United States Patent

Walker

[15] **3,640,630**

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[54] **PRESSURIZED CONTINUOUS FLOW LIQUID APPLICATOR WITH SHUTOFF VALVE**

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[21] Appl. No.: **50,263**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 794,175, Jan. 27, 1969, abandoned.

[52] **U.S. Cl.** **401/188,** 401/204

[51] **Int. Cl.** **A46b 11/02**

[58] **Field of Search** 401/187–190, 203, 401/204

[56] **References Cited**

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[57] **ABSTRACT**

A system for the application of liquid to a surface, such as by painting, washing and waxing, in which the liquid source is maintained under a constant superatmospheric pressure and a flexible cable is connected between the pressurized liquid source and the liquid applicator. A shutoff valve can selectively pinch-off the cable in order to cut off the liquid supply to the applicator. The liquid applicator can be fixed or movable to selected positions and may be in the form of a roller.

8 Claims, 9 Drawing Figures

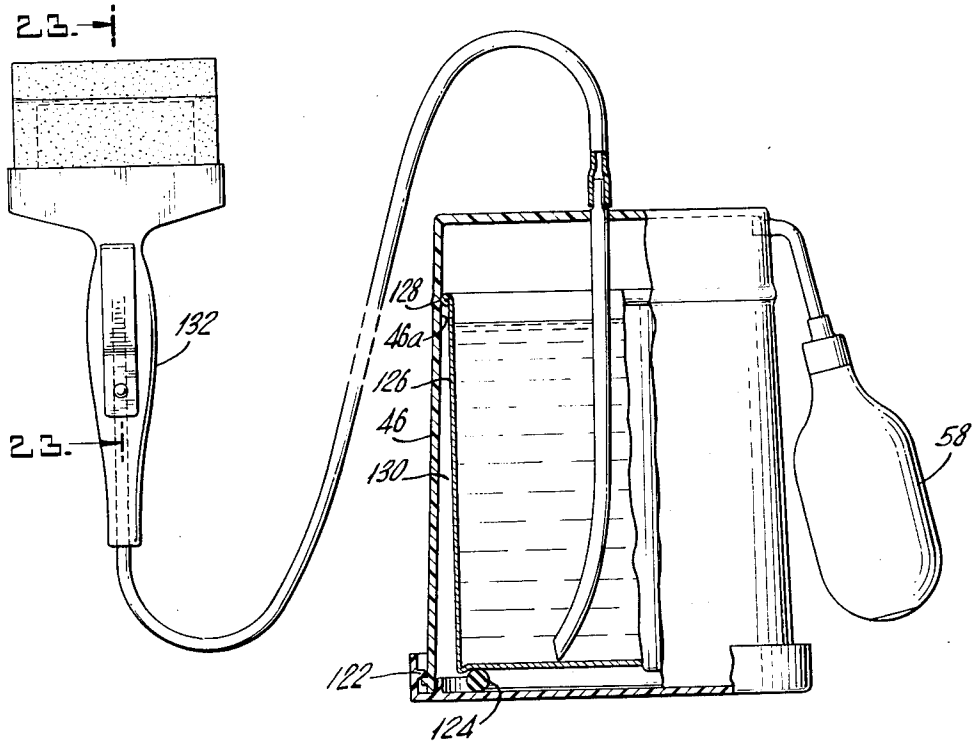


Fig. 23.

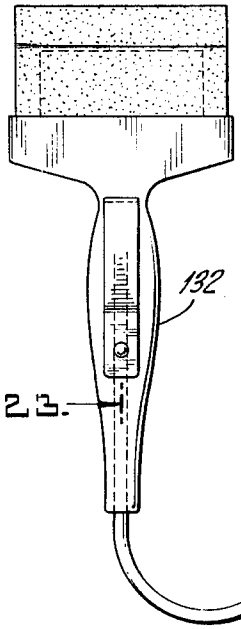


Fig. 22.

