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Wharton

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[54] **POUR SPOUT**

[76] Inventor: **Franklin Eugene Wharton,** 1308 Sartori Ave., Torrance, Calif. 90501

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[52] **U.S. Cl.** **222/569**

[51] **Int. Cl.** **B65d 25/48**

[58] **Field of Search** 222/569, 567, 479, 90

[56] **References Cited**

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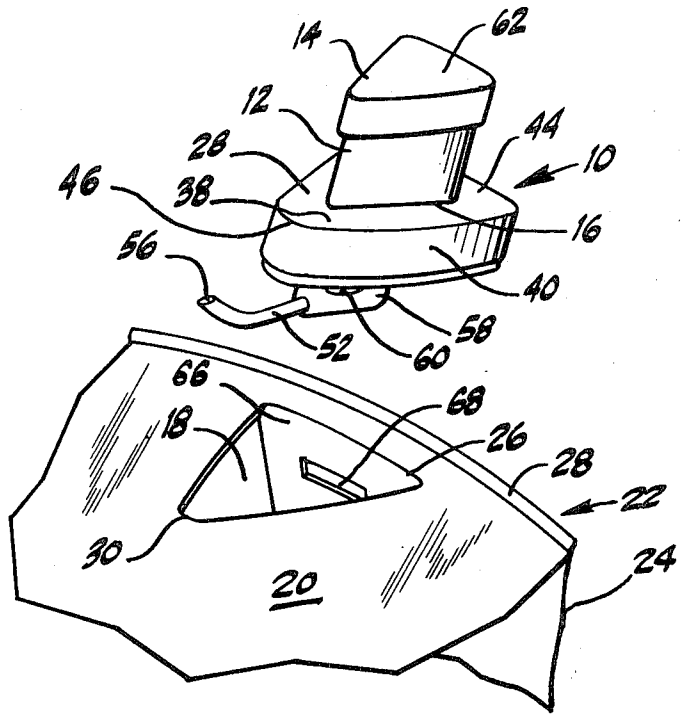
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Primary Examiner—Stanley H. Tollberg
Assistant Examiner—John P. Shannon
Attorney, Agent, or Firm—William F. McDonald

[57] **ABSTRACT**

A pour spout device adapted to be positioned over an opening in the end wall of a container having at least one end wall and a side wall. The opening has two ends, a first end adjacent the juncture of the end wall and the side wall, and a second end spaced inwardly from the juncture of the end wall and the side wall. The device includes a tubular body having an upper end and a lower end. A vent tube having an upper end and a lower end extends the length of the tubular body and is attached to and eccentrically positioned within the tubular body so as to be toward the second end of the opening in the end wall of the container when the device is in use. A plate is attached to the lower end of the tubular body and has an opening therein in alignment with and coextensive with the inside of the tubular body. The plate has a first end adapted to be positioned generally over the first end of the opening and a second end adapted to be positioned generally over the second end of the opening. A pad of resilient material is attached to the surface of the plate opposite the tubular body and has an opening therein in alignment with and coextensive with the inside of the tubular body. The pad is adapted to sealingly engage the surface of the end wall of the container around the opening therein. A hook shaped lever arm swings out from a first end positioned below the pad of resilient material and then upwardly to a second end at a position spaced from the plate and below the plane of the plate. Means are provided for attaching the first end of the lever arm to the plate towards the second end thereof so that the lever arm may be slid through the opening. The second end of the lever arm would then be positioned below and bearing against the end wall so as to compress the pad into sealing position when the plane of the plate is parallel to the plane of the end wall. Means are also provided for compressing the pad below the first end of the plate into sealing position on the end wall of the container to complete the seal.

