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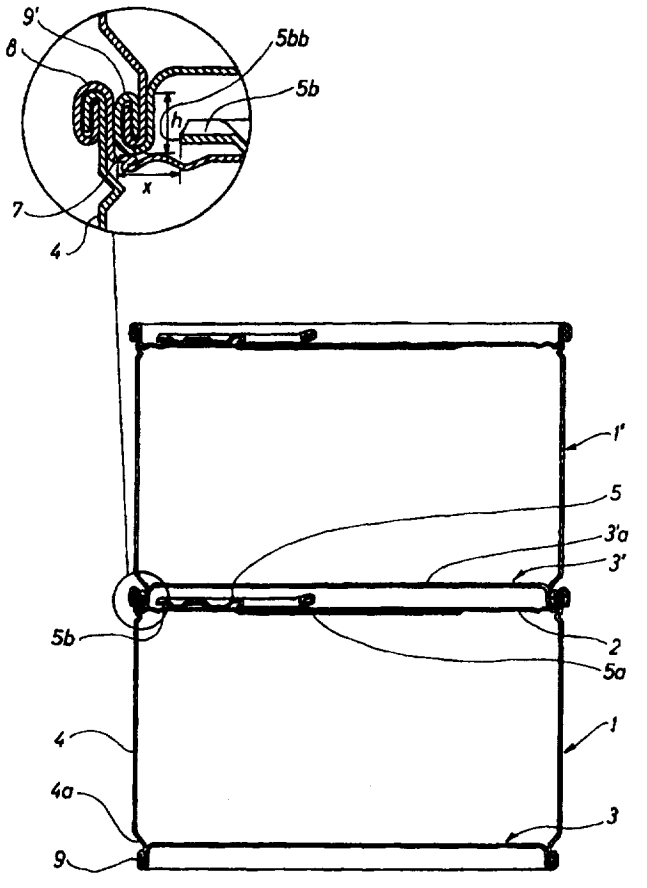
(54) Title: A CAN WITH A COVER PROVIDED WITH A PULL RING

(57) Abstract

A can with a cover comprises a pull ring (5) and a score line (7) adjacent the closing flange (8) of the cover, and a bottom closing flange (9). The nose (5b) of the pull ring (5) is spaced such a distance (x) from the weakening line (7) that two cans (1', 1) can be stacked atop one another without any risks of damaging the pull ring. When the handle part (5a) is lifted, the pull ring is displaced the distance (x) outwards towards the cover flange (8) before it perforates the cover through the score line (7). The resulting can is less vulnerable compared to known cans at the score line during handling and can thus withstand heavy vertical loads. Moreover more room is provided for a closing chuck at the seaming of the cover.



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Title: A can with a cover provided with a pull ring

Technical Field.

The invention relates to a can with a cover and a bottom member, where the cover comprises a pull ring provided with a nose, said can optionally being used for packing of formed articles, such as formed articles of meat, and where a score line is provided in the cover adjacent a circumferential closing flange shaped between the cover and the body of the can preferably at a distance within 0.5 mm therefrom, and where the bottom member is secured to a lower portion necked in of the body of the can by means of a circumferential bottom closing flange.

Background Art

A circular can with a cover and a bottom member has been known for a long time, where the cover and the bottom member are secured by means of a closing flange to the cylindrical body of the can. The top side of the cover is provided with a pull ring, viz. an easy-open device, as well as upwardly projecting stacking projections, and the bottom member is provided with corresponding stacking projections. When two identical cans are stacked atop one another, the pull ring is almost completely protected from bumps and impacts because the stacking projections transfer the vertical pressure between the cans while they simultaneously maintain such a distance between the cover of the lower can and the bottom surface of the upper can that the pull ring is not squeezed. Such a can is, however, not completely satisfactory because the projections interfere with the distribution of the material in the cover which may cause undesired tensions in said material and consequently weak, i.e. leaking portions at the score line during the handling of the can. Furthermore it turned out that a very high number of cans of this type stacked atop one another involves a risk of the lower can leaking already when it is sub-

jected to a vertical load of approximately 40 N. In addition, the manufacture of such a can is not as easy as it should be because when the cover is to be seamed onto the body of the can it is not easy to make room for a closing chuck between the nose of the pull ring and the cover closing flange, said closing chuck functioning as a counter-tool for the seaming implement.

