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(12) # EUROPEAN PATENT SPECIFICATION

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(54) **Flexible container.**

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Description

This invention relates to an improvement in flexible containers of the kind used in storing and dispensing liquids or solid suspensions.

European patent application EP–A 0 056 016 discloses a flexible container which includes a filling aperture, defined by a collar which is also adapted to receive the dispensing tap for the container. To enable the filling aperture to be sealed a flap is provided to cover the aperture so that it can be heat sealed to the periphery of the aperture. This results in a sealed package which is only ruptured by the insertion into the collars of a dispensing tap which incorporates a spigot to break the flap sealing the aperture.

A difficulty encountered with the initial design was to ensure that the flap would be correctly located over the aperture during the heat sealing operation. This problem was overcome by heat sealing portions of the flap to the periphery of the aperture at selected positions on two sides of the aperture.

An example of this construction is shown in Figures 1 and 2 of the drawings. A portion of the flexible container is shown in Figure 1. The container is formed of two walls 2 and 4 welded together at seam 3. The container is filled and dispensed through the aperture 7 which is defined by the gland 8. The wall of the container is secured to the outer surface of the flange 9 of the gland 8 and the aperture is covered by the flap 5. This flap is heat sealed with small round seals 13 at a number of places around the outer circumference of the inner surface of the flange 9. The edge 12 of flap 5 is shown in the schematic plan view of the aperture 7 in Figure 2. The edge 14 of the flange 9 is also shown in Figure 2. When the container is filled it is sealed by the heat seal at line 15.

Although this arrangement ensures that the flap is correctly located about the aperture, the presence of the flap restricts the flow of liquid through the aperture during filling. It is possible to obtain adequate filling speeds by increasing the pressure of the filling liquid on the flap. The presence of the flap also restricts the use of the container for solid suspensions such as pineapple crush.

It is an object of this invention to overcome these problems.

To this end the present invention provides a flexible container sealed about its edges, one wall of the container having an aperture through which the contents of the container can be passed for filling or dispensing, a collar 21 mounted in the aperture, the collar 21 being adapted to receive means for dispensing the contents of the container, and a flap 25 located inside the container covering the aperture and having a heat sealable layer forming a surface thereof adjacent the said one wall, which is characterised in that the flap 25 is attached to the container or collar 21 by means of at least two divergent weld lines 26, 27 located on opposite sides of the aperture, which weld lines 26, 27 form a divergent chute of the flap 25 which widens in the direction away from the centre of the aperture to direct the contents into the container. Although the flap abuts the collar flange and the aperture in its prefilled state under filling conditions the flap and the collar flange will distend to form a funnel approximately perpendicular to the axis of the collar. The diameter of the funnel so formed is dependent on the position of the welds and these should be placed to ensure that the diameter is at least equivalent to that of the collar.

A preferred form of this invention is illustrated in Figures 3, 4 and 5 of the drawings in which Figure 3 is a plan view of the collar and flap, Figure 4 is a sectional view of the collar and flap during the fill operation and Figure 5 is a perspective view of Figure 4.

The collar 21 is a polyethylene cylinder having a base flange 22 and a support flange 23 and location flange 24. Alternatively the collar can be formed from a modified polyethylene such as polyethylene vinyl acetate. The collar is inserted into the aperture of the wall of the flexible container which is heat sealed to the upper surface of base flange 22. The support flange 23 provides support for the container during filling when the collar is gripped and held below the filling nozzle. Usually the flexible containers are placed in a rigid box when filled and the collar is inserted through an aperture in a wall of the box and the wall locates between flanges 22 and 23 of the collar 21. A dispensing tap is then inserted into the collar 21.

The flap 25 is secured to the under surface base flange 22 by welds 26 and 27. The flap 25 abuts the flange 22 in the unfilled bag and after filling the flap is heat sealed by a circular weld about the periphery of the aperture of collar 21. Any two ply laminate which incorporates a non-heat sealing outer layer such as Polyester, Nylon or Metal Foil, and a heat sealable inner layer of Polyethylene or modified Polyethylene can be used for the flap 25.

The container may be formed from any flexible film or laminate, with or without a loose inner layer, which can be satisfactorily heat sealed to form a container.

Generally laminates are of two ply construction incorporating an outer barrier layer with the inner layer being polyethylene which may be modified to enhance its properties.

Sometimes a third layer of foil or a vacuum deposit of aluminium is sandwiched in the laminate to provide a barrier to gases, water vapour and light.

The loose inner layer is always polyethylene, either natural or modified.

During filling as shown in figures 4 and 5 the pressure of the fluid passing through collar 21 and impacting on flap 25 distends the flap 25 and the flange 22 to form an elbow and spout which directs the flow of fluid into the interior of the container.