8 Claims, 7 Drawing Figures



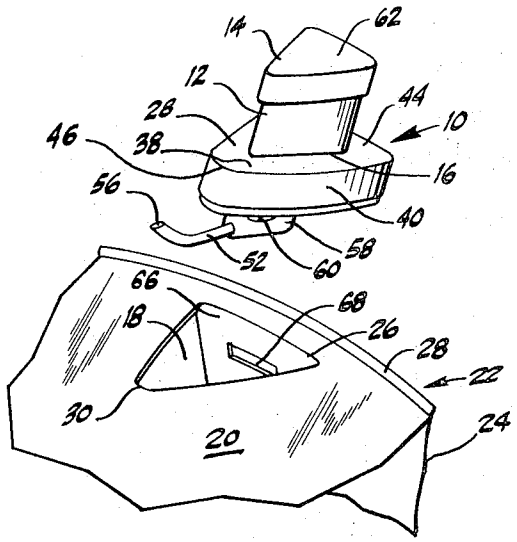


Fig. 1

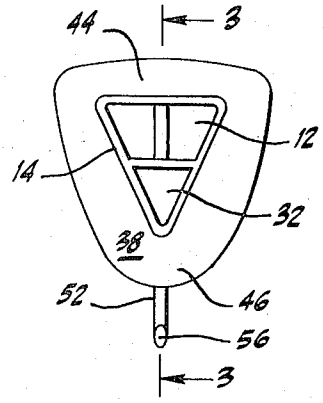


Fig. 2

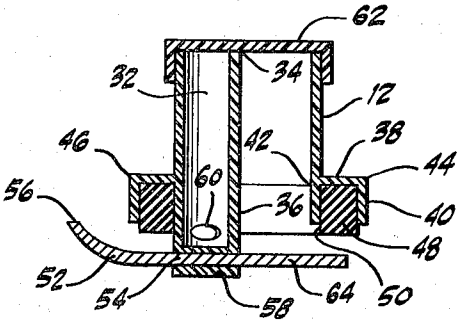


Fig. 3

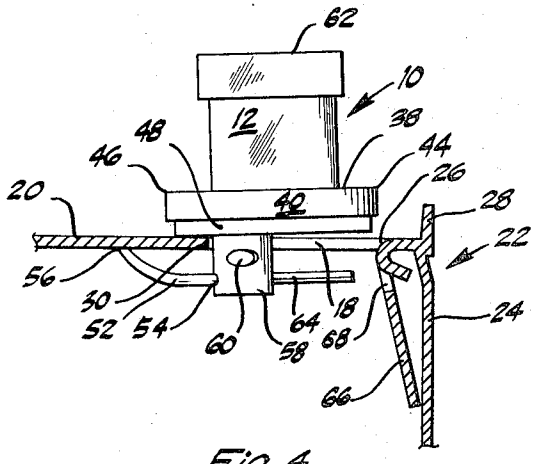


Fig. 4

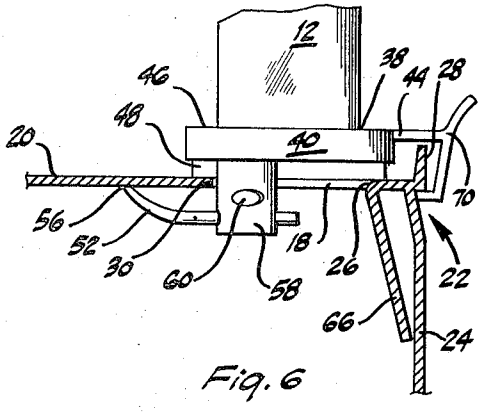


Fig. 6

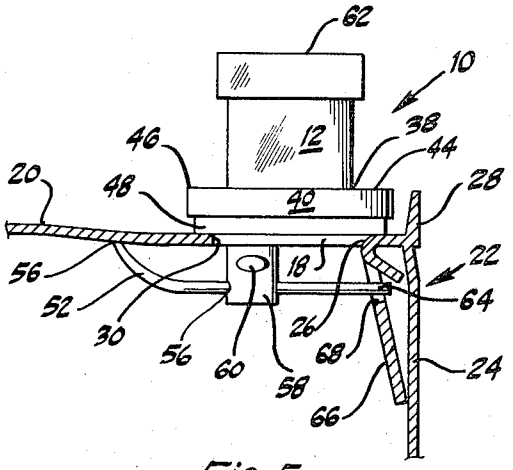


Fig. 5

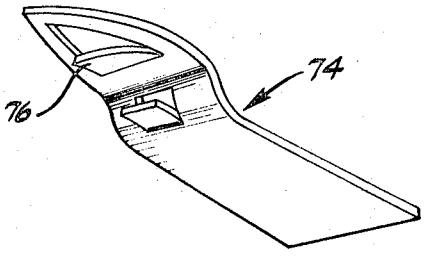


Fig. 7

POUR SPOUT

BACKGROUND OF THE INVENTION

The present invention relates to a pour spout for use on containers. It is particularly applicable to use on containers having an opening in the end wall, wherein the container has at least one end wall and a side wall, so that the contents of the container may be easily and smoothly dispensed with a minimum of leakage. An example of such a container is the typical metal juice can such as a tin can or an aluminum can for grapefruit juice, pineapple juice, and the like. The device may also be used on other types of containers containing other types of materials.

