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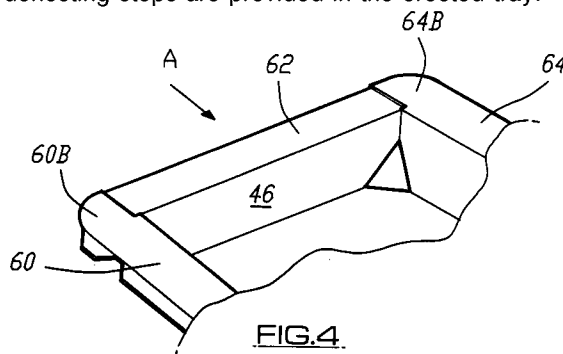
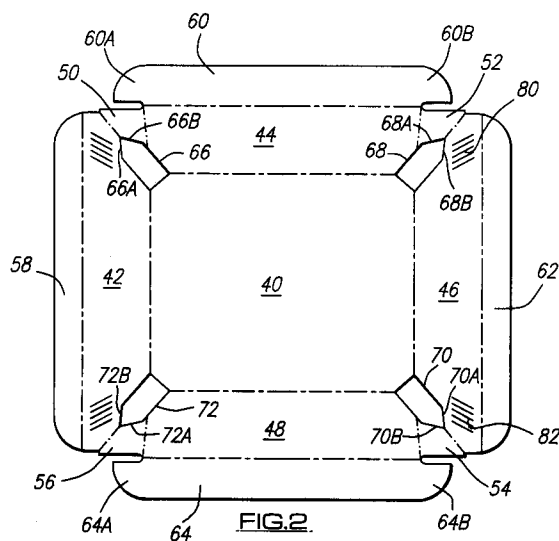
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Yorkshire (GB)(54) **Nestable paperboard tray.**

(57) A cut and creased blank of cardboard material can be erected and glued into a tray with a base (40,90), tapering side walls (42-48; 92-98) and a top

flange (58-64; 92-98) and the corners are so formed with cut outs (66-72) and fillet panels (50-56) so that denesting steps are provided in the erected tray.

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This invention relates to packaging containers, and seeks to provide a packaging container of cut and creased sheet material such as cardboard, the purpose of which is to replace a previously utilised thermoformed plastics material tray.

There is on the market today a package which is used for confectionery, in particular small chocolate tablets wherein the chocolate tablets are stacked side by side, and then are placed into a tray cavity of a thermoformed plastics material tray. The tray with the chocolates therein is then placed into an outer sleeve of cardboard or the like, to form the complete package. The sleeve on one side is cut away to provide viewing apertures so that the chocolates can be viewed when on display, but the thermoformed tray remains hidden from view.

Environmental pressure has led to the criticism and in some cases the rejection of the use of plastics material for the said tray, and the present invention is concerned with the provision of a substitute for the said tray.

As concerns the package described above, it is assembled by high speed machinery, and in particular the thermoformed trays are designed so as to be nestable one within the other, so that in the formation of the packages, the stacked trays can be denested by denesting machinery. The chocolates are machinery grouped and packaged into the trays, and the trays are loaded by machinery into the sleeves, the sleeves eventually being closed at their ends by erection machinery.

Any substitute for the thermoformed tray must therefore be capable of fitting into to such a packaging operation.

The present invention therefore seeks to provide a tray of cut and creased sheet material which has the capability of being nested. Upon conception of the invention, it has been realised by the inventor that the tray according to the present invention has much wider application than the specific application mentioned above, although the tray was conceived to meet the problem described.

In accordance with the present invention, a tray is formed from a blank of cut and creased sheet material such as cardboard has a base and outwardly tapering walls, and the corners are notched and/or cut away and/or are provided with projections to allow the trays to be nested, and wherein the blank comprises a base panel to which are hinged wall panels, and adjacent ends of the wall panels are connected by fillet panels which are hingedly connected to the said wall panel ends, so that in folding the wall panels upwardly in relation to the base, the fillet panels also fold, whereby each fillet panel rests upon an adjacent inner wall panel surface, and lies at right angles to the adjacent wall panel.

Such a design approach to a cut and creased cardboard tray is a departure from conventional practise in the art of manufacturing cut and creased sheet material packaging containers, because it is opposed to the conventional approach which is to the effect that tray corners would not be cut away, notched.

