

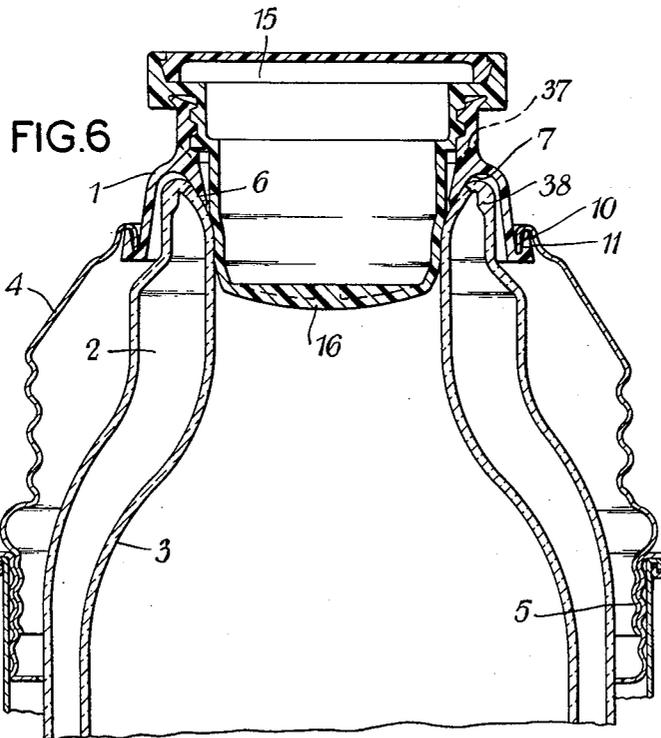
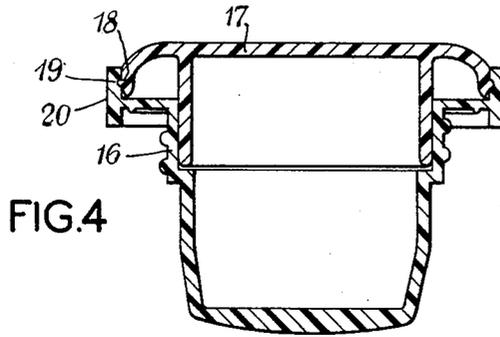
March 26, 1963

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VACUUM FLASKS

3,082,895

Filed Dec. 31, 1957

2 Sheets-Sheet 2



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3,082,895

VACUUM FLASKS

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Filed Dec. 31, 1957, Ser. No. 706,321

Claims priority, application Great Britain Jan. 8, 1957
12 Claims. (Cl. 215-13)

The present invention relates to vacuum flasks and like containers where the actual container for the liquid or other material to be received is housed within an outer canister or like casing.

The invention relates in one aspect to pouring lips for such containers of the type where a pouring lip is a separate member of annular form made preferably of a resilient flexible material such as polyethylene and is located to encircle the neck of the flask and be held in place by engagement of the lip member at or towards its lower margin with a surrounding portion of the canister in which the flask is housed. The invention also relates to pouring lips of the type indicated having associated stopper means providing a closure to the flask.

An object of the present invention is to provide a construction of pouring lip of the type indicated which has improved sealing contact with the mouth of the flask it surrounds whereby the contents of the flask can be easily poured out and leakage of the contents into the space between the flask and its surrounding canister is prevented.

A further object of the present invention is to provide a construction of pouring lip of the type indicated and according to the preceding paragraph, in which the improved sealing effect is achieved despite irregularities of the mouth of the flask produced during the fusion and working of the inner and outer flask walls in known manner in the vicinity of the flask mouth.

A still further object of the present invention is to provide a construction of pouring lip of the type indicated and according to the preceding paragraphs, and stopper means for the flask, associated with the pouring lip, having improved means for securing the stopper in situ.

