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(54) HYGIENIC CLOSURE MEANS FOR CANS

(57) The invention relates to hygienic closure means for cans. The inventive closure means are used to close the can opening through which the product contained therein is dispensed, in particular a liquid product, before the can is opened and after the contents thereof have been partially consumed. The invention provides perfect hygienic protection of the area surrounding the aforementioned opening, on which the user places his/her mouth directly in order to consume the product. The improvements offered by the invention lie in protective tongues which are pivot fixed to the point at which the opening tab is connected, said tongues being configured such that they are connected to the surface of the lid as well as to the groove formed along the outer perimeter of said lid and, where appropriate, to the actual peripheral edge of the can at the area at which the lid is joined to the body of the can.

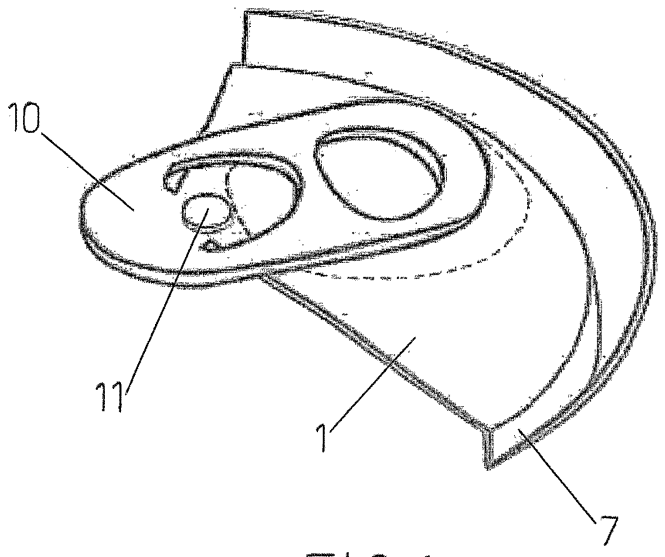

FIG.1

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Description

Object of the Invention

[0001] The present invention refers to hygienic closures for cans and provides essential new features and considerable advantages with respect to known means used for the same purpose in the current state of the art.

[0002] More particularly, the present invention is directly related to the development of can closures, particularly cans of the type containing liquid beverages, by means of which new solutions are provided so that the user can drink, in improved hygienic conditions, the liquid content of the cans through the outflow opening provided in the same, and which is initially sealed with a closing means capable of being pushed inwardly when the user acts manually on a tab which is incorporated, and linked, to the lid of the can.

[0003] The field of application of the invention is obviously comprised in the industrial sector dedicated to the manufacturing of cans containing beverages, be they alcoholic or non-alcoholic beverages.

Background and Summary of the Invention

[0004] As is known in the current state of the art, cans are one way of packaging liquids for direct consumption from the container. This type of containers have the evident drawback of lack of hygiene in the moment of consumption, due to dirt and the presence of germs accumulated in the can since the manufacturing process ended until the moment of consumption, all of it derived from handling, transport, storage or other type of operations.

[0005] As it will be understood, the maintenance of the can in such hygienic conditions that will guarantee the consumption of the content without considerable risks and in sufficiently sanitized conditions, has been a constant preoccupation for all manufacturers of this type of products. However, the only practical solutions adopted to date consisted in providing cans grouped by batches and protected by a plastic wrap, which evidently does not constitute a sufficient solution for the drawback posed, because on one hand, the plastic wrap does not totally cover the can packages, leaving some areas uncovered, and on the other hand, the final handling of the cans is generally carried out individually, after they have been removed from the plastic wrap package.

[0006] Moreover, there is the additional drawback of the product outflow opening being closed by means of a closing device which is constituted by a portion capable of being pushed towards the inside of the container; evidently this portion will be in contact with the liquid enclosed in the container, transferring dirt and germs that could have accumulated on this portion to said liquid, and from the liquid to the consumer by drinking it.

[0007] Therefore, there is a need to suitably protect the lid area of the can surrounding the outflow opening for the liquid product contained inside it, especially in the area over which the user directly puts his/her lips to drink through the outflow opening made on the lid of the can, once the closure has been pushed inwardly by the use of a tab provided for the specified purpose.

[0008] In this sense, the invention has designed a sanitized closure for the outflow opening of a can containing a beverage for consumption, constituting a permanent protection for the mentioned product outflow opening. The protecting piece thus maintains protection of the area of the can in direct contact with the user's month in the moment when the liquid contained inside the can is drunk, so when the user turns the opening tab to position it in the place from where it is normally acted upon to open the can, the protecting flap turns at the same time, leaving the area where the opening is uncovered. Once the container has been opened, the protecting piece can be turned again to its initial position, and by applying a small pressure, it can close the outflow opening, thus preventing the flow of liquid to the exterior.

[0009] The proposed closure essentially has a simple conception and design, it is easy to manufacture and has, as a starting point, the known conventional closure for this type of cans, to which a protecting piece has been added which is responsible for the hygienic protection of the chosen area. The system can be applied to most known can designs, independently of the adjustments that may be necessary for its adaptation to formats, designs and dimensions of different can manufacturers, and for the purpose of assuring the desired leak-tightness in the outflow opening when the protecting flap acts as a lid to prevent liquid spillages. This means that the opening process is practically the same as the one currently used by manufacturers, the mentioned protecting flap being the only innovative element added.

[0010] As has been previously mentioned, the protecting flap proposed by the invention may consist of an independent piece that is joined to the cans during the manufacturing process. Therefore, as the flap is independent of the opening tab, it can be turned without varying the initial position of the opening tab when the protecting flap is to be used. The protecting flap can adopt various shapes and sizes, according to the design, and moreover, according to the nature with which it has been conceived, it can be manufactured from any material that allows it. Furthermore, the protecting flap can exceed the limit imposed by the lid of the can and attach itself to the edge of the can on its outer part. The flap can thus be acted upon from the edge of the same, producing the opening turn if so desired.

[0011] In a variant of the system, a second internal flap could be used that would act simultaneously with, and in the same way as, the external flap, both of them can be turned simultaneously or independently.

[0012] The flap can incorporate a seal indicating that the same has not been acted upon previously.

[0013] As will be understood, the opening action includes a turn in a certain minimum angle, and the closure is produced by turning the flap again by a 180° angle with

respect to the open position, in the same or in the opposite direction.

[0014] In the various embodiments of the protecting flap the invention proposes, it has been anticipated that they can be applied to lids of cans both by using the rivet linking the conventional tab to the lid, and by providing a central notch that makes the protecting flap independent of said rivet. The outer perimetric edge of the flap can be finished in various ways: it can prepared to be attached to the groove perimetrically surrounding the lid, it can be designed to be attached to the perimetric edge of the joint between the lid and the body of the can, or the protecting flap can simply consist of a planar piece, without any configuration or folded at its outer perimetric edge.

