

Description

This invention relates to a pouring device and more particularly to a pouring device for use with a liquid container.

It is well known that it is difficult, if not impossible, to obtain a smooth flow of liquid from a container having a single outlet. The outflow of liquid from the container creates a low pressure zone within the container. As a consequence of this, air is forced into the container through the liquid passing through the outlet and in so doing creates a surging or gulping effect. This surging effect disrupts the outflow producing an unstable jet of liquid.

In normal circumstances, such an unstable jet of liquid is merely inconvenient. However, when corrosive, toxic or flammable liquids are being poured from a container such an unstable outflow can be extremely dangerous.

AU-B-24953/71 describes a pouring device for a liquid container which includes an air vent and so enables a smooth outflow of the liquid to be obtained.

It is an object of the invention to provide an improved pouring device of this known type.

According to the invention there is provided a pouring device arranged to be positioned in the outlet of a container, said device comprising:—

(i) a body portion having a front face and a rear face arranged so that the rear face faces towards the interior of the container when the device is in position;

(ii) an aperture through the body portion from the front face to the rear face;

(iii) an air flow tube which is in communication with the aperture and extends between the rear face and a free end disposed within the container so that air may flow through the tube from the exterior of the container to the interior thereof, said free end being located above the aperture when the container is in the pouring position; and

(iv) an outlet path through which liquid from the container may flow,

characterised in that said outlet path is defined by a pair of opposed legs extending from the body portion, said opposed legs generally conforming to the shape of the container outlet but being spaced apart at their ends remote from the body portion, and in that the cross-sectional area and the width of said opposed legs progressively increases lengthwise from their free ends so that when deformed inwardly to fit within the container outlet the bending stresses are evenly distributed therealong to resist creep.

In order that the invention may be more readily understood and put into practical effect reference will now be made to the accompanying drawings, in which:—

Fig. 1 is a rear perspective view of a pouring device according to one embodiment of the invention,

Fig. 2 is a front elevation of the device shown in Fig. 1,

Fig. 3 is a partial section of the device shown in

Figs. 1 and 2, and

Fig. 4 is a partial section through a portion of the device shown in Figs. 1 and 2 seated in the outlet of a container.

The embodiment of the invention illustrated in the drawings is particularly useful for use on externally threaded upstanding outlets of 20 litre containers. A section through a portion 10 of the outer end of such an outlet is shown in Fig. 4. The portion 10 includes external screw threads 12 and an intumed outer portion consisting of an angled element 14 and a flat annular element 16. An internally threaded closure is screwed onto the outlet to close the container.

The pouring device 18 includes a body portion 19 the rear face 20 of which faces the interior of the container when the device is in position in the outlet of the container. An aperture 22 extends through the body portion 19 from the front face to the rear face 20.

An air flow tube 24 extends from the rear face 20 of the body portion 19 and is in communication with the aperture 22 so that air may flow from the exterior of the container to the interior of the container. As shown in Fig. 1 the air flow tube 24 extends above the top of the body portion 19. Although the air flow tube 24 is shown as L-shaped it may extend from the rear face 20 at an angle of about 45° to that face.

A pair of opposed legs 23 and 25 extend from the body portion 19 and are so shaped as to conform generally to the shape of the container outlet. The ends of the legs 23 and 25 are spaced apart at their ends remote from the body portion to provide a gap 27. The area between the legs 23 and 25 defines an outlet path 21 through which liquid from the container may flow. The periphery of the body portion 19 and the legs 23 and 25 are provided with spaced apart flanges 26 and 28 which are shown in detail in Fig. 3. Flange 26 has an inclined surface 30 which leads to a flat surface 32. Flange 28 also has an inclined surface 34 by which it is connected to the surface 32.

In use, the device 18 is pressed into the end portion of the container outlet as shown in Fig. 4. Inclined surface 30 then abuts element 14 and the annular surface 32 abuts element 16. The device is held in position by the inclined surface 34 which abuts against the inner periphery of element 16. When in position the device may be rotated so that the air flow tube 24 is correctly located above the outlet 21.

It can be seen that once the device is sprung into position it will remain in location and that a closure may be readily screwed onto the external screwthreads 12 of the outlet. The pouring device therefore need not be touched by the user once it is fitted.

One of the problems associated with plastic pouring devices which are 'push fitted' into a container is that they lose their tolerance over a period of time due to 'creep' of the plastics material. This may be exacerbated by contact with liquids, so that the pourers do not remain a tight fit. If the pourer is allowed to dry, it will then

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be a sloppy fit, and may drop out of the container. The construction of the pouring device of this invention allows stresses to be spread over the flange of the device and resist the effects of 'creep'. Thus, as is clearly shown in the drawings, the cross-sectional area and the width of the opposed legs 23, 25 progressively increases lengthwise from their free ends such that when deformed inwardly to fit within the container outlet, the bending stresses are evenly distributed therealong to resist creep.

