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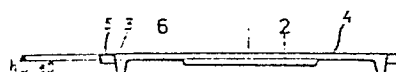
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54 A top end for a tin.

57 A top end for a tin, can or similar container, provided with a seaming edge (5) all round a circumfering groove (3) surrounding the actual wall of the top end, the improvement being that the actual wall of the top end is provided with a central, at least substantially flat portion (2), and with at least one circumfering, at least substantially flat portion (6, 7) all around the central flat portion (2), said flat portion being all situated at mutually different levels.

FIG. 2



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The invention relates to a top end for a tin, can or similar container, in which said top end has been provided with a seaming edge all round a circumfering groove surrounding the actual wall of the top end, in which the wall of the top end has been
5 provided with reinforcing deformations.

The known top ends generally applied until the time of invention, have been provided with one or more concentric reinforcing deformations in the form of circular buckles or ribs in the top
10 end wall. The top end wall is, with the possible exception of these reinforcing ribs, situated at a lower level with respect to the seaming edge. This lower level is necessary for working the seaming edge by means of a seaming head in order to attach the top end to a cylinder wall for manufacturing a tin.

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A drawback of such known top ends is that they bulge out and/or are plastic-deformed at the circumfering groove when under high pressure which will arise during for instance sterilizing the tin and its contents. To prevent this bulging phenomenon from
20 occurring, the top end may be provided with several ribs that improve the elasticity of the top end, or the top end may be made of thicker sheet metal, but in this way more material is used and, moreover, the bending ability is reduced, so a stronger force is needed for manufacturing and shaping the top end.

It is also a drawback that the seaming edge may be overloaded under high internal pressure in the tin, which may cause leakages. In most cases this drawback may be prevented by applying an elastic cooking ridge in the top end.

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Another drawback of the known top ends is that, due to the strong profiling because of the ribs, there is little flat surface left on the top end for applying information such as batch codes, dates etc.

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Is is the object of the present invention to remove the drawbacks stated above. The top end according to the invention is characterized in that the actual wall of the top end is provided with a central, at least substantially flat portion and with at least one circumfering, at least substantially flat portion all round the central flat portion, said flat portions all being situated at mutually different levels. The circumfering flat portion adjacent to the circumfering groove is situated higher than the bottom of the circumfering groove and the possibly present second flat circular portion adjacent to said circumfering flat portion is situated lower than the circumfering flat portion, whereas the central, flat portion is situated lower or higher than the second flat portion.

25

By a flat portion of the top end wall a flat or nearly flat (slightly conical) surface is meant that is parallel to or nearly parallel to the surface in which the seaming edge is situated.

30

The top end according to the present invention has been especially designed for a tin with content which has to undergo a sterilization process. The product with which the tin has to be filled, is either at room temperature or cold, and will have about the same

pressure after sterilizing as during the filling of the tin.
During sterilizing pressures up to 2.5 atmospheres above
atmospheric pressure arise inside the tin, so the top end has to
be flexible, otherwise the seaming edge is overloaded, which may
5 cause leakages.

The present invention covers a flexible top end which, with the
same thickness of sheet metal as with the known top ends, offers
a larger resistance against bulging out and lasting deformation
10 than the known top ends. By selecting a smaller material thickness,
material can be saved whereas the resistance against bulging out
and lasting deformation is as with known top ends.

Further saving of material is obtained because the top end
15 according to the invention can be made from a piece of material
having a smaller surface, because it has less profiling than the
top ends known.

Moreover, on the top end invented there are flat surfaces of
20 sufficient size for applying information, such as batch codes,
dates etc., for example by diepressing, imprinting and the like.

Other small unevennesses, such as prepressed indents for the sake
of opening the tin (pouring indents), impressed logos and the like
25 can be present on these flat surfaces. Furthermore, means known
per se for opening tins without tools such as a pull ring and a
pull tab, can be present in these flat surfaces.

The present top end may be used for tins containing all kinds of
30 sterilized or non-sterilized products which cause no or little
underpressure in the tin when the product is cooled down to at
least room temperature.

And, finally, the ring-shaped and disc-shaped flat surfaces of the top end give the tin a nice appearance.

