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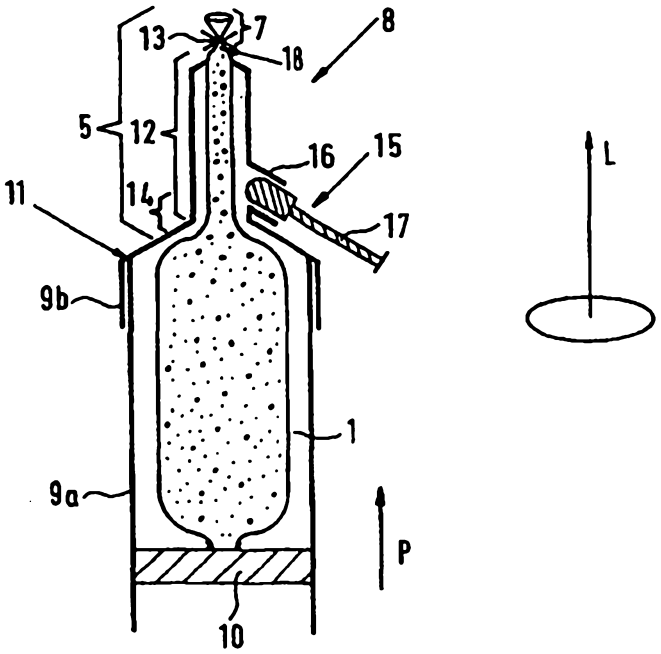

(57) Abstract

The invention describes a housing (8) with an integrated flexible packaging unit (1) for compositions of pasty consistency. Said flexible packaging unit (1) comprises a flexible projection (5) by which contact of the content of the package with the elongated spout (11) of the housing (8) is avoided when the package is integrated in the housing. By this means, clogging of the elongated spout (11) is prevented.

A housing containing a replaceable flexible packaging unit

The invention relates to a housing with an integrated replaceable packaging unit for compositions of a pasty consistency and to a flexible packaging unit which comprises a flexible projection. The packaging unit is especially suitable as a container for oxygen sensitive substances.

Flexible packaging units having substantially tubular bodies with ends being closed by e.g. metal clips or compressed rings are state of the art. One very common example is the application of this type of packaging unit for the packing of pasty foodstuff, above all for sausage-meat, thereby giving sausages their typical form.

The German utility model G 9207385.9 describes a cylindrical foil packaging unit with convexly bent ends, being closed by tube clips. This type of packaging system was especially developed for oxygen sensitive offset printing inks.

This improvement for packaging systems suitable for oxygen sensitive printing inks which were used up to this time was directed towards a better storage stability and a better exclusion of oxygen during the filling and emptying process. However in certain respect it shows insufficiencies:

- the width of the opening, corresponding to the whole circumference of the cylindrical body once the closing is removed, makes difficult the repeated opening and closing necessary when just parts of the content are needed; particularly when only very small amounts are taken out.
- moreover the resultant large surface of contact with air would inevitably lead to a decrease of quality of the composition.
- additionally, the width of the opening makes an exact dosage of content a time-consuming operation risking exhaustive contact with air.

With regard to the latter problem, the insertion of said cylindrical flexible packaging unit in an conventional type of piston-cylinder dispenser was described. However, using this the content of the packaging system comes into contact with the protruded end of the dispenser, causing the well known effect of clogging of the opening after repeated applications.

The same happens with solid cartridges having solid elongated dispensing openings. Said cartridges are well known for the dispensing of adhesive and sealing materials. Usually this type of solid cartridge is clamped in a rigid housing for reasons of better handling.

This kind of combination of dispenser and packaging unit does not enable the use of packaging unit over a long period because of clogging.

In accordance with the invention, there is provided a housing containing a replaceable flexible packaging unit for the packing of compositions having a pasty consistency, said packaging unit comprising a substantially tubular body closed at one end and a flexible projection, said housing being equipped with a movable piston at one of its ends, and further comprising an elongated spout lined with the flexible projection, wherein the elongated spout comprises means for emptying the projection of said packaging unit.

