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ROLLER ASSEMBLY-CONTAINER ENGAGEMENT

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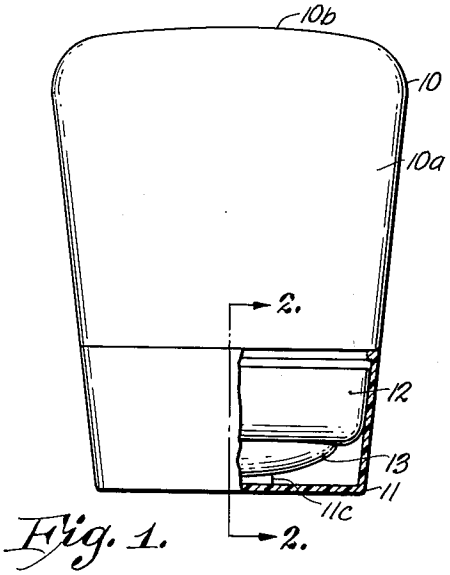


Fig. 1.

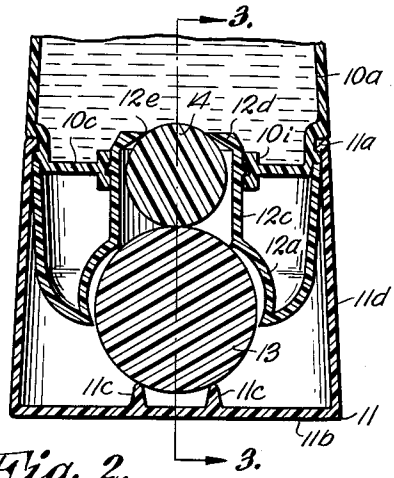


Fig. 2.

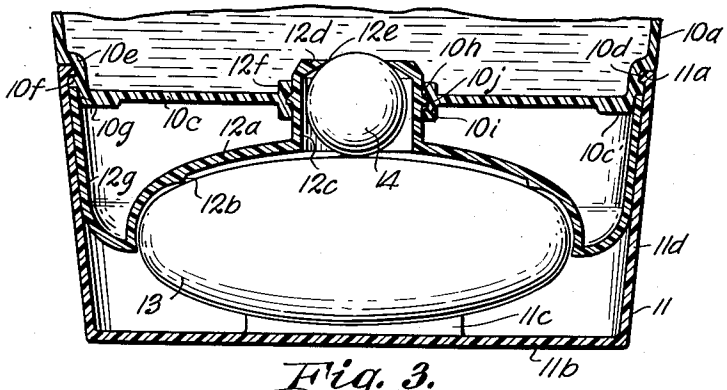


Fig. 3.

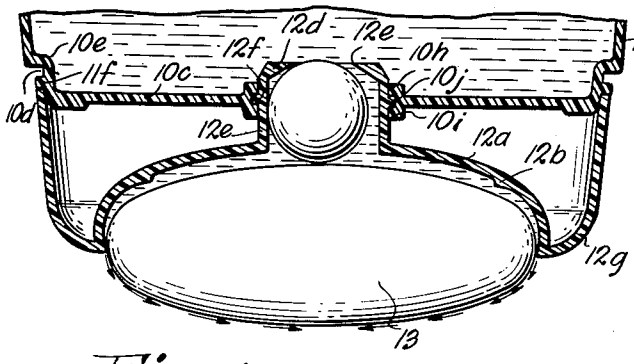
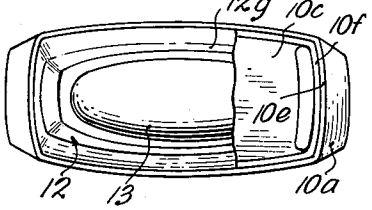


Fig. 4.

Fig. 5.



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ROLLER ASSEMBLY-CONTAINER ENGAGEMENT

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This invention relates to "roll-on" applicator dispensers employing rotating elements to distribute the contents thereof and refers more particularly to an engagement for attaching roller element assemblies to container bodies whereby the rotating element and its socket are removably yet fixedly attachable to the container body with a cover or skirt overlying the roller assembly engagement with the container.

An object of the invention is to provide an engagement between a roller assembly and a container body which provides an exceedingly simple yet positive and secure engagement of the assembly with the container body.

Another object of the invention is to provide such an engagement for a roller assembly and container body wherein the container-assembly connection is entirely hidden from view and also protected.

Another object of the invention is to provide an engagement for a roller assembly and container body which is adaptable to various types of roller carrying assemblies, including both elliptical and spherical rollers.

Another object of the invention is to provide a combination engagement for a roller assembly and a container and top engagement for a container which completely hides and encloses the roller assembly, yet provides a secure engagement of the container top with the container and, additionally, provides a secure engagement for the roller assembly and container body and a complete covering of the engagement.

