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H. E. KARKUT

3,282,223

HANDLE AND PUMP CONSTRUCTION

Filed June 26, 1964

2 Sheets-Sheet 1

Fig. 1

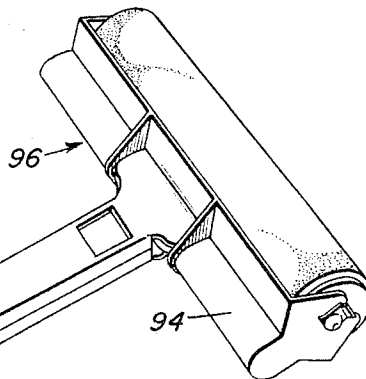
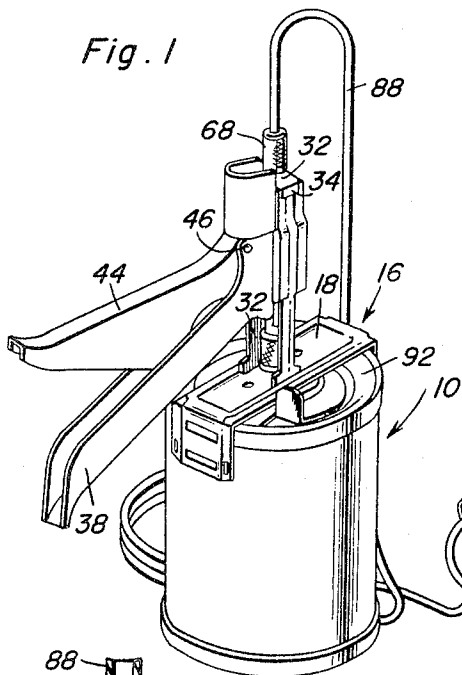


Fig. 5

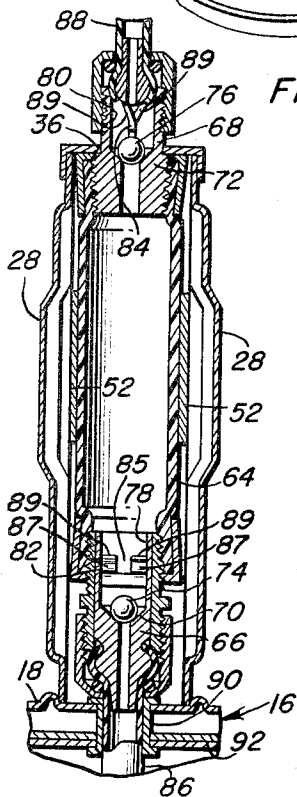
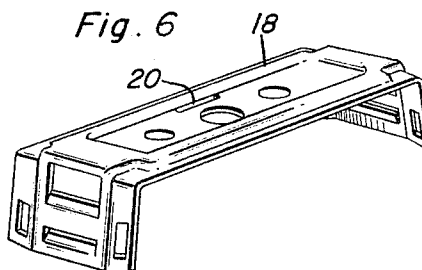


