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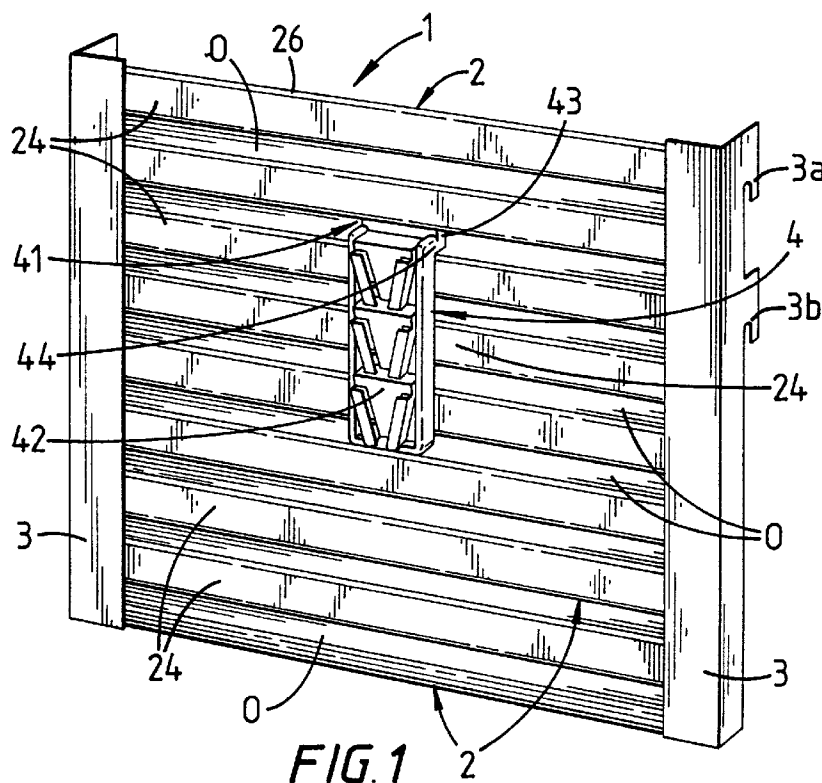
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### (54) Display panels

(57) A display panel 1 comprising a plurality of inter-engageable sections 2 is disclosed. Each of the sections is arranged to receive a bracket 4 or other means for displaying goods. The sections 2 are arranged to be inter-engageable by relative rotation. Once inter-engaged

the sections are substantially prevented from moving towards or away from each in a direction perpendicular to the longitudinal length of the sections. Each section is formed by rolling from a single piece of sheet material, increased thickness is provided in certain regions to improve strength.



**FIG. 1**

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## Description

This invention relates to display panels, in particular display panels for use in shops and supermarkets.

Display panels are used to support brackets and hangers shelves and fitments from which packets of products can be suspended, stacked or displayed and merchandised. Typically the packet containing the product is provided with a suitable hole which can be slid over the hanger. When purchasing an item, a customer removes the item by sliding it along the hanger and off the end and removes the items from the shelf or fitment in which it is displayed or stored.

Different sized display panels are required for different shops and products. It is therefore desirable that different sized display panels can be easily and cost effectively produced.

Even once a display panel has been installed, flexibility is desirable so that one panel can be adapted to display different types and sizes of goods at different times. It is advantageous if different numbers of hangers and/or other display means can be used with the display panel and if these can be provided in a large number of different positions.

It is also desirable if the number of possible display positions is maximised in both directions in the plane of the panel. This can be achieved in one direction by providing slots for engagement rather than holes and in the other direction by making the spacing between the slots as small as possible.

It is an object of the present invention to provide a display panel which can be produced easily in different sizes and which can be adapted to display a range of goods.

US patents 4,450,970 and 4,607,753 disclose slotted display panels which are made up of a plurality of elongate section which contact one another. The sections are held in position relative to each other indirectly by means of support structure. Without the support structure there is nothing to stop the adjacent sections collapsing towards one another.

GB Patent 1 352 008 (which is an equivalent of DE 2 138 627) discloses a display panel of an old fashioned type in which hanging means can only be located by being hooked over an upstanding lip. This has the disadvantage that the hanging means can easily become disengaged if it is accidentally knocked upwards and the further disadvantage that the openings in the panels are large to allow the hanging means to be introduced causing the spacing between each support position in the vertical direction to be large. There is disclosure of connecting adjacent sections by snapping or sliding appropriately shaped portions together. Sliding the sections together would be a difficult operation and providing a suitable design for snapping connection would increase expense and introduce weakness in the design.

According to one aspect of the present invention there is provided a display panel for supporting hanging

display means, which comprises two or more mutually inter-engageable elongate sections, each elongate section being arranged to accept and support hanging display means.

According to another aspect of the present invention there is provided a method of forming elongate sections for use in a display panel for supporting hanging display means which comprises two or more mutually inter-engageable elongate sections, each elongate section being arranged to accept and support hanging display means wherein the method comprises the step of forming each section from a single piece of material of a given thickness by rolling and bending the piece of material into an appropriate shape.