Additionally, the tray preferably is provided with a top peripheral flange, so that if the tray is located inside a sleeve in a manner similar to that described above, the flange edges can provide for the centralization of the tray (cavity) inside the sleeve.

By providing cut outs at the corners of the tray, predetermined nesting steps can be defined so that when similar trays are brought together and are nested in a stack, they will be predictably spaced one in relation to the other, by a predetermined amount. This could not be achieved if the trays were not provided with the notches or cut outs, and simply were provided with tapered walls which frictionally fitted together upon nesting of the trays.

It will of course be appreciated that in order to achieve the nesting arrangement of the trays, the tray walls must be outwardly flared in relation to the base.

The wall panels preferably are provided on their outer edges with flange strips, which are folded relative to the wall panels in the erection of the blank so as to form a continuous flange around the top of the tray, such flange panels overlapping at the corners of the tray. Where the flange panels overlap they are preferably adhered for example by gluing.

At the corners of the base panel, the base panel and side wall panel ends are cut away so that said steps will be formed at the corners in the erected tray.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, wherein:-

Fig. 1 is a perspective view illustrating the elements of a conventional package using a thermoformed tray of which the tray is to be replaced by a tray according to the present invention;

Fig. 2 is a plan view of a blank according to the embodiment of the invention, and for formation into a tray according to the present invention;

Figs. 3 and 4 show in perspective view various stages of erection of the blank shown in Fig. 2; and

Fig. 5 is an end view taken in the direction of arrow A in Fig. 4 showing how trays according to the embodiment of the invention can be stacked.

Referring to the drawings, Fig. 1 shows in perspective view a conventional package which

comprises a thermoformed plastics material tray 10 having a cavity 12 which is filled in this instance with tablets of chocolate 14 packed side by side so as to fill the cavity 12.

The thermoforming of the tray is such as to provide denesting steps 16 and 18, so that similar trays can be stacked in nested fashion for transportation purposes, and the denesting steps 16 and 18 are such as to keep the trays evenly spaced so that they can reliably be denested by conventional denesting equipment.

The marshalling and loading of the tablets 14 of chocolate into the cavity 12 is also performed by automatic machinery, as is the loading of the filled tray 10 into the second part of the package which is a cardboard sleeve 20. The loading of the filled tray into the sleeve 20 is indicated by arrow 22 in Fig. 1.

The sleeve 20 has bevelled ends as shown, and closure end panels 24, 26, 28 and 30 at each end serve to close the sleeve after it has been loaded with the filled tray.

On the top surface, the sleeve 20 is provided with apertures 32 which are viewing apertures enabling the tablets of chocolate 14 to be viewed by a potential purchaser, whilst obscuring the thermoformed tray 10.

The closing of the ends of the sleeve is also carried out by automatic machinery.

Environmentally, the use of plastic materials trays has become objectionable in some countries, and indeed forbidden in others, and the present invention seeks to provide an alternative for such tray but constructed of material which is environmentally acceptable. Such material is cardboard, and the invention in the embodiment illustrated comprises a single blank of cut and creased cardboard material which is shown in Fig. 2.

Referring to that figure, the single blank shown in Fig. 2 comprises a base panel 40 of rectangular form, to the edges of which are hinged respective wall panels 42, 44, 46 and 48.

At adjacent ends, the wall panels 42-48 are interconnected by fillet panels 50, 52, 54 and 56, the fillet panels 50-56 being foldable relative to the wall panels about the fold lines indicated by chain dotted lines.

The wall panels 42-48 are provided with flange strips 58, 60, 62 and 64, the flange strips 58 and 62 being narrower than 60 and 64, and said strips 60 and 64 having extensions 60A, 60B, 64A and 64B at the ends thereof for the purpose which will be apparent. The ends of the flange strips are rounded as shown.

At the corners of the base panel 40, the blank is cut away in the regions 66, 68, 70 and 72 in the form of a cut out which has a gable end shape as shown so that the inclined edges 66A, 66B, 68A,

68B, 70A, 70B and 72A and 72B, which will form the steps for denesting purposes as will be described in relation to Fig. 5.

