(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 240 851 A2

# (12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
**18.09.2002 Bulletin 2002/38**

(51) Int Cl.[7]: **A47B 47/06**, A47F 5/11

(21) Application number: **02253040.6**

(22) Date of filing: **30.04.2002**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE TR**
Designated Extension States:
**AL LT LV MK RO SI**

(30) Priority: **30.04.2001 GB 0110564**

(71) Applicant: **CRP Print & Packaging LTD**
**Corby, Northamptonshire NN17 5JY (GB)**

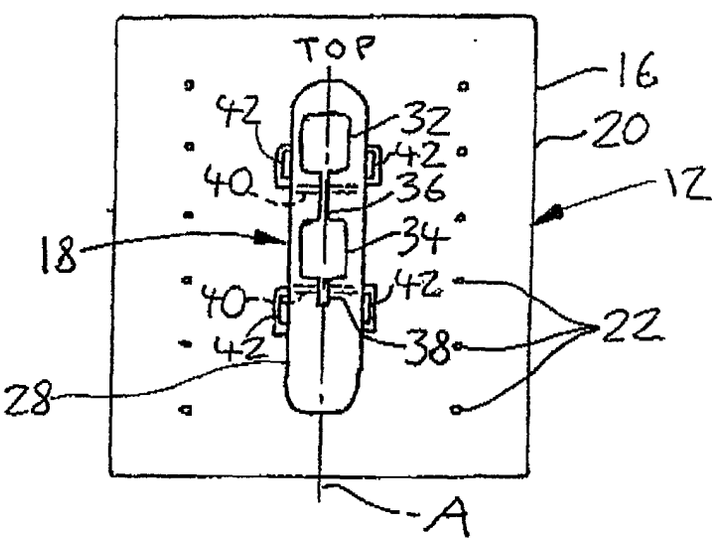
(72) Inventor: **Leevzli, Simon**
**Lichfield, Staffs WS13 6RU (GB)**

(74) Representative: **Croston, David et al**
**Withers & Rogers,**
**Goldings House,**
**2 Hays Lane**
**London SE1 2HW (GB)**

## (54) A connector

(57) A display stand connector comprises first and second parts (12,14). Each of the first part and second part comprises a planar element (20, 48). The planar elements are dimensioned so as to allow them to be sandwiched by closely lying plies of first and second members of a display stand. The planar element (20) of the first part (12) is arrangeable transversely to the planar element (48) of the second part (14) by slidable engagement. The first part comprises a raised portion (24) for locating through an opening in a ply of the first member. The first part (12) comprises engaging means to engage a ply of the first member of the display stand further to prevent planar movement of the planar element of the first part with respect to the first member of the display stand.

FIG 6




EP 1 240 851 A2

## Description

**[0001]** The present invention relates to a connector. The connector comprises two parts, and it is particularly, but not exclusively, intended that said two parts are locatable on two members of a display stand for connecting said two members together when said two parts are connected.

**[0002]** A known display stand connector will now be described with reference to figures 1 to 4 of the drawings, in which:

Figure 1 is an end view of a first part of the known display stand connector,

Figure 2 is a side view of the first part,

Figure 3 is front view of a second part of the known connector,

Figure 4 is a top view of the second part, and

Figure 5 is a perspective view showing two parts of a display device being assembled using the known connector.

**[0003]** Referring to figures 1 to 4, a known display stand connector comprises first and second parts 2, 3. The first part 2 comprises a sheet 4 and two walls 5,6 extending perpendicularly therefrom. One wall 6 extends along an edge of the sheet 4 and the other wall extends parallel to said one wall 6, spaced therefrom so as to define two channels C1, C2 therebetween, one on each side of the sheet 4. The walls 6 carry protrusions P1. The second part 3 comprises a base 7a and L-shaped walls 7b defining a slot 8 and a cavity 9 therebetween. Inner sides of the walls 7 carry protrusions P2.

**[0004]** Referring to figure 5, the known connector is used to connect a tray 100 and a wall 101 of a display device. Each of the tray 100 and the wall 101 comprises two plies of cardboard (shown on the wall 101 by reference numerals 102, 103). The sheet (shown by broken line 4) is sandwiched by the two plies of tray 100 with the walls 5, 6 protruding from an end of the layers. The base 7a is sandwiched by the two layers 102, 103 with walls 7b protruding from an aperture in the layer 102. The second part 3 is oriented so that the opening of the slot 8 is uppermost.