Containers such as metal cans are widely used for the containment of solids and liquids such as beverages, for example, fruit juices. The containers are designed to protect their contents from contamination by the atmosphere. However, when the time comes to remove the liquids from the containers some difficulties are encountered. If one simply punctures an opening in the end wall of the container and then pours, the contents frequently dribble and splash out in an erratic manner so that they do not all end up smoothly in the cup, glass, or other receiving vessel. Further, if some of the contents of the container remain, one is faced with the problem of closing the container to minimize contamination and deterioration of the contents of the container. All of these problems are well known. Accordingly, there have been many attempts to provide various pour spouts for use on the openings in such containers. The degree of success of the pour spout has varied depending on the type of spout and the type of opening and the type of container.

Many prior pour spouts, particularly for use on beverage cans, have been quite elaborate. The elaborateness or the complexity of the pour spout was necessary to assure a satisfactory sealing relationship between the base of the spout and the container to prevent dribbling and leakage therearound. Unfortunately, it frequently made the pour spout awkward to apply to the container and even more difficult to remove. Accordingly, in recent years, a real need has developed for a pour spout device which would provide a satisfactory seal around the opening of the end wall of the container but at the same time be an effective spout for the dispensing of the contents of the container.

SUMMARY OF THE INVENTION

It is an advantage of the present invention that it provides a pour spout for use on the end wall of a container which will effectively seal against the end wall of the container so that the contents of the container do not dribble out around the base of the spout when in use. The spout advantageously, smoothly and reliably dispenses the contents of the container. If desired, the spout can be closed when not in use to protect the contents of the container. It is a further advantage of the present invention that the pour spout is easy to apply, highly effective, and at the same time may be easily removed from the container.

The present invention provides a pour spout device adapted to be positioned over an opening in the end wall of a container having at least one end wall and a side wall. The opening has two ends, a first end adjacent the juncture of the end wall and the side wall, and

a second end spaced inwardly from the juncture of the end wall and the side wall. The device includes a tubular body having an upper end and a lower end. A vent tube having an upper end and a lower end extends the length of the tubular body and is attached to and eccentrically positioned within the tubular body so as to be toward the second end of the opening in the end wall of the container when the device is in use. A plate is attached to the lower end of the tubular body and has an opening therein in alignment with and coextensive with the inside of the tubular body. The plate has a first end adapted to be positioned generally over the first end of the opening and a second end adapted to be positioned generally over the second end of the opening. A pad of resilient material is attached to the surface of the plate opposite the tubular body and has an opening therein in alignment with and coextensive with the inside of the tubular body. The pad is adapted to sealingly engage the surface of the end wall of the container around the opening therein. A hook shaped lever arm swings out from a first end positioned below the pad of resilient material and then upwardly to a second end at a position spaced from the plate and below the plane of the plate. Means attach the first end of the lever arm to the plate towards the second end thereof so that the lever arm may be slid through the opening, the second end of the lever arm being positioned below and bearing against the end wall so as to compress the pad into sealing position when the plane of the plate is parallel to the plane of the end wall. Means are also provided for compressing the pad below the first end of the plate into sealing position on the end wall of the container to complete the seal.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings are illustrative of advantageous embodiments of this invention.

In the drawings:

FIG. 1 is a perspective view of a pour spout according to the present invention showing its relationship to the opening in a container over which it is to be applied;

FIG. 2 is a top plan view, with parts removed for purposes of clarity, of a pour spout device according to the present invention;

FIG. 3 is a side elevational view, in section, taken along line 3—3 of FIG. 2;

FIG. 4 is a side elevational view, showing the device of FIG. 2 as it is being applied to a container, with the container being shown in section;

FIG. 5 is a side elevational view, of the embodiment of FIG. 4, showing it in a further position wherein it is positioned for use on the container, shown in section;

FIG. 6 is a side elevational view, showing another embodiment of the present invention as it is applied to a container, with the container shown in section;

FIG. 7 is a perspective view of an opening device which may be utilized to provide an opening in the end wall of the container which facilitates the application of a pour spout according to the present invention thereto.