[0015] Furthermore, the invention also anticipates a sealing formation between the outer perimetric edge of the flap and the lid, preferably by means of a heat-sealable material, which is maintained until the moment when the user exerts sufficient force on the flap to remove the seal, the arrangement being such that the remains of the sealing material are swept away by the flap once the breakage occurs, without leaving traces on the area of the lid to which it was applied.

Brief Description of the Drawings

[0016] These and other features and advantages of the invention will clearly be demonstrated by the following detailed description of a preferred embodiment, which is given only by way of an illustrating and non-limiting example, and with reference to the attached figures, in which:

Figure 1 is a perspective view of an example of a hygienic closure for cans according to the invention, in which a riveted aluminium sheet appearing conventionally in relation to the opening area of the can is extended by means of the protecting flap portion to the very edge of the can;

Figure 2 is a cross-sectional view of the previous closure;

Figure 3 shows an opening and closing sequence of a can containing a liquid product, which is provided with the hygienic closure proposed by the invention;

Figure 4 shows a modified version of the protecting flap which is completely independent of the opening tab of the can and is prepared to be extended over, and pass over the outer edge of the can;

Figure 5 shows a cross-section of the hygienic closure piece in Figure 4;

Figure 6 shows an opening and closing sequence equivalent to Figure 3, but related to a flap which is independent of the tab but has a configuration that is equivalent to a semicircle;

Figure 7 shows a sequence relating to the process of closing a can of the type discussed, as it is carried out in prior art;

Figure 8 is a sequence equivalent to Figure 7, but it is modified to allow the incorporation of the protecting flap proposed by the invention in the process of closing the can, and

Figures 9, 10, 11 and 12 are embodiments of the protecting flap of the invention in its application to a can containing a consumable liquid product.

Description of the Preferred Embodiments

[0017] As has been previously described, the detailed description of preferred embodiments of the invention will be made below with the aid of the attached drawings, by means of which the same reference numbers will be used to designate identical or similar parts.

[0018] Thus, considering first the depiction of Figure 1, it shows a perspective view of a hygienic closure for cans containing beverages, conceived according to the invention, and integral to the opening tab. In the commented depiction, the flap portion is indicated by reference number 1, whereas the tab portion is identified by reference number 10, the latter includes an orifice 11 for the fastening rivet to the lid of the can, and the flap portion shows its outer perimetric edge 7 as a complementary configuration to the notch that the lid can have perimetrically in each case. The cross-section of Figure 2 more clearly shows this configuration.

[0019] As to Figure 3, it is a step-by-step sequence for the opening and closing operations of the can, from a first position (first depiction in the upper left-hand side of the drawing) in which the opening is completely hidden by the protecting flap, to a final position in which said flap has returned to the initial position, after having been slid over the lid of the can and having passed through a series of intermediate positions, including the completely opposite position (that is, turned 180°) in which the opening area is completely uncovered and the user can exert the mentioned opening action by a manual action on tab 10, as is usual.

[0020] With a closure of this type, two different objectives can be achieved:

protecting the opening area of the cans from occasional contamination by dirt and germs, and

having a means of closing the opening of the lid, once the container has been opened, to avoid content spillages.

[0021] In all cases, the proposed modification for the can may be carried out in the production line of said cans, extending the riveted aluminium sheet in the opening area of conventional cans to the edge of the same, as is shown in Figure 1. Therefore, the incorporation of the hygienic closure to conventional cans would be easy and would have a low cost.

[0022] In the same way, the leak-tight feature of the hygienic closure would be implemented by exerting a small pressure on the riveted aluminium sheet, until the latter is adapted to the lid opening. The process could

also be carried out in the production line, for which a suitable manufacturing program could be incorporated in the machine responsible for incorporating the hygienic closure in the can. In this case, the riveted sheet must be slightly bigger, thus providing a sufficient surface area to completely adapt itself to the cavity defined by the opening. In this way, the final configuration will consist of the catch for opening the can, the rivet and the sheet extended to the edge of the can.

[0023] The leak-tight feature could also be reached without adapting the aluminium sheet to the opening, i.e., with a final configuration which, in this case, would consist of the catch for opening the can, the rivet and the extended aluminium sheet which would remain planar and without any notches. In any case, one or the other configuration must be adopted by the manufacturer, depending on his production line, on the geometry and design of the can and, of course, on what he considers more cost-effective during the manufacturing process.

[0024] All the foregoing is equally valid for the modified version case which is shown in Figures 4 to 6, in which an aluminium sheet constituting the protecting piece, or flap, generally indicated with reference number 1', is completely independent of the opening tab. In this case, flap 1' adopts an approximate semicircular shape, having an orifice 11 in a position which coincides with the circle centre and its perimetric edge configuration adopts a shape 7 equivalent to the one discussed in relation to 1, beyond which said edge is finished according to 8, folding over itself to leave a housing that can be adapted to the edge of the can, over which it can slide when the user pushes it manually in any direction. Figure 5 is a cross-sectional view that most clearly shows the profile adopted by said outer perimetric edge of the mentioned piece of protecting flap 1'.

[0025] In turn, Figure 6 shows a sequence corresponding to the opening and closing operations of the can, in which, as in the case of the version shown in Figure 3, the protecting flap passes through multiple positions, from a first position in which it completely covers the area which is to be protected, to a completely opposite position in which the can opening is completely uncovered, and its return to the initial position, to protect and hermetically seal the product outflow opening once the sealed portion has been pushed and shifted inwardly.

[0026] In Figure 7, a sequence relating to the process of closing a can of the type discussed, as it is carried out in prior art, is shown; a diagrammatic view of the phase of joining and closing between a lid and the body of the can can be observed, for the joint perimetric winding of both edges, with the use of suitable roller 3. As to Figure 8, the same operative sequence applied to the invention can be observed, in which said roller has been modified to provide a space to house the sheet constituting the flap in the formation area of the edge of the lid, thus guaranteeing a flap configuration such that it is suitably adjusted to the groove surrounding the lid, and can guarantee, in turn, a suitable leak-tightness when the mentioned flap is used for the purpose of closing the outflow opening of the can. As will be understood, the only difference between the sequences of both figures simply consists of the modification of roller 3 to allow the incorporation of the material of flap 4; this allows assuring that the operative phases of the process are exactly the same as those in prior art, allowing the use of already existing installations for the incorporation of improvements provided by the invention without great structural changes.

[0027] Considering now Figures 9 to 12, various options of improved leak-tight closures according to the invention can be observed. In all cases, the depictions are equivalent in relation to flap versions that can be linked by means of the rivet of the tab, or notched in the central area of their diametrical edge, the sub-figures associated to said versions being distinguished from each other by the suffix "a" or "b".

