June 1, 1954 N. T. BALDANZA 2,679,875

DISPENSER CONTAINER OF MOLDED PLASTIC

Filed Oct. 15, 1949

3 Sheets-Sheet 1

Fig. 1

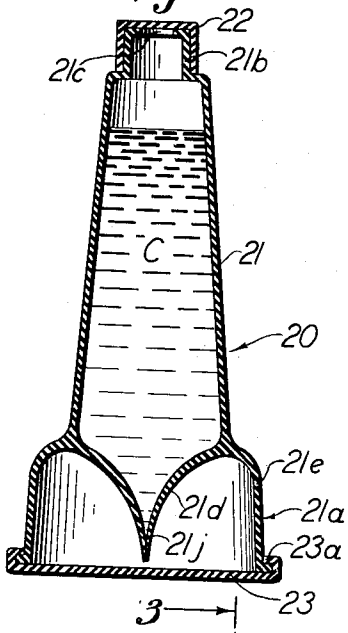


Fig. 3

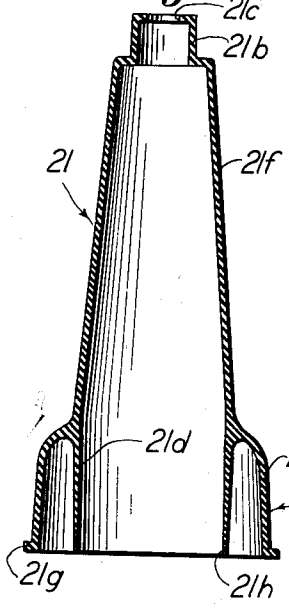


Fig. 7

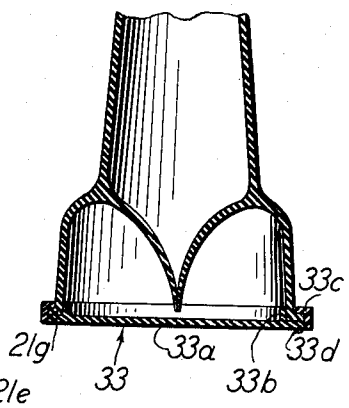


Fig. 2

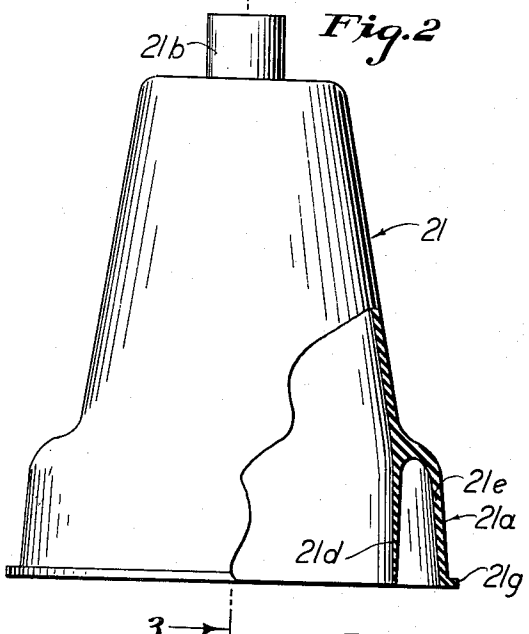


Fig. 5

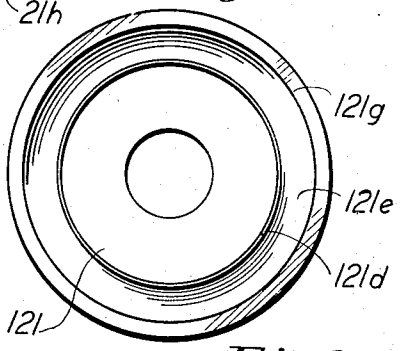


Fig. 6

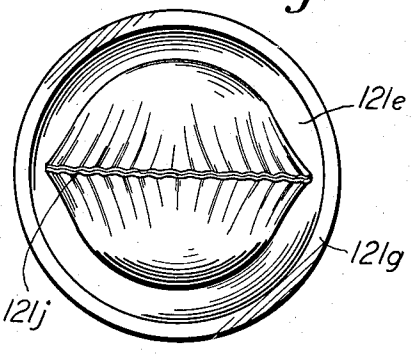
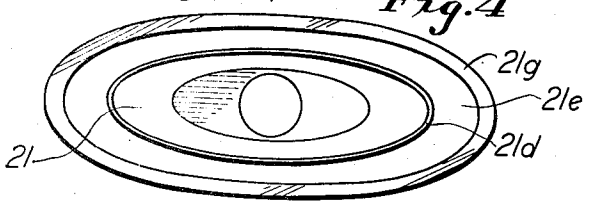


