



 Publication number: **0 494 306 A1**

 EUROPEAN PATENT APPLICATION
published in accordance with Art.
158(3) EPC

 Application number: **91902752.4**

 Int. Cl.⁵: **B65D 47/08**

 Date of filing: **16.01.91**

 International application number:
PCT/JP91/00031

 International publication number:
WO 92/02431 (20.02.92 92/05)

 Priority: **27.07.90 JP 80392/90 U**

 Date of publication of application:
15.07.92 Bulletin 92/29

 Designated Contracting States:
CH DE FR GB IT LI NL

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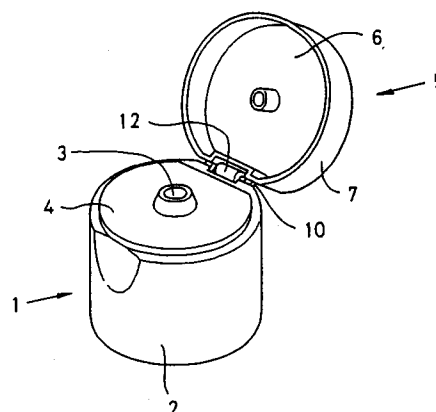
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 **CAP WITH RESILIENTLY REVERSING LID.**

 A cap or the like having a resiliently reversing lid, in which the top surface of an outer first peripheral wall (2) of a cap (1) or the like is closed with a lid (5) having a second peripheral wall (7) suspending from the outer periphery of a top wall (6) in such manner that the lower end surface of the second peripheral wall (7) rides on the upper end surface of said first peripheral wall; the upper and lower ends of rear surfaces of the first and second peripheral walls (2, 7) respectively, are connected to each other with a hinge (10) and, in addition to said hinge, the rear upper and lower parts of the first peripheral wall (1) are connected to each other with a resilient band plate (12), so that the lid (5) may be opened or closed around said hinge (10); and said hinge (10) is positioned farther back than said resilient band plate and formed into one body with the cap from synthetic resin; and a main object of the invention is to leave none of cutaway part as a trace used to remain in many cases on the lid after removal of the

metallic mold when integrally molding a cap of such kind as above from synthetic resin.

FIG. 1



TECHNICAL FIELD

The present invention relates to a cap structure having an elastically turnover cover. The "cap structure" used herein is meant to include a cap and a container with a cap.

BACKGROUND ART

As the cap having the elastically turnover cover, there is known a cap which is integrally molded of a synthetic resin and having its cap body and cover hinged at three points, as called so, as is used in the container of Japanese Utility Model Laid-Open No. 34049/1988, for example. This cap is formed by integrally connecting a cap body and a cap opening cover into one piece by means of the three-point hinge. This three-point hinge structure is composed of: first two hinges for connecting the upper end of the rear portion of the circumferential wall of the cap body and the lower end of the rear portion of the circumferential wall of the cover placed on the cap body; and second and third hinges for connecting L-shaped elastic plates between the first circumferential wall portion below those the first hinges and the front portion of the top wall of the cover at the upper end of the circumferential wall portion of the cover between the two hinges.

In order that the three-point hinged cap may be integrally molded of a synthetic resin, both the circumferential wall portion of the cover in front of the rising portions of the L-shaped elastic plates and the top wall portion of the cover below the horizontal portion are notched for parting the mold. Especially, the notched portions of the top wall of the cover deteriorate the appearance of the cover. Still the worse, the notches makes it incomplete to shut off the mouth of the cap body with the cover.

In order to eliminate the defects of the aforementioned example of the prior art, in which the horizontal plates are attached to the elastic plates and are extended to the central portion of the top wall of the cover, the present invention contemplates to provide a cap structure which can be formed of only the individual rear portions of the circumferential walls of the cap body and the cover without notching the circumferential wall and top wall of the cover, so that the cover may have its appearance improved and may seal up the mouth of the cap body when in the closing operation.