**[0005]** To connect the two parts 100, 101, the sheet 4 of the first part 2 is moved downwards to locate in the slot 8 of the second part 3, with the walls 5, 6 sandwiching the walls 7. The protrusions P1 of the first part 2 sandwich the protrusions P2 of the second part 3 to lock the parts together.

**[0006]** Various problems exist with the known connector. The sheet 4 and the base 7a rely on friction from the respective sandwiching layers of cardboard to prevent planar movement of the sheet and the base. As seen from figure 5, it is necessary to have a space roughly approximate to the length of the walls 5, 6 above the entrance to the slot 8 to facilitate entrance of the sheet 4 into the slot. However, reducing the length of the walls 5, 6 and slot 8 combination can increase skewing of the longitudinal axis of sheet 4 relative to the longitudinal axis of the slot 8.

**[0007]** An aim of the invention is to provide an improved display stand connector.

**[0008]** According to a first aspect of the invention there is provided a display stand connector comprising first and second parts, each of the first part and second part comprising a planar element, the planar elements being dimensioned so as to allow them to be sandwiched by closely lying plies of first and second members of a display stand, the planar element of the first part being arrangeable transversely to the planar element of the second part by slidable engagement, the first part comprising a raised portion for locating through an opening in a ply of the first member, wherein the first part comprises engaging means to engage a ply of the first member of the display stand further to prevent planar movement of the planar element of the first part with respect to the first member of the display stand.

**[0009]** The engaging means preferably comprises one, and most preferably a series of, formations, and, most preferably, protrusions. In the preferred embodiment, the protrusions are conical. The conical sections may be designed geometrically and with such material that they can puncture cardboard but not the skin of a person.

**[0010]** Preferably the first part bears indicia to facilitate correct insertion of the part into an assembly. The first part preferably comprises one or more tabs spaced from the generally thin planar element to capture a part of a display device.

**[0011]** Preferably, the second part also comprises engaging means such as formations to prevent planar movement of the planar element of the second part with respect to plies of a display stand. Most preferably the engaging means is lockable. In that way, accidental release of a ply of a display stand is obviated. In the preferred embodiment, the lockable engaging means comprises two spaced abutment surfaces designed to closely fit a ply of material.

**[0012]** According to a second aspect of the invention there is provided a display stand connector comprising first and second parts, each of the first part and second part comprising a planar element dimensioned so as to allow it to be sandwiched by closely lying plies of a display stand, the planar element of the first part being arrangeable transversely to the planar element of the second part by slidable engagement, wherein one of the first part and second part comprises closable engaging means to prevent movement of a ply from the closable engaging means.

**[0013]** Both first and second parts may comprise closable engaging means. However, in the embodiment de-

scribed only the second part does.

**[0014]** According to a third aspect of the invention there is provided a connector comprising first and second separate parts, connectable to, respectively, first and second members, the first part being arrangeable transversely to the second part by slidable engagement, to connect first and second members to form a structure, wherein the first part comprises engaging means to prevent planar movement of a first member relative to the engaging means and the second part comprises closable engaging means to prevent planar movement of the second member relative to the closable engaging means.

**[0015]** The closable engaging means may be lockable. The closable engaging means may comprise a wall bearing one or more closeable formations. In one preferred embodiment, the closable engaging means preferably comprises pivotable walls, each wall bearing a part of the closable engaging means. The closable engaging means preferably comprises resilient snap-closing means.

**[0016]** Preferably the first part has a recess arrangement or protrusion arrangement and the second part has the other of a recess arrangement or protrusion arrangement designed to co-operate to lock the first part on the second part once it has been slid ably engaged thereon.

**[0017]** The known connector has an opening to the slot at an uppermost end.

**[0018]** That means the slot must be approached from above. This arrangement requires a certain operator working space. An aim of the invention to provide a display stand connector which requires a reduced operator working space.