Preferably, the projection is reduced in its opening width, and particularly in its diameter, in contrast to that of the substantially tubular body.

Dispensing the pasty content through a projection of said packaging unit as described by the present invention can provide for:

- an exact application of small quantities even without any additional means;
- very easy re-closing by any type of closing means;
- high protection from oxygen (air) contact, since the closing means close the package air-tightly and since the entire content of the package is contained within the oxygen impermeable package.

In one embodiment of the invention, this packaging unit is formed by a foil tube which is closed at one end by well known methods e.g. tubular clips or welding seams. The projection is formed by at least one restricting means which compresses the circumference of the substantially flexible tube at a predetermined position and to a predetermined diameter.

In a preferred embodiment, said restricting means is adjustable in radial and longitudinal direction across and along the flexible tube in order to fix the opening diameter and the length of the projection.

Preferably the ratio of tubular body length to projection length is at least 1:0.2 to 1:0.5.

The projection is closed by any suitable means, in particular any type of clip can be used.

As further enhancement for protection against oxygen contact, the projection is evacuable after the filling process and can be optionally refilled with an inert gas, such as nitrogen.

Although the several advantages are achieved with just the features of the packaging unit alone, even better results in handling are obtainable by the already described combination of the packaging unit of the present invention and a housing which is specially adapted in respect to the form of said packaging unit.

The housing of the present invention may generally have the form of a known piston cylinder applicator, such as a housing made of an inflexible or, at least, sufficiently press/force resistant material having at one of its ends an elongated spout and, on the other end, opposite to the elongated spout, a piston movable across the longitudinal axis of the housing for forcing the content of the packaging unit through the elongated spout by pressure. The projection of the packaging unit is adjusted in its dimensions so that the inner part of the elongated spout is lined by the projection and, therefore, does not come into contact with the pasty content of the packaging unit. By that means, clogging of the elongated spout is avoided.

The projection of the packaging unit may be longer than the protruding end of the cartridge, when inserted. More exactly it may be to such an extent longer that the upper end of the projection can be cut and closed by any conventional clip or any other means. In case the opening of the projection is clogged by hardened content, a simple cut of the end of the projection will again guarantee a free flow of the content.

Furthermore, with this special feature of combination of packaging unit and housing, the content of the packaging unit will preferably not come into contact with the housing and in particular the protruded end of the housing. This enables the user to exchange packaging units when they have been emptied. The exchange procedure is very simple due to a housing consisting of two separate parts. This kind of packaging unit ensures that there is no loss in quality of its content. Thus, even after repeated use of the same packaging unit over a long period, the quality of the product

is comparable with that of an unused new one.

Preferably, the means for emptying the projection of the packaging unit may be realised in that, in the lower part of the elongated spout in at least

one inlet, a second piston is inserted, which is adjustable along the longitudinal axis of the elongated spout for emptying the projection of said foil packaging unit. This is of particular advantage for either expensive contents or contents which would lead to disposal problems should the packaging unit not be completely emptied.

Fig 1 shows the flexible foil packaging unit of the present invention;

Fig 2 shows a longitudinal cut through a combination of a housing and a packaging unit filled with a composition of pasty consistency;

Fig 3 shows an alternative form of a packaging unit of the present invention.

Fig 4 shows the way of folding and closing the projection's opening of Fig 3.

Fig 5 shows the principle of folding a sheet of package material and cutting the packaging unit form out of the folded sheet.

Fig 6 shows a view of the upper and lower edges of the folded sheet of Fig 5.

Figure 1 shows the flexible packaging unit 1 having a content of pasty consistency. The body 2 of the packaging unit 1 is substantially tubular and its one end 3 is closed by any conventional mechanical means such as clips, rings, etc. Alternative possibilities for closing the edges of the lower end 3 are welding or gluing them together. The transition 4 to the projection 5 is formed by a restricting means 6 which compresses the circumference of the substantially tubular body 2 of the packaging unit 1. The restricting means 6 is adjustable in axial A and longitudinal L direction in order to determine the diameter and length of the projection 5.

