United States Patent

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[54] **THERMOCONTRACTILE CAPSULE**
4 Claims, 3 Drawing Figs.

[52] **U.S. Cl.** ..... **215/38 A**, 215/46 A
[51] **Int. Cl.** **B65d 41/02**
[50] **Field of Search** ..... 215/38 A, 46 A

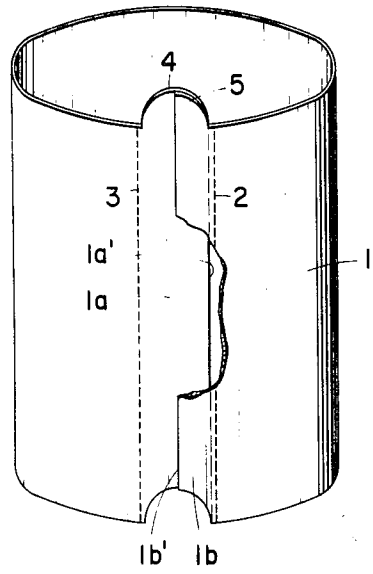
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ABSTRACT: A capsule made of thermocontractile material and having at least a pair of lines of perforations from side to side along which the capsule may be torn open. The capsule is provided with a part adapted to introduce and ensure the tearing action along the perforated lines.



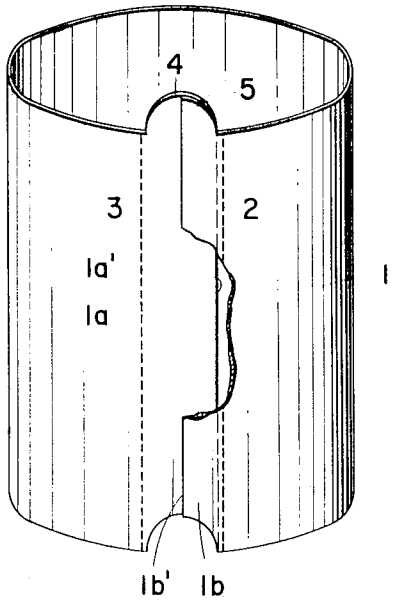


FIG. 1

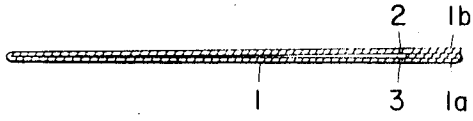


FIG. 2

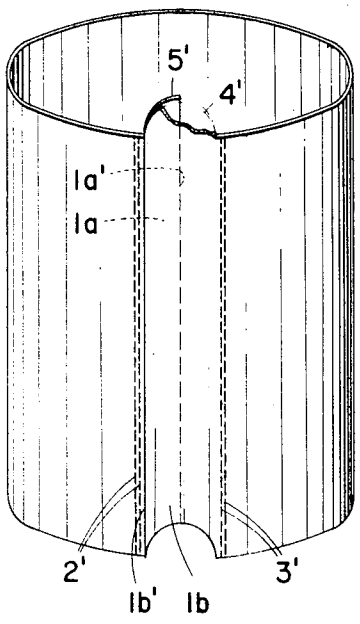


FIG. 3

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THERMOCONTRACTILE CAPSULE

A thermocontractile capsule formed with two vertical parallel lines of perforations along which said capsule can be ripped or opened out is known in the art. But such capsule has a defect that it is often difficult to perform smooth ripping-out along the perforations. This is attributable to the fact that such thermocontractile capsule is closely attached to the neck of a bottle or the like by first fitting it to a desired position on the neck and then heating it to cause its shrinkage to thereby achieve close attachment to said neck, so that a lateral stretching force or stress is constantly acting as an internal force. Such stress works to prevent smooth vertical ripping along the perforations and often causes lateral deviation in the course of ripping operation, thus making it difficult to perform continuous and smooth ripping along the prescribed lines to the bottom at one stroke.

The present invention aims at providing a novel and improved thermocontractile capsule which is made of a thermocontractile material and in which desired ripping can be performed smoothly and positively in the vertical direction along the perforations and also said perforations can be formed with ease and at extremely high efficiency.

In order to accomplish the above object, there is provided according to the present invention a capsule comprising a cylindrical structure made of a thermocontractile material such as synthetic resin, with both side edge portions of the cylinder being superposed one on the other, and in which a first vertical line of perforations is formed along a part of the first side edge portion which part is slightly apart from the edge of said portion, and a second vertical line of perforations is formed at a position on the second side edge portion which position is symmetrical with the position of the first line of perforations with the edge of said second side edge portion as an axis of symmetry. There is also formed a lip or grip element between the top end of the second line of perforations and the top end of the edge of the first side edge portion, while a similar lip or grip element, which is however about one-half of the first-said grip element in width, is formed between the top end of the edge of the second side edge portion and the top end of the first line of perforations.

