

Description

[0001] This invention relates to containers made of cardboard, corrugated board or similar lightweight foldable sheet material. When such containers are stacked one upon the other, they are less likely to deform under the resulting top loading, the nearer they are to having their side walls properly aligned vertically. It has indeed been found that misalignment of the order of one wall thickness gives rise to a significantly increased likelihood of container failure in such top load conditions. It is therefore a primary object of the present invention to provide improved means to assist in maintaining such alignment.

[0002] According to the invention there is provided a container made of cardboard, corrugated board or similar lightweight foldable sheet material, wherein a wall of the container has at least one flap defined therein adjacent an edge of the container, which flap is readily partly releasable from its said wall and is arranged, when so partly released, to be positionable for connection to an adjacent container, in such manner as to assist in preventing relative movement of the two containers.

[0003] Such a flap may be used to interconnect two adjacent containers located one above the other in a stack, or side by side in adjacent stacks, or indeed in any manner which will assist in maintaining containers in vertical alignment with each other.

[0004] When we refer to the "edge" of a container we mean the junction between two side walls of the container, or the junction between a side wall and a top or base wall, or a free edge of any wall.

[0005] In a preferred form of the invention the said flap is connected to the container by way of a fold line about which it is positionable as aforesaid. Preferably the said flap is releasably connected to the container by way of a line of perforations other than at said fold line. However, if the board is sufficiently heavy that the flap will stay in place in its panel until intentionally released therefrom, the flap may be substantially unconnected to the container other than at said fold line.

[0006] Preferably the said fold line is between a side wall and a top or base wall of the container. Thus the said fold line may be between a side wall and a top wall of the container, or between a side wall and base wall, with the flap in either of such walls in each case. Alternatively the fold line may be within a wall of the container, spaced somewhat inwardly from an edge thereof.

[0007] In another form of the invention the said flap is in a side wall of the container adjoining a free top or bottom edge thereof, the said fold line being in the said side wall. Such side wall could be a wall of the body of a container, or it could be a side wall of a lid forming part thereof.

[0008] The container may be formed with a slot for receiving the said flap of a similar container when adjacent thereto, to connect the two containers together as aforesaid, and the flap may then be formed so as to be

trapped in the slot when inserted therein, for example by forming it with suitable rearwardly facing shoulders.

[0009] The container may be formed with a line of weakness arranged to permit complete detachment of the said flap from the container, subsequent to its said securement, so as to enable two containers interconnected by the flap to be separated when desired. Advantageously, such a line of weakness is arranged so as to minimise the breaking effect on it of forces normally tending to misalign the two stacked containers, prior to any such separation.

[0010] Alternatively the flap may have part thereof defined to be kept unsecured to an adjacent container in use, so as to facilitate subsequent separation of the flap from said adjacent container and separation of the containers from each other. Such a part is preferably distal from the fold line connecting the flap to the container, and may be defined by a fold line in the flap itself.

[0011] Preferably the container incorporates at least two of said flaps, located at substantially opposite positions in the container.

[0012] Some embodiments of the invention will now be described by way of example and with reference to the accompanying drawings, in which:-

Figure 1 is a somewhat simplified perspective view of two containers according to the invention, in a stack;

Figure 2 is an enlarged view to illustrate the manner of interconnecting the two containers in accordance with the present invention;

Figures 3 and 4 are views similar to Figure 2 but showing two further embodiments; and

Figures 5 and 6 are two views of another embodiment.

[0013] Referring first to Figure 1, this shows two similar rectangular box-like containers 1 and 2 made of corrugated board, having side walls 3 and 4, a top 5, and a base 6. The top 5 and the base 6 may be formed in any manner from panels foldable about hinge lines formed in the board, and the details of such panels are not shown.

[0014] A rectangular flap 7 is defined in each of the side walls 3 by a line of perforations 8. The bottom boundary of the flap is formed by the fold line 9 between the side wall 3 and the base 6, and it will thus be seen that the flap is readily partly releasable from the wall 3 by way of the perforations 8, while remaining hingedly connected thereto at the fold line 9.

[0015] Referring now to Figure 2, when the containers 1 and 2 are stacked one on the other, to assist in maintaining their vertical alignment the flaps 7 of the upper container 1 are released from their side walls 3, folded down about fold lines 9, and glued or otherwise secured to the side walls 3 of the container 2.