5 The invention will now be elucidated with the help of the appended drawing.

Fig. 1 is plan view of a top end according to the present invention in a modification having two concentric flat surfaces.

10 Fig. 2 is a cross section of the top end along the line II-II in fig. 1.

Fig. 3 is a plan view of a top end according to the present invention in a modification having three concentric flat surfaces.

15 Fig. 4 is a cross section of the top end according to the line IV-IV in fig. 3.

The top end according to fig. 1 and 2 has been provided with a
20 circumfering groove 3 all round a ring-shaped flat surface 6 which is situated higher than the bottom of the circumfering groove 3, but lower than the top surface 4 of the seaming edge all round the circumfering groove. The distance (e) between the back side of surface 6 and the bottom surface of the circumfering
25 groove 3 amounts to at least one-sixth, five-sixth at the most and preferably between one-third and two-third of the total height of the lid (h).

30 A disc-shaped flat surface 2 is centrally situated within the ring-shaped surface 6 at a lower level with respect to said ring-shaped surface.

The width of the circumfering groove 3 has to be at least

sufficient for receiving seaming implements in order to seam the seaming edge 5 onto a cylinder wall to, in this way, attach the top end to the cylinder wall for manufacturing a tin, can or similar container.

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In fig. 3 and 4 another modification of the top end according to the present invention is shown, in which the only difference with respect to the modification according to figures 1 and 2 is that between the central surface 2 and the ring-shaped surface 6 adjacent to the circumfering groove a third flat surface 7 is present. This third surface 7 is situated lower than the ring-shaped surface 6 adjacent to the circumfering groove 3, whereas the central surface 2 may be situated higher than the third surface 7 as is indicated in fig. 4 with a line drawn, but the central surface 2 may also be situated lower than the third surface 7 as is indicated by a dotted line in fig. 4.

The top ends according to the present invention may be made of thin sheet metal, such as tin plate, electrolytically chromium coated steel (ECCS) or aluminium.

The flat surfaces 2, 6 and 7 may also be slightly cone-shaped and/or may be provided with pouring indents, impressed inscriptions, rupture lines, pull tabs and/or pull rings which are known per se and therefore have not been indicated in the drawing.

It is obvious that minor changes in the details and the arrangement of the portions of the top ends may be made without departing from the spirit of the invention as set forth in the appended claims.

It is obvious also that the invented and claimed top end may be used as a bottom end as well for manufacturing a tin, can or similar container.

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1. A top end for a tin, can or similar container, provided with a seaming edge all round a circumfering groove surrounding the actual wall of the top end, in which the wall of the top end has been provided with reinforcing deformations, characterized in that the actual
5 wall of the top end is provided with a central, at least substantially flat portion (2) and with at least one circumfering, at least substantially flat portion (6, 7) all round the central flat portion, said flat portions being all situated at mutually different levels.
- 10 2. A top end according to claim 1, characterized by only one circumfering substantially flat portion (6) between the central, substantially flat portion (2) and the circumfering groove (3).
3. A top end according to claim 2, characterized in that the central,
15 substantially flat portion (2) is situated lower with respect to the seaming edge (5) than the circumfering, substantially flat portion.
4. A top end according to claim 1, characterized in that the circumfering substantially flat portion (6) adjacent to the circumfering
20 groove (3) is situated lower than the seaming edge (5) and higher than a following, at least substantially flat ring-shaped portion (7) that again is situated higher or lower than the central, substantially flat portion (2).

5. A top end according to any of the previous claims, characterized in that the distance (e) from the flat portion (6) adjacent to the circumfering groove (3) to the level of the bottom of the circumfering groove amounts to a minimum of one-sixth and a maximum of
5 five-sixth of the height (h) of the top end.

6. A top end according to any of the previous claims, characterized in that the top end is made of tin plate, electrolytically chromium coated steel (ECCS) or aluminium.
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7. A top end according to any of the previous claims, characterized by the presence of small unevennesses in the at least substantially flat portions of the top end in the form of codes, decorations, pouring indents and the like.
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8. A top end according to any of the previous claims, characterized in that means for opening the tin without tools are present at the flat portions of the top end.