Preferably, the sections are arranged to be inter-engageable via relative rotation and further arranged so that inter-engaged sections are substantially prevented from moving linearly towards or away from one another in a direction perpendicular to the longitudinal length of the sections.

The prevention of movement is advantageous because it can lead to increased strength in the direction concerned, which typically will be vertical in use. Further, and perhaps more importantly, once the sections have been inter-engaged, the segment can be easily moved as a whole and assembly completed, for example by the addition of side brackets, without undesired relative movement between the sections occurring. This means that the sections can be accurately located for assembly without the need for a jig or other guide. At the same time being able to rotate the sections into inter-engagement provides for quick and easy inter-engagement as part of the manufacturing process.

The sections can be arranged such that once a number of sections have been interengaged, the overall length of the segment in the direction substantially perpendicular to the longitudinal length of each section can be adjusted by compressing and/or stretching the segment. This is facilitated by the use of relatively thin and malleable material to form the sections. Sections formed by rolling a single piece of steel are particularly suitable. Such adjustment is likely to be difficult or impossible with sections produced in other ways, for example by extruding aluminium.

The amount of adjustment possible is typically relatively small but allows a single size of section to be used to accurately produce panels of a large number of desired lengths. For example a twenty section segment might have a nominal length of 500 mm and compression might allow this to be adjusted to 495 mm and stretching to 505 mm. Such changes will only be produced when desired, and do not impair the strength of the structure. Once the segment has been given the desired length the assembly can be completed by, for example, the addition of side brackets.

The direction in which movement is substantially prevented can be in a plane parallel to a face formed by the inter-engaged sections.

Preferably the display panel comprises a plurality of openings each of which is arranged to allow the introduction of a distal portion of a hanging means, each opening having an associated seating portion on which an inserted hanging means can rest and an associated abutment portion, spaced from and depending towards the seating portion, behind which a distal portion of an inserted hanging means can be located to prevent forward movement of the distal portion.

Preferably each section comprises engaging means for engaging with another section. Each section can comprise a lip portion with which the engaging means of another section can engage.

Each section can be arranged to have a generally box section shape but with an opening in one face. The opening can be arranged to allow the introduction of hanging means and/or an engaging member of an adjacent elongate section. The box section be of generally parallelogram shaped cross-section.

Each section can be formed from a single piece of material of a given thickness which is cold rolled and bent into shape.

Each section can be shaped so that there is greater thickness of material in the region of the opening than in other areas. This can improve strength and facilitate the inter-engagement of adjacent sections. Preferably this greater thickness is provided by a crush fold which is such that the material is folded back on itself and two thicknesses of material contact with one another in the region of the fold. Alternatively the fold may be an open fold where the two thicknesses of material in the region of the fold do not contact one another.

Each section can comprise a hook shaped portion which is shaped and dimensioned so as to be engageable with a lip portion of an adjacent section.

Each section can be arranged so that a first side wall of the box section, adjacent to the engaging means, is disposed at an obtuse angle relative to the face of the box section including the opening. The first side wall can be angled towards the free edge of the engaging means. A second side wall of the box section, adjacent to the lip portion, can be parallel to the first side wall. In an alternative arrangement the first and second side walls can extend generally at right angles to the face of the box section so that the box section is generally rectangular.

The side walls, engaging means and lip portions of each section can be arranged and dimensioned so that two sections can be inter-engaged by locating the lip portion of one section in an entrance to the engaging means of another section and then rotating one section relative to the other section. Preferably once the two sections are inter-engaged, the outside surface of a side wall of one section abuts with outside surface of a side wall of the other section.

Each section can have front wall portions which are adjacent to the opening. The front wall portions can comprise the engaging means and lip portion. The front

wall portions of a given section can be parallel to one another. A back wall of each section, opposite the respective opening, can be parallel to the front wall portions.

5 Preferably a first of the front wall portions is spaced substantially one thickness of material further from the back wall than is a second of the front wall portions. When two sections are inter-engaged, the first front wall portion of one section can overlay the second front wall portion of the other section.

10 Preferably, when two or more sections are inter-engaged, the first front wall portions of all the joined sections are disposed in substantially the same plane. Similarly, when two or more sections are inter-engaged, the back walls of all the joined sections are preferably disposed in substantially the same plane. This can be facilitated if the first and second front wall portions are not in the same plane.

Any number of sections can be inter-engaged to form a display panel. The display panel can comprise side rails to which all or a selected number of the sections can be fixed. The side rails can be shaped as brackets or be provided with brackets so that the display panel can be supported by another structure. The size of the display panel can be fine tuned in the way described above. This can be important where display panels are to be used with a number of different types of support structure. Each type of support structure is likely to need panels of different dimensions.

30 The display panel will normally be orientated in use so that the sections run horizontally and so that the front face of the display panel is substantially vertical. The sections can be slidably inter-engagable.

