

5 The invention relates to a method for producing a cardboard sealing lid.

 Such sealing lids have become known on the one hand as overlapping lids and on the other as insert lids and the invention is directed at both types of lid.

10 Today, cartons made of cardboard are used on a large scale for accommodating food or the like. Although these containers are coated with a very thin layer of plastics, they decompose in rubbish and do not therefore cause long-term pollution of the environment, i.e. they are of

15 environmentally friendly construction.

 The lids of such containers have always until today consisted completely of plastics material, since it has not been possible to produce dimensionally stable lids from cardboard. It should be taken into consideration that the

20 lids are not positioned on the cartons until a relatively long time after their manufacture, i.e. when the carton has been filled in a filling plant or the like with the product to be accommodated. In the meantime deformation cannot be ruled out. Moreover, environmental influences such as

25 temperature and humidity act on the lid and contribute to the deformation of the lid.

 These lids therefore without question represent pollution of the environment and constitute a waste-disposal problem, while a sealing lid of cardboard - i.e. of the same material

30 as the carton body - would not have to be disposed of separately from the carton.

 A cardboard capsule seal for vessels with bulbously reinforced neck and tapering below the reinforcement has become known from DE-PS 251 424, this capsule seal comprising

35 at its lower end a ring-type rim bent outwards somewhat. The lower part of the capsule seal is thereby made more resistant and provided with material which is sufficient to withstand the stress arising during attachment of the capsule to the bottle and which is in a position to compensate for the

40 alterations in shape of the lower part of the capsule during attachment thereof. Bending such as described in the above-mentioned citation has not become known in practice and is also not in a position to remain stable for a relatively long time, since the cardboard material exhibits a certain "memory capacity" and the outwardly bent rim of the capsule seal must attempt to bend back into its original position. This bending

45 back under the influence of the "memory capacity" is reinforced by humidity and temperature differences.

 US-A-20 14 901, on which the precharacterizing clause of

50 claim 1 is based, describes a container with a lid. Container and lid consist of cardboard and are designed for prefabrication, such that they may be constructed and assembled at point of use. The lid consists of a circle which is cut into at its edge to form a plurality of individual

55 tongues which are then bent via a stabilising ring. The individual tabs are preferably adhered to the outside and

inside of the stabilising ring.

Manufacture of such a lid is expensive and requires precision tools to produce the necessary slits of the desired size and in the desired position.

5 US-A-22 44 940 likewise describes an assemblable container. Here too the lid or the base may be formed of a circle which is provided with slits at its periphery, such that here too tabs are formed which lie against the outside of the wall of the carton and are adhered there.

10 Finally, a container seal is known from US-A-23 83 760 which consists of cardboard, the lid being punched in a particular form. It is not explained therein how to achieve this lid form and an encircling strip is attached to the encircling, downwardly directed rim of the lid, which strip
15 is clearly intended to preserve the shape of the lid. In our opinion this lid is not dimensionally stable and therefore not suitable for secure sealing of containers accommodating food.

The problem on which the invention is based is that of
20 providing a method of producing a lid for cartons or carton-type containers which may be made of cardboard and yet exhibits the necessary strength, especially the necessary stability.

This problem forming the basis of the invention is solved
25 by the teaching of the main claim.

Exemplary embodiments are explained in the subclaims.

In other words it is proposed that the encircling, upwardly or downwardly directed flange of a lid - depending on whether it is an overlapping lid or an insert lid - is
30 formed from the grooved rim of a circle and then provided with a stabilising ring which lies fixedly on the outside or inside of the flange. Since the lid, like the cartons, is provided with a very thin plastics coating, it is possible, by the action of heat on the area of the encircling
35 stabilising rim or stabilising flange and by the corresponding action of pressure, to achieve fusing together of the thin plastics layers then lying against each other, such that the stabilising rim is thereby firmly attached to the normal encircling flange. It has surprisingly been noted
40 that a high degree of lid stability can be achieved by this simple measure.

While it has been assumed above that a very thin plastics coating is present on the carton and lid, it is of course also possible, when this very thin plastics coating has not
45 been provided, to replace the latter by a corresponding adhesive layer, such that the same advantages are then obtained, but then with adhering together of stabilising rim and stabilising flange.

Since the height of the adhesion or welding between
50 flange and stabilising rim or stabilising ring may be freely selected, it is even possible to produce a closure in which the then somewhat projecting inner part of the bent flange, i.e. the stabilising ring, forms an abutment which, on the one hand, carries an overlapping lid more securely on a
55 carton and, on the other hand, provides the possibility of not being able to separate the lid from the container without

damage, such that unauthorized sampling and inspection of the container contents are no longer possible.

Exemplary embodiments of the invention are described below with the aid of the drawings, in which

- 5 Fig. 1 is a diagrammatic view of a carton with an overlapping lid,
- Fig. 2 shows a circle for producing a lid,
- Figs. 3 and 4 show a first embodiment of two different work stages in the production of a lid,
- 10 Figs. 5 and 6 show stabilising rims adhered or sealed together at varying heights,
- Figs. 7 and 8 show modified embodiments of a lid construction at different work stages,
- Figs. 9 and 10 show modified embodiments at different work stages,
- 15 Figs. 11 and 12 show an insert lid with stabilising rim and
- Fig. 13 shows a carton with lid positioned thereon.

