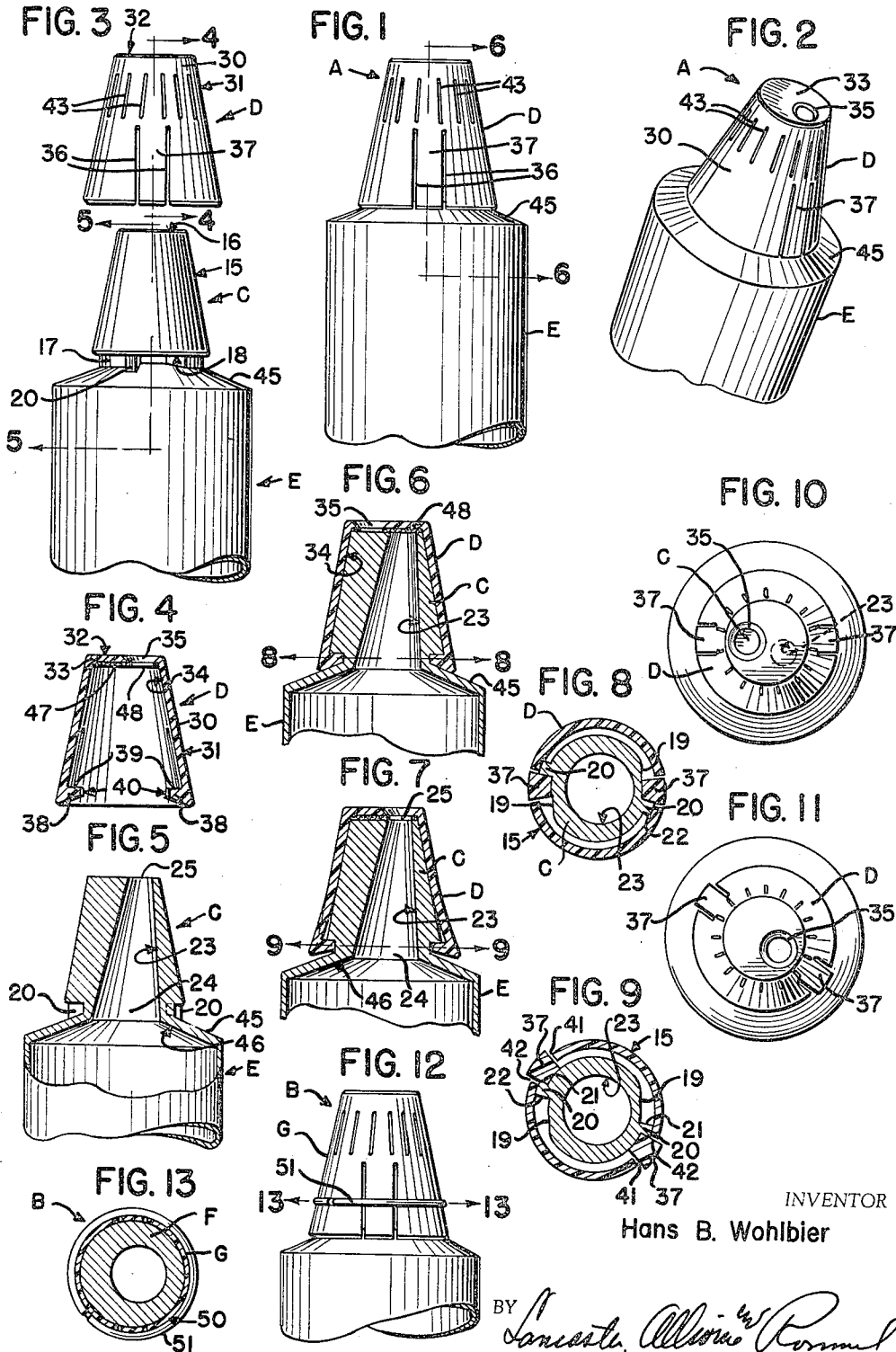


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H. B. WOHLBIER
DISPENSER HEAD AND ROTATABLE CLOSURE THEREFOR FOR
CONTAINERS OF FLUENT MATERIALS
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INVENTOR
Hans B. Wohlbiere

BY *Lancaster, Allison & Rosenthal*
ATTORNEYS

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DISPENSER HEAD AND ROTATABLE CLOSURE THEREFOR FOR CONTAINERS OF FLUENT MATERIALS

Hans B. Wohlbier, Lubbock, Tex.

