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(54) **PARTIALLY COATED TWO-PIECE TINPLATE CAN**

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Description

Technical Field

[0001] The present invention relates to a two-piece can having part of the interior surface formed by exposed tin. The two-piece can is in particular, although not necessarily limited, for the storage of foodstuffs.

Background

[0002] Many foodstuffs are packaged in cans made from tinplate. The cans may either be three-piece cans or two-piece cans. In three piece cans the cans have a cylindrical side wall including a longitudinal side seam. A can end is attached to one end of the side wall by a double seam to form an open top can. The open top can is filled with product and closed by double seaming a can end to the other end of the side wall. The contents can then be thermally processed in order to be sterilised.

[0003] During thermal processing and subsequent storage the product takes up a certain amount of the tin coating in the can thereby preserving the taste and look of the can contents by minimizing oxidation.

[0004] In order to reduce the number of seams present the two-piece can was developed where one end of the can and the side wall are formed from a single piece of tinplate in a drawing operation. An example of such an operation is described in European Patent No. 0492870.

[0005] Often the foodstuff in the can acts to corrode the layer of tin slowly. In order to reduce this corrosion a coating may be applied to part of the wall of the can. The coating acts to slow down the corrosion of the tin by the can's contents thereby extending the shelf life of the product in the can by increasing the length of time before the contents of the can include the statutory maximum amount of tin.

[0006] During the drawing operation to make a two-piece can the side walls are "drawn up" from the end wall of the can and therefore are less thick and include a thinner layer of tin than the end wall of the can. Thus, in order to ensure sufficient tin is available to react to any oxygen in the air to minimise the oxidisation of the foodstuff it is an accepted principle that the tin on the end wall of the can must be exposed to the foodstuff. Therefore, the can body of European Patent No. 0492870 has a lacquered surface forming a region which extends from the part of the wall defining the mouth. The region of the lacquered surface is less than the total length of the side wall and the remaining portion of the side wall and the end wall of the can is an exposed tin zone.

[0007] However, this distribution of the tin surface results in the foodstuff present in the upper part of the can being more oxidised than that at the end wall. This two tone effect can diminish the aesthetic appearance of the contents of the can. Additionally, the tin exposure at the end wall can lead to unsightly marks on the end wall of the can.

[0008] European Patent No. 2082968 discloses all features of the preamble of claim 1, and describes another method of lacquering a can made from a tinplate drawing operation which attempts to address these problems. In European Patent No. 2082958 the can body has a plurality of lacquered surfaces which extend the height of the sidewall and are separated by exposed tin zones. The lacquered surfaces are distributed to limit the aesthetic impact due to chemical action of said foodstuff on said exposed tin zones. However, due to the greatly diminished amount of tin surface available for oxidisation the taste and appearance of the foodstuff in the can will be diminished as it will be exposed to increased oxidisation.

[0009] Therefore it is desirable to provide a two-piece can which mitigates one or more of these problems.

Summary

[0010] In accordance with the present invention there is provided a can body according to claim 1.

[0011] By applying coating to the inside of the tinplate can in such a manner oxidation of the food contents down the depth of the wall of the can is minimised in a more uniform manner. This means that when the contents of the can are extracted from the can it has a consistent appearance the entire length of the can. Additionally, by applying coating to the end wall of the can the interior of the end wall of the can does not oxidise and therefore no unsightly marks can be seen.

[0012] Preferably the coating on the end wall is located centrally and extends radially from the centre of the end wall. This is because when a user looks into a can their eye is drawn to the centre of the can. Therefore by placing the coating in such a position the user is less likely to notice any unsightly marks formed on the inner surface of the end wall of the can by tin oxide.

Brief description of the drawings

[0013]

Figure 1 illustrates a can which does not form part of the present invention;
Figure 2 illustrates a can according to the invention including an annular ring;
Figure 3 illustrates a can which does not form part of the present invention including a bead; and
Figure 4 illustrates a can which does not form part of the present invention including a bead and an annular ring of coating.

Detailed description

[0014] A can 10 is made from tinplate by any suitable operation, for example, a drawing operation such as that described in European Patent No. 0492870. The can 10 has an end wall 12 and an integral side wall 14 which

has been extended from the end wall 12. The end of the sidewall furthest from the end wall 12 defines an opening 16 through which contents are introduced into the can 10. Once the can has received its contents the opening receives a lid (not shown) which is sealed in place and the can and its contents undergoes the required processing (such as thermal or pressure processing).

[0015] The tinplate may be made from a steel matrix having at least the inner surface of its lateral wall provided with a coating of tin and/or tin alloy.

[0016] The inner surface of the end wall of the can 10 is provided with a coating 18 forming a layer between the tinplate forming the can and the contents of the can. No coating is provided to the side walls 14 of the can 10 in this embodiment of Figure 1, which does not form part of the present invention.

