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(54) **An additive carrying cartridge for mixing the additive with the content of a container**

(57) An additive carrying cartridge for mixing the additive with the content of a container comprising a cylindrical additive containing body (1) having a closed upper base (2) and an open lower base (3) sealed by a sheet of breakable material (4). The perimetrical rib (5) in the central part of the containing body (1), the diameter of which is greater than the diameter of the mouth (11) of the container (10), the containing body (1) being divided into a first portion (6) having a plurality of broken sections joined to each other defining a bellows and a second portion (7). The additive (8) occupies a volume inside the containing body (1) defining a level the distance D of which, measured from the lower base (3) of the second portion (7), is greater than the distance E between said lower base (3) and the upper base (2) of the first portion.

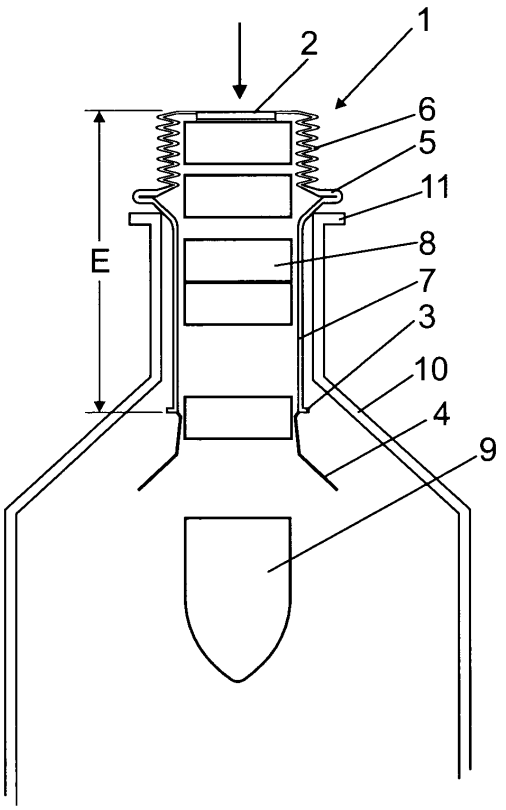

FIG. 2

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Description

Field and Object of the Invention

[0001] The invention is within the field of dispensing or mixing devices of several substances, the final mixture being contained in a container, and more specifically, it relates to an additive carrying cartridge for mixing the additive with the content of a container.

State of the Art

[0002] Different systems and devices are currently known for mixing substances of a different nature, such as for example, when a solid state product is intended to be mixed with the liquid content of a container.

[0003] There are currently a great number of liquid containing containers having stoppers inside of which the substance to be mixed is comprised, said stoppers having closing sheets at their lower base made of easily breakable materials.

[0004] There is a great variety of systems for mixing both components. For example, the stopper may have an inner sharp element such that when the stopper is rotated with respect to the mouth of the container said element cuts the closing sheet causing the substance to be mixed, contained inside it, to fall inside the container and producing the mixture, such system can be observed for example in Spanish patent application ES 2007538 and in the Spanish utility model application ES 0280124.

[0005] In the cited devices, the stopper has a double function, the primary function is to close the container and the secondary function is to act as a container for the substance to be mixed, therefore, the stopper is intimately joined to the container being dependent on the same, which is dangerous because during the transportation of the container, the substance to be mixed which is inside the stopper may accidentally and undesirably be mixed with the content of the container.

[0006] On the other hand, stoppers of the type described and known up to date require complicated mechanisms for achieving the breaking of the closing sheet of the same when the substances are going to be mixed, requiring cutting and duplicating elements of the inner partitions of the stopper to achieve the cutting of the sheet.

[0007] In other occasions, it is the mouth itself of the container that has a seal or closing sheet which is broken by the rotating effect of the stopper on said mouth. Therefore, the manufacturing process of said stoppers is laborious and mostly expensive given the complex inner configuration of said stoppers.

[0008] Due to all this, the need to provide a cartridge that is totally independent of the container containing the substance to be mixed has been detected, that is, the cartridge can be used in commercial containers such as, for example, mineral water bottles, and that does not need to incorporate special stoppers for achieving the mixture of the substances contained in the stopper with the content of the container.

[0009] On the other hand, a cartridge has been designed that does not need inner elements for the breaking of the sheet or seal thereof, but it is the substance itself contained in the cartridge that causes the breaking of the closing seal or sheet of the same, so that due to the simplicity of its constitution, it is easy to manufacture and of a lower cost.

[0010] This objective is achieved by means of the invention as it is defined in claim 1, and preferred embodiments of the invention are defined in the dependent claims.