FIG. 1

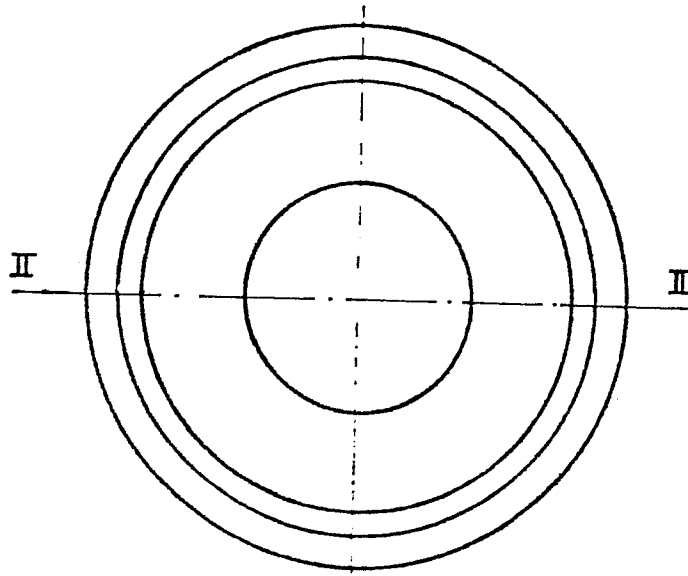


FIG. 2

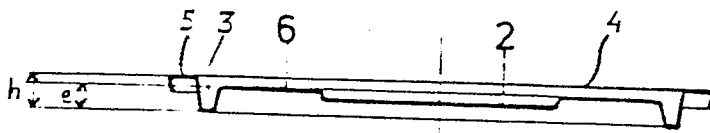


FIG. 3

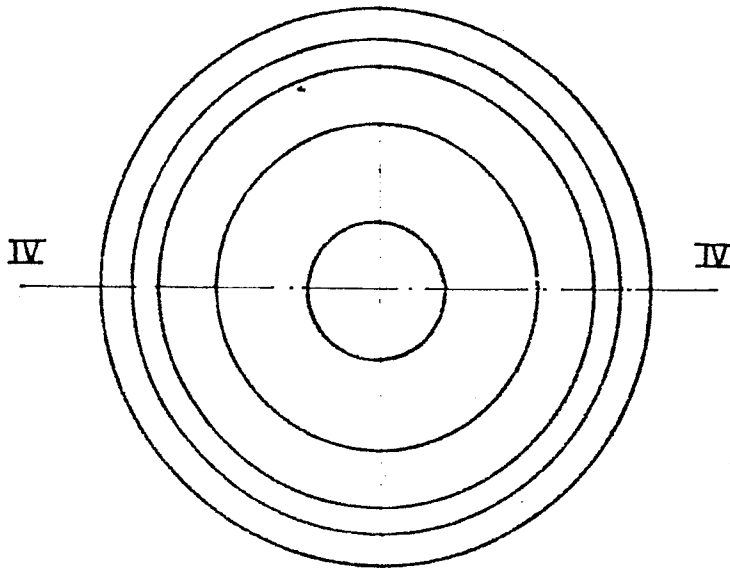


FIG. 4





European Patent
Office

EUROPEAN SEARCH REPORT

0144102

Application number

EP 84 20 1620

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 3)
X	NL-C-72 920 (LOFTS CANNING PATENTS LTD.) * Figure 2; column 2, lines 8-13; column 4, lines 28-38 *	1-3, 6-8	B 65 D 8/04
X	US-A-2 119 533 (FINK) * Figure 1; page 1, column 2, lines 34-38 *	1-3,5 6	
A		8	
X	BE-A- 658 569 (CARNATION COMP.) * Figures 1,2; page 4, lines 20-24*	1,7	
A		2,4,6	TECHNICAL FIELDS SEARCHED (Int. Cl. 3)
X	FR-A-2 251 487 (AMERICAN CAN COMP) * Figures 1,2,5; page 3, lines 2-6 *	1,3,6	B 65 D
A		2	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 04-02-1985	Examiner STEEGMAN
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			