[0028] Thus, in the case of a flap 5 such as the one depicted in Figure 9.1.a, it can be observed that it is constituted by a substantially planar sheet, with an approximately semicircular base, notched in a central portion 6 so that it does not depend on the joining rivet of the opening tab with the lid of the can, its perimetric edge being configured so that it has an inner shape capable of attaching itself to the perimetric groove which the lid of the can has, and consisting of an outer portion 8 finished so that it folds over itself to attach itself and adapt to the shape of the perimetric edge of the can. In this way, a considerable increase in the protection area is guaranteed.

[0029] Figure 9.2.a shows a top plan view of the same lid in the previous figure, whereas Figure 9.3.a depicts a top view of the protecting flap applied to can 9, the tab 10 joined to the centre of the can, as usual, also being shown.

[0030] The previous explanation is perfectly applicable in the case of Figures 9.1.b to 9.3.b, in which flap 5 lacks notch 6 and is seen as a complete semicircle, and having in its place an orifice 11 intended to be used as a means of linkage to the assembly with the aid of the rivet 12 itself used for linking tab 10 to the lid of the can.

[0031] In turn, Figures 9.5 and 9.6 show, respectively, upper plan and elevational views of a can 9 with protecting flap 5 incorporated, and plan and elevational views of a section made on a can, for the purpose of better understanding the explanation. The position of tabs 5 is turned 180° with respect to sub-figures 9.3, leaving portion 13 of the outflow opening for the product contained in it uncovered. The section shows the attachment and adaptation of flap 5 to the perimetric edge of can 9.

[0032] Now mentioning the figures numbered with 10, a modified embodiment of protecting flap 5' can be observed, likewise conceived with a semicircular base, in which a version identified by sub-figures 10.1.b to 10.3.b is notched in its central area 6, and another version identified by sub-figures 10.1.a to 10.3.a is provided with an orifice 11 for its linkage by means of the rivet 12 itself of tab 10, but in which now the end perimetric edge of flap

5 has only one formation 7 adapted to attach itself to the perimetric groove which the lid of can 9 has. Tab 5' is planar.

[0033] The views in Figures 10.4 and 10.5 likewise show, respectively, plan and elevational views of can 9 with applied flap 5', and plan and elevational views of a cross-section performed in can 9, in which said flap 5' is no longer extended outside the upper edge.

[0034] Figures numbered with 11 correspond to a new embodiment of the flap according to the invention. In this case, flap 5" basically corresponds to flap 5', both in the centrally notched version 6, identified by Figures 11.1.b to 11.3.b, and in the version provided with a central orifice 11 for the passage of the rivet, said tab being finished at its outer perimetric edge such that it can attach itself to the perimetric groove of the lid, and move rotationally with respect to the latter, although in the case of the present embodiment, the flap has been extended over the inner diametrical edge, by means of respective portions 14 that increase the surface area of the flap to an extension considerably greater than that of the initial semicircle. These extended portions 14 are extremely useful in the manufacturing process because they allow a correct functioning of the compression chuck.

[0035] Lastly, as refers to the embodiment represented in Figures numbered with 12, it can be observed that it corresponds to a flap 5"', with simpler features than the foregoing, both in the version provided with a central notched portion 6 (sub-figures 12.1.b to 12.3b) and as refers to the version provided with a central orifice 11 for the passage of rivet 12 of the tab 10 (sub-figures 12.1a to 12.3.a), because in this case, the mentioned flap 5"' simply consists of a considerably planar protecting piece, which is not provided with any shape with respect to its perimetric edge.

[0036] Figures 12.4 and 12.5 also show respective depictions of plan and elevational views of can 9 with flap 5"' applied to its lid, and plan and elevational views of a cross-section performed in can 9. In the latter, it can be observed that flap 5"' is limited to the outline of the can itself, because its diametrical dimension coincides with the diametrical dimension corresponding to the latter.

[0037] If the depiction in Figure 9.4 is now considered, a modified version of flap 5 corresponding to the embodiment contained in the figures numbered with 3 can be observed. In this case, the flap shows an extension 15, which, in case the flap has been assembled after the closing process of the can has been carried out, allows modifying the assembly process so that it can be adapted to the capabilities of different assembly plants.

[0038] As will be understood, the solutions proposed by the invention and described in the foregoing can be modified in their configuration and size for the purpose of meeting the needs derived from different can sizes used by different manufacturers.

[0039] It is not considered necessary to extend the content of this description so that a person skilled in the art can understand its scope and the advantages derived therefrom, as well as carrying out and putting into practice the object thereof.

[0040] However, it must be understood that the invention has been described as a preferred embodiment of the same, therefore, it can be modified without altering the substance of said invention; said modifications can especially affect the shape, size and/or manufacturing materials.

Claims

1. A hygienic closure for cans, particularly to provide a suitable protection against the accumulation of dirt, germs and the like in the area that surrounds the outflow opening of the can and on which the user directly puts his/her mouth to ingest the liquid content of the can, **characterized in that** it consists of an extension of the opening tab (10) of conventional cans, configured as a flap and extended to the very edge of the can.

2. A hygienic closure for cans according to claim 1, **characterized in that** the mentioned flap is configured such that at the same time, it provides a closing lid for the can once the outflow opening has been opened, avoiding occasional unwanted spillages.

3. A hygienic closure for lids according to claims 1 or 2, **characterized in that** the mentioned protecting flap extends to the outer part of the edge of the can.

4. A hygienic closure for cans according to one or more of claims 1 to 3, **characterized in that** the protecting flap can move rotationally and slide over the lid of the can by the user's manual action.

5. A hygienic closure for lids according to claim 4, **characterized in that** the mentioned protecting flap is attached to the lid of the can by means of the same joining rivet (12) of the opening tab (10).

6. A hygienic closure for cans according to claim 4, **characterized in that** the mentioned protecting flap is attached to the can by means of its sliding connection (8) to the perimetric edge of the can.

7. A hygienic closure for cans according to claim 1, **characterized in that** the means of rotating linkage between a flap (5, 5', 5", 5"') and the lid of the can (9) consist of a notch (6) in a central position with respect to the inner diametrical edge of said flap.

8. A hygienic closure for cans according to claim 7, **characterized in that** the means of rotating linkage between the flap (5, 5', 5", 5"') and the lid of the cans (9) consist of an orifice (11) in a central position next to the inner diametrical edge of said flap, through

which the fastening rivet (12) of said opening tab (10) is passed.

9. A hygienic closure for cans according to one or more of claims 6 to 8, **characterized in that** the flap (5, 5', 5", 5''') is substantially planar.

10. A hygienic closure for cans according to one or more of claims 6 to 9, **characterized in that** the outer perimetric edge of the flap (5', 5'') is configured so as to have a complementary configuration (7) to the groove perimetrically surrounding the lid, where it is linked.

11. A hygienic closure for cans according to one or more of claims 6 to 9, **characterized in that** the outer perimetric edge of the flap (5) is configured so as to have a complementary shape to the groove perimetrically surrounding the lid, and its outer part is finished by a profile formation (8) which coincides with the perimetric edge of the joint between the lid and the can (9), where it is linked.