Unlike the construction shown in figures 1 and 2 the flow rate is not restricted. An increase in filling speed from 1 litre per minute to 8.5 litres per minute has been achieved with the construction of this invention.

Liquid at 50,000 cps, will require a head pressure of 280 cm of water to obtain a flow rate of 1 litre/min with the conventional gland.

The new gland will achieve a flow rate of 6 litres/min at half the above head pressure (140 cm of water).

Using a liquid of 6,000 cps, and 280 cm of water head pressure a flow rate of 1.6 litres/min was obtained with conventional gland, whilst only 15 cm of water head pressure was required for the new gland to achieve the same flow rate.

Using liquids of 1 cps and 15 cm of water head pressure a flow rate of 1 litre/min was obtained with the conventional gland and 8.5 litres/min with the new gland.

Furthermore it is now possible to fill the container with a solids suspension in which the solid particles are up to 2/3 of the internal diameter of the collar. The flap itself is no longer a restriction to the size of particles which can enter the container.

Claims

1. A flexible container sealed about its edges, one wall of the container having an aperture through which the contents of the container can be passed for filling or dispensing, a collar (21) mounted in the aperture, the collar (21) being adapted to receive means for dispensing the contents of the container, and a flap (25) located inside the container covering the aperture and having a heat sealable layer forming a surface thereof adjacent the said one wall, characterised in that the flap (25) is attached to the container or collar (21) by means of at least two divergent weld lines (26, 27) located on opposite sides of the aperture, which weld lines (26, 27) form a divergent chute the flap (25) which widens in the direction away from the centre of the aperture to direct the contents into the container.

2. A container as claimed in claim 1, in which the flap is formed from a two-ply laminate (25), the first heat sealable layer thereof being formed from polyethylene or modified polyethylene and the second layer being formed from a non-heat sealable film of polyester, Nylon or metal foil.

3. A container as claimed in claim 2, in which a third layer of metal foil or vacuum deposited metal is interposed between the first and second layers.

Patentansprüche

1. Verformbarer Behälter, der an seinen Kanten abgedichtet ist, wobei eine Wand des Behälters eine Öffnung aufweist, durch welche der Inhalt des Behälters zum Füllen oder Austeilen passieren kann, ein Ring (21) in der Öffnung befestigt ist, welcher zur Aufnahme von Vorrichtungen zum Verteilen des Inhalts des Behälters vorgesehen ist, und wobei eine Zunge (25) innerhalb des Behälters zur Abdeckung der Öffnung angeordnet ist, welche eine heißsiegelbare Schicht aufweist, die eine zu der Behälterwand benachbarte Oberfläche bildet, dadurch gekennzeichnet, daß die Zunge (25) an dem Behälter oder dem Ring (21) befestigt ist, indem mindestens zwei divergierende Schweißkanten (26, 27) an gegenüberliegenden Seiten der Öffnung angeordnet sind, wobei die Schweißlinien (26, 27) eine Streurinne aus der Zunge (25) bilden, welche sich in Richtung weg vom Zentrum der Öffnung erweitert, um den Inhalt in den Behälter zu leiten.

2. Behälter nach Anspruch 1, dadurch gekennzeichnet, daß die Zunge aus einem Zweilagenlaminat (25) gebildet ist, wobei eine erste heißsiegelbare Schicht aus Polyethylen oder modifiziertem Polyethylen gebildet ist und eine zweite Schicht aus einem nicht heißsiegelbaren Film aus Polyester, Nylon oder Metallfolie gebildet ist.

3. Behälter nach Anspruch 2, dadurch gekennzeichnet, daß eine dritte Schicht aus Metallfolie oder vakuumaufgedampftem Metall zwischen der ersten und zweiten Schicht angeordnet ist.