The end 7 of the projection 5 is closed by a closing means, which are in a preferred manner mechanical clips.

The flexible packaging unit can be made of any suitable material and depends on the content of said packaging unit. For oxygen sensitive contents a material must be chosen which forms a barrier for oxygen. This means that the value of the diffusion constant for oxygen through this material has to be very small. Suitable materials are for example foils or laminates of aluminium, polyethylene or polypropylene.

In Figure 2, the flexible packaging unit 1 is introduced in a housing 8 which belongs to the general type of piston-cylinder applicators. The applicator consists of a solid housing 9a and 9b, which are reversibly put together. Alternatively, of course, any other type of reversible connection is applicable. For example, these two parts can be provided with threads in order to hold them together. The housing 9a at one end consists of a piston 10 which is movable along the longitudinal axis L of the housing 8. By pressing or screwing the piston 10 across the axis L to the upper end 11 of the housing 9a, the content of the flexible, substantially tubular packaging unit 1 is dispensed through its projection 5. The solid housing 9b has an elongated spout. Diameter and length of the projection 5 is fitted to diameter and length of the elongated spout. The projection 5 is inserted in the housing 8 and in particular in the elongated spout in such a way that the end 7 of the projection 5 juts out from the elongated spout far enough to allow attachment of a closing means 13. In the lower part 14 of the elongated spout 12 an inlet 16 is attached to insert a second piston 15. Said piston 15 comprises an elongated stick 16 which has to be substantially the same length as the elongated spout 12. The piston 15 is movable along the longitudinal axis L of the elongated spout 12. By pushing up the piston to the end 18 of the elongated spout 12, the content of the projection 5 is pressed out.

Figure 3 shows an alternative form of the flexible packaging unit 1 of the present invention. The body 2 is substantially tubular comprising one seam 19. But even with two or more seams it would keep its substantially tubular form. The projection 5 is a square body with its adjoining edges attached lengthwise together. The attachment can be performed by any conventional means. In particular welding or gluing is applicable in order to get durable seams. In Figure 4 the closure principle of the projection 5 at its upper end 7 is illustrated in top view. Each of the edges 21 is divided and the halves of adjoining edges 21 are attached together, thereby forming a symmetric cross. The transition part 20 is a square pyramid with an open top. It forms the transition from the substantially tubular body 2 with only one seam 19 to the square projection 5 with four seams (24a-d).

Obviously, instead of 4 edges, a higher number of edges such as 6 or 8, the number still being even, is possible.

Figure 5 represents the way of producing the packaging unit of Fig 3.

A foil sheet 22 which is the package material is folded as represented in Figure 6. It shows in top view the upper 25 and lower 26 ends of the sheet 22. The sheet 22 having two side edges 23a, 23b is folded with inwardly directed pleats 28, 29 on two opposite sides and with the two side edges 23a, 23b lying above one another.

Segments from the pleats 28,29 can simply be cut out to form the projection 5 and the transition part 20 of the packaging unit 1.

The edges can simultaneously be cut and joined together along a cut and weld line C in the same step. In the same step, the side edges 23a, 23b, $23a^1$, $23b^1$ and upper and lower edges 21 can be joined together. The simultaneous cutting and

joining is, however, not a basic requirement.

Two parts can be cut and welded together at the same time, a first part along the edges 23a, 23b and a second part along the edges $23a^1$, $23b^1$ along one and the same cut and weld line C, when the pleated foil shown in Fig.6 is pressed in a flat shape. A foil material consisting of at least two layers with different welding properties allows 23a, 23b and $23a^1$, $23b^1$ to be joined without joining the edges $23a^1$ and 23a. The layer directed to the interior of the package must be weldable (consisting e.g. of polyethylene or polypropylene) while the layer directed towards the exterior is not weldable under the same conditions (consisting e.g. of polyester).

This way of folding the sheet 22 provides the possibility of cutting out the packaging unit form and joining all open edges simultaneously in one step, permitting a very economic and fast way of packaging unit production.