Erection of the blank is particularly simple, and it is capable of machine erection by a punch and die type operation which involves pressing the punch downwards on the base which forces the tray into the die. This action forms the tray around the punch. The folding and erecting operation is indicated by figures 3 and 4. In Figure 3, the side walls 44, 46 and 48 have been folded partially upwards, and the flange strips 60, 62 and 64 have folded outwardly, but the ends of these strips are approaching each other, and at the same time the fillet panels 52 and 54 are folding as indicated so that they are approaching the shaded areas 80 and 82 on the inside surface of wall 46.

The fillet panels 50 and 56 are folding in similar fashion at the other side of the tray (not shown).

Fig. 4 shows the fully erected position, and it will be seen that the extensions 60B and 64B of flange strips 60 and 64 overlap the ends of strip 62, and in fact are glued thereto. The fillet strips 52 and 54 are face to face with the inner surface of wall 46 and may or may not be adhered thereto as required. It will be appreciated that the extensions 60A and 64A are similarly overlapped with and glued to the flange strip 58 in order to complete the tray.

As shown in Fig. 5, the trays can be nested one within the other insofar as the sloped edges 70A, 70B and 66A and 66B come together to form steps on which the tray is supported when nested with another similar tray as shown in Fig. 5. The nested trays will be spaced by the predetermined distance D to enable denesting of same by denesting machinery. The tray illustrated and described therefore is interchangeably usable with the thermoformed tray shown in Fig. 1, and provides an alternative, environmentally friendly substitute therefor.

In a modification, the fillet panels 50-56 are connected to panels 42 and 46. Otherwise this modified construction operates in the same way as that illustrated.

Claims

1. A tray formed from a blank of cut and creased sheet material such as cardboard, comprising a base (40, 90) and outwardly tapering walls (42-48; 92-98) wherein the corners are notched (66-72) to allow the trays to be nested, characterised in that the blank comprises a base panel (40) to which are hinged wall panels (42-48) and adjacent ends of the wall panels (42-48) are connected by fillet panels (50-56) which are hingedly connected to said wall pan-

el ends, so that in folding the wall panels (42-48) upwardly in relation to the base (40) the fillet panels (50-56) also fold whereby each fillet panel (50-56) rests upon an adjacent inner wall panel surface, and lies at angle to the adjacent wall panel (42,44) the blank also having cut outs (66, 72) adjacent said fillet panels (50-56) shaped to define said notches (66-72) which form denesting steps.

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2. A tray according to claim 1, characterised in that the tray has a top peripheral flange (58-64; 98-104) so that if the tray is located inside a sleeve (20) the flange edges can provide for the centralization of the tray cavity inside the sleeve.

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3. A tray according to claim 2, characterised in that the wall panels (42-48) are provided on their outer edges with flange strips (58-64) which are folded relative to the wall panels (42-48) in the erection of the blank so as to form said top peripheral flange (58-64) such flange panels (58-64) overlapping at the corners of the tray.

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4. A tray according to claim 2, characterised in that said flange panels (56-64; 98-104) where they overlap, are glued together.

