Jan. 8, 1952 M. FRIEDMAN 2,582,026

CLOSURE FOR CONTAINER HAVING A NECK WITH A REDUCED OUTER PORTION AND A BORE, AND SEALS FOR SAID BORE AND SAID REDUCED PORTION

Filed Dec. 2, 1946 2 SHEETS—SHEET 1

FIG. 1

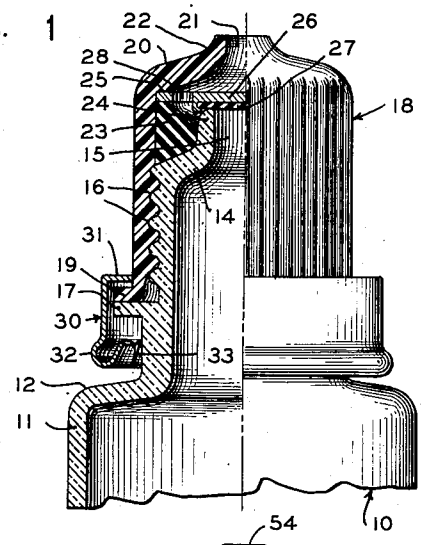


FIG. 2

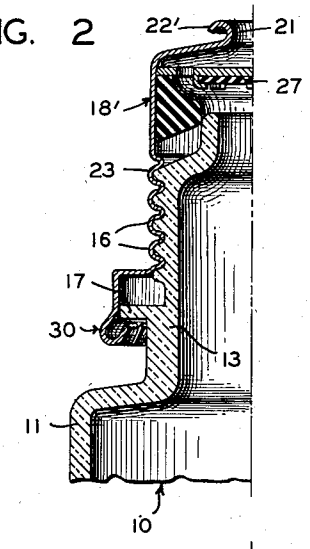


FIG. 4

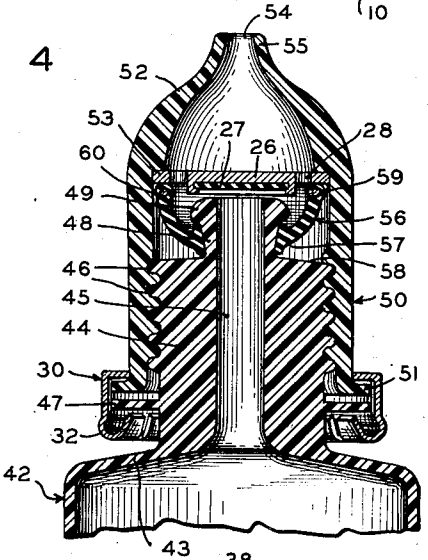


FIG. 5

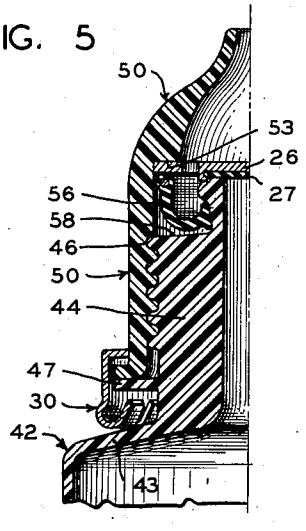


FIG. 3

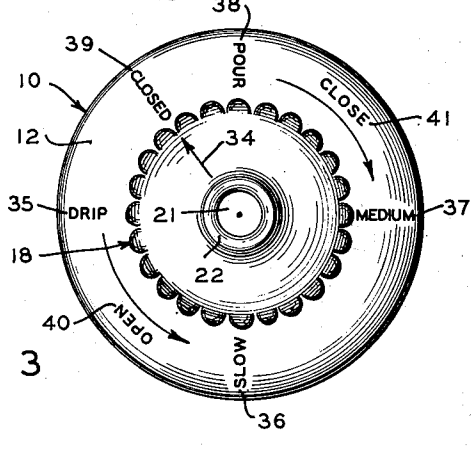
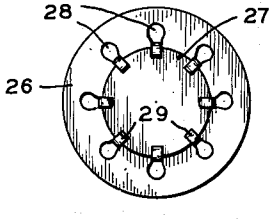