In the manufacture of vacuum flasks, the flask proper (sometimes referred to as the "inner" or the "refill") is made up of two glass vessels, an innermost vessel shaped with a neck having a flared mouth and an outermost vessel having initially a constant diameter cylindrical section so that the innermost vessel can be located within the outermost with an intervening space in known manner. The wall of the outermost vessel in the vicinity of the neck of the innermost vessel is then softened and moulded to conform generally to the neck shape of the flask and the rim of the innermost and outermost vessels brought together and welded around the periphery to complete the double-walled flask. The softening and moulding of the outermost vessel and the welding step (hereinafter referred to as "working") is liable to distort the regularity of the exterior surface of the flask neck and the mouth of the flask at the line of junction of the two vessels. For this reason the lip rim and external neck of the flask may be irregular both as to precise size and shape.

The present invention in one aspect comprises stopper means for a vacuum flask or like container of the type indicated and includes an annular pouring lip member having means for engaging the canister, resilient flexible means for providing a seal between itself and the inner face of the mouth of the flask and screw means for engaging a stopper provided with corresponding screw surfaces. In one preferred form of the invention the screw means comprises a screw thread formed on the inside of the pouring lip member. In an alternative form the screw thread is formed on the outside of the pouring lip member.

Other screw means besides a screw thread may be em-

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ployed and, for example, the engaging faces of the pouring lip member and the stopper may be provided with complementary inclined lugs or other complementary inclined inter-engaging surfaces.

5 Conveniently the stopper may also be provided with a depending bung made of a resilient material which enters the neck of the flask to provide a fluid-tight seal therewith.

10 According to another aspect of the invention a pouring lip member for a vacuum flask or like container of the type indicated comprises an annular member having means at its lower end to engage the canister or other casing and having an inwardly and downwardly directed skirt member of a resilient flexible material adapted to engage on its under surface the inner side of the lip of the mouth of the flask to form a seal between the pouring lip member and the mouth of the flask.

15 In a preferred form a second skirt member of a resilient and flexible material depends from the inside of the pouring lip member and is spaced outwardly from and extended below the first skirt and is adapted to engage the outside of the neck of the flask.

The invention will now be described with reference to the accompanying drawings in which:

25 FIGURE 1 shows a vacuum flask assembly incorporating features of the present invention;

FIGURE 2 shows on a large scale and in cross section the upper end of the flask shown in FIGURE 1;

FIGURE 3 shows a detail of construction;

30 FIGURE 4 shows in section details of construction of the stopper;

FIGURE 5 shows in cross section an alternative construction embodying features of the present invention; and

35 FIGURE 6 shows a further construction also in cross section.

Referring to the construction shown in FIGURES 1 to 4 a pouring lip member 1 which is made of a resilient flexible material such as polyethylene is located to encircle the neck 2 of the flask 3 it being held in position in the manner to be described by the metal shoulder 4 of the canister 5 in which the flask is housed.

The pouring lip member 1 has an internal annular skirt 6 located intermediate the upper and lower margins which skirt 6 extends radially inwardly and downwardly with respect to the axis of the pouring lip member to provide an undersurface 7 of substantially frusto-conical form. As shown in FIGURE 2 the pouring lip member 1 is so shaped on its inner surface as to be spaced from the neck of the flask.

40 Projecting from the inner face of the pouring lip member at a point lower than the skirt 6 is a second skirt 8 which is preferably relatively thin and flexible compared to the skirt 6. This second skirt 8 is so disposed as to make contact with the outside of the neck 2 of the flask 3 to provide an additional sealing line between the pouring lip member 1 and the flask neck 2 to supplement that provided by the contact between the skirt 6 and the mouth of the flask. It further serves as an additional support for the flask. When the pouring lip member 1 is engaged by the shoulder member of the canister it is drawn downwardly so that the skirt 6 presses against the relatively regular surface of the flask mouth to centralise the flask mouth in respect to the skirt 6 and to hold it there; at the same time it provides a liquid seal between the pouring lip member and the flask to prevent leakage through the joint. Since the second skirt 8 is also flexible and since the flask does not normally contact the pouring lip member except by the skirts 6 and 8 the correct centre positioning of the pouring lip member relative to the flask is not affected by any variation which may occur on the upper and outer side of the mouth of the flask resulting from its manufacturing process. The shoulder member