Another object of the invention is to provide such roller assembly and container top engagements which may be employed in a flexible wall, blow molded container.

Another object of the invention is to provide a container having a roller assembly wherein the roller dispensing element may be manufactured and fabricated entirely separately from the container proper, a new, novel engagement between the container and roller assembly being provided which provides a rigid secure engagement therebetween and permits full employment and use of the roller assembly with the container.

Another object of the invention is to provide a universal roller assembly which may be employed with various size container bodies provided only that the container bodies have the requisite cooperative inventive engagement to receive the roller assembly.

Other and further objects of the invention will appear in the course of the following description thereof.

In the drawings, which form a part of the instant invention and are to be read in conjunction therewith, an embodiment of the invention is shown and, in the various views, like numerals are employed to indicate like parts.

FIG. 1 is a side elevational view of a container embodying the inventive structure, the container shown in the normal position when not in use, a portion of the container top having been cut away to better illustrate portions of the construction.

FIG. 2 is a sectional view taken along the line 2—2 of FIG. 1 in the direction of the arrows.

FIG. 3 is a sectional view taken along the line 3—3 of FIG. 2 in the direction of the arrows.

FIG. 4 is a sectional view similar to that of FIG. 3, but with the container top removed and with the rollers in dispensing position.

FIG. 5 is a plan view of the inventive container construction with the container top removed and a portion of the construction cut away to better illustrate portions of the construction.

Referring to the drawings, therein is shown a container construction having three basic parts. The first part is the container body portion generally designated at 10, the second the container top portion generally designated at 11, and the third the roller assembly generally designated at 12. These parts will be described in the order named. All container parts save the rollers, the latter of glass or like rigid material, may be formed of polyethylene or like material.

Referring first, then, to the container body 10 in the form shown, it has a circumferential side wall 10*a*, an upper unbroken end wall 10*b* continuously connected to or formed continuous with side wall 10*a* and lower end wall 10*c* (FIG. 3) which has an opening 10*h* preferably centrally thereof, to be described. A continuous circumferential groove 10*d* is formed in side wall 10*a* of the container body 10 just above lower end wall 10*c*. Wall 10*a* is preferably recessed inwardly as at 10*e* to form groove 10*d* and an extension 10*f* defines the lower wall of the groove. The lowermost portion of wall 10*a*, indicated at 10*g*, is preferably recessed inwardly the width of the roller insert skirt to be described.

Central opening 10*h* is preferably, though not necessarily, circular in form. Opening 10*h* is defined by circumferential flange or ring 10*i*, fixed to or formed integral with wall 10*c* and having groove 10*j* formed centrally of the inner face thereof. Alternatively (and not shown), an inwardly-extending ridge or raised portion may be formed on the flange 10*i* if the engagement between the roller element and opening 10*h* is desired to be reversed. The thickness of flange 10*i* is preferably greater than the thickness of wall 10*c* whereby to provide greater rigidity for the engagement to be described. Additionally, the outer peripheral portion of lower end wall 10*c* is preferably thickened as at 10*c'* for greater rigidity.

The container top 11 is congruent in transverse section to the transverse section of container body 10 and must be of sufficient depth to receive the roller assembly when the top is engaged with the container body. Means for engaging container body 10 above wall 10*c* are provided and comprise, in the instance shown, bead 11*a* formed circumferentially inwardly of peripheral wall 11*d* of top 11. Bead 11*a* engages groove 10*d* to form a circumferential sealing fit of the top of the container. Fixed to the inner side of lower end wall 11*b* of top 11 are flange extensions 11*c* adapted to contact the roller element when the top is in positive engagement with the container body and force the roller element or another roller in contact therewith into sealing relationship with its socket seat. It should be noted that the groove-bead engagement of groove 10*d* and bead 11*a* may be reversed (if desired) with the bead on the container and the groove in the top. However, it is preferred that the wall of the container be in line with the wall of the top when in engagement and this is most easily achieved in the construction shown.

The roller assembly shown employs combined elliptical and spherical rollers in combination wherein the elliptical lower roller provides large area dispensing, with the upper spherical roller providing a proper seal when the top is on to avoid undesired passage of liquid from the container body proper. This combination of structure is well adapted to use in the instant invention, but is not required. Either a single elliptical or a single spherical roller member may be employed, the structure of the engagement and skirt of the roller insert being the inventive structure, rather than the form of the rollers themselves.

Referring particularly to the roller assembly, "elliptical" roller 13 is received in socket 12*a*, the latter preferably

but optionally provided with circumferential sealing ridge or bead 12*b*. Spherical roller 14 is received in a recessed socket defined by upwardly-extending flange 12*c*, the latter having inwardly-extending upper edges 12*d* which taper interiorly to define upper opening or seat 12*e*. Depending upon the engagement desired, either a ridge 12*f* (shown) or groove (not shown) is provided to engage an opposite means on flange 10*i*. Socket 12*a* surrounds and engages a sufficient portion of roller 13 so as to maintain it within the socket. Skirt 12*g* is preferably fixed to the lowermost periphery of socket 12*a* and is so formed and of such length as to be received in recess or groove 10*g* of the container body 10.