FIG. 6



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FIG. 10

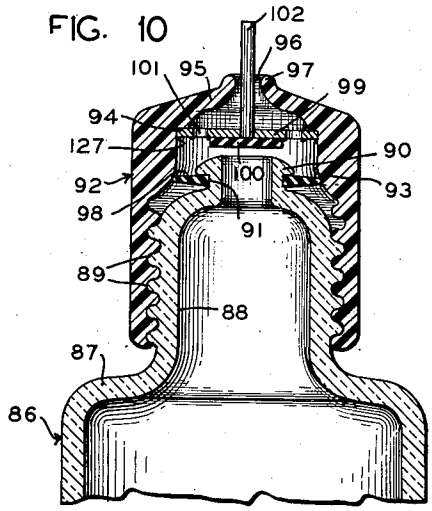


FIG. 12

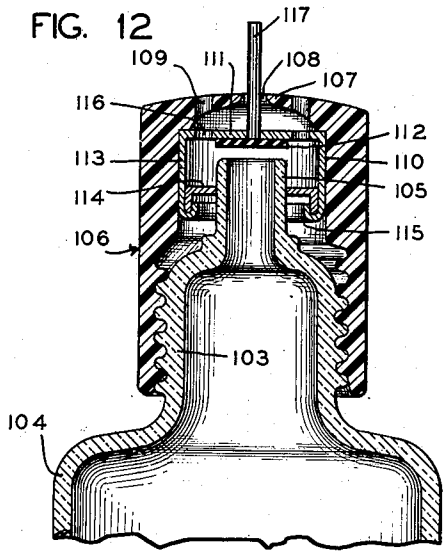


FIG. 11

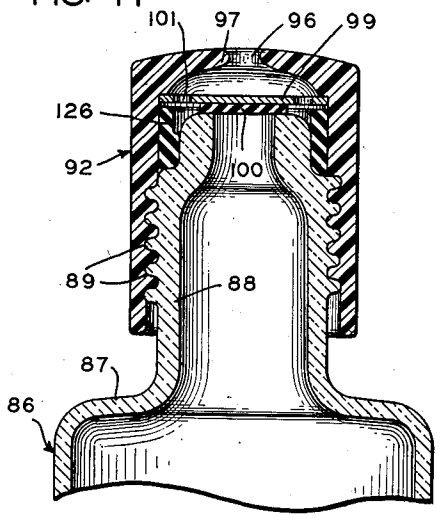


FIG. 9

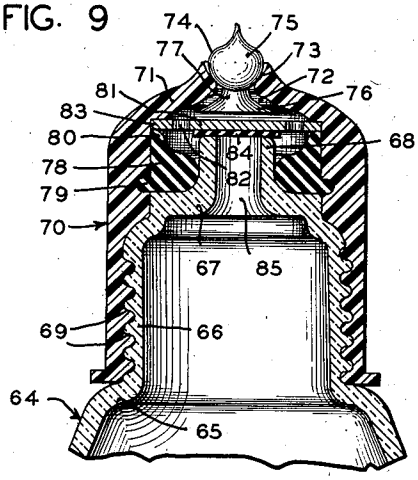


FIG. 7



FIG. 8

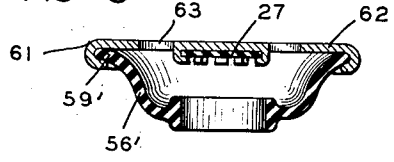


FIG. 1a

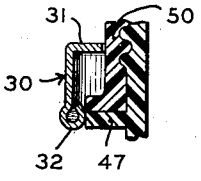
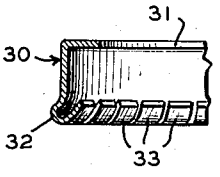


FIG. 1b



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CLOSURE FOR CONTAINER HAVING A NECK WITH A REDUCED OUTER PORTION AND A BORE, AND SEALS FOR SAID BORE AND SAID REDUCED PORTION

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Application December 2, 1946, Serial No. 713,575

17 Claims. (Cl. 222—520)

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This invention relates to improvements in portable container closures and particularly to an improved dispensing closure for a container such as a bottle, jar, can or carton.

While various forms of dispensing closures for portable containers have been previously provided they have not proved to be entirely satisfactory under service conditions for which the device of the invention has been particularly designed. Such previously proposed devices have not always definitely precluded leakage of the container contents nor sufficiently sealed such contents against evaporation and exposure to the air, permitting loss or deterioration of such contents by evaporation, oxidation, and wetting by atmospheric moisture. In many cases the parts of such closures are separable from the container and thus subject to loss, and are difficult to manipulate to open and close the container.

It is among the objects of the present invention to provide an improved portable container closure that may be easily manipulated between its open and closed positions, that may be adjusted to various intermediate positions to control the rate of dispensing the container contents, that provides a fluid tight seal for the container when closed and is so constructed as to preclude leakage between the container and the closure device.

A further object resides in the provision of a portable container closure, all parts of which are permanently secured to the container to avoid misplacement and loss of the closure parts.

A still further object resides in the provision of an improved portable container closure that is attractive in appearance, simple and economical to manufacture, easy to operate and which may be operated repeatedly without damage or deterioration so that the container contents may be dispensed a small quantity at a time over a long period.

Other objects and advantages will become apparent from a consideration of the following description in conjunction with the accompanying drawings, in which:

Fig. 1 is an elevational view of a fragmentary portion of a container showing a closure illustrative of the invention applied thereto, a portion of the container and closure being shown in section to better illustrate the construction thereof;

Fig. 1*a*, a sectional view showing the manner of applying the cap retaining ring shown in Fig. 1;

Fig. 1*b*, a sectional view of the cap retaining ring;

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Fig. 2, a sectional view of a fragmentary portion of a container and closure therefor similar to that shown in Fig. 1 but in which the closure cap is formed of a different material than the cap shown in Fig. 1;

Fig. 3, a top plan view of the container and closure shown in Figs. 1 and 2;

Fig. 4, a sectional view of a fragmentary portion of a somewhat modified form of container and closure showing the closure in open position;

Fig. 5, a sectional view of a fragmentary portion of the closure and container shown in Fig. 4 showing the closure in closed position;

Fig. 6, a plan view of the closure seal and seal supporting member;

Fig. 7, an elevational view of the resilient washer or gasket member shown in Figs. 4 and 5;

Fig. 8, a sectional view of a modified form of resilient gasket;

Fig. 9, a longitudinal sectional view of a container and a further modified form of container closure illustrative of the invention;

Fig. 10, a longitudinal sectional view of a fragmentary portion of a container and a closure similar to the closure illustrated in Fig. 9 but embodying certain modifications in its details;

Fig. 11, a longitudinal sectional view of a container and a closure similar to the closure shown in Figs. 9 and 10 but embodying further detailed modifications;

Fig. 12, a longitudinal sectional view of a fragmentary portion of a container and a closure similar to the closure illustrated in Figs. 9, 10 and 11 but omitting certain elements of the previously illustrated closures for the purpose of simplifying the closure construction;

With continued reference to the drawings and particularly to Fig. 1, the container, generally indicated at 10, is illustrated as a glass jar or bottle of substantially cylindrical shape having a side wall 11 from the upper edge of which extends an inwardly directed top wall portion 12 from which a hollow cylindrical neck 13 extends upwardly. At its upper end the neck 13 is necked in, as indicated at 14, and provided with a central opening or aperture 15 through which the contents of the container 10 may be discharged. Externally the neck 13 is provided with a screw thread 16 adjacent the lower end of which there is provided an outwardly extending integral annular flange 17.

