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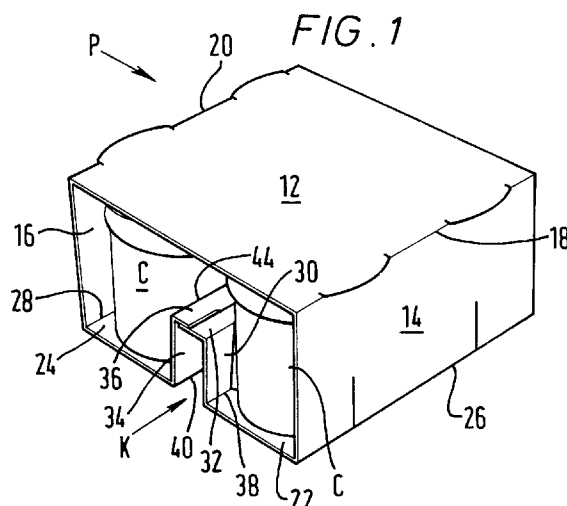
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(54) **Carton with article separating keel structure.**

(57) A carton (P) accommodating a plurality of articles (C) of the type having an internal keel structure (K) which protrudes inwardly of the carton to form a separator to space apart adjacent articles, said keel structure comprising two portions (30,32 ;34,36) provided by at least one carton panel (22,24) which portions comprise cooperating securing portions (48,50) so that the keel structure can be set up to form a bridge element.



This invention relates to a carton accommodating a plurality of articles which includes a keel construction upstanding internally of the carton to provide both separating and retaining means for the packaged articles. Typically the articles comprise tubs, pots or jars containing foodstuff.

The invention provides a carton accommodating a plurality of articles of the type having an internal keel structure which protrudes inwardly of the carton to form a separator to space apart adjacent articles on either side of the keel structure, said keel structure comprising two portions arranged in spaced relationship with respect to each other, each of which portions is provided by at least one carton panel, said keel portions comprising complementary securing portions which cooperate to form a bridge element and thereby set up the said keel structure.

According to a feature of the invention, each keel portion may comprise a side panel which is hingably attached to said one carton panel and a top panel which is hingably attached to the keel side panel and which provides one of said securing portions.

According to another feature of the invention, each keel securing portion may comprise a tab which abuts the other keel securing portion in face contacting relationship. In constructions where this feature is adopted, the keel securing portions may comprise complementary tabs which can be glued together to secure the keel in an operative set-up position.

According to yet another feature of the invention one of the keel securing portions may comprise an aperture and the other of the keel securing portions may comprise a tab which passes through the aperture when the keel is in a set-up operative position.

According to a further feature of the invention, said keel portions may be struck from a single panel of the carton. In constructions in which the keel portions are struck from a single panel, the single panel may be a base panel of the carton.

According to a still further feature of the invention, a plurality of keels may be provided in one or more rows in which each keel acts to separate two adjacent articles.

Various embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

FIGURE 1 is a perspective view of a formed carton according to the invention in a first embodiment;

FIGURE 2 is a plan view of the unformed blank for forming the carton shown in Figure 1;

FIGURE 3 is a perspective view of an unformed keel structure of the blank shown in Figure 1;

FIGURE 4 is a perspective view of a formed keel structure of the blank shown in Figure 1;

FIGURE 5 is a perspective view of second embodiment of a carton according to the invention;

FIGURE 6 is a plan view of a carton blank for

forming the carton shown in Figure 5;

FIGURE 7 is a perspective view of an unformed keel structure part of the blank shown in Figure 6;

FIGURE 8 is a perspective view of a formed keel structure of the carton blank shown in Figure 6;

FIGURE 9 is a perspective view of a modified keel similar to that shown in Figure 8;

FIGURE 10 is a perspective view of a completed carton in a third embodiment of the invention;

FIGURE 11 is a plan view of the carton blank for forming the carton shown in Figure 10;

FIGURE 12 is a perspective view of an unformed keel structure which is a modification of the arrangement shown in Figure 7;

FIGURE 13 is a perspective view of the Figure 12 structure shown formed and which is a modification of the keel structure shown in Figure 8;

FIGURE 14 is a perspective view of a modified keel structure similar to that of Figure 12; and

FIGURE 15 is a perspective view, similar to Figure 8, showing the modified keel of Figure 14 in a set-up condition.

Referring first to Figures 1 to 4 there is shown a carton 'P' of the wraparound type formed from a blank 10 of paperboard or other suitable foldable sheet material. The carton accommodates an array of four articles A disposed in two rows of two. Carton blank 10 comprises top panel 12 and side panels 14 and 16 hinged to top panel 12 along transverse fold lines 18 and 20 respectively. The base of the carton comprises base panels 22 and 24 hinged to side wall panels 14 and 16 along transverse fold lines 26 and 28, respectively. A keel structure K is formed from panel sections 30, 32 and 34, 36. More specifically, the keel structure comprises side walls 30 and 34 hinged to base panels 22 and 24 respectively, along interrupted transverse fold lines 38 and 40. Keel K further comprises two top panel portions 32 and 36. Keel top panel portion 32 is hingably connected to keel side panel 30 along interrupted fold line 42 whilst keel top panel portion 36 is hingably connected to keel side wall panel 34 along interrupted fold line 44. Keel top panel 32 comprises a tab receiving recess 48 whilst top panel 36 comprises keel locking tab 50. Formation of the keel into a set-up condition is shown in Figures 3 and 4. Tab 50 is passed into recess 48 and caused to underlie top panel 32. The marginal portions of keel top panel portion 32 adjacent recess 48 are caused to underlie keel top panel portion 36 thus creating an interlocked top panel portion to keel K. Keel K is further stabilised by the interlocking of the base panels by means of locking tab 52 which is rotated upwardly about hinge 54 and caused to pass through a complementary locking aperture 56 defined by flap 58 and struck from tab 50 formed in base panel portion 24. This embodiment requires no gluing of the keel and is found to be more economical in its

use of carton material, such as paperboard, than known carton keel constructions.