DISCLOSURE OF THE INVENTION

In case of an embodiment shown in Figs. 1 to 5, if a cover 5 is pushed up from the open state of Fig. 5, each of curved elastic bands 12 is to have its cover side end 12b moved along an arc a,

which has a radius of a straight distance from the body side end 12a to the cover side end 12b of the elastic band 12. Since, however, the cover 5 is turned on hinges 10, it is allowed to move along an arc b which has a radius of a straight distance from the hinges 10 to the cover side end 12b. If the point of intersection between a straight line c containing the body side end 12a and the hinges 10 and the aforementioned arc b is designated at a dead center A, the elastic band 12 is extended till the dead center A against its elasticity and is shrunken after the dead center A by its elastic controlling force so that the cover is elastically turned over to establish the closed state. The cover opening operation could be likewise understood.

Incidentally, the elastic band 12 may have its intermediate portion curved to the front in the closed state of Fig. 4.

Another embodiment shown in Figs. 6 to 8 might be thought like the case of the foregoing first embodiment.

A similar discussion applies to the case of a third embodiment shown in Figs. 9 to 11. In this embodiment, each of the elastic bands 12 is curved in a letter "C" not only in the open state but also in the closed state, in which it is received in a recess 13. According to this embodiment, the elastic bands can be prevented from being forcibly extended more than their limits even when they pass through the dead center A at which they are extended to their maximum strokes.

BRIEF DESCRIPTION OF THE DRAWINGS

Of Figs. 1 to 5 showing one embodiment of the cap structure of the present invention: Fig. 1 is a perspective view showing the open state; Fig. 2 is a perspective view showing the closed state from the back; Fig. 3 is a top plan view showing the same; Fig. 4 is an enlarged section showing an essential portion; and Fig. 5 is an enlarged section showing an essential portion in the open state. Of Figs. 6 to 8 showing a second embodiment: Fig. 6 is a perspective view showing the closed state from the back; Fig. 7 is a perspective view showing the open state; and Fig. 8 is an enlarged section showing an essential portion. Of Figs. 9 to 11 showing a third embodiment: Fig. 9 is a perspective view showing the open state; Fig. 10 is a perspective view showing the closed state from the back; and Fig. 11 is an enlarged side elevation showing an essential portion.

BEST MODE FOR CARRYING OUT THE INVENTION

First of all, the first embodiment will be described with reference to Figs. 1 to 5.

Reference numeral 1 designates the body of a cap structure having a first circumferential wall 2. This first circumferential wall 2 is formed into a circumferential wall to be fitted on the outer circumference of the neck of a container, in case the body 1 is a cap, and has its lower end shut out with a bottom wall in case the cap structure is a container body. In the shown embodiment, the first circumferential wall has its top covered with a top plate 4 having a pouring port 3, but this top plate 4 can be eliminated.

Indicated at reference numeral 5 is a cover which is molded of polyethylene or the like integrally with the aforementioned body 1. This cover 5 can be turned on later-described hinges to open or close the top of the first circumference. In the cover 5, a second circumferential wall 7 depends from the outer circumference of a top wall 6 and can have its lower end placed on the upper end of the first circumferential wall 2. The first circumferential wall 2 and the second circumferential wall 7 are shaped into a true circle, as seen in a top plan view, and have their backs formed into a vertical wall 8 which in turn is formed with a groove 9 at its widthwise center.

The vertical walls of the first and second circumferential walls 2 and 7, which are divided by the groove, have their respective upper and lower ends connected by curved hinges 10 and 10, as better seen from Fig. 4. Moreover, the upper end of the groove bottom of the first circumferential wall and the lower end of the groove bottom of the second circumferential wall are formed to merge into each other, and the first and second circumferential wall portions are formed in front of their merging portions with holes 11 and 11, which are extended downward and upward from the upper and lower ends of the individual circumferential walls to leave an elastic band 12 at the bottom of the groove 9 at the back of the holes 11 and 11. This elastic band 12 is preliminarily curved such that the body 1 and the cover 5 are integrally molded of a synthetic resin such as polyethylene, as shown in Fig. 5, with the cover 5 being opened with respect to the body 1 and with the elastic band 12 being curved upward. The connecting portions between the upper and lower ends of the elastic band and the second and first circumferential walls are so formed that they cannot be bent angularly.