[0016] To facilitate release of the flaps 7 from the lower container when the two containers are to be separated-

ed, and as shown in Figure 2, an end part 23 of each flap may be left free of the side wall 3 of the lower container, to enable a user to grip the flap and tear it free. Such operation may be further facilitated by forming the flap with a transverse fold line 24 at the boundary between its glued and unglued areas.

[0017] Although in this and other illustrated embodiments the flap 7 is shown connected to the container at a fold line (9) which defines the junction between two adjacent walls of the container, such connection may alternatively be at a fold line within one of the walls rather than at its edge, spaced somewhat inwardly from a said junction or from a free edge of a wall.

[0018] An alternative way of permitting separation of the containers is to make the flaps 7 readily detachable from the container in which they are formed. Thus a line of perforations 20 may be formed in the base 6 of the container, associated with each flap 7 but only shown in Figure 2, to enable the flaps to be completely detached from their original container when the two containers are to be separated.

[0019] To enable the flap 7 to lie comfortably face to face with the side wall 3 of the lower container, despite the two side walls being vertically aligned, an extra (reversed) fold line may be formed in the flap, parallel to the fold line 9 and spaced therefrom by the thickness of the board. Similar provision may be made in other embodiments, where necessary.

[0020] In an alternative embodiment, which is not illustrated, the flaps 7 could be located at the tops of the side walls 3, connected at the fold lines 10, and the flaps in the lower container 2 would then be folded up and glued to the upper container 1.

[0021] Referring now to Figure 3, in this embodiment a flap 7 is located in the base 6 of an upper container, again connected by way of fold line 9, and is glued to the outside of the wall 3 of the lower container. In a variation shown in Figure 4 the flap 7 is passed through a slot 11 in the top 5 of the lower container and glued to the inside of the side wall 3. A line of perforations 21 in the side wall 3 of the embodiment of Figure 3 serves the same purpose as the perforations 20 in Figure 2, and a similar provision may be made in the embodiment of Figure 4. Alternatively an end part 23 of the flap may be left unglued as in Figure 2.

[0022] Another variation is illustrated in Figure 4, in which the flap is formed with non-return means in the form of rearwardly facing shoulders 26, like a much truncated arrow-head, for trapping it in a slot in an adjacent container, thus making it unnecessary to glue the flap to the other container. Such a slot may be positioned like the slot 11 of Figure 4, or it could be formed in the side wall 3 of the lower container rather than in its top. This variation may equally well be applied to any of the other illustrated embodiments of the invention.

[0023] In other embodiments, not illustrated, flaps as shown in any of Figures 1 to 4 may be located at the vertical fold line between two adjacent side walls 3 and

4 of a container, to enable two containers to be connected together side by side rather than one upon the other.

[0024] In the embodiment of Figures 5 and 6 a flap 12 is defined in a container side wall 13 having a free top edge 14, by a line of perforations 15 and a vertical fold line 16 terminating at the edge 14. In this case the flap itself incorporates a horizontal fold line 17 to enable the portion 18 of the flap below the fold line 17 to be folded up and glued to the side wall 19 of an upper container. A line of perforations 22 may be formed in the side wall 13 to serve the same purpose as the perforations 20 in Figure 2 and 21 in Figure 3, or a corner 25 of the flap may be left unglued for the same purpose as the end part 23 in Figures 2 and 3. A similar arrangement may be provided at a free edge of any wall of a container, be it a side wall or a top or base wall.

