basic roller design permits assembling sleeves of various lengths on the core so that desired stripe width can be achieved. The variations are almost limitless simply by putting appropriate spacer sleeves over the core at the ends of the painting sleeve assembly. This will assure that the paint is fed outwardly to the periphery of the roller, and no leakage takes place at the ends of the core beyond the foam plastic elements.

An added feature, applicable to either embodiment, is constructing the pointer guide 140, shown in FIGURES 10 and 19, to serve also as a support for the device when it is not in use. The rod 140, mounted on the cross shaft 141 between the side plates 88 and 89, has a section 142 beyond the shaft provided with a rubber tip 143. When the element 140 is rotated to a vertical position, such as shown in FIGURE 19, the tip 143 engages the ground and lifts the forward part of the chassis free of the surface beneath it. This is desirable to do intermediate striping operations so that there will be no spot formed by the residual paint in the roller while the unit is being parked temporarily.

The foregoing detailed description is to be clearly understood as given by way of illustration and example only, the spirit and scope of this invention being limited solely by the appended claims.

I claim:

1. A fluid application device comprising an elongated member having an outer wall defined by a surface of revolution, said member including a plurality of resilient substantially fluid-impervious annular members in an axially aligned relationship with the side edges thereof in juxtaposition, said annular members collectively defining said outer wall of said elongated member, said elongated member having fluid passage means interiorly thereof adapted to receive a coating fluid, said fluid passage means communicating with said annular members between said side edges, for conducting said fluid intermediate said side edges of said annular members to said outer wall for application to an adjacent surface.
2. A device as recited in claim 1 in which said annular members are of resilient cellular foam plastic material.
3. A device as recited in claim 1 in which said annular members are relatively short cylindrical discs of resilient cellular foam plastic material, each of said discs having a plurality of axially extending slots in the outer periphery thereof for distributing fluid at said periphery.
4. A fluid application device comprising a rotatable cylindrical element, said element including a plurality of resilient substantially fluid-impervious annular members in an axially aligned relationship with the side edges thereof in juxtaposition, said an-

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- ular members collectively defining the circumferential surface of said cylindrical element, said cylindrical element having a relatively rigid portion inwardly of said annular members, and including fluid passage means in said relatively rigid portion, said fluid passage means providing communication between the interior of said cylindrical element and said side edges of said resilient annular member, for transmitting fluid from the interior of said cylindrical element intermediate said side edges to said circumferential surface, and means for supplying pressurized fluid to said fluid passage means for such transmission to said circumferential surface.
5. A device as recited in claim 4 including in addition a wheeled member carrying said cylindrical element, said wheeled member including means for supporting a fluid reservoir, conduit means for interconnecting such a reservoir and the interior of said cylindrical element, and pump means for forcing fluid from said reservoir through said conduit means to said cylindrical element, thereby providing said means for supplying pressurized fluid.
 6. A device as recited in claim 4 including in addition a wheeled member, means mounting said cylindrical element on said wheeled member with freedom for vertical floating movement relative to said wheeled member, said wheeled member including means for supporting a fluid reservoir, conduit means for interconnecting such a reservoir and the interior of said cylindrical element, and pump means for forcing fluid from said reservoir through said conduit means to said cylindrical element, thereby providing said means for supplying pressurized fluid.
 7. A device as recited in claim 6 in which for said mounting means said chassis includes a duality of spaced members, each of said members including a substantially vertically disposed slot therein, said roller having axial end portions extending into said slots, said axial portions being slidable within said slots to thereby provide said floating movement.
 8. A device as recited in claim 7 in which one of said axial portions comprises a journal extending from one end of said roller, and the other of said axial portions comprises a substantially rigid tube received in the opposite end of said roller, said roller being rotatable relative to said tube, said tube communicating with said fluid inlet means and forming a portion of said conduit means.
 9. A painting device comprising a roller, said roller including a rotatable cylinder and a plurality of annular members on said cylinder, said annular members being in an abutting side-by-side relationship, and made of a substantially fluid-impervious resilient material, said cylinder having aperture means in the circumferential wall thereof adjacent and in communication with the abutting surfaces of said annular members, said cylinder having a fluid passageway in communication with said aperture means in said cylindrical wall, and means for providing pressurized fluid to said fluid passageway for permitting said fluid to flow outwardly through said aperture means and between said abutting surfaces for application by the exterior of said annular members to an adjacent surface.