A generally cylindrical closure cap, generally indicated at 18, is provided with internal screw threads which engage with the screw thread 16 on the exterior of the container neck 13. At its

bottom or lower end the cap 18 is provided with an outwardly extending annular flange 19 and at its opposite end is necked in, as indicated at 20, to a discharge opening 21 surrounded by an annular lip 22.

As illustrated, the container 10 is formed of glass or other ceramic material and the cap 18 is formed of a synethtic resin or plastic. Other materials may be used, however, for both the container and the cap without in any way exceeding the scope of the invention. For example, Fig. 2 illustrates an arrangement in which the container is formed of glass or ceramic material and the cap is formed of thin metal, both the cap and the container could be formed of metal or both could be formed of synthetic resin, as indicated in Fig. 4. The invention is in no way limited to any specific material for either the container or the cap but it is preferred that the cap at least be made of some readily moldable or formable material such as synthetic resin or relatively soft thin metal.

The exterior of the cap 18 is preferably fluted or otherwise provided with an ornamental surface which is not completely smooth in order to provide a better hand grip for turning the cap on the screw threaded neck 13.

A solid ring or washer 23 rests upon the external surface of the necked in portion of the container neck 13, this surface providing an annular shoulder contacting the adjacent surface of the washer. The inner annular surface of the washer is in contact with the external surface of the lip 24, which extends upwardly from the necked in portion 14 and the external annular surface of the washer is in contact with the inner surface of the cap 18. The washer or gasket 23 thus provides a fluid tight seal between the outer portion of the container neck 13 and the outer portion of the cap 18 so that fluid cannot leak into the space between the container neck and the cap and flow backwardly through the screw threads and out of the space between the flanges 17 and 19 to the exterior of the container. This prevents wetting of the user's hands by liquid contents of the container and also prevents fouling or corroding of the screw threads, which condition would render it difficult to turn the cap on the container neck.

At the necked-in portion 20 the cap 18 is provided with an internal annular shoulder 25 which seats upon the outer edge portion of a disc 26 having a diameter substantially the same as the internal diameter of the cap. This member 26 carries a disc-shaped seal 27 preferably formed of resilient material such as rubber, cork, paper, etc., and surrounding the seal 27 a series of apertures 28 is provided in the disc 26.

The construction of the disc 26 and seal 27 is particularly illustrated in Fig. 6 wherein the seal is shown positioned substantially concentrically of the supporting disc and held in operative position against the surface of the supporting disc by bent over metal tongues 29 which are struck up from the disc at the time the apertures 28 are provided. These tongues are bent over the edge portion of the seal 27 and retain the seal firmly in position. In order to provide metal tongues 29 of the proper flexibility and stiffness, the supporting disc 26 is preferably formed of a suitable thin malleable metal.

When the cap 18 is turned down on the thread 16 to a position in which the flange 19 is against or closely adjacent to the flange 17, the supporting disc 26 is moved toward the outer end of the container neck 13 and the seal 27 is pressed firmly against the outer end of the container neck surrounding the aperture 15. This provides a fluid tight seal for the container. The washer 23 is formed of a firm material, such as hard rubber, and is fixed in the cap 18 in position to hold the outer edge portion of the supporting disk 26 firmly against the internal cap shoulder 25.

When the cap is turned outwardly on the container neck the washer 23 moves outwardly on the reduced outer end portion of the container neck and the cap and washer will carry the supporting disk 26 and seal 27 away from the end of the container neck so that container contents may pass under the seal, through the apertures in the supporting disk and through the aperture in the cap when the container is inverted. The washer forms a ring about the reduced outer end portion of the container neck so that when the container is uprighted and portion of the content in the space between the container neck and the outer end of the cap will be returned into the container.

The cap 18 is retained in permanent assembly with the container by suitable means such as the metal band of generally channel shaped cross section, generally indicated at 30. This band has an inwardly extending annular flange 31 overlying the flange 19 of the cap and an inwardly directing bead or rolled portion 32 at its end opposite the flange 31, the edge of which bead is engageable with the under surface of the container flange 17 so that the cap 18 cannot be separated from the container but can be loosened only an amount sufficient to properly space the seal 27 from the end of the container neck to permit dispensing of the container contents through the neck and the cap.

The band 30 is formed of flexible material, preferably thin springy metal, and has its edge at the rolled over portion slitted at closely spaced intervals, as indicated at 33, to provide a plurality of flexible tongues at the inner edge of the rolled over portion. These tongues are of sufficient length and flexibility to permit the cap flange 19 and container neck flange 17 to pass through the rolled over portion of the band, as shown in Fig. 1*a*, without exceeding the elastic limits of the material, to permit assembly of the band with the cap and the container neck.

Fig. 2 illustrates the same construction as that shown in Fig. 1 except that the cap 18' is formed entirely of metal, in which case the band 30' may be made integral with the metal cap in order to avoid the necessity of providing separate pieces and the closure is shown in open position. The band, however, may be made separately, if desired, and associated with the cap in the same manner as that illustrated in Fig. 1. Otherwise, the construction shown in Figs. 1 and 2 are substantially identical.