Brief Description of the Invention

The object of the invention is to provide a can of the above type which compared to known cans is less vulnerable at the score line during the handling procedure, which can withstand a vertical load of up to 600 N without leaking and without the pull ring being damaged, and which is easy to manufacture because it allows room in a better manner than the known cans for a closing chuck at the seaming of the cover.

The can according to the invention is characterised in that the nose of the pull ring is spaced such a distance x, preferably 1 to 3.5 mm, from the score line that the bottom flange of the upper can finds room between the cover flange of the lower can and said nose when two cans are stacked atop one another, and that the bottom flange is of such a height that it can stand directly on the lower can without touching the pull ring thereof and without the surface of the bottom member touching said pull ring, and that the pull ring is adapted such that when a user pulls in the handle part thereof it can simultaneously be displaced a distance corresponding to the above distance x outwards towards the cover flange before the tip of the nose is forced downwards into the score line of the cover material.

As a result it is possible to completely avoid the known projections increasing the risk of leaks. In addition, the width of the bottom flange can be increased and thereby provide a large area absorbing the vertical stacking pressure exerted on the cover of the can without thereby causing the

bottom flange to destroy the pull ring of the lower can significantly. The latter is obtained because the nose of the pull ring is positioned at a distance away from the cover closing flange of this can in the stacked position of said can. It is not possible for the nose to be pressed at the wrong moment downwards into the score line by the bottom flange thereabove, because the space between said nose and the cover flange is improved. As the bottom flange is of a considerable height, a sufficient distance is ensured between the cover of a can and the bottom surface of the can stacked thereon. The can according to the invention is furthermore easy to manufacture because the increased space between the nose of the pull ring and the cover closing flange allows an easy insertion of a closing chuck towards the cover, i.e. on the location where the cover closing flange is to be provided.

The pull ring may also comprise an intermediary portion between the handle part and the nose, said intermediary portion being rivetted to the cover, such as by means of a hollow rivet, and this intermediary portion may according to the invention be provided with a substantially curved slit extending around the rivet because the hollow side of the "curve" faces away from the nose. In this manner the nose slides in a first phase in a particularly reliable manner outwards towards the cover closing flange, i.e. towards the score line, when the handle part of the pull ring is slightly lifted.

The slit of the intermediary portion may according to the invention be substantially U-shaped, which turned out to be particularly advantageous.

Moreover, the slit of the intermediary portion may according to the invention be substantially lyre-shaped which in practice turned out to be a particularly reliable shape.

The hollow rivet of the pull ring may according to the invention be made

of material from a tear-up web defined in the cover by a non-continuous auxiliary score line, said tear-up web being torn up when the pull ring is lifted and turned with the effect that said pull ring when turned past vertical plane can act as a lifting bar while supported by the cover flange in connection with the breaking up of the score line. In this manner it is in particular ensured that not only the nose punctures the cover in the correct location, viz. along the score line, but also that the further breaking up of the entire score line and consequently the tearing up of the cover can be carried out in a very reliable manner so as to open the can.

Furthermore, the auxiliary score line of the tear-up web may according to the invention be substantially bell-shaped, where the broadest portion of the "bell" faces the score line, but nevertheless is spaced therefrom, preferably at a distance of at least 2 mm. This embodiment has proved particularly reliable.

Before the handle part is lifted by the user, the tip of the nose may according to the invention be spaced from the inner wall of the cover flange when seen in the radial direction a distance of 2 to 4 mm, preferably 2.5 to 3.5 mm. Such an embodiment turned out to allow a suitably large width of the bottom flange, whereby the bottom surface of the latter towards the cover therebelow is increased.