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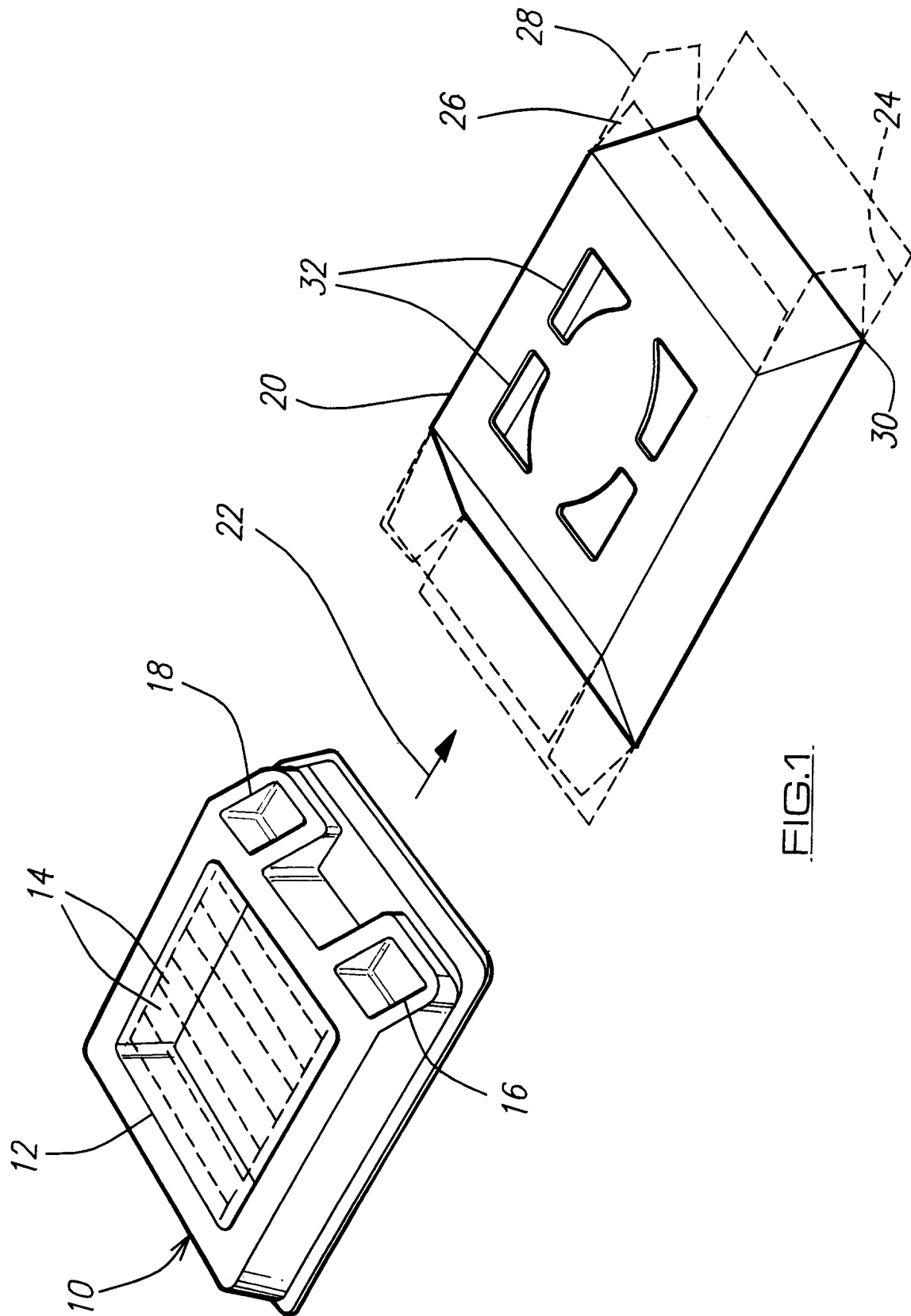
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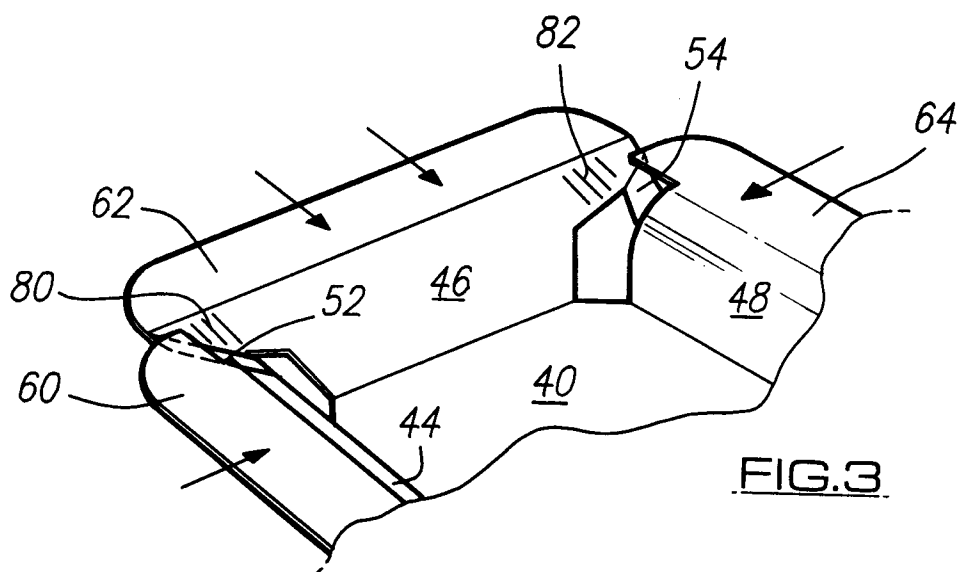
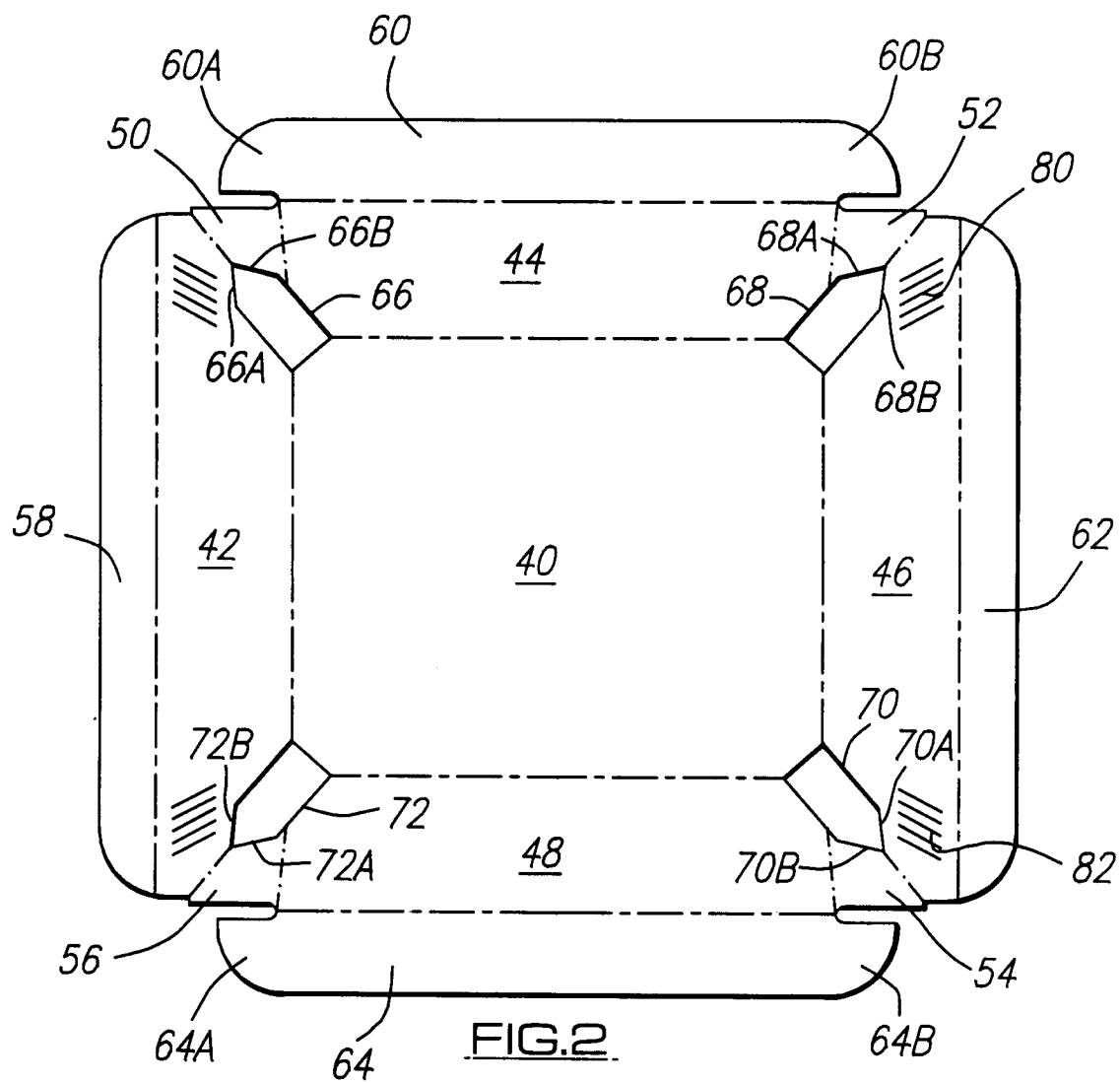
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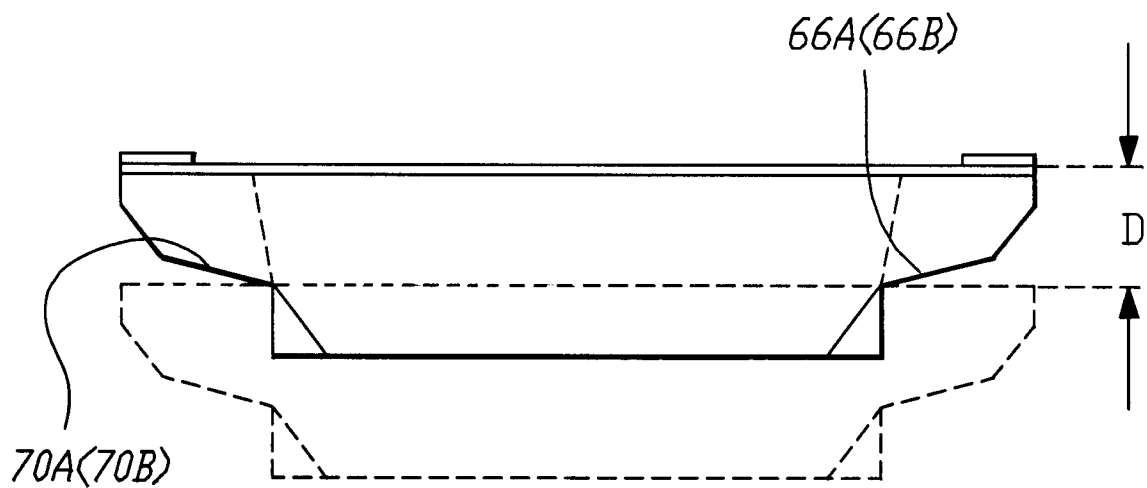