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4, which usually is of metal, engages the pouring lip member 1 by means of a downwardly directed flange 10 which engages in a groove 11 formed about the lower end of the pouring lip member. A preferred form which prevents relative rotation between the two is shown in FIGURE 3. The bottom of the groove 11 is provided with a plurality of projections 12 which are engaged by corresponding cut-out portions 13 in the flange 11. It will be apparent that when the shoulder 4 is screwed into the body of the canister 5 and the pouring member pulled down into firm engagement with the flask 3 the projections 12 engage with the cut-out portions 13 to prevent rotation occurring between the pouring lip member 1 and the shoulder member 4.

The inner face of the pouring lip member 1 is provided with screw threading 14 to receive a screw threaded stopper 15. The screw threaded stopper 15 is provided with a depending bung 16 which may be in the form of a hollow moulding of polyethylene or other flexible resilient material. When the stopper is screwed home the bung 16 enters the mouth of the flask 3 to form a fluid tight seal. A further seal is of course provided between the threaded portions of the pouring lip member 1 and the stopper.

The stopper 15 may comprise a hollow moulding 16 of a resilient flexible material which is reinforced at the head and over the screw-threaded portion by a non-resilient non-flexible reinforcing member 17. This reinforcing member 17 may form a push-fit into the moulding 16 and if desired may also be retained by a ridge 18 on the member 17 engaging a groove 19 in the rim 20 of the stopper. By providing this non-flexible non-resilient reinforcement the threading of the stopper although made of flexible resilient material is prevented from being deformed out of engagement with the screw thread on the pouring lip member.

The rim 20 of the stopper 15 is provided with a depending flange 21 which serves to engage the pouring edge 22 of the pouring lip member to serve as a further seal and also to serve as a reinforcement for the upper end of the pouring lip member to resist any tendency of the pouring lip member to expand by the stopper 15 being screwed down and for the threads to slip out of engagement.

On the undersurface of the stopper 23 there is formed an annular ridge 24 which when the stopper is screwed home engages on the inside face of the pouring edge 22 and presses it into engagement with the flange 21.

When the engaging surfaces of the stopper 15 and the pouring lip member 1 are made of flexible resilient material such as polyethylene the stopper 15 is held firmly when screwed home and does not tend to become unscrewed under shaking or vibrating conditions.

As an additional reinforcement for the pouring neck member or as an alternative to the depending flange 21 a non-flexible non-resilient collar 25, shown in dotted line, may be secured round the threaded portion of the pouring lip member 1.

By making the pouring lip member 1 wholly of a flexible resilient material or as an alternative by making the skirts 6 and 8 of a flexible resilient material it is possible successfully to provide a stopper which is screw threaded in the pouring lip member and which at the same time has a depending bung which engages only the neck 2 of the flask 3. Thus the stopper engages over different portions the pouring lip member 1 and the flask 3. However the bung 16 serves also to align the flask 3 and when forced home the flexible skirts 6 and 8 and if the pouring lip member 1 is made wholly of a flexible resilient material the flexibility of this member allows the flask, the pouring lip member, and the stopper all to be aligned to allow threaded engagement between the stopper and the pouring lip member 1 and a force fit of the bung 16 in the neck 2 of the flask.

FIGURE 5 shows a construction in which the screw

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thread is formed on the outside face 26 of the pouring lip member 1. On the left hand side of the centre line is shown a form of stopper in which the annular portion 27 comprises a rim having two depending flanges 28 and 29 screw threads being formed on the inner face of the depending flange 28. The outer face of the depending flange 29 is downwardly and inwardly inclined with respect to the axis of the stopper and the inner face of the pouring lip member 1 is similarly formed so that as the stopper is screwed home a wedging action occurs between the two faces.