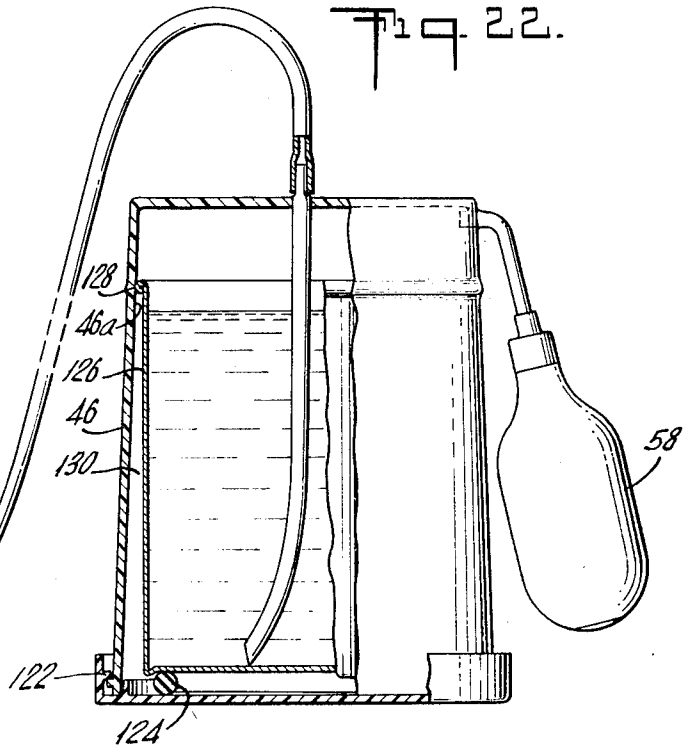


Fig. 23.

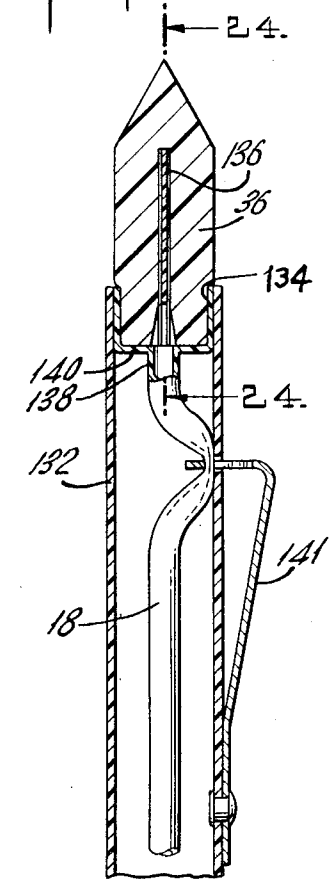


Fig. 24.

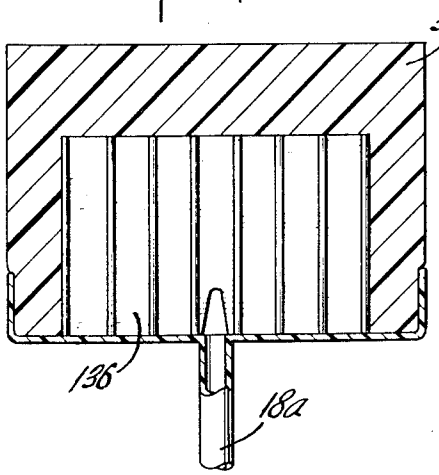


Fig. 25.

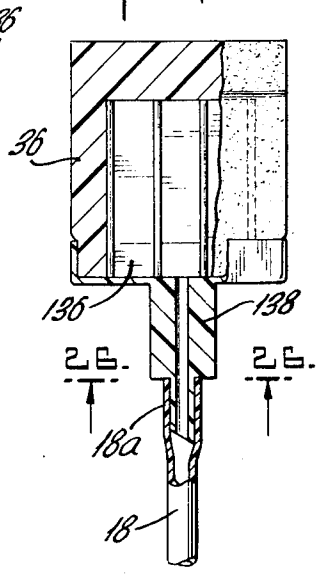
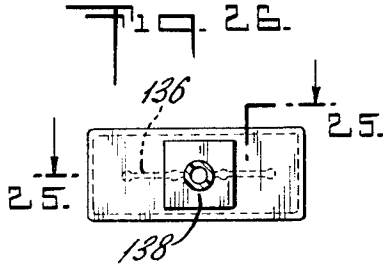


Fig. 26.