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5 Claims. (Cl. 222—28)

This invention relates to dispenser head and rotatable closure therefor for containers of fluent materials.

An important object of the invention is to provide a rotatable closure with associated head, which closure is adapted to be permanently attached to the head for employment during the entire period of use of the container. The closure is attached to the head by a simple snap action, prior to marketing of the container assembly of the container body, head and closure.

Another important object is to provide a rotatable closure for the opening in the head of a container of fluent material which closure, in conjunction with the head, provides means to indicate, visually and by touch, when the closure has uncovered the opening in the head. Such is important since, in cases when a conventional container is inverted in order to pour or squeeze a portion of the contents from the container, the manipulator is generally unable to ascertain whether or not the closure has been moved to an open position.

Still another important object is to provide a container head and closure therefor, having the advantages described above, which container head and closure are inexpensive to manufacture and assemble, and wherein parts have dual functions, thus aiding in a reduction of the cost of manufacture.

Other objects and advantages of the invention will be apparent during the course of the following detailed description of the invention, taken in connection with the accompanying drawing, forming a part of this disclosure, and in which drawing:

Fig. 1 is an elevation of the head portion of a container, provided with the head of this invention and containing a closure of the invention, with the closure in a closed position.

Fig. 2 is a perspective view of the assembly of Fig. 1.

Fig. 3 is a disassembled elevational view of the head-containing container portion and the closure of Figs. 1 and 2.

Fig. 4 is a vertical section of the closure of Figs. 1-3, substantially on the line 4-4 of Fig. 3.

Fig. 5 is a vertical section of the head and associated portion of the container body, substantially on the line 5-5 of Fig. 3.

Fig. 6 is a vertical section, substantially on the line 6-6 of Fig. 1, and with the closure in a closed position.

Fig. 7 is a vertical section, somewhat like that of Fig. 6, but with the closure in an open position.

Fig. 8 is a horizontal section, substantially on the line 8-8 of Fig. 6.

Fig. 9 is a horizontal section, substantially on the line 9-9 of Fig. 7.

Fig. 10 is a top plan, with the closure in a closed position.

Fig. 11 is a top plan, with the closure in an open position.

Fig. 12 is a fragmentary elevation along the lines of Fig. 1, but showing a modification of the closure of Fig. 1.

Fig. 13 is a horizontal section, substantially on the line 13-13 of Fig. 12.

In the drawing, wherein for the purpose of illustration are shown two embodiments of the invention and wherein similar reference characters designate corresponding parts throughout the several views, the letter A designates the embodiment of the invention of Figs. 1 to 11 inclusive and, B, the embodiment of Figs. 12 and 13.

The embodiment A of the invention comprises the head portion C and closure portion D, providing an assembly for association with a container or receptacle E.

Referring mainly to Figs. 3, 5, 6, 8 and 9, the head portion C is preferably an integral portion of generally truncated conical shape with a peripheral wall surface 15 extending to an outermost end wall surface 16 which is preferably flat. At its inner end part, the head portion is reduced in circumference to provide a neck 17 and a shoulder 18 which together form a recess. As may be seen in Fig. 8, the generally cylindrical neck 17 is provided with preferably two flattened outer faces 19 shown in Figs. 8 and 9 and disposed 180° apart, all to provide a cam. Two lugs 20 extend outwardly from the neck 17 at opposite ends of the flattened outer faces 19 so that these lugs are also disposed 180° apart, and each lug has preferably two substantially flat closure portion contacting faces 21 and 22. Extending preferably obliquely through the head portion is a fluent material dispensing passageway 23 whereby, while the longitudinal axis of the passageway at the inner end 24 of the passageway, may intersect the longitudinal axis of the head portion and this inner end may have a relatively large circumference, the outer end 25 of the passageway 23 will be offset with respect to the longitudinal axis of the head portion.

