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(54) **Method of manufacturing a drinks can with a protective film**

Verfahren zum Herstellen einer Getränkedose mit einer Schutzfolie

Procédé de fabrication d'une cannette de boisson avec un film de protection

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(73) Proprietors:
- **Nicola, Giuseppe**
  **15047 Spinetta Marengo (Alessandria) (IT)**
- **Poletti, Mauro**
  **15100 Alessandria (IT)**
- **Cozzo, Giampiero**
  **15028 Quattordio (Alessandria) (IT)**
- **Cozzo, Giovanni**
  **15028 Quattordio (Alessandria) (IT)**

(72) Inventor: **Nicola, Guiseppe**
**15047 Spinetta Marengo (Alessandria) (IT)**

(74) Representative: **Fioravanti, Corrado et al**
**Jacobacci & Partners S.p.A.,**
**Corso Regio Parco 27**
**10152 Torino (IT)**

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**WO-A-95/28328**
**WO-A-97/14621**
**WO-A-99/16677**
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## Description

**[0001]** The present invention relates to a method of manufacturing a drinks can with a tab opening, in particular of the type known as a "stay-on-tab", that is with a metal tab designed to fold over inside the can upon. opening.

**[0002]** Cans of this type have the advantage of keeping the opening tab attached to the can once this has been opened. This prevents the metal tabs from littering the environment.

**[0003]** However, cans of this type have one particularly serious disadvantage from a health and hygiene point of view, since by coming into contact with the liquid inside the can, the metal tab can transmit to the drink dirt and impurities which may have been deposited on the upper surface of the can during transport and storage, either before or after being purchased by the consumer.

**[0004]** US-A-5 647 497 discloses a can for beverages of a stay-on-tab type, including:

a cylindrical body with a top closure wall having a tab portion which can be folded into the can by pulling an opening means,
a protective film element for covering and adhering to at least the external surface of the tab portion, and
a gripping portion, secured to the film element, for uncovering the said surface before opening the can.

**[0005]** Other beverage cans having the above mentioned features are known from WO-A-99/16677 and WO-A-97/24621.

**[0006]** The general object of the present invention is to overcome the aforesaid disadvantage by providing a can for drinks, or other liquids for human consumption, with optimum protection of the opening area so as to prevent any dirt which might have accumulated on the top surface of the can from being transferred to the liquid it contains.

**[0007]** A further object of the invention is to apply a protective element to the lid of a can in a simple, quick and inexpensive step during the normal manufacturing and bottling of the beverage.

**[0008]** These, and other objects which will be better understood hereinafter, are achieved according to the invention by a method of manufacturing a drinks can as defined in Claim 1.

**[0009]** Other important characteristics of the invention are defined in the dependent Claims.

**[0010]** In order to explain more clearly the innovative principles of the invention, and its advantages over the prior art, several possible embodiments will now be described by way of example, with the aid of the appended drawings. In the drawings:

Figure 1 is an enlarged, partially sectioned view of a can manufactured in accordance with the invention, taken on the line I-I of Figure 2;
Figure 2 is a plan view, from above, of a can with a protective film according to a first embodiment of the invention;
Figure 3 is a plan view of a can with a protective film according to a second embodiment of the invention;
Figure 4 is an enlarged, schematic partially sectioned view of the region of the opening of the can, with the protective element intact;
Figure 5 is an enlarged, schematic partially sectional view of the opening area of the can, with the protective element partly removed;
Figure 6 shows a detail of the attachment between the protective element and a gripping element thereof next to the pouring aperture;
Figure 7 is an enlarged partial section, taken on the line VII-VII of Figure 8, of another embodiment of the can of the invention;
Figure 8 is a plan view from above, of a can with a different embodiment of protective element; and
Figure 9 is a plan view from above, of a can with a protective element according to a further embodiment.

**[0011]** With reference to Figure 1, a can 10 of substantially known structure, of a type commonly used for beverages or other liquids for human consumption, includes a side wall 11, a bottom (not shown since it is a structure well known in the art and, in any case, is not affected by the innovative concepts of the invention described here) and a top closure wall or cover 12 with a pouring aperture 13 formed therein which is opened by pulling a ring 14. The can is of a type known in the art as a "stay-on-tab" type, in which, when the ring 14 is pulled upwards, a tab portion 12a of the wall 12 bends into the can, partly detaching itself from the rest of the wall 12 and opening the aperture 13.