DETAILED DESCRIPTION

Throughout the drawings, corresponding reference numerals have been used for corresponding parts.

Referring now particularly to FIG. 1, a pour spout device in accordance with the present invention is indicated generally at 10. The device has a tubular body

12, of suitable material such as plastic or metal, having an upper end 14 and a lower end 16. The device is shown positioned over an opening 18 in the end wall 20 of a container, indicated generally at 22, having at least one end wall 20 and a side wall 24. As shown, the opening 18 has two ends, a first end 26 adjacent the juncture, shown as a rim 28, of end wall 20 and side wall 24. The second end 30 is spaced inwardly from juncture or rim 28.

Referring to FIGS. 2 and 3 as well as FIG. 1, it may be further seen that pour spout 10 also has a vent tube 32 having an upper end 34 and a lower end 36. As may be seen, vent tube 32 extends the length of tubular body 12 and is attached to and eccentrically positioned within tubular body 12 so as to be toward second end 30 of opening 18 in end wall 20 of container 22 when the pour spout device 10 is in use.

Plate 38, shown having a depending lip 40 around the periphery thereof is attached to lower end 16 of tubular body 12. It may be readily seen that plate 38 has an opening 42 therein in alignment with and coextensive with the inside of tubular body 12. Plate 38 has a first end 44 adapted to be positioned over first end 26 of opening 18 and a second end 46 adapted to be positioned generally over second end 30 of opening 18.

A pad 48 of suitable resilient material such as rubber, neoprene, or the like is attached to the surface of plate 38 opposite tubular body 12 and also has an opening 50 therein coextensive with the opening of tubular body 12. As may be seen in FIGS. 5 and 6, pad 48 is adapted to sealingly engage the surface of end wall 20 of container 24 around opening 18 therein, when pour spout 10 is in operable position.

A generally hook shaped lever arm 52 swings out from a first end 54 positioned below pad 48 of resilient material and then upwardly to a second end 56 at a positiion spaced from plate 38 and below the plane of plate 38. Suitable means, shown as a collar 58, are provided for attaching first end 54 of lever arm 52 to plate 38 towards second end 46 thereof. As shown, collar 58 extends downwardly from plate 38 and is attached to lower end 36 of vent tube 32. Collar 58 closes lower end 36 of vent tube 32 and has passages 60 therethrough in communication with the interior of vent 32.

Suitable means such as removable cap 62 are provided for closing the upper end 14 of tubular body 12.

In the embodiment shown in FIGS. 1 through 3, a shaft 64 extends outwardly from a position below plate 38. As shown, shaft 64 may be an extension of lever arm 52 and is attached to plate 38 in the same manner as lever arm 52, i.e. by means of collar 58.

As may be seen in FIG. 1, when opening 18 was formed in end wall 20 of container 22, a portion 66 of end wall 20 was bent inwardly of container 22 adjacent side wall 24 of container 22. Portion 66 has further opening 68 therein.

Referring now to FIG. 4, pour spout 10 is seen as it is being applied to the opening in container 22. Lever arm 52 has been slid through the opening 18 and under second end 30 thereof to a position below end wall 20. Spout 10 has correspondingly been slid over end wall 20 to a position such that shaft 64 may drop through opening 18.

In FIG. 5, pour spout 10 may be seen in operable position. From the position shown in FIG. 4, spout 10 has been swung downwardly to a position where the plane of plate 38 is substantially parallel to the plane of end wall 20. Second end 56 of lever arm 52 is positioned below and bearing against end wall 20 with sufficient pressure to actually slightly raise it. Shaft 64 is now positioned within opening 18 and passes through further opening 68 in portion 66, bearing against the sides thereof. In this manner shaft 64 longitudinally bears against end wall 20 of container 22 from below, between first end 26 of opening 18 and side wall 24. As a result, pad 48 is compressed slightly so as to sealingly engage the surface of end wall 20 around opening 18.

Cap 62 may be removed whenever it is desired to dispense the contents of container 22. Vent tube 32 is positioned so that when the contents of container 22 are being dispensed air may flow through vent tube 32 into the space in container 22 above the contents thereof, thereby providing a free flow of contents from container 22 with a minimum of slugs and surges.