Now, the present invention will be described in detail with particular reference to its preferred forms of embodiment shown in the appended drawings. It is to be understood, however, that the present invention is not limited to the particular embodiments shown herein.

In the drawings:

FIG. 1 is a perspective view of the capsule according to the present invention, with parts broken away:

FIG. 2 is a cross-sectional plane view of the capsule according to the present invention, showing a condition where the lamination of the two side edge portions is folded double flatly at the centerline between two lines of perforations; and

FIG. 3 is a view similar to FIG. 1, but showing another embodiment of the invention.

Referring generally to the drawings, the cylindrical body 1 is made of thermoplastic material or other suitable thermocontractile thin material and both side edge portions 1*a* and 1*b* thereof are superposed one on the other and secured fast to each other by heat adhesion or with an adhesive.

At a part slightly spaced from the edge 1*a'* of the side edge portion 1*a* which is positioned in the inside, there is formed a vertical line of perforations 2, and at a position on the outwardly exposed side edge portion 1*b* and symmetrical with the first-said line of perforations 2 with the edge 1*b'* of said 1*b* as an axis of symmetry, there is formed another vertical line of perforations 3 as shown.

There is also formed an upwardly projecting lip-shaped grip element 4 between the top end of the line of perforations 3 and the top end of the edge 1*a'* of the inside positioned side edge portion 1*a*, while a similarly shaped grip element 5 having a width about one-half that of the first-said grip element 4

is formed between the top end of the edge 1*b'* of the outwardly positioned side edge portion 1*b* and the slightly inwardly located top end of the line of perforations 2. Said both grip elements 4 and 5 are bound up fast to each other by suitable means.

Thus, according to the capsule of the present invention, the line of perforations 2 and 3 are formed outside of the lamination of the inner and outer side edge portions 1*a* and 1*b*, so that the portion between said lines of perforations 2 and 3 is far stronger than the other parts of the cylinder 1, and therefore, when that portion is torn off vertically by gripping and pulling down the grips 4 and 5, it can be smoothly and positively ripped out right to the bottom end at one stroke without causing lateral ripping.

It is also noted that in the capsule of the present invention, the edge 1*b'* of the side edge portion 1*b* is positioned centrally between both lines of perforations 2 and 3, so that it is possible to fold double the laminated portion flatly by bending along the edge 1*b'* of the side edge portion 1*b* in the manner as shown in FIG. 2, and in this case, as will be noticed, both lines of perforations 2 and 3 coincide with each other, so that it is possible to form both of them simultaneously.

In an alternative embodiment shown in FIG. 3, a line of perforations 2' is formed at a part slightly spaced from the edge 1*b'* of the external side edge portion 1*b*, and another line of perforations 3' is formed at a position symmetrical with the first-said line of perforations with the edge 1*a'* of the internal side edge portion 1*a* as an axis of symmetry, whereby same effect as in the preceding embodiment is obtained.

In the case of FIG. 3, a lip-shaped grip element 4' is formed between the edge 1*b'* of the external side edge portion 1*b* and the line perforations 3', and a similar grip element 5' having a width about one-half that of the grip element 4' is formed between the edge 1*a'* of the internal side edge portion 1*a* and the line of perforations 2'.

Also, in the embodiment of FIG. 3, each line of perforations 2' and 3' is composed of slightly spaced plural files and the perforations in the respective files are arranged vertically in staggered relation to each other, whereby ripping is effected from one perforation in one file to the corresponding perforation in the adjacent file and continued in this manner downwardly in succession, so that the ripping operation can be conducted even more smoothly and surely.

I claim:

1. A capsule comprising a cylindrical body made of thermocontractile material such as synthetic resin, with both side edge portions of said cylindrical body being superposed one on the other, in which a vertical line of perforations is formed at a part slightly apart from the edge of the first side edge portion of said cylindrical body, while another line of perforations is formed at a position on the second side edge portion that is located symmetrical with the first-said line of perforations with the edge of said second side edge portion as an axis of symmetry, and in which an upwardly projecting lip-shaped grip element is formed between the top end of the second-named line of perforations and the top end of the edge of the first side edge portion, while a similar grip element, which is about one-half of the first-said grip element in width, is formed between the top end of the edge of the second side edge portion and the top end of the first-named line of perforations.

2. A capsule according to claim 1, in which the first side edge portion is positioned inside and the second side edge portion is positioned outside.

3. A capsule according to claim 1, in which the first side edge portion is positioned outside and the second side edge portion is positioned inside.

4. A capsule according to any of the preceding claims, in which each line of perforations is composed of slightly spaced plural files and perforations in said files are arranged vertically in staggered relation to each other.

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