

A CONTAINER

The present invention relates to a liquid container provided with a dosing cap and a pouring insert for the container. The cap is preferably cup-shaped and is preferably fitted and held preferably as a force fit, e.g. jammed, into the container neck and reduces the original cross-section of the container neck, e.g. to 1/10 or less. The insert is cup-shaped and the base area of such a pouring insert, when inserted, is positioned lower in the container than its opening area.

The function of the insert is to reduce the stream of liquid flowing out of the container on pouring so as to make it easier to fill the dosing cap without spilling.

In a known pouring insert of this type (EP 0.109,704 - GB 2150102) the side wall is cylindrical and a sloping partition extends across it forming a base area. A cylindrical pouring spout extends up from this sloping partition coaxial with the side wall. An additional air vent opening is provided in the lowest region of the sloping partition. In the embodiment shown in that document, this known pouring insert reduces the original cross-section of the container neck into which it is inserted to approximately 1/10, so that the liquid is discharged from the container in a smaller stream than in the case of a completely free container neck. The dosing cap can thus be filled much more easily, as is desirable, for example, in the case of soft scourer bottles and the like.

In the known pouring insert, egress of the contents takes place through the pouring spout and during this pouring process the additional air vent

2.

opening in the partition has be in a position above the discharge opening of the pouring spout, if pressure compensation is to be obtained through the air vent opening, thus ensuring smooth flow rather than jerky flow. If the container is held in such a way that liquid can also flow out through the air vent opening in the partition, such liquid is unlikely to pass into the dosing cap and instead is more likely to flow down beside the latter and be spilt.

British Patent Application No. 8526372 Serial No. 2168945 is directed to a pouring insert for a container comprising means for sealingly locating the insert in the neck of the container and affording a septum extending across and within the opening of the container, the septum affording opening means for egress of the contents from the container, and access thereto of liquids falling onto the septum, the said opening means being spaced from the axis of the insert and affording egress at locations distributed around the axis over an angle in excess of 180° , the septum affording an annular region linking a base area and the side walls of the insert, the annular region being the most remote region of the insert from the opening of the container in use of the insert, and in which the opening means contact or are located in the annular region.

According to the present invention there is provided a liquid container provided with a dosing cap and a pouring insert located in the neck of the

container, the cap when secured on the container nesting its portion which is within the container within the insert, the cap being provided with skirt means extending out from between the ends of the cap and in use adapted to extend outside the neck of the container and provided with co-operating means on the inside face of the skirt adapted to secure the cap to co-operating means on the outside of the neck of the container, sealing means being afforded between the pouring insert and the neck of the container and between the pouring insert and the cap.

The means for sealingly locating the insert in the neck of the container are preferably a circumferential outwardly facing annular shoulder dimensioned to be a force fit in the neck of the container. Stop means may also be provided on the

insert to prevent it being pushed right through the neck of the container during insertion therein. In a modified arrangement the insert may be provided with outwardly extending skirt means which nest over the neck of the container and desirably the inside face of these skirt means may be provided with structures cooperatively shaped with structures on the outside of the neck of the container so as to be capable of engaging each other preferably releasably so as to hold the insert positively onto the container.

The insert may also afford engagement means cooperating with engagement means on the dosing cap, e.g. cooperating screw threads.

These engagement means may be located on the inner face of the insert outwardly of the septum or when the insert is provided with outwardly extending skirt means on the outer face of the said skirt means. In a preferred form of the invention there is provided a liquid container having a threaded neck, a pouring insert disposed in the said neck, a dosing cap threadedly secured to the said neck, sealing means afforded by or in part by the said insert to effect a seal between the said insert and the said neck, the said insert having a base area provided with an opening therein, the said dosing cap extending into the said insert, the said dosing cap having integral therewith an outwardly disposed threaded skirt, threadedly securable to the said neck, the said insert affording or in part affording sealing means extending outwardly of the said neck and engageable with the said dosing cap.

5.

The invention also provides a closure assembly for a container, the closure assembly consisting of a cap and a cup-shaped pouring insert affording a septum which in use in the container extends across and within the container, which cap in use nests a substantial portion of its internal depth within the insert. Substantial portion in this context means at least 25%, e.g. 30% to 60%, especially 35% to 50%.

In this embodiment the dosing cap may be provided with external cooperating means disposed between its ends rather than at its open end. These may be on the outside surface of the walls of the cap to engage the inside surface of the insert. Stop means can preferably be provided on the cap to ensure that it cannot be inserted beyond a predetermined desired distance into the cap.