Referring now to FIG. 6, an alternate means for compressing pad 48 below first end 44 of plate 38 into sealing position on end wall 20 of container 22 to complete the seal may be seen. This embodiment of the invention is particularly applicable when the juncture of end wall 20 and side wall 24 is in the form of rim 28 as shown. In this embodiment a clip 70 is attached to plate 38 and is adapted to engage rim 28 in a position as shown which compresses pad 48 into sealing position. A tab 72 may be provided on clip 70 to facilitate engaging it with and releasing it from rim 28 of container 22.

FIG. 7 shows an opening device, indicated generally at 70, useful in providing further opening 68 in portion 66 to facilitate the use of the embodiment of the invention shown in FIGS. 1 through 5 inclusive. Opening device 74 is of generally conventional and well known construction but is provided with a second puncturing point 76 which will form further opening 68 as the opening device 74 is forming opening 18.

The pour spouts of the present invention are simple yet effective for use on containers. They are easily applied and removed from the container, and easy to clean. They prevent dribbling, or leaking of the contents of the container in use and facilitate a smooth even dispensing of the contents of the container. The pour spout may be closed to protect any remaining contents of the container which are not immediately dispensed.

It should be appreciated that while there have been shown and described hereinabove possible embodiments of this invention, the invention is not limited thereto, and various changes, alterations, and modifications can be made thereto without departing from the spirit and scope thereof as defined in the claims.

What is claimed is:

1. A pour spout device adapted to be positioned over an opening in the end wall of a container having at least one end wall and a side wall, the opening having two ends, a first end adjacent the juncture of the end wall and the side wall, and a second end spaced inwardly from the juncture of the end wall and the side wall, which device comprises:

a. a tubular body having an upper end and a lower end;

b. a vent tube having an upper end and a lower end extending the length of the tubular body and attached to and eccentrically positioned within the tubular body so as to be toward the second end of the opening in the end wall of the container when the device is in use;

c. a plate attached to the lower end of the tubular body and having an opening therein in alignment with and coextensive with the opening of the tubular body, the plate having a first end adapted to be positioned generally over the first end of the opening and a second end adapted to be positioned generally over the second end of the opening;

d. a pad of resilient material attached to the surface of the plate opposite the tubular body and having an opening therein in alignment with and coextensive with the opening of the tubular body, the pad being adapted to sealingly engage the surface of the end wall of the container around the opening therein;

e. a hook shaped lever arm swinging out from a first end positioned below the pad of resilient material and then upwardly to a second end at a position spaced from the plate and below the plane of the plate;

f. means comprising a collar extending downwardly from the plate and within which the first end of the lever arm is mounted attaching the first end of the lever arm to the plate towards the second end thereof so that the lever arm may be slid through the opening, the second end of the lever arm being positioned below and bearing against the end wall so as to compress the pad into sealing position when the plane of the plate is parallel to the plane of the end wall;

g. means for compressing the pad below the first end of the plate into sealing position on the end wall of the container to complete the seal.

2. The device of claim **1** including means for closing the upper end of the tubular body.

3. The device of claim **1** wherein the collar is attached to the lower end of the vent tube.

4. The device of claim **3** wherein the collar closes the lower end of the vent tube and the collar has passages therethrough in communication with the interior of the vent tube.

5. The device of claim **1** when a rim is formed at the juncture of the end wall and side wall of the container wherein the means for compressing the pad below the first end of the plate comprises a clip attached to the plate and adapted to engage the rim in a position which compresses the pad.

6. The device of claim **5** including a tab on the clip for engaging it with and releasing it from the rim.

7. The device of claim **1** wherein the means for compressing the pad below the first end of the plate comprises a shaft extending outwardly from a position below the plate and adapted to longitudinally bear against the end wall of the container from below between the first end of the opening and the juncture of the end wall and side wall when the device is in position on the end wall of the container, and means attaching the shaft to the plate.

8. The device of claim **7** when, in forming the opening in the end wall of the container, a portion of the end wall is bent inwardly of the container adjacent the side wall of the container and the portion has a further opening therein, wherein the shaft is adapted to pass through such further opening and bear against the end wall of the container by means of the sides of such further opening.

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