10. A painting device comprising
a roller,
said roller including a rotatable cylinder, and a plu-
rality of annular members on said cylinder,
each of said annular members including an outer cir-
cumferential wall and radial side walls,
said annular members being arranged in a side-by-side
axially aligned relationship on said cylinder with
said radial walls in juxtaposition,
said cylinder having aperture means adjacent and in
communication with said radial walls, said cylinder
having an internal fluid passageway communicating
with said aperture means, said annular members
being of a resilient substantially fluid-impervious
cellular material,
and means for providing a pressurized fluid to said
internal fluid passageway for causing said fluid to
flow outwardly through said aperture means in said
cylinder and between said radial side walls of said
annular members for application by said circum-
ferential walls of said annular members to an ad-
jacent surface.
11. A device as recited in claim 10 in which said roller
includes
a pair of hub members removably engaging the outer
ends of said cylinder,
a fluid supply tube extending axially into said cylinder
through one of said hubs,
said tube being of smaller diameter than the inner
diameter of said cylinder, and having aperture means
therethrough for emptying fluid into said cylinder,
and a spacer block interposed between said tube and
the inner circumferential wall of said cylinder for
decreasing the interior volume of said cylinder,
said spacer block having apertures therethrough for
transmitting fluid from said fluid supply tube to said
apertures in said cylinder.
12. A device as recited in claim 10 in which said
means for providing pressurized fluid comprises
a fluid reservoir,
a conduit extending from said reservoir to said cylin-
der,
and a pump for pumping said fluid from said reservoir
to said cylinder.
13. A device as recited in claim 12 including in addi-
tion
wheel means for supporting said reservoir, and drive
means interconnecting said wheel means and said
pump for causing said wheel means to operate said
pump upon rotation of said wheel means.
14. A fluid application device comprising
a rotatable cylindrical element,
said element including an inner core portion, said core
portion having an interior fluid passageway, and an
exterior longitudinal surface,
said surface having recess means therein for distribut-
ing fluid along said surface,
said core including aperture means interconnecting said
interior fluid passageway and said recess means,
and a sleeve means,
said sleeve means including a tubular member receiv-
ing said core,
and a plurality of cylindrical discs of resilient foam
plastic material resistant to the flow of fluid,
said members having substantially radial side walls and
being received on said tube in a side-by-side abutting
relationship, with the outer surfaces of said resilient
members collectively defining a substantially cylind-
rical surface,
said tubular member having apertures therethrough
providing communication between said recess means
and said abutting side walls,
and means for supplying pressurized fluid to said in-
terior fluid passageway for conduction of said fluid

- through said aperture means to said recess means
and thence through said apertures in said tubular
member and between said abutting side walls to
said outer surfaces of said discs.
15. A device as recited in claim 14 including in addi-
tion
spacer sleeve means on said core axially outwardly of
said first mentioned sleeve means,
said spacer sleeve means covering portions of said
recess means for precluding fluid leakage at said
portions.
16. A device as recited in claim 14 in which
each of said resilient foam plastic discs includes a plu-
rality of axially extending relatively shallow slots in
the cylindrical periphery thereof for distributing
fluid to said periphery.
17. A painting device comprising
a chassis,
said chassis including rear wheel means and front
wheel means,
said chassis having a surface for holding a fluid supply
container,
a roller carried by said chassis for applying fluid to an
adjacent surface,
said roller having fluid inlet means interiorly thereof,
said roller including a plurality of adjacent resilient
annular members collectively defining an exterior
circumferential surface of said roller for engage-
ment with said adjacent surface,
and means for conducting said fluid from the interior
of said roller to said exterior circumferential surface
of said roller,
conduit means,
said conduit means connecting to one end of said roller
for supplying fluid thereto, the other end of said con-
duit means being insertable into a fluid supply con-
tainer on said surface of said chassis,
and a pump carried by said chassis for pumping fluid
through said conduit means from said fluid supply
container and to said roller under pressure.
18. A device as recited in claim 17 in which said pump
includes
a rotatable member having spaced peripheral projec-
tions thereon,
said projections being engageable with said conduit,
said conduit being of flexible nature adjacent said ro-
tatable member,
and a rigid member engaging said conduit opposite said
rotatable member, whereby upon rotation of said
rotatable member said peripheral projections col-
lapse said conduit toward said rigid member, and
move said collapsed portions toward said roller for
thereby pumping fluid from said container toward
said roller.
19. A device as recited in claim 18 including in addi-
tion
means movably carrying said rigid member for selec-
tively allowing movement of said rigid member to a
position relatively remote from said conduit, for per-
mitting removal of said conduit from the vicinity of
said pump.
20. A device as recited in claim 18 including in addi-
tion
a drive pulley for said rotatable member,
said drive pulley being frictionally engageable with the
circumference of one of said wheels for rotation by
said wheel, whereby rotation of said wheel drives
said pump.
21. A painting device comprising
a chassis,
said chassis including rear wheel means and front
wheel means,
said chassis having a surface for holding a fluid supply
container,
a roller,