The annular member 27 is made of flexible resilient material and in order to reinforce it it is provided with an upstanding flange 30 into which is forced the non-resilient non-flexible moulded reinforcement 31 which serves as the top of the stopper and is also provided with a depending skirt 32 which reinforces the flange 29. Any tendency for the flange 28 to jump its threading is resisted by the member 31 bearing against the flange 30.

On the right hand side of the centre line there is shown a somewhat similar construction but in this case the depending flange 29 is shorter than the flange 28 leaving a clear space between the stopper and the inner face of the pouring lip member 1.

An alternative interlocking connection between the pouring lip member 1 and the shoulder of the canister is shown. Instead of the pouring lip member 1 being provided with a substantially vertical annular groove as shown in FIGURE 2 the lower end of the pouring lip member is formed with a horizontal shoulder 34 upon which a corresponding radially inwardly extending shoulder on the canister engages. Spaced around this shoulder 34 are a number of lugs 35 which engage recesses in the radially and inwardly extending shoulders on the canister so that a non-rotating engagement is made between the pouring lip member 1 and the canister.

In FIGURE 6 is shown a pouring lip member in which the lower and second skirt is dispensed with there being only the single skirt 6.

It will be realised that the pouring lip member 1 may be used with closure means other than screw closure means and for example the pouring edge may be formed along the dotted line 37 and an ordinary cork bung used to close the flask. In this figure there is shown the thickening 38 which occurs at the join between the inner and outer vessels forming the flask and it is along this line around the mouth that the greatest irregularities occur. As shown in this drawing it will be seen that the pouring lip member stands clear of the flask at this point. This allows for small differences in the flasks to be accommodated.

Whilst the invention has been described and is illustrated with reference to a construction in which a separate metal shoulder serves to engage the pouring lip member and the body of the canister it will be realised that the invention includes the form in which the pouring lip member is extended downwardly also to form the shoulder and is provided with screw threading or other means for engaging the body of the canister in such a manner that it can be drawn downwardly until the skirt 6 and the skirt 8, when provided, engages the flask.

What I claim is:

1. Stopper means for a vacuum insulated flask having a neck provided with an open mouth at the end thereof, and a casing enclosing the said flask, the said stopper means including an annular pouring lip member adapted to surround the neck of the flask, means on said pouring lip member for engaging the casing surrounding the flask, resilient means on said pouring lip member for sealingly engaging the inner surface of the mouth of the flask, a stopper engageable with said pouring lip member for closing the mouth of the flask, and cooperating screw surfaces on said stopper and said pouring lip member for retaining the stopper engaged on the pouring lip member.

2. Stopper means as claimed in claim 1, including a

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bung portion depending from said stopper for sealingly engaging within the neck of the flask when the stopper is engaged with the pouring lip member.

3. Stopper means for a vacuum insulated flask having a neck provided with an open mouth at the end thereof, and a casing enclosing the said flask, the said stopper means including an annular pouring lip member adapted to surround the neck of the flask, a pouring rim on said pouring lip member, means on said pouring lip member for engagement with the casing surrounding the flask, resilient means on said pouring lip member for sealingly engaging the inner surface of the mouth of the flask, screw surfaces formed on the inner surface of the pouring lip member, a stopper insertable within the pouring lip member to close the mouth of the flask, screw surfaces on said stopper for cooperating with said first-mentioned screw surfaces to retain the stopper in the pouring lip member, a head on said stopper, and a peripheral flange depending from said head for engaging the pouring rim of the pouring lip member.

4. Stopper means as claimed in claim 3, including a ridge depending from the head of the stopper concentric with and spaced inwardly from the said peripheral flange, the said ridge bearing against the pouring rim to press it into sealing engagement with the flange when the stopper is screwed home.

5. Stopper means as claimed in claim 4, including a bung portion depending from the stopper for sealingly engaging in the neck of the flask when the stopper is screwed home.