Each section can be arranged to accept and support a hanging member by a hanging fit. The hanging member can be located by introducing a step shaped portion into a particular section through the respective opening. When the hanging member is positioned so as to be supported by a single section, a first part of the hanging member abuts with an outside surface of that section, a second part of the hanging member rests on an edge of that section which edge is adjacent to the opening and a part of the step shaped portion abuts with an internal surface of one of the walls of that section.

40 The hanging member can be arranged so that forward movement of the step portion is inhibited by the abutment between said part of the step portion and said internal surface. The section and hanging member can be arranged so that a surface of the step shaped portion abuts with an internal surface of the wall of the section opposite the opening.

55 The sections and hanging member can be arranged so that the hanging member can be located and supported once a number of sections have been inter-engaged to form a display panel. The hanging member is then supported in the same way except that the first part of the hanging member may then abut with overlaying front wall portions of one or more engaged sections. Fur-

ther, the second part of the hanging member may rest on part of a section adjacent to that section in which the step shaped portion is located.

The hanging member and sections can be arranged so that the hanging member must be rotated into position. Further the arrangement can be such that the hanging member cannot be disengaged from the section by movement of the hanging member parallel to the face of the inter-engaged sections.

The hanging member can comprise a projection which is arranged to be located in the opening of a different section from that section in which the step shaped portion is located. The hanging member can be arranged such that the interaction of the step portion and the projection with the inter-engaged sections enables the hanging member to be snapped into position and thereby resist removal.

The hanging member can comprise a bracket which can be arranged to support a hanger upon which products can be hung.

According to another aspect of the invention there is provided a display system comprising supporting structure and a number of display panels.

An embodiment of the present 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 display panel;  
Figure 2 is a cross-sectional view of one of the elongate sections making up the display panel shown in Figure 1;  
Figure 3 is a cross-sectional view showing two inter-engaged elongate sections;  
Figures 4 and 5 are cross-sectional views showing modifications of the arrangement of Figures 1 to 3;  
Figure 6 is a cross-sectional view of a display panel showing an alternative bracket; and  
Figure 7 is a perspective view of the display panel and alternative bracket shown in Figure 6.

Referring to Figure 1 a display panel 1 generally comprises a plurality of inter-engaged elongate sections 2 which are arranged horizontally and two side brackets 3 to which the elongate sections 2 are fixed. Each side bracket 3 comprises a generally U-shaped channel in which ends of the sections 2 are located. The two side brackets 3 comprise hook portions 3a, 3b which are arranged so that the display panel can be supported on a separate structure. The hook portions 3a, 3b are formed from the same piece of material of the U-shaped channel but are not bent around into the U-shape of the remainder of the channel. A bracket 4 is supported by the display panel 1.

Referring to Figure 2 each elongate section 2 is formed from a single sheet of material M which is cold rolled and bent into shape. Each section 2 is of uniform cross-section. The cross-section is generally parallelogram shaped.

Each elongate section 2 comprises a back wall 21, a first side wall 22 and a second side wall 23. First and second front wall portions 24 and 25 define an opening O in the remaining wall of the parallelogram.

An internal front wall 241 connects the first side wall 22 to the first front wall portion 24. An obtuse angle exists between the internal surface 22i of the first side wall 22 and the internal surface 241i of the internal front wall 241. The material M is bent back over itself between the internal front wall 241 and the first front wall portion 24 so that a double thickness is provided. This double thickness comprises the internal front wall 241 and part of the first front wall portion 24.

The first front wall portion 24 comprises a first portion 24a which forms part of the front wall of the parallelogram and an extended portion 24b which extends beyond the general shape of the parallelogram and is provided with the engaging means 26. The engaging means 26 comprise part of the extended portion 24b and a hook member 26a which is angled backwards towards the back wall 21 of the section 2. An internal acute angle exists between the hook member 26a and the extended portion 24b.

The second front wall portion 25 is connected directly to the second side wall 23 and there exists an acute angle between the internal surfaces 23i, 25i of the second side wall 23 and the second front wall portion 25. The bend between the second side wall 23 and the second front wall portion 25 has a greater radius than the other bends in the parallelogram. This radius is chosen so that adjacent lengths of section can be inter-engaged by rotation as described below.

In a region 25a where the second front wall portion 25 defines the edge of the opening O, the material M is bent over and under to provide a double thickness layer. This double thickness layer forms a lip 27. The shape and dimensions of the engaging means 26 and the lip 27 are chosen so that the lip 27 of one section 2 may be located and engaged with the engaging means 26 of another section 2.