The cap may also or instead be provided with cap skirt means extending out from between its ends and in use adapted to envelope the neck of the container or the outwardly extending skirt means on the

5. insert. The cap skirt means is preferably provided with internally disposed engagement means enabling the cap to be secured to cooperating means on the neck of the container or the skirt of the insert.

10. The invention also extends to a combination of the insert and cap adapted to nest a substantial portion of its length therein.

- According to a preferred embodiment of the present invention, the pouring insert is a cup-shaped construction with at least three uniformly
15. circumferentially distributed openings. The openings are preferably in the form of slots, and desirably such openings or slots are each located in the side wall and the base area of the cup.

20. Thus, the pouring insert according to the present invention is preferably cup-shaped. When it is inserted into the container neck, its base area is located further within the container than its opening area and, independently of the way in which the
25. container is held during pouring, liquid only passes through some of the circumferentially distributed slots and out of the opening area, whilst at least one opening is available for producing a pressure compensation in the container.

30. It is desirable for the openings to extend into or be in the base area, because then liquid residues

can flow downwards out of the dosing cap after remounting the cap on the container after use and such residues are returned into the container by passing through the openings back into the container.

5. Admittedly, a cup-shaped pouring insert is already known (German Patent 1607982), which can be inserted in a container neck and has two facing openings in its side wall adjacent to the base area. However, this pouring insert can only be inserted in
10. the container neck in such a way that its base wall is located outside the container and its opening area forming the cup opening is located inside the container. In addition, this known pouring insert is not suitable for use in conjunction with containers
15. to be closed by dosing caps, because the residual material flowing downwards from the re-fitted dosing cap flows into an annular area of the pouring insert, but cannot get back into the container again.
20. According to a preferred embodiment of the invention, the base area of the pouring insert is convex in the direction of the open end thereof and the region between the side wall and the convex base area affords an annular transition area into which the openings extend.
25. The convexity of the base area imparts additional strength and stability to the pouring insert. In addition, residual material left in the dosing cap after its use can flow back out of the dosing cap and pass from the central part of the convex base area in
- 30.

8.

the direction of the openings and consequently into the container.

5. In order to be able to mechanically insert a pouring insert according to the present invention to a predetermined position within the container neck, it is desirable to provide on its open end an outwardly directed annular shoulder, adjacent to which a sealing surface is formed on the outer face of the side wall. The automatic inserting movement of the pouring insert is in this way limited by the engagement of the annular shoulder on the end face of the container neck and due to the sealing surface, there is simultaneously a sealing fit in the container neck.

10. In order to be able to firmly anchor the pouring insert on the container, an outer holding wall can emanate from the annular shoulder and run parallel to the side wall. This holding wall can pass in the direction of the base area and preferably has an anchoring projection on its inner face adapted to cooperate with a structure on the outer face of the neck of the container.

15. On inserting the pouring insert in the container neck, the anchoring projection can pass over a corresponding anchoring projection on the outer face of the container neck, accompanied by elastic deformation of the holding wall, so as to lockingly engage behind the said neck in the inserted end position.

20. With such a construction, a thread can be formed on the inner face of the side wall of the insert,

into which may be screwed an outer thread of the dosing cap.

With such a construction, the pouring insert and screwed-in dosing cap can be inserted as one unit and in a single operation into the container neck.

In order to achieve a reliable seal between the pouring insert and the dosing cap mounted on the container neck, an annular sealing surface can be provided on the pouring insert on the wall area forming the annular shoulder and on the side remote from the base area. This sealing surface sealingly engages with a corresponding sealing surface of the dosing cap, when the latter has been fitted.

Thus in a preferred form of the invention there is provided a closure assembly adapted for use with a container having a threaded neck, the assembly consisting of a pouring insert adapted to be disposed in the said neck of the container, a dosing cap adapted to be threadedly securable to the said neck, sealing means afforded by or in part by the said insert to effect a seal between the said insert and the said neck; the said insert having a base area provided with an opening therein, the said dosing cap when located on the container extending into the said insert, the said dosing cap having integral therewith an outwardly disposed threaded skirt, threadedly securable to the said neck, the said insert affording or in part affording sealing means which in use on the container extend outwardly of the said neck and which are engageable with the said dosing cap to effect a seal between the said insert and the said cap.

The invention may be put into practice in various ways and two specific embodiments will be described to illustrate the invention with reference to the accompanying drawings, in which:-

Figure 1A is a partial section through a container with a pouring insert in accordance with the present invention located in the neck of a container and a dosing cap screwed onto the neck of the container,

Figure 1B is an exploded version of Figure 1A showing the container, insert and cap separately but disposed on the same longitudinal axis 50, with the insert in the process of being located in the neck of the container,

Figure 2A is a view corresponding to Figure 1A of a second embodiment in which the dosing cap is screwed into the insert, and

Figure 2B is an exploded version of Figure 2A showing the container, insert and cap separately but disposed on the same longitudinal axis 50 with the insert in the process of being located in the neck of the container.