**[0019]** According to a fourth aspect of the invention there is provided a display stand connector comprising first and second parts, each of the first part and second part comprising a planar element dimensioned so as to allow it to be sandwiched by closely lying plies of a display stand, the planar element of the first part being arrangeable transversely to the planar element of the second part by slidable engagement means, the slidable engagement means of the display stand connector comprising an aperture in one of the first part or the second part which is arranged to receive a lug on the other part so as to effect the slidable engagement, wherein the aperture is formed in the face of said one part and the lug is inserted, on assembly, through the aperture in the face of said one part.

**[0020]** That contrasts with the prior connector in which the aperture is at the end of the raised portion and which consequently requires a clearance of approximately twice the shelf height to assemble the stand. In the arrangement set out in the above aspect the two parts are connected together by inserting the lug through the aperture in the face of one part so as to effect sliding engagement. Because the parts are connected together in that way, there is no need for said one part to protrude out of the wall of the stand. Consequently, the connector is hidden when assembled together. Prior connectors of the type described in FIG. 1 are visible and can ruin the aesthetic effect of the stand on assembly.

**[0021]** Preferably, said one part comprises a raised portion and the aperture is formed in the face of the raised portion.

**[0022]** Preferably, the raised portion is raised from the planar element of the first part by approximately the thickness of one ply of material from which the stand is made. In that way, the connector in accordance with the invention is better hidden after assembly as the face of the raised portion will be substantially flush with the face of the wall of the stand.

**[0023]** Preferably display stand connector comprises two spaced lug and aperture arrangements.

**[0024]** The walls 7b of the known connector can easily dislodge themselves from the aperture in the layer 102 of the wall 101. Preferably, the connector of the invention comprises retaining means to retain a member such as a ply thereon.

**[0025]** According to a fifth aspect of the invention there is provided a display stand connector comprising first and second parts, each of the first part and second part comprising a planar element dimensioned so as to allow it to be sandwiched by closely lying plies of a display stand, the planar element of the first part being arrangeable transversely to the planar element of the second part by slidable engagement, the display stand connector also comprising a raised portion designed to protrude through a ply of a display stand, wherein the first part comprises one or more locking abutment on the raised portion spaced from the planar element to retain a ply between the planar element and the or each locking abutment.

**[0026]** The locking abutments preferably comprise guide means such as a tapered leading edge to guide the first part through an aperture in a ply.

**[0027]** A display stand connector in accordance with the invention will now be described by example and with reference to the remaining accompanying drawings, in which,

Figure 6 is a side view of a first part of a display stand connector in accordance with aforesaid five aspects of the invention,

Figure 7 is an end view of the first part,

Figure 8 is a side view of a second part of the display stand connector, and

Figure 9 is an end view of the second part.

**[0028]** Referring to Figures 6 to 9, the display stand connector 10 comprises a first part 12 and a second part 14. The parts 12, 14 are made of resilient semi-rigid material such as plastics material.

**[0029]** Referring to Figures 1 and 2, the first part 12 comprises a body 16 and a connector part 18.

**[0030]** The body 16 is in the form of a sheet 20. The sheet 20 has engaging means which takes the form of two rows of protrusions 22 (only some of which are referenced for clarity) which protrude from one face of the sheet 20. The protrusions 22 are conical (see figure 7).

**[0031]** The connector part 18 comprises a blister portion 24 having a front face 26 supported by an outer peripheral wall 28. The raised portion 24 defines a cavity 30. The front face 26 has first and second apertures 32, 34 and, respective, first and second channels 36, 38 coextensive with the respective apertures 32, 34. The channels 36, 38 share the same longitudinal axis A. Recesses 40 are formed on the inside of the front face 26 in the vicinity of the channels 36, 38.

**[0032]** The front face 26 also comprises a plurality of retaining flaps 42. Each retaining flap 42 has a tapered leading edge 44 to allow for easy insertion through an aperture in another material. Furthermore, each retaining flap 42 has a trailing edge 46 which is parallel to the sheet 20.

**[0033]** The second part 14 comprises a body 48, in the form of a sheet. The body 48 comprises first, second and third portions 54, 56, 58. The first and second portions 54, 56 are hinged at hinges 60, 62 to the third portion 58. The hinges 60, 62 are parallel. The hinges 60, 62 are easily manufactured, live hinges.