Referring now to Figures 5 to 9 there is shown another carton Pa embodying the invention in which like parts of the previous embodiment are designated like reference numerals with the addition of suffix 'a'. The carton accommodates a group of four cartons 'Ca'. The carton comprises a wraparound paperboard blank 10a having top panel portions 12a and 12a' and side panels 14a and 16a, respectively. Blank 10a is maintained in its tubular structure by securing, as by gluing marginal top panel 12a' to the underside of top panel portion 12a. Top panel portion 12a is hinged to side panel 16a along interrupted transverse fold line 20a and top panel portion 12a' is hinged to side wall panel 14a along interrupted transverse fold line 18a. Two individual keel structure parts Ka and Ka' are formed by striking a series of keel elements from a single base panel 22a. Base panel 22a is hinged to side panel 14a along transverse fold line 26a and to side panel 16a along transverse fold line 28a. The keel part Ka comprises side panel elements 30a and 34a and top panel element 32a. To form the keel part, the side panel elements 30a and 34a are hinged into an upstanding position about fold lines 38a and 40a respectively whilst top panel 32a is folded about fold line 42a. Keel locking tongue 50a is inserted into a complementary keel locking aperture 48a in side wall 34a. Tongue 50a can then be rotated upwardly about hinge line 44a in order that side panel 34a and tongue 50a are generally co-planar and can lie smoothly against the side of an article Ca. Keel part Ka' is formed in a similar manner. Thus, an interrupted keel is formed which requires no gluing to retain its set-up formation. The keel elements are formed from material struck from the base panel 22a and do not require additional material.

Figure 9 shows a similar keel part Kb to that shown in Figure 8 but in which keel part Kb is modified by removing tongue 50a and aperture 48a and substituting therefor hinge 42b in keel side wall 30b thereby creating two approximately symmetrical side walls 30b and 34b. Top flaps 32b and 36b are brought into superposed relation and can be glued together to hold the keel together.

Referring now to Figures 10 and 11 there is shown yet another embodiment of the invention in which carton Pc is formed from a wraparound paperboard blank 10c for packaging a group of articles Cc such as tubs of yoghurt. Carton Pc comprises elements Kc and Kc' struck from base panels 22c and 24c. The elements Kc and Kc' are similar to keel parts Ka and Ka' described above with reference to Figures 5 to 8. However, in this embodiment carton Pc is formed into its tubular structure by interconnecting base panel portions 22c and 24c by means of panel interlocking means 52c and 56c. In this particular embodiment locking tabs 52c are struck from base panel

portion 22c and locking apertures 56c are struck in base panel portion 24c.

Keel part Kc comprises side panels 30c and 34c which are hingably connected to base panel portions 22c and 24c respectively. Keel part Kc is formed by displacing keel panels 30c and 34c upwardly about hinge line 38c and 40c respectively. The top of keel part Kc is formed by panel 32c and the two side panel sections are interconnected by means of tab 50c which passes through aperture 48c in keel panel 34c. Tab 50c is hingably connected to top panel 32c along hinge line 51c and can thereby be folded downwardly and abut side panel 34c to which it may be attached for example by glueing.

Referring next to Figure 12 and 13 there is shown a further embodiment of an 'interrupted' keel comprising keel part Kd for separating articles such as tubs of yoghurt. Keel part Kd comprises side walls 30d and 34d which are struck from carton blank base panel 22d and hinged upwardly about fold lines 38d and 40d respectively.

Keel part Kd further comprises top panel portions 32d and 36d. These top panel portions are rotated about fold line 38d and 40d respectively and securing portions are engaged to maintain the keel upright. Keel top panel 32d comprises securing flaps f_1 and f_2 and receiving aperture Rd. Top panel 36d comprises securing portions S_1 , S_2 and securing tongue 50d. Tongue 50d is struck from top panel 36d on its marginal edges by slots 50d'. Keel top panels 32d and 36d are brought together so that tongue 50d passes beneath panel 36d whilst portions S_1 , S_2 pass above it. Flaps f_1 and f_2 are passed beneath top panel 32d and receiving aperture Rd moves into engagement with slots 50d' thus securing the keel part Kd in an upright position.

Referring now to Figures 14 and 15 there is shown a still further embodiment of a keel part Ke which comprises side panel 30e and 34e. The keel panels are struck from base panel 22e and are foldably connected thereto along hinge lines 38e and 40e respectively. The side wall panels 30e and 34e are hinged upwardly about said hinges 38e and 40e and top panel portions 32e and 36e are brought into abutting relation. Top panel portion 32e comprises article receiving recess, flap receiving recess Re and marginal flaps f_{1e} and f_{2e} . Top panel 32e is hingably connected to side panel 30e along hinge line 42e which extends from each side of the flap portion 64e cut from side panel 30e in order to form article receiving recess 65e. Similarly top panel 36e is hingably connected to side panel 34e along hinge line 44e where panel 36e comprises flap portion 67e defining recess 66e. Top panel 36e further comprises central tab 50e and central tab marginal slots 50e' and marginal tabs 51e and 52e. Top panels 32e and 36e are engaged so that tab 50c lies beneath panel 32e and the edge of recess Re is brought into engagement with slots 50e'

whilst tabs 51e and 52e lie above flaps f_{1e} and f_{2e} . Article receiving recesses 65e and 66e of each side wall are therefore presented in the formed keel Ke to receive the side wall of an article.

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Claims

1. A carton accommodating a plurality of articles of the type having an internal keel structure which protrudes inwardly of the carton to form a separator to space apart adjacent articles on either side of the keel structure, said keel structure comprising two portions arranged in spaced relationship with respect to each other, each of which portions is provided by at least one carton panel, said keel portions comprising complementary securing portions which cooperate to form a bridge element and thereby set up the said keel structure. 10 15 20
2. A wraparound carton as claimed in claim 1 wherein each keel portion comprises a side panel which is hingably attached to said one carton panel and a top panel which is hingably attached to the keel side panel and which provides one of said securing portions. 25
3. A wraparound carton as claimed in claim 1 or claim 2 wherein each keel securing portion comprises a tab which abuts the other keel securing portion in face contacting relationship. 30
4. A wraparound carton as claimed in claim 3 wherein said keel securing portions comprise complementary tabs which are permanently secured together to hold the keel in an operative set-up position. 35
5. A wraparound carton as claimed in any of claims 1 to 4 wherein one of the keel securing portions comprises an aperture and the other of the keel securing portions comprises a tab which tab passes through the aperture when the keel is in a set-up operative position. 40 45
6. A wraparound carton as claimed in any of the preceding claims wherein said keel portions are struck from a single panel of the carton. 50
7. A wraparound carton as claimed in claim 6 wherein said single panel is a base panel of the carton.
8. A carton as claimed in any of the preceding claims which comprises a plurality of keels in one or more rows wherein each keel acts to separate two adjacent articles. 55