The external surface 24e of the first front wall portion 24 is parallel to the external surface 25e of the second front wall portion 25. However, the external surfaces 24e and 25e are not disposed in the same plane. The external surface of the first front wall portion 24e is spaced approximately one material thickness T further from the back wall 21 than is the external surface of the second front wall portion 25e. The internal surface 25i of the second front wall portion 25 is both parallel to and in the same plane as the internal surface 241i of the internal front wall 241. This arrangement ensures that when a plurality of sections 2 are inter-engaged a composite front wall surface, formed of the first front wall portions 24 of each of the sections 2, lies in one plane and a composite back wall surface, formed from the back walls 21 of each section, also lies in one plane.

Figure 3 shows a first section 2a engaged with a second section 2b. To engage the first section 2a with

the second section 2b the lip 27 of the first section 2a is located in the mouth of the engaging means 26 of the second section 2b. Then the first section 2a can be rotated relative to the second section 2b into position. Once in position, the lip 27 of the first section 2a fits closely in the engaging means 26 of the second section 2b, the external surface of the second front wall portion 25e of the first section 2a abuts an internal surface 24i of the extended portion 24b of first front wall portion 24 of the second section 2b, and the external surfaces of the second side wall 23 of the first section 2a and the first side wall 22 of the second section 2b abut with one another.

Because of these interactions, the two sections 2a and 2b are firmly engaged with one another provided that relative sliding between the sections and relative rotation of the sections in at least one sense is prevented. With the particular view shown in Figure 3, the first section 2a must be rotated in a clockwise direction relative to the second section 2b in order to disengage the sections 2a, 2b and thus rotation in this direction must be prevented if it is desired to keep the sections engaged.

Provided that the sections are orientated as shown in Figure 3 with the engaging means 26 of each section 2 uppermost, gravity tends to resist rotation of the first section 2a in a clockwise direction.

A whole series of sections 2 can be inter-engaged in the same way as shown in Figure 3 to provide a display panel 1 as shown in Figure 1. Relative sliding and rotation of the sections 2 is prevented by the location of the sections 2 in the U-shaped channel and by welding some or all of the sections 2 to the side brackets 3.

Once the sections 2 have been inter-engaged and fixed to the side brackets 3 the resulting structure is extremely rigid especially taking into account the relative thinness of the material used for each section. This rigidity is due to the shape of each section and also the doubling, tripling and quadrupling of material thicknesses in the completed display panel 1.

In use, the display panel 1 is orientated so that the sections 2 are orientated as shown in Figure 3 with the engaging means 26 of each section uppermost. Further, the orientation is such that the front wall portions 24 and 25 and the back wall 21 of each section 2 are substantially vertical and the side walls 22 and 23 are inclined upwardly from the front of the section to the back of the section. This orientation helps to give the display panel strength, rigidity and stability.

A bracket 4 can be located in and supported by any one of the sections 2.

The bracket 4 comprises a step portion 41 and a depending portion 42. The step portion comprises a foot 43 and a leg 44. The foot 43 has an abutting edge 43a and an abutting surface 43b. The depending portion 42 has an abutting surface 42a and an internal corner 42b which is formed where the leg 44 meets the depending portion 42.

The bracket 4 is located in the display panel 1 by introducing the foot 43 into the opening of the desired section 2b and rotating the bracket 4 relative to the section 2b to finally position the bracket. When the bracket is in position the abutting edge 43a abuts with the internal surface of the first side wall 22 of the section 2b and the abutting surface 43b abuts with the internal surface of the back wall 22 of the section 2b. Further, the abutting surface 42a of the depending member 42 abuts with the first front wall portion 24 of the section 2 below the section 2b in which the leg 44 and foot 43 are inserted when such a section 2 is in position. If, as shown in figure 3, there is no section 2 below the section 2b in which the leg 44 and foot 43 are inserted then the abutting surface 42a abuts with the second front wall portion 25 of the section concerned 2b. Similarly the internal corner 42b rests on the outside of the engaging portion 26, of the section below 2, if a section 2 below is present or on the lip 27 of the section 2b in which the bracket 4 is inserted if, as shown in Figure 3, no section 2 below is present.

The bracket 4 is held in position by a hanging fit because the abutting surface 42a abuts with the external surfaces of the sections 2, the abutting edge 43a abuts with the internal surface of the first side wall 22 and the abutting surface 43b abuts with the back wall 21. Further, because the first side wall 22 is disposed at an acute angle relative to the back wall 21, movement of the foot 43 away from the back wall 21 is prevented. When the bracket 4 is loaded force is transmitted through the abutment points to the section 2. To remove the bracket 4 it must be rotated away from the sections 2 and any load on the bracket 4 will tend to prevent such rotation.

Any number of elongate sections 2 may be engaged together to form a display panel and similarly each of the elongate sections 2 may be of any suitable length. Typical dimensions of the display panel might be 1 to 1.5 metres along each side. The back wall of each section can be 24mm wide, the depth of each section can be 12mm. The internal angles of the parallelogram can be 60° and 120°. The internal angle of the engaging means can be 25°. The thickness of the material M can be 0.55mm. The configuration of each section and the use of rolling to form the sections allows the pitch of the resultant panel (ie the vertical spacing between each support position) to be small for example 25mm or less. Although panels can be produced with a larger pitch, for example 100mm, a preferable upper limit for the pitch is 60 mm, an upper limit of 35mm being more preferable still. A preferable lower limit for the pitch is 10mm, a lower limit of 15mm being more preferable still. A pitch of about 25mm is particularly preferred.