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Fig. 27.

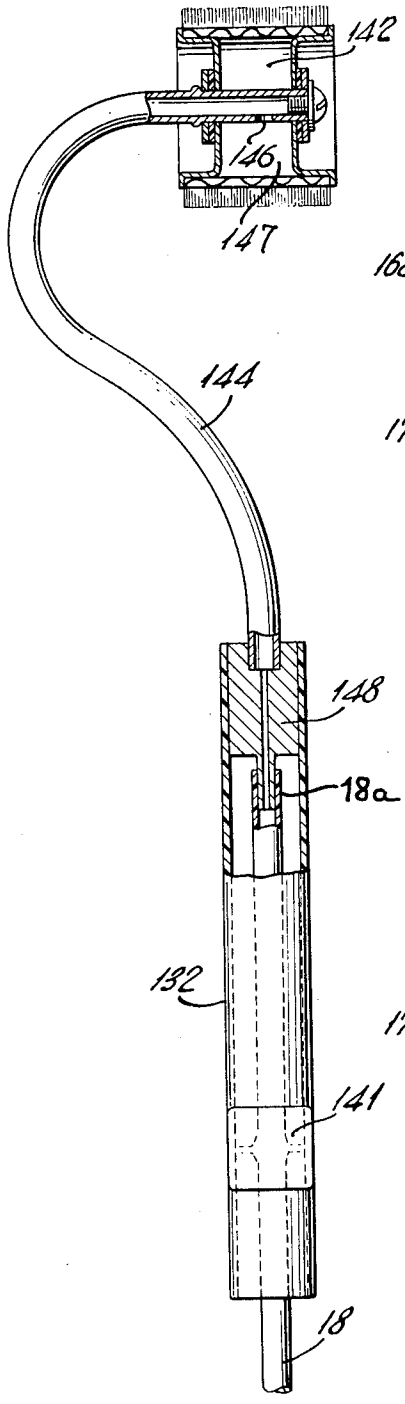


Fig. 30.

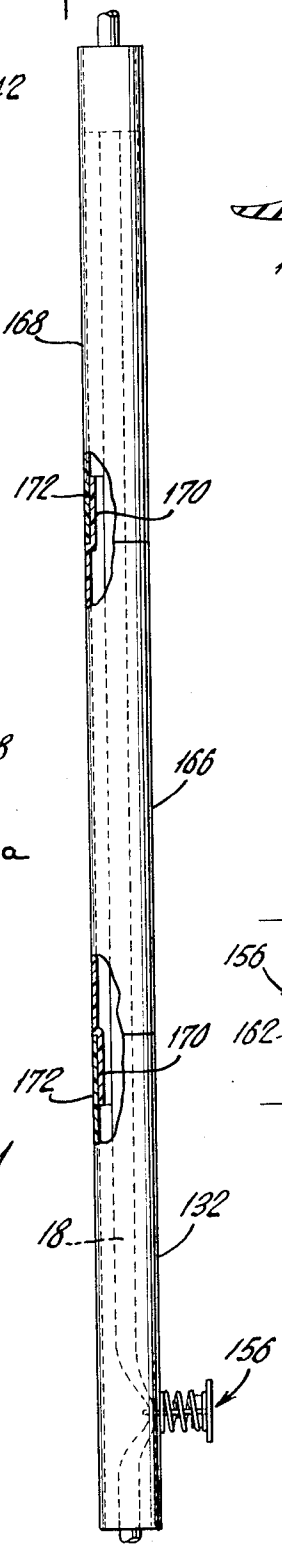


Fig. 28.