12. A hygienic closure for lids according to one or more of claims 6 to 11, **characterized in that** the flap (5'') incorporates extensions (14) from its inner diametrical edge which substantially increase its surface area and are destined to allow a better performance of the compression chuck.

13. A hygienic closure for cans according to one or more of claims 6 to 11, **characterized in that** the flap (5) incorporates an extension (15) that allows modifying the assembly process for its adaptation to the capabilities of different assembly plants.

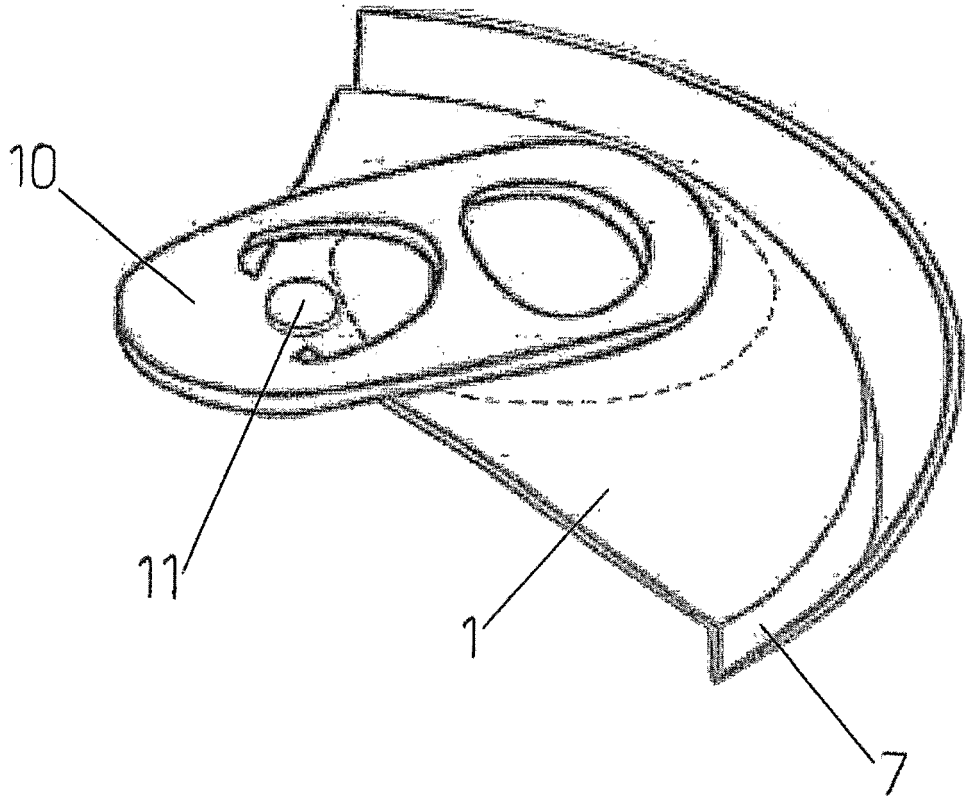

FIG.1

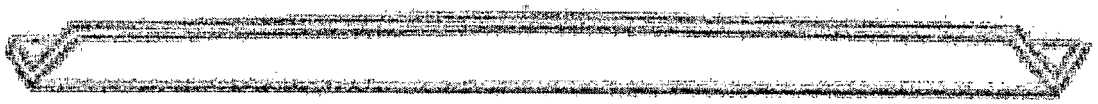

FIG.2

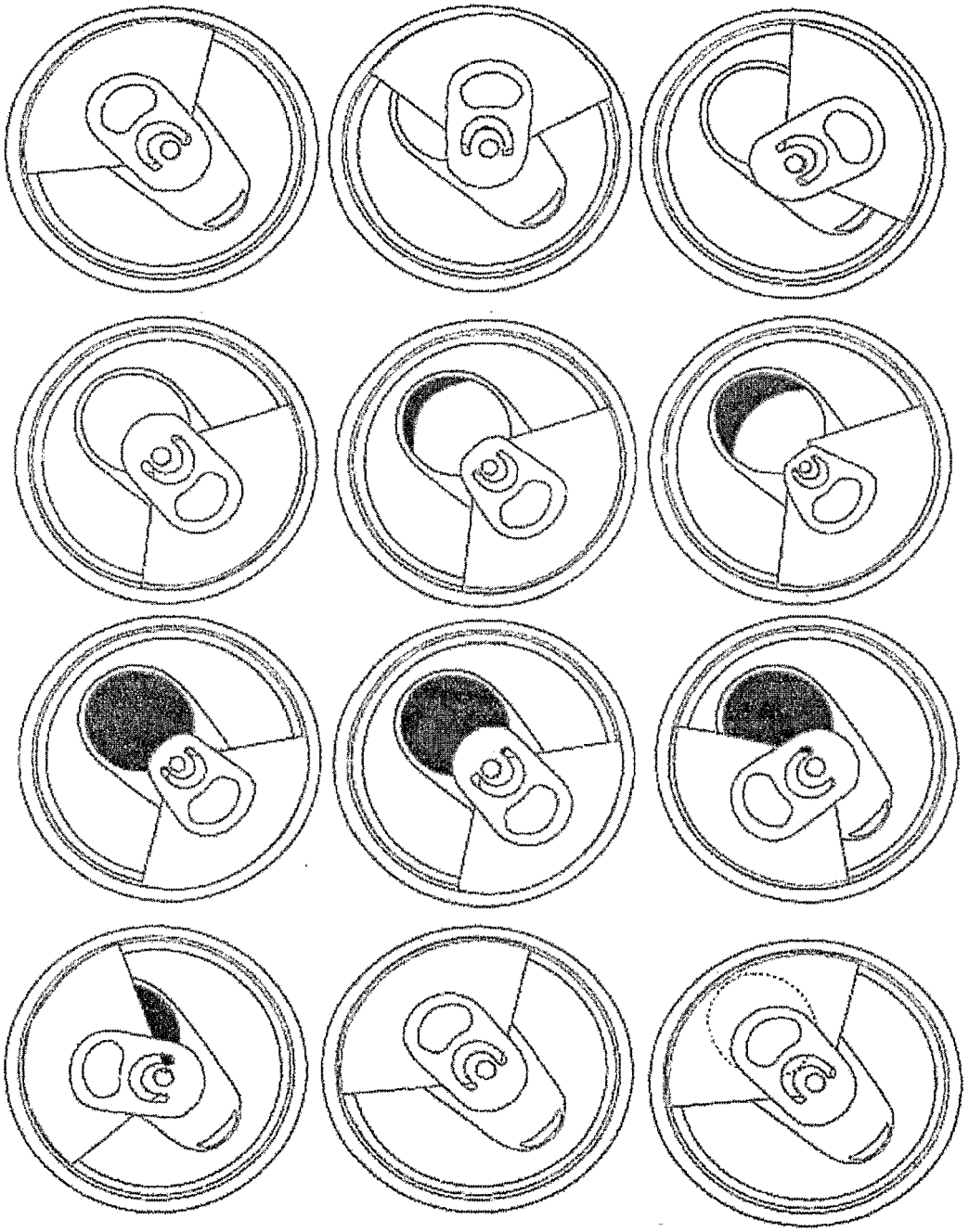

FIG.3

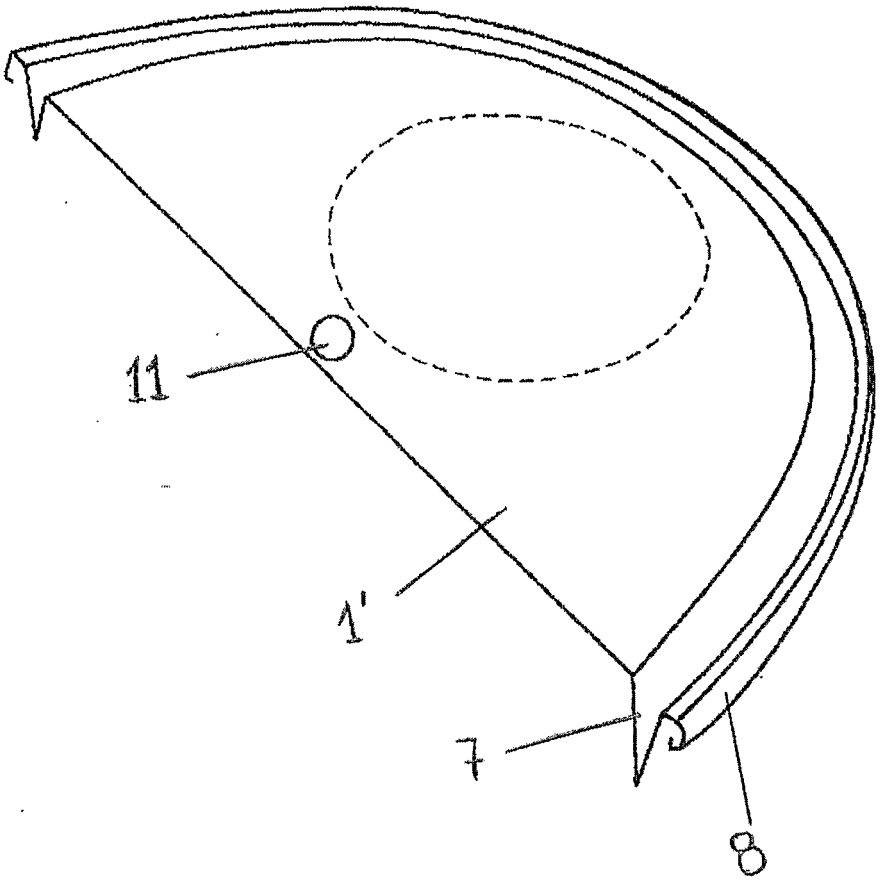

FIG.4

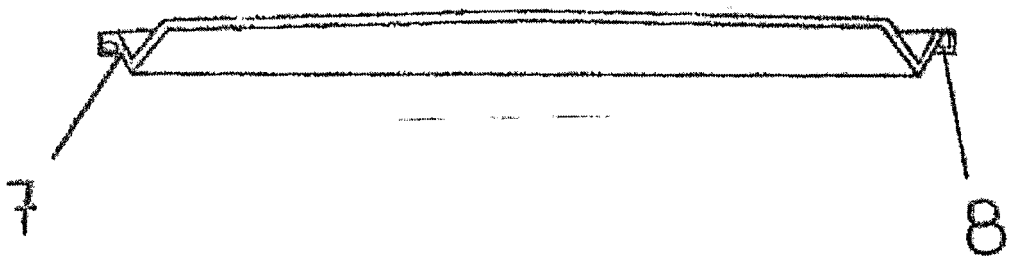