Any number of brackets may be provided in any or all of the sections 2. A hanger from which products can be hung can be supported by the bracket 4. The brackets may be used to support members other than hangers. Further, items other than brackets may be inserted

and supported by the display panel provided that those items have the correct configuration.

Figure 4 shows an alternative arrangement in which each section 2 is generally rectangular in cross section so that the side walls 22 and 23 extend generally at right angles to the back 21 and the front wall portions. In this case the foot of the bracket 4 is angled forwardly as shown in Figure 4 so as to contact the internal surface of the front wall portion 24A.

An angled foot 43 on the bracket 4 may also be employed in the case of the non-rectangular section as shown in Figure 5.

Figures 6 and 7 show an alternative bracket 5 located in the display panel 1. The alternative bracket 5 comprises a step portion 51 and a depending portion 52. The step portion 51 comprises a foot 53 and a leg 54 which are similar to those of the step portion 41 of the bracket 4 described above.

The depending portion 52 is different from that of the bracket 4 in that it comprises one slot 55 through the whole of the depending portion into which the end of a hanger H can be located and a projection 56 at an end remote from the step portion 51.

The alternative bracket 5 is located in and supported by the display panel 1 in much the same way as the bracket 4. Abutment between the foot 53 and the internal surface 241i of the internal front wall 241 prevents movement of the step portion 51 in the direction away from the back wall 21. However as the alternative bracket 5 is rotated into position the projection 56 snappingly locates into the opening O of a section 2 disposed below the section in which the step portion 51 is located. This means that the alternative bracket is held more firmly and can, at least to some extent, resist becoming disengaged due to an unintentional force which tends to rotate the alternative bracket 5 away from the panel 1.

Typically, in use a display system is used which comprises supporting structure and a plurality of display panels 1. Each of the display panels is mounted to the supporting structure via the side brackets 3. The supporting structure might be the existing support posts in, for example, a supermarket, which were previously used as part of a different display system. Different forms of side brackets can be produced to suit different existing support structure.

Typically, the existing support posts are slotted tubes. Pairs of slots are usually provided along the length of the posts. The slots are designed to receive suitable brackets for supporting display panels, shelves etc. The (vertical) spacing between adjacent pairs of slots in the posts found in one supermarket is typically different from the spacing of slots found in another supermarket. Some typical spacings, or slot pitches are 32mm, 35mm and 40mm. If a display system having a continuous slatwall is to be formed from a number of display panels supported one above another by existing support posts, the overall vertical length of each display panel should be a multiple of the slot pitch of the posts.

The bracket on each display panel will be located in the same position relative to the display panel as a whole. The brackets on each panel must be located into the slots of the support post. Therefore, if each panel does not have a length substantially equal to a multiple of the slot pitch, gaps will occur between adjacently supported panels.

A suitable length for 32mm pitch posts might be 416 mm and for a 35 mm pitch 420 mm. It will be appreciated that with the pitch of the sections themselves being of the order of 25 mm, a 416 mm panel and a 420 mm panel will be made up of the same number of sections. To maintain a continuous slatwall, whilst enabling the use of only one size of section, the precise length of the panels for use in a particular setting are adjusted by stretching or compressing the segments of interlocked sections during assembly before the side brackets/rails are added. This is facilitated by the formation of the sections from relatively thin steel and the interlocking configuration of the sections. Once the side brackets/rails are in place and the sections appropriately welded to them, the size of the panels is fixed.

When several display panels 1 are used in a display system, the engaging means 26 of the section at the top of each display panel is preferable flattened so that the first side wall 22 of the section 2 at the top of one display panel can abut directly with the second side wall 23 of the bottom section 2 of another display panel disposed above said one display panel in the display system. In this way no inter-engagement between the separate display panels is required by rotation.

Additional rigidity can be obtained by welding one or more strips to the back of the display panel at an angle (typically approximately 90°) to the longitudinal length of the sections. These strips can be L-shaped.

## Claims

1. A display panel for supporting hanging display means, which comprises two or more mutually inter-engageable elongate sections, each elongate section being arranged to accept and support hanging display means characterised in that the sections are arranged to be inter-engageable via relative rotation and further arranged so that inter-engaged sections are substantially prevented from moving linearly towards or away from one another in a direction perpendicular to the longitudinal length of the sections.
2. A display panel according to claim 1 in which said direction is in a plane parallel to a face formed by the interengaged sections.
3. A display panel according to claim 1 or claim 2 in which each section has a generally box section shape but with an opening in one face which is ar-

ranged to allow the introduction of hanging means.