An extension nozzle may be fitted to a container/pourer device arrangement of this invention. It may be screwthreaded internally at one end to be attached to outlet 10, and may be externally threaded at the other end to take the original cap for the container. Provision may be made to ensure proper return air flow through orifice 22 by creating communication to the orifice from the atmosphere.

The rim or external periphery of the device may be varied according to the shape and configuration of the outlet of the container in respect of which the pouring device is to be used. For example, the rim may be of sufficient width to carry a screwthread by means of which it may threadedly engage the internally screwed outlet of the container. In the case of a plastic container, the rim may be made rather narrow with a sharp edge which is adapted to engage into the plastic neck of the container outlet. Alternatively, the rim may have a pair of closely spaced sharp edges.

Claims

1. A pouring device (18) arranged to be positioned in the outlet of a container, said device comprising:—

(i) a body portion (19) having a front face and a rear face (20) arranged so that the rear face (20) faces towards the interior of the container when the device is in position;

(ii) an aperture (22) through the body portion (19) from the front face to the rear face (20);

(iii) an air flow tube (24) which is in communication with the aperture (22) and extends between the rear face (20) and a free end disposed within the container so that air may flow through the tube from the exterior of the container to the interior thereof, said free end being located above the aperture when the container is in the pouring position; and

(iv) an outlet path (21) through which liquid from the container may flow,

characterised in that said outlet path (21) is defined by a pair of opposed legs (23, 25) extending from the body portion (19), said opposed legs (23, 25) generally conforming to the shape of the container outlet but being spaced apart at their ends remote from the body portion, and in that the cross-sectional area and the width of said opposed legs (23, 25) progressively increases lengthwise from their free ends so that when deformed inwardly to fit within the container outlet the bending stresses are evenly distributed

therealong to resist creep.

2. A pouring device according to Claim 1, characterised in that body portion (19) and the opposed legs (23, 25) are of circular configuration and the rim of the device has means for positively engaging the outlet of the container.

3. A pouring device according to Claim 2, characterised in that the engaging means comprise a screwthread formed on the rim of the device.

4. A pouring device according to Claim 2, characterised in that the engaging means is constituted by a pair of spaced apart flanges (26, 28).

5. A pouring device according to any one of the preceding claims, wherein the aperture (22) in the body portion and the outlet (21) defined between the opposed legs (23, 25) are of circular cross-section.

Revendications

1. Dispositif de versement (18) adapté à être disposé à la sortie d'un conteneur, ledit dispositif comportant:

(i) un élément formant corps (19) présentant une face antérieure et une face postérieure (20) telles que la face postérieure (20) soit en regard de l'intérieur du conteneur quand le dispositif est installé;

(ii) une ouverture (22) ménagée à travers l'élément formant corps (19) reliant la face intérieure et la face postérieure (20);

(iii) un tube d'amenée d'air (24) relié avec ladite ouverture (22) s'étendant entre la face postérieure (20) et une extrémité libre se trouvant à l'intérieur du conteneur, de manière à ce que l'air puisse s'écouler à travers le tube depuis l'extérieur du conteneur jusqu'à l'intérieur de celui-ci, ladite extrémité libre étant disposée à un niveau supérieur à celui de l'ouverture quand le conteneur se trouve en position de versement; et

(iv) une sortie de liquide (21) par laquelle le liquide peut s'écouler depuis le conteneur,

caractérisé en ce que ladite sortie (21) est formée d'une paire de jambes (23—25) se faisant face s'étendant à partir de l'élément formant corps (19), lesdites jambes (23, 25) se faisant face s'adaptant généralement à la forme de la sortie du conteneur mais étant espacées à leurs extrémités opposées à l'élément formant corps, et en ce que la surface de la section transversale et la largeur desdites jambes (23—25) opposées s'accroissent progressivement dans le sens de la longueur à partir de leur extrémité libre de manière à ce que lorsqu'elles sont déformées vers l'intérieur, afin de s'adapter dans la sortie du conteneur, les tensions de déformation soient régulièrement distribuées le long de leur contour de manière à opposer une résistance à un glissement annulaire de celles-ci.

2. Dispositif de versement selon la revendication 1, caractérisé en ce que l'élément formant corps (19) et les jambes en opposition (23—25) ont une forme généralement circulaire et en ce que le rebord du dispositif comporte des moyens

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be a sloppy fit, and may drop out of the container. The construction of the pouring device of this invention allows stresses to be spread over the flange of the device and resist the effects of 'creep'. Thus, as is clearly shown in the drawings, the cross-sectional area and the width of the opposed legs 23, 25 progressively increases lengthwise from their free ends such that when deformed inwardly to fit within the container outlet, the bending stresses are evenly distributed therealong to resist creep.

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2. A pouring device according to Claim 1, characterised in that body portion (19) and the opposed legs (23, 25) are of circular configuration and the rim of the device has means for positively engaging the outlet of the container.

3. A pouring device according to Claim 2, characterised in that the engaging means comprise a screwthread formed on the rim of the device.