**[0034]** The first portion 54 comprises a projection arrangement 64 which extends from a surface 65 of the body 48. The projection arrangement 64 comprises two arcuate projections 66, 68 which, if extended, would form part of the same circle. Each projection 66, 68 comprises a tapered leading edge 70 (only one of which is referenced for clarity) and a trailing abutment edge 72 (only one of which is referenced for clarity).

**[0035]** The second portion 56 comprises a spacer wall 74 which extends from a first surface 75 of the body 48. The spacer wall 74 defines a circular aperture 76 which communicates with a second surface 77 of the sheet 52. An end 78 of the spacer wall 74 is parallel to the surface 75. Distanced from the end 78, at a distance approximately equal to the distance between the surface 65 and the trailing abutment edge 72, is an annular shoulder 80. The distance between the annular shoulder 80 and the second surface 77 is approximately equal to the distance between the foremost part of the leading edge 70 and the trailing abutment edge 72.

**[0036]** The third portion 58 comprises a connector part 82. The connector part 82 comprises a wall 83 which extends perpendicular to a surface 84, the surface 84 being on an opposite side of the body 48 to the projection arrangement 64 and spacer wall 74. The wall comprises two spaced T-sectioned lugs 86, 88. Each lug 86, 88 comprises a protrusion arrangement 90 on a side facing the surface 84.

**[0037]** The first and second parts 12,14 of the connector 10 are used to connect first and second parts of a display device.

**[0038]** A particular display device comprises a first member (herein, a wall) consisting of two cardboard plies and a second member (herein, a shelf) consisting of three cardboard plies.

**[0039]** On assembly, the sheet 20 of the first part 12 is sandwiched by the two cardboard plies of the wall. An opening exists in one of the plies to allow the raised portion 24 to protrude therethrough so that the apertures 32, 34 can be accessed. The raised portion 24 is inserted, tapered leading edge 44 foremost, through the opening. The tapered leading edge 44 helps to facilitate insertion. The trailing edges 46 of the retaining flaps 42 act with the sheet 20 to hold the first part 12 in place relative to the plies of the wall. Furthermore, the protrusions 26 locate in the plies of the cardboard wall to stop planar movement of the cardboard wall relative to the sheet 20. This stops the opening taking all of the stress of movement of the wall relative to the shelf which can cause an increase in size of the opening.

**[0040]** The shelf of the display device comprises three side-to-side cardboard plies. The central ply is fixed to one or both of the outer plies. The first and second portions 54, 56 are pivoted at hinges 60, 62 for the projection arrangement 64 to move towards the spacer wall 74. The central (first) ply has an aperture and is located between the first and second portions 54, 56. The first and second portions 54, 56 are then further pivoted, the projections 66, 68 snap into the circular aperture 76 so that the trailing abutment edge 72 comes to rest against the annular shoulder 80. At the same point, the end 78 of the spacer wall 74 comes in to contact with the surface 65 of the sheet 52. The outer (second and third) plies are arranged around the closed first and second portions 54, 56. Such an arrangement prevents movement of the shelf outwardly of the second cardboard part. The second part 14 is arranged so that the connector part 82 extends from an end of the shelf.

**[0041]** The T-sectioned lugs 86, 88 can then be inserted into the first and second apertures 32, 34. The lugs are moved along longitudinal axis A to locate the wall 83 in the channels 36, 38. The distance between the protrusion arrangement 90 and the surface 84 is approximately the same as the thickness of the wall. Therefore, the protrusion arrangement 90 on each lug initially mildly resists movement of the lugs 86, 88 along the channels 36, 38. Upon application of a certain force the protrusion arrangements 90 slide over the cavity side of the wall 28 and snap lock in the recesses 40.

**[0042]** It will be appreciated that this arrangement holds the first and second parts 12, 14 of the connector, and therefore the first and second parts of the display device, together.

**[0043]** Other aspects of the invention envisaged may comprise a combination of any one or more of the preceding aspects of the invention and consistory clauses.

**[0044]** It will be appreciated that the display stand connector 10 is advantageous over the known display

stand connector in several respects. It has improved planar retention of the plies of the wall and shelf with respect to, respectively, the first part and second part. The lugs 86, 88 of the first part are introduced to the apertures 32, 34 on a front of the first part, thereby reducing the size of the necessary working space to fit the two parts together by sliding engagement. Retention of a ply of the wall of the display stand by tabs 42 is achieved to prevent the first part 12 working its way out of the opening in the ply.