Fig. 4



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DISPENSER CONTAINER OF MOLDED PLASTIC

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Fig. 8

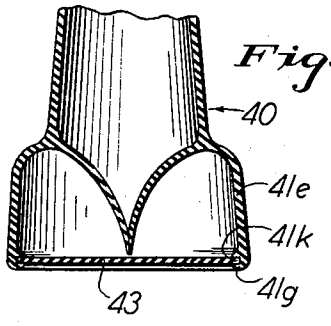


Fig. 9

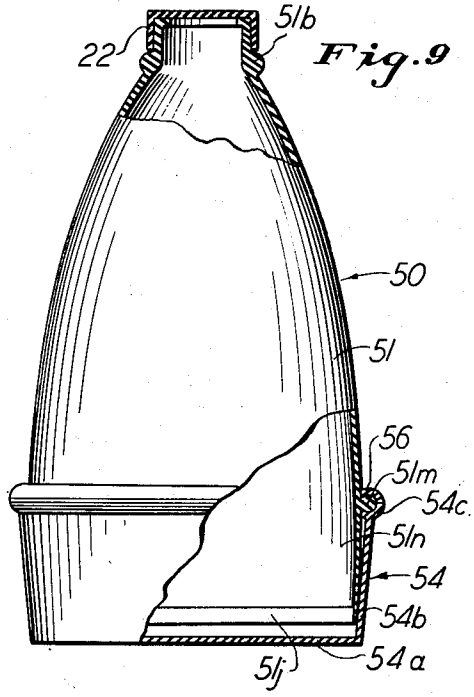


Fig. 12

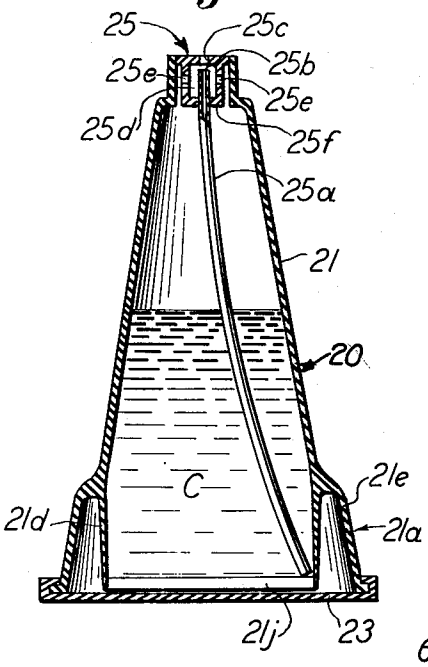


Fig. 10

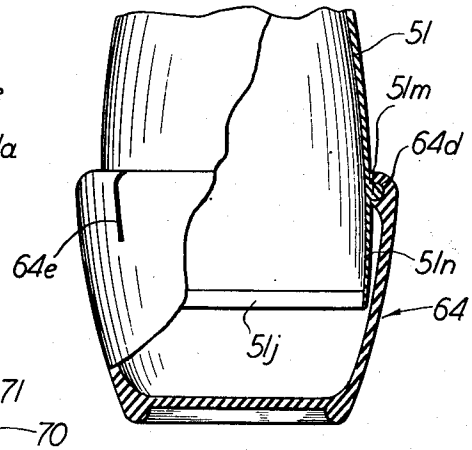
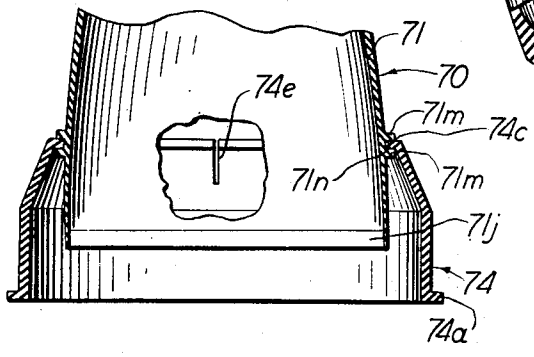