4. A display panel according to claim 3 in which each section is arranged so that a first side wall of the box section is disposed at an obtuse angle relative to the face of the box section including the opening and a second side wall of the box section is parallel to the first side wall.

5. A display panel according to any preceding claim in which the sections are arranged so that when two sections are inter-engaged the outside surface of a side wall of one section abuts with the outside surface of a side wall of the other section.

6. A display panel according to any preceding claim in which each section is formed from a single piece of material of a given thickness which has been rolled and bent into shape.

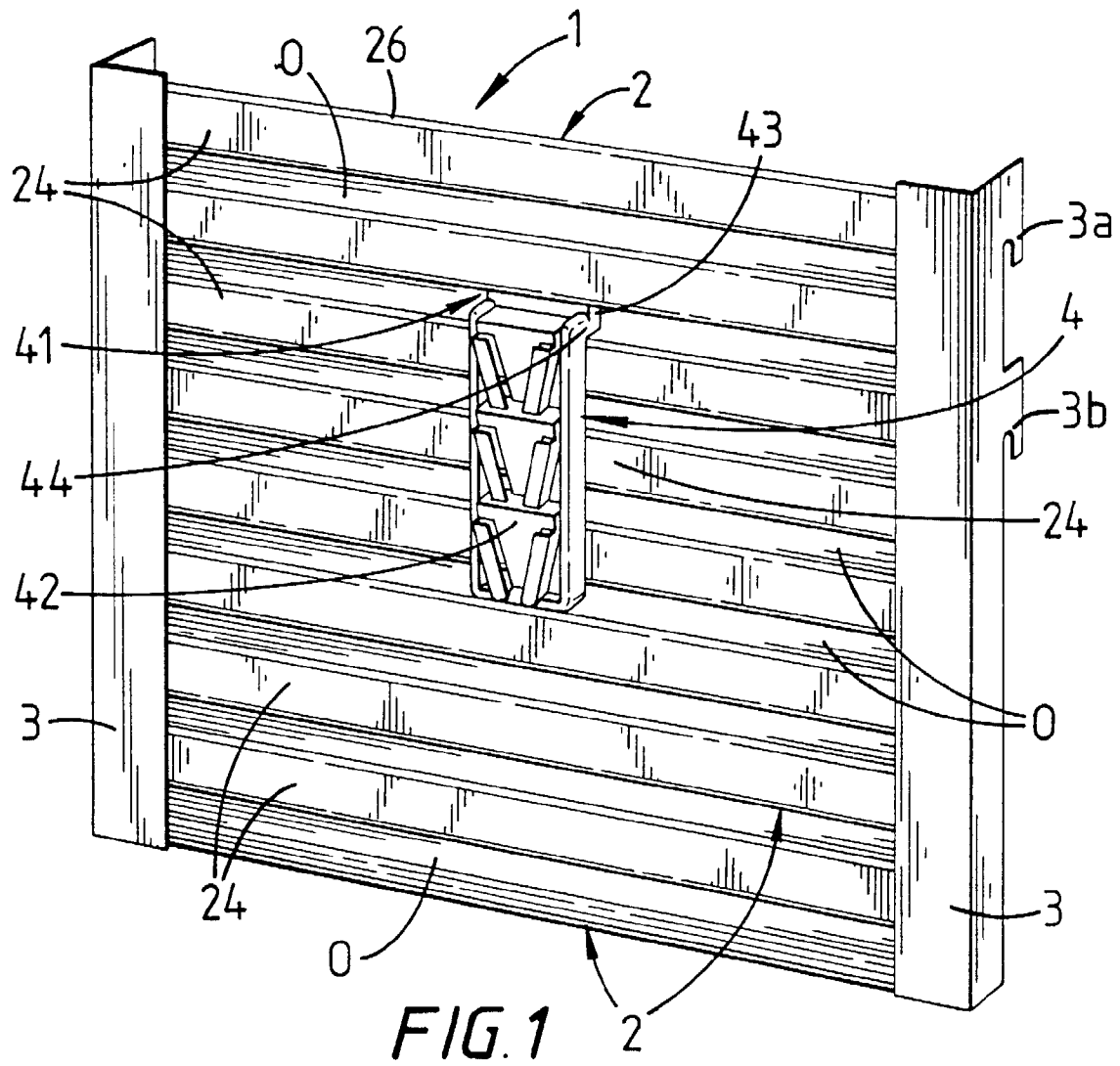
7. A display panel according to any preceding claim which comprises a plurality of openings each of which is arranged to allow the introduction of a distal portion of hanging means, each opening having an associated seating portion on which an inserted hanging means can rest and an associated abutment portion, spaced from and depending towards the seating portion, behind which a distal portion of an inserted hanging means can be located to prevent forward movement of the distal portion.