Reference may be made to FIGS. 2 and 4 to ascertain that the engagement of the roller assembly with the top of the container is solely and primarily, as far as rigid fixing and positioning goes, effected by the central engagement of flange 12*c* with flange 10*i*. Thus this connection must be of sufficient rigidity and tenacity to retain position of the roller assembly on the container proper in normal operation of the container in dispensing liquid therefrom. Skirt 12*g* serves to keep foreign matter out of the container body 10 and out of the space between the roller insert and the container and, additionally, improves the appearance thereof. Additionally, some protection is provided to the central engagement by the skirt, (depending upon the strength and rigidity thereof) against lateral forces applied. Additionally, skirt 12*g* in its abutment on flange 10*f* aids in resisting further insertion of flange 12*c* into the opening 10*h* under excessive upward pressure.

In operation of the device, the container, in inverted position from FIG. 1, is filled with the liquid to be dispensed. Then the roller assembly is snapped vertically downwardly into place so that bead or ridge 12*f* fits into slot or groove 10*j* circumferentially. Skirt 12*g* aids in such positioning by sliding over enlarged portion 10*c'* and fitting into groove or recess 10*g*. When top 11 is fitted over the roller assembly and container so that bead 11*a* fits into groove 10*d*, means 11*c* abut roller surface 13, forcing spherical roller 14 into abutment with seat 12*e*, thus preventing influx of liquid into the space surrounding the rollers and the socket 12*a*. Removal of the top permits the movement of the rollers into the position of FIG. 4 and permits the motion of liquid into socket 12*a* to be transferred from the roller by rotation thereof.

The "fitment" referred to herein includes the sockets for rollers 13 and 14, and the skirt 12*g*.

From the foregoing it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth together with other advantages which are obvious and which are inherent to the structure.

It will be understood that certain features and subcombinations are of utility and may be employed without reference to other features and subcombinations. This is contemplated by and is within the scope of the claims.

As many possible embodiments may be made of the invention without departing from the scope thereof, 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:

1. In combination in a roller dispensing container, a container body wall enclosing a volume of space and having a first opening therein, a first socket for a first roller element having a second opening therein, said first socket formed so as to fit into said first opening with the second opening therein communicating with the interior of the container body, first connecting means connecting said first socket in said first opening, a second roller element socket circumferentially connected to the first socket and communicating therewith by a third opening, said second socket being of greater dimension than said first socket whereby to overlie and surround said first opening and first socket, a circumferential groove formed in the container body peripherally to said first opening, a depending skirt having one end thereof circumferentially fixed to the said second socket and the other end thereof circumferentially fitting into said container body groove; a first roller element substantially spherical in form in said first socket of such size as to be able to close the second opening therein and a second roller element substantially elliptical in cross section along one axis of rotation and substantially spherical in cross section normal thereto in said second socket, said axis of rotation being greater in length than the diameter of the first roller.

2. Apparatus as recited in claim 1 including a container top, and means cooperating between the container top and container body for engaging the container top on said body in such manner as to enclose said sockets and skirt, said last means comprising a bead and groove between the container top and the container body wall, the bead and groove attachment of the top and container wall adjacent to but peripheral to the skirt receiving groove.

3. In combination in a roller dispensing container, a container body enclosing a volume of space and having a normally vertical continuous side wall and normally horizontal end walls connected to said side wall, a first one of said end walls having a first opening therein which communicates with said container body enclosed volume, a first socket for a first relatively smaller roller element, said first socket having a second opening therein and formed so as to fit into said first opening with said second opening communicating with the interior of said container body, first connecting means connecting said first socket in said first opening, a second roller element socket of greater dimension than said first socket circumferentially fixed to and surrounding said first socket and communicating therewith by a third opening whereby to overlie said second opening in said first socket and surround same, a circumferential shelf formed in said first end wall at its connection with said side wall, and a depending skirt having one end thereof circumferentially fixed to said second socket and the other end thereof circumferentially fitting into said container body shelf; a first roller element substantially spherical in form in said first socket of such size as to be able to close the second opening therein and a second roller element substantially elliptical in cross section along one axis of rotation and substantially spherical in cross section normal thereto in said second socket, said axis of rotation being greater in length than the diameter of the first roller.

4. Apparatus as recited in claim 3 including a container top, and means cooperating between the container top and container body for engaging the top on said body in such manner as to enclose said sockets and skirt, said last means comprising a bead and groove between the container top and the container body wall, the bead and groove engagement of the top and container body wall adjacent to but peripheral to the skirt receiving groove.

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