The second embodiment, as shown in Figs. 6 to 8, is not formed with the aforementioned vertical wall 8 and groove 9 of the foregoing first embodiment. In this second embodiment, the righthand and lefthand portions of the back of the first and second circumferential walls 2 and 7, which are shaped into a true circle in a top plan view, are projected backward from their upper end lower end

portions to form triangular projections 13 and 13. These projections 13 and 13 are connected at their rear ends by the hinges 10 and 10 to connect the upper and lower ends of the first and second circumferential walls. Moreover, the elastic band 12 is extended between the hinges 10 and 10 and so tensed between the lower first circumferential portion and the upper second circumferential portion that its upper and lower ends merge into the two circumferential walls in an unbendable manner. Like the case of the first embodiment, the second embodiment has its cap structure molded of the body and the cover in the closed state.

Figs. 9 to 11 show the third embodiment. In this embodiment, the first and second circumferential walls 2 and 7 having a top plan view of a true circle are connected at their rear upper and lower ends by the hinge 10 and at the righthand and lefthand sides of the hinge 10 by a pair of C-shaped elastic bands 12 and 12. These elastic bands are fitted in the recesses 13, which are formed to extend between the upper and lower portions of the individual backs of the first and second circumferential walls 2 and 7. The recesses 13 have their lower end rear edges and upper end rear edges connected to the lower and upper ends of the elastic bands 12 through second and third hinges 14 and 15.

Like the foregoing other embodiments, the third embodiment is also formed in the open state, as shown in Fig. 9.

INDUSTRIAL APPLICABILITY

According to the construction thus far described, the cap structure of the present invention can be prevented from having its appearance deteriorated because of no notch and can have its body top sealed up by the cover. Unlike the three-point hinged cap of the prior art, the elastic plates need not be mounted by notching the back of the circumferential wall of the cover and the top wall of the cover partially. In the structure of Claim 4, moreover, the elastic bands are given the C-shaped longitudinal sections so that they can have their cover side ends passing over the dead centers while leaving a margin of further elastic deformations. Since, moreover, the C-shaped elastic bands are fitted in the recesses 13 formed in the backs of the first and second circumferential walls of the body and the cover when in the closed state, the elastic bands will not deteriorate the appearance of the cap structure.

Claims

1. A cap structure having an elastically turnover cover, characterized: in that the body 1 of said

cap structure is closed at the top of its first circumferential wall 2 with the cover 5 having a second circumferential wall 7 depending from the outer circumference of the top wall 6 by placing the lower end of the second circumferential wall 7 on the upper end of said first circumferential wall 1; in that said first and second circumferential walls 2 and 7 have their individual backs connected at their upper and lower ends by a hinge 10; in that the upper and lower portions of the backs of said first and second circumferential walls are so connected through the elastic band 12 that said cover 5 can be opened or closed on said hinge 10; and in that said hinge 10 is integrally molded of a synthetic resin at the back of said elastic band.

2. A cap structure having an elastically turnover cover, characterized in that the hinges 10 and 10 are mounted at the righthand and lefthand sides of said elastic band 12.
3. A cap structure having an elastically turnover cover, characterized in that the elastic bands 12 and 12 are mounted at the righthand and lefthand sides of said hinge 10.
4. A cap structure having an elastically turnover cover, according to any of Claims 1, 2 and 3, characterized: in that said first circumferential wall 2 and said second circumferential wall 7 are formed with recesses extended continuously between the upper and lower portions thereof; and in that the elastic bands 12 having a C-shaped section are fitted in the recesses such that their lower and upper ends connected to the lower and upper rear edges of said recesses.