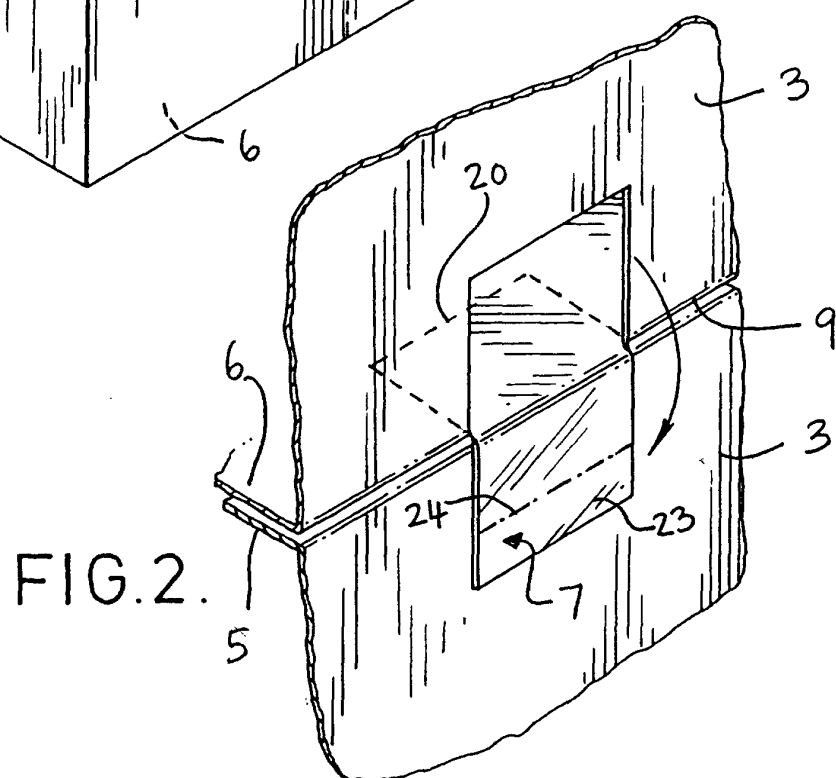
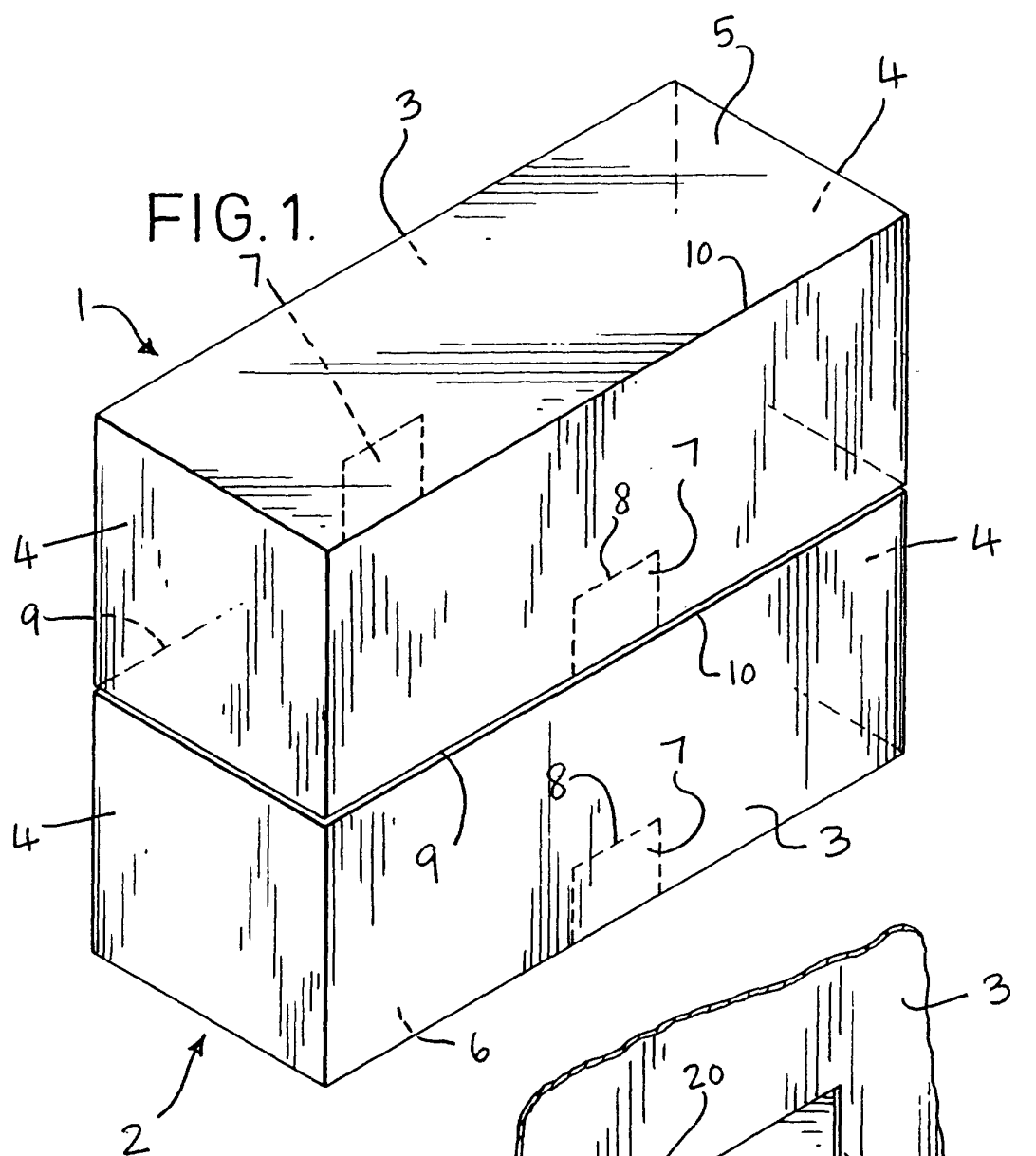
[0025] It will thus be seen that the invention provides improved means for maintaining vertical alignment of stacked containers. This reduces the cause of containers deforming under the top loads which result from stacking, and thus permits making the containers from lighter and/or cheaper material.