The reference to any prior art in this specification is not, and should not be taken as, an acknowledgment or any form of suggestion that that prior art forms part of the common general knowledge in Australia.

Throughout this specification and the claims which follow, unless the context requires otherwise, the word "comprise", and variations such as "comprises" and "comprising", will be understood to imply the inclusion of a stated integer or step or group of integers or steps but not the exclusion of any other integer or step or group of integers or steps.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A housing containing a replaceable flexible packaging unit for the packing of compositions having a pasty consistency, said packaging unit comprising a substantially tubular body closed at one end and a flexible projection, said housing being equipped with a movable piston at one of its ends, and further comprising an elongated spout lined with the flexible projection, wherein the elongated spout comprises means for emptying the projection of said packaging unit.

2. A housing according to claim 1, wherein the ratio of the length of the body to the length of the projection of said flexible packaging unit is at least 1:0,2.

3. A housing according to claim 1 or 2, wherein a piston is fixed in at least one inlet incorporated in the elongated spout and wherein said piston is movable along the longitudinal axis (L) of said spout for emptying the projection of said packaging unit by pressure.

4. A housing according to one of the claims 1 to 3, wherein the projection of the flexible packaging unit has a smaller opening width, and particularly a smaller diameter, than that of the body.

5. A housing according to claim 4, wherein the projection is formed by a restricting means compressing the circumference of the substantially tubular body at a predetermined position.

6. A housing according to claim 5, wherein said restricting means is adjustable both in radial direction (A) and in

longitudinal direction (L) across and along the substantially tubular body of said packaging unit for fixing the opening diameter and the length of the projection.

7. A housing according to one of the claims 5 or 6, wherein the projection is evacuable.

8. A housing, substantially as hereinbefore described with reference to the drawings.

DATED this 15th day of March, 2002

SICPA HOLDINGS S.A.