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FIG. 1

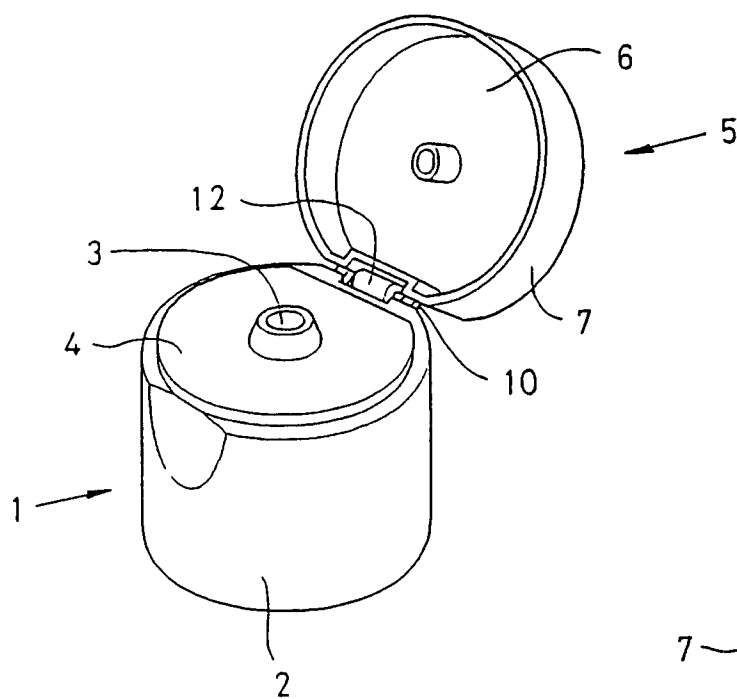


FIG. 2

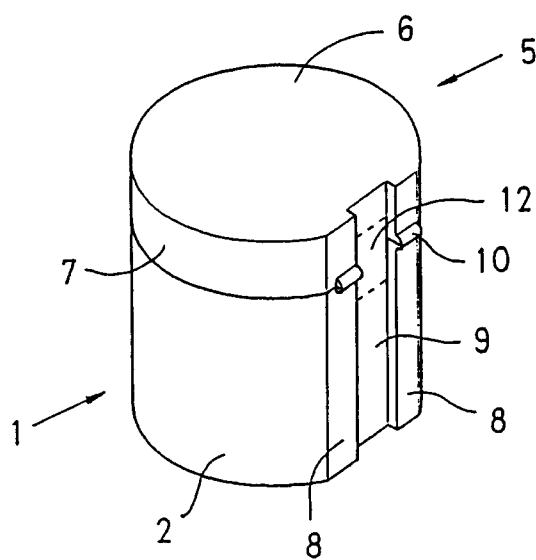


FIG. 3

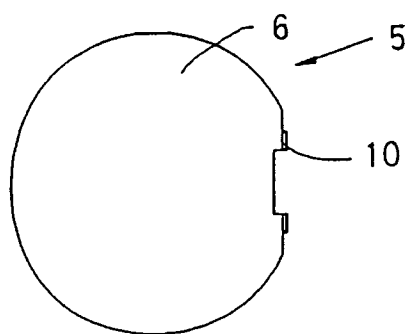