**[0045]** It will also be appreciated that whilst the display stand connector 10 is put to use in the connection of two members of a display stand in the above described embodiment, it is envisaged the display stand connector 10 may be used as a "general" connector in multiple obvious uses which are not described above merely for the sake of brevity.

## Claims

1. A display stand connector comprising first and second parts, each of the first part and second part comprising a planar element, the planar elements being dimensioned so as to allow them to be sandwiched by closely lying plies of first and second members of a display stand, the planar element of the first part being arrangeable transversely to the planar element of the second part by slidable engagement, the first part comprising a raised portion for locating through an opening in a ply of the first member, wherein the first part comprises engaging means to engage a ply of the first member of the display stand further to prevent planar movement of the planar element of the first part with respect to the first member of the display stand.

2. A display stand connector according to claim 1, wherein the engaging means comprises a series of formations.

3. A display stand connector according to claim 1 or 2, wherein the engaging means comprises protrusions.

4. A display stand connector according to claim 3, wherein the protrusions are conical.

5. A display stand connector according to claim 4, wherein the conical sections are designed geometrically and with such material that they puncture cardboard but not the skin of a person.

6. A display stand connector according to any preceding claim, wherein the first part comprises one or more tabs spaced from the generally thin planar element to capture a part of a display device.

7. A display stand connector according to any preceding claim wherein the second part comprises engaging means such as formations to prevent planar movement of the planar element of the second part with respect to plies of the display stand.

8. A display stand connector according to claim 7, wherein the engaging means is lockable.

9. A display stand connector according to claim 8, wherein the lockable engaging means comprises two spaced abutment surfaces designed to fit closely around a ply of material.

10. A display stand connector comprising first and second parts, each of the first part and second part comprising a planar element dimensioned so as to allow it to be sandwiched by closely lying plies of a display stand, the planar element of the first part being arrangeable transversely to the planar element of the second part by slidable engagement, wherein one of the first part and second part comprises closable engaging means to prevent movement of a ply from the closable engaging means.

11. A display stand connector comprising first and second separate parts, connectable to, respectively, first and second members, the first part being arrangeable transversely to the second part by slidable engagement, to connect first and second members to form a structure, wherein the first part comprises engaging means to prevent planar movement of a first member relative to the engaging means and the second part comprises closable engaging means to prevent planar movement of the second member relative to the closable engaging means.

12. A display stand connector comprising first and second parts, each of the first part and second part comprising a planar element dimensioned so as to allow it to be sandwiched by closely lying plies of a display stand, the planar element of the first part being arrangeable transversely to the planar element of the second part by slidable engagement means, the slidable engagement means of the display stand connector comprising an aperture in one of the first part or the second part which is arranged to receive a lug on the other part so as to effect the slidable engagement, wherein the aperture is formed in the face of said one part and the lug is inserted, on assembly, through the aperture in the face of said one part.

13. A display stand connector according to claim 12, wherein said one part comprises a raised portion and the aperture is formed in the face of the raised portion.

**14.** A display stand connector according to claim 13, wherein the raised portion is raised from the planar element of the first part by approximately the thickness of one ply of material from which the stand is made.

**15.** A display stand connector according to claim 14, comprising first and second parts, each of the first part and second part comprising a planar element dimensioned so as to allow it to be sandwiched by closely lying plies of a display stand, the planar element of the first part being arrangeable transversely to the planar element of the second part by slidable engagement, the display stand connector also comprising a raised portion designed to protrude through a ply of a display stand, wherein the first part comprises one or more locking abutments on the raised portion spaced from the planar element to retain a ply between the planar element and the or each locking abutment.

**16.** A display stand connector according to claim 15, wherein the or each locking abutments comprises guide means such as a tapered leading edge to guide the first part through an aperture in a ply.