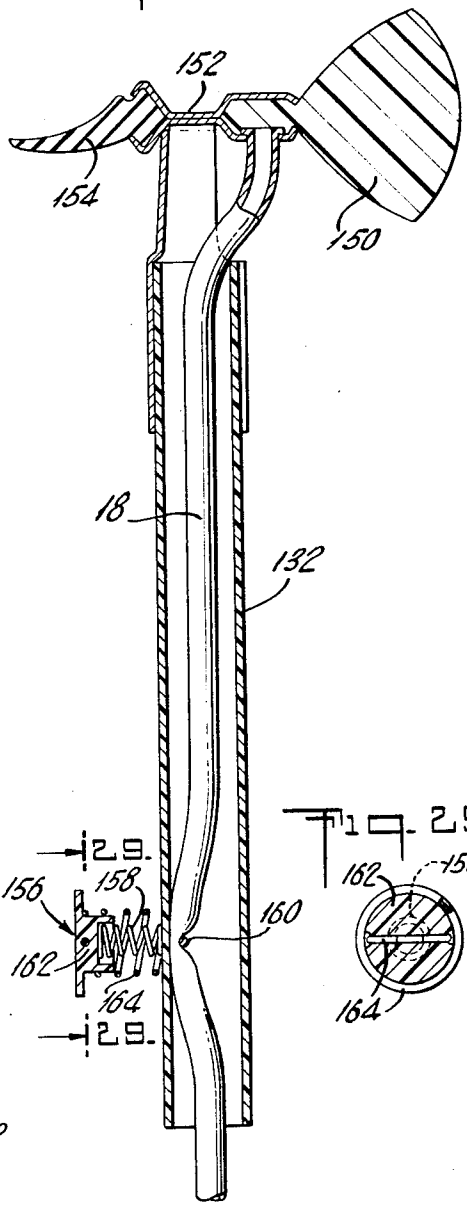


Fig. 29.

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PRESSURIZED CONTINUOUS FLOW LIQUID APPLICATOR WITH SHUTOFF VALVE

This application is a continuation-in-part of Ser. No. 794,175 filed Jan. 27, 1969, said application now abandoned.

BACKGROUND OF THE INVENTION

The use of a liquid applicator, such as a paint brush or roller employed in painting, involves the frequent dipping of the paint brush or roller in a paint can or a paint tray, respectively. In many cases the painter uses a ladder or scaffold which requires frequent bending to dip the brush or roller in the paint container and also may involve the descending from the ladder in order to dip the implements in paint containers resting on the floor. This type of painting operation obviously involves a great deal of time to intermittently renew the paint supply which thereby lessens the speed of painting. It is, therefore, extremely desirable to have a continual source of paint supply, or other liquid supply fed to the applicator, such as a paint brush or roller, so that the painter or cleaner may upon command, by means of a valve at his fingertips, turn the paint or other liquid supply on and off.

It should be apparent that although pressurized painting devices are known, none of these devices have the distinct advantages of the apparatus of the present invention.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a pressurized, continuous-flow liquid applicator which is portable and may be worn and carried by the user.

It is another object of the present invention to provide a pressurized, continuous-flow liquid applicator having an adjustable width of brush, roller or squeegee.

It is a further object of the present invention to provide a painting method which is more efficient than present known method and which minimizes paint wastage and involves much less drip and spatter.

It is another object of the present invention to provide a painting or cleaning device which has less friction and requires less effort since paint or liquid is dispensed from within the applicator to thereby lubricate the entire applicator surface when it is being used. Moreover, the paint or the liquid spreads on the applied surface more evenly.

A still further object of the present invention is to provide a liquid applicator which can be of a convex or a concave form, to be particularly effective in painting or cleaning structures having curves, such as boats.

Another object of the present invention is to provide a painting system which does not permit the paint to thicken from continuous air exposure, and additionally used less paint.