Finally, the body of the can, the cover member and the bottom member may according to the invention be made of metal sheet of a thickness of 0.1 to 1.5 mm, which turned out to be a suitable thickness relative to the weight of the articles ordinarily to be contained in the can.

Brief Description of the Drawings

The invention is explained in detail below with reference to the drawings, in which

Fig. 1 is a vertical sectional view of two cans according to the invention stacked atop one another, where an enlarged view is shown of the area between the nose of the pull ring of the lower can and the cover closing flange of said can,

Fig. 2 is a top view of a can according to the invention, where it is clearly shown that the nose of the pull ring is considerably spaced from the cover closing flange before the can is opened,

Fig. 3 is a top view of a pull ring, where the slit in the intermediary portion is substantially U-shaped,

Fig. 4 is a top view of a pull ring, where the slit in the intermediary portion is substantially lyre-shaped,

Fig. 5 is a cross sectional view of a can during the opening procedure, whereby the pull ring has been turned 120°, and whereby the cover closing flange forms a support for the pull ring while the cover is being torn up along the score line, and

Fig. 6 illustrates a portion of a cover, where the auxiliary score line is bell-shaped.

Best Mode for Carrying Out the Invention

The cans 1 and 1' illustrated in Fig. 1 are identical and stacked atop one another. The can 1 comprises a cover 2 and a bottom member 3 secured to the body 4 of a can. The cover 2 is provided with a pull ring 5 with a nose 5b. A score line 7 is provided in the cover 2 adjacent, preferably inside a distance of 0.5 mm from a circumferential cover closing flange 8 shaped between said cover and the body 4 of the can. The resulting can is particularly suited for packing of formed articles, such as formed articles

of meat, but it can, however, also be used for many other types of articles. The bottom member 3 is secured to a lowermost portion 4a necked in of the body 4 of the can by means of a circumferential bottom closing flange 9.

On the upper can 1' all the relevant parts have the same reference numerals as on the lower can 1, whereby, however, a "mark" has been added.

The nose 5b on the pull ring 5 of the lower can is provided at such a distance x from the score line 7 that the bottom flange 9' of this can 1' has room between the cover flange 8 of the lower can and said nose 5b when two cans are stacked atop one another. The bottom flange 9' of the upper can is of such a height that said bottom flange 9' stands directly on the cover 2 of the lower can without touching the pull ring 5 when said two cans are stacked atop one another. Furthermore, the bottom surface 3a of the bottom member 3 does not touch the pull ring 5. The pull ring 5 is shaped such that when a user pulls in the handle part 5a, said ring is displaced a distance corresponding to the above distance x outwards towards the cover flange 8 before the tip 5b of the nose is forced downwards into the score line 7 of the cover.

Such a can is less vulnerable than the known cans because the bottom flange 9' can be made very broad, as a matter of fact its width can match the distance x, whereby the vertical forces to be transferred from can to can are distributed across a relatively large area on the can cover. Accordingly, the score line 7 is not as vulnerable as previously experienced. It turned out that the can according to the invention can stand a vertical load of up to 600 N without leaking neither at the score line nor at the cover closing flange 8, and without the pull ring 5 being damaged by the surface 3'a of the bottom member 3 of the upper can. As the above distance x is rather large, preferably 1 to 3 mm, more room than previously is provided

during the seaming of the cover where the pull ring 5 has been mounted in advance, said room being provided for a closing chuck between the closing flange of the cover and the nose. The closing chuck forms the basis for an additional folding implement.

As illustrated in Fig. 2, the pull ring 5 may in addition to the handle part 5a and the nose 5b comprise an intermediary portion 5c arranged between the latter two parts and rivetted to the cover, such as by means of a hollow rivet 9. Then the intermediary portion may comprise a substantially curved slit 12 extending around the rivet 9, the hollow side of said slit facing away from the nose 5b. The slit 12 may be shaped in many different ways, such as U-shaped as shown in Fig. 3 or be lyre-shaped as shown in Fig. 4.