FIG 1

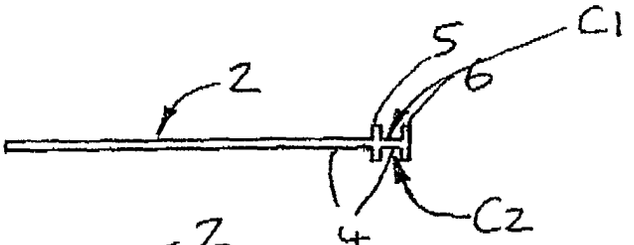



FIG 2

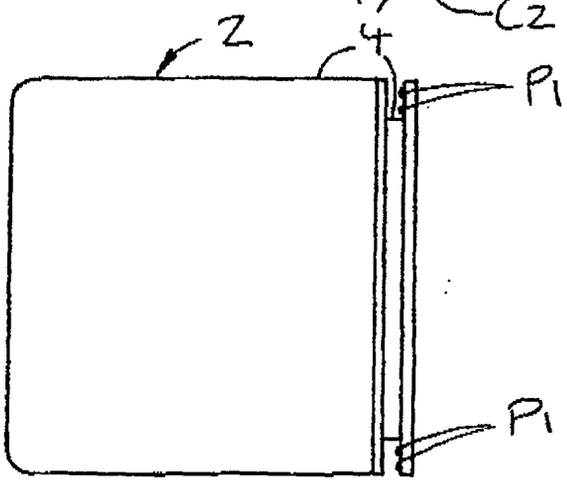



FIG 3

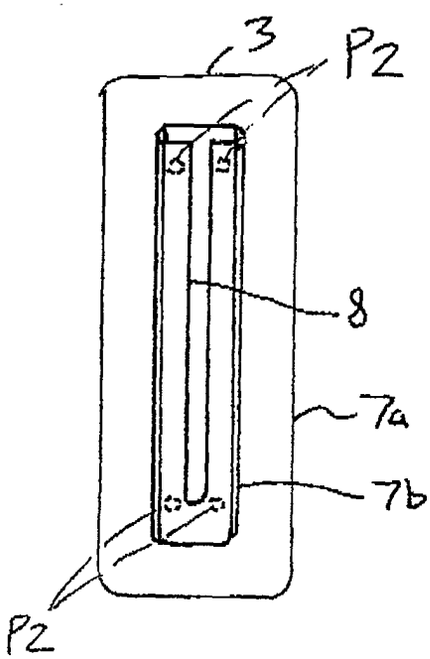
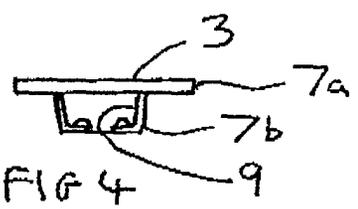



FIG 4



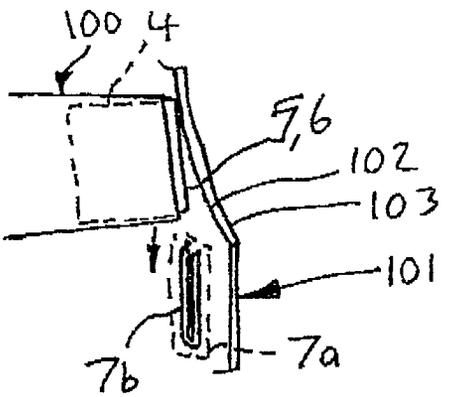



FIG 5

FIG 6

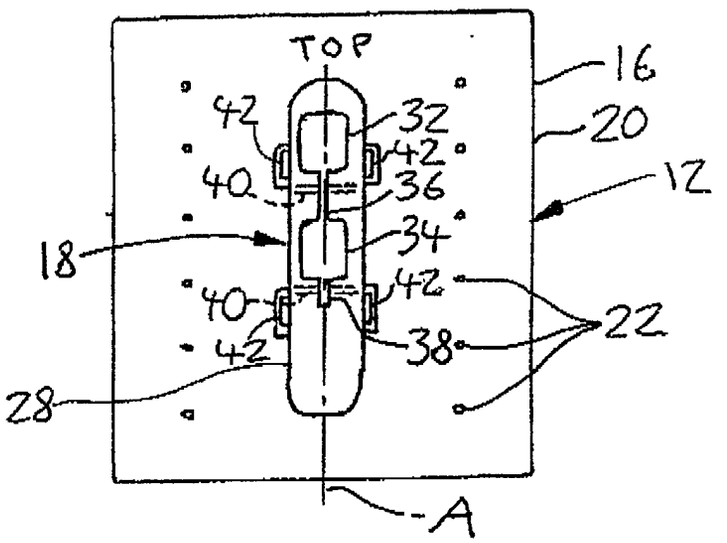
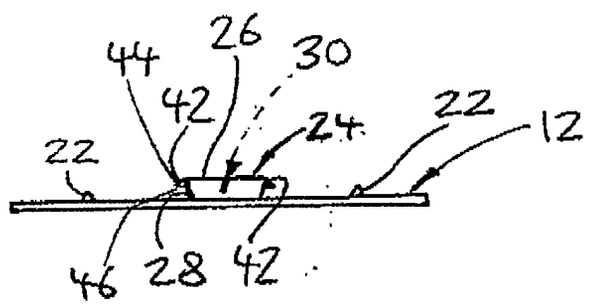