In the arrangement illustrated in Fig. 1, the cap is provided with an indicating marker as designated at 34 in Fig. 3, and the upper surface of the end wall portion 12 of the container is provided with indicia as designated at 35 to 39 inclusive, indicating the operational position of the cap for determining the rate at which the contents are to be dispensed, and is also provided with directional arrows, as indicated at 40 and 41, which disclose the direction of rotation of the cap for opening and closing the container closure.

In the somewhat modified arrangement illus-

trated in Figs. 4 and 5, a container, generally indicated at 42, of cylindrical or other desired form is provided with an inwardly extending end wall or flange 43, from which extends a hollow neck 44 having an internal bore or aperture 45. This neck is provided exteriorly with screw threads 46 and with an outwardly extending annular flange 47 near the end of the neck connected to the container. At its outer end the neck is provided with a reduced cylindrical portion 48 provided with a terminal bead 49.

A cylindrical cap, generally indicated at 50 is threaded upon the neck 44 and is provided at its open end with an outwardly extending annular flange 51. At its end opposite flange 51 the cap is necked in as indicated at 52 and is provided with an internal shoulder 53 at the junction of its cylindrical portion with the necked-in portion 52. At the outer end the cap is provided with a pouring aperture 54 surrounded by an annular lip 55.

A supporting disc 26, which may be identical in all respects with the disc illustrated in Figs. 1, 2 and 6, is carried internally of the cap 50 and bears at its outer edge portion against the shoulder 53. This disc is provided with a seal member 27 and a circular series of apertures 28 as described above. In this somewhat modified arrangement, an annular, bowl-shaped, washer or gasket, generally indicated at 56, is operatively disposed between the outer end of the container neck 44 and the interior of the cap 50 and cooperates with the seal support 26. This resilient washer or gasket 56, shown in elevation in Fig. 7, is provided with a central aperture surrounded by an inner annular bead 57 which fits tightly about the reduced extension 48 of the neck 44 between the annular shoulder 58 and the bead 49. The annular wall of the gasket or washer is curved outwardly and upwardly from the bead 57 to an outer circumferential bead 59 at its outer end. The wall is preferably thickest against the bead 57 and gradually reduces in thickness as it approaches the bead 59. Preferably the bead 59 includes a stiffening rim 60 of wire or other suitable material.

The bead 59 presses against the inner surface of the cap 50 and against the under surface of the seal support 26 to provide a fluid tight seal between the container neck and the cap and to hold the disc 26 resiliently against the shoulder 53. When the cap is screwed outwardly on the container neck, as is illustrated in Fig. 4, the gasket 56 tends to move the disc 26 and seal 27 with the cap to a position in which the seal is spaced from the outer end of the container neck 44 to permit contents of the container to flow through this space and through the apertures 28 in disc 26 to the pouring or dispensing aperture 54 of the cap. When the cap is screwed inwardly on the container neck the gasket or washer 56 is deformed or compressed, as is clearly shown in Fig. 5, but retains its bead portion in contact with the container neck and with the inner surface of the cap 50 so that a fluid tight seal between the container neck and the cap is maintained at all times and any leakage of container contents between the screw threads on the container neck and the cap and outwardly at the base of the container neck is precluded. In this case the cap is permanently retained on the container by a band 30 which may be identical with the corresponding band 30 shown in Figs. 1 and 2 and described above, this band engaging the flange 51 on the cap and the flange 47 on the container neck to prevent separation of the cap from the container.

A slightly modified form of resilient gasket and seal supporting disc is shown in Fig. 8. In this arrangement the resilient gasket 56' is the same as the gasket 56 illustrated in Figs. 4, 5, and 7 and described above except that the stiffening rim 60 is omitted from the outer bead 59. In this case the outer bead 59' is gripped in a rolled peripheral channel or bead 61 provided on the modified seal supporting disc 62 so that the disc performs the double function of stiffening the outer end of the resilient gasket and supporting the seal 27 in the manner indicated above. The disc 62 is provided with apertures 63 surrounding the seal 27 and functions in the same manner as the disc 26 described above. In this case, the disc itself, being held firmly in engagement with the internal shoulder 53 of the cap provides a sufficiently tight seal between the resilient gasket and the cap to preclude any leakage of container content past the overlap of the cap and the container neck.

In the arrangement shown in Fig. 9, the container, generally indicated at 64, which is shown as formed of glass, has a narrow curved end wall or flange 65 corresponding to the wall 12 in Fig. 1 and the wall 43 in Fig. 4 and a large diameter cylindrical neck 66 having at its outer end an inwardly directed end wall or flange 67 from which projects an apertured boss-like structure 68. This arrangement is particularly designed for dispensing granular material, such as salt, sugar, etc. The cylindrical portion of the neck 66 is provided with external screw threads 69 which receive screw threads provided internally of a cylindrical cap, generally indicated at 70. At its outer end the cap is provided with an inwardly directed end wall or flange 71 in which there is a central aperture 72 surrounded by an annular lip 73. A closing weight 74 is mounted in the aperture 72 and comprises a generally spherical portion 75 and a generally flat-central portion 76 connected to the spherical portion by a reduced neck portion 77 having a diameter smaller than the diameter of the aperture 72. The flat-central portion is spaced from the spherical portion by an amount such that when the weight 74 is in an intermediate position in the aperture a dispensing passage is provided between the spherical portion of the weight and the surrounding lip of the cap 70. The flat portion 76 has a width less than the diameter of the cap aperture to provide openings, one at each side of the flat portion for the passage of container contents into the cap aperture.