A container 1, the neck portion of which is shown in Figure 1, may be a soft scourer bottle. The container has a neck 2, on whose outer face is formed a thread 3, onto which is screwed a dosing cap 4 by means of an inner thread 5 located on the inside face of a skirt 40 of the dosing cap.

The skirt 40 extends out from the outer face of the side wall 45 of the cap approximately midway between its base and its open end. In fact, the length from the top of the skirt (the portion nearest the closed end) to the open end is 48% of the internal depth of the cap whilst the length from the underside of the skirt (point 41) is about 41%. A substantial portion of the depth of the cap is thus nested within the container (by being inserted within the insert).

According to a first embodiment of the present invention a cup-shaped pouring insert 7 is shown located as a force fit in the container neck 2, i.e. it is inserted by being pressed into the opening. The insert has a base area 9, 10 and in use this is located in the interior of container 2. The insert also has an open top or opening area which in use is located within and in the vicinity of the discharge opening of the neck 2 of the container. The pouring

- insert may be conveniently (and conventionally) made from elastic plastics material. The insert 7 has a cylindrical side wall 8, the upper outer edge of which affords three sealing surfaces, an axially
5. facing annular shoulder 42, an outwardly facing axially extending circumferential sealing face 12, and an inclined or conical inwardly facing sealing surface 13, the function of which will be described below. The shoulder 42 engages with and seals
10. against an annular shoulder 14 on the end face of the neck 2 of the container. The sealing face 12 of the insert engages with an inner face 43 of the neck of the container and seals therewith when the shoulders 42 and 14 are in engagement.
15. The base area of the cup-shaped pouring insert is curved upwardly in the direction of its opening area. An annular transition area 10 is located between it and the side wall 8. Slots 11 parallel to the longitudinal axis of the pouring insert 7 are
20. provided in side wall 8 and extend through the transition area 10 and just into the convex base area 9. This embodiment has six slots 11, which are uniformly circumferentially distributed.
- As mentioned above, the dosing cap 4 has a skirt
25. 40 and located on the inside face of the skirt 40 is a screw thread 5 adapted to cooperate with the thread 3 on the neck 2 of the container. Where the skirt connects to the side wall 45 of the dosing cap, an outwardly facing inclined or conical sealing surface
30. 6 is provided which is dimensioned and located so as to seal onto the surface 13 of the insert 7.

- When it is wished to pour some of the contents out of the container, the dosing cap 4 is unscrewed and the container 1 is tilted in such a way that its content flows out. Only a relatively small amount of
5. liquid passes out and this will be through only some of the slots 11. Thus, the pouring insert 7 restricts the original opening cross-section of the neck of the container to a considerably reduced value, specifically to about 1/10 or less. The much
10. smaller quantity of liquid flowing out of the container can be very easily filled into the dosing cap 4, as compared with the situation when the neck of the container is completely free. Filling of the cap can be controlled without difficulty and the
15. dosing cap 4 can be filled up to a given desired level. It is unimportant in what "turning position" or orientation relative to the axis of pouring the container neck 2 and consequently the pouring insert 7 are located during the pouring operation, because
20. as a result of the uniform distribution of the slots 11, liquid passes out through some slots in each pouring position, whilst other slots remain connected to the ambient air for producing a pressure compensation in the interior of the container 1.
25. When the filled dosing cap 4 has been emptied, it can again be screwed onto the thread 3 by means of its thread 5, its sloping sealing surface 6 sealingly engaging the sloping sealing surface 13 at the upper end of the pouring insert 7. In this position, as
30. shown in Figure 1A, the liquid residues still

- remaining in the dosing cap 4 trickle down the inner face of the cap 4 and drip substantially onto the transition area 10 and partly onto the convex base area 9 (from where they will flow to the area 10), so
5. that the said liquid residues gradually pass through the slots 11 back into container 1.

- The embodiment according to Figures 2A and 2B corresponds with that according to Figures 1A and 1B in that a pouring insert 17 is inserted into the neck
10. 2' of a container 1. As in the embodiment of Figure 1A and 1B, the side wall 18 and a convex base area 19 between them afford an annular transition area 20. The insert has slots 21 in its side wall 18. The slots extend into the annular transition area 20
15. (corresponding to the transition area 10 in the embodiment of Figures 1A and 1B). The outer face of the side wall 18 has a sealing surface 22 which sealingly engages on the inner face 52 of the neck 2' of the container. The insertion depth of the pouring
20. insert 17 is limited by an outwardly directed annular shoulder 24 connected to the sealing surface 22 and which rests on the end face 53 of the neck 2' of the container. The side wall 18 of the insert extends outwardly at its upper end into a seal providing
25. region 54. Besides providing the shoulder 24 this region also provides an upwardly and inwardly facing conical sealing surface 23 the function of which will be described below.