Now referring mainly to Figs. 1 to 3, 6 and 7, the closure portion D is shown as also of truncated conical shape, with a peripheral wall or skirt 30 having an outer surface 31, extending to the outermost surface 32 of an end wall 33, which wall is preferably flat. The closure portion has a head portion-accommodating recess 34 open at its inner end part and provided with a fluent material discharge opening or port 35 in the end wall 33 offset from the axis of rotation of the portion D but which will align axially with the axis of the passageway 23 as in Fig. 7. The wall 30 is provided with preferably two pairs of relatively closely spaced-apart slits 36 extending from the inner edge of this wall in parallelism toward the end wall 33. This arrangement provides two tongues 37 which are preferably disposed substantially 180° apart. At the free end of each tongue 37 is an inwardly-extending lug or short flange 38 which has a surface 39 adapted to slidably contact the shoulder 18, and a surface 40 to slidably contact the neck 17 and provides a cam follower. The lugs 38 are each provided with two opposite faces 41 and 42 adapted to contact the lugs 20. In effect, the closure portion D is preferably a cap and its peripheral wall, at least at the tongues 37, is of springy or resilient material, whereby the tongues may be sprung so that the free ends of the lugs 38 thereof may ride over the peripheral wall 15 and then spring into the recess provided by the neck 17 and shoulder 18 in order to attach the closure portion D to the head portion C. The peripheral wall 30 may be provided with means to assist in the rotation of the closure portion. Such means may be spaced apart ribs or projections 43 extending from the outer face of the wall 30.

The container or receptacle E may take any approved form. It may be a collapsible tube, for example, provided with the shoulder or discharge end portion 45 providing a fluent material discharge way 46, and the head portion C may be secured thereto by any approved means. In fact, the head portion C and container E may have walls of the same material and be integral.

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Between the outermost end wall surface 16 of the head portion C and the inner face of the end wall 33 of the closure portion D, I prefer to provide preferably a thin disc or gasket 47 of cork or the like, containing an opening 48 aligning with the port 35. The disc 45 may be secured to the inner face of the end wall 33 in any approved way, such as by an adhesive.

With the parts disposed as in Fig. 3, when the closure portion D is pressed down upon the head portion C so that the free end portions of the lugs 38 ride over the peripheral wall surface 15 of the head portion C and finally enter the recess below the shoulder 18, urged by the springy tongues 37, the closure portion D will be permanently attached to the head portion C, but may be rotated in order to align (as in Figs. 7 and 11) or misalign (as in Figs. 6 and 10) the passageway 23 and discharge port 35.

It will be noted, particularly in Fig. 8, that the tongues 37 do not extend beyond the periphery of the wall surface 15. They are thus positioned in Figs. 6 and 10 at which time the passageway 23 is closed and the lugs 38 are contacting the flattened faces 19. On the other hand, in Fig. 9 it will be noted that the tongues 37 do extend beyond the periphery of the wall surface 15. They are thus positioned in Figs. 7 and 11 at which time the passageway 23 is open and the lugs 38 have ridden off the flattened faces 19 and contact the curved face of the neck 17. Thus, the positions of the tongues 37 will indicate whether or not the passageway 23 is open or closed without the operator of the head and closure assembly actually seeing that the passageway is open or closed (as when he has inverted or partly inverted the device of the embodiment A). Furthermore the added tension of the tongues 37 as in Fig. 9 will tend to hold the closure portion D in an open position until it is manually rotated to a closed position. It is now apparent that an operator will also know, in the darkness, when the closure portion is in an open or closed position, since he can feel whether or not the tongues 37 are in one or the other position.

In Figs. 12 and 13, the head portion F is preferably exactly like the head portion C and the only difference in the closure portion G over the closure portion D is that the former is provided with a peripheral groove 50 which includes the tongues 37 and a suitable resilient snap ring 51 is disposed in the groove. This provides a particularly snug engagement of the parts of the closure portion G with the head portion F. In assembling the closure portion G may be applied to the head portion F in the same way as the closure portion D is applied to the head portion C and the snap ring 52 then applied. In use, operations are exactly like operations of the closure portion D with respect to the head portion C.