Fig. 11



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DISPENSER CONTAINER OF MOLDED PLASTIC

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Fig. 13

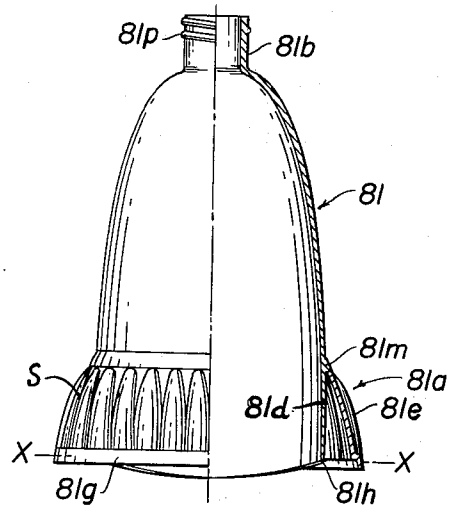


Fig. 14

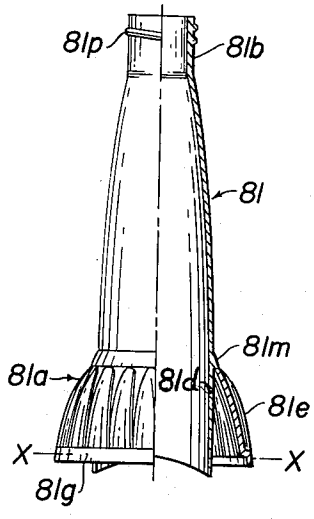


Fig. 15

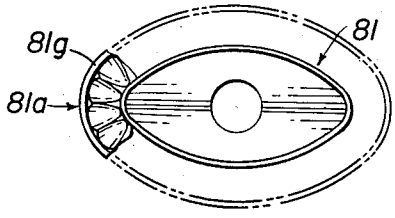


Fig. 16

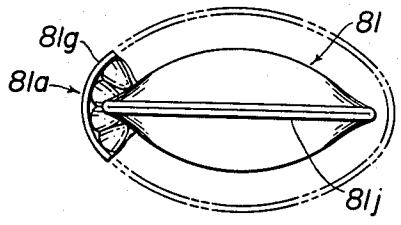
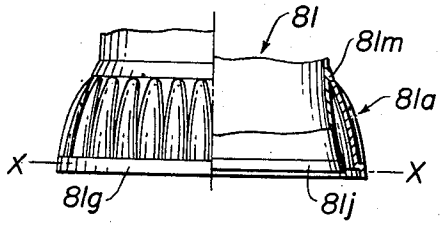


Fig. 17



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Patented June 1, 1954

2,679,875

UNITED STATES PATENT OFFICE

2,679,875

DISPENSER CONTAINER OF MOLDED PLASTIC

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Application October 15, 1949, Serial No. 121,491

12 Claims. (Cl. 150—0.5)

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This invention relates to dispenser-containers and more particularly is directed to dispenser-containers molded of thermoplastic resins having bodies of a degree of rigidity to serve for various purposes to replace fragile glass or vitreous bottles or corrodible metal containers, or if desired having a degree of flexibility to serve and replace sprayer-dispensers made of glass and metal parts which otherwise require bulbs, pumps or the like.

Among the objects of the invention is to generally improve molded thermoplastic resinous dispenser-containers of the character described of simple construction, which shall be cheap to manufacture and adapted for quantity as well as quality production, which shall be neat, attractive and colorful in appearance, which shall be suitable to replace fragile vitreous containers, such as glass bottles or corrodible metal containers, or, when fitted with an internal atomizer and having a desired degree of elasticity to permit flexing to serve as and replace sprayer-dispensers made of glass and metal parts which in conventional constructions require external bulbs, pumps and the like, which shall permit molding of dispenser-containers in ornamental as well as simple shaped contours in sizes and shapes to be readily carried in ladies' handbags as a self contained atomizer dispenser unit for cosmetics and the like, and which shall be practical and efficient to a high degree in use.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of constructions, combination of elements, arrangements of parts which will be exemplified in the constructions hereinafter described and of which the scope of application will be indicated in the claims following.