A gasket or washer 78 of resilient material, such as natural or synthetic rubber, rests upon the upper surface of the neck wall 67 and bears against the outer surface of the boss-like structure 68 and also against the surrounding internal surface of the cap 70. This washer is provided with an annular external bead or extension 79 which fits into a groove provided in the inner surface of the cap so that the washer is fixed to the cap and is constrained to move with the cap outwardly and inwardly rubbing along the outer surface of the boss-like structure 68 of the container neck. The washer is also provided with an upstanding bead or extension 80 which bears against the under surface of the seal supporting disc 81 outside of the circular series of apertures 82. The outer surface of the disc 81 opposite the extension 80 bears against an annular shoulder 83 provided interiorly of the cap at its outer end.

A seal 84 carried by the disc 81 covers the end of the boss-like structure 68 and closes the dispensing aperture 85 extending through this structure when the seal is held in sealing position against the outer end of the container neck.

When the cap is screwed inwardly on the container neck, as illustrated in Fig. 9, the seal 84 is held in sealing relation against the outer end of the boss-like structure 68 closing the aperture 85. When the cap is screwed outwardly on the container neck the resilient washer or gasket 78 is moved outwardly with the cap retaining the seal supporting disc 81 against the shoulder 83 thereby moving the seal to a position in which it is spaced from the end of the portion 68 of the container neck providing a dispensing passage through this space and through the apertures 82 in the disc 81. The contents of the container may then pass into the space between the supporting disc 81 and the end wall of the cap. If the weight 74 is in position closing the dispensing aperture 72 the contents will be held in this space but after the weight is moved upwardly opening the dispensing passage between the weight and the lip 73 the container contents held in the above mentioned space may then flow through the dispensing passage.

In this case the cap may be permanently associated with the container if desired but as this arrangement is particularly adapted for such containers as salt shakers, sugar dispensers, etc., it may be preferable to permit separation of the cap from the container for filling of the container, this arrangement being illustrated in Fig. 9. The fluid tight seal provided by this arrangement will prevent clogging and deterioration of the contents by exposure to atmospheric moisture.

In the arrangement shown in Fig. 10, the container 86 is provided with an end wall or flange 87 from which extends a hollow cylindrical neck 88 provided with external screw threads 89 and having a dome-shaped end from which extends an apertured boss 90 provided with an external groove 91 which may be of generally rectangular cross section. A cylindrical cap, generally indicated at 92, is provided with internal screw threads received by the threads 89 and above the screw threads with an inwardly curved shoulder 93 and an annular radial shoulder 94 above the shoulder 93. Above the shoulder 94 the cap has an inwardly directed annular flange or end wall 95 provided with a central aperture 96 surrounded by an upstanding annular lip 97. A resilient sealing washer 98 has a central aperture surrounding the boss 90, the portion of the washer surrounding the aperture being received in the groove 91 and an outer edge bearing against the curved annular shoulder 93 of the cap. This washer has a radial wall thickness which decreases uniformly from the inner aperture to the outer edge, the outer edge which contacts the cap shoulder being relatively sharp and flexible to maintain a fluid tight seal between the container neck and the cap.

A seal supporting disc 99 is mounted in the cap by wedging the rim of the disc between spaced internal ribs 127 in the cap and is firmly seated against internal cap shoulder 94. This disc carries a concentric sealing disc 100 which cooperates with the outer end of the boss 90 to seal the container and is provided with apertures 101 surrounding the sealing disc for the passage of container contents through the supporting disc. A stem 102 extends from the center of the supporting member 99 through the dispensing aperture 96 in the cap and terminates outside of the cap for removing the supporting disc and seal from the cap for cleaning. With this arrangement when the cap 92 is screwed inwardly on the container neck the disc 100 is forced into sealing engagement with the outer end of the boss 90. When the cap is screwed outwardly to the position illustrated in Fig. 10 the disc 99 is moved to a position spaced from the end of boss 90 to permit passage of container contents past the seal and through the cap aperture.

The arrangement shown in Fig. 11 is similar to that shown in Fig. 10. The container neck, however, is provided with a generally cylindrical terminal portion 125' having no exterior groove, and an annular washer 126 of resilient material is forced into the cap and holds the seal support disc 99 against the cap shoulder. The washer has a light sliding fit with the external surface of the neck extension and surrounds the neck extension in a manner to return any portion of the container contents in the space between the outer end of extension 125 and the cap end wall into the container when the container is uprighted.

In the arrangement shown in Fig. 12, the neck 103 of the container, generally indicated at 104, is provided with an elongated cylindrical apertured boss 105 and the cylindrical cap, generally indicated at 106, is provided with a continuous end wall 107 provided with a central aperture 108 surrounded by a circular series of apertures 109 and is provided internally with an annular radial shoulder 110. The seal supporting member 111 carrying the disc 112 of sealing material is secured in the cap by a metal cylinder 113. Cylinder 113 is forced into the cap and frictionally engages the interior side walls of the cap to hold the seal supporting disc against the internal annular shoulder of the cap. An apertured washer 114 of suitable sealing material is secured in the cylinder 113 and fits closely about the elongated boss 105, to provide a seal between the cylinder and the boss. This sealing washer may conveniently be secured in the cylinder by beading the lower edge of the cylinder over an extension on the disc, as indicated at 115 and moves with the cap, sliding on the surface of boss 105.

The seal supporting disc 111 is provided with a circular series of apertures 116 which register sufficiently with the series of apertures 109 so that when the cap is screwed outwardly and the disc 112 is spaced from the end of the boss 105 the container contents may flow through the space between the end of the boss and the sealing disc and through apertures 116 and 109, when the container is inverted. When the cap is screwed down on the container neck the disc 112 is brought into sealing engagement with the boss 105.

