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(54) **Reclosable bag with zipper in a fin seal**

(57) Reclosable bags (10) are disclosed wherein a sheet of web (100) is folded so that outward longitudinal quarters are folded over a central longitudinal half in a horizontal form fill seal apparatus (1000). The central longitudinal half forms the back wall of the bag (10) while

the two outward longitudinal quarters form the front wall of the bag. A fin seal (24) is formed where the longitudinal edges meet. The zipper (30) is formed within the fin seal. However, in an alternative embodiment, the zipper is formed within the top fold while the longitudinal edges are joined by a fin seal.

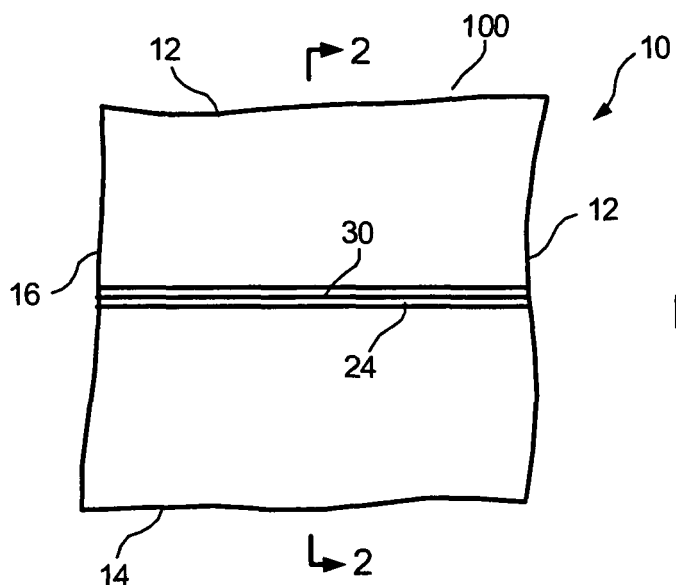
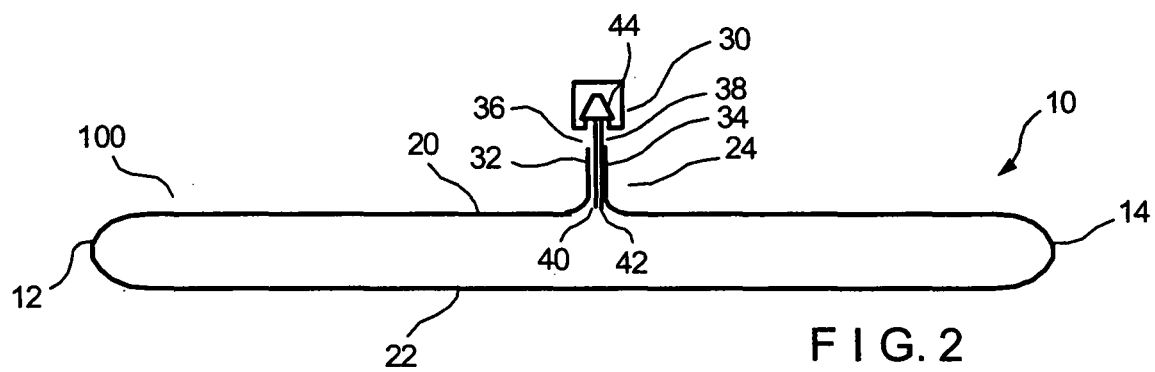


FIG. 1



Description

Field of the Invention

[0001] The present invention relates to reclosable bags, formed by a horizontal form fill seal (HFFS) process, with zippers, particularly slider zippers in a fin seal.