FIG.5

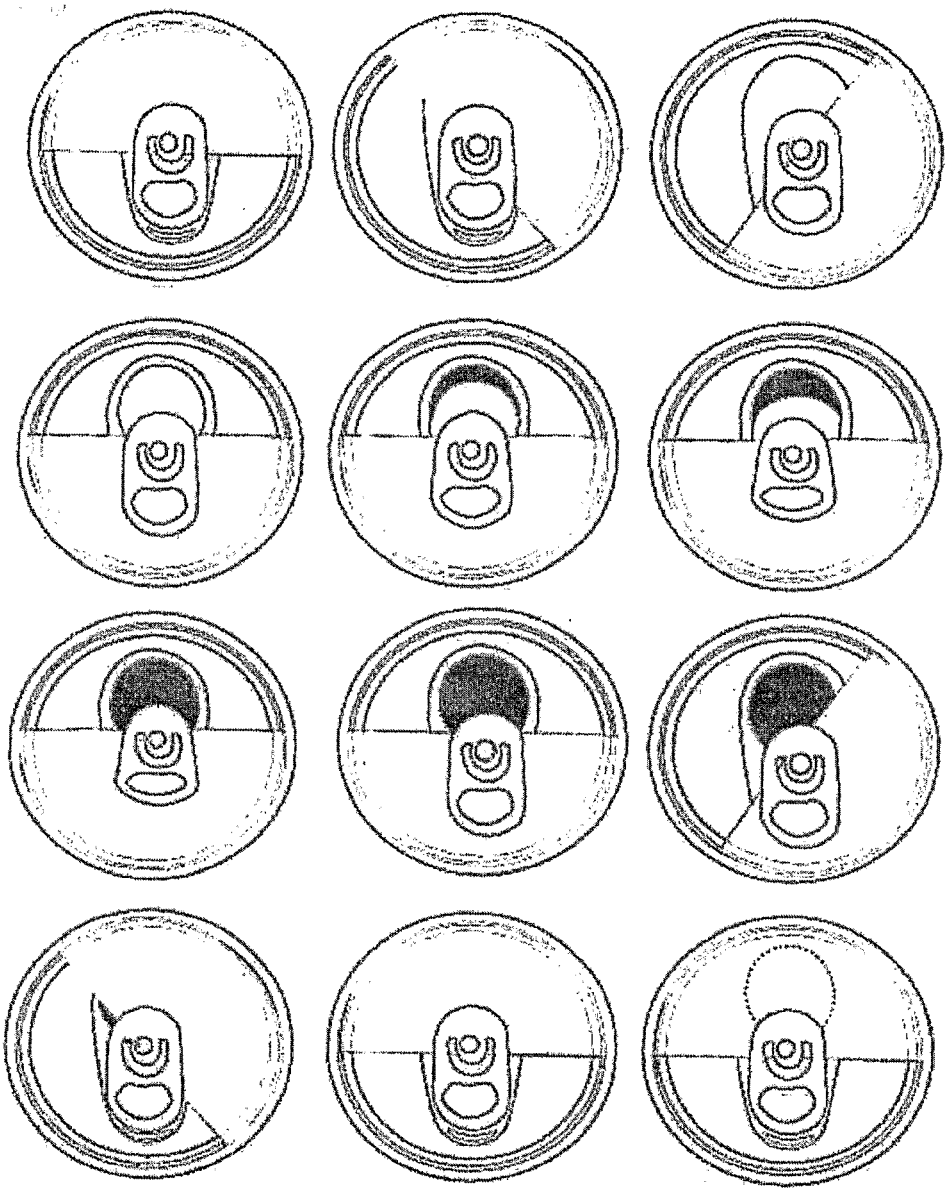

FIG.6

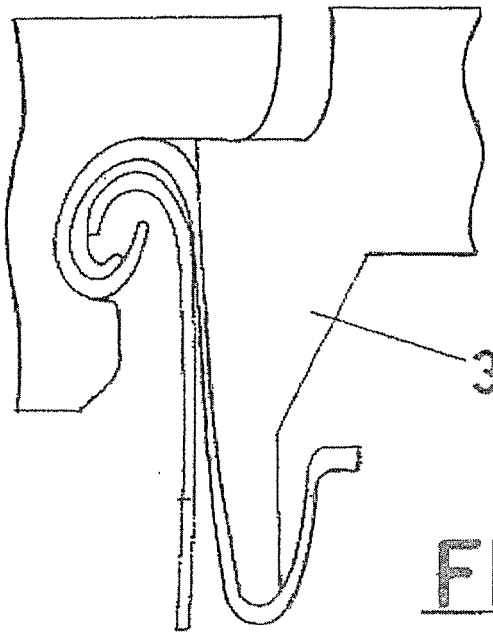

FIG.7

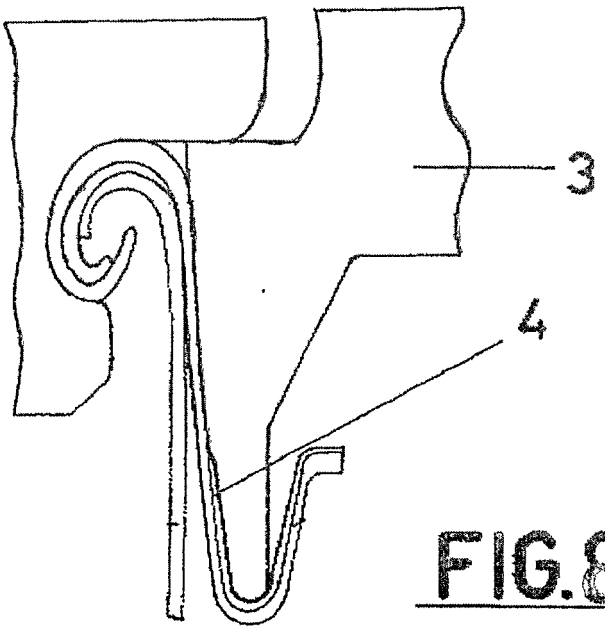

FIG.8

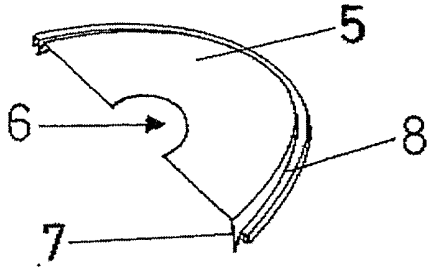

FIG.9.1a

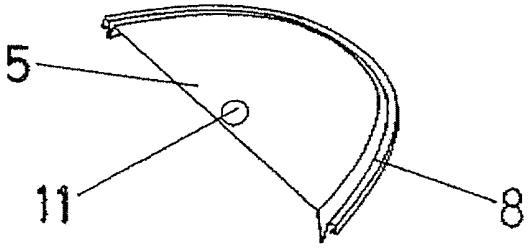

FIG.9.1b

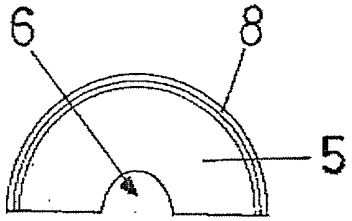

FIG.9.2a

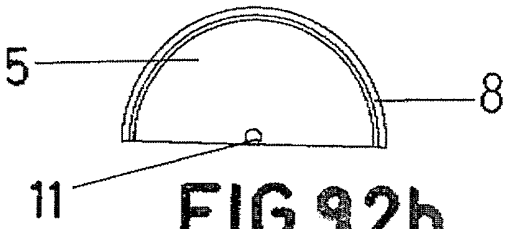

FIG.9.2b

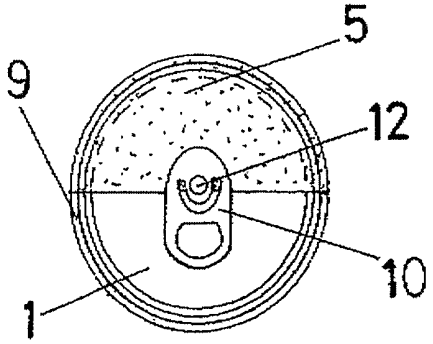

FIG.9.3a

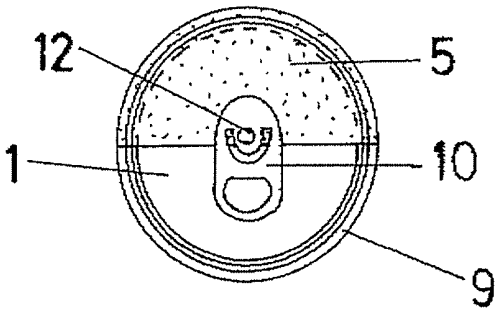

FIG.9.3b

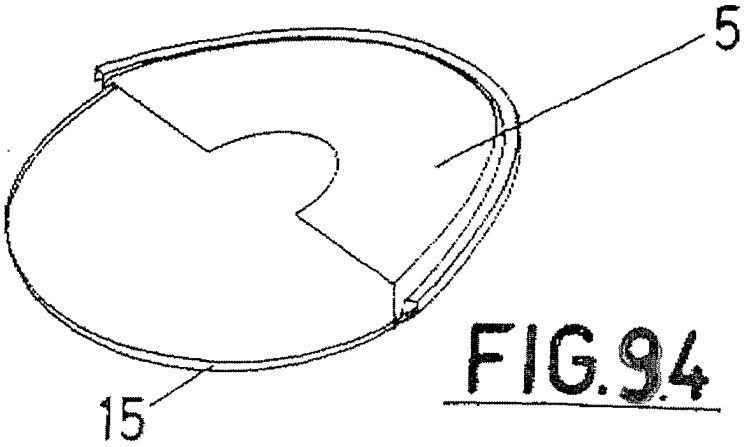

FIG.9.4

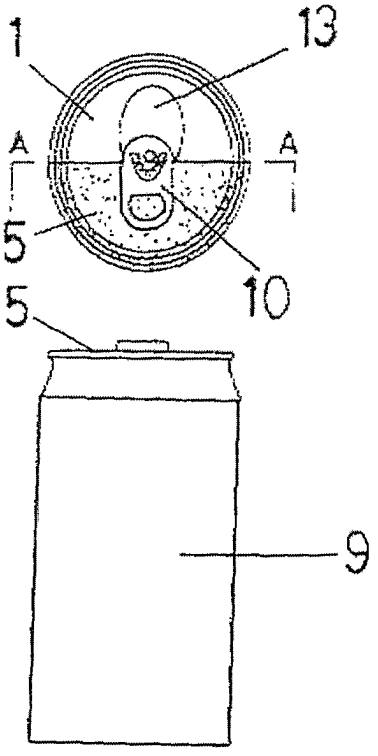

FIG.9.5

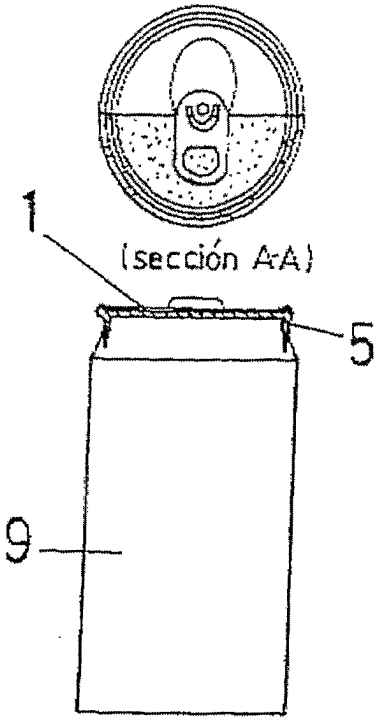

FIG.9.6

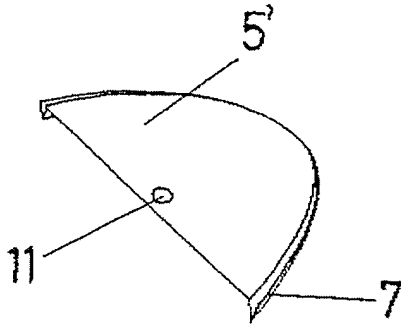

FIG.1a

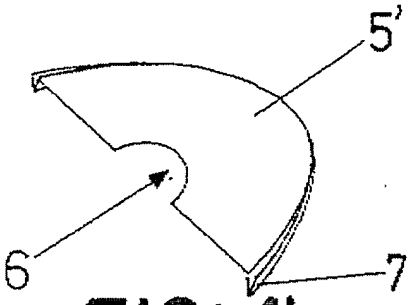

FIG.1b

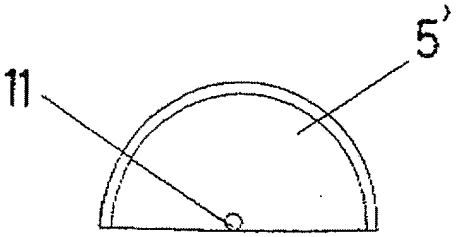

FIG.2a