[0026] It will be appreciated that flaps like those of any of the illustrated embodiments, or modifications thereof, may just as readily be used to interconnect two containers side by side in two adjacent stacks, or indeed to interconnect both two vertically stacked containers and two side by side containers at the same time.

Claims

1. A container made of cardboard, corrugated board or similar lightweight foldable sheet material, wherein a wall of the container has at least one flap defined therein adjacent an edge of the container, which flap is readily partly releasable from its said wall and is arranged, when so partly released, to be positionable for connection to an adjacent container in such manner as to assist in preventing relative movement of the two containers.
2. A container as claimed in claim 1, wherein the said flap is connected to the container by way of a fold line about which it is positionable as aforesaid.
3. A container as claimed in claim 2, wherein the said flap is releasably connected to the container by way of a line of perforations other than at said fold line.
4. A container as claimed in claim 2, wherein the said flap is substantially unconnected to the container other than at said fold line.
5. A container as claimed in any of claims 2 to 4, wherein the said fold line is between a side wall and a top or base wall of the container.

6. A container as claimed in claim 5, wherein the said fold line is between a side wall and a top wall of the container.
7. A container as claimed in claim 6, wherein the said flap is in the said side wall. 5
8. A container as claimed in claim 6, wherein the said flap is in the said top wall. 10
9. A container as claimed in any of claims 2 to 4, wherein the said fold line is between a side wall and a base wall of the container. 10
10. A container as claimed in claim 9, wherein the said flap is in the said side wall. 15
11. A container as claimed in claim 9, wherein the said flap is in the said base wall. 20
12. A container as claimed in any of claims 2 to 4, wherein the said fold line is between two adjacent side walls of the container, the said flap being in one of said side walls. 25
13. A container as claimed in any of claims 2 to 4, wherein the said fold line is within a wall of the container, spaced inwardly from an edge thereof. 25
14. A container as claimed in any of claims 2 to 4, wherein the said flap is in a side wall of the container adjoining a free edge thereof, the said fold line being in the said side wall. 30
15. A container as claimed in any preceding claim, wherein the said flap is rectangular. 35
16. A container as claimed in any of the preceding claims, which is formed with a slot for receiving the said flap of a similar container when adjacent thereto. 40
17. A container as claimed in claim 16, wherein the said flap is formed so as to be trapped in the said slot when inserted therein. 45
18. A container as claimed in claim 17, wherein the said flap is formed with rearwardly facing shoulders to effect said entrapment. 50
19. A container as claimed in any of claims 1 to 15, wherein the said flap has a part thereof defined to be kept unsecured to an adjacent container in use, so as to facilitate subsequent separation of the flap from said adjacent container and separation of the containers from each other. 55
20. A container as claimed in claims 2 and 19, wherein the said part is distal from the said fold line.
21. A container as claimed in claim 19 or 20, wherein the said part is defined by a fold line in the flap.
22. A container as claimed in any of claims 1 to 18, having a line of weakness arranged to permit complete detachment of the said flap from the container, subsequent to its said securement.
23. A container as claimed in any preceding claim, incorporating at least two of said flaps, located at substantially opposite positions in the container.
24. Containers as claimed in claim 1, substantially as hereinbefore described with reference to the accompanying drawings.
25. Blanks for making containers as claimed in any of the preceding claims.