A stem 117 is attached at one end to the center of seal supporting disc 111 and extends through the central cap aperture 108. This stem is used to force the disc 111 and the cylinder 113 out of the cap in order that the cylinder and disc may be cleaned, repaired or replaced.

It will be obvious to those skilled in the art that various changes may be made in the invention without departing from the spirit and scope thereof and therefore the invention is not limited by that which is shown in the drawings and described in the specification but only as indicated in the appended claims.

What is claimed is:

1. A portable container and adjustable closure therefor comprising a container having a hollow cylindrical neck provided with external screw threads, an outer end portion of reduced diameter and an annular shoulder between said end portion and the outer diameter of said neck; a generally cylindrical cap of moldable material provided with internal screw threads and a transverse end wall having therein a central aperture surrounded by an annular lip and an external flange at the opposite end thereof said cap being threadable on the screw threaded portion of said container neck; an external flange on said container neck adjacent the inner end of the screw threads thereon engageable by the flange on said cap to determine the inner position of the cap relative to the container neck; an internal annular shoulder in said cap at the junction of said end wall with the cylindrical portion thereof; a seal supporting disc in said cap having a diameter substantially equal to the internal diameter of said cap and bearing marginally against said internal shoulder; a disc of sealing material secured centrally to one side of said supporting disc in position to overlie the reduced end portion of said container neck to close the container, said supporting disc having therein a series of apertures surrounding said disc of sealing material to provide a passage for container contents when said sealing disc is spaced from the end of said reduced extension of the container neck; an annular washer of resilient material carried by said cap and surrounding the reduced end portion of said container neck to hold said disc in contact with said internal cap shoulder and provide a seal between said cap and said container neck; and a metallic ring of generally channel shaped cross section overlying the flange at the end of said cap and the corresponding external flange on said container neck to retain said cap on said neck against separation while permitting turning of said cap on said container neck screw threads to move said disc of sealing material toward and away from the outer end of the reduced extension of said container neck.

2. A portable container and closure therefor comprising a container having an externally screw threaded neck provided with a longitudinal bore; a generally cylindrical internally screw threaded cap threaded onto said neck; a seal support carried transversely of said cap and provided with marginal apertures; a disc type seal carried by said support centrally thereof in position to seal the outer end of said neck; and a sealing washer of resilient material secured in said cap and surrounding the outer end portion of said container neck and bearing against the marginal surface of said seal support to position said support and said seal in said cap.

3. A portable container and closure therefor comprising a container having a hollow neck provided with external screw threads and with an apertured end portion of reduced diameter beyond said screw threads; a cylindrical cap threaded upon the external screw threads on the container neck and having a necked in end portion and an internal annular shoulder within said end portion; a disc shaped member extending transversely of said cap and having its marginal portion seated against said shoulder; a disc of sealing material carried by said supporting member in position to overlie said aperture in the reduced outer end portion of said container neck; and a washer of resilient material carried by said cap and surrounding the reduced portion of said container neck with a sealing fit, said washer bearing against the marginal portion of said disc-shaped support opposite said internal cap shoulder to hold said seal support against said cap shoulder when the cap is turned inwardly and outwardly on the screw threads provided on the container neck, and to return container contents from the interior of said cap to the interior of said container when said container is moved from an inverted to an upright position.

4. A portable container and closure therefor comprising a container having a hollow neck portion provided with external screw threads, an extension of reduced diameter at the outer end thereof and an annular shoulder surrounding said extension; a generally cylindrical internally screw threaded cap threaded onto said container neck and having a necked in end portion and an internal annular shoulder at the end of said necked in end portion joining the cylindrical portion of the cap; a seal supporting disc and a disc seal supported thereby disposed within said cap with the marginal portion of said supporting disc overlying said internal shoulder and said seal disc overlying the reduced extension of the container neck, said supporting disc having therein a series of apertures surrounding said seal disc; and an annular washer of resilient material frictionally held in said cap surrounding the reduced extension on said container neck and bearing against the adjacent marginal surface of said seal supporting disc outside of said apertures to urge said seal supporting disc against said internal cap shoulder whereby said seal is moved relative to the outer end of the reduced portion of the container neck when said cap is turned inwardly and outwardly on the screw threads provided on said container neck.

5. A portable container and a closure therefor comprising a container having a cylindrical hollow neck provided with external screw threads, an outer end portion of reduced diameter and an annular shoulder surrounding said outer end portion; a generally cylindrical internally screw threaded cap formed of moldable material and provided with internal screw threads engageable with the screw threads on said neck, and an internal shoulder opposing the shoulder surrounding the reduced extension provided on said container neck; a seal support carried transversely of said cap and provided with marginal apertures; a disc type seal carried by said support centrally thereof in position to seal the reduced end portion of said container neck said seal support being supported in said cap against said internal shoulder; and an annular sealing washer of resilient material surrounding the reduced extension of said container neck between the shoulder on said container neck and said closure means providing a fluid tight seal between said container and said cap to prevent the leakage of container contents between the threads on the container neck and internally of said cap.

6. A portable container and a closure therefor comprising a container having a cylindrical hollow neck provided with external screw threads, an outer end portion of reduced diameter and an annular shoulder surrounding said outer end portion; a generally cylindrical internally screw threaded cap formed of moldable material and provided with internal screw threads engageable with the screw threads on said neck and an in-

ternal shoulder opposing the shoulder surrounding the reduced extension provided on said container neck; closure means for the reduced end portion of said container neck supported in said cap against said internal shoulder; and an annular washer of resilient material surrounding the reduced extension of said container neck between the shoulder on said container neck and said closure means providing a fluid tight seal between said container and said cap to prevent the leakage of container contents between the threads on the container neck and internally of said cap, said washer of resilient material having an annular extension of reduced cross sectional area around the rim thereof contacting the outer edge portion of said closure means opposite said cap shoulder.