By DAVIES COLLISON CAVE
Patent Attorneys for the applicant

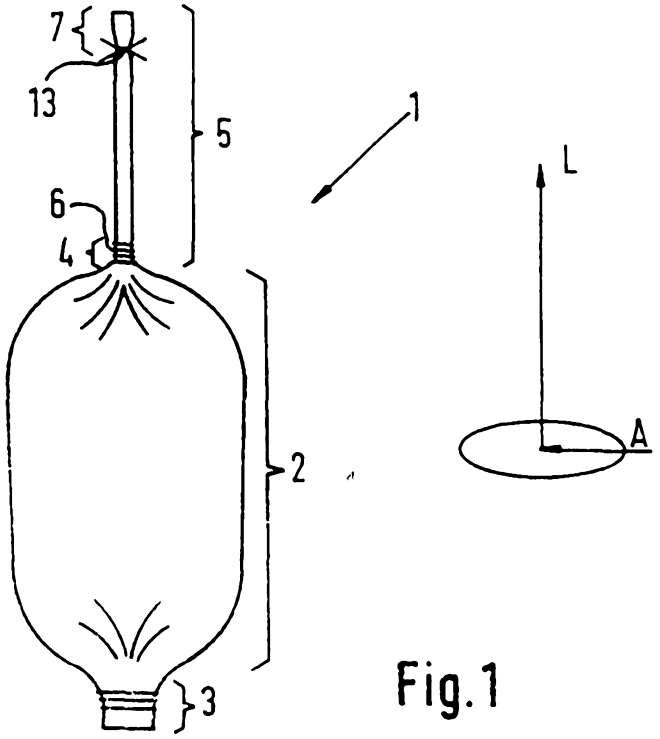

Fig.1

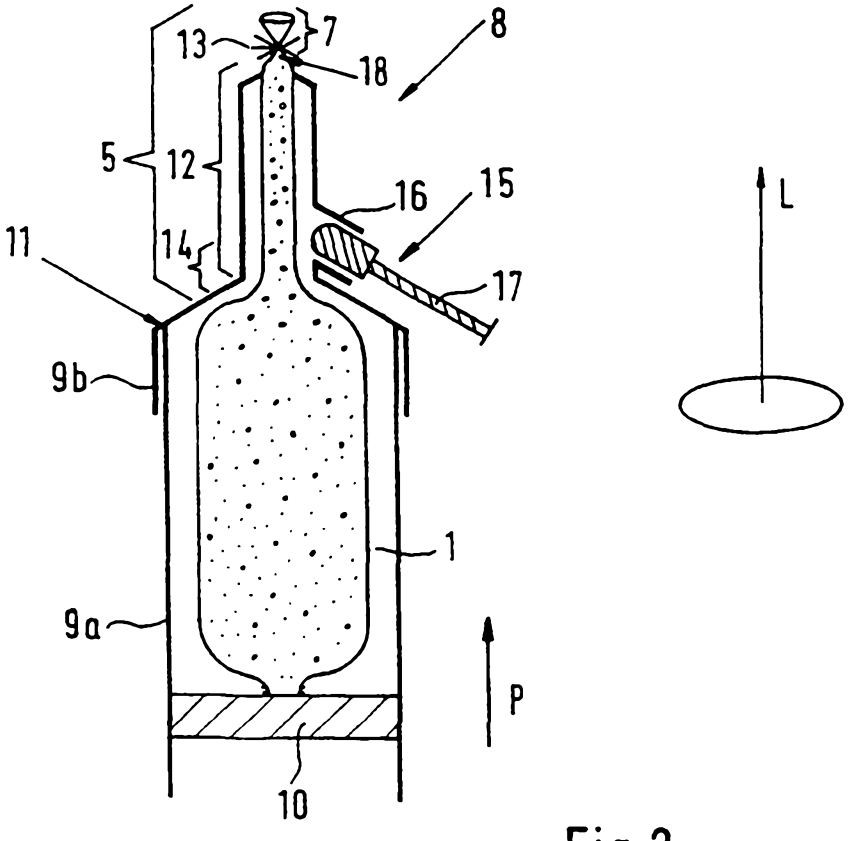

Fig.2

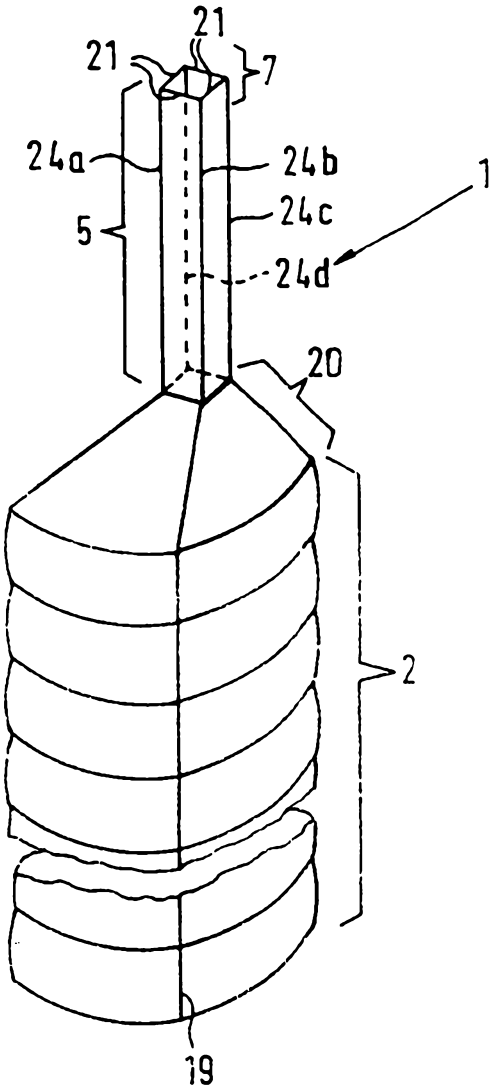

Fig.3