Fig. 6



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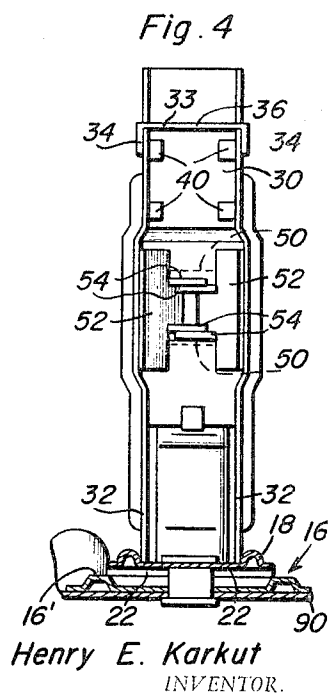
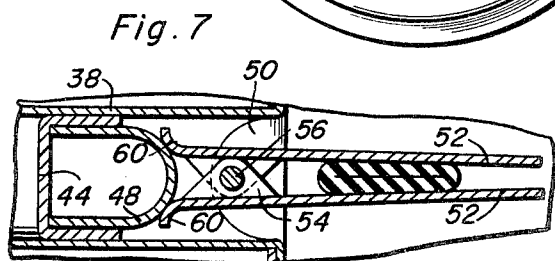
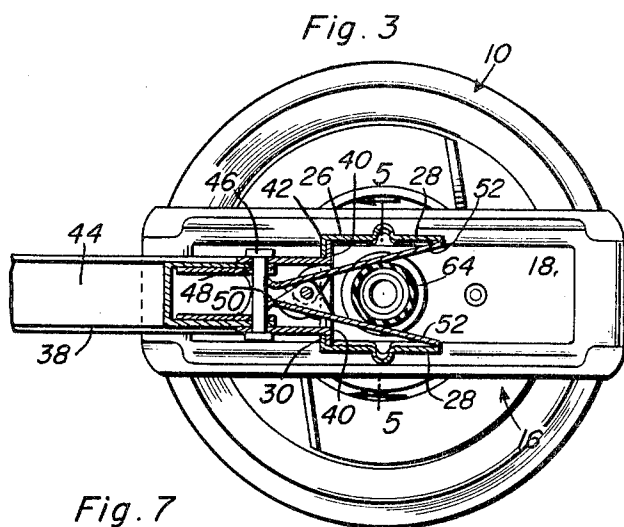
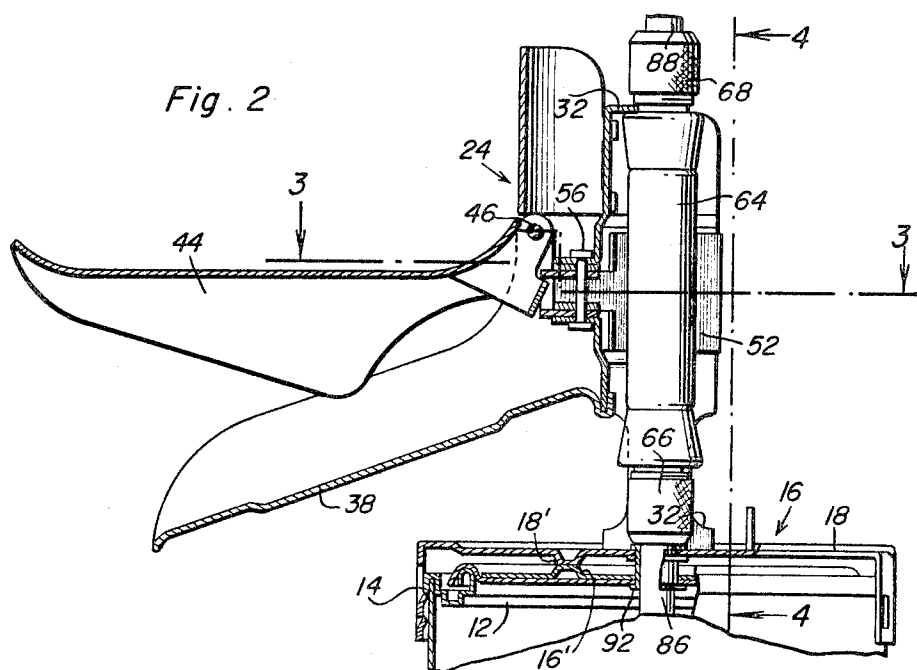
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HANDLE AND PUMP CONSTRUCTION

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2 Sheets-Sheet 2



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3,282,223

HANDLE AND PUMP CONSTRUCTION

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8 Claims. (Cl. 103—148)

This invention relates to a novel and useful handle and pump construction and more specifically to a handle and pump construction adapted to be supported from a removable can closure such as that disclosed in my copending U.S. application Serial No. 228,352, for Paint Applicator, filed October 4, 1962, now U.S. Patent No. 3,192,554 dated July 6, 1965. Further, the handle and pump construction of the instant invention includes means by which paint within the can closed by the aforementioned closure may be pumped from within the can by means of the pump portion of the instant invention which is disposed exteriorly of the associated can or container.

The handle and pump construction of the instant invention is designed in such a manner that a painter standing on the floor or on a raised platform or support such as a ladder may support the handle and the pump construction of the instant invention with one hand, with the associated paint can attached thereto, and a roller applicator in the other hand such as that disclosed in my above-mentioned copending application with the handle and pump construction of the instant invention being operable to pump paint from the associated can or container into the reservoir of the roller application. In this manner, a painter can readily move about and maintain a constant supply of paint in the reservoir of the roller applicator thus allowing the painter, within limits of his endurance, to greatly increase his production.

The main object of this invention is to provide a handle and pump construction specifically designed to be supported from a closure of a paint can or the like and including means by which paint or other liquid may be pumped from the associated can while the latter is substantially tightly closed by means of the removable closure cover associated with the handle and pump construction.