FIG. 4

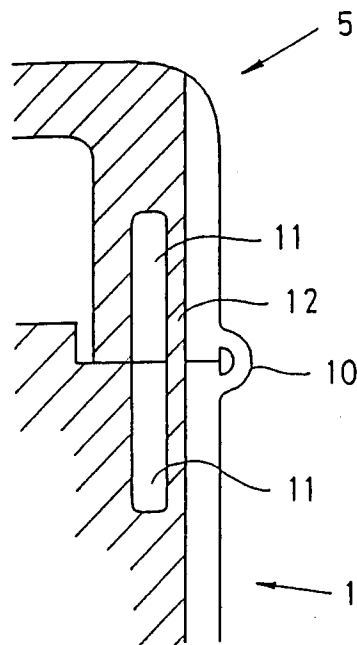


FIG. 5

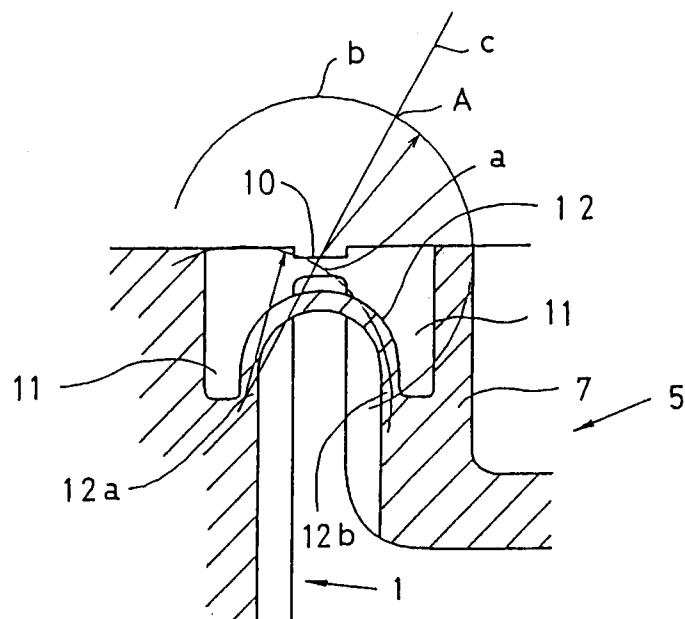


FIG. 6

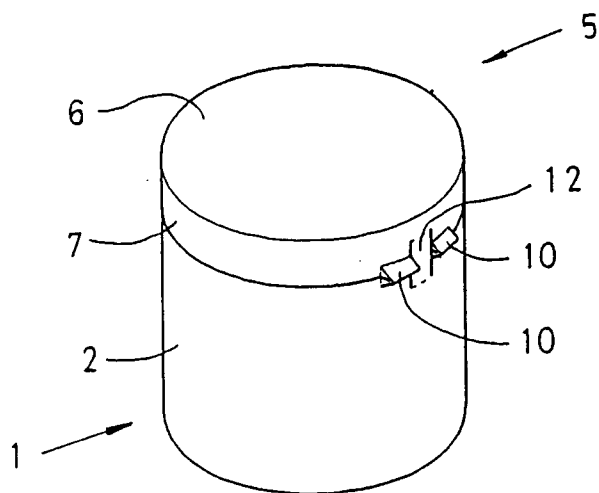


FIG. 7

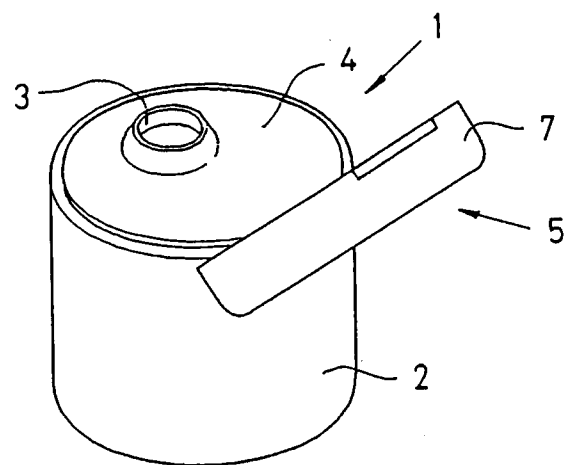