In the accompanying drawing in which illustrative embodiments of the invention are shown,

Fig. 1 is a sectional view showing in depth a liquid dispenser-container construction of a molded thermoplastic resin having a heat sealed bottom closure joint and assembled with a fitted bottom-closure plate embodying the invention.

Fig. 2 is a front elevational view, partly broken away, showing in width the one-piece molded body of the improved dispenser-container shown in Fig. 1 with the cap removed before heat sealing the open edge of the bottom closure joint.

Fig. 3 is a cross sectional view taken on line 3—3 in Fig. 2 showing details of the interior construction of said molded body.

Fig. 4 is a bottom view of the improved body shown in Fig. 2 showing the oval cross sectional shaped contour of the improved molded body.

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Fig. 5 is a bottom view similar to Fig. 4 but showing a modified form of molded body having a circular cross sectional shaped contour before heat sealing open edges of the bottom closure joint.

Fig. 6 is a bottom view like Fig. 5 showing the bottom heat sealed closure for the body formed with a corrugated or serpentine joint.

Fig. 7 is a fragmentary sectional view similar to Fig. 1 showing a modified form of fitted bottom-closure plate for the body in which the plate is secured by gripping and clamping the outturned flange of the body from two directions.

Fig. 8 is a front sectional view similar to Fig. 7 showing still another modification of fitted bottom-closure plate which is snapped into position in the peripheral rim portion of the body.

Fig. 9 is an elevational view partly in cross-section of a modified construction of molded dispenser-container similar to that shown in Fig. 1 except that the base is dished and carried up the sides of the body for securing to an outward projecting integrally formed bead.

Fig. 10 is a fragmentary view partly in cross-section of a modified container similar to that shown in Fig. 9.

Fig. 11 is a fragmentary sectional view of molded container similar to that shown in Figs. 9 and 10, in which the base is shown to be locked between two spaced outwardly projecting integrally formed ledge portions.

Fig. 12 is a cross sectional view taken across the width of a container similar to that shown in Fig. 1, constructed to serve as a spraying device.

Fig. 13 is a front elevational view, partly in section showing a modified form of the one-piece molded body shown in Fig. 2.

Fig. 14 is a side elevational view, partly in section, of the modified body shown in Fig. 13.

Fig. 15 is a bottom view, partly in phantom, of the modified body shown in Figs. 13 and 14 having an oval cross-sectional shape.

Fig. 16 is a bottom view similar to Fig. 15 showing the bottom heat sealed closure for the modified body, and

Fig. 17 is a fragmentary front elevational view, partly in section, of the modified body having the bottom heat sealed closure shown in Fig. 16.

Referring in detail to the drawing, 20 denotes a liquid dispenser-container molded of thermoplastic resinous material constructed to embody the invention.

Dispenser-container 20 may be molded as desired as a thermoplastic structure having either a degree of elasticity or a relatively rigid char-

acter, that is, to serve for various purposes to replace vitreous or fragile containers, for example, glass bottles or corrodable metal containers in which case polystyrene or similar materials may be used, or of a desired degree of flexibility to serve as built-in spraying means and to replace dispenser-sprayers of conventional constructions of vitreous and metal parts eliminating thereby extra bulbs, pumps and the like in which case polyethylene, cellulose acetate or similar flexible materials may be used in the manner hereinafter described.

Said dispenser-container **20**, as seen from Figs. 1 to 4, comprises a body **21** which may be molded as a one-piece structure constructed to stand upright on a base **21***a* and terminating at an upper end with an integrally formed neck **21***b*, the latter being fitted with a cup shaped closure cap **22** for sealing contents C, a suitable through-opening or outlet passage **21***c* being provided in said neck **21***b* for emptying the contents C.

