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[72] Inventor **Marcel Bilon**
Beaurepaire, France
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 [73] Assignee **Boxal Beaurepaire, S.A.**
Beaurepaire, France
a French Company

3,251,502 5/1966 Hayford 220/27X
 3,425,471 2/1969 Yates 220/29

FOREIGN PATENTS

269,955 5/1964 Australia 220/23
 339,738 12/1930 Great Britain 220/23

Primary Examiner—George E. Lowrance
 Attorney—Robert E. Burns and Emmanuel J. Lobato

[54] DEVICE FOR CLOSING A BOX 9 Claims, 6 Drawing Figs.

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[56] References Cited UNITED STATES PATENTS

2,671,577 3/1954 Remington 220/27X

ABSTRACT: A device for closing a box is provided with a rupturable membrane for fluidtightly closing the box, means for rupturing this membrane in order to unseal the box and a cover which is placed on the opening of the box when the membrane has been moved away, these means including an annular groove cut on the side of the membrane near its edge and forming a weak point facilitating the rupture thereof and on the other hand a curved bearing surface of either one side of the cover and at least two projections positioned at the front of this surface along a diameter corresponding substantially to that of the annular groove.

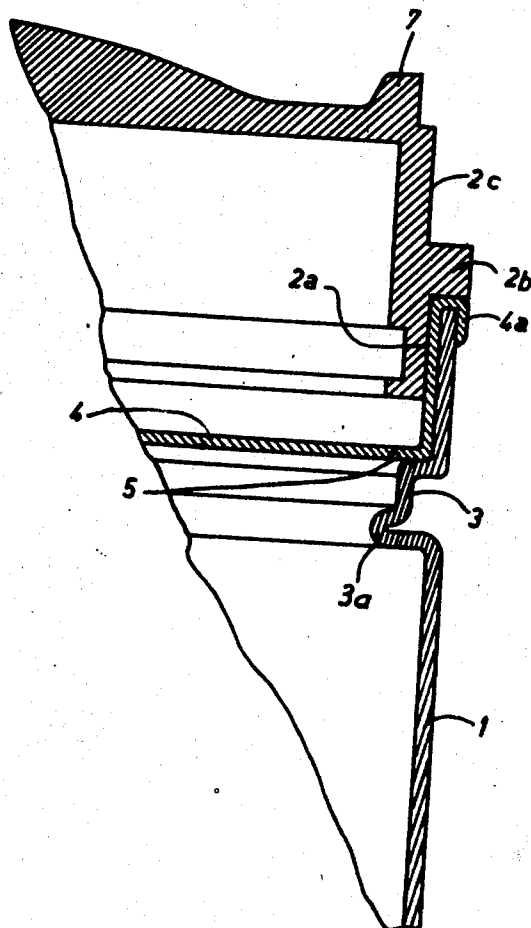


FIG. 4

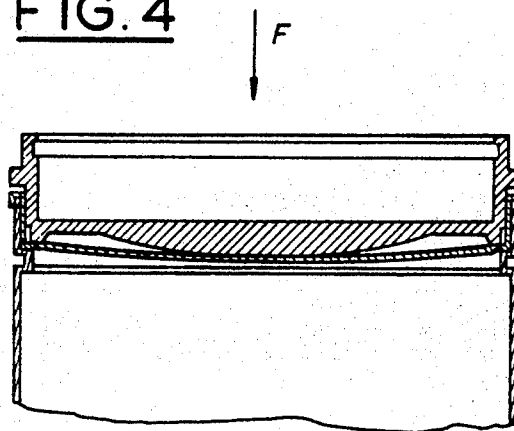
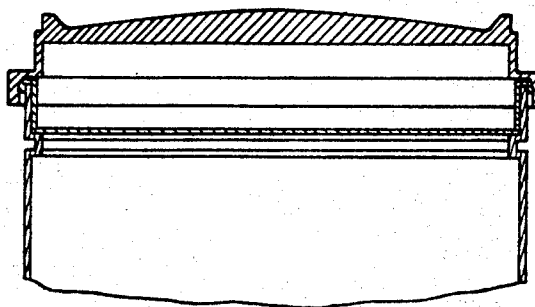