4. A pouring device according to Claim 2, characterised in that the engaging means is constituted by a pair of spaced apart flanges (26, 28).

5. A pouring device according to any one of the preceding claims, wherein the aperture (22) in the body portion and the outlet (21) defined between the opposed legs (23, 25) are of circular cross-section.

Revendications

1. Dispositif de versement (18) adapté à être disposé à la sortie d'un conteneur, ledit dispositif comportant:

(i) un élément formant corps (19) présentant une face antérieure et une face postérieure (20) telles que la face postérieure (20) soit en regard de l'intérieur du conteneur quand le dispositif est installé;

(ii) une ouverture (22) ménagée à travers l'élément formant corps (19) reliant la face intérieure et la face postérieure (20);

(iii) un tube d'amenée d'air (24) relié avec ladite ouverture (22) s'étendant entre la face postérieure (20) et une extrémité libre se trouvant à l'intérieur du conteneur, de manière à ce que l'air puisse s'écouler à travers le tube depuis l'extérieur du conteneur jusqu'à l'intérieur de celui-ci, ladite extrémité libre étant disposée à un niveau supérieur à celui de l'ouverture quand le conteneur se trouve en position de versement; et

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2. Dispositif de versement selon la revendication 1, caractérisé en ce que l'élément formant corps (19) et les jambes en opposition (23—25) ont une forme généralement circulaire et en ce que le rebord du dispositif comporte des moyens



zur engager la sortie du conteneur.

3. Dispositif de versement selon la revendication 2, caractérisé en ce que les moyens d'engagement comportent un filetage formé dans le rebord du dispositif.

4. Dispositif de versement selon la revendication 2, caractérisé en ce que les moyens d'engagement sont constitués par deux saillies radiales (26—28) espacées l'une de l'autre.

5. Dispositif de versement selon l'une quelconque des revendications précédentes, caractérisé en ce que l'ouverture (22) ménagée dans l'élément formant corps et la sortie (21) définies par l'espacement entre les jambes en opposition (23—25) sont de section transversale circulaire.

Patentansprüche

1. Im Auslass eines Behalters anzubringende Ausgiessvorrichtung (18), welche aufweist:

(i) einen Hauptteil (19) mit einer Vorderseite und einer Rueckseite (20), die so angeordnet sind, dass die Rueckseite (20) gegen das Innere des Behalters weist, wenn die Vorrichtung in ihrer Lage angebracht ist.

(ii) eine den Hauptteil (19) von der Vorderseite zur Rueckseite (20) durchsetzende Oeffnung (22),

(iii) ein Belueftungsrohr (24), das mit der Oeffnung (22) in Verbindung steht und sich zwischen der Rueckseite (20) und einem derart im Behälter angeordneten freien Ende erstreckt, dass Luft durch das Rohr vom Aeusseren des Behalters ins Innere desselben stroemen kann, wobei das freie Ende oberhalb der Oeffnung angeordnet ist, wenn sich der Behälter in der Giessstellung befindet,

(iv) einen Auslasskanal (21), durch welchen Flussigkeit aus dem Behälter fliessen kann,

dadurch gekennzeichnet, dass der Auslasskanal (21) von zwei gegenueberliegenden Schenkeln (23, 25) gebildet ist, die vom Hauptteil (19) ausgehen, wobei die gegenueberliegenden Schenkel (23, 25) allgemein der form des Behaelterauslasses angepasst sind, deren vom Hauptteil entfernte Enden jedoch einen gegenseitigen abstand einschliessen, und dass die Querschnittsflaeche und die Breite der gegenueberliegenden Schenkel (23, 25) von ihren freien Enden aus in Laengsrichtung sich zunehmend vergroessern, so dass bei Verformung derselben nach innen, um sie in den Behaelterauslass einzupassen, die biefekraefte Laengs derselben zur Verhinderung einer allmaehlichen Verformung gleichmaessig verteilt sind.

2. Ausgiessvorrichtung nach Anspruch 1, dadurch gekennzeichnet, dass der Hauptteil (19) und die gegenueberliegenden Schenkel (23, 25) kreisform besitzen und dass der Rand der Vorrichtung Einrichtungen zum festen eingreifen am Auslass des Behalters aufweist.

3. Ausgiessvorrichtung nach Anspruch 2, dadurch gekennzeichnet, dass die Einrichtungen zum eingreifen eim am Rand der Vorrichtung ausgebildetes Schraubengewinde aufweisen.

4. Ausgiessvorrichtung nach Anspruch 2, dadurch gekennzeichnet, dass die Einrichtungen zum eingreifen aus zwei im abstand voneinander angeordneten Flanschen (26, 28) bestehen.

5. Ausgiessvorrichtung nach einem der vorangehenden Ansprueche, wobei die Oeffnung (22) im Hauptteil und der zwischen den gegenueberliegenden Schenkeln (23, 25) gebildete Auslass (21) kreisfoermigen Querschnitt besitzen.