6. Stopper means for a vacuum insulated flask having a neck provided with an open mouth at the end thereof, and a casing enclosing the said flask, the said stopper means including an annular pouring lip member adapted to surround the neck of the flask, a pouring rim on said pouring lip member, means on said pouring lip member for engagement with the casing surrounding the flask, resilient means on said pouring lip member for sealingly engaging the inner surface of the mouth of the flask, screw surfaces formed on the outer surface of the pouring lip member, a stopper engageable with the pouring lip member for closing the mouth of the flask, a depending peripheral flange on said stopper, screw surfaces formed on the inner surface of said flange and engageable with the screw surfaces of the pouring lip member to secure the stopper thereon, a second depending flange on said stopper concentric with said first-mentioned flange and spaced inwardly therefrom, and an inclined outer surface on said second flange for frictionally engaging the inside of the pouring lip member when the stopper is screwed home.

7. Stopper means as claimed in claim 6, including a bung portion depending from the stopper for sealingly engaging in the neck of the flask when the stopper is screwed home.

8. Stopper means for a vacuum insulated flask having a neck provided with an open mouth at the end thereof, and a casing enclosing the said flask, the said stopper means comprising an annular pouring lip member adapted to surround the neck of the flask in spaced relation therewith, means on said pouring lip member for engaging the casing surrounding the flask, an inwardly and downwardly directed skirt member of a resilient flexible material on said pouring lip member for sealingly engaging the inner surface of the mouth of the flask, a second resilient and flexible skirt member on said pouring lip member for engaging the neck of the flask to support the pouring lip member in said spaced relation therewith, a stopper engageable with said pouring lip member for

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closing the mouth of the flask, and cooperating screw surfaces on said stopper and said pouring lip member for retaining the stopper engaged on the pouring lip member.

9. A vacuum insulated flask, a neck on said flask, an open mouth at the end of said neck, a casing enclosing the said flask, and stopper means for closing the mouth of the flask, the said stopper means comprising an annular pouring lip member adapted to surround the neck of the flask, means on said pouring lip member for engaging the casing surrounding the flask, resilient means on said pouring lip member for sealingly engaging the inner surface of the mouth of the flask, a stopper engageable with said pouring lip member for closing the mouth of the flask, and cooperating screw surfaces on said stopper and said pouring lip member for retaining the stopper engaged on the pouring lip member and a bung portion depending from said stopper for sealingly engaging within the neck of the flask when the stopper is engaged with the pouring lip member.

10. A pouring lip member for a vacuum flask comprising an annular member having a casing-receiving annular groove at its lower end to engage the canister member, an inwardly and downwardly directed skirt member of a resilient flexible material adapted to engage on its under surface the inner side of the lip of the flask to form a seal between the pouring lip member and the mouth of the flask, and interengaging means within the groove at the lower end of the pouring lip member to engage complementary means on the canister and prevent rotation of the pouring lip member on the canister.

11. A pouring lip member for a vacuum flask comprising an annular member having means at its lower end to engage the canister member, and an inwardly and downwardly directed skirt member of a resilient flexible material adapted to engage on its under surface the inner side of the lip of the flask to form a seal between the pouring lip member and the mouth of the flask, the pouring lip member having at its lower end an annular groove provided with projections to interlock with complementary depressions formed in a flange in the canister to prevent rotation of the pouring lip member on the canister.

12. A pouring lip for a vacuum flask having a neck provided with an open mouth at one end thereof, said mouth having an inwardly and downwardly sloping inner surface and a casing enclosing the flask, said pouring lip comprising an annular pouring lip member having a downwardly extending flange adapted to surround the neck of the flask in spaced relation therewith, interengaging means on the lower end of said flange for engaging the casing surrounding the flask, an inwardly and downwardly directed skirt member of a resilient flexible material on said pouring lip member for sealingly engaging the inwardly and downwardly sloping inner surface of the mouth of the flask, and a second resilient and flexible skirt member on the inner face of said flange for engaging the outer surface of the neck of the flask to support the pouring lip member in said spaced relation therewith.

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