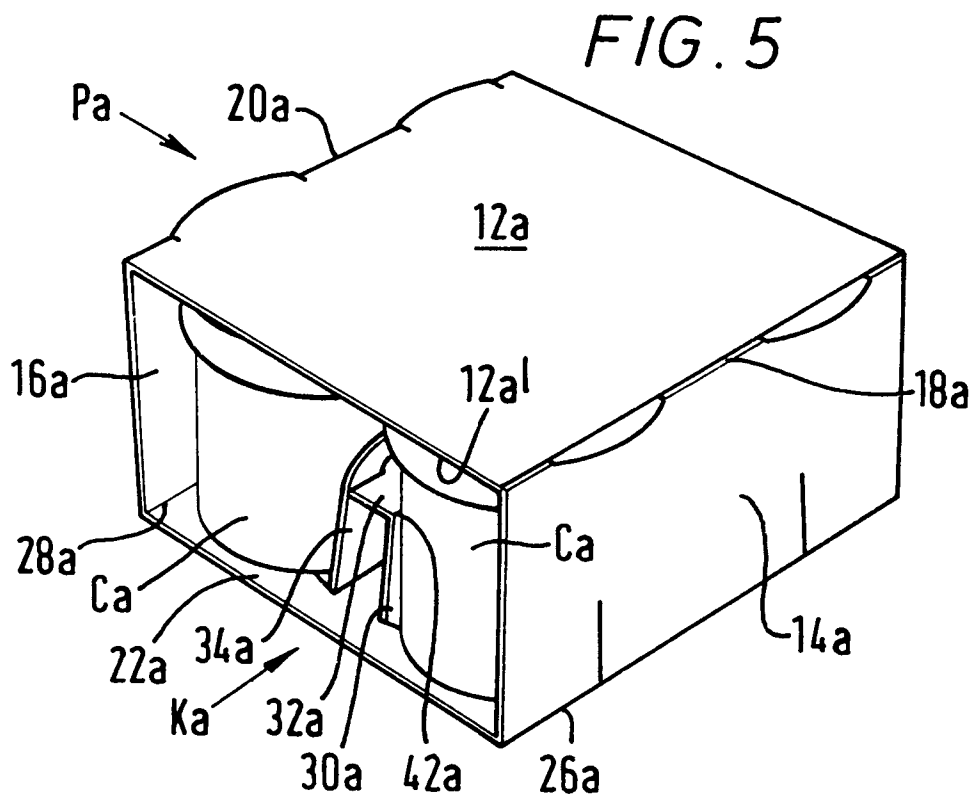
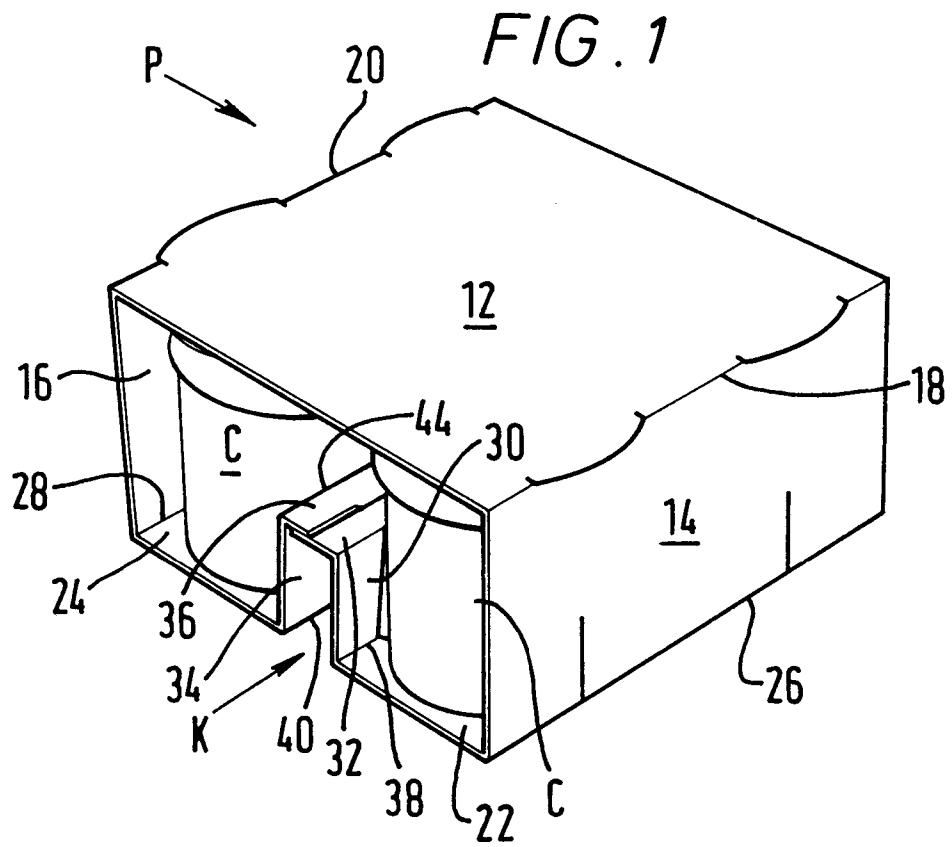