8. A display panel for supporting hanging display means, which comprises a plurality of openings each of which is arranged to allow the introduction of a distal portion of hanging means, each opening having an associated seating portion on which an inserted hanging means can rest and an associated abutment portion, spaced from and depending towards the seating portion, behind which a distal portion of an inserted hanging means can be located to prevent forward movement of the distal portion, the display panel further comprising two or more mutually inter-engageable elongate sections, each elongate section being arranged to accept and support hanging display means, characterised in that the sections are arranged so that inter-engaged sections are substantially prevented from moving linearly towards or away from one another in a direction perpendicular to the longitudinal length of the sections.

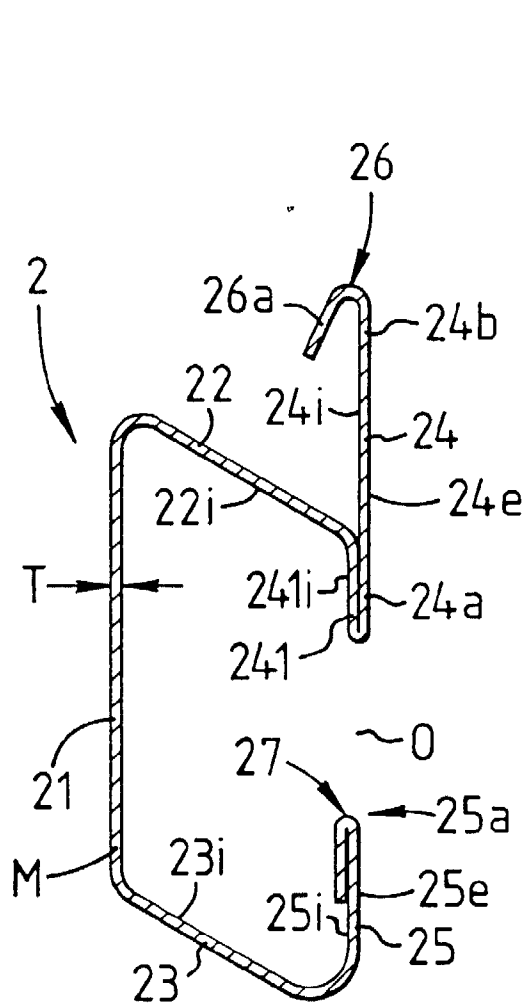
9. A method of forming elongate sections for use in a display panel for supporting hanging display means which comprises two or more mutually inter-engageable elongate sections, each elongate section being arranged to accept and support hanging display means, the method being characterised by comprising the step of forming each section from a

single piece of material of a given thickness by rolling and bending the piece of material into an appropriate shape.

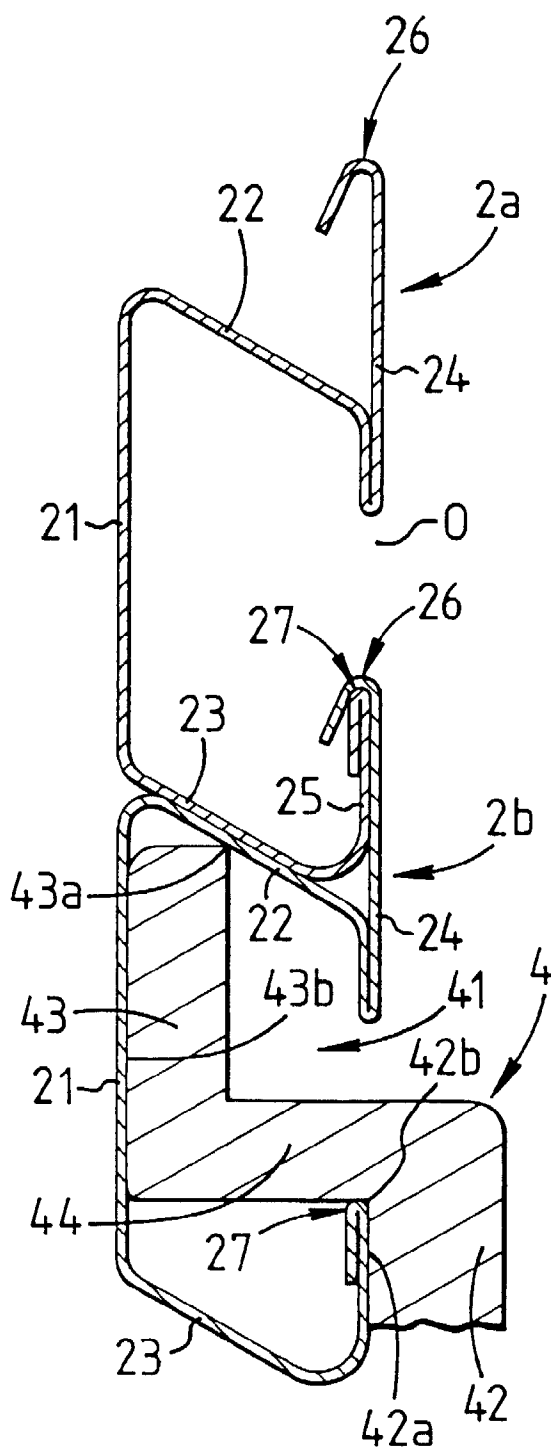
10. A display system comprising supporting structure and a plurality of display panels according to any preceding claim.







