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CLOSURE DEVICE FOR BOXES AND THE LIKE

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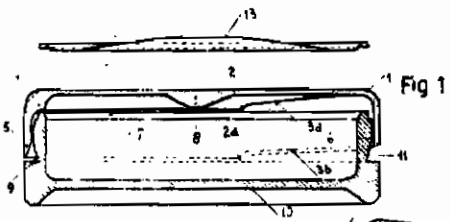

Fig 1.

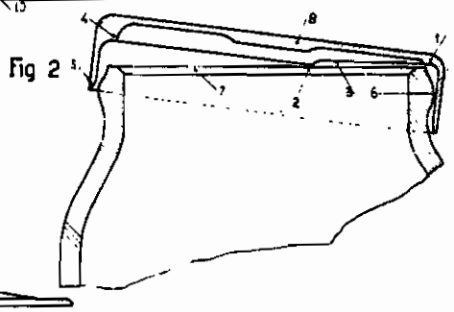

Fig 2

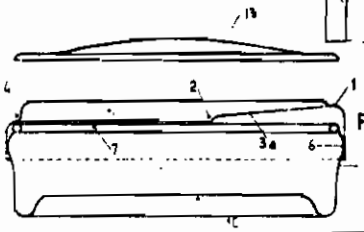

Fig 3

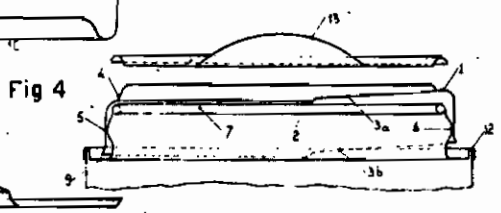

Fig 4

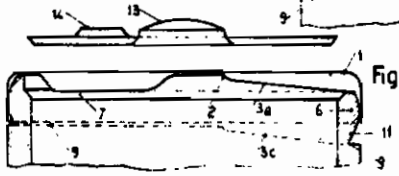

Fig 5

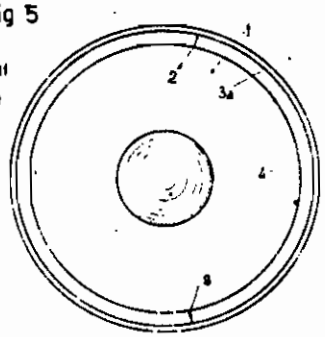

Fig 6

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# ALIEN PROPERTY CUSTODIAN

## CLOSURE DEVICE FOR BOXES AND THE LIKE

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This invention relates to a closing device for boxes and similar containers in which the opening is produced by pressure. The boxes may be of circular or oval form and constituted by a body and a lid independent of each other, each member comprising a bottom and a lateral wall, the lateral wall of the lid fitting on the outer lateral wall of the body. It is well known that these and other boxes, provided with a similar closing device cannot be easily opened or may require the use of an opening device.

According to this invention the lid bottom is provided with inner ribs so formed as to constitute two points of support at a distance from one another equal to about 3/5 of the periphery, about which the lid may oscillate on the edge of the side wall of the body, on which the opposite ends of the ribs rest on two points at a distance apart equal to about 2/5 of the periphery.

The two points of support are advantageously obtained by means of a peripheral rib on the inner bottom of the lid, which is cut away on about 3/5 of the periphery or depressed on said length to form an inclined plane thus permitting tilting of the lid when a pressure is applied on it in the zone where the rib is cut away or depressed. The rib may be obtained, on tin lids, by a peripheral groove extending over about 3/5 of the periphery. When on the contrary the points of support are formed by ribs apart from each other it will be convenient to provide a third rib between them which prevents oscillation of the lid in a direction opposed to the predetermined direction for opening the box.

The wall of the box member (body) adapted to fit into the other member (lid) if of arcuate section, so that the contact between the side walls of the box members is established on a line or region at about mid-height of the walls.

The points of support being above the contact line allow an easy tilting of the lid rearwards.

In order to permit tilting of the lid on the side on which pressure is to be applied, the edge of the lid outer wall is inclined upwards on the side on which the pressure is to be applied or the usual outer annular ridge on the inner wall on a level with the edge of the lateral wall of the lid is cut away at least on a zone equal to the distance (about 2/5 of the periphery) between the two points of support. Said peripheral ridge may be similarly cut away, inclined or fully depressed and it may be of any desired form under the edge of the lid wall.

The outer wall is generally the more resilient and deformable one and tends therefore to flare under a pressure on the line connecting the points of support and to contract on a line perpendicular thereto. This inconvenience is reduced and made harmless in the box according to this invention owing to the fact that the lid is supported when tilted in a region in proximity to the lid bottom instead of on the free edge of its side wall. The lid can thus move from its normal closing position notwithstanding the slight flaring of the side wall.

In order to facilitate the opening although the lid under the pressure tends to contract at the bottom of the wall edge, the lower part of the inner edge of the wall is slightly bevelled, thus preventing increasing of its resistance.