**[0012]** At least the region of the tab portion 12a of the upper or external surface of the top wall 12 is covered with a removable protective film 15, preferably made of at least one layer of aluminium or another material which can be made into a film able to adhere to the metal surface to which it has been applied but then to be removed easily at the time of opening the can.

**[0013]** The film 15 is preliminarily coupled to the sheet metal constituting the top wall 12. The film 15 is fixed to the metal upper or external surface of the wall 12 during production thereof, for example during the rolling step, or during other steps in the working of the metal disc constituting the said wall 12, so as to obtain a cover or top closure wall 12 already provided with a protective film 15 before the can is filled and closed at the top with the top wall 12.

**[0014]** In dependence on the manufacturing process used and on the particular characteristics wanted in the finished product, the film 15 may be of various sizes, from a maximum which substantially covers the entire

outer surface of the lid 12 to a minimum which covers just the tab portion 12a. In Figures 2 and 3, the outline of the film 15 is shown by a broken line to indicate that this film 15 can extend as far as desired over the wall 12, beyond the pouring aperture 13.

**[0015]** The can 10 has an element 16, also preferably made of aluminium foil, for gripping and removing the film 15.

**[0016]** Figures 1-6 illustrate various embodiments in which the gripping element 16 and the film 15 are constituted by respective separate elements and thus have appropriate sealing or fixing means 17 for securing the element 16 to the film 15. For example, the contact portions of the gripping element and the film could be heat bonded, or the elements 15 and 16 could be secured by any other method; these methods, which could vary according to the type of material chosen for the film 15 and for the element 16, will be well known to those skilled in the art and are thus not described here.

**[0017]** As illustrated in the examples of Figures 2-5, the attachment means 17 between the film 15 and the element 16 are arranged outside the pouring aperture 13, along the border thereof. In addition, the film 15 could advantageously have tear lines 18 along those in the metal wall 12 at the site of the pouring aperture 13, in order to encourage the portion of film covering the tab portion 12a to become detached from the rest of the film, as will be explained more clearly below.

**[0018]** Further attachment means 19 are provided to secure the gripping element 16 to the top wall 12 of the can. The attachment means 19 between the gripping element 16 and the wall 12 are preferably arranged outside the attachment means 17 between the film 15 and the gripping element 16, around the edge of the pouring aperture 13. The gripping element 16 and the wall 12 may be joined by any method able to prevent them from becoming detached accidentally.

**[0019]** In one preferred embodiment, the gripping element 16 has a handling portion 20 which projects slightly from the can, making it easier to lift and remove the film 15.

**[0020]** As can be seen in Figures 4 and 5, the attachment 17 between the film 15 and the gripping element 16 can also extend partially to the metal surface of the top wall 12 so as to make the film adhere better to the can. In addition, the attachment 19 between the gripping element 16 and the wall 12 of the can may also be attached, at least at a few points (according to the size of the film covering the lid 12) to the said protective film 15.

**[0021]** As is clear from a comparison of Figures 4 and 5, which schematically illustrate a detail of the pouring aperture 13, before and after the protective film 15 has been removed respectively, before opening the can by breaking the metal tab of the pouring aperture 13, the consumer must lift the gripping element 16, for example by means of the portion 20.

**[0022]** Owing to the attachment means 17 extending around the edge of the pouring aperture 13 (and owing to the tear lines 18 in the film 15), when it is lifted, the gripping element 16 tears with it the portion of film 15 covering the metal tab 12a over the pouring aperture. The metal tab 12a has been protected from contact with dust and any other impurities and can thus be immersed without risk in the drink when the opening ring 14 is pulled.

**[0023]** In addition, the attachment means 19 between the gripping element 16 and the wall 12 ensure that the element 16 and the film 15 which is secured to it remain secured to the can once it has been opened, preventing them from littering the environment.

The shape of the gripping element 16 and its arrangement on the can may vary according to specific requirements. For example, in the embodiment illustrated in Figure 3, the gripping element covers the opening ring 14, thus obliging the consumer to remove the film 15 so as to reach the ring 14. This ensures that the consumer cannot open the can without removing the protective film 15 from the opening, thereby contaminating the drink with any impurities which might be present on the outer surface of the film.

**[0024]** With appropriate positioning of the attachment means 17, the removable portion of the film 15 can extend beyond the pouring apertures 13, conceivably so as to coincide with the entire film 15.