Background to the Invention

[0002] In the prior art, reclosable bags with a shrouded zipper or a zipper-in-the-fold configuration are well known. Examples of such prior art include U.S. Patent No. 6,799,890 entitled "Tamper Evident Resealable Packaging", issued on October 5, 2004 to Schneider et al.; U.S. Patent No. 6,347,437 entitled "Zipper and Zipper Arrangements and Methods of Manufacturing the Same", issued on February 19, 2002 to Provan; and U.S. Patent No. 6,138,439 entitled "Methods of Making Slide-Zipper Reclosable Packages on Horizontal Form-Fill-Seal Machines", issued on October 31, 2000 to McMahon et al.

[0003] While these references have been satisfactory in many respects, it is desired that these configurations be modified to include the zipper in a fin seal, or to include a fin seal along with a zipper-in-the-fold configuration.

Summary of the Invention

[0004] It is therefore an object of the present invention to provide a reclosable bag, formed by a form fill and seal method and apparatus, wherein the zipper profile is placed in a fin seal.

[0005] It is therefore a further object of the present invention to provide an alternative embodiment of a reclosable bag, with both a zipper-in-the-fold configuration along with a fin seal.

[0006] It is therefore a still further object of the present invention to achieve these objects within the context of known and established form fill and seal apparatus, particularly horizontal form fill seal apparatus.

[0007] These and other objects are attained by providing a reclosable bag wherein the profile and slider are in the fin seal, particularly with the fin seal in a central location on the front wall of the reclosable bag. The profile and slider can be sealed to make the resulting reclosable bag have the profile and clip exposed. Similarly, it could be sealed so that the reclosable bag has the profile and clip shrouded or otherwise sealed into the fin seal. This reclosable bag may also incorporate an easy open configuration by utilizing such methods as perforating, laser scoring, lines of weakness, etc. Further, this can be applied to other zipper styles, such as string zippers or flanged profile zippers.

[0008] An alternative embodiment includes the zipper and slider in the top fold with a fin seal formed at a central location in the front wall. By using established form fill and seal apparatus, slider packages can be produced

and further can be made in what are known as quarter-fold and center-fold styles.

Brief Description of the Drawings

[0009] Examples of the present invention will now be described in detail with reference to the accompanying drawings, in which:

- 10 Figure 1 is a plan view of a reclosable bag;
- Figure 2 is a cross-sectional view along plane 2-2 of Figure 1, showing a reclosable bag with a zipper in a fin seal, with an exposed slider;
- 15 Figure 3 is an alternative cross-sectional view along plane 2-2 of Figure 1, showing a reclosable bag with a zipper and slider within a fin seal, wherein the fin seal forms a shroud over the zipper and slider;
- Figure 4 is an alternative cross-sectional view along plane 2-2 of Figure 1, showing a reclosable bag with a zipper, without a slider, within a fin seal;
- 20 Figure 5 is an alternative cross-sectional view of a reclosable bag wherein the zipper and slider are within a fold thereby forming a shroud, and the fin seal is in a central portion on the bag;
- 25 Figure 6 is a perspective view of the horizontal form fill and seal apparatus forming the reclosable bags of the present invention;
- Figures 7 and 8 are sectional views of string zippers; and,
- 30 Figures 9, 10 and 11 disclose various configurations of sealing of a sliderless zipper to the fin seal.

Detailed Description

- 35 [0010] Referring now to the drawings in detail wherein like numerals refer to like elements through the several views, one sees that Figure 1 is a plan view of a reclosable bag 10. Bag 10 includes top edge (or left edge) 12 formed by a first fold, bottom edge 14 (or right edge) formed by a second fold, and side edges 16, 18 formed by seals.
- 40 By reason of the first and second folds forming top and bottom edges (or left and right edges) 12, 14, the reclosable bag 10 is formed from a single sheet of web 100 thereby forming a front wall 20 and a rear wall 22 (see Figs. 2-5). At a central location on front wall 20, fin seal 24 is formed from edges 32, 34 of web 100. Within fin seal 24 is zipper 30 formed of first and second interlocking profiles 36, 38 with respective first and second flanges 40, 42. Additionally, a slider 44 can be mounted on interlocking profiles 36, 38, as shown in Figs. 2 and 3, so that
- 45 movement of the slider 44 in a first direction interlocks the profiles 36, 38 together and movement of the slider 44 in a second direction unlocks the profiles 36, 38 from each other as is known to those skilled in the art.