FIG. 2

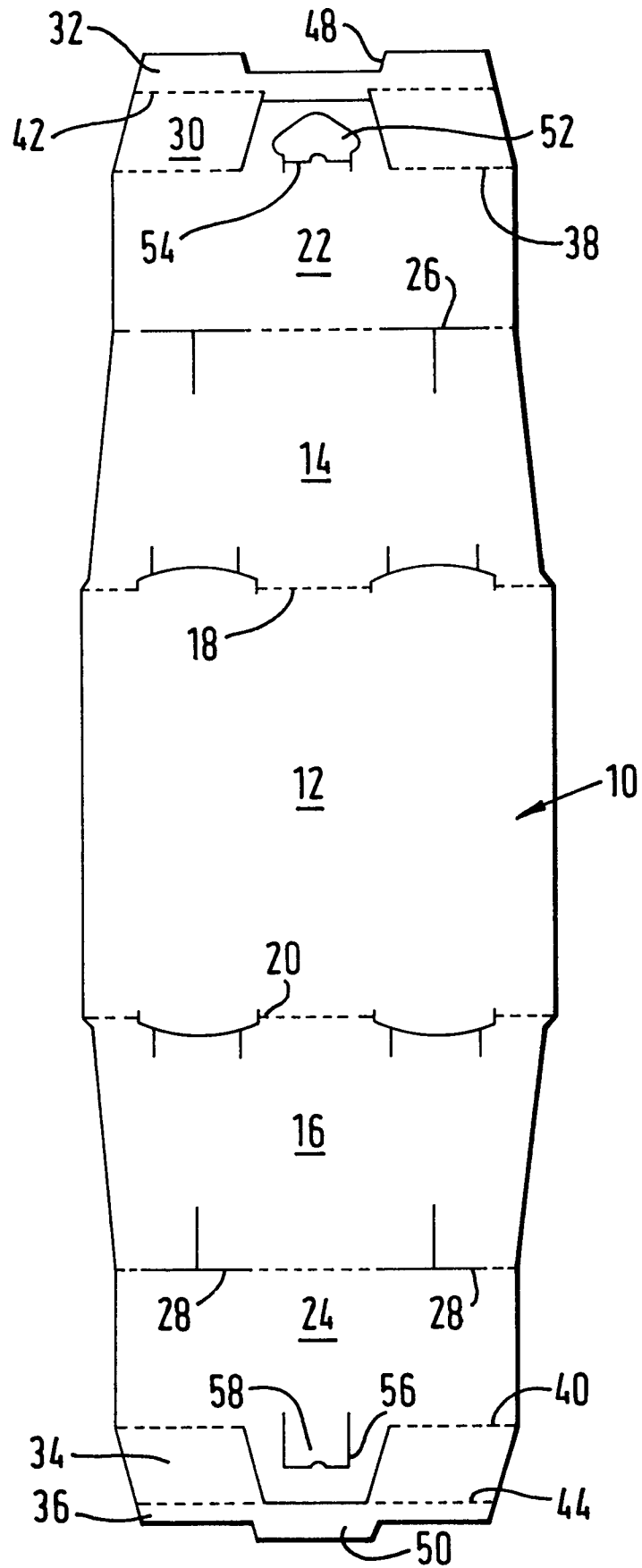


FIG. 3

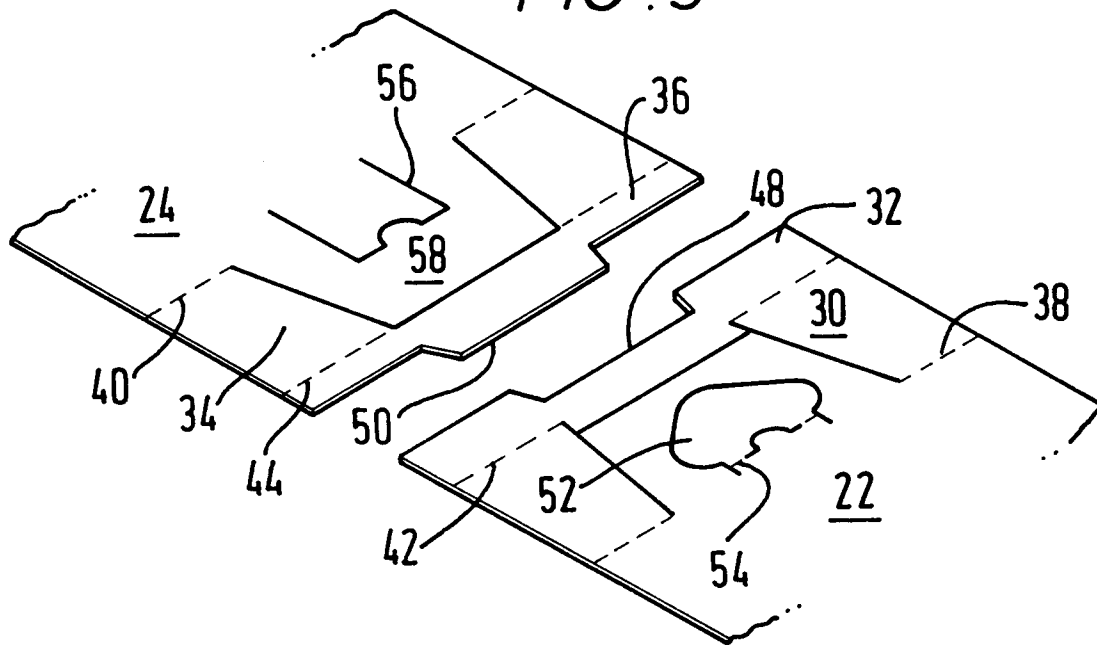


FIG. 4