**[0025]** As shown in Figure 6, the gripping element 16 may be more securely attached to the film 15 by folding one end 21 of the handling element over the site of the tab 12a, and fixed to the film 15 with a further attachment area 22.

**[0026]** Furthermore, in order to improve the attachment of the gripping element 16 to the film 15 and/or the surface 12 of the can, the attachment means 17, 19 can be made to coincide with any raised portions or ribs which are to be found on the lid surface of the upper part of the can.

**[0027]** The protective film 15 and/or the gripping element 16 may each be constituted by several layers of film coupled together.

**[0028]** In a further alternative embodiment, illustrated in Figures 7 and 8, the gripping element 16 and the protective film 15 may be formed in one piece. The protective film 15 has an appendage 16 which acts as gripping portion. This portion 16 is in a passive position folded onto the top wall 12 of the can during packaging, transport and storage, so that it remains within the perimeter of the lid. (The gripping portions 20 - in Figure 1 - and 16 - in Figure 7 - are shown slightly raised only for the sake of clarity). In Figures 1 and 7 the gripping portion 16 is then raised, as shown by the broken line in Figure 7, to expose the tab portion 12a and the edge region of the wall 12 adjacent the pouring aperture 13 upon opening the can.

**[0029]** In Figures 7 and 8 there is shown a variant in which the protective film 15 covers substantially the entire upper or external surface of the wall 12, extending to the perimetral edge 23 thereof. In Figure 8, the at-

tachment means 19 securing the film 15 to the top wall 12 are indicated schematically in areas near the perimeter 23 and/or on it.

**[0030]** Advantageously, the film 15 has a central aperture or gap 24 around the opening ring 14 and the means 25 fixing it to the wall 12, this aperture making it possible to lift the film 15 beyond the area of the ring-pull 14 without the latter obstructing this movement.

**[0031]** Figure 9 shows a further variant in which the film 15 covers only the tab 12a and has a gripping element 16, preferably formed in one piece with the film, folded horizontally into a passive position for transport and storage. In this example, the film 15 is attached at 19 to the upper, external surface of the wall 12, near the region where the tab portion 12a is joined to the rest of the wall 12, in such a way that when the film 15 is lifted it is moved sideways, as shown by the broken line, and thus does not obstruct the liquid being poured from the opening.

**[0032]** In a further variant of the invention (which is not illustrated) the film 15 could cover only the portion of the tab 12a which is immersed in the liquid when the can is opened, but not the central or upper portion of the tab, that is the portion nearest the centre of the top wall 12.

**[0033]** In all the variants of the invention described here, the film 15 is preferably attached - directly or by means of a gripping element 16 securely attached to the film 15 - to the can, in particular to the top wall 12, so as to remain secured to the can even once this has been opened and to avoid being dispersed as litter, separately from the can. The extent of the attachment between the can and the film (and/or the gripping element 16) may vary according to requirements: it could consist of dots or dashes, for example, that is be limited to a few areas of contact between the film (and/or the gripping element 16) and the top wall 12, along the perimetral edge 23, for example; on the other hand, the attachment could be uniform and continuous.

**[0034]** The type of attachment may vary according to the material chosen for the film 15 and could include, though not exclusively, the following types of attachment: heat bonding, ultrasonic welding, heat sealing, gluing by means of a comestible adhesive, used as a self-adhesive layer.

**[0035]** It is clear that, according to the present invention, the film remains secured to the upper wall of the can from the moment it is produced, preventing any impurities from being deposited, or even condensation from forming, on those portions of the outer surface of the can that generally come into contact with the beverage when the can is opened and the contents thereof are drunk or poured.

**[0036]** It will also be appreciated that the film 15 could constitute an ideal surface on which to print the words or graphics which are usually printed on the top covers of cans to indicate the bottling plant. This would mean that the manufacturers of the covers would no longer be obliged to use different presses to make covers for different plants.

## Claims

1. A method of manufacturing a stay-on-tab can, comprising the steps of:

   - providing a cylindrical body (11),
   - providing a top closure wall (12) having a tab portion (12a) which can be folded into the can by pulling an opening means (14),
   - providing a protective film element (15) for covering and adhering to at least the external surface of the tab portion (12a), the film element (15) having gripping means (16, 20), secured thereto for uncovering the said surface before opening the can;

   **characterised by** comprising the step of:

   - coupling the protective film element (15) to the said top wall (12) during production thereof before the can is filled and closed at the top with the top wall (12).