- 50 [0011] Further, Figure 2 shows the first and second flanges 40, 42 sealed to edges 32, 34 so that zipper 30 protrudes from the fin seal 24 and slider 44 is clear of the fin seal 24.

[0012] Figure 3 shows the first and second flanges 40, 42 sealed inwardly from edges 32, 34 of web 100 whereby edges 32, 34 extend over zipper 30 and slider 44 to be sealed at seal 54 thereby forming a shroud over the zipper 30 and slider 44. One or more lines of weakness, illustrated as lines 50, 52 are typically provided to provide the user with access to zipper 30.

[0013] Figure 4 shows the first and second flanges 40, 42 sealed to edges 32, 34 within fin seal 24. As the embodiment of Figure 4 does not include slider 44, the zipper 30 is contained entirely, or substantially entirely, within fin seal 24.

[0014] Figure 5 shows an alternative embodiment wherein edges 32, 34 are brought together to form fin seal 24 without zipper 30 therebetween. However, zipper 30 is contained within the fold which forms top edge (or left edge) 12. More specifically, flanges 40 and 42 are sealed to an interior of web 100 forming bag 10, proximate to top edge (or left edge) 12. One or more lines of weakness, illustrated as lines 50, 52 are typically provided to provide the user with access to zipper 30.

[0015] Figure 6 illustrates horizontal form fill seal apparatus 1000 wherein the web 100 is supplied from source 110. Consumer product 200 is placed on web 100. Edges 32, 34 of the web 100 are brought together by folders 120, 122 along with longitudinally (or machine direction) fed zipper 30 from zipper supply 130 between sealing bars 140 in order for sealing bars 140 to form fin seal 24. Likewise, the movement of the edges 32, 34 toward each other forms the folds of top and bottom edges (or left and right edges) 12 and 14. In this configuration, outward longitudinal quarters of web 100 form the front wall 20, while the interior or central longitudinal half of web 100 forms rear wall 22. Sealing bar 150 thereafter forms side edge 16 of a given reclosable bag 10 and side edge 18 of a subsequent reclosable bag 10 and likewise separates adjacent bags.

[0016] In the case of the embodiment of Figure 5, the zipper 30 would be supplied upstream from the folders 120, 122 in order to provide the zipper 30 adjacent to the fold of top edge (or left edge) 12. Likewise, apparatus, such as a cutter or a laser scorer, can be used to provide lines of weakness 50, 52.

[0017] Figures 7 and 8 are sectional views of the sealing of string zipper 80, comprising male and female profiles 82, 84, to edges 32, 34, respectively, by sealing bars 140.

[0018] Figures 9, 10 and 11 illustrate various configurations of sealing bars 140 for sealing a sliderless zipper, such as a string zipper 80, between edges 32, 34. The seals formed by sealing bars 140 can be above the zipper lock, both above and below the zipper lock, or some combination thereof to create a hinge.

[0019] Thus the several aforementioned objects and advantages are most effectively attained. Although preferred embodiments of the invention have been disclosed and described in detail herein, it should be understood that this invention is in no sense limited thereby and its

scope is to be determined by that of the appended claims.

