July 24, 1962 W. F. BLANFORD ETAL 3,045,878

OPERATING HANDLE FOR AEROSOL CONTAINERS

Filed Feb. 2, 1959

FIG-1

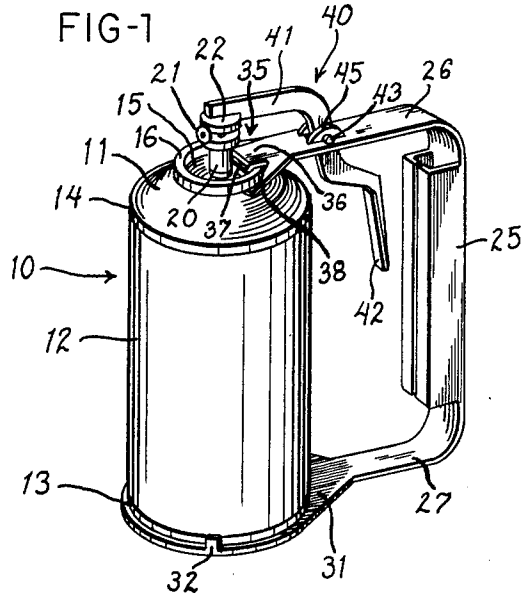


FIG-2

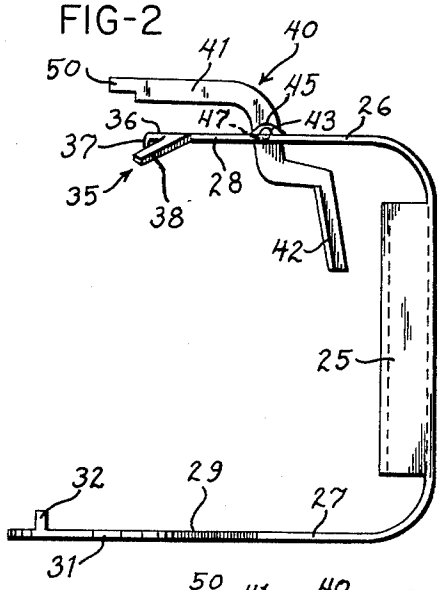


FIG-3

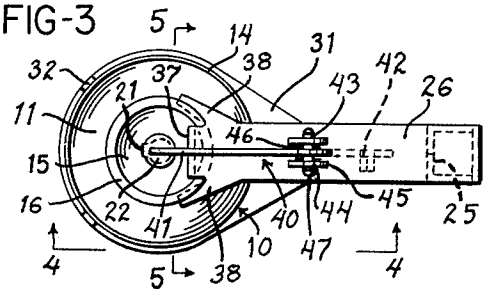


FIG-4

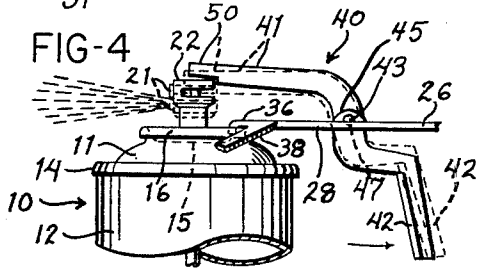


FIG-5

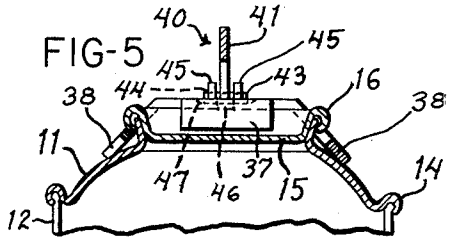


FIG-6

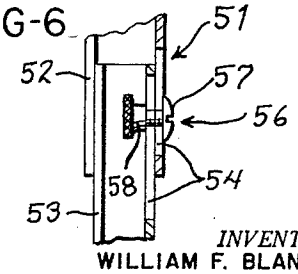
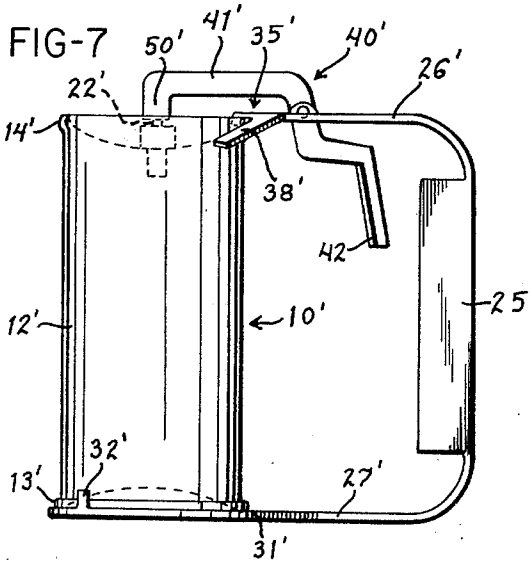


FIG-7



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OPERATING HANDLE FOR AEROSOL CONTAINERS

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This invention relates to handles for operating disposable aerosol spray discharge containers, and more particularly to such a handle in which the container may conveniently be held by a person wearing glooves, with its discharge nozzle definitely pointed in the desired predetermined direction and discharged by pressing an operating lever connected to effect displacement of the spray discharge button and open the nozzle.

Such containers are intended to be discharged in the usual case by holding the container body encircled with the thumb and fingers of one hand and operating a discharge button on the nozzle fixture with the index finger. One widely used type of such container has a generally bowl-shaped top extending upward, above the top rim of the container body, with the discharge nozzle located in a central cap secured to the top by crimping. In another generally used form the container top is recessed and the discharge nozzle is set into the top of the container with the nozzle disposed below the upper rim, over which a flat cover may be secured to protect against accidental discharge during shipping and storing. In each type, the cap or top is secured in place by a crimped rim around its outer edge, and the nozzle fixture is centrally located, the contents being discharged through the nozzle in a spray by downward displacement of the control button in the top of such fixture.