2. A manufacturing method according to claim 1, **characterised in that** said coupling step is chosen from the group consisting of: heat bonding, ultrasonic welding, heat sealing, gluing by means of a comestible adhesive, used as a self-adhesive layer.

3. A manufacturing method according to claim 1, **characterised in that** said coupling step is carried out during a rolling step, or during other steps in the working of the metal disc constituting the top wall (12), so as to obtain a cover or top closure wall (12) already provided with a protective film element (15) before the can is filled and closed at the top with the top wall (12).

## Patentansprüche

1. Verfahren zum Herstellen einer Dose mit verankerter Aufreißlasche, wobei das Verfahren folgende Schritte enthält:

   - Vorsehen eines zylindrischen Körpers (11),
   - Vorsehen einer oberen Verschlusswand (12), die einen Aufreißlaschenteil (12a) besitzt, der dadurch in das Innere der Dose gefaltet werden kann, dass an einer Öffnungseinrichtung (14) gezogen wird,
   - Vorsehen eines Schutzfolienelements (15), um zumindest einen Teil der äußeren Fläche des Aufreißlaschenteils (12a) zu bedecken und an

diesem zu haften, wobei das Folienelement (15) eine Greifeinrichtung (16, 20) besitzt, die daran befestigt ist, um die Fläche vor dem Öffnen der Dose frei zu legen;

**dadurch gekennzeichnet, dass** das Verfahren folgenden Schritt enthält:

- Verbinden des Schutzfolienelements (15) mit der oberen Wand (12) während deren Fertigung, bevor die Dose gefüllt und oben mit der oberen Wand (12) verschlossen wird.

2. Herstellungsverfahren gemäß Anspruch 1, **dadurch gekennzeichnet, dass** der Verbindungsschritt aus einer Gruppe ausgewählt wird, die folgende Schritte enthält: Heißverkleben, Ultraschallschweißen, Heißschweißen, Kleben mit Hilfe eines Lebensmittelklebers, der als selbstklebende Schicht verwendet wird.

3. Herstellungsverfahren gemäß Anspruch 1, **dadurch gekennzeichnet, dass** der Verbindungsschritt während eines Walzschritts oder während anderer Schritte bei der Bearbeitung der Metallscheibe ausgeführt wird, die die obere Wand (12) bildet, um einen Deckel oder eine obere Abschlusswand (12) zu erhalten, die bereits mit einem Schutzfolienelement (15) versehen ist, bevor die Dose gefüllt und oben mit der oberen Wand (12) verschlossen wird.

**Revendications**

1. Procédé de fabrication d'une canette à languette d'ouverture retenue, comprenant les étapes consistant à :

- fournir un corps cylindrique (11),
- fournir une paroi de fermeture supérieure (12) comportant une portion formant languette (12a) qui peut être pliée vers l'intérieur de la canette en tirant sur un moyen d'ouverture (14),

fournir un élément de protection pelliculaire (15) destiné à recouvrir au moins la surface extérieure de la portion formant languette (12) et à adhérer à ladite surface, l'élément pelliculaire (15) comportant des moyens de prise (16, 20) fixés sur ledit élément pelliculaire et destinés à découvrir ladite surface avant l'ouverture de la canette ;
**caractérisé en ce qu'**il comprend l'étape consistant à :

- coupler l'élément de protection pelliculaire (15) à ladite paroi supérieure (12) pendant sa fabrication avant que la canette soit remplie et fermée à la partie supérieure avec la paroi supérieure (12).

2. Procédé de fabrication selon la revendication 1, **caractérisé en ce que** ladite étape de couplage est choisie dans le groupe constitué par : le thermocollage, le soudage par ultrasons, le thermosoudage, le collage par adhésif comestible, utilisé comme couche autoadhésive.

3. Procédé de fabrication selon la revendication 1, **caractérisé en ce que** ladite étape de couplage est réalisée pendant une étape de laminage, ou pendant d'autres étapes du travail du disque métallique constituant la paroi supérieure (12), de manière à obtenir un couvercle ou une paroi de fermeture supérieure (12) déjà doté d'un élément de protection pelliculaire (15) avant que la canette soit remplie et fermée à la partie supérieure avec la paroi supérieure (12).