Description of the Invention

[0011] The present invention relates to an additive carrying cartridge for mixing the additive with the content of a container comprising an additive containing body of a substantially cylindrical shape with a smaller diameter than the diameter of the mouth of the container, having a closed upper base and an open lower base, the lower base of the containing body being sealed by a sheet (seal) of breakable material and said containing body having two portions, a first portion and a second portion.

[0012] In a first aspect, the invention will have a perimetrical rib in the central part of the containing body, the diameter of which is greater than the diameter of the mouth of the container, the cartridge being supported on the container through said rib, the containing body being divided into a first portion and a second portion, the first portion having a plurality of broken sections joined to each other defining a bellows for varying the height of said first portion with respect to the mouth of the container, said upper base moving between an extended initial position and a withdrawn final position.

[0013] In turn, the additive will occupy a volume inside the containing body defining a level the distance D of which, measured from the lower base of the second portion, is greater than the distance E between said lower base and the upper base of the first portion in its withdrawn final position.

[0014] In this way, and thanks to the described configuration, the cartridge will be arranged on the mouth of the container, the second portion of the cartridge being introduced inside the container due to the fact that the cartridge is supported on the edge of the mouth of the container through the rib, which prevents the cartridge from being totally introduced inside the container.

[0015] Subsequently and because of a slight pressure on the upper base of the cartridge, thanks to the bellows defined in the first portion, the additive contained inside the cartridge will be pushed against the sheet of breakable material, causing the same to break and the additive to fall inside the container and producing the mixture of said additive and the content of the container. This is achieved because the volume occupied by said additive is greater than the volume contained inside the cartridge,

when the upper base is in its withdrawn final position.

[0016] Therefore, a cartridge which is independent of the container and applicable to any liquid containing container currently marketed is obtained, the constitution of which is simple and of a low cost.

[0017] In another aspect of the invention, the additive can be in solid state in the form of a plurality of cylindrical-shaped elements, located one after the other, the element nearest to the seal of breakable material being sharp or pointed for facilitating the breaking of the seal in the necessary cases.

[0018] In this way, the sheet or seal is ripped more easily and by applying a smaller pressure for achieving the mixture.

[0019] In turn, the transition area between the rib of the container and the second portion of the same can have a peripheral bevel. In this way, introducing and supporting the cartridge on the mouth of the container is facilitated.

Description of the Drawings

[0020] A series of drawings will be described below which aid in understanding the invention better and are expressly related to embodiments of said invention presented as illustrating and non-limiting examples thereof.

Figure 1 represents a sectional view of the cartridge according to the object of the present invention, said cartridge being in its initial state, that is, it has not been used yet.

Figure 2 represents a sectional view of the cartridge, located on the mouth of the container once it has been used.

Description of an Embodiment of the Invention

[0021] As can be observed in Figures 1 and 2, the additive carrying cartridge for mixing the additive with the content of a container object of the present invention comprises a substantially cylindrical additive containing body (1) having a closed upper base (2) and an open lower base (3) which is closed by a sheet (4) of breakable material.

[0022] The containing body (1) has a smaller diameter than the inner diameter of the mouth of the container (10) on which the container will be arranged.

[0023] The containing body (1) has a ring-shaped perimetrical rib (5) dividing the same into a first portion (6) and a second portion (7), the diameter of said perimetrical rib (5) being greater than the inner diameter of the mouth (11) of the container and said rib being the support point of the cartridge in the mouth of the container (10).

[0024] The first portion (6) has a bellows structure formed by a plurality of adjacent broken sections, said structure enabling the movement of the upper base (2) with respect to the perimetrical rib (5) and therefore, with respect to the border of the mouth (11) of container (10). Therefore, when a certain pressure is applied on the upper base (2) and because the container is normally supported in a fixed surface, said upper base (2) can be moved from an extended initial position (Figure 1) to a withdrawn final position (Figure 2), in which the mentioned bellows is fully folded.

[0025] The additive (8) is provided inside containing body (1); in this particular case, the additive is in solid state and is materialized as a plurality of cylindrical shaped elements in the form of pellets, tablets, lozenges and the like. One of said elements (9), specifically the one nearest to the sheet of breakable material, can be sharp with the purpose of facilitating the breaking of the same and can have any other shape as long as said shape facilitates the ripping of the sheet (4). Anyway, the additive can be a powder or granulated in any size and it can even be in a liquid form, as long as the breaking coefficient of the sheet (4) is less than the necessary pressure applied on the upper base (2), which depends directly on the volume of the additive (8) and the physical properties of the same, such as density.

[0026] The volume occupied by the additive (8) is such that the distance D between the same and the position of the lower base measured in a vertical direction is greater than the distance E between the lower base and the upper base in the withdrawn final position, likewise measured in a vertical direction. In this way, when a certain pressure is applied on the upper base (2), there is a moment when the volume inside the containing body (1) is reduced to the volume initially occupied by the additive (8), therefore, if pressure is continued to be applied on the upper base (2), the additive (8) will tend to push the sheet of breakable material (4) causing said sheet to break and releasing, at that moment, the content of the containing body (1) inside the container (10); this moment has been depicted in Figure 2.