Still another object of this invention is to provide a handle and pump construction including structural components which may be readily manufactured at a low cost from various kinds of available material.

Yet another object of this invention is to provide a handle and pump construction in accordance with the preceding objects including means for attaching the handle and pump construction and its associated closure cover to an associated paint can or the like with a minimum amount of effort.

A final object of this invention to be specifically enumerated herein is to provide a handle and pump construction which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively trouble free in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the handle and pump construction of the instant invention operatively associated with a closure cover and illustrated with its closure cover operatively mounted on a paint can for closing the same and further including a flexible paint supply line connected to the outlet of the pump portion of the handle and pump construction at its inlet end and to a roller-type of paint applicator at its outlet end;

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FIGURE 2 is an enlarged fragmentary side elevational view of the handle and pump construction with portions thereof being broken away and shown in section;

FIGURE 3 is a horizontal sectional view taken substantially upon the plane indicated by the section line 3—3 of FIGURE 2;

FIGURE 4 is a fragmentary vertical sectional view taken substantially upon the plane indicated by the section line 4—4 of FIGURE 2;

FIGURE 5 is a fragmentary vertical sectional view taken substantially upon the plane indicated by the section line 5—5 of FIGURE 3;

FIGURE 6 is a perspective view of the body member of the associated paint can closure; and

FIGURE 7 is a horizontal sectional view similar to that of FIGURE 3 but fragmentary in nature and on somewhat of an enlarged scale showing the movable jaw elements of the pump construction in different positions of operation.

Referring now more specifically to the drawings the numeral 10 generally designates a conventional form of paint can including a partial annular top wall 12 of conventional design and an outwardly projecting reinforcing flange 14.

The numeral 16 generally designates a can closure cover such as that disclosed in the above-mentioned copending application. The body member 18 of the closure cover 16 has a pair of slots 20 formed therein through which a pair of ears 22 of the handle and pump construction 24 of the instant invention are secured in order to secure the handle and pump construction 24 to the body member 18 of the closure cover 16, the closure cover 16 including rotatable cam means 16' coacting with abutment means 18' on the body member 18 adjustably maintaining the cover 16 and body member 18 in generally parallel spaced relation. The handle and pump construction 24 includes a channel-shaped body 26 including a pair of generally parallel legs 28 interconnected by means of a bight portion 30. The legs 28 include a pair of extensions 32 and the terminal end of each extension 32 abuts against the upper surface of the body member 18 and has the corresponding tab 22 supported therefrom. The channel-shaped body 26 further includes an upper end wall 33 which is formed integrally with and defines an angulated extension of the bight portion 30. The upper end wall 33 includes a pair of opposite side downturned flanges 34 which embracingly engage the upper ends of the legs 28.

The upper end wall 33 has a forwardly opening notch 36 formed therein and a stationary handle element 38 is supported from the body 26 by means of tabs or ear portions 40 formed integrally therewith and secured through corresponding slots 42 formed in the bight portion 30. A movable handle element 44 is pivotally supported from the stationary handle element 38 by means of a pivot pin 46 and has a generally U-shaped actuator 48 secured thereto adjacent the pivot pin 46.

The bight portion 30 has a centrally disposed opening formed therein defined by a pair of laterally struck portions 50 which are suitably apertured so as to define mounting lugs or ears. A pair of jaw element plates 52 are provided and each includes a pair of generally parallel and apertured mounting ears 54 which are registerable with the ears or lugs 50. A pivot fastener 56 is secured through the ears or lugs 50 and 54 and thereby pivotally supports the jaw element plates 52 within the channel-shaped body 26 for movement of the free ends of the plates toward and away from each other. The plates 52 include slightly backturned end portions 60 which are engageable by the U-shaped member 48 carried by the movable handle element 44. As the U-shaped member 48 engages the portions 60, the base ends of the plates

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from which the portions 60 are supported are spread apart and the free ends of the plates 52 remote from the portions 60 are swung toward engagement with each other.

The handle and pump construction 24 further includes a resilient tubular section 64 disposed within and extending longitudinally of the channel-shaped body 26 between the jaw element plates 52.