[0017] By applying the organic coating to end wall but not to the side walls the tin on the side walls is available to oxidise any oxygen in the can's contents. It has been found that, contrary to previous expectations, the amount of tin present on the side walls of the can sufficiently minimises the oxidisation caused to the contents of the can. This means that there is no region along the length of the can which has a diminished aesthetic appearance due to oxidisation. Additionally, as the end wall of the can does not oxidise due to the coating the formation of unsightly marks on the end wall of the can are inhibited. When the contents are placed into the can there are often one or more pockets of air trapped at the top of the can between the contents and the lid. In order to mitigate any unsightly marks caused by oxidation of the tin present at the top of the can optionally the can 10 according to the invention is provided with a coating 20 at the surface of the side wall of the can 10 proximal to the opening 16 of the can 10 as illustrated in Figure 2. The coating only extends up to 20% of the height of the side wall. Optionally, the coating may extend only 10% of the height of the side wall.

[0018] The side wall of the can may be provided with one or more beads 22 as illustrated in Figure 3. In embodiments which do not form part of the invention, further coating 24 may be provided in an annular ring covering one or more of the beads as illustrated in Figure 4. This may be in addition to or rather than any coating at the end of the can proximal to the opening.

[0019] Optionally, the entire end wall of the can may not be covered with a coating. According to the invention, more than 75% of the end wall of the can is coated. In alternative embodiments the end wall of the can is provided with one or more beads. In such an instance at least the flat portion of the end wall is provided with a coating.

[0020] The coating may be formed of any suitable material. For example it may be chosen from a group comprising epoxy phenolic lacquer, epoxy amine lacquer, acrylic resin lacquer, epoxy polyester lacquer, and vinyl lacquer with or without a pigment.

[0021] The coating may be applied to the surface of the open top can using any suitable method. For example, the coating may be sprayed onto the inner surface of the can using a nozzle.

Claims

1. A can body (10) drawn from a tinplate to comprise an end wall (12) and an integral side wall (14) which extends from the periphery of the end wall (12) to a terminal portion defining a mouth (16) of the body (10), wherein between 75% and 100% of the inside of the end wall (12) is covered with a coating (18); and the inside of the side wall (14) is applied with an annular ring of coating (20) adjacent to the terminal portion, wherein the coating (20) on the side wall (14) extends up to 20% of the height of the side wall (14), **characterised in that** the remaining portion of the inside of the side wall (14) is an exposed tin surface.

2. A can body (10) as claimed in claim 1 wherein the coating (18) on the end wall (12) is located centrally and extends radially from the centre of the end wall.

Patentansprüche

1. Dosenkörper (10), der aus einer Blechplatte geformt ist, sodass er eine Endwand (12) und eine integrale Seitenwand (14) umfasst, die sich vom Umfang der Endwand (12) zu einem Endabschnitt erstreckt, der eine Öffnung (16) des Körpers (10) definiert, wobei zwischen 75 % und 100 % der Innenseite der Endwand (12) mit einer Beschichtung (18) bedeckt sind und die Innenseite der Seitenwand (14) mit einem ringförmigen Beschichtungsring (20) versehen ist, der an den Endabschnitt angrenzt, wobei sich die Beschichtung (20) an der Seitenwand (14) bis zu 20 % der Höhe der Seitenwand (14) erstreckt, **dadurch gekennzeichnet, dass** der restliche Abschnitt der Innenseite der Seitenwand (14) eine freiliegende Blechoberfläche ist.

2. Dosenkörper (10) nach Anspruch 1, wobei die Beschichtung (18) an der Endwand (12) mittig angeordnet ist und sich radial von der Mitte der Endwand aus erstreckt.

Revendications

1. Corps de boîte (10), formé de fer blanc, de sorte à comprendre une paroi d'extrémité (12) et une paroi latérale intégrale (14) s'étendant à partir de la périphérie de la paroi d'extrémité (12) vers une portion terminale définissant une bouche (16) du corps (10), dans lequel entre 75 % et 100 % de l'intérieur de la paroi d'extrémité (12) sont recouverts d'un revête-

ment (18); et l'intérieur de la paroi latérale (14) est recouvert d'un revêtement en forme d'anneau (20) à proximité de la portion terminale, le revêtement (20) sur la paroi latérale (14) s'étendant sur 20 % de la hauteur de la paroi latérale (14), **caractérisé en ce que** la portion restante de l'intérieur de la paroi latérale (14) est une surface en fer blanc exposée.

2. Corps de boîte (10) selon la revendication 1, dans lequel le revêtement (18) sur la paroi d'extrémité (12) est localisé centralement et s'étend radialement à partir du centre de la paroi d'extrémité.