**FIG. 2**



**FIG. 3**

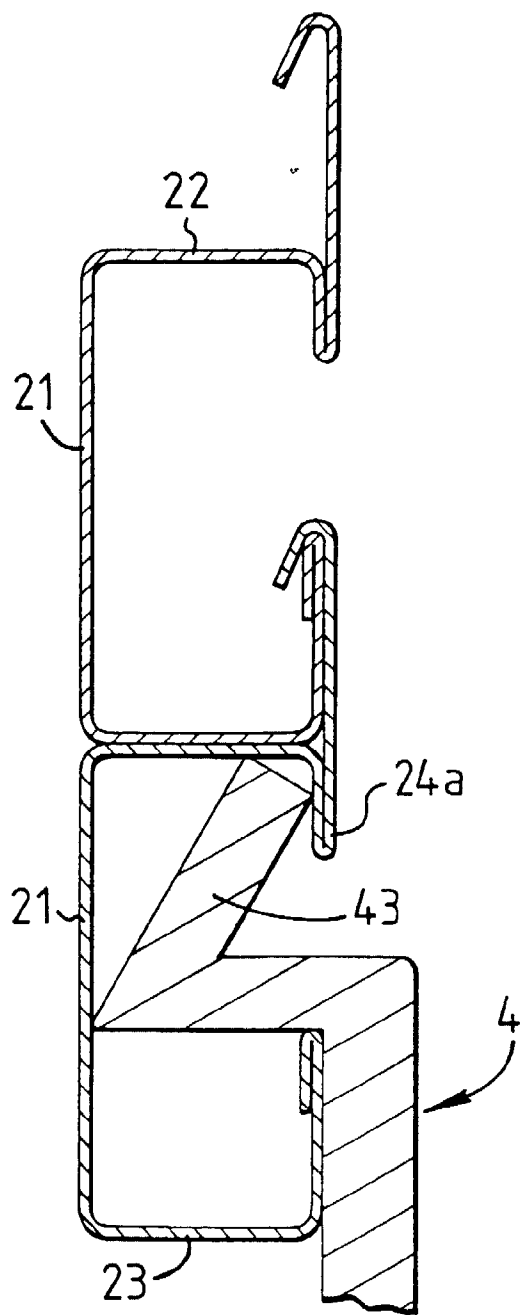


FIG. 4

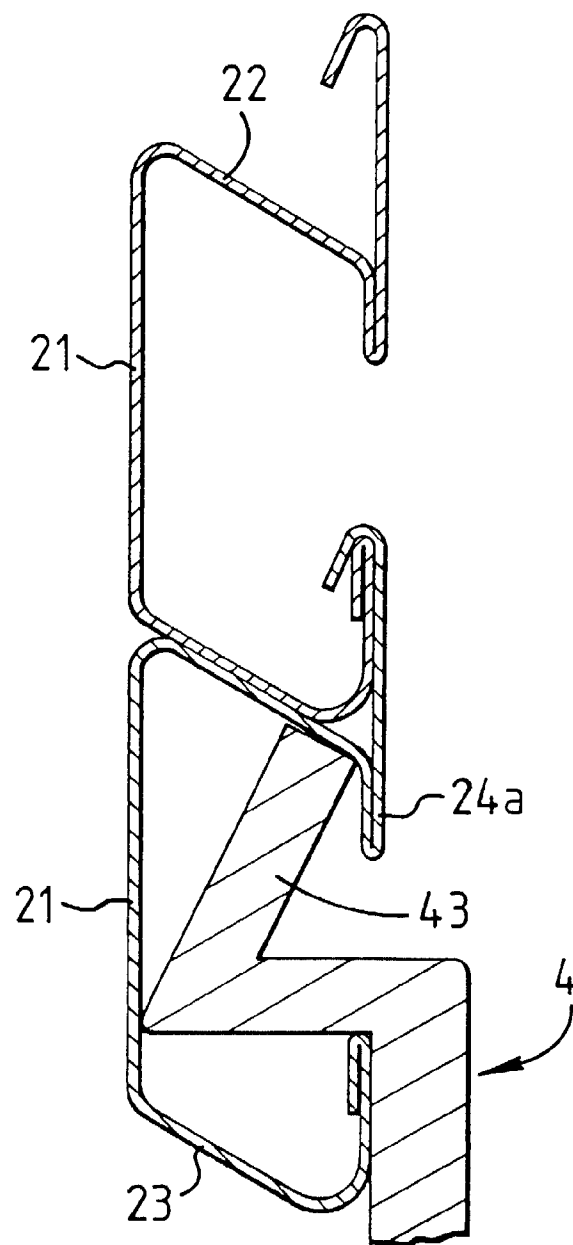


FIG. 5