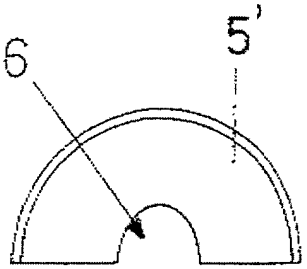

FIG.2b

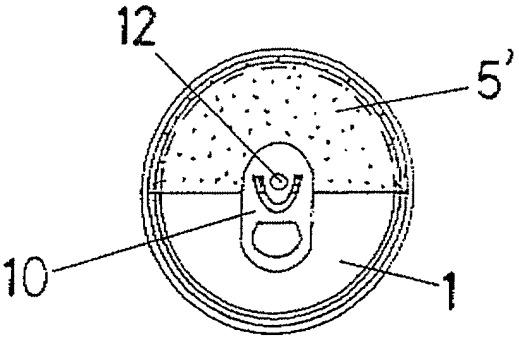

FIG.3a

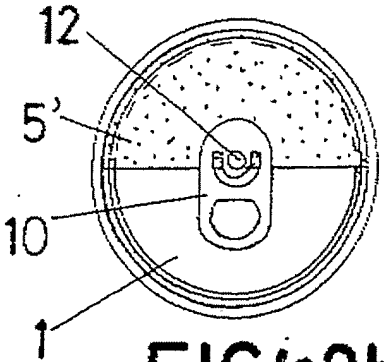

FIG.3b

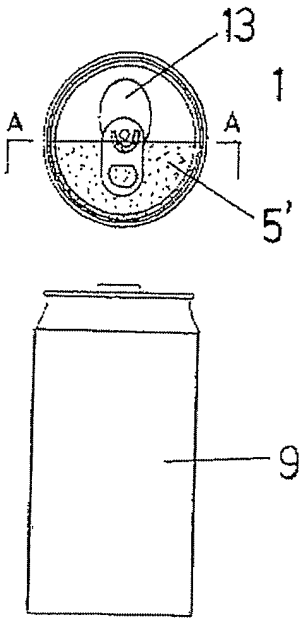

FIG.10.4

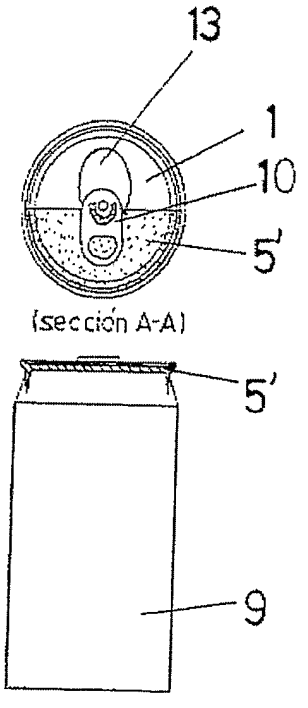

FIG.10.5

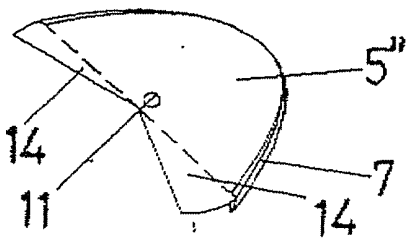

FIG.11.1a

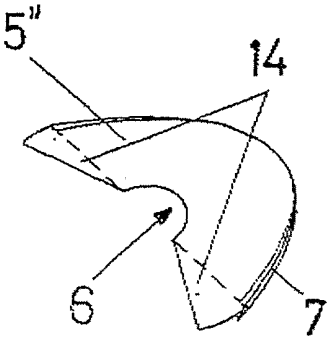

FIG.11.1b

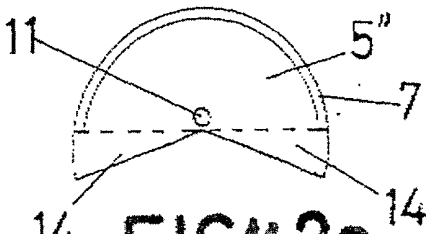

FIG.11.2a

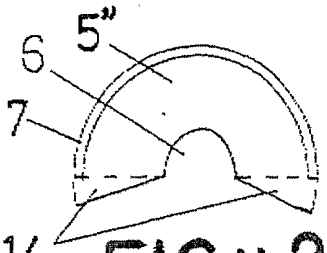

FIG.11.2b

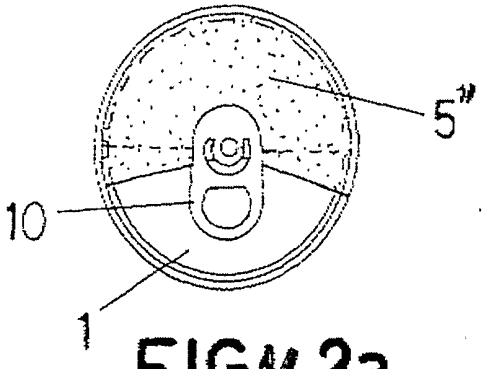

FIG.11.3a

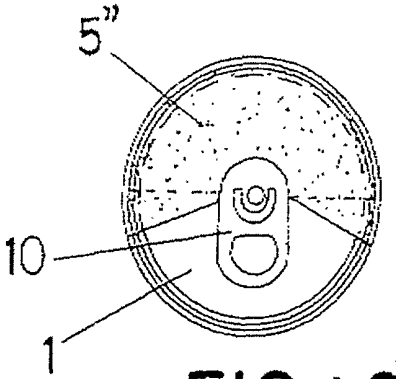

FIG.11.3b

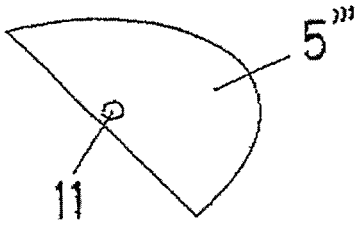

FIG.12.1a

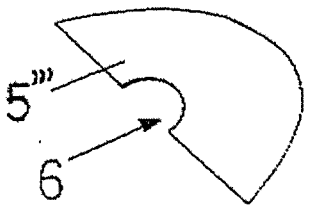

FIG.12.1b

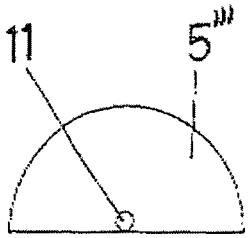

FIG.12.2a

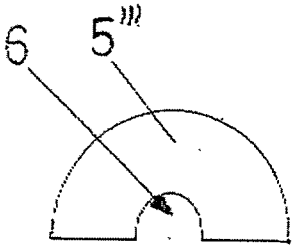

FIG.12.2b

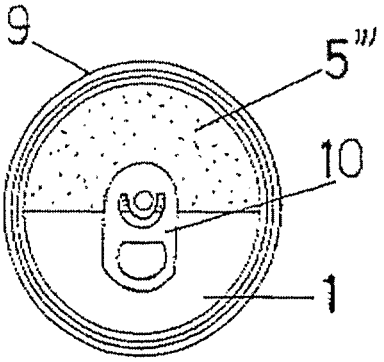