7. A portable container and closure therefor comprising a container having a cylindrical hollow neck provided with external screw threads, an outer end portion of reduced diameter and an annular shoulder surrounding said outer end portion; a generally cylindrical internally screw threaded cap formed of moldable material and provided with internal screw threads engageable with the screw threads on said neck, and an internal shoulder opposing the shoulder surrounding the reduced extension provided on said container neck; a seal support carried transversely of said cap and provided with marginal apertures; a disc type seal carried by said support centrally thereof in position to seal the reduced end portion of said container neck said seal support being supported in said cap against said internal shoulder; and an annular sealing washer of resilient material surrounding the reduced extension of said container neck between the shoulder on said container neck and said closure means providing a fluid tight seal between said container and said cap to prevent the leakage of container contents between the threads on the container neck and internally of said cap; said washer of resilient material comprising an annular member having an inner circular bead closely surrounding the reduced end portion of the container neck, an outer circular bead of larger diameter than said inner bead having a stiffening core therein contacting the outer edge portion of said closure means opposite said cap shoulder, and a curved annular wall extending between said beads.

8. A portable container and closure therefor comprising a container having a cylindrical hollow neck provided with external screw threads, an outer end portion of reduced diameter and an annular shoulder surrounding said outer end portion; a generally cylindrical internally screw threaded cap formed of moldable material and provided with internal screw threads engageable with the screw threads on said neck, and an internal shoulder opposing the shoulder surrounding the reduced extension provided on said container neck; a seal support carried transversely of said cap and provided with marginal apertures; a disc type seal carried by said support centrally thereof in position to seal the reduced end portion of said container neck said seal support being supported in said cap against said internal shoulder; and an annular sealing washer of resilient material surrounding the reduced extension of said container neck between the shoulder on said container neck and said closure means providing a fluid tight seal between said container and said cap to prevent the leakage of container contents between the threads on the container neck and internally of said cap; said

washer of resilient material comprising an annular member having an inner circular bead closely surrounding the reduced end portion of the container neck, an outer circular bead of larger diameter than said inner bead having a stiffening core therein contacting the outer edge portion of said closure means opposite said cap shoulder, and a curved annular wall extending between said beads and decreasing in thickness from said inner to said outer bead.

9. Closure means for a portable container having a hollow cylindrical neck provided with external screw threads and an outer end portion of reduced diameter, said closure means comprising a generally cylindrical cap provided with internal screw threads engageable with the external screw threads on said container neck and having an internal annular shoulder; and a seal support carried by said cap operative to close said container comprising a thin metal supporting disc adapted to be disposed in said cap against said internal shoulder and a disc of sealing material centrally disposed on one side of said supporting disc in position to overlie said reduced end portion of said container neck, said supporting disc having apertures therein around said disc of sealing material, and tongues struck out of said apertures and bent over said disc of sealing material to secure said disc of sealing material to said supporting disc; and a sealing washer of resilient material secured in said cap and surrounding the outer end portion of said container neck and bearing against the marginal surface of said seal support to position said support against said internal annular shoulder.

10. In combination with a portable container having a hollow cylindrical neck provided with external screw threads and an end portion of reduced diameter providing an annular shoulder at the end of said neck surrounding said reduced end portion; and a generally cylindrical cap provided with internal threads engageable with the external threads on said container neck and having an internal annular shoulder; a combined sealing closure and gasket for said container adapted to be seated in said cap against said internal shoulder comprising a washer of resilient material having an inner bead dimensioned to fit the reduced extension of said container neck, an outer bead dimensioned to fit the interior of said cap, a curved flexible annular wall connecting said beads, a seal supporting disc having the outer edge portion thereof rolled over the outer bead of said resilient washer to secure said disc and said washer, and a disc of sealing material secured to the surface of said supporting disc within said washer, said supporting disc having a series of apertures surrounding said disc of sealing material providing a passage for container contents.

11. A portable container and closure therefor comprising a container having an externally screw threaded neck provided with a longitudinal bore; a generally cylindrical internally screw threaded cap threaded onto said container neck; a seal support carried transversely of said cap and provided with marginal apertures; and a seal carried by said support centrally thereof in position to seal the outer end of said neck when said cap is turned inwardly on said screw threads; and a sealing washer of resilient material secured in said cap and surrounding the outer end portion of said container neck and bearing against the marginal surface of said seal support to position said support and said seal in said cap

and retaining means permanently associating said cap with said container but permitting relative movement therebetween comprising an external annular flange on said container, an external annular flange on the end of said cap adjacent said container flange, and a generally channel shaped metal ring overlying and engageable with said flanges, said ring being substantially wider than the combined thickness of both of said flanges.

12. A portable container and closure therefor comprising a container having an externally screw threaded neck provided with a longitudinal bore; a generally cylindrical internally screw threaded cap threaded onto said container neck; a seal support carried transversely of said cap and provided with marginal apertures; and a seal carried by said support centrally thereof in position to seal the outer end of said neck when said cap is turned inwardly on said screw threads; and a sealing washer of resilient material secured in said cap and surrounding the outer end portion of said container neck and bearing against the marginal surface of said seal support to position said support and said seal in said cap and retaining means permanently associating said cap with said container but permitting relative movement therebetween comprising an external annular flange on said container, an external annular flange on the end of said cap adjacent said container flange, and a generally channel shaped metal ring overlying and engageable with said flanges, said ring being substantially wider than the combined thickness of both of said flanges, said metal ring having along one edge thereof a rolled bead portion comprising a series of separate resilient fingers bendable within the elastic limits of the material thereof to pass over said flanges and to engage said container flange after said ring has been assembled in operative association with said container and said cap.