A pair of fittings 66 and 68 are secured in the opposite ends of the resilient tubular section 64 and include valve seats 70 and 72 respectively, which face down stream and have ball check valves 74 and 76 operatively associated therewith. The ball check valves 74 and 76 are retained in position within the counterbored portions 78 and 80 of the fittings 66 and 68 by means of retaining elements 82 and 84, respectively. The retaining elements 82 and 84 are frictionally secured within the corresponding counterbored portions of the fittings 66 and 68. Each of the retaining elements comprises an elongated plate-like member of a width slightly less than the inside diameter of the corresponding fitting and endwise inserted therein behind the corresponding check valve. The ends of the plate-like members 82 and 84 remote from the corresponding check valves have endwise outwardly opening notches 85 formed therein centrally intermediate the opposite side edges of the plate-like members and defining a pair of endwise projecting legs 87 on each plate-like member. The free end portions of each pair of legs 87 include terminal end portions 89 bent toward opposite sides of the medial plane of the corresponding plate-like member, the remote corners of each pair of terminal end portions 89 being disposed in frictional engagement with the adjacent inner surface portions of the corresponding fitting.

The fitting 66 has the outlet end of an inlet line 86 secured thereto and the fitting 68 has the inlet end of an outlet line 88 secured thereto. The inlet end of the inlet line 86 projects downwardly through the tubular fastener 90 by which the closure member 92 of the closure cover 16 is pivotally supported from the body member 18 and is positioned to receive paint from within the can 10 and also serves to retain the lower end of the resilient tubular section 64 within the body 26. The outlet end of the outlet line 88 is communicated with the reservoir portion 94 of the roller applicator generally referred to by the reference numeral 96 and is therefore operable, upon actuation of the handle and pump construction 24, to supply the roller applicator 96 with paint from within the container 10, the upper end of the resilient tubular section 64 being retained within the body 26 by means of a friction fit of the fitting 68 within the notch 36.

It may be seen that the legs 28 of the channel-shaped body 26 define abutments engageable by the jaw elements 52 to limit movement of the free ends of the jaw elements 52 away from each other. Accordingly, it may be seen that the movable handle element 44 may be urged toward the stationary handle element 38 so as to force the U-shaped member or portion 48 between the portions 60 carried by the jaw elements 52. This operation will of course swing the free ends of the jaw elements 52 toward each other and thereby clamp the resilient tubular section 64 between the jaw elements 52.

Deformation of the resilient section 64 in this manner will cause a portion of the liquid disposed therein to unseat the valve element 76 from the seat 68 and to pass upwardly into the outlet line 88 and subsequently into the reservoir 94 of the roller applicator 96. As the handle element 44 is allowed to swing away from the handle element 38, the ball valve element 76 will again seat on the seat 68 and the partial vacuum created within the resilient tubular section 64 will cause the ball valve element 74 to move upwardly away from the seat 70 and fluid or paint from within the container 10 to be drawn upwardly into the resilient tubular section 64 through the inlet line 86.

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The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be restored to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A fluid pump construction adapted to be connected in a fluid flow line between adjacent sections thereof, said fluid pump construction including a resilient tubular section adapted to be intermittently squeezed, means at opposite ends of said tubular section adapted for fluid tight connection to the adjacent ends of said adjacent fluid flow line sections and including check valve means for controlling the flow of fluid through said tubular section, a pump actuator assembly including a channel defining portion in which at least a portion of said resilient tubular section is disposed, first and second fixed and movable handle elements supported from said actuator assembly, opposing jaw elements supported from said assembly and disposed in said channel on opposite sides of said portion of said resilient tubular section and movable toward and away from each other for squeezing said portion of said resilient tubular member therebetween, and means operatively connected between said movable handle element and said jaw elements for moving the latter toward and away from each other in response to movement of said movable handle element relative to said fixed handle element.

2. A fluid pump construction adapted to be connected in a fluid flow line between adjacent sections thereof, said fluid pump construction including a resilient tubular section adapted to be intermittently squeezed, means at opposite ends of said tubular section adapted for fluid tight connection to the adjacent ends of said adjacent fluid flow line sections and including check valve means for controlling the flow of fluid through said tubular section, a pump actuator assembly including a channel defining portion in which at least a portion of said resilient tubular section is disposed, a handle element movably supported from said assembly, opposing jaw members supported from said assembly and disposed in said channel on opposite sides of said portion of said resilient tubular section and movable toward and away from each other for squeezing said portion of said tubular section therebetween, and means operatively connected between said movable handle element and said jaw members for moving the latter toward and away from each other in response to movement of said movable handle element relative to said channel defining portion.