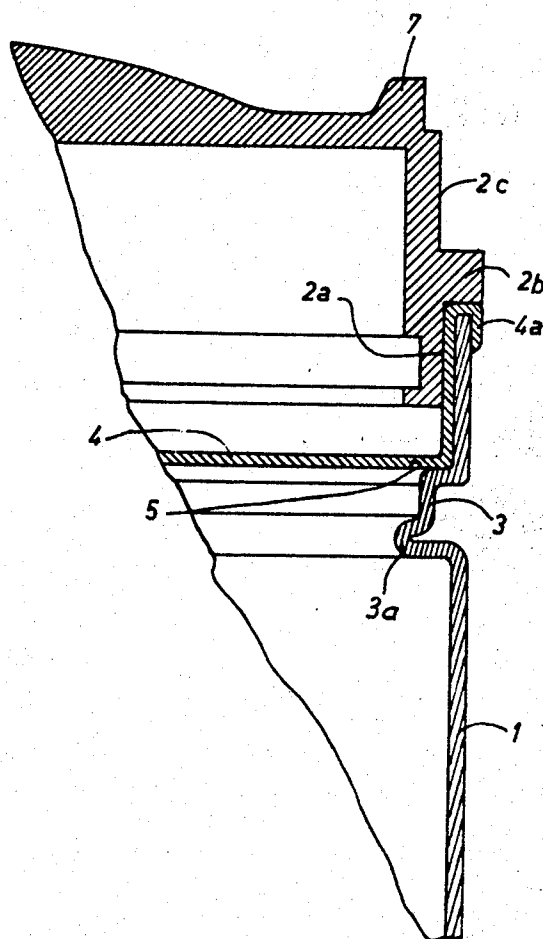
FIG. 5



INVENTOR: MARCEL BILON

BY: *Robert E. Bicus*
Attorney

FIG. 3b



INVENTOR: MARCEL BILON

By: *Robert E. Burns*
Attorney

DEVICE FOR CLOSING A BOX

This invention relates to a device for closing a box.

The use of tearable membranes to tightly close boxes of all sorts is now generally well known. These membranes cannot generally be removed except by circular or spiral cutting with the aid of some tool, knife, scissors, screw driver, or by tearing or pulling on one of their parts.

Very often the removal of these membranes requires rapid consumption of the product contained in the boxes they close, in particular, when the product is perishable or is able to evaporate for example. Sometimes, the devices for closing boxes with membranes are completed by a cover which fixed itself on the opening of the box.

the present invention precisely has for its object a device of this type but in which the drawbacks inherent to the use of membranes are definitely avoided.

To this effect, this device comprises a fluidtight closing membrane, means for removing this membrane in order to unseal the box, and a cover which is placed on the opening of the box when the membrane has been removed and wherein these means comprise, an annular groove cut on the periphery of the membrane near its edge and constituting a weak point facilitating the rupture thereof and on the other hand, a curved bearing surface provided on one side of the cover and at least two projections positioned at the foot of this surface, along a diameter corresponding substantially to that of the groove.

Other characteristics and features of the invention will now be described with reference to the accompanying drawings given by way of example in which:

FIG. 1 is a side elevation of a box with a device according to the invention;

FIG. 2 is a vertical cross section of FIG. 1 on a larger scale;

FIG. 3a is a plane view of FIG. 1 and FIG. 3b is a detail view on a larger scale of FIG. 2;

FIG. 4 is a view similar to FIG. 2 for another position of the cover of the box;

FIG. 5 shows a view similar to FIG. 2, according to another modification.

The box shown in the drawings have a body 1 on the upper part of which is placed a cover (FIGS. 1 and 2).

When the body 1 is metallic, for example of tin or aluminum, cover 2 is made of plastic material.

As shown in FIGS. 2 and 3b a container or body 1 has inwardly near its opening an annular rib 3 which forms a support for a rupturable metallic membrane 4 set on the edge of the opening of the body at 4a.

The lower face of this membrane has an annular groove or cut 5 extending perpendicular to the vertical side of rib 3 and which thus forms a weakened circular zone of reduced resistance. This zone is necessary to permit the moving away of the part of the membrane which closes the box, as described below.

Cover 2 is in the form of a cap and is removably engaged in the opening of the box by a part or rim 2a defined on the lateral surface of the cover and by an annular rib 2b bearing on the edge of the box in the closed position of the cover. The rim 2a has an outer diameter corresponding to that of the opening of the box in such a way as to be engagable in the latter by the application of a slight force which guarantees perfect closing of the box.

Inside the cover 2, it is possible to place either a measuring spoon d, or one or several products different from those which will be contained in the box, intended for example to be mixed upon use with the contents of this box.

Above the radially extending rib 2b, is provided a rim 2c which is also cylindrical but whose diameter is slightly less than that of the rim or part 2a in order to allow free sliding of the cover 2 in the opening of the box when it is removably engaged therein by inversely positioning it in the container 1 as shown in FIG. 4.