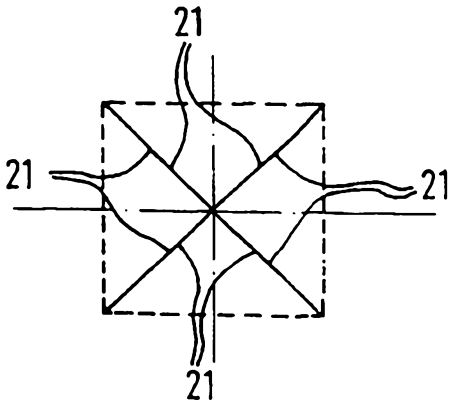

Fig.4

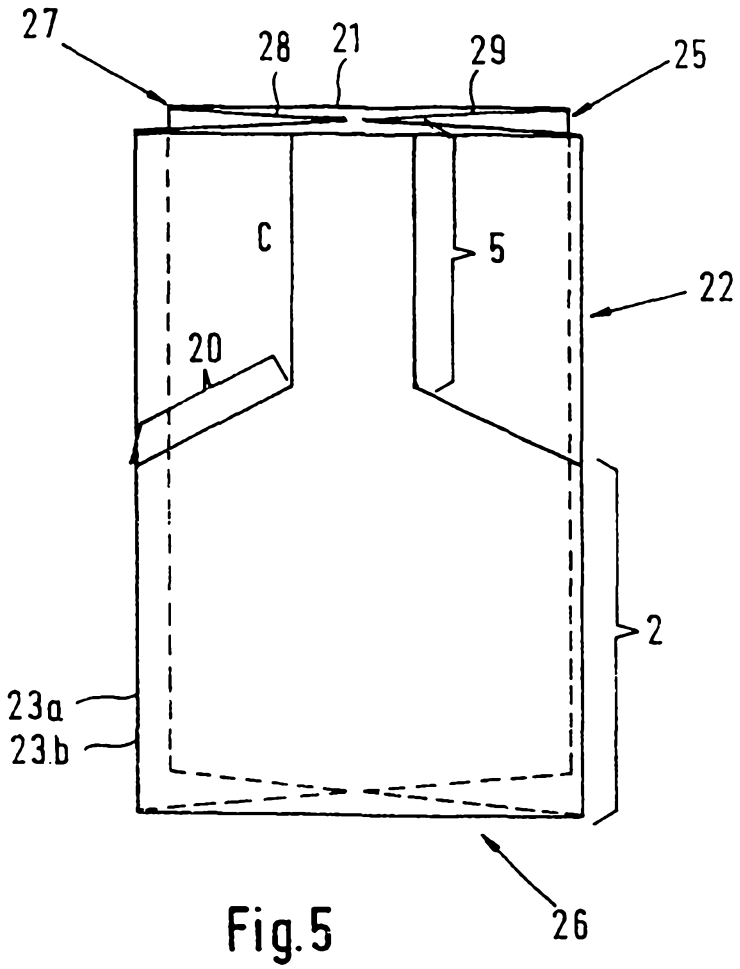
27
28
21
29
25
C
5
22
20
2
23a
23b
26

Fig.5

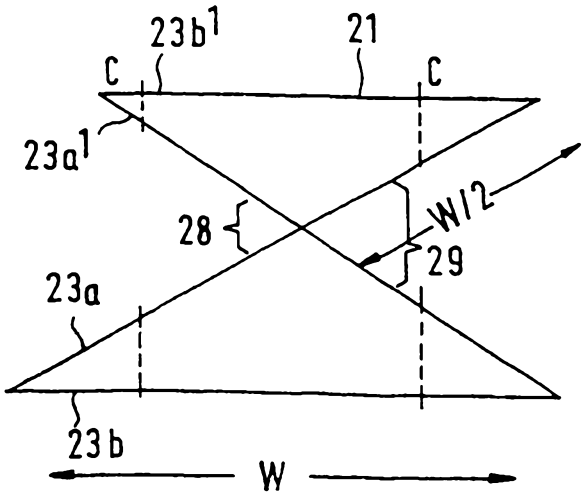
23b1
21
C
C
23a1
W/2
28
29
23a
23b
W

Fig.6