Body **21** of dispenser-container **20** may be molded by any well understood injection process in the form shown in Figs. 2, 3 and 4 with base **21***a* open ended and provided with a double or skirted wall, that is, with an inner wall portion **21***d* spaced from a flounced or outer wall portion **21***e*, said wall portions **21***d* and **21***e* being arched to extend as branches from which funnel tapering wall **21***f* extends upwardly. Outer wall portion **21***e* may join the body **21** anywhere along a mid-portion thereof and is here shown to make such juncture in the lower portion spaced from and nearer to the base end of body **21**. Said base wall portions **21***d* and **21***e* preferably may be of such thickness that outer wall portion **21***e* is relatively stiff and is formed with an outturned rim flange **21***g* to provide a steady footing support for the dispenser-container **20** and liquid contents C, while inner wall portion **21***d*, which may be of tapered cross-section, that is, a wide feathered edge-margin, is of a thickness capable of being bent into shape, or flexed, to bring opposite sides of rim edge **21***h* thereof together for cementing or heat sealing a bottom closure joint **21***j*, whereby the liquid contents C is retained in the body **21**, as is clear from Fig. 1.

If desired to provide a finished fitted bottom for dispenser-container **20**, a thin flat plate **23** corresponding in contour to the base flange **21***g* may be provided, said plate **23** being secured in place in any suitable manner as by cementing or heat sealing in-turned rim flange **23***a* thereof to interlock with rim flange **21***g*, as shown in Fig. 1.

Dispenser-container **20** may be made to have any desired cross-sectional shape such as polygonal, oval or circular and as clear from Figs. 1, 2, 3 and 4, when made oval in cross-section, opposite sides of the rim edge **21***h* of inner wall portion **21***d* are readily brought together for heat sealing along the long axis of the oval, and outer wall portion **21***e* may be spaced a sufficient distance from the inner wall portion **21***d* to accommodate the finished heat sealed joint **21***j* leaving seam substantially in a straight line or bowed, if desired. However, when made circular in cross-section, heat sealed joint **121***j* of inner wall portion **121***d*, as is clear from Figs. 5 and 6, may be corrugated or crimped, that is, serpentine shaped so that same will freely fit into the circular area within flange **121***g* of outer wall portion **121***e*.

After constructing the parts as shown in the drawings and described above, the dispenser-container **20** may be readily assembled in the following manner. Body **21** having first been molded of a suitable plastic for the service requirements, is fitted with a tight cap **22** or other stopper means, then is inverted and filled with fluid contents C through bottom of body **21** while still open. Opposite sides of rim edge **21***h* are next brought together and heat sealed or cemented to form joint **21***j* or joint **121***j*. If desired closure-bottom plate **23** may be incorporated in the well understood manner to fully conceal the heat sealed joint and give a neat, finished appearance to the container **20**.

The operation of the dispenser-container **20** will now be apparent. The body **21** of such dispenser-container **20** is made of flexible molded material, such as polyethylene, cellulose acetate, any other suitable thermoplastic resin, or a rubber compound, and filled with fluid contents C, as for example a liquid or a fine powder. By first removing cap **22** and next tilting container **20** at a suitable angle for pouring out contents C through opening **21***c*, a squirting action results by inwardly distorting, that is, squeezing flexible wall **21***f* to dispense contents C whereby a controlled range of flow is accomplished. This effect is especially efficient when the opening **21***c* is of relatively small diameter.

Dispenser-container **20** may also readily be fitted with an atomizer of any well known construction. As shown in Fig. 12 an atomizer in the form of sprayer-cap **25** may comprise a tube **25***a* extending to the V-shaped elongated trough-like bottom of the container **20** adjacent closure joint **21***j* and terminating at its upper end in a nozzle **25***b* projecting into chamber **25***d*, said nozzle being spaced just short of ejector opening **25***c* in alignment therewith. Openings **25***e* are provided in chamber wall **25***f* to permit communication of air within container **20** with the atmosphere.

Where a spraying receptacle is desired, outlet passage **21***c* may be fitted with sprayer-cap **25** in the well understood manner.

The operation of such dispenser-container **20** fitted with sprayer-cap **25** for use as an atomizing receptacle will now be apparent. The contents C may be emptied or removed as desired in a fine spray by pressing, that is, grip squeezing or inwardly distorting wall **21***f*. In so doing, air from the space above the liquid contents C is forced out through openings **25***e*, chamber **25***d* and through ejector outlet opening **25***c*, simultaneously the liquid contents C is forced up through tube **25***a* and discharged by nozzle **25***b* to mix with the air flow and pass out of ejector opening **25***c* in a fine spray or mist. Upon releasing the squeeze pressure on wall **21***f*, chamber of dispenser-container **20** assumes its original volume and atmosheric air enters through openings **25***d* and **25***e* displacing the sprayed contents. The extension of tube **25***a* to the V-shaped elongated trough-like bottom formed by the joint **21***j* enables discharge of almost the entire contents from an upright position of dispenser-container **20**. Said spray container **20** will then be restored to a normal condition again ready for use. Top closure cap **22** may be seated on neck **21***b* to make the container leak-proof for storage.

