

United States Patent

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[72] Inventor **Rolf Lennart Ignell,
Lund, Sweden**
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[73] Assignee **Sobrefina SA,
Fribourg, Switzerland,
a company of Switzerland**
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[31] **8,495/67**

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80A, 80B, 80BC, 80BD, 80C, 80D, 80DA; 220/45;
215/80; 113/120A, 121A, 121C

[56] **References Cited**
UNITED STATES PATENTS
1,039,753 10/1912 Kannenberg 113/80
1,709,196 4/1929 Snyder 113/121
2,199,528 5/1940 Sebell 113/121
3,223,063 12/1965 Payton 113/121

Primary Examiner—Charles W. Lanham
Assistant Examiner—Michael J. Keenan
Attorney—Pierce, Scheffler & Parker

[54] **METHOD OF HERMETICALLY CLOSING A
CONTAINER BY MEANS OF A LID CAPABLE OF
BEING SEAMED**
2 Claims, 4 Drawing Figs.

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113/120, 113/121
[51] Int. Cl..... B21d 51/46

ABSTRACT: A hermetically sealed container is obtained by placing a lid having an upwardly extending peripheral side wall into the mouth of a container and having a sealing compound applied to the outside of said wall and forming a folded seam of a peripheral flangelike member around the upper edge of said side wall of the lid by applying pressure while compressing and spreading the sealing compound between the vertical side wall of the lid and the mouth of the container.

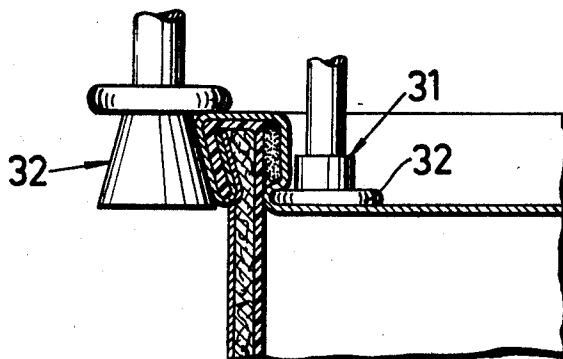


Fig.1

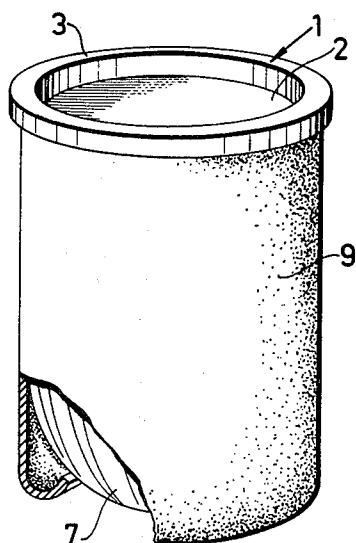


Fig.2

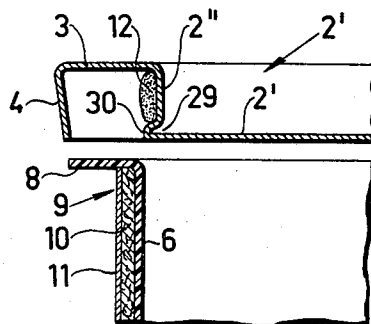


Fig.3

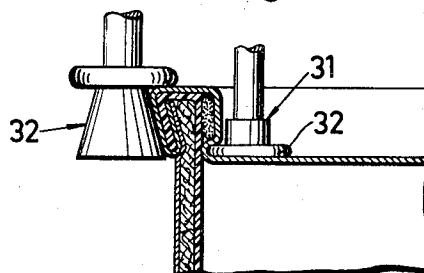
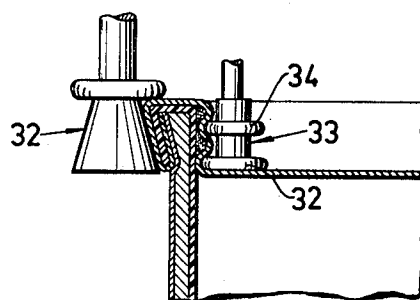


Fig.4



INVENTOR

Rolf Lennart Ignell

By

Pierre, Schiffler & Parker
Attorneys

METHOD OF HERMETICALLY CLOSING A CONTAINER BY MEANS OF A LID CAPABLE OF BEING SEAMED

The present invention is concerned with packaging technology and relates to a method of hermetically closing a container by means of a bowl-shaped lid which is capable of being seamed, the upper portion of the side wall of said lid including a projection which is folded down onto the outside of the container.

A sealing agent, for instance a "compound" material which is itself known, is utilised for the hermetic sealing operation. In accordance with conventional methods, this is usually applied to the above projection so that it flows out into the seam that has been formed on the outside of the container. The purpose is naturally that the seam should in this way be made completely leakproof. It has however been found that the compound is often forced out of the seam during the seaming operation. This is undesirable for two main reasons. On the one hand, the appearance of the container will be less attractive, but above all, the leakage of the compound enables the pressure on the compound inside the seam to decrease to a level so that the compound will not fill all the pores in the seam. The result will in other words be that a hermetic seal can no longer be guaranteed.

It is however possible to eliminate these and other disadvantages in accordance with the invention, which is characterised by the sealing agent or compound being applied on the outside of the side wall of the lid and by its being enclosed inside the space defined by the said side wall and the said projection, and spreading the compound by squeezing under pressure during the seaming operation.