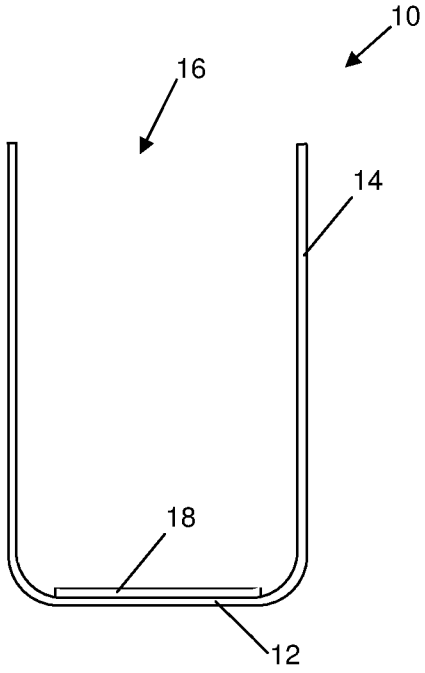

Figure 1

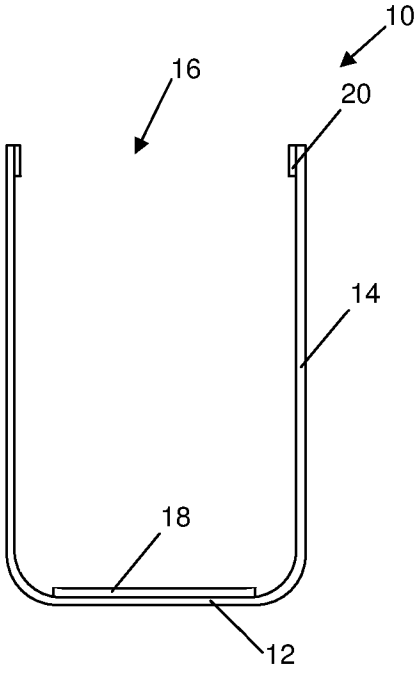

Figure 2

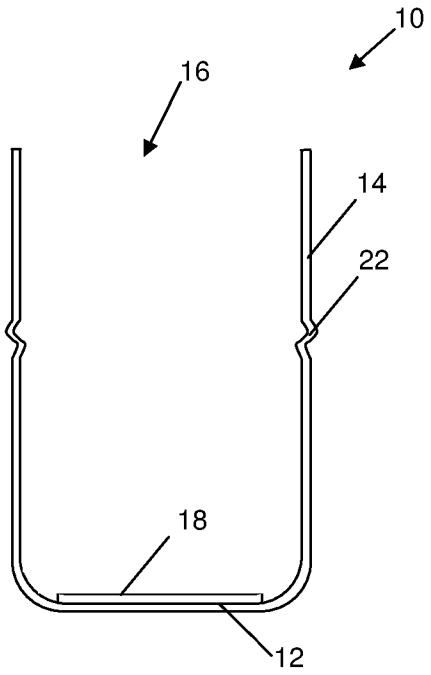

Figure 3

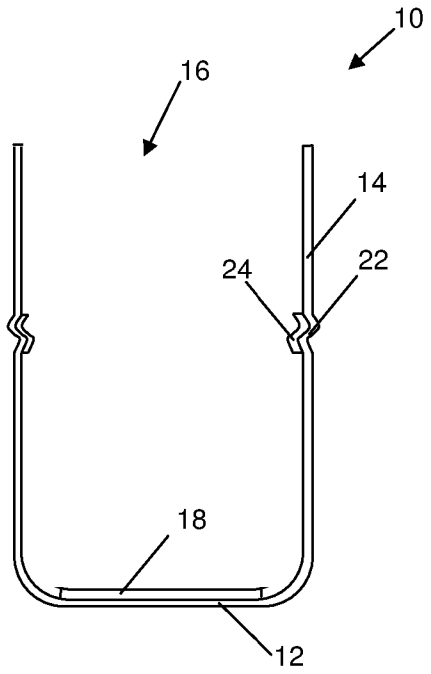

Figure 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 0492870 A **[0004] [0006] [0014]**
- EP 2082968 A **[0008]**
- EP 2082958 A **[0008]**

Szabadalmi igénypontok

1. Doboztest (10), amely bádogból van kialakítva, úgy hogy tartalmaz végfalat (12) és integrált oldalfalat (14), amely kiterjed a végfal (12) kerületétől vég részhez, amely a test (10) száját (16) határozza meg, ahol a végfal (12) belsejének 75%-100%-a fedve van bevonattal (18); és az oldalfal (14) belseje gyűrű alakú bevonati (20) gyűrűvel van ellátva, amely határos a vég résszel, ahol a bevonat (20) az oldalfalon (14) kiterjed az oldalfal (14) magasságának 20%-áig, azzal jellemezve, hogy az oldalfal (14) belsejének maradék része kitett bádog felület.

2. Az 1. igénypont szerinti doboztest (10), ahol a bevonat (18) a végfalon (12) centrikusan helyezkedik el és a végfal középpontjából sugárirányban terjed ki.