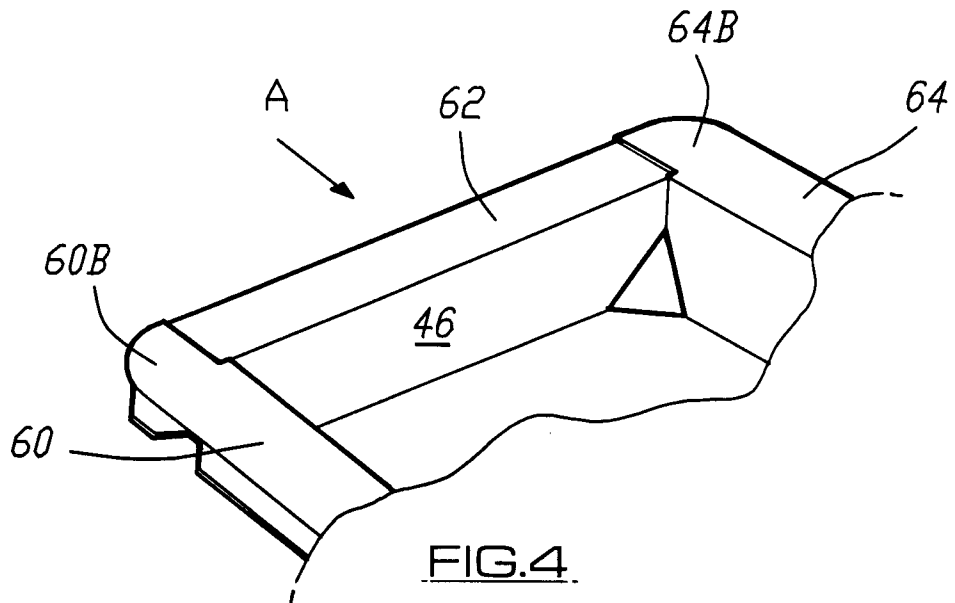
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EUROPEAN SEARCH REPORT

Application Number
EP 95 10 1764

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.6)
A	DE-A-18 13 005 (AKERLUND & RAUSING) * page 3 - page 4; figures 1-3 * ---	1-4	B65D5/28
A	FR-A-2 133 727 (AKERLUND & RAUSING) * the whole document * ---	1	
A	WO-A-93 10009 (KLIKLOK CORP.) -----		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 6 June 1995	Examiner Leong, 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			