13. A portable container and adjustable closure therefor comprising a container having a hollow cylindrical neck provided with external screw threads and an outer end portion of reduced diameter, and an annular shoulder between said end portion and the outer diameter of said neck; a generally cylindrical cap of moldable material provided with internal screw threads and a transverse end wall having therein a central aperture surrounded by an annular lip and an external flange at the opposite end thereof said cap being threadable on the screw threaded portion of said container neck; an external flange on said container neck adjacent the inner end of the screw threads thereon engageable by the flange on said cap to determine the inner position of the cap relative to the container neck; an internal annular shoulder in said cap at the junction of said end wall with the cylindrical portion thereof; a disc in said cap having a diameter substantially equal to the internal diameter of said cap and bearing marginally against said internal shoulder; a disc of sealing material secured centrally to one side of said supporting disc in position to overlie the reduced end portion of said container neck to close the container, said supporting disc having therein a series of apertures surrounding said disc of sealing material to provide a passage for container contents when said sealing disc is spaced from the end of said reduced extension of the container neck; an annular washer surrounding the reduced end portion of said container neck and bearing against the adjacent internal surface of said cap and the marginal surface of said supporting disc opposite said internal shoulder to hold said disc in contact with said internal shoulder; and a metallic ring of generally channel shaped cross section overlying the flange at the end of said cap and the corresponding external flange on said container neck to retain said cap on said neck against separation while permitting turning of said cap on said container neck screw threads to move said disc of sealing material toward and away from the outer end of the reduced extension of said container neck, said cap being formed of moldable material and having an ornamentally roughened outer surface to provide a hand grip for turning said cap on said container neck.

14. A portable container and closure therefor comprising a hollow cylindrical neck having external screw threads thereon, an annular radial shoulder at the outer end thereof and an extension of reduced diameter having an annular groove adjacent said shoulder and an externally beaded end portion beyond said groove; a generally cylindrical cap provided with internal screw threads engageable with the screw threads on said container neck and having a necked in end portion provided with a pouring aperture surrounded by an annular lip and an internal shoulder substantially at the junction of the necked in end portion with the cylindrical portion of said cap; a sealing member comprising an apertured supporting disc having its marginal portion seated against said internal shoulder, and a disc of sealing material carried centrally of said supporting disc in position to overlie the reduced end portion of the container neck; an annular gasket of resilient material comprising an inner bead closely surrounding the reduced portion of said container neck and fitting into said groove, an outer bead having a stiffening member therein and bearing against the marginal portion of said supporting disc opposite said internal shoulder and against the internal wall of said cap adjacent said shoulder, and a flexible annular wall extending between said inner and said outer bead; a flange on the end of said cap opposite said necked in end portion; a corresponding external flange on said container neck inwardly of said external screw threads; and a metallic band of generally channel shaped cross section overlying said flanges to retain said cap on said container neck while permitting limited relative movement and rotation of the cap relative to the container neck to move said disc of sealing material toward and away from the outer end of the reduced end portion of the container neck.

15. A portable container and closure therefor comprising a hollow cylindrical container neck provided with external screw threads and having a transverse end wall and a tubular extension of reduced diameter projecting centrally from said end wall, the portion of the end wall surrounding said extension providing an annular radial shoulder; a generally cylindrical cap of moldable material having internal screw threads engageable with the external screw threads on said container neck and provided with a transversely extending end wall having an aperture surrounded by an annular pouring lip, said cap having an internal annular shoulder substantially at the junction of said end wall with the cylindrical portion of the cap and having a thickened cylindrical portion between said shoulder and said internal screw threads; a sealing member comprising an apertured supporting disc having the

marginal portion seated against said internal shoulder and having a disc of sealing material supported centrally thereon in position to cover the end of the reduced extension of said container neck, the apertures in said supporting disc surrounding said disc of insulating material; an annular washer of resilient material disposed between the reduced extension of said container neck and the adjacent internal surface of said cap, said washer having an annular extension seated in a groove provided interiorly of said cap so that said washer is secured to said cap against movement relative thereto and moves along the reduced extension of said container neck when said cap is turned inwardly and outwardly on said screw threads and having an annular extension around the rim thereof bearing against the marginal portion of said seal supporting disc opposite said internal shoulder in said cap to resiliently maintain said seal supporting disc seated against said internal shoulder; and a weight having a neck portion of reduced diameter positioned in the aperture in the end wall of said cap.

16. A portable container and closure therefor comprising a container having an externally screw-threaded neck provided with a longitudinal bore, said neck having an outer end portion of reduced diameter; a generally cylindrical internally screw-threaded cap threaded onto said neck; a separate seal support carried transversely within said cap and provided with marginal apertures; a disc type seal carried by said support centrally thereof in position to seal the outer end of said neck; and an annular sealing washer of resilient material surrounding the outer end portion of said neck and contacting the interior surface of said cap adjacent said seal support.

17. A portable container and closure therefor comprising a container having an externally screw-threaded neck provided with a longitudinal bore; a generally cylindrical internally screw-threaded cap threaded onto said neck; a seal support carried transversely of said cap and provided with marginal apertures; said seal support having a depending peripheral flange; a disc type seal carried by said support centrally thereof in position to seal the outer end of said neck; and a sealing washer of resilient material secured in said cap and surrounding the outer end portion of said container neck and bearing against the marginal portion of said seal support to position said support and said seal in said cap.

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