FIG. 8

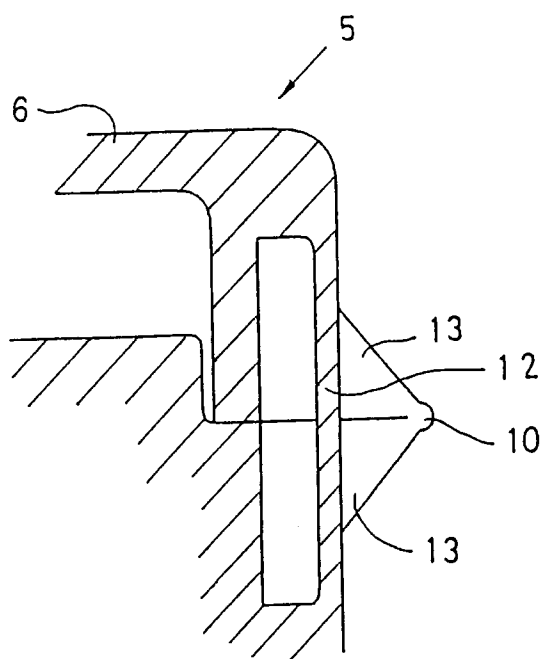


FIG. 9

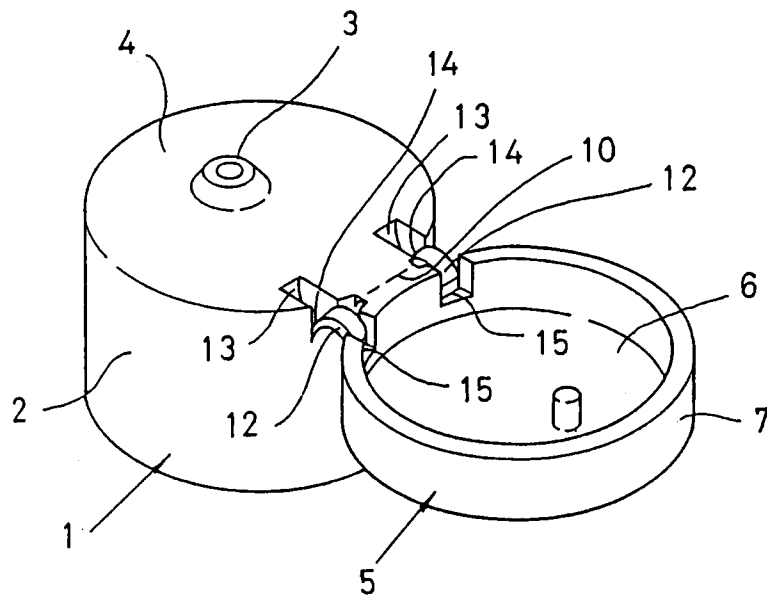


FIG.10

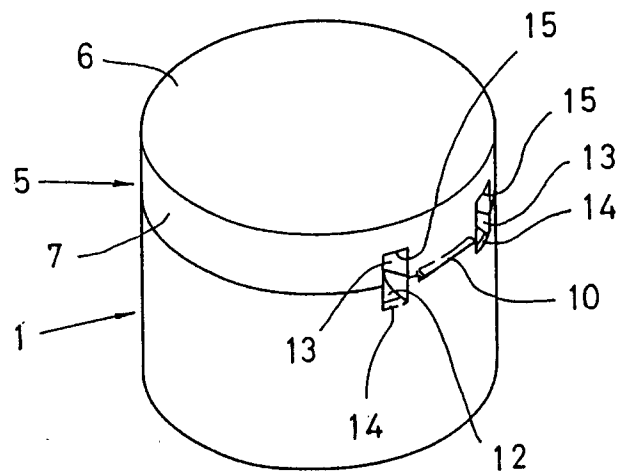
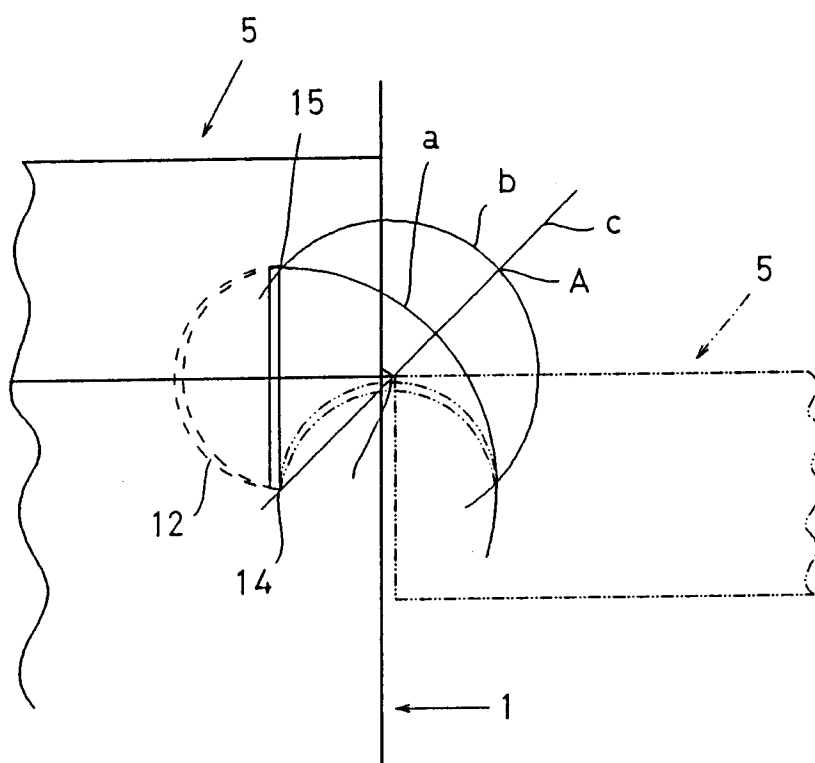


