ABSTRACT

An adapter is provided for use in combination with an aerosol can for installation in an automatic aerosol dispenser unit. The adapter snaps into the top of an aerosol container can and is provided with a cam-like flange having slots to cooperate with and lock into a receiving member of an aerosol dispensing unit.

The aforementioned Abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

8 Claims, 6 Drawing Figures
AEROSOL CAN ADAPTER

BACKGROUND OF THE INVENTION

The automatic dispensing of aerosol products is well known in the art. Commercial problems, however, have been encountered in maintaining the quality, safety and efficacy of such products due to the substitution of inferior and indeed unsafe materials for products designed for use in automatic dispensers. There is, accordingly, a need where aerosol products are dispersed to provide a means to assure that the products dispensed will meet certain essential standards and reduce a minimum the opportunities for substituting low quality or even deleterious products for those intended to be dispensed. There is also a need to minimize the opportunity of mistake in dispensing aerosol products, such as dispensing a potent insecticide where only a deodorant is intended.

The prior art has failed to provide a means for accomplishing the result with any degree of certainty. Most automatic dispensers utilize conventional aerosol spray cans and valves inviting unauthorized substitution of inferior products to the detriment of the manufacturer of the dispensing unit and his reputation in the trade or with the public.

SUMMARY OF THE INVENTION

The present invention provides an aerosol can adapter which, when affixed to an aerosol can, is difficult to remove. The adapter snaps into and forms an integral part of the aerosol can by virtue of its structure, which comprises a substantially cylindrical body provided with an annular recess about its outer periphery and a plurality of vertical slots extending from the bottom of the adapter and through the recess to impart flexibility and resiliency to the portion of the adapter which engages the inner lip of an aerosol can.

For the purpose of affixing the adapter and can to an aerosol dispenser unit, the upper portion of the adapter is provided with an outwardly extending flange having one or more slots therein to engage a mating bracket to facilitate locking of an aerosol can in place and preliminary actuation of the can valve upon installation of the aerosol can and adapter in a dispenser unit.

These and other objects, features and advantages of the invention will, in part, be pointed out with particularity and, in part, become obvious from the following more detailed description of the invention taken in conjunction with the accompanying drawing which forms an integral part thereof.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevation of an aerosol adapter according to the invention;
FIG. 2 is a plan view showing the top of the aerosol can adapter of FIG. 1;
FIG. 3 is a section in elevation taken along the line 3—3 of FIG. 2;
FIG. 4 is a plan view of a mounting bracket of an aerosol dispensing mechanism for receiving the adapter of FIGS. 1 to 3;
FIG. 5 is a side elevation, partly in section, of an aerosol can with the adapter of FIGS. 1 to 3 affixed thereto and retained by the dispensing mechanism mounting bracket of FIG. 4;
FIG. 6 is a section in elevation taken along line 3—3 of FIG. 2 showing another embodiment of the adapter of FIGS. 1 to 3.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The invention involves a substantially cylindrical hollow body 1 provided with a circumferential recess 3 about the outer surface of its lower portion and adapted to receive the inner lip 5 of the top of an aerosol container can generally indicated at 7 in FIG. 5. To facilitate application of the adapter to the can, the lower portion of the body 1 is also provided with a plurality of vertical slots 9 extending up through the recess 3 and radially inwardly from the outer surface of body 1 to a central bore 11 thereby conferring the body with sufficient flexibility and resilience to snap in to the lip 5 of the aerosol container can. The adapter is preferably constructed of a synthetic resinous material such as polystyrene, acrylonitrile copolymers, nylon or other suitable materials. Those materials resistant to aerosol ingredients are especially preferred.

The upper portion of the adapter is provided with a flange 13, having a plurality, i.e., at least two, of vertical slots 15 extending through the flange to mate with corresponding projections 15' of a mounting bracket 21 of a dispenser unit 30. Bore 11 may be provided with a shoulder 17 inside of flange 13 and another shoulder 19 above annular recess 3 as shown in FIGS. 2, 3 and 6.

The flange 13 is provided with a cam-like configuration 16 on each lower surface extending say about midway the distance from each such slot 15 to the next succeeding slot 15, diminishing the depth of flange 13 from one slot to the next. The surfaces 16 thus provided on flange 13 will, upon insertion of the adapter 1, affixed to can 7, into the dispenser mounting bracket 21, cause elevation of the can and its valve stem 29, upon rotation of the can in the appropriate direction, by virtue of the bottom of the cam surfaces 16 operating against the top of the projections 15' of the mounting bracket 21. This accomplishes two purposes. The elevation of the can valve stem 29 operating against the fixed dispenser unit 30 and opens the contents of the aerosol container 7 to the dispenser 30 from which such contents may be automatically dispensed by means not shown. The surface 16 by frictionally engaging projections 15' also serve to lock the can and adapter firmly in place.