It is another object of the present invention to provide a liquid applicator for painting, window washing, car washing, waxing or any type of liquid application. Moreover, the brushes, rollers and squeegee are disposable thereby reducing the clean-up time to a minimum.

A further object of the present invention is to provide a paint container packaged in the form of a flexible plastic bag which can be inserted in a portable pressurized container.

An object of the present invention is to provide a control valve which closes the flexible tube by pinching the exterior thereof thereby making the flow of paint or liquid semiautomatic.

Another object of the present invention is to provide an air pumping device in the handle of the brush or squeegee which pumps up liquid to the brush or squeegee merely by the natural motion of the brush or roller in painting or by the manipulation of the squeegee in cleaning.

A still further object of the present invention is to provide a paint applicator surface which is constituted of a plastic foam material that is provided with an adhesive surface for removably fixing the plastic foam to the applicator holder.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be more clearly understood from the following description of specific embodiments of the invention together with the accompanying drawings in which:

FIG. **22** is an embodiment of the present invention shown partly in elevation and partly in cross section.

FIG. **23** is a view of the embodiment shown in FIG. **22** taken along the lines **23—23** thereof.

FIG. **24** is a view taken along the lines **24—24** of FIG. **23**.

FIG. **25** is another view taken along the lines **25—25** of FIG. **26**.

FIG. **26** is a view taken along the lines **26—26** of FIG. **25**.

FIG. **27** is a partly sectional and a partly elevational view of another arrangement of the invention shown in FIG. **22** in which a roller is removably inserted in a hollow handle.

FIG. **28** is a partly sectional and a partly elevational view of another embodiment of the invention having both a sponge applicator and a squeegee.

FIG. **29** is a view taken along the lines **29—29** of FIG. **28** and

FIG. **30** is a further arrangement forming part of the present invention in which a handle extension is provided for the apparatus.

DESCRIPTION OF PREFERRED EMBODIMENTS

FIG. **22** shows an embodiment of the present invention in which the canister **46** is provided with an air tight bottom cover **122**. Secured to the inside surface of the bottom cover **122** is a yieldable support in the form of a rubber ring **124**. An inner receptacle **126**, having concial walls, rests on rubber ring **124** and is provided with a bead or projection **128** at its open end. Normally, the flange **128** firmly engages the adjacent inner wall **46***a* of the canister **46** to thereby seal the space **130** located between the receptacle **126** and the wall **46***a* of the canister **46**. However, when bulb **58** is squeezed and the inner receptacle **126** and the above is pressurized the receptacle **126** is moved downwardly against the rubber ring **124** a distance sufficient to cause the flange **128** to disengage from wall **46***a* thereby opening a communication between the receptacle and the space **130**. Since the space **130** is at atmospheric pressure the pressure in the receptacle **126** is thereby relieved to that space if a predetermined pressure level is surpassed in the receptacle. As seen in FIG. **23**, a hollow handle **132** is provided with a base **134** for receiving a liquid applicator **36** having a guide vane **136**. A fitting **138** is connected to the base carrier **140** for the liquid applicator **36**. One end **18***a* of tubing **18** is connected to fitting **138** whereby pressurized liquid in the tubing may be spread out in the liquid applicator **36** after being directed under pressure against the guide vane **136**. A spring valve **141** is provided which normally pinches the plastic tubing **18** closed so that there is no flow of pressurized fluid until the valve **141** is depressed in the direction of the handle **132**. Naturally, when the spring valve **141** is depressed the fluid under pressure is permitted to pass through the tubing **18** and into the liquid applicator **36**.

FIGS. **24–26** show the guide vane **136** embedded in liquid applicator **36** whereby it should be apparent that the pressurized fluid is conducted in such a manner that the same is projected against opposite sides of the guide vane **136** thereby ensuring that the fluid, for example paint, is directed to various portions of the liquid applicator **36** for even application or spreading of the paint.