Under various circumstances of use, finger pressure discharge in the usual way presents difficulties. If the user's hand is wet or greasy, or the user is wearing gloves, e.g., in the case of a surgeon using a spray-on liquid bandage, or of a gardener using an areosol insecticide, the operation of holding the can with the nozzle properly directed and applying finger pressure for downward displacement of the button is somewhat awkward. Additionally, the position of the discharge orifice is not readily apparent in many such containers, and the nozzle must be examined to insure proper direction of the orifice each time the container is used.

Attempts have been made to overcome these difficulties by securing the container in a handle equipped with a trigger-operated discharge mechanism, and by providing visual indicia on the device as to the position of the discharge orifice, but such attempts have not been satisfactory. Some forms of discharge handles heretofore available tend to be elaborate and cumbersome, employing screws, latches, clips or similar devices to secure bands passing circumferentially around the container body for holding it in place. Simpler types of discharge handles or levers secured to the can by jaws or clamps press-fitted to the container at the crimped rim tend to be dangerous in that the contents are necessarily under substantial pressure, and this type of handle may exert an opening force at the crimped rim of the cap or top of the container, with consequent danger that the can may leak or burst.

It is accordingly an object of the present invention to provide an operating handle for aerosol spray containers which will grip and support the can securely with inwardly directed pressure so as to press the can securely closed and avoid any tendency to spring it open.

It is a further object to provide such an operating handle into which the can may be fitted by simply pressing it into the handle in the desired position where it will be gripped and supported by reason of the resilience of the handle, without use of screws, latches, clips or other similar closing means.

It is also an object to provide such a handle which may be simply and inexpensively produced so that it may be supplied at relatively low cost, commensurate with the cost of the disposable container.

Additional objects of the invention will be apparent from the following description, the accompanying drawings and the appended claim.