3. The combination of claim 2 wherein said channel defining portion includes a pair of opposing side wall portions between which said jaw members are disposed, said jaw members being engageable with said side wall portions to limit movement of said jaw members away from each other.

4. A fluid pump construction adapted to be connected in a fluid flow line between adjacent sections thereof, said fluid pump construction including a resilient tubular section adapted to be intermittently squeezed, means at opposite ends of said tubular section adapted for fluid tight connection to the adjacent ends of said adjacent fluid flow line sections and including check valve means for controlling the flow of fluid through said tubular section, a pump actuator assembly including a channel defining portion in which at least a portion of said resilient tubular section is disposed, first and second fixed and movable handle elements supported from said actuator assembly, opposing jaw elements supported from said assembly and disposed in said channel on opposite sides of said portion of said resilient tubular section and movable toward and away from each other for squeezing said portion of said resilient tubular member therebetween,

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and means operatively connected between said movable handle element and said jaw elements for moving the latter toward and away from each other in response to movement of said movable handle element relative to said fixed handle element, one end of said channel defining portion of said assembly including an elongated resilient transversely extending body member, said body member having an aperture formed therethrough generally aligned with one end of said resilient tubular section, a panel-like closure member supported from said body member and including a centrally disposed aperture aligned with the first-mentioned aperture, said closure member being adapted to overlie the upper open end of a container in fluid tight sealing engagement therewith, movable cam means carried by said closure member and abutment means carried by said body member for engagement by said cam means, said cam means and said abutment means coacting to maintain said closure member and said body member in generally parallel spaced relation, the free ends of said body member projecting outwardly beyond remote edge portions of said closure member and including laterally directed arm means projecting toward and through the medial plane of said closure member, the free ends of said arms including engaging means adapted to engage outwardly projecting flange portions carried by opposite side wall portions of said container below the upper end thereof.

5. The combination of claim 4 wherein said cam means includes a cam plate disposed between and rotatably supported from said closure member, said cam plate and said body member including opposing cam surfaces engageable with each other upon rotation of said cam plate relative to said other member for camming the adjacent portions of said members away from each other.

6. The combination of claim 5 wherein said cam plate and said body and closure members having registered apertures formed therein, a tubular pivot fastener secured through said apertures rotatably supporting said cam plate and said body and closure members for rotation relative to each other, said tubular pivot fastener being generally aligned with one end of said resilient tubular section.

7. A fluid pump construction adapted to be connected in a fluid flow line between adjacent sections thereof, said fluid pump construction including a resilient tubular section adapted to be intermittently squeezed, means at opposite ends of said tubular section adapted for fluid tight connection to the adjacent ends of said adjacent fluid flow line sections and including check valve means for controlling the flow of fluid through said tubular section, said means at opposite ends of said tubular section including a pair of tubular fittings each having one end sealingly secured to a corresponding end of said tubular

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section, corresponding ends of said tubular fittings defining enlarged counterbores whose inner and outer ends define outwardly and inwardly facing seats, a ball check valve disposed in each of said counterbores, and axially removable ball check valve retaining means frictionally secured in each of said counterbores outwardly of the associated ball check valve member, said ball check valve retaining means each comprising an elongated plate-like member of a width slightly less than the diameter of the associated counterbore and endwise inserted into the corresponding counterbore, the outer ends of said plate-like members having centrally disposed endwise outwardly opening notches formed therein centrally intermediate the opposite side edges thereof defining a pair of endwise projecting legs on the outer end of each plate-like member, the free end portions of each pair of legs being slightly bent toward opposite sides of the medial plane of the corresponding plate-like member, the remote corners of the free ends of each pair of legs being disposed in frictional engagement with the inner surfaces of the associated counterbore.

8. A fluid pump construction adapted to be connected in a fluid flow line between adjacent sections thereof, said fluid pump construction including a resilient tubular section adapted to be intermittently squeezed, means at opposite ends of said tubular section adapted for fluid tight connection to the adjacent ends of said adjacent fluid flow line sections and including check valve means for controlling the flow of fluid through said tubular section, a pump actuator assembly, means supporting said resilient tubular section from and in substantially stationary position relative to said actuator assembly, a handle element movably supported from said assembly, opposing jaw members supported from said assembly for relative movement toward and away from each other and disposed on opposite sides of said resilient tubular section for squeezing said tubular section therebetween, and means operatively connected between said movable handle element and at least one of said jaw members for relatively moving the latter toward and away from each other in response to movement of said handle element relative to said assembly.

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