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means rotatably mounting said roller on said chassis for applying fluid to an adjacent surface beneath said chassis,
 said mounting means including means for providing said roller with freedom for vertical movement relative to said chassis,
 said roller having fluid inlet means interiorly thereof, a core communicating with said fluid inlet means, a plurality of abutting resilient foam plastic annular discs collectively defining an exterior circumferential surface of said roller,
 and means for conducting said fluid from the interior of said core of said roller to said exterior circumferential surface of said roller,
 conduit means,
 said conduit means connecting to one end of said roller for supplying fluid thereto, the other end of said conduit means being insertable into a fluid supply container on said surface of said chassis,
 and a pump carried by said chassis for pumping fluid through said conduit means from said fluid supply container and to said roller under pressure.

22. A painting device comprising
 a chassis,
 said chassis having a pair of front wheels, a pair of rear wheels, and a support surface adapted to support a paint can,
 a roller carried intermediate said front wheels and adapted to engage the surface adjacent said chassis,
 said roller including a cylinder,
 and a plurality of annular members of cellular compressible material on the exterior of said cylinder, said annular members having radial walls in juxtaposition, said cylinder having apertures therethrough aligned with said radial walls,
 said roller having an axial inlet for receiving paint for distribution outwardly through said cylinder and between said radial walls for application by the circumferential surfaces of said annular members,
 a tube extending from said axial inlet to a location adjacent said support surface for insertion into a paint can supported on said surface,
 and a pump,
 said pump including a rotatable disc,
 a plurality of relatively smaller rollers projecting outwardly from said disc, with the axes of said rollers parallel to the axis of rotation of said disc,
 said rollers being engageable with the exterior of said tube,
 a rigid member movably held adjacent said disc for acting as a backing for said rollers, whereby upon rotation of said discs said rollers locally flatten said tube against said rigid member for pumping paint through said tube,
 a drive shaft for said disc,
 a pulley for rotating said drive shaft,
 and adjustable means for mounting said drive shaft, disc and pulley on said chassis for selective engagement of said pulley with the periphery of one of said rear wheels, whereby rotation of said rear wheel causes rotation of said pulley and said disc for driving said pump.

23. A device as recited in claim 22 in which for said adjustable means mounting said drive shaft, pulley and disc there is provided
 a second shaft pivotally mounted on said chassis,
 a member rotatably mounting said drive shaft,
 said member being rotatably carried by said second shaft,
 and a manually rotatable lever for rotating said second shaft so as to cause said mounting member to move said drive pulley into a position of engagement with the periphery of said rear wheel.

24. A device as recited in claim 23 in which said chassis includes

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an upwardly extending handle for permitting manual manipulation thereof,
 a cable extending upwardly of said handle,
 said cable being connected with said lever whereby upon pulling on said cable said lever is rotated in one direction to cause said movement of said pulley to said periphery of said wheel,
 and including resilient means biasing said lever in the opposite direction for normally holding said pulley away from said wheel.