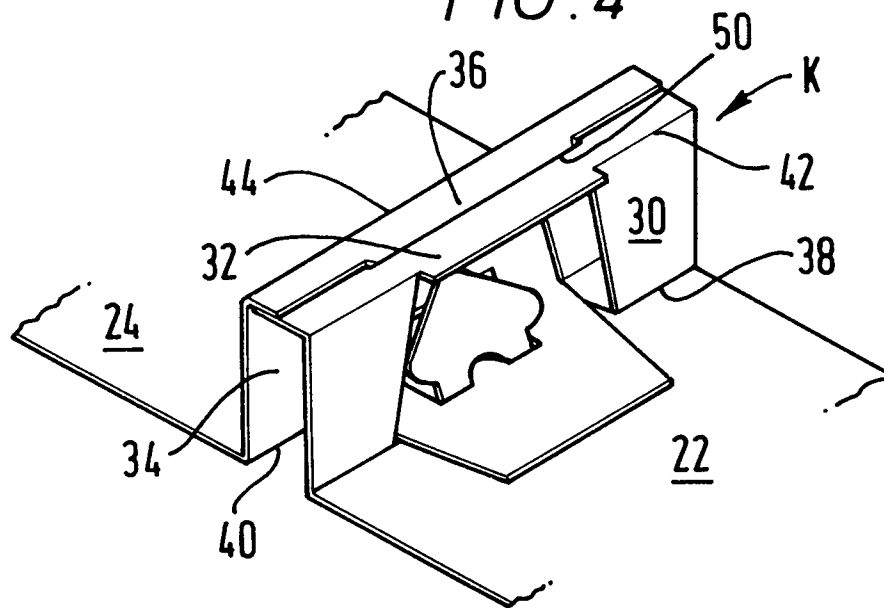


FIG. 6

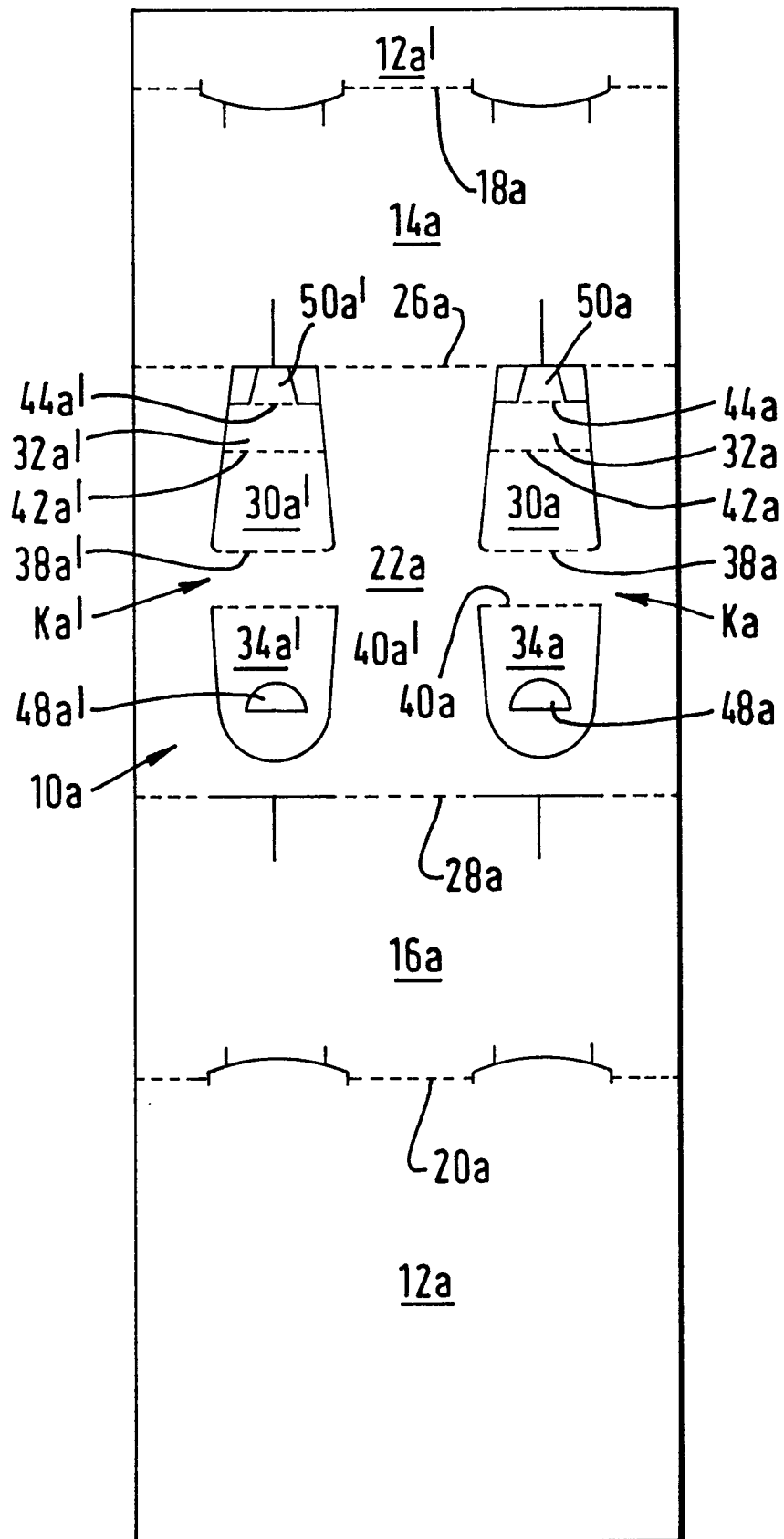


FIG. 7