FIG. 11



INTERNATIONAL SEARCH REPORT

International Application No PCT/JP91/00031

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶ According to International Patent Classification (IPC) or to both National Classification and IPC Int. Cl. ⁵ B65D47/08											
II. FIELDS SEARCHED Minimum Documentation Searched ⁷ <table border="1"> <thead> <tr> <th>Classification System</th> <th>Classification Symbols</th> </tr> </thead> <tbody> <tr> <td>IPC</td> <td>B65D47/08, B65D43/16</td> </tr> </tbody> </table> Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸			Classification System	Classification Symbols	IPC	B65D47/08, B65D43/16					
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IPC	B65D47/08, B65D43/16										
Jitsuyo Shinan Koho 1926 - 1991 Kokai Jitsuyo Shinan Koho 1971 - 1991											
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹ <table border="1"> <thead> <tr> <th>Category [*]</th> <th>Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²</th> <th>Relevant to Claim No. ¹³</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>JP, U, 63-40351 (Shiseido Co., Ltd.), March 16, 1988 (16. 03. 88), Figs. 4 to 6 (Family: none)</td> <td>1-4</td> </tr> <tr> <td>X</td> <td>JP, A, 62-16354 (Owens-Illinois, Inc.), January 24, 1987 (24. 01. 87) Figs. 1 to 5 & US, A, 4638916</td> <td>1-4</td> </tr> </tbody> </table>			Category [*]	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³	X	JP, U, 63-40351 (Shiseido Co., Ltd.), March 16, 1988 (16. 03. 88), Figs. 4 to 6 (Family: none)	1-4	X	JP, A, 62-16354 (Owens-Illinois, Inc.), January 24, 1987 (24. 01. 87) Figs. 1 to 5 & US, A, 4638916	1-4
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[*] Special categories of cited documents: ¹⁰ "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family											
IV. CERTIFICATION <table border="1"> <tr> <td> Date of the Actual Completion of the International Search April 4, 1991 (04. 04. 91) </td> <td> Date of Mailing of this International Search Report April 15, 1991 (15. 04. 91) </td> </tr> <tr> <td> International Searching Authority Japanese Patent Office </td> <td> Signature of Authorized Officer </td> </tr> </table>			Date of the Actual Completion of the International Search April 4, 1991 (04. 04. 91)	Date of Mailing of this International Search Report April 15, 1991 (15. 04. 91)	International Searching Authority Japanese Patent Office	Signature of Authorized Officer					
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