TOP
16
20
12
42
32
42
40
36
18
34
42
40
22
42
38
28
A

FIG 7


44
26
30
42
24
22
12
22
46
28
42

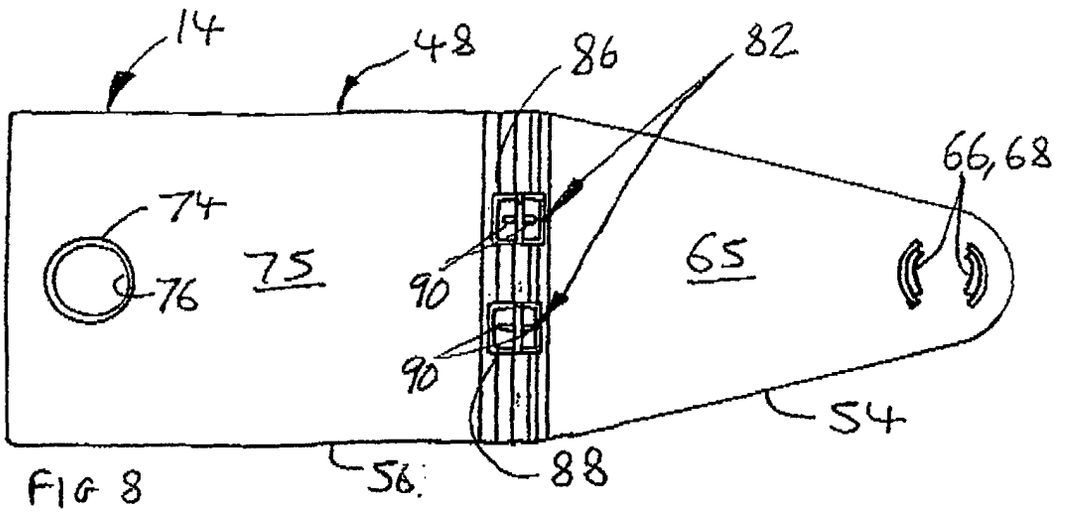

14
48
86
82
66, 68
74
75
76
90
65
90
54
56
88

FIG 8

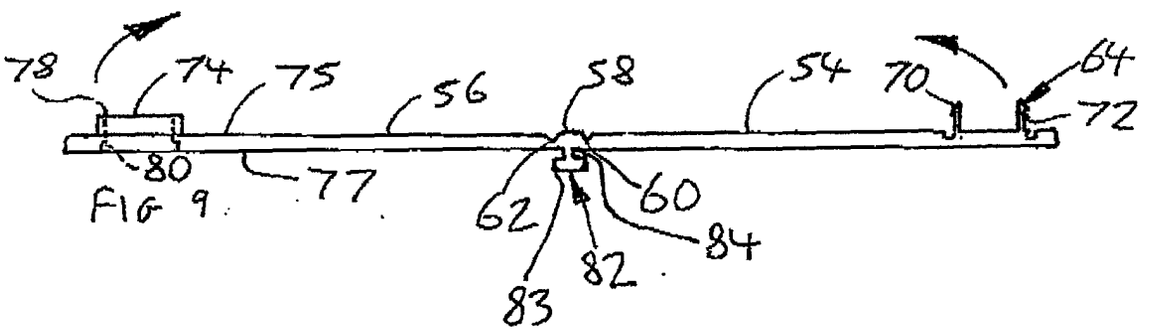

78
74
75
56
58
54
70
64
72
80
77
62
60
84
82
83

FIG 9