FIG.12.3a

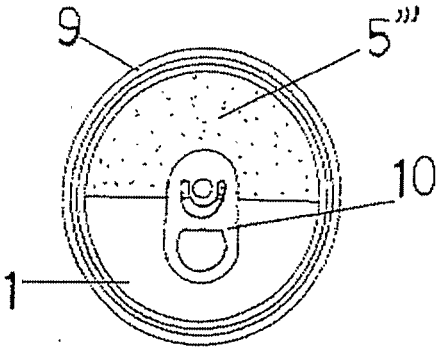

FIG.12.3b

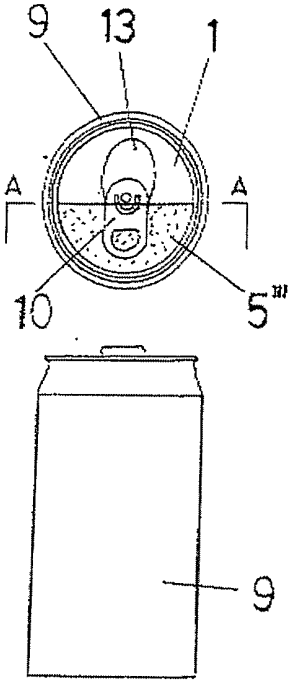

FIG12.4

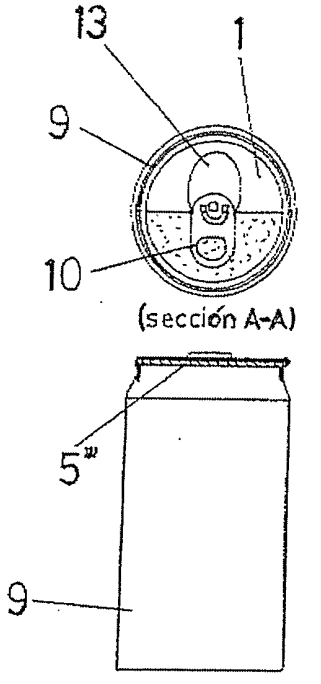

FIG12.5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 2004/000456

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B65D17/40

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D17/40

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CIBEPAT,EPODOC,WPI.

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	DE 4427812 A1 (Gantschev, Ljubomir) 01.02.1996, **abstract, drawings**	1-5,7-9 10,11 12,13
X Y A	US 5131554 A (Kuo) 21.07.1992, **The whole document**	1-6 10,11 7-9
X A	BE 1013401 A6 (Hahn) 04.12.2001, **abstract, drawings**	1-5,7-9 12,13
X A	DE 3931573 A1 (Grau) 04.04.1991, **abstract, drawings**	1-5,7-9 12,13
X A	NL 1008675C C2 (Geertruda) 12.03.1999, **abstract, drawings**	1-5,7-9 12,13
X A	DE 29803352U U1 (Gerhardt Geb) 04.06.1998, **abstract, drawings**	1-5,7-9 12,13

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
14 FEB 2005 (14.02.05)	**16 FEB 2005 (16.02.05)**
Name and mailing address of the ISA/ **S.P.T.O.** Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No
PCT/ ES 2004/000456

Patent document cited in search report	Publication date	Patent familiy member(s)	Publication date
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BE1013401 A 6	04.12.2001	NONE	----------
DE3931573 A 1 C 2	04.04.1991	NONE	----------
NL1008675C C 2	12.03.1999	NONE	----------
DE 29803352 U	04.06.1998	DE 29721300 U	19.02.1998

Form PCT/ISA/210 (patent family annex) (July 1992)