The cover 4 is effective to rupture the weakened membrane 4 and to accomplish this, the rim 2c of the cover has a height substantially equal to the distance separating the edge of the

box. In addition, the membrane and the outer side of its bottom is curved at 6 (FIGS. 2 and 3a) and carries four projections 7, staggered by 90° one with respect to the other, and inscribed by their outer sides in the circle formed by the circular groove or nick 5.

The top of the curve 6 of the cover extends above the upper level of projections 7.

If the cover 2 is placed in the position of FIG. 4 and a force F is exerted on the cover as shown, the curved part 6 of the cover will contact a rupturable membrane 4 before the projections themselves touch this membrane in such a way that the membrane will be placed under tension and deform downwardly as shown in FIG. 4.

As soon as the projections 7 contact the membrane, the force F will also be transmitted or applied to the membrane 4 by the projections 7, which, due to their small contact area, will be applied by the membrane with a specific pressure which is relatively high. The thickness of the membrane 4 and the depth of nick 5 will be selected such that a user need not exert excessive effort to cause the rupture of the membrane 4 at the weakened portion of nick 5 perpendicular to projections 7. It will suffice then to continue to exert the force F by turning cover 2 in the body of the box 1 in order that the part of the membrane radially inwardly of the nick 5 detaches itself.

The membrane is prevented from falling into the bottom of the container or box 1 by a collar 3a formed at the foot of rib 3 and the diameter of which is less than the diameter of nick 5 in the membrane 4.

Hence, the detached portion of the membrane will necessarily rest on the collar 3a and will thus be prevented from falling into the box.

In a modification not shown the falling of the membrane into the box fall of this membrane on collar 3a can be prevented by providing the cover 2, in particular the peak of its curved surface, with a suction cup for retaining the detached part of the membrane, which makes it possible to extract it very easily from the box.

This suction cup can be recessed on the cover or formed within it by sufficiently weakening the central part of the curved zone to make it flexible.

In another modification also not shown, the falling of the membrane can be prevented by retaining the membrane with an adhesive material which can be applied on the cover or even on the membrane 4.

When the membrane has been ruptured or removed, the box is closed by replacing the cover 2 in the position of FIGS. 1 and 2.

In another modification, also not shown, the part of the cover opposite the curved zone can be full and have a hollow housing in the mass forming the quality of the measurement in which can be placed the product contained in the box in a desired amount.

It will be noted that by means of the present invention, the opening of the box is complete after removing the membrane and that this opening can be made without using any special tool.

Additionally, the edges of the part of the membrane remaining in the box are not sharp and are folded by the annular projection 3 of the box.

It will be noted again that cover 2 can, in a modification, be arranged atop the opening of the box (FIG. 5) and not engaged within the opening.

I claim:

1. A sealed container comprising an open ended metallic container body and a cover, said container having an inner annular rib near an opening of a given diameter thereof; a rupturable membrane set over said opening and having a part bearing against said rib and a part folded over the upper outside portion of said body; said membrane having an annular weakened zone of diminished resistance; a removable cover including a part fitting tightly within said opening against said membrane, a peripheral portion fitting over said membrane

and an upper part having a diameter slightly less than said diameter so as to freely fit therein when said cover is placed therein upon unsealing said container, said upper part further including a central arcuate part and peripheral projections for applying a force to said zone of diminished resistance in said membrane to rupture same.

2. Device according to claim 1, wherein said zone of diminished resistance comprises means defining an annular groove having a diameter substantially equal to that of said inner annular rib.

3. Device according to claim 1, wherein said cover is composed of plastic material, the inside of said cover having a housing adapted to contain a product different from that intended to be placed in said box.

4. Device according to claim 1, in which said cover is composed of plastic material and wherein the side thereof opposite that having said arcuate surface has a housing forming meter-

ing means.

5. Device according to claim 1, wherein the upper part of said rib carries means for retaining said membrane when it has been sectioned off from said container.

6. Device according to claim 5, wherein these means comprise a suction cup formed on said rib.

7. Device according to claim 5, wherein said means consist of adhesive material positioned on said rib.

8. Container according to claim 5, wherein said means consist of adhesive material on said membrane.

9. Container according to claim 1, wherein the inner side of the container body has a collar having a diameter less than said zone of diminished resistance, this collar forming retaining means for this membrane for preventing the same from falling to the bottom of the container after rupture.

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