FIG. 1

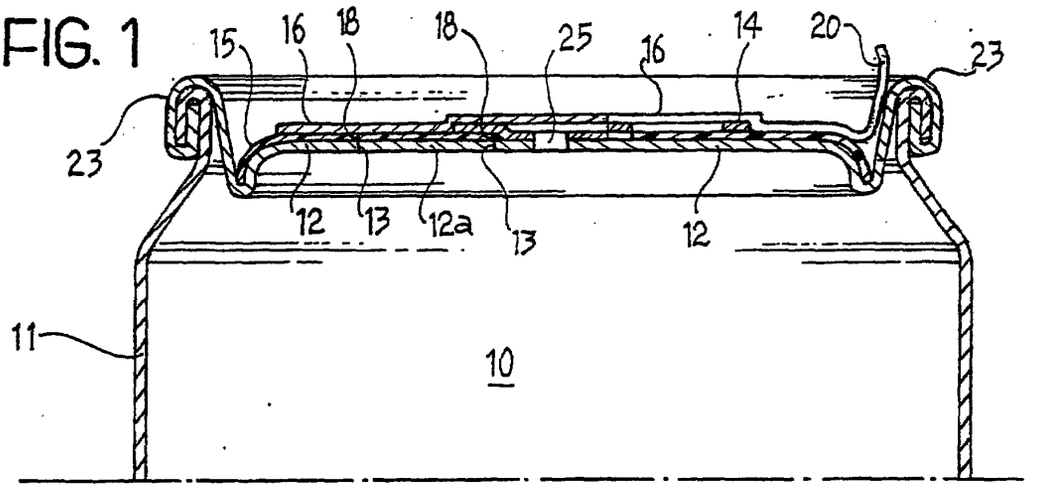


FIG. 2

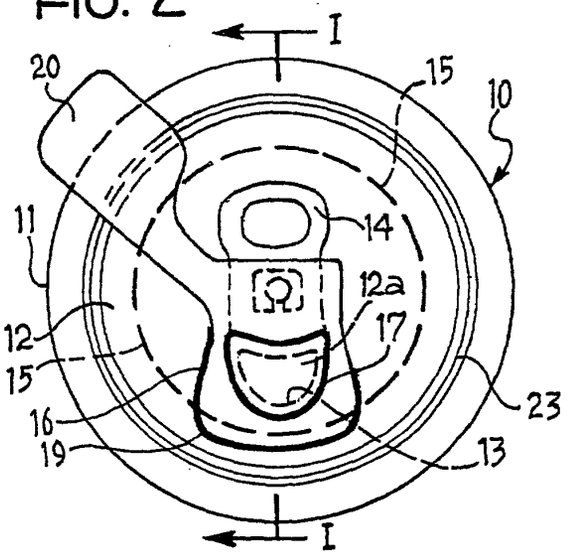


FIG. 3

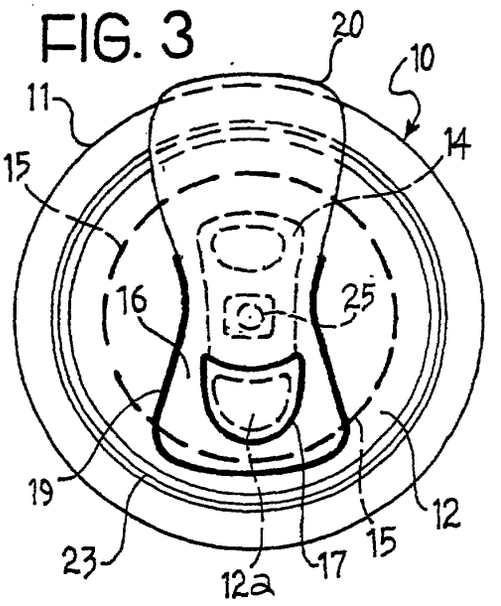


FIG. 4

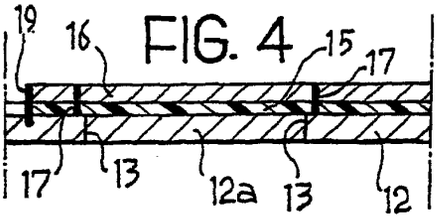