Fig. 7 shows a dispenser-container construction provided with a modified form of fitted flat bottom-closure **33** which may comprise a plate **33***a* having an upstanding circular flange **33***b*, the peripheral rim of which fits inside outer wall portion **21***e* of body **21** and a clamping ring

33c of L-shaped cross section secured over base flange 21g to plate 33a as by cemented joint 33d.

A modified form of dispenser-container 40 is shown in Fig. 8 which is similar to container 20 except that fitted flexible flat bottom-closure plate 43 thereof is in snap-in engagement with an internal continuous groove 41k provided in in-turned rim ledge 41g formed in outer wall portion 41e in the well understood manner.

Where containers having flexible walls but relatively rigid bases or where contrasting color schemes are desired, dispenser-container 50 of modified construction embodying the invention is provided.

Dispenser-container 50 is seen in Figs. 9 and 10 to comprise a body 51 terminating in an upper integrally formed neck 51b and a bottom heat sealed closure joint 51j supported upright in a dish-shaped base 54, said body 51 being preferably of a flexible material and formed with an integral continuous outwardly extending bead 51m to serve as a reinforced bracing spaced from said joint 51j, that is, in a mid-portion of the body 51. Base 54 may be made of a relatively rigid material such as polystyrene, nylon or other well known thermoplastic resins or of any suitable metal, and proportioned to receive the lower section 51n of body 51. Base 54 may be formed with a side wall 54b upstanding from bottom wall 54a and a rim flange 54c shaped to seat bead 51m. Body 51 may be permanently connected to base 54 by any suitable clamp joint such as for example annulus 56 fitted over bead 51m and cemented to rim flange 54c, as clearly shown in Fig. 9, or body 51 may be removably connected to base 64 of modified form similar to base 54 but provided with a continuous internal groove 64d for seating on bead 51m and one or more vertical slits 64e for permitting snap-in engagement between the bead 51m and groove 64d.

Dispenser-container 70, shown in Fig. 11, is a further modification of the invention which like containers 20 and 50 is seen to comprise a body 71 and heat sealed closure joint 71j similar to bodies 21 and 51 having joints 21j, 51j, respectively. As here shown body 71 may be provided with a pair of spaced apart outwardly extending ledges 71m serving as a reinforced bracing and which form a groove 71n therebetween for receiving inwardly turned rim edge 74c of base 74 in snap-in engagement. Base 74 may be of tubular shape having one or more vertical slits 74e and an out-turned bottom rim flange 74a to serve as a steadying support for the container 70. Base 74 if desired may be fitted with a closure bottom similar to those shown in Figs. 1 and 7 or may be made dish-shaped with an integral bottom similar to base 64 of container 50.

Dispenser-container 50 may be assembled in a similar manner to that above described for container 20 but base 54 is preferably attached after the filling and sealing operation by inserting lower section 51n of body 51 into base 54 so that bead 51m seats on rim flange 54c after which annulus 56 is clampingly fitted in place over bead 51m and cemented to rim flange 54c to make a permanent joint.

For utilizing base 64, snap-in assembly of the base and body is facilitated by vertical slits 64e which permits spreading the rim of the base so that bead 51m may be sprung to engage internal groove 64d. Likewise, rim edge 74c of base 74 may be sprung for snap-in engagement in groove 71n between ledges 71m.

Dispenser-containers 50 and 70 when made with flexible bodies 51 and 71 and fitted with a sprayer-cap 25 like spray container 20, above described, will function in a similar manner.

A further modification embodying the invention may be shown in Figs. 13 to 17, inclusive, in which body 81 is molded as a one-piece structure similar to body 21 of dispenser-container 20 shown in Figs. 2 and 3 but differing in the following respects.