Claims

1. A reclosable bag comprising:
 - a front wall and a rear wall;
 - a reclosable zipper; and
 - wherein a sheet of web is folded whereby edges of said web are brought together in a central portion of said front wall and joined with said reclosable zipper in a fin seal.
2. The reclosable bag of Claim 1 further including a top edge and a bottom edge formed by folding of said sheet of web.
3. The reclosable bag of Claim 2 further including side seals joining said front wall and said rear wall.
4. The reclosable bag of Claim 1 wherein said zipper includes first and second interlocking profiles and respective first and second flanges.
5. The reclosable bag of Claim 4 wherein said first and second flanges are sealed within said fin seal.
6. The reclosable bag of Claim 1 wherein said first and second interlocking profiles protrude from said fin seal.
7. The reclosable bag of Claim 6 wherein said zipper further includes a slider to open and close said interlocking profiles.
8. The reclosable bag of Claim 1 wherein said interlocking profiles are sealed to said edges within said fin seal and said zipper is substantially free of protrusion from said fin seal.
9. The reclosable bag of Claim 1 wherein said web is joined to said reclosable zipper inwardly from said edges, and said edges are joined to each other above said zipper thereby forming a shroud.
10. The reclosable bag of Claim 9 wherein said shroud includes one or more lines of weakness.
11. The reclosable bag of Claim 10 wherein said zipper-- includes first and- second interlocking profiles and respective first and second flanges, wherein said flanges are sealed to said web.
12. The reclosable bag of Claim 11 wherein said zipper further includes a slider to open and close said interlocking profiles.

13. The reclosable bag of Claim 1 wherein said reclosable zipper is a string zipper.

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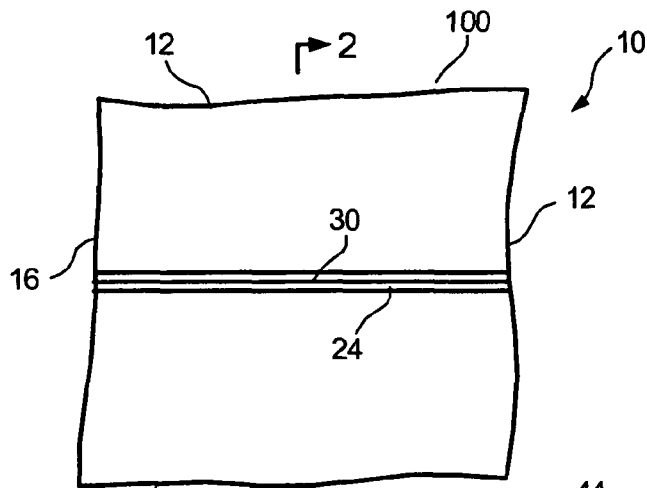