A roller **142** is illustrated in FIG. **27** having a rigid hollow arm **144** having an opening **146** into the interior of roller **142**. A fitting **148** at the other end of the hollow arm **144** is securely held in hollow handle **132** and the flexible tubing **18** is connected at **18***a* to the fitting **148**. A spring valve **141** is shown mounted on the handle **132** and is operated in the manner hereinbefore described. It should be clear that the roller embodiment described may be used with the same hollow handle **132** that is shown in FIG. **23** for use with a polyurethane plastic foam liquid applicator.

FIG. 28 shows another use of the hollow handle 132 and that is for supporting sponge applicator 150 connected to the tubing 18. A structural member 152 supports not only the sponge applicator 150 but also a squeegee 154 at the opposite side thereof.

A valve arrangement referred to generally by the numeral 156 is constituted of an inner spring 158 provided with a pinching element 160. The end of the inner helical spring 158 remote from the pinching element 160 is fixed to finger piece 162. An outer helical spring 164 is secured at one end to the finger piece 162 and at the other end to the outside surface of hollow handle 132. Thus, when the finger piece 162 is depressed against spring pressure, the pinching element 160 is moved away from engagement with the tubing 18 to thereby open the tubing for the flow of fluid from the receptacle 126 to the sponge applicator 150.

FIG. 30 illustrates an arrangement whereby a handle extension is provided by means of a multiplicity of handle sections 132, 166 and 168 that interfit by means of male and female connections 170 and 172 respectively. It should be apparent that the number of handle sections and the individual length thereof can be selected dependent upon the total length of the required extension.

What is claimed is:

1. A liquid application system having a flow of pressurized liquid therein comprising: a liquid applicator, a hollow handle for said applicator, a closed container having an outer portable canister provided with an air tight cover and a pressuring device and an inner receptacle for holding the pressurized liquid to be applied, a flexible tube communicating at one end with said liquid applicator and communicating at the other end with said closed container, a valve device operative with said flexible tube for controlling the flow of the pressurized fluid therethrough from said closed container to said liquid applicator, said canister being provided with a yieldable element in the interior bottom surface thereof upon which said inner receptacle rests, and a relief vent in said closed container so positioned that upon the pressuring of said closed container above a predetermined amount of pressure said relief vent becomes operative into an internal portion of said outer portable canister.

2. A liquid application system as claimed in claim 1 wherein said hollow handle is constructed to receive and mount alternately a plurality of different-shaped liquid applicators.

3. A liquid application system as claimed in claim 1 wherein said valve device is a spring-operated member which normally pinchs said flexible tube closed.

4. A liquid application system as claimed in claim 1 wherein said liquid applicator is a spongelike material, and means embedded in said spongelike material for directing said liquid to selected locations in said spongelike material whereby a smooth application of liquid to a selected surface is achieved.

5. A liquid application system as claimed in claim 1 wherein a space at atmospheric pressure is located between said closed container and inner receptacle, said space being normally closed by a projection on the outer surface of said inner receptacle engaging the adjacent wall of said closed container, said inner receptacle and the projection thereon being movable to a position upon the attainment of a predetermined pressure in said inner receptacle whereby said projection is removed from engagement with said adjacent wall resulting in communication between the pressurized interior of said inner receptacle and said space in order to relieve said inner receptacle.

6. A liquid application system as claimed in claim 5 further comprising a yieldable support and said inner receptacle rests on said yieldable support and when moved in one direction against said yieldable support, by means of pressurized fluid in said inner receptacle said projection on the inner receptacle is moved to a position whereby the same is spaced from the adjacent wall of said closed container.

7. A liquid application system as claimed in claim 1 wherein said liquid applicator constitutes a spongelike material, and a squeegee device, and means mounting both said spongelike material and said squeegee device.

8. A liquid applicator system as claimed in claim 1 wherein said handle is rectangular-shaped in cross section, and a plurality of liquid applicators, each having a fitting provided with an external shape corresponding to the shape of said rectangular cross section of said handle to thereby selectively interfit said fitting in said handle, and said flexible tube passing through said handle.

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