Fig. 1 shows a carton 1 comprising an overlapping lid 2, the overlapping lid 2 being provided in a manner known per se with a downwardly directed encircling flange 3. The overlapping lid 2 overlaps with its downwardly directed flange 3 the outside of the upper edge of the carton 1. The downwardly directed flange 3 carries a tear tab 22, such that with certain embodiments of the overlapping lid 2 release of the overlapping lid is possible by operating the tear tab and thus separating the flange 3 into two parts.

To produce the lid still to be described below, for example the lid 2, work begins with a cardboard circle 20 (Fig. 2), which is provided at least in its edge area with grooves 21 which prevent restoration of the flange subsequently to be bent.

To provide such a lid 2, consisting of cardboard and therefore usually unstable, with additional stability, in accordance with Fig. 3 the encircling flange 3a of a lid 2a is bent up inwardly and thereby forms a stabilising ring 4a. This stabilising ring 4a is pressed onto the inside of the downwardly directed flange 3a under the action of heat and fixed by fusion of the thin plastics layer such that the lid shown in Fig. 4 is achieved. Instead of the thermal action and the welding of the adjoining plastics layers it is also possible to use adhesion, such that the adhesive layer acts instead of the plastics layer.

The representations of Figs. 5 and 6 make it clear that it is possible to weld the flange 4a more or less extensively, i.e. to a higher or lower point, to the inside of the flange 3a, such that the upper part of the stabilising ring 4a or 4b projects more or less far inwards. From the representation in Fig. 13 it may be seen that securing of the lid 2a is thereby achieved which either enables the lid 2a to be particularly firmly clamped to the carton 1a or to be constructed as a safety lid, such that it even provides security against undesired opening.

In the embodiment according to Figs. 7 and 8 the downwardly directed encircling flange 3c is bent up inwardly, as before. Into the U-shaped space thus formed there is inserted a reinforcing ring 5. This reinforcing ring 5 is

then firmly connected by thermal action with the encircling flange 3c, and indeed also with the inside of the encircling rim of this flange 3c. In this way the stabilising ring 3c of the lid 2c is obtained which - with reference to Figs. 5 and 6 - may similarly be welded or adhered to a greater or lesser height.

In the embodiment according to Figs. 9 and 10 there is provided an additional stabilising ring 4b, which is constructed in the exemplary embodiment shown in the shape of a J. The short leg lies on the inside of the downwardly directed encircling flange 3b of an overlapping lid 2b and the large flange of the stabilising ring 4b lies on the outside of the flange 3b. Here too, the flange 3b is firmly connected with the stabilising ring 4b, for example by the action of heat.

In the exemplary embodiment shown in Figs. 11 and 12 a sealing lid is designated 11, which consists substantially of a base 12 and an upright rim 3. Fig. 11 shows that the free rim edges of the rim 13 are bent outwards, i.e. a U-shaped flange 15 is formed in the upper area of the rim 13. If this U-shaped flange 15 is then exposed to pressure directed from the outside inwards, the U-shaped flange 15 positions itself against the outside of the rim 13 and - since the starting material has been provided with a fine plastics coating - the flange 15 may then be adhered to the outside of the rim by the action of heat and then forms a stabilising ring 14 visible in Fig. 12. This stabilising ring 14 has the effect that restoration of the upwardly bent rim 13 can no longer occur, i.e. a sealing lid 11 is produced which is dimensionally stable and which may be positioned on the filled carton in the filling plant even a relatively long time after its manufacture.

When the sealing lid 11 is used, the stabilising ring 14 lies on the upper edge of the carton and thus constitutes a limit stop. At the same time this stabilising ring 14 acts as a grip, such that easy release of the lid 11 is possible.

The drawings show a round sealing lid 11, but it goes without saying that this lid may also be of polygonal construction.

To illustrate an instance of use, Fig. 13 shows a carton 1a with lid 2a, this lid 2a being constructed, by way of the projecting stabilising flange 4a, as a safety lid provided with a tear tab 22.

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CLAIMS

1. A method for producing a sealing lid, which is constructed as an overlapping lid or an insert lid,
a) a circle (20) being produced from cardboard.
10 b) a dish-shaped lid (2, 2a, 2b, 2c, 11) thereafter being formed from the circle (20) and
c) an encircling stabilising ring (4a, 4b, 4c, 14) subsequently being welded or adhered at least to the area of the encircling flange (3, 3a, 3b, 3c, 13) of
15 the lid rim opposite the stabilising ring, characterized in that before step b)
a1) grooves (21) are created in the rim area of the circle (20) by pressing in a corresponding tool.
- 20 2. A method according to claim 1 characterized in that the lower rim edge of the encircling flange (3a) is bent up inwardly and is fastened to the inside of the encircling flange (3a) by adhesion and/or welding and thus forms the stabilising ring (4a).
- 25 3. A method according to claim 1, characterized in that the lower rim edge of the encircling flange (3c) is bent up inwardly, a reinforcing ring (5) is inserted into the space in the U formed in this way and then the bent rim and the
30 reinforcing ring (5) are fastened by adhesion and/or welding to the inside of the encircling flange (3c) and in this way form the stabilising ring (4c).
- 35 4. A method according to claim 1, characterized in that a J- or U-shaped stabilising ring (4b) is inserted, which is fastened to the inside and outside of the encircling flange (3b) by adhesion and/or welding.
- 40 5. A method according to claim 1, characterized in that the encircling free edge of the rim (13) of a lid (11) is bent outwards and fastened to the outside of the rim (13) of the lid by adhesion or welding.



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