- The insert has an outer holding wall 26 which
30. extends on from the shoulder 24 and passes downwardly

substantially parallel to side wall 18 from the wall area 54 affording the annular shoulder 24 (see Figure 2B). The holding wall 26 is provided with an inwardly directed, annular anchoring projection 28, which engages behind a correspondingly shaped anchoring projection 27 on the outside of the neck of the container 2'. The holding wall 26 is so dimensioned as to be elastically outwardly expandable relative to the pouring insert 17. Thus, the anchoring projection 28 can expand and be slid or pushed over the anchoring projection 27 and then contracts again and "snaps" behind it.

A thread 25 is formed on the inner face in the opening area of the pouring insert 17. A corresponding outer thread 5' is provided on the outside face of the lower part 48 of the wall 45 of the dosing cap 4'. The dosing cap can then be nested in the insert 17 and secured to it by these interengageable threads. The dosing cap 4' has an annular rib or flange 55 extending out from its outer face about halfway down its length. The upper face 56 is about 44% of the internal depth of the cap from its open end and the lower face 57 is about 39%.

The flange also carries a sloping sealing surface 6' which, when the cap is screwed into the insert, sealingly engages with the sloping sealing surface 23 formed on the seal providing region 54 at the upper end of the pouring insert 17. (Figure 2A).

The operation of the pouring insert 17 during the pouring process, as well as during the return of residual liquid from dosing cap 4' into container 1' corresponds to the operation of the embodiment shown in Figures 1A and 1B.

CLAIMS

1. A liquid container provided with a dosing cap and a pouring insert located in the neck of the container, the cap when secured on the container nesting its portion which is within the container within the insert, the cap being provided with skirt means extending out from between the ends of the cap and in use adapted to extend outside the neck of the container and provided with co-operating means on the inside face of the skirt adapted to secure the cap to co-operating means on the outside of the neck of the container, sealing means being afforded between the pouring insert and the neck of the container and between the pouring insert and the cap.

2. A liquid container as claimed in Claim 1 in which the co-operating means are screw threads.

3. A liquid container as claimed in Claim 1 or Claim 2 in which the sealing means are surfaces on the neck, the insert and the cap which engage each other when the cap is secured to the neck of the container by engaging the co-operating means.

4. A liquid container having a threaded neck, a pouring insert disposed in the said neck, a dosing cap threadedly secured to the said neck, sealing means afforded by or in part by the said insert to effect a seal between the said insert and the said neck, the said insert having a base area provided with an opening therein, the said dosing cap extending into the said



K12501GB

17

insert, the said dosing cap having integral therewith an outwardly disposed threaded skirt, threadedly securable to the said neck, the said insert affording or in part affording sealing means extending outwardly of the said neck and engageable with the said dosing cap.

5. A closure assembly for a container, the closure assembly consisting of a cap and a cup-shaped pouring insert affording a septum which in use in a container extends across and within the container, which cap in use nests a substantial portion of its internal depth within the insert.

6. A closure assembly as claimed in Claim 5 in which the cap is provided with external co-operating means disposed between its ends and adapted to engage co-operating means on the insert or on the container.

7. A closure assembly as claimed in Claim 6 in which the external co-operating means are on the outside surface of the walls of the cap and in use engage the inside surface of the insert.

8. A closure assembly as claimed in Claim 6 provided with skirt means extending out from between the ends of the cap and in use adapted to extend outside the neck of the container.

9. A closure assembly as claimed in Claim 8 in which the external co-operating means are on the inside face of the skirt of the cap.



10. A closure assembly as claimed in any one of Claims 5 to 9 in which stop means are provided to prevent the cap displacing the insert into the container.

11. A closure assembly adapted for use with a container having a threaded neck, the assembly consisting of a pouring insert adapted to be disposed in the said neck of the container, a dosing cap adapted to be threadedly securable to the said neck, sealing means afforded by or in part by the said insert to effect a seal between the said insert and the said neck, the said insert having a base area provided with an opening therein, the said dosing cap when located on the container extending into the said insert, the said dosing cap having integral therewith an outwardly disposed threaded skirt, threadedly securable to the said neck, the said insert affording or in part affording sealing means which in use on the container extend outwardly of the said neck and which are engageable with the said dosing cap to effect a seal between the said insert and the said cap.