25. A painting device comprising
 a chassis,
 said chassis having a pair of front wheels,
 a pair of rear wheels,
 and a support surface adapted to support a paint can,
 a roller,
 means mounting said roller on said chassis adjacent said front wheels for engaging an adjacent surface beneath said chassis,
 said mounting means including means for providing said roller with freedom for vertical floating movement relative to said chassis,
 said roller including a cylinder,
 and a plurality of annular members of cellular compressible material on the exterior of said cylinder, said annular members having radial walls in juxtaposition,
 said cylinder having apertures therethrough aligned with said radial walls,
 said roller having an axial inlet for receiving paint for distribution outwardly through said cylinder and between said radial walls for application by the circumferential surfaces of said annular members,
 a tube extending from said axial inlet to a location adjacent said support surface for insertion into a paint can supported on said surface,
 and a pump,
 said pump including a rotatable disc, a plurality of relatively smaller rollers projecting outwardly from said disc, with the axes of said smaller rollers parallel to the axis of rotation of said disc,
 said smaller rollers being engageable with the exterior of said tube,
 a rigid member movably held adjacent said disc for acting as a backing for said smaller rollers whereby upon rotation of said disc said smaller rollers locally flatten said tube against said rigid member for pumping paint through said tube,
 a drive shaft for said disc,
 a pulley for rotating said drive shaft,
 and adjustable means for mounting said drive shaft, disc and pulley on said chassis for selective engagement of said pulley with the periphery of one of said rear wheels, whereby rotation of said rear wheel causes rotation of said pulley and said disc for driving said pump.

26. A fluid application device comprising
 a wheeled member adapted for movement across a surface to receive fluid application,
 said wheeled member including means for supporting a fluid reservoir,
 a fluid distribution means,
 said fluid distribution means including a roller,
 means interconnecting said roller and said wheeled member for causing said roller to engage a surface supporting said wheeled member,
 said interconnecting means including means for providing vertical floating movement of said roller relative to said wheeled member,
 conduit means interconnecting such a reservoir and said fluid distribution means,
 and pump means for forcing fluid from said reservoir through said conduit means to said fluid distribution means under pressure, for thereby supplying fluid to said fluid distribution means,

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said pump means being operable by the movement of said wheeled member on said surface.

27. A painting device comprising a roller,

said roller having internal fluid conduit means providing a passageway from the interior of said roller to the periphery thereof,

a conduit connected to said interior for conducting a fluid thereto,

said conduit having a flexible portion, a rotatable member having spaced projections thereon, an arcuate member adjacent the periphery of said rotatable member,

said flexible portion of said conduit being interposed between said rotatable member and said arcuate member,

and resilient means for positioning said arcuate member in said position of adjacency whereby upon rotation of said rotatable member said flexible conduit is locally collapsed by said spaced projections for thereby urging a fluid through said conduit, and upon generation of a predetermined downstream pressure in said conduit said pressure will cause said arcuate member to move away from said rotatable member in opposition to said resilient means for thereby reducing the amount of said collapsing of said conduit and reducing the amount of fluid pumped through said conduit to said roller.

28. A painting device comprising

a roller,

said roller having a circumferential surface for applying paint,

an internal passageway

and passage means interconnecting said internal passageway and said circumferential surface for supplying paint to said surface,

a conduit connected to said internal passageway, a rotatable member,

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a plurality of relatively small rollers projecting outwardly from said rotatable member with the axes of said relatively small rollers parallel to the axis of rotation of said rotatable member,

said conduit extending adjacent the periphery of said rotatable member so that upon rotation of said rotatable member said relatively small rollers are engageable with the exterior of said conduit,

an arcuate rigid member,

means holding said arcuate rigid member adjacent said rotatable member in engagement with said conduit for acting as a backing for said relatively small rollers, whereby upon rotation of said rotatable members said relatively small rollers locally flatten said conduit against said rigid member for pumping paint through said conduit,

means for rotating said rotatable member,

and resilient means for movably holding said arcuate rigid member in said position of adjacency, whereby upon generation of a predetermined back pressure in said conduit said resilient means allows movement of said arcuate rigid member away from said rotatable member for thereby reducing the amount of said local flattening of said conduit and reducing the pumping through said conduit.

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