The hollow rivet 9 of the pull ring 5 may be made of material from a tear-up web 15 defined in the cover by a non-continuous auxiliary score line 14. The tear-up web is arranged substantially below the pull ring 5. When the handle part 5a of the pull ring is lifted and turned more than 90° (in Fig. 5 the pull ring is turned approximately 120°), said pull ring forms a type of lifting bar with the cover flange 8 as support. When the handle part 5a is pressed in a direction of the arrow A, the score line 7 is broken up efficiently along a distance in such a manner that users can pull away the cover from the body of the can.

As shown in Fig. 6, the auxiliary score line 14a can be substantially bell-shaped, the broadest portion of the "bell" then facing the score line 7. A short distance, but preferably at least 2 mm, exists between the "bell" and the score line 7.

Before the handle part is lifted by the user, the distance a between the tip of the nose 5b and the inner wall of the cover flange 8 when seen in the radial direction can be approximately 2 to 4 mm, preferably 2.5 to 3.5

mm. It is evident that the previously described distance x is slightly shorter than this distance a.

The body of the can 4, the cover member 2 and the bottom member 3 can be made of metal sheet of a thickness of 0.5 to 1.5 mm, but many other wall thicknesses can, of course, also be chosen.

The invention may be modified in many ways without thereby deviating from the scope thereof.

Claims

1. A can with a cover (2) and a bottom member (3), and where the cover comprises a pull ring (5) provided with a nose (5b), said can for instance being used for packing formed articles, such as formed articles of meat, and where a score line (7) is provided in the cover adjacent a circumferential closing flange (8) shaped between said cover and the body (4) of the can, and where the bottom member (3) is secured on a lowermost portion (4a) necked in of the body of the can by means of a circumferential bottom closing flange (9), characterised in that the nose (5b) of the pull ring (5) is spaced such a distance x, preferably 1 to 3.5 mm, from the score line (7), that the bottom flange (9') of the upper can finds room between the cover flange (8) of the lower can and said nose (5b) when two cans (1', 1) are stacked atop one another, and that the bottom flange (9) is of such a height (h) that the bottom flange (9) stands directly on the cover (2) of the lower can when the two cans are stacked atop one another without touching the pull ring (5) and without the bottom surface (3a) of the bottom member (3) touching said pull ring (5), and that when a user pulls in the handle part (5a) the pull ring is adapted to be displaced a distance corresponding to the above distance x outwards towards the cover flange (8) before the tip (5bb) of the nose is forced downwards into the score line (7) of the cover material.

2. A can as claimed in claim 1, where the pull ring (5) in addition to the handle part (5a) and the nose (5b) comprises an intermediary portion (5c) arranged between the latter two parts and being rivetted to the cover, such as by means of a hollow rivet (9), characterised in that the intermediary portion (5c) comprises a substantially curved slit (12) extending around the rivet (9), the hollow side of the "curve" facing away from the nose (5b).

3. A can as claimed in claim 2, characterised in that the slit

of the intermediary portion (5c) is substantially U-shaped (12a).

4. A can as claimed in claim 2, characterised in that the slit of the intermediary portion (5c) is substantially lyre-shaped (12b).

5. A can as claimed in one or more of the preceding claims 1 to 4, characterised in that the hollow rivet (9) of the pull ring is made of material from a tear-up web (15) defined in the cover by a non-continuous score line (14), where said tear-up web (15) can be torn up when the handle part (5a) of the pull ring (5) is lifted and turned, whereby when turned past the vertical plane the lifting ring (5) can be used as a lifting bar with the cover flange (8) as a support in connection with the breaking up of the score line (7).