Revendications

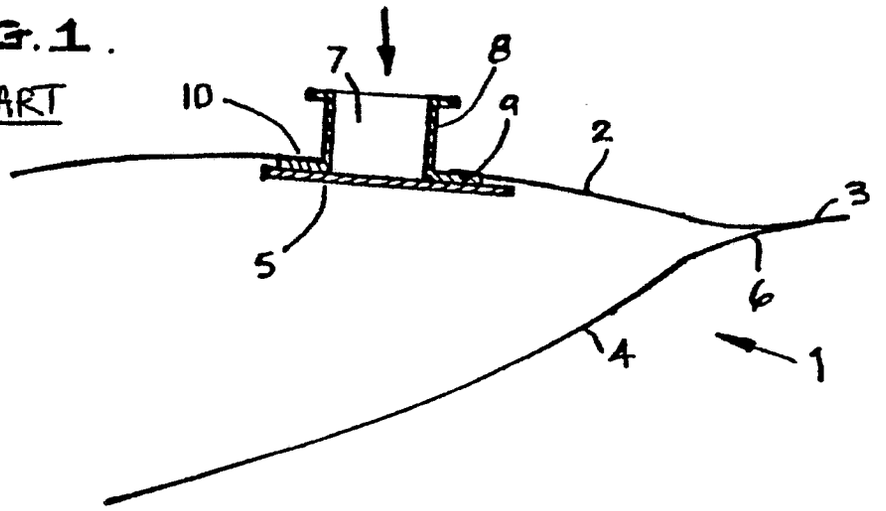
1. Un conteneur flexible rendu étanche sur ses bords, une paroi du conteneur présentant une ouverture à travers laquelle on peut faire passer le contenu du conteneur pour assurer le remplissage ou le vidage de ce dernier, une collerette (21) montée sur l'ouverture, cette collerette (21) étant susceptible d'être équipée de moyens de distribution du contenu du conteneur, ainsi qu'un volet (25) disposé à l'intérieur du conteneur pour couvrir l'ouverture et muni d'une couche que l'on peut sceller à la chaleur et formant une surface adjacente à ladite paroi, caractérisé en ce que le volet (25) est fixé au conteneur ou à la collerette (21) à l'aide d'au moins deux cordons de soudure divergents (26, 27) situés sur des faces opposées de l'ouverture, ces cordons de soudure (26, 27) formant une goulotte divergente du volet (25) qui s'élargit dans la direction s'éloignant du centre de l'ouverture pour diriger le contenu dans le conteneur.

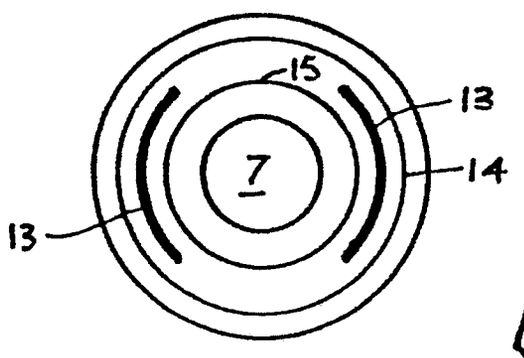
2. Un conteneur selon la revendication 1, dans lequel le volet est formé d'un stratifié à deux couches (25), la première couche de ce stratifié, susceptible d'être scellée à la chaleur, étant formée de polyéthylène ou de polyéthylène modifié et la seconde couche étant formée d'un film non apte à être scellé à la chaleur en polyester, en nylon ou en feuille métallique.

3. Un conteneur selon la revendication 2, dans lequel une troisième couche de feuille métallique ou de métal déposé sous vide est interposé entre les premières et secondes couches.

FIG. 1.

PRIOR ART





PRIOR ART

FIG. 2.

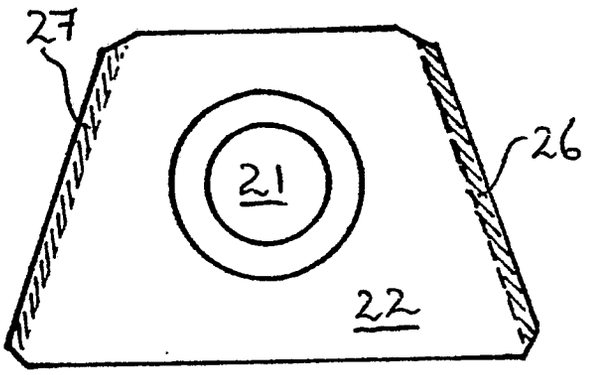


FIG. 3.

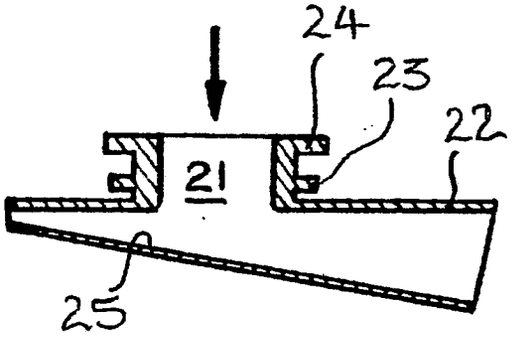


FIG. 4.

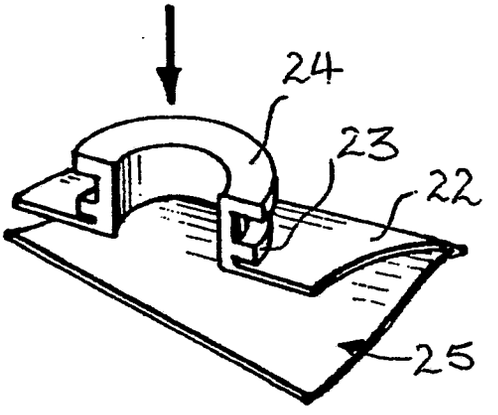


FIG. 5