Various changes may be made to the embodiments of the invention herein shown and described without departing from the spirit of the invention or scope of the claims.

What is claimed is:

1. A dispenser head and closure assembly for a receptacle for fluent material, said assembly including a head portion provided with a fluent material dispensing passageway therethrough, a closure portion rotatably mounted upon said head portion and provided with an exposed discharge opening for alignment with said passageway upon rotation of said closure portion, and cam and cam follower means carried by said portions to rotatably mount said closure portion upon said head portion and to indicate when said opening and passageway are aligned at a time when said opening cannot be seen by a manipulator of said closure portion.

2. A dispenser head and closure assembly for a receptacle for fluent material, said assembly including a head portion provided with a fluent material dispensing passageway therethrough, a closure portion rotatably mounted upon said head portion and provided with an exposed discharge opening for alignment with said

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passageway upon rotation of said closure portion, and means carried by said portions to rotatably mount said closure portion upon said head portion and to indicate, by a change in the shape of said closure portion, when said opening and passageway are aligned at a time when said opening cannot be seen by a manipulator of said closure portion.

3. A dispenser head and closure assembly for a receptacle for fluent material, said assembly including a head portion provided with a fluent material dispensing passageway therethrough, a closure portion rotatably mounted upon said head portion and provided with an exposed discharge opening for alignment with said passageway upon rotation of said closure portion, stop means to limit rotation of said closure portion to a fully open position, stop means to limit rotation of said closure to a fully closed position, and means carried by said portions to rotatably mount said closure portion upon said head portion and to indicate when said opening and passageway are aligned at a time when said opening cannot be seen by a manipulator of said closure portion.

4. A dispenser head and closure assembly for a receptacle for fluent material, said assembly including a dispenser head portion having a body provided with an outermost end part, an innermost end part and a fluent material dispensing passageway therethrough, a hollow closure portion rotatably mounted upon said head portion, provided with an outer end wall disposed upon said outermost end part and a skirt extending over said body to said innermost end part, said outer end wall having an exposed discharge opening for selective alignment and misalignment with said passageway upon rotation of said closure portion, stop means to limit rotation of said closure portion to a fully open position, stop means to limit rotation of said closure portion to a fully closed position, and means carried by said portions to rotatably mount said closure portion upon said head portion against removal thereof and to indicate when said opening and passageway are aligned at a time when said opening cannot be seen by a manipulator of said closure portion, including a neck extending from said innermost end part of said body and provided with a cam surface, said neck being less in diameter than said body whereby a shoulder is provided at the edge portion of said innermost end part, and a tongue of springy material secured at one end thereof to said skirt and disposed substantially flush with the outer surface of said skirt when said closure is in one of said positions and disposed outwardly of said surface when said closure is in the other of said positions, said tongue having a projection at its free end portion bearing against said cam and disposed against said shoulder.

5. A dispenser head and closure assembly for a receptacle for fluent material, said assembly including a dispenser head portion having a body provided with an outermost end part, and innermost end part, and a fluent material dispensing passageway therethrough, a hollow closure portion rotatably mounted upon said head portion, provided with an outer end wall disposed upon said outermost end part, and a skirt extending over said body to said innermost end part, said outer end wall having an exposed discharge opening for selective alignment and misalignment with said passageway upon rotation of said closure portion, stop means to limit rotation of said closure portion to a fully open position, stop means to limit rotation of said closure portion to a fully closed position, and means carried by said portions to rotatably mount said closure portion upon said head portion against removal thereof and to indicate when said opening and passageway are aligned at a time when said opening cannot be seen by a manipulator of said closure portion, including a neck extending from said innermost end part of said body and provided with a cam surface, said neck being less in diameter than said body whereby a shoulder is provided at the edge portion of said innermost end part, and a tongue of springy material secured at one end thereof to said skirt

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and disposed substantially flush with the outer surface of said skirt when said closure is in one of said positions and disposed outwardly of said surface when said closure is in the other of said positions, said tongue having a projection at its free end portion bearing against said cam and disposed against said shoulder and for abutting said stop means upon rotation of said closure. **5**

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