FIG. 1

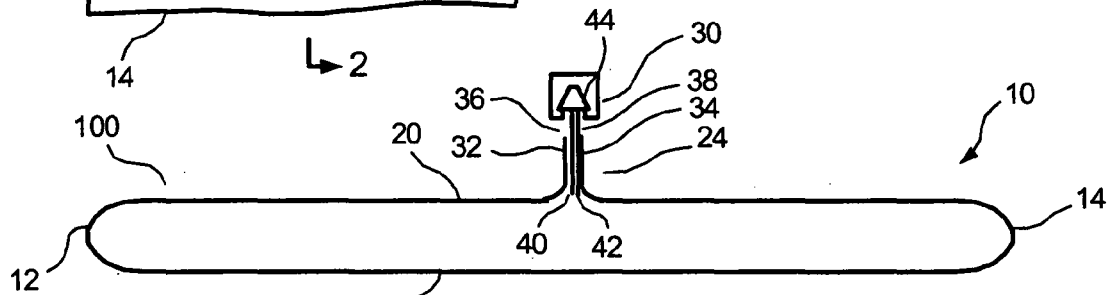


FIG. 2

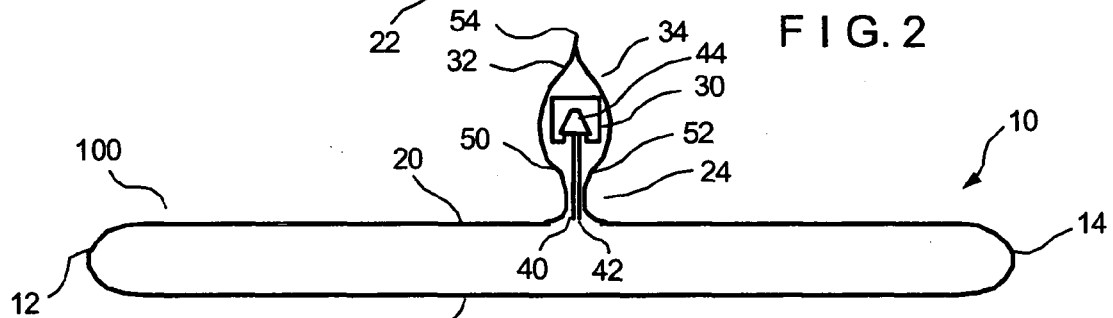


FIG. 3