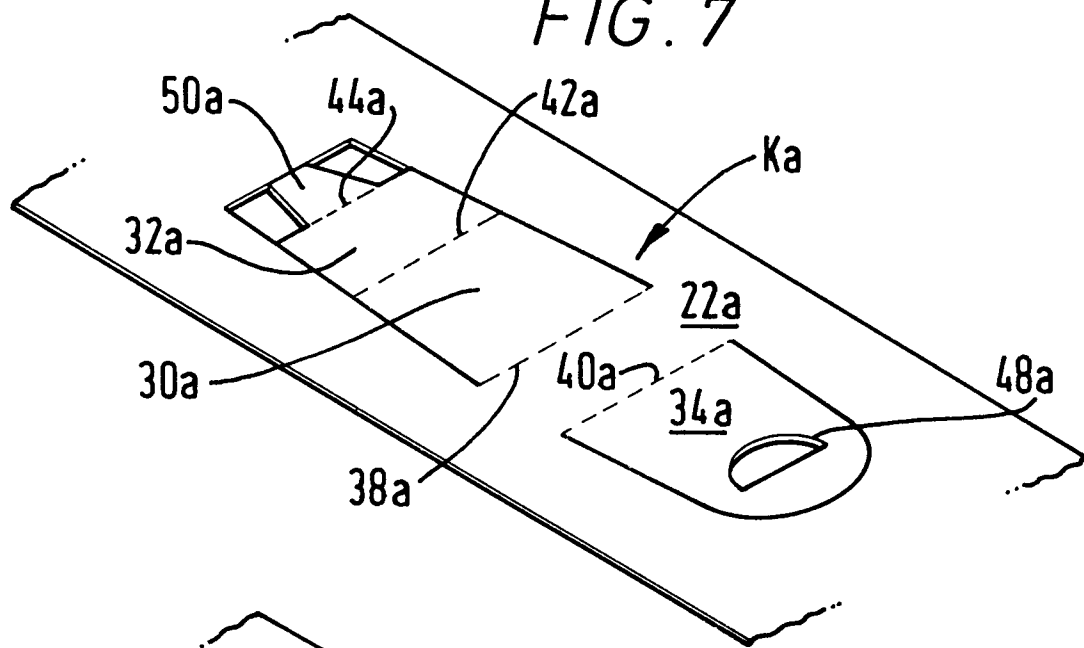


FIG. 8

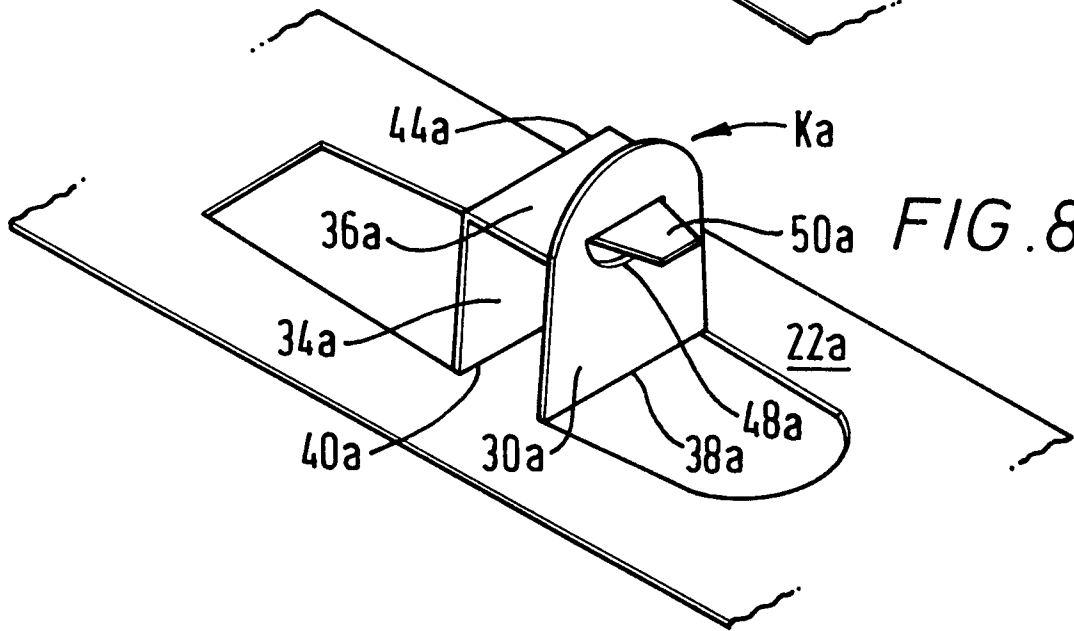
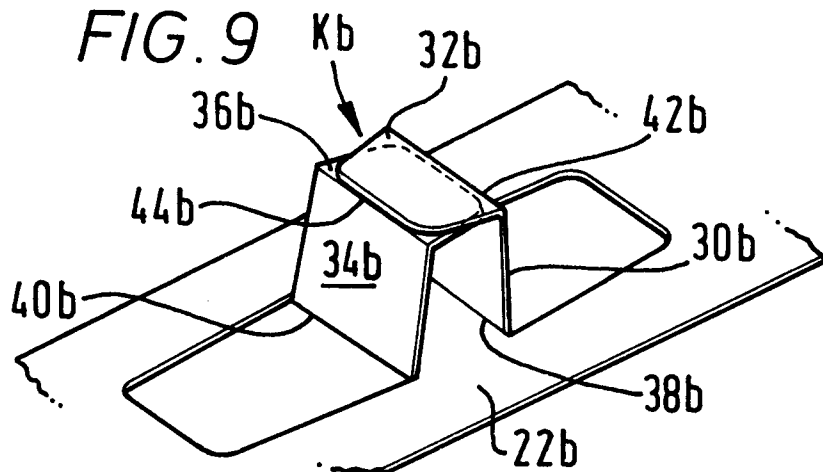