To assist in locking the can 7 and adapter 1 in the proper position for dispensing purposes, the deepest portion of flange 13 immediately adjacent to the next succeeding slot 15 is provided with a depending knob or stop 18 which engages projection 15' of bracket 21 to prevent further rotation of the can and adapter.

In order to confer the necessary lift of the can 7 and corresponding depression of valve stem 29, the cans surfaces 16 on the bottom of flange 13 are advantageously slanted at an angle of from about 2° to 10° from the horizontal, preferably about 5° depending upon the extent of vertical movement required to fully open the valve 31 of the aerosol container 7 and communicate its contents to the dispenser 30. The angles of surfaces 16 are preferably such that upon insertion up into mounting bracket 21 a clockwise twist from the bottom will elevate and lock the can in place.
A further embodiment of the invention is shown in FIG. 6 wherein an annular ring 14 is provided to press the lower resilient body portion of adapter 1 outwardly and thereby expand the annular recess 3 against inner lip 5 of aerosol container 7. For this purpose, the lower inside bore of adapter 1 has a taper extending from the region of annular recess 3 inwardly and toward the bottom of the adapter. Annular ring 3 is so constructed as to mate with the lower portion of the adapter, the outer surface of the ring being tapered inwardly from top to bottom and thereby, upon insertion into adapter 1, expand the lower portion of the adapter, and in particular, the annular recess 3 against the lip 5 of aerosol can 7 to firmly secure the adapter in place.

It is understood that the number of slots 15 in the adapter and the projections 15' in the mounting bracket 21, although advantageously shown as 3 each, may be subject to variation in number and size, as will be apparent to those skilled in the art, to key the adapter and can to different types of aerosol contents. Indeed, resort may be had to such modifications and equivalents as fall within the spirit of the invention and the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. In an adapter for permanent installation on an aerosol can having an undercut inner lip so as to adapt the same to be received by an aerosol dispensing device, said adapter comprising a substantially cylindrical body provided with a central bore and a circumferential recess about the lower outer surface thereof to engage the inner lip of an aerosol can, an outwardly extending circumferential flange about the upper portion of said adapter, and at least two vertical slots in said flange, for receiving corresponding projecting tabs of an aerosol dispensing device, the depth of said flange gradually varying from one slot to the next successive slot to provide cam-like surfaces to engage the corresponding projecting tabs of the aerosol dispensing device.

2. An adapter according to claim 1 wherein said adapter flange is provided with at least three slots adapted to mate with corresponding projecting tabs of the dispensing device.

3. An adapter according to claim 1 wherein the slope of the bottom of said flange ranges from about 2° to 10° from the vertical and extends in decreasing depth to a point adjacent each succeeding slot to provide a leading edge of least depth the bottom cam-like surfaces of which, upon insertion and rotation in said device, will engage the upper surfaces of the projections of the device thereby elevating the adapter and aerosol can and frictionally retaining the same.

4. An adapter, according to claim 3, wherein the slope of the bottom of said flange is about 5 degrees from the vertical and extends from about midway between each slot to the next succeeding slot.

5. An adapter, according to claim 1, wherein immediately adjacent to each said slot in said flange there is provided a depending projection at the trailing end of each cam-like surface to prevent rotation of said adapter and can beyond slot-engaging projections of said device.

6. An adapter, according to claim 1, mounted on an aerosol can wherein the inner face of said bore is tapered inwardly and downwardly and a lock ring is provided with an outer taper corresponding substantially to the taper of said tapered bore to expand the outer periphery of said adapter and compress the same against the inner lip of an aerosol can upon which said adapter is mounted.

7. In an aerosol dispensing assembly comprising an aerosol container provided at its top with a substantially cylindrical body having a central bore and a circumferential recess about the lower outer surface thereof in engagement with the inner lip of the aerosol container, the improvement which comprises an outwardly extending circumferential flange about the upper portion of said cylindrical body, at least two vertical slots in said flange, a mounting bracket having a configuration substantially corresponding to the top of said flange including inwardly directed projections receiving said vertical slots, the relative surfaces defined by the bottom of said flange being in communication with the top of each said projection and varying in depth to form cam-like surfaces having leading edges of least depth which, upon rotation together of the aerosol container and cylindrical body, will both frictionally retain the aerosol container and flange in said mounting bracket and elevate said container sufficiently to depress its valve stem and communicate its contents to a dispensing mechanism.

8. An assembly, according to claim 7, wherein the central bore of said cylindrical body is tapered inwardly and downwardly and a ring of substantially the same configuration is compressed within said bore to expand the lower portion of said cylindrical body against the inner lip of said aerosol container and retain the two firmly in place.

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