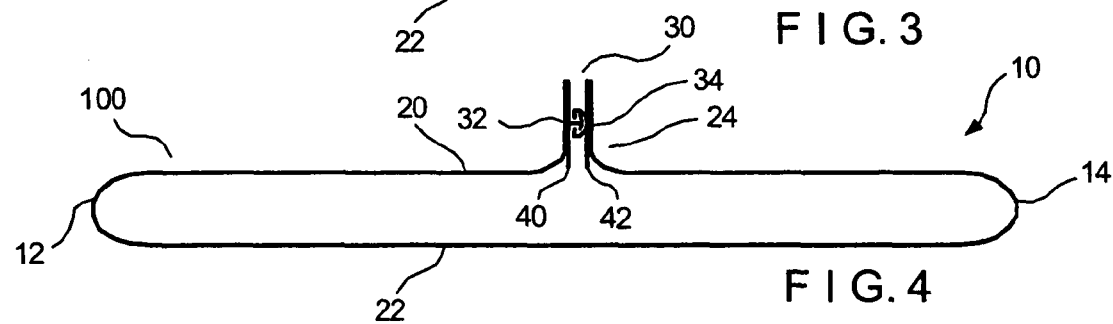


FIG. 4

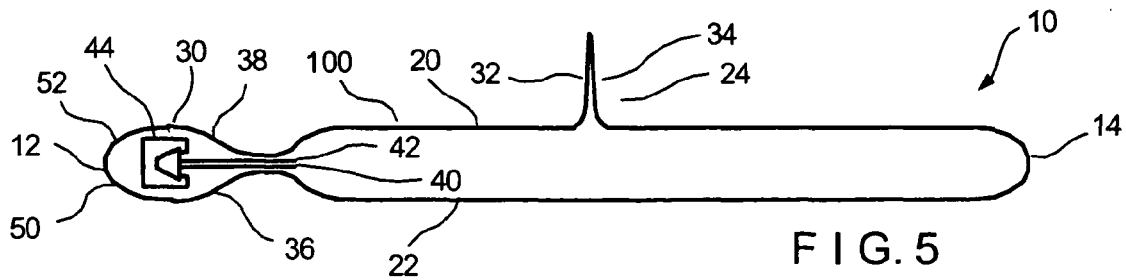


FIG. 5