FIG. 9



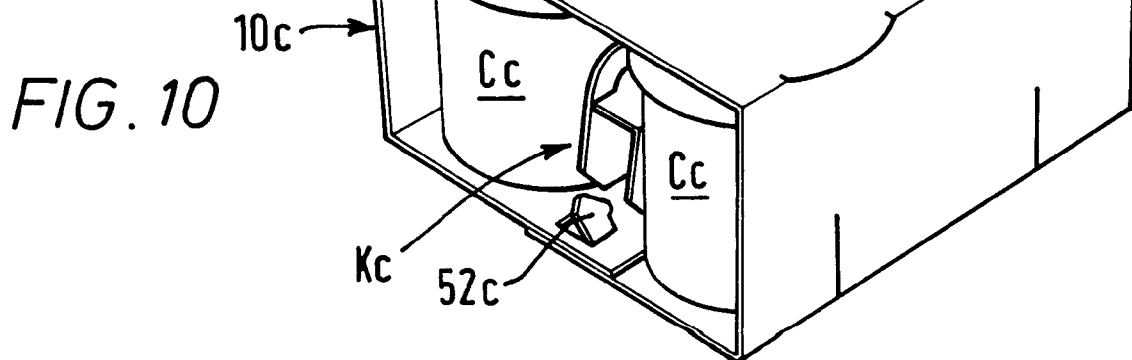
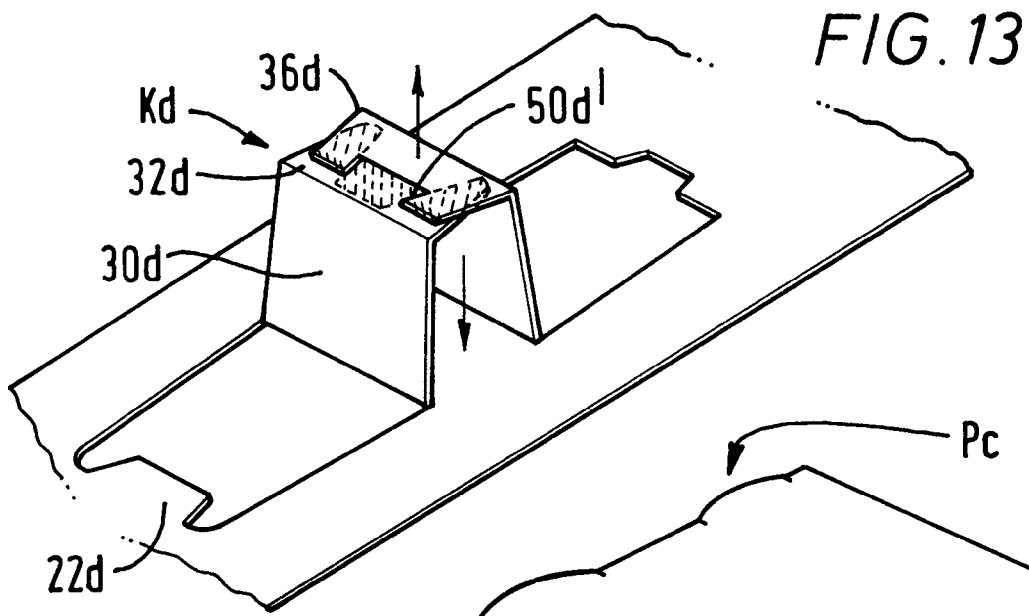
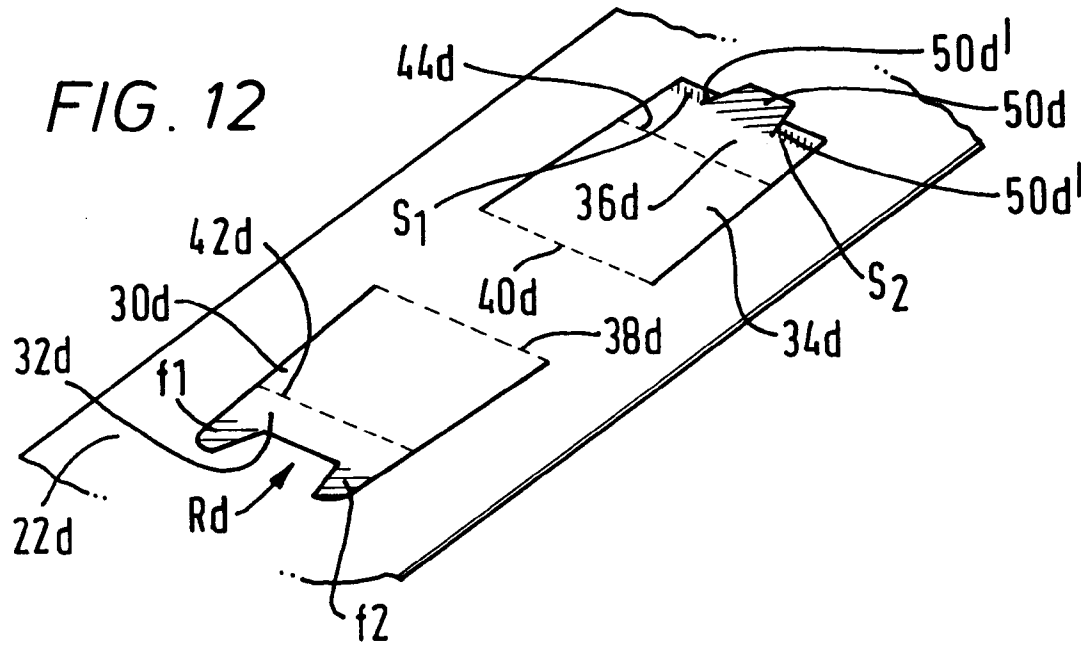