6. A can as claimed in claim 5, characterised in that the auxiliary score line (14) of the tear-up web is substantially bell-shaped (14a), whereby the broadest portion of the "bell" faces the score line, but is spaced therefrom, preferably a distance of at least 2 mm.

7. A can as claimed in one or more of the preceding claims 1 to 5, characterised in that the distance a between the tip (5bb) of the nose and the inner wall of the cover flange (8) when seen in the radial direction is approximately 2 to 4 mm, preferably 2.5 to 3.5 mm, before the handle part is lifted by the user.

8. A can as claimed in one or more of the preceding claims 1 to 6, characterised in that the body (4) of the can, the cover member (2) and the bottom member (3) are made of metal sheet of a thickness of 0.1 to 1.5 mm.

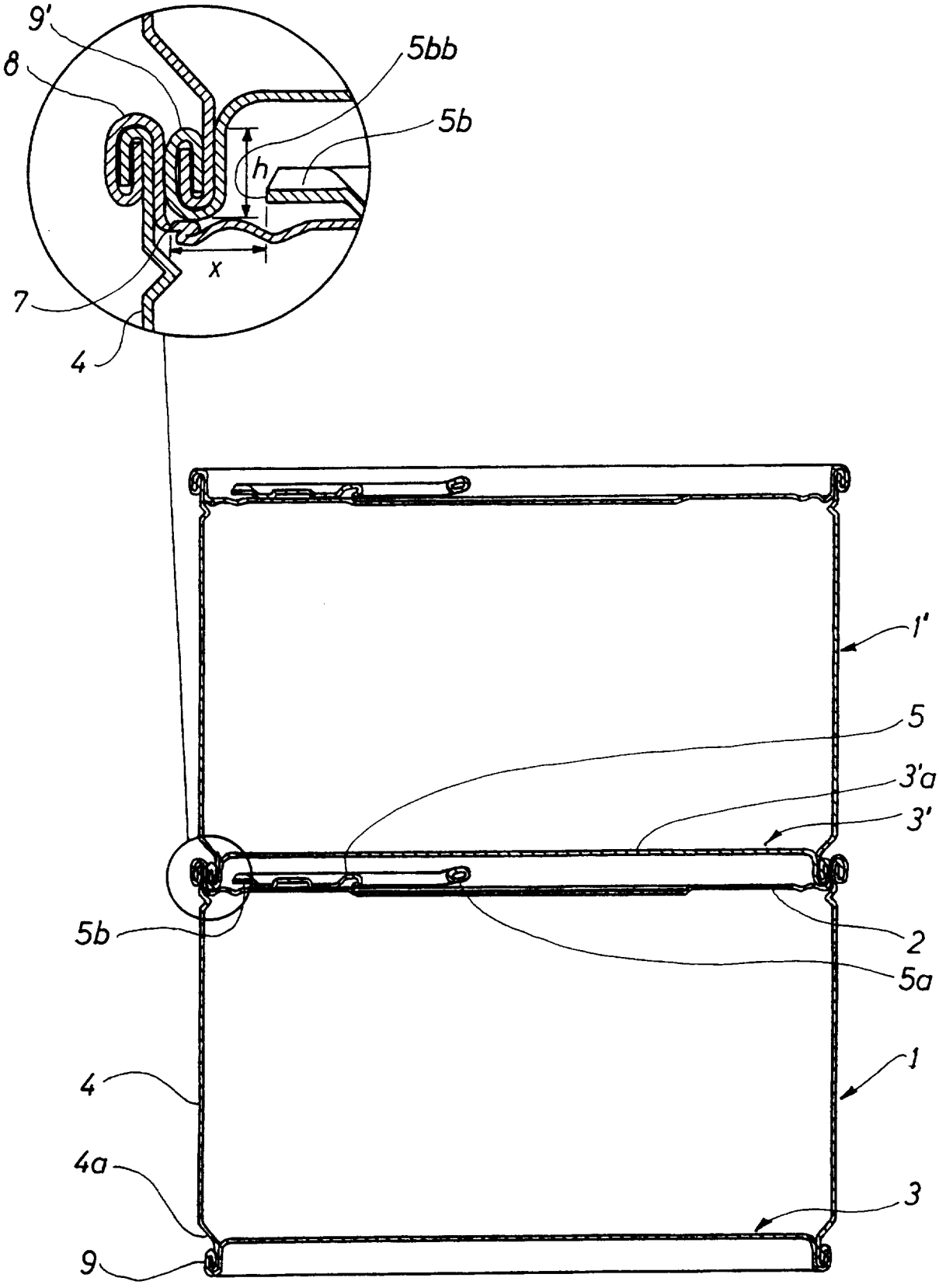

Fig. 1

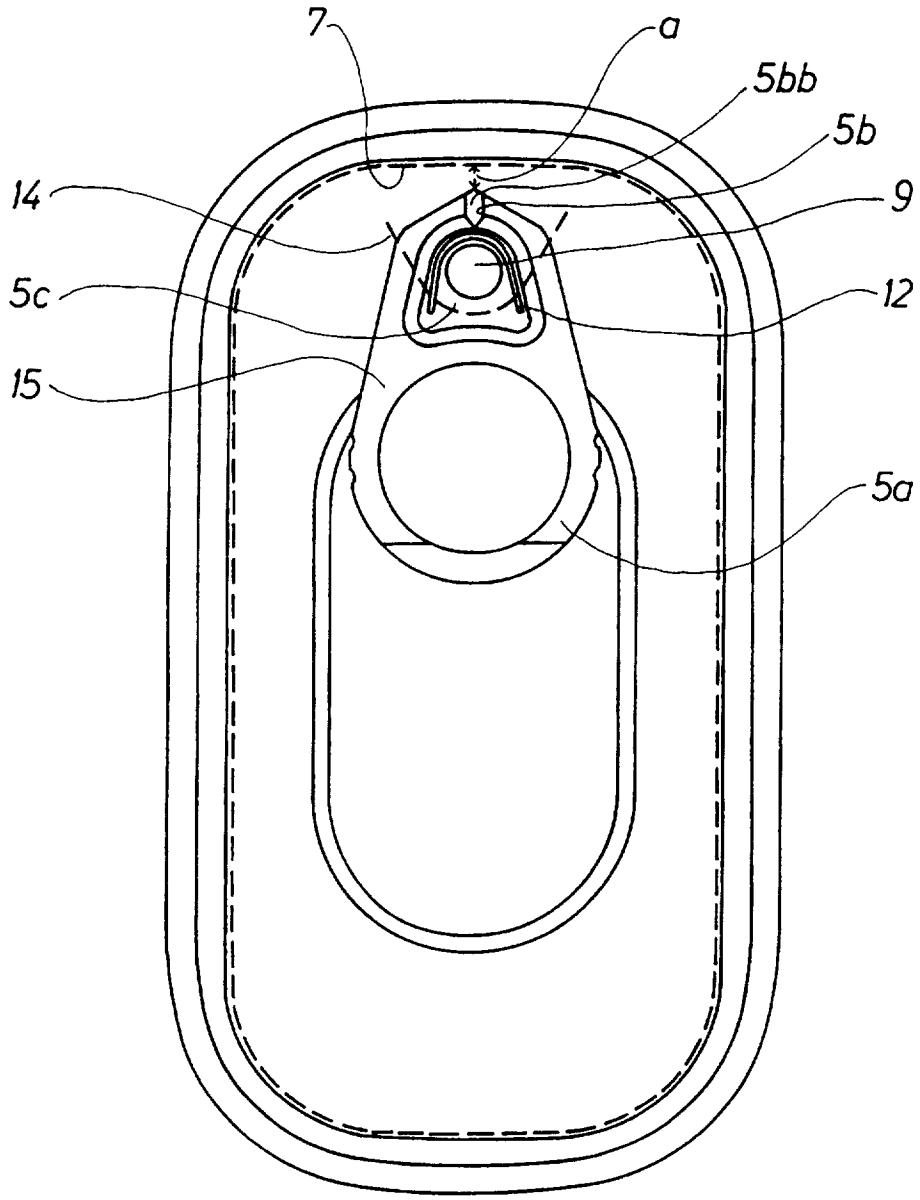

Fig. 2

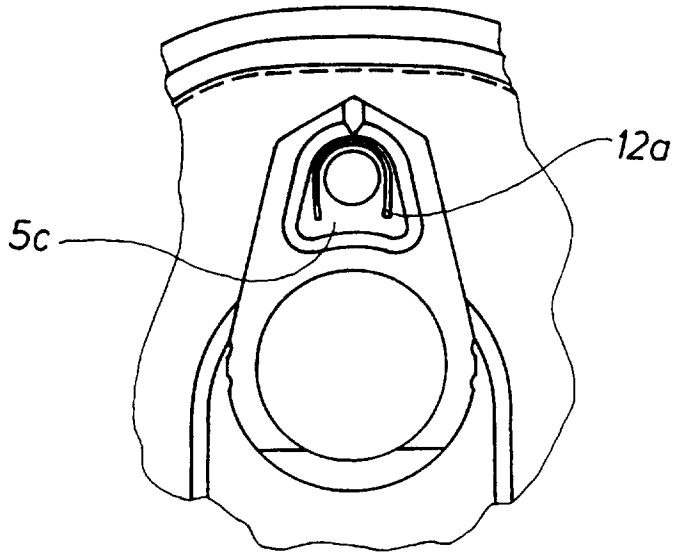

Fig. 3

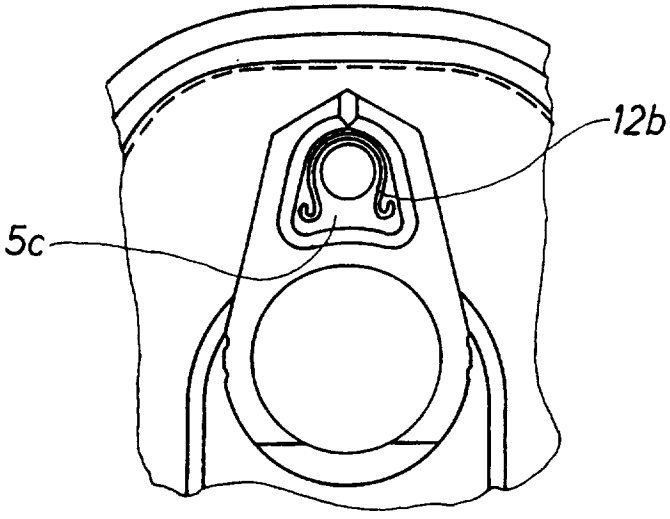

Fig. 4

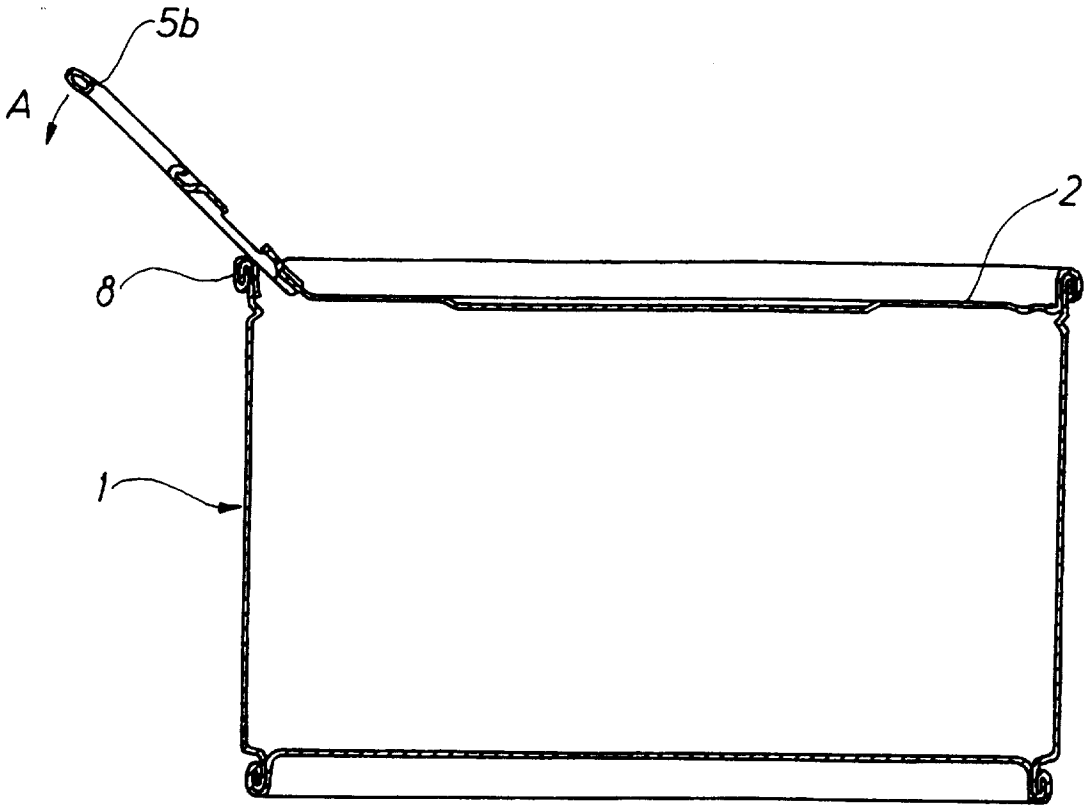

Fig. 5

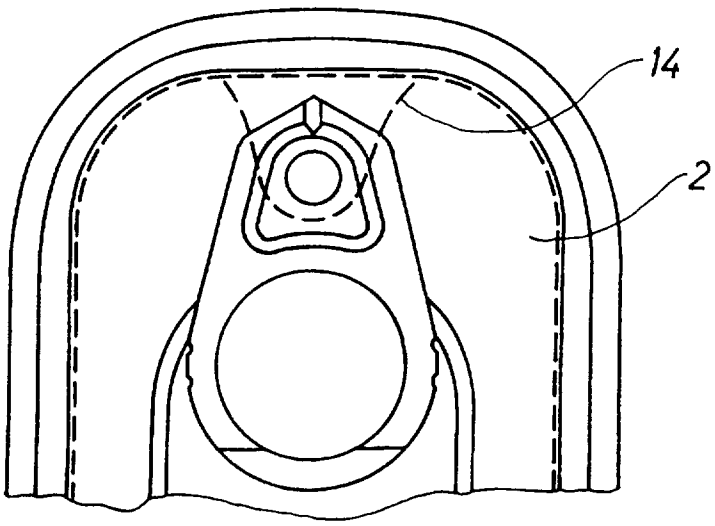

Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.
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A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B65D 17/34, B65D 21/032
According to International Patent Classification (IPC) or to both national classification and IPC

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Y	US 1650520 A (S.M. JOHNSON), 22 November 1927 (22.11.27), figures 1,2	1-8
Y	US 3586203 A (GEORGE T. POWELL), 22 June 1971 (22.06.71), figures 3,4	2,3,4,8
Y	WO 8805406 A1 (SAUNDERS, WILLIAM T.), 28 July 1988 (28.07.88), figures 1-19	5,6,8

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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INTERNATIONAL SEARCH REPORT

International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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A	SE 364235 B (VEREINIGTE DEUTSCHE METALLWERKE AG), 18 February 1974 (18.02.74), page 4, line 1 - line 21, figures 1-7	1-8

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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