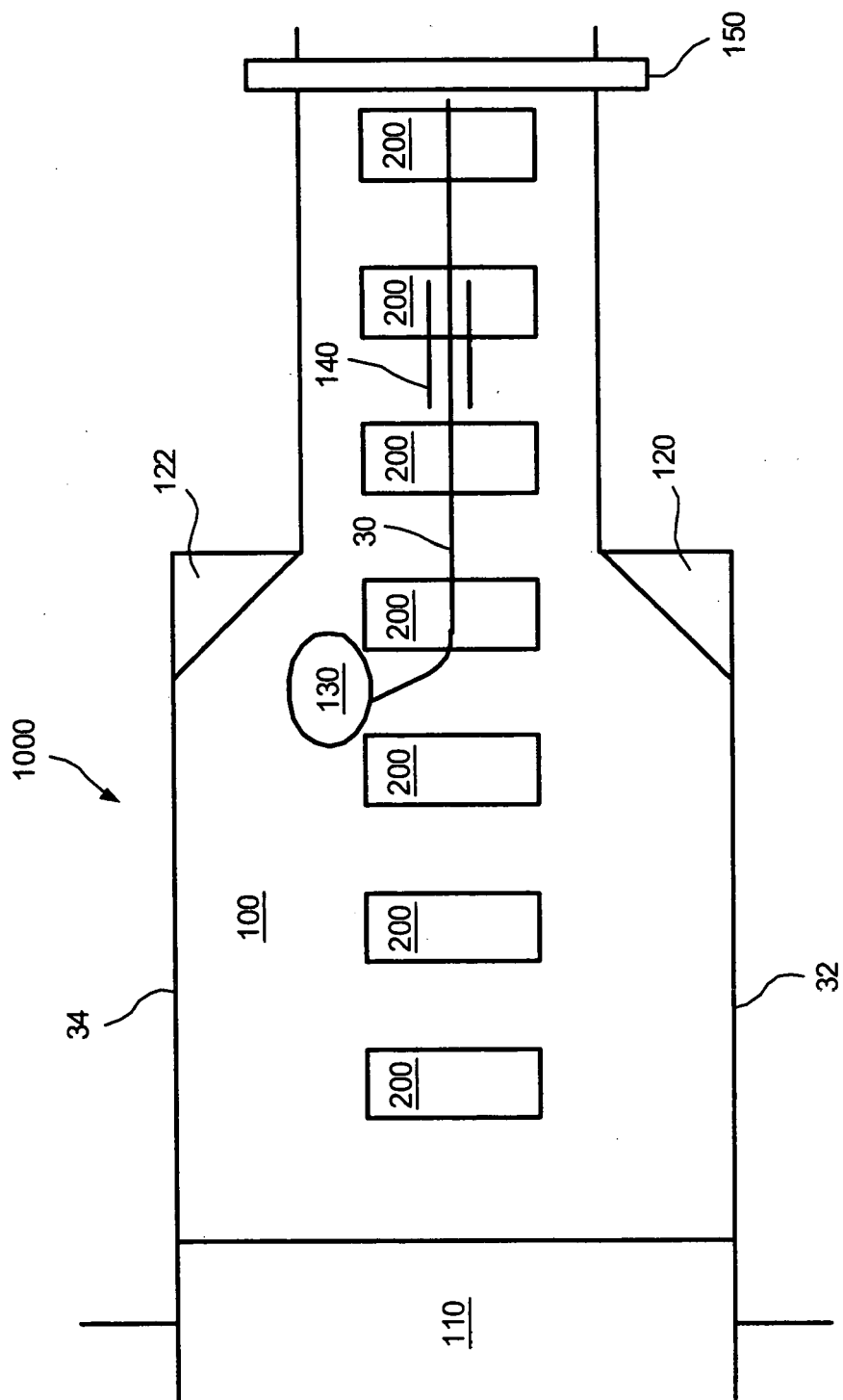
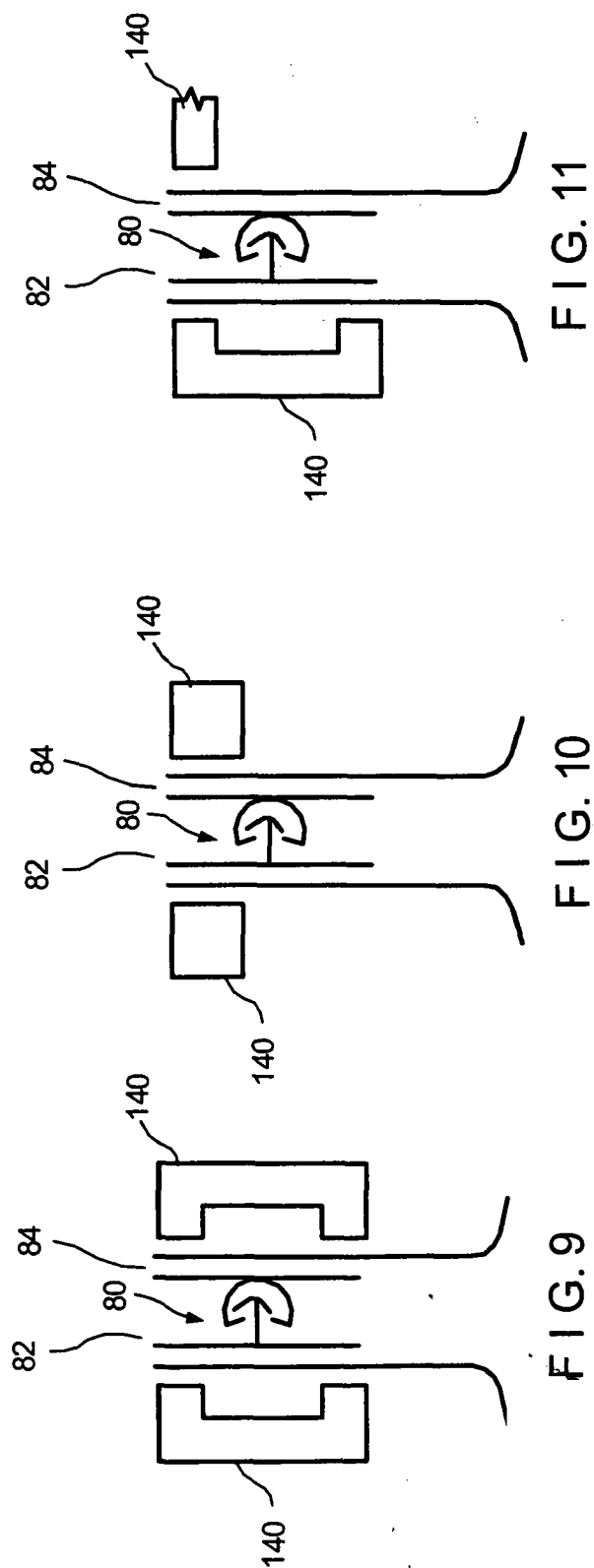
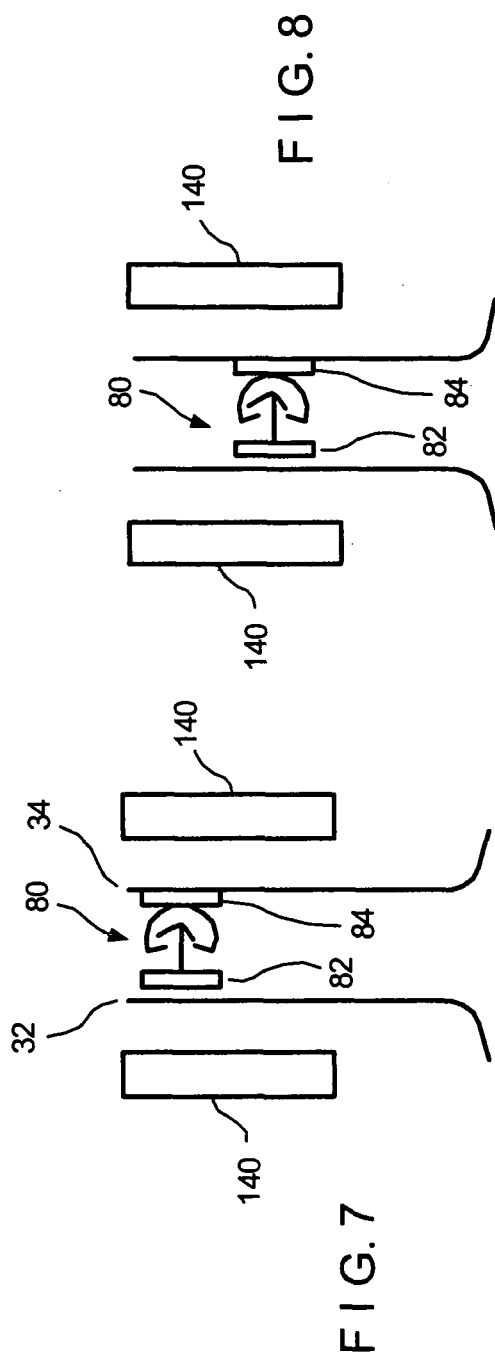