Body 81 which may be formed at one end with a neck 81b is threaded, as at 81p, to engage a closure cap (not shown) of any conventional type in the well understood manner, and has a base 81a here shown as being of oval cross-section, said base 81a being provided with an inner wall portion 81d and an outer skirted wall portion 81e which branch from an annular thickened midportion 81m. Inner wall portion 81d may be formed as of wide feathered edge margin having a rim edge 81h which extends downwardly beyond a plane X—X and as shown in Figs. 13 and 14 is curved and of such contour that when opposite peripheral portions of said edge 81h are brought together along the long axis of the oval in said plane X—X and heat sealed to provide joint 81j, said edge 81h may lie substantially in a straight line, as is clear from Figs. 16 and 17.

If desired the decorative effect of the container body 81 may be enhanced and the base 81a also stiffened by providing outer wall 81e with suitable embossed means, such as scallops S, or of any other desired ornamental configuration provided, as for example, between midportion 81m and pedestal stepped element 81g, shown in Figs. 13, 14, 15 and 16.

The body 81 may be utilized in practicing the invention in the same manner as described above for body 21 in the construction of either the dispenser-container or the atomizer 20.

It will thus be seen that there is provided improved dispenser-containers of molded plastic whereby the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An article of manufacture comprising a one-piece open ended tubular body molded of thermoplastic, said body comprising a single walled portion extending about a chamber from one open end to an intermediate section thereof, a double walled portion having exterior and interior structure extending from the other open end to merge into said single wall portion at said intermediate section, the exterior structure of said double walled portion being relatively stiff to form a rigid base for the body and the interior structure being relatively less rigid than said exterior structure for flexing to permit rim edge portions of said other open end to be brought into abutment for heat-sealing as a bottom closure for said body chamber within said base.

2. The article defined in claim 1 in which said single walled portion is resiliently deformable out of a normal position for grip squeezing.

3. The article defined in claim 1 including a pedestal stepped element integrally formed with

said exterior structure and having an impressed embossing means for stiffening said base between said intermediate section and the pedestal element.

4. The article defined in claim 1 including a pedestal stepped element integrally formed with said exterior structure having a free edge lying in one plane, and a free rim edge of said interior structure extending beyond said plane in a curved contour to form a straight heat sealed bottom closure joint having its free edge parallel to said plane within said base.

5. A dispenser-container of the character described for normally resting on a horizontal surface in an upright position comprising a tubular body having a top outlet opening and having rim edge portions opposite said outlet opening sealed together to form a chamber for containing a liquid, and a base for supporting the dispenser-container in said upright position having a tubular wall connected to an intermediate portion of the body and extending therefrom to encircle the said sealed edges.

6. A dispenser-container of the character described for normally resting on a horizontal supporting surface in an upright position comprising a single walled tubular portion to extend in said upright position having a top outlet opening, and a double walled portion joined to the single walled portion and having interior and exterior structures with the interior structure having bottom marginal edge portions sealed together to form a chamber with the single walled portion for containing a liquid, said exterior structure extending to encircle the inner structure and terminating beyond the sealed edges for supporting the dispenser-container in the said upright position.

7. The dispenser-container as defined in claim 6 formed from thermo-plastic material with the single walled portion being resiliently deformable out of a normal position for grip squeezing and the exterior structure of said double walled portion being relatively rigid with respect to the single walled portion.

8. The dispenser-container as defined in claim 6 with the addition of a bottom closure plate connected to said exterior structure and covering the sealed marginal edge portions of the interior structure.

9. The dispenser-container as defined in claim 5 including a pedestal stepped element integrally formed with the tubular wall of the base and such tubular wall having impressed embossing means thereon for stiffening purposes.

10. A dispenser-container of the character described for normally resting on a horizontal supporting surface in an upright position comprising a resilient tubular body having a top outlet opening and having rim edge portions opposite said outlet opening sealed together to form a chamber for containing a liquid, and a dish-shaped base having a tubular wall relatively rigid with respect to the resilient body joining an intermediate portion of the body for supporting the dispenser-container in said upright position.

11. The dispenser-container as defined in claim 10 with the tubular body having an external annular bead at said intermediate portion, and the dish-shaped base having a marginal rim edge formed with an internal groove clampingly engaging the annular bead.

12. The dispenser-container as defined in claim 10 in which the dish-shaped base has an inwardly extending-flange, and the tubular body has a pair of annular ledges extending from the intermediate portion forming a groove which clampingly engages the flange.

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