In the drawings:

FIG. 1 is a perspective view illustrating a discharge handle in accordance with the invention in use with a common form of aerosol container of the upwardly extending crimped-cap type;

FIG. 2 is a side elevation on a slightly larger scale of the discharge handle of FIG. 1;

FIG. 3 is a top plan view of the handle of FIG. 1;

FIG. 4 is a detail view of such handle viewed from the line 4—4 of FIG. 3, with the discharge position of the discharge lever and trigger indicated in dotted lines;

FIG. 5 is a detail view on the line 5—5 of FIG. 3 on an enlarged scale;

FIG. 6 is a detail view in section of the central gripping portion of a modified form of handle adjustable to containers of different heights; and

FIG. 7 is another embodiment of the invention in use on an aerosol container of the recessed top type.

Referring to the drawings, which illustrate preferred embodiments of the invention, FIG. 1 shows an operating handle in accordance with the invention in use with an aerosol container 10 of the type with an upwardly extending top, designated by the numeral 11, and having side 12, lower rim 13 and upper rim 14 with a central cap 15 secured to top 11 by a crimped rim 16. Cap 15 is fitted with a discharge nozzle 20, including orifice 21 and control button 22.

As clearly appears from FIGS. 1 and 2, the handle is in the general shape in vertical cross section of a reclining letter U having a central gripping portion 25 and upper and lower arms 26 and 27 extending from opposite ends of the gripping portion in a direction generally parallel to each other. Central gripping portion 25 may be hollow for reducing weight and simplifying manufacture, and while shown in the drawings as of rectangular cross-section may be in any suitable form.

The arms are somewhat resilient to provide for spreading them into gripping relation with container 10, and the vertical distance between the outer ends 28 and 29 of arms 26 and 27 is somewhat less than the vertical distance between the lower rim 13 of the container and the crimped rim 16 of the cap. The outer end of the lower arm may conveniently be expanded into the form of a plate 31 as shown in the drawings for engaging lower rim 13 of the container, and is provided with tabs or stops 32 for resisting lateral movement of the container between the arms. At the outer end of upper arm 26 means are provided for releasably engaging crimped rim 16 of the container cap by a claw indicated generally by the numeral 35, including a central finger 36 with its outer end 37 turned downwardly for engaging over the top of and downwardly inside rim 16, and with two outer

fingers or portions 38 extending outside the rim and slightly downward so as to lie against and outside of rim 16 for preventing lateral movement of the container at the top and properly positioning it in the handle, the claw and fingers being wholly outside or exteriorly of the container.

Means for displacing control button 22 are provided by a trigger assembly indicated generally at 40, pivotally connected to upper arm 26 and including a forwardly directed lever arm 41 extending generally above and along the upper arm substantially parallel to it, having an operative connection with an operating lever or trigger portion 42. The trigger assembly is shown as a unitary member, and the pivotal connection may be provided by a pin 43 passing through hole 44 in lever arm 41 with its ends extending through apertures in a pair of ears 45 positioned on either side of slot 46 on the upper arm. A shallow depression 47 is formed in the surface of the arm as shown in the drawings for receiving the lower portion of the pin. Pin 43 may thus readily be press-fitted into place, where it is held securely by depression 47. While the pivotal connection is shown as being on the upper surface of arm 26, it could equally well be on the lower surface.

Lever arm 41 is so dimensioned that its outer tip 50 will overlie the control button 22 in position to engage it for displacement in response to movement of the operating lever toward gripping portion 25. The operating lever 42 is generally at right angles to the lever arm portion and extends inside the handle adjacent to and substantially parallel with gripping portion 25 in position to be conveniently squeezed by the user's index finger toward the gripping portion when the gripping portion is held in the palm of the hand, in the same manner that a pistol would be held and discharged. It should be understood that the unitary form of trigger assembly shown in the drawing is merely exemplary of a suitable satisfactory construction and that it is possible to connect the operating lever with the lever arm in other ways so that movement of the operating lever by the user's hand will be communicated through the lever arm to displace control button 22 for discharge.

While aerosol containers of the types referred to come in standard sizes appropriate for correspondingly dimensioned handles, the discharge handle may easily be made adjustable, as appears from the modified form shown in FIG. 6. In this embodiment the central gripping portion 51 is divided into two parts 52 and 53 instead of the single piece construction heretofore described. Parts 52 and 53 are shaped and dimensioned so that one is slidably received within the other. Each part is provided with a slot 54. The slots are positioned to be in register, and a fastening 56 such as bolt 57 and nut 58 are passed through the slots so that the spacing between the upper and lower arms may be adjusted to receive aerosol containers of different sizes.