FIG. 11

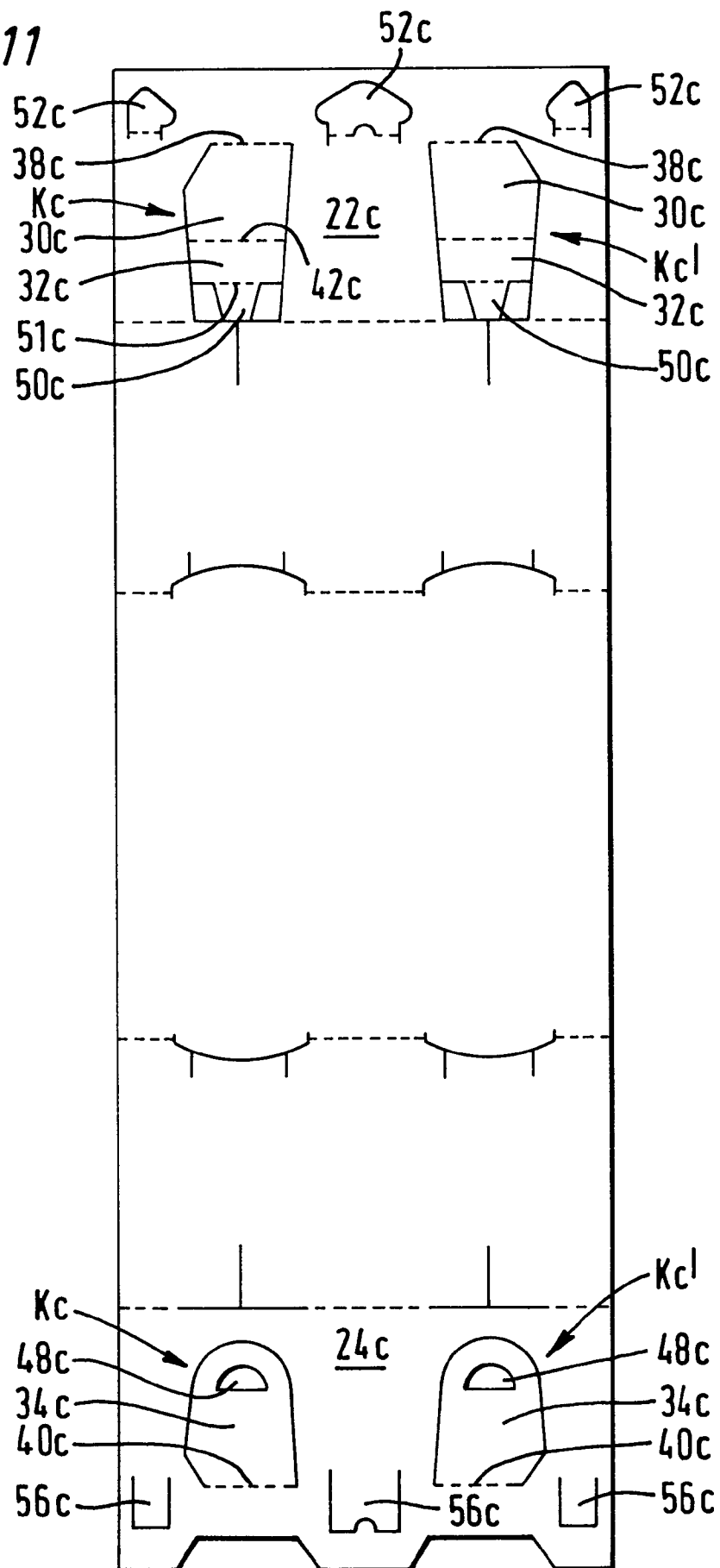


FIG. 14

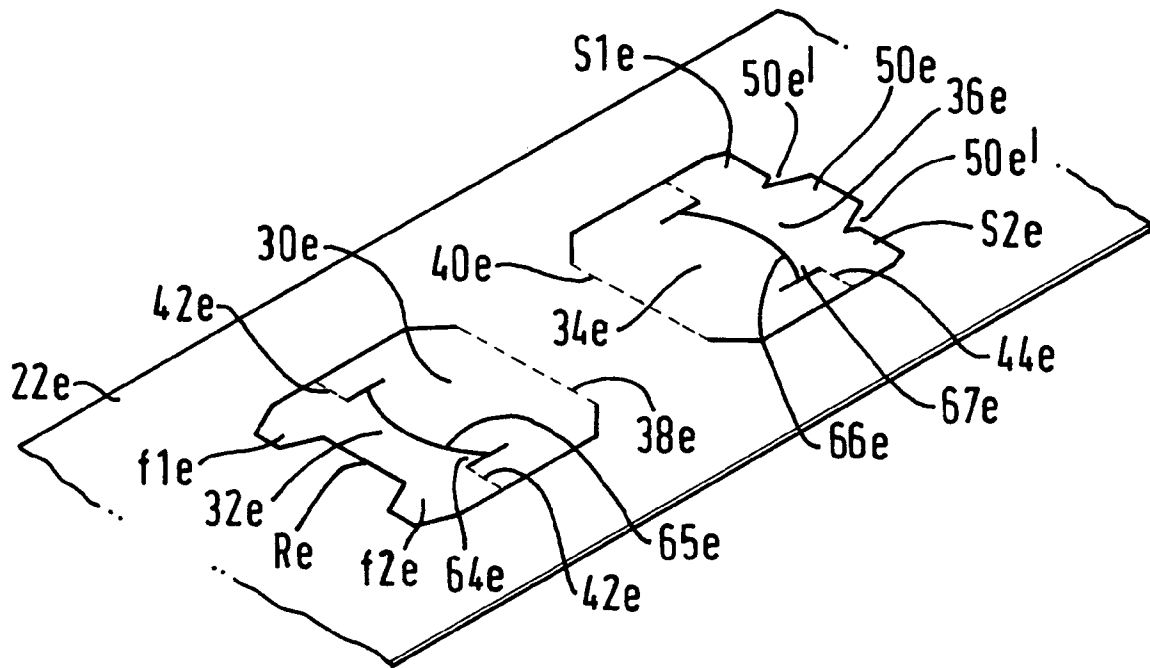
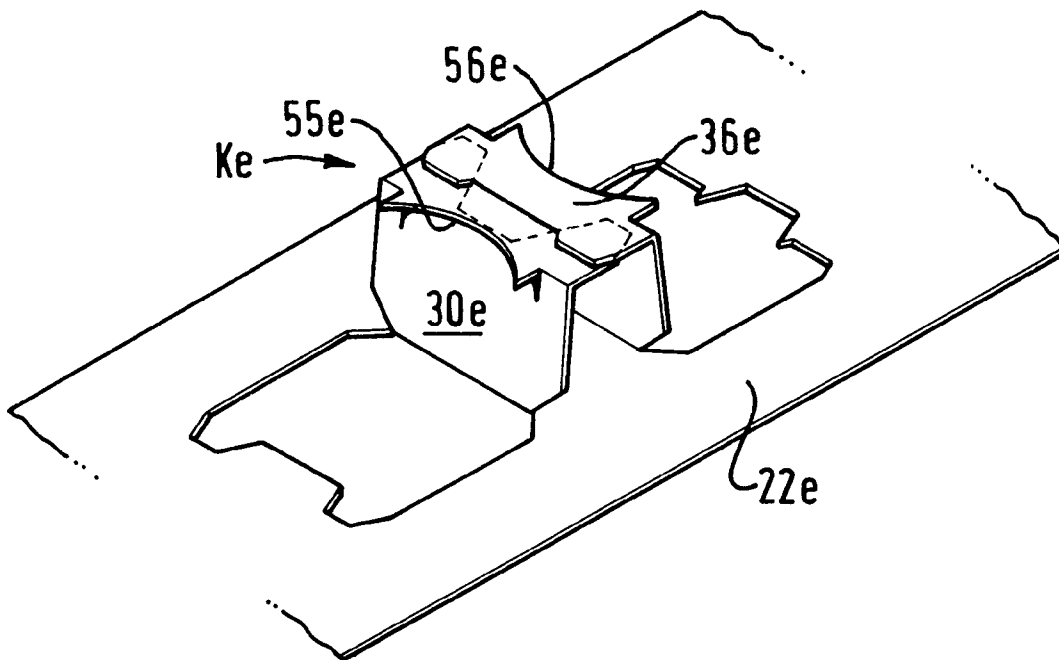


FIG. 15





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 92 31 0066

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.5)
X A	FR-A-2 647 421 (THE MEAD CORPORATION) * the whole document *	1,2,5-7 3,4	B65D71/26
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B65D
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 09 FEBRUARY 1993	Examiner SMITH C.
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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