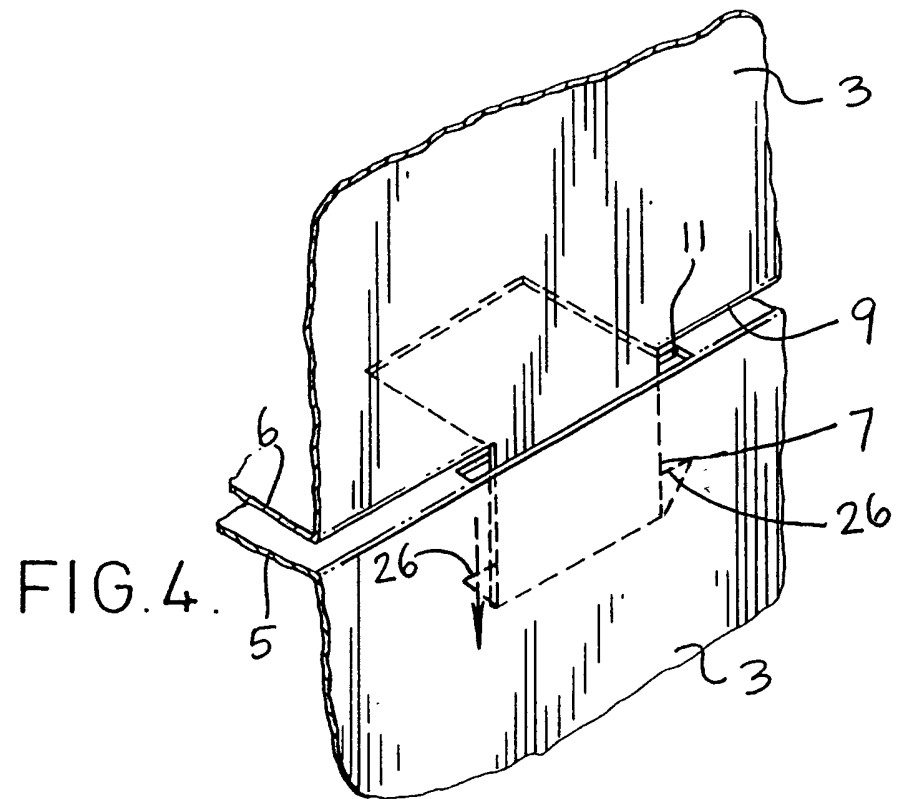
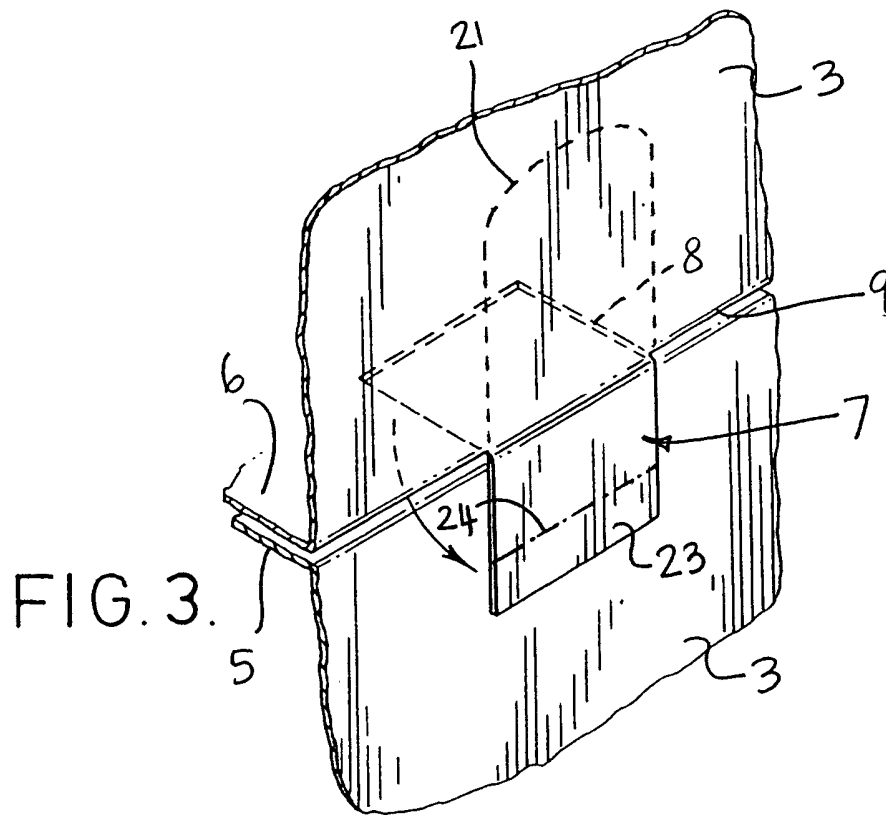