Operation of the handle clearly appears from the drawings and the foregoing description. A container is fitted into a handle of proper size with its lower rim 13 engaged against plate 31 and stops 32. In the unitary handle form, the ends of upper and lower arms 26 and 27 are spaced apart a distance slightly less than the vertical spacing between the bottom of the container and the rim means at the top as stated, and in the modified adjustable form parts 52 and 53 are adjusted and secured by fastening 56 to provide such spacing. Being resilient, the arms are spread into gripping relation with the container, the outer end 28 of the upper arm being distorted slightly upward a sufficient distance to allow the container to be fitted into the handle between the outer ends 28 and 29 of the arms. The bottom is secured against lateral movement by stops 32, and the crimped rim 16 is gripped in claw 35. By reason of their resilience, the arms 26 and 27 press the container in an inward direction with finger 36 pressing inwardly downward against the crimped rim and plate 31 pressing upward against the bottom. Thus the clamping force is directed to press the parts of the container together, instead of tending to separate them, and pressure on the trigger will not disturb this arrangement.

By reason of the dimensions of lever arm 41, its tip 50 overlies control button 22. By placing the container in the handle with discharge orifice 21 facing in the predetermined desired direction with respect to gripping portion 25 of the handle, the container is ready for repeated use by pressing the trigger, with assurance that it will always be pointed in the proper desired direction.

When the contents of the container have been exhausted, it is removed and discarded by again spreading upper and lower arms 26 and 27, and a new container is fitted into place.

The form of container shown in FIG. 7 has a depressed top which does not include a cap. In the embodiment of the invention here shown, like parts are indicated by the same numerals as in the form heretofore described, and similar parts are designated by the same reference numeral primed. Thus, upper arm 26' is somewhat shorter than in the form first described, and claw 35' grips upper rim 14' of the container with inwardly directed force, rather than the rim of the cap. Also, in this form tip 50' of lever arm 41' is bowed downwardly so as to be situated directly over control button 22' in the top of the nozzle, which is located below the level of upper rim 14' of the container.

Thus the invention provides a simple and inexpensive handle for supporting, directing and discharging aerosol spray containers, which may be manufactured at low cost from either metal or plastic materials. Inasmuch as an intended use of the handle is by doctors and technicians in hospitals and operating rooms, it is preferable that materials be selected which may be repeatedly sterilized without deterioration, and it is a further advantage of the invention that this may be done.

While the forms of device herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to these precise forms of device, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claim.

What is claimed is:

An operating handle for an aerosol container of the type having a finger pressure dispensing valve button in the top and a crimped rim surrounding such valve, comprising a generally U-shaped sheet metal handle member having a central gripping portion and upper and lower generally flat integral arms extending forwardly from opposite ends of said gripping portion and generally parallel to each other, said arms being resiliently deflectable between a released position which is less than the distance between the base of such container and said crimped rim thereof and an opened position providing for the insertion and removal of such container, said lower arm forming an integral container base receiving platform with opposite stops proportioned to receive said base for resisting lateral movement of said container, a container top gripping claw forming an integral part of said upper arm and having a central turned-down finger proportioned to be received over said rim in said open position of said arms and to engage said rim at the top and inside thereof in said released position, said claw further having a pair of outer fingers positioned on either side of said central finger and extending downwardly, outwardly and forwardly of said central finger and proportioned to engage said rim exteriorly thereof for preventing lateral movement of said container at said top with inwardly directed forces leaving said crimped rim substantially free of forces tending to open the same, means in said upper arm defining a trigger receiving slit, and a trigger pivotally received on said upper arm extending through said slit having an operating portion portion extending generally parallel to said upper arm with

a button operator engageable with said push button and a lower finger engaging portion extending downwardly adjacent said central gripping portion.

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