Claims

1. An additive carrying cartridge for mixing the additive with the content of a container comprising:

   an additive containing body (1) of a substantially cylindrical shape with a smaller diameter than the diameter of the mouth of the container having a closed upper base (2) and an open lower base (3), the lower base of the containing body being sealed by a sheet of breakable material (4),

   characterized in that

   it has a perimetrical rib (5) in the central part of the containing body (1), the diameter of which is greater than the diameter of the mouth (11) of the container (10), the cartridge being supported on the container through said rib (5), the containing body (1) being divided into a first portion (6) and a second portion

(7); the first portion (6) of which has a plurality of broken sections joined to each other defining a bellows for varying the height of said first portion (6) with respect to the mouth (11) of container (10), said upper base (2) moving between an extended initial position and a withdrawn final position, and **in that** the additive (8) occupies a volume inside the containing body (1) defining a level the distance D of which, measured from the lower base (3) of the second portion (7), is greater than the distance E between said lower base (3) and the upper base (2) of the first portion in its withdrawn final position.

2. A cartridge according to claim 1, **characterized in that** the additive (8) is in solid state in the form of a plurality of cylindrical-shaped elements (9), located one after the other, the element nearest to the seal of breakable material being sharp.

3. A cartridge according to any of the previous claims, **characterized in that** a peripheral bevel is arranged in the transition area between the perimetrical rib (5) of the container and the second portion (7) thereof.

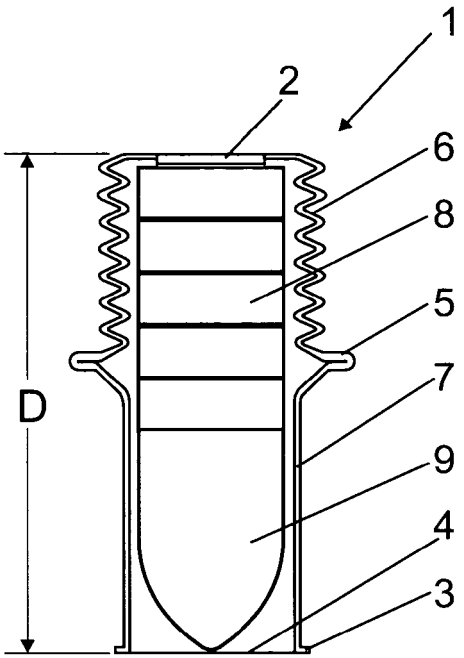

FIG. 1

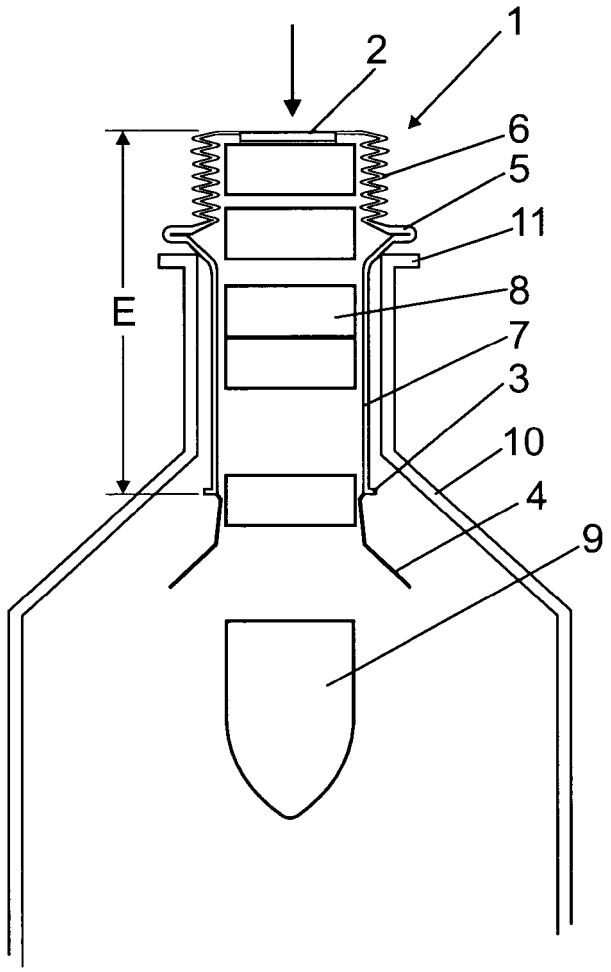

FIG. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 06 38 0065

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	28 August 2006	Appelt, L

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REFERENCES CITED IN THE DESCRIPTION

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