The invention will now be explained more closely by reference to the enclosed drawings, of which:

FIG. 1 is a perspective view of a container with a seamed-on sheet metal lid;

FIG. 2 shows a portion of the lid and container before the seaming operation;

FIG. 3 shows how a seaming operation can be carried out; and

FIG. 4 shows a final seaming operation in accordance with the invention.

The container in FIG. 1 consists of an inner lining having the requisite leakproof properties, and of an outer stiffening sleeve. The lining consists of a cylindrical portion 6, FIG. 2, and of a hemispherical portion 7 which forms the bottom of the container. The upper portion of the lining projects beyond the upper edge of a sleeve 9 and forms a flange 8. It is best for the lining to have been produced by means of deep-drawing and to consist preferably of plastic, perhaps in combination with other materials.

PVC, pure or varnished on the inside with polyvinylidene chloride or other varnish, polyethylene or a laminate thereof comprising a thin aluminum foil with one or more layers of polyethylene, may be cited as examples of possible materials for the lining. When using the latter laminated material, it is preferable if the lining has been produced by folding a flat sheet of material in the way specified in U.S. Pat. application Ser. No. 675,549 now U.S. Pat. No. 3,436,007. The present invention has particularly great significance in connection with this type of container, since it would be simple to make the container leakproof, a difficulty which can arise by the said folding process.

The outer sleeve 9 principally consists of a tube 10 of cardboard, the elastic properties of which have been made use of in accordance with the present invention. Cardboard tube 10 is in addition provided with a label 11 which extends right up to the upper edge of the sleeve. It is best if the label contains a layer of plastic or aluminum foil or is varnished with a plastic varnish, so that the sleeve does not become saturated during the filling operation. The sleeve may alternatively consist of extruded polystyrene, which is particularly suitable in cases where the container and its contents are to be pasteurised.

The lid 1, which consists of sheet metal capable of being seamed, has the shape of a bowl 2 having a flat base 2' and a substantially straight side wall 2''. Side wall 2'' extends into a

flangelike member 3 and a skirt or shoulder 4 which projects downwards and inwards. (Impact-resistant) polystyrene may also be considered as a suitable material for the lid and is capable of being seamed. There is in addition a groove 29 between base 2' and side wall 2'', which on the opposite side appears as a projection or a ridge 30.

The lid has been provided with additional sealing material, a "compound" on the outside of side wall 2'', which may for instance consist of very soft PVC. It should be noted that the thickness of the material has been greatly exaggerated in the FIGS.

During the seaming operation, skirt or shoulder 4 of the lid is folded in under the outward-turned flange 8 of the inner lining, and flangelike member 3 of the lid, together with flange 8 and skirt 4, is folded down along the outside of sleeve 9, and is pressed into the sleeve material so that this is compressed as seen in FIGS. 3 and 4.

The seaming operation can be carried out using conventional seaming machines, the seaming rollers of which should however be adapted for carrying out of the present invention. An inner roller 31, FIG. 3, having a ring-shaped ridge 31', which during the seaming operation travels in the groove 29, is provided. An outer roller 32 is constructed in such a way that it is capable of pressing the boundary between the flangelike member 3 and the shoulder 4 of the flangelike member in against ridge 30, by which means a very high pressure is set up between ridge 30 and the inner lining 6. This pressure will substantially remain even after the rollers have been removed, due partly to the fact that the cold-worked sheet metal can only spring back to an insignificant extent, and partly to the sleeve having satisfactory elasticity. The compound 12 will thus be enclosed in a well sealed space which is bounded by wall 2'' and inner lining 6. The compound can therefore be caused to spread out into this space without a risk of leakage. The spreading-out of the compound may be achieved by applying pressure to the wall 2'', for instance by means of a roller 33 which is fitted with a ring-shaped ridge 34. The final seaming operation may be carried out either in two stages, as shown in FIGS. 3 and 4, or perhaps directly in one stage by means of rollers which are in principle like those shown in FIG. 4.

The invention is not restricted to a packaging container of the kind which contains an insert with a bottom and an upper outwardly-turned flange as shown in the drawings. It may thus also find application in connection with "composite cans", viz. packaging containers which have an insert in the shape of a tube or an inner coating that is open at both ends and has no end flanges, or is formed together with the outer stiffening to have a collar.

I claim:

1. A method for hermetically sealing a lined container with a lid member in which the container has a sleeve and a laminated lining comprising a layer of metal foil and at least one layer of a flexible plastic, said lining having an outwardly extending circumferential flange 8 at the top of the container extending over the upper circumferential edge of the sleeve and in which the lid member is provided with an upwardly extending peripheral side wall 2'', a flangelike member 3 extending outwardly from the top of the side wall and a downwardly extending skirt 4 at the outer circumference of the flangelike member 3, the lid member having a sealing compound 12 disposed on the outer surface of the side wall 2'', the method comprising inserting the lid member into the top of the container, folding skirt 4 inwardly to engage the underside of flange 8 folding the outer portion of flangelike member 3 downwardly to fold the composite layer of skirt 4 and flange 8 inwardly against the outer wall of the sleeve of the container and finally pressing the outside of said folded composite layer and the inside of the side wall 2'' together to compress the sealing compound 12 between the outside of the side wall 2'' and the inside surface of the laminated lining at the upper portion of the container to seal

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the container and avoid leakage which might be caused by unevenness of the laminated lining caused by the original shaping thereof.

tion of the side wall 2'' of the lid member is pressed against the laminated lining to confine the sealing compound above said bottom portion.

2. A method as claimed in claim 1 wherein the bottom por-

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