FIG.5

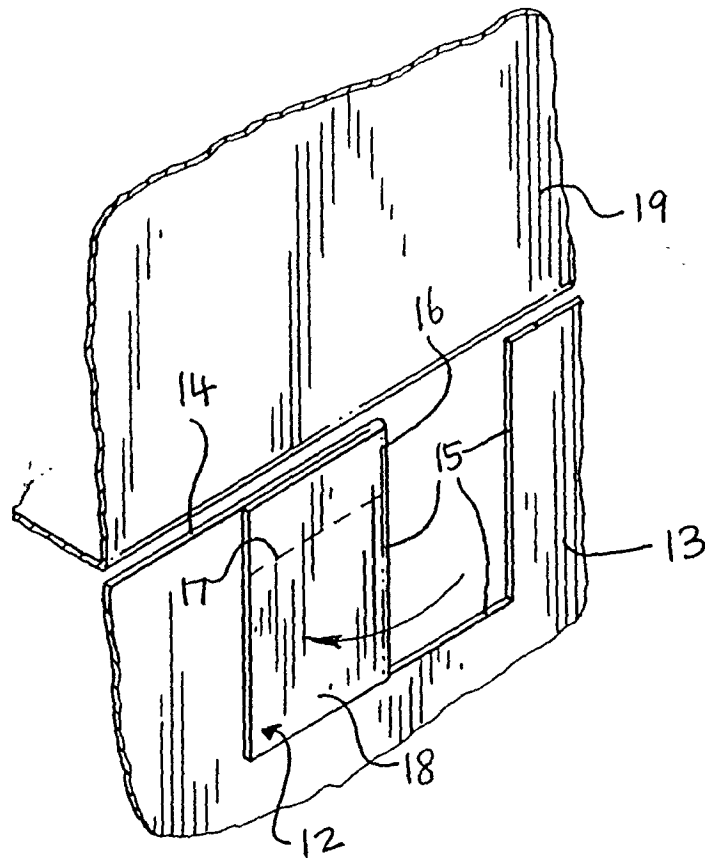
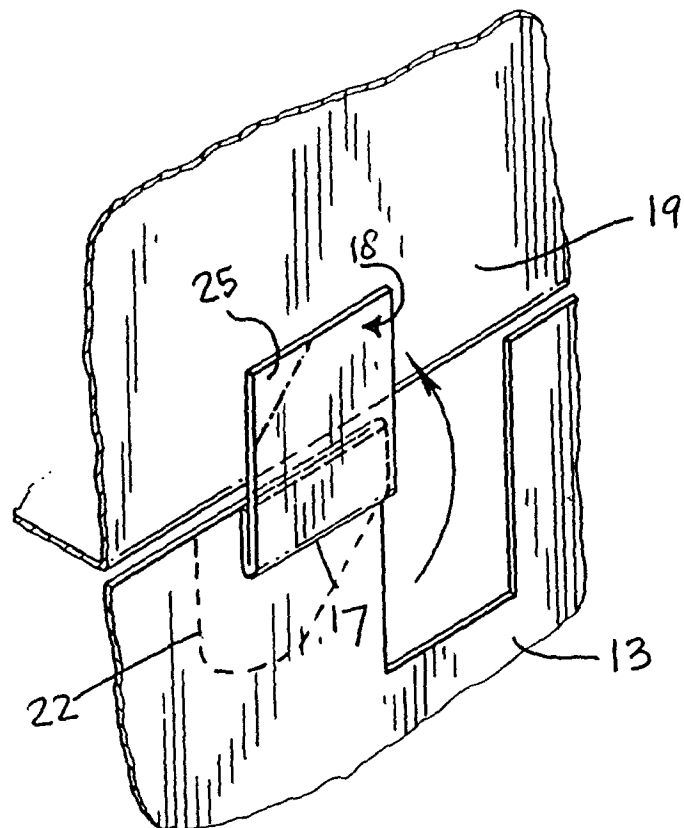


FIG.6





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 01 30 3778

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	DE 195 06 302 A (HENKEL KGAA) 5 September 1996 (1996-09-05) * column 3, line 24 - column 4, line 7; figures *	1-12	B65D21/02 B65D5/00
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
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The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 1 August 2001	Examiner Olsson, B
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 01 30 3778

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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01-08-2001

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