FIG. 5

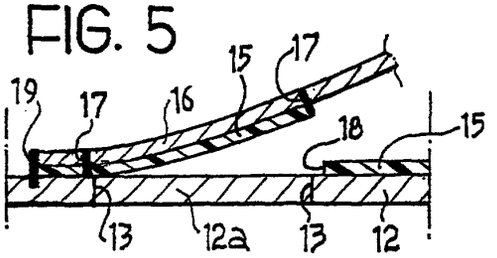


FIG. 6

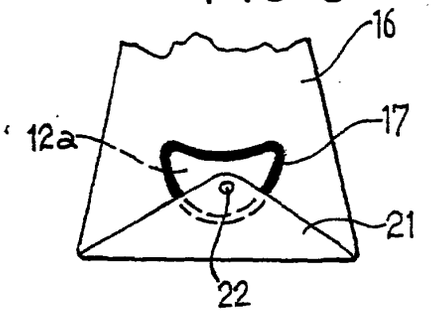

FIG. 7

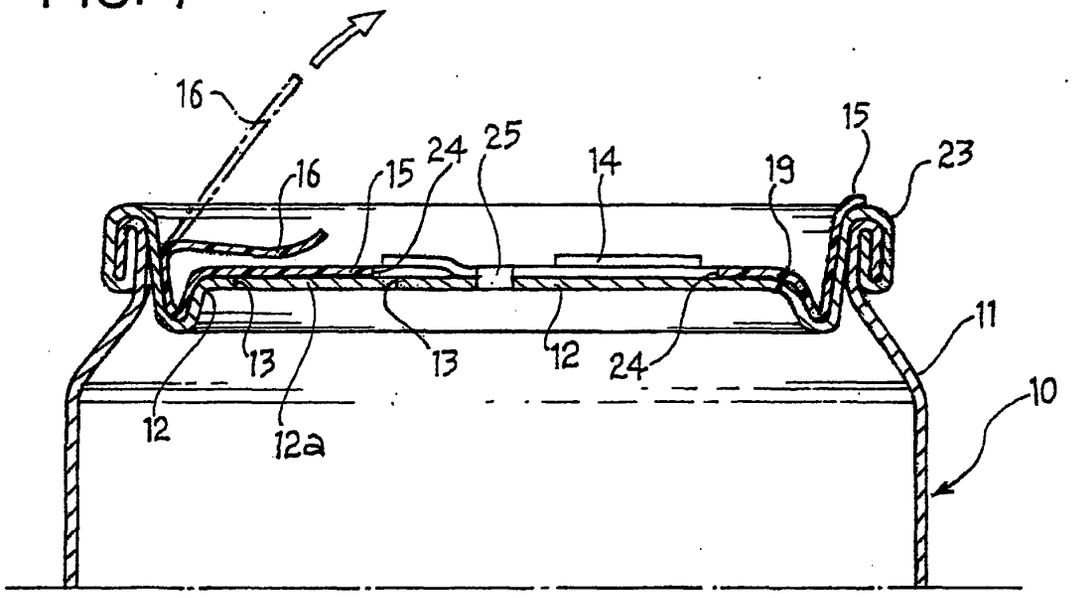


FIG. 8

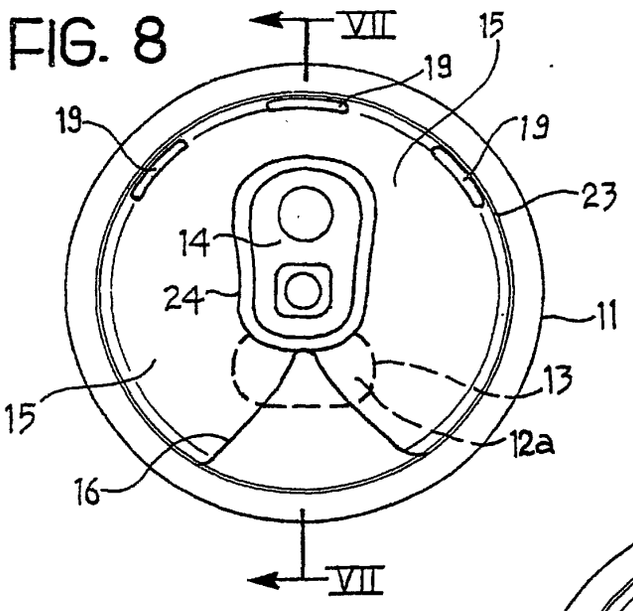


FIG. 9