According to a modified form of the invention the increase of the distance between the points of support during opening of the box is prevented by providing a recess or the like in the support region of the points of support.

The box forming the object of this invention constitutes an article of cheap mass production of large use. This box may be manufactured of plastic material or tin (for boot polish, floor wax and chemical products) or part of glass and part of porcelain or part of sheet metal or board or other cellulose product (jars and bottles for medical or toilet creams, food articles and the like) or of any other suitable material.

The annexed drawings show some embodiments of the invention.

Fig. 1 shows a box which may be manufactured of pressed plastic material.

The box is provided with a lid 1 constituted by an innerly cylindrical wall slightly bevelled at the edge bottom and a bottom having a circular rib extending over about 3/5 of the periphery with rounded sides. Between the points 2 where the flat portion ends, the rib 4 is depressed on an inclined plane 3*a*. The lid lies on the edge 7 of the box body by means of said rib 4 having slightly rounded edges. The lid wall has on an arc smaller than 180° of the edge (about 2/5 of a circle) and under the inclined plane 3*a* an incline 3*b* thus forming edges 2*a* leaving a zone 11 of the wall of the box body exposed along said arc smaller than 180°. On pressing the lid 1 on the side of said arc, the edges 2 acting as points of support oscillate on the edge 7 of the body and the lid is brought to an inclined position on the body, as shown in Fig. 2, in which it may be easily removed. The box body is constituted by a bottom and a lateral wall having an outer convex surface 6 with its maximum circle (forming the contact line with the lid wall) at about

mid-height. The peripheral bead 8 is at a suitable distance from the lid to allow inclination of the latter.

The inclined plane 3a is slighted depressed in proximity to the point of support.

According to fig. 2, the box has no peripheral bead facing the lower edge of the slide wall 5 of the lid, so that it is not necessary to cut away the lid on an inclined plane, tilting being still possible. According to fig. 2, the lower edge of the side wall of the lid 5 is slightly bevelled inside in order to facilitate the opening even if the lid wall is slightly flared.

Fig. 3 shows a box and lid both of pressed sheet metal. The body has no peripheral bead and therefore the lower edge of the lid wall is continuous. The rib 4 with its inclined plane 3a is pressed from the material of the lid. The side wall of the lid may be curved outside towards its free edge, which may be upturned to increase the bending resistance. The edge of the side wall 6 of the body is reinforced by means of a bead 7.

Obviously the box body shown in figs 2 and 3 may be provided with a peripheral bead provided the latter is at a suitable distance from the lid to permit tilting thereof.

According to fig. 4 the curved side wall of pressed sheet metal of the box body is attached thereto by folding at 12 at the end of a radial plane forming a peripheral bead. In this case, as in fig. 3, the upper edge of the wall 6 is reinforced by a bead 7 and the rib 4 on the lid with its inclined plane 3a is obtained by pressing. Moreover the wall 5 of the lid is curved as described with reference to fig. 3 corresponding to the bevel shown in fig. 2. Owing to the radial plane 9, the lower edge of the lateral wall of the lid has an inclined plane 3b.

Fig. 5 shows a construction in which the ribs forming the points of support 2 and inclined plane 3a form part of the body while the lid 1 is of cylindrical form with a flat bottom. There are actually three ribs, two of which form the points of support 2 at a distance of about 2/3 of the periphery, while the third rib, which may be seen on the left of fig. 5, serves to support the lid in the closing position.

The lower edge of the continuous lid wall being in one plane, the annular bead 8 of the body has an inclined plane 3c for permitting tilting of the lid on the points of support 2 and the depression of the side wall of the lid in the undercut zone 11.

Fig. 6 is an inner view of a lid of the type shown in figs. 1 and 2 and shows the peripheral rib 4 extending over about 3/5 of the periphery and the inclined plane 3a beginning at the ends of the rib 4 thus forming the points of support 2.

A second lid 3 may be applied to all boxes or containers. In the drawing above each figure is shown a small lid of a form suitable for the box in each figure. Such lids may be manufactured, according to requirements, of tin, cardboard or other suitable material and made more or less convex at the centre to facilitate seizing and support the pressure at the centre form the inner bottom of the lid, if necessary by means of a boss 6 of the lids of plastic material, this pressure being produced throughout the periphery, although the second lid is already pressed on about 3/5 by the peripheral rib of the lid.

According to requirements, in the peripheral groove of the second lid a rubber or mastic ring may be arranged as customary in folded boxes. The rings may be of crude plastic rubber or semi-resilient or resilient rubber partially or completely vulcanised. For the closure of boxes or containers adapted to contain substances which may deteriorate the rubber, mastics constituted by polimerised vinyl compounds of casein or other suitable substances may be used. When of cardboard, the containers may be coated or impregnated with paraffine or other suitable substances.

The lid according fig. 5 is so formed as to facilitate seizing by means of side wings 14.

Obviously the form of the box body and lid below or above the zone of the side wall serving for the opening and closure of the box may be of any suitable form.

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