FIG. 6





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 06 25 0576

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 84/02896 A (CREATIVE PRODUCTS RESOURCE ASSOCIATES, LTD) 2 August 1984 (1984-08-02) * abstract; figures 1,2 * * page 6, paragraph 2 - page 9, paragraph 1 *	1-13	INV. B65D33/25
X	US 4 848 928 A (AUSNIT ET AL) 18 July 1989 (1989-07-18) * abstract; claim 1; figures 1,2 *	1-13	
A,D	US 6 799 890 B2 (SCHNEIDER ET AL) 5 October 2004 (2004-10-05) * abstract; figures 1-34 *	1-13	
A,D	US 6 347 437 B2 (PROVAN ET AL) 19 February 2002 (2002-02-19) * figures 2,3,6 *	1-13	
A,D	US 6 138 439 A (MCMAHON ET AL) 31 October 2000 (2000-10-31) * abstract; figures 1,2 *	1-13	TECHNICAL FIELDS SEARCHED (IPC)
A	US 2004/136618 A1 (AUSNIT STEVEN ET AL) 15 July 2004 (2004-07-15) * paragraph [0044]; figure 12 *	1,13	B65D B31B B65B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 2 May 2006	Examiner Seegerer, H
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
ON EUROPEAN PATENT APPLICATION NO.**

EP 06 25 0576

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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02-05-2006

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 8402896	A	02-08-1984	EP 0134806 A1	27-03-1985
			JP 60500494 T	11-04-1985
US 4848928	A	18-07-1989	BE 1002250 A5	06-11-1990
			DE 3810555 A1	10-11-1988
			FR 2614278 A1	28-10-1988
			GB 2204016 A	02-11-1988
US 6799890	B2	05-10-2004	AU 764024 B2	07-08-2003
			AU 9720401 A	18-07-2002
			BR 0106110 A	10-09-2002
			CA 2365038 A1	16-07-2002
			EP 1223111 A2	17-07-2002
			JP 2002225889 A	14-08-2002
			MX PA02000509 A	17-09-2002
			NZ 516571 A	25-07-2003
			US 2003103687 A1	05-06-2003
			US 2003103688 A1	05-06-2003
			US 2003099412 A1	29-05-2003
			US 2003103689 A1	05-06-2003
			US 2003103690 A1	05-06-2003
			US 2002094137 A1	18-07-2002
			US 2002094138 A1	18-07-2002
US 6347437	B2	19-02-2002	AT 322188 T	15-04-2006
			AU 4820000 A	21-11-2000
			CA 2336693 A1	16-11-2000
			EP 1119268 A1	01-08-2001
			JP 2002543861 T	24-12-2002
			WO 0067603 A1	16-11-2000
			US 6286189 B1	11-09-2001
			US 2001002504 A1	07-06-2001
US 6138439	A	31-10-2000	AU 748560 B2	06-06-2002
			AU 3404600 A	30-11-2000
			BR 0001799 A	02-01-2001
			CA 2306723 A1	21-11-2000
			EP 1057620 A2	06-12-2000
			JP 2001018928 A	23-01-2001
			NZ 504582 A	25-08-2000
			US 6810639 B1	02-11-2004
			US 2001042357 A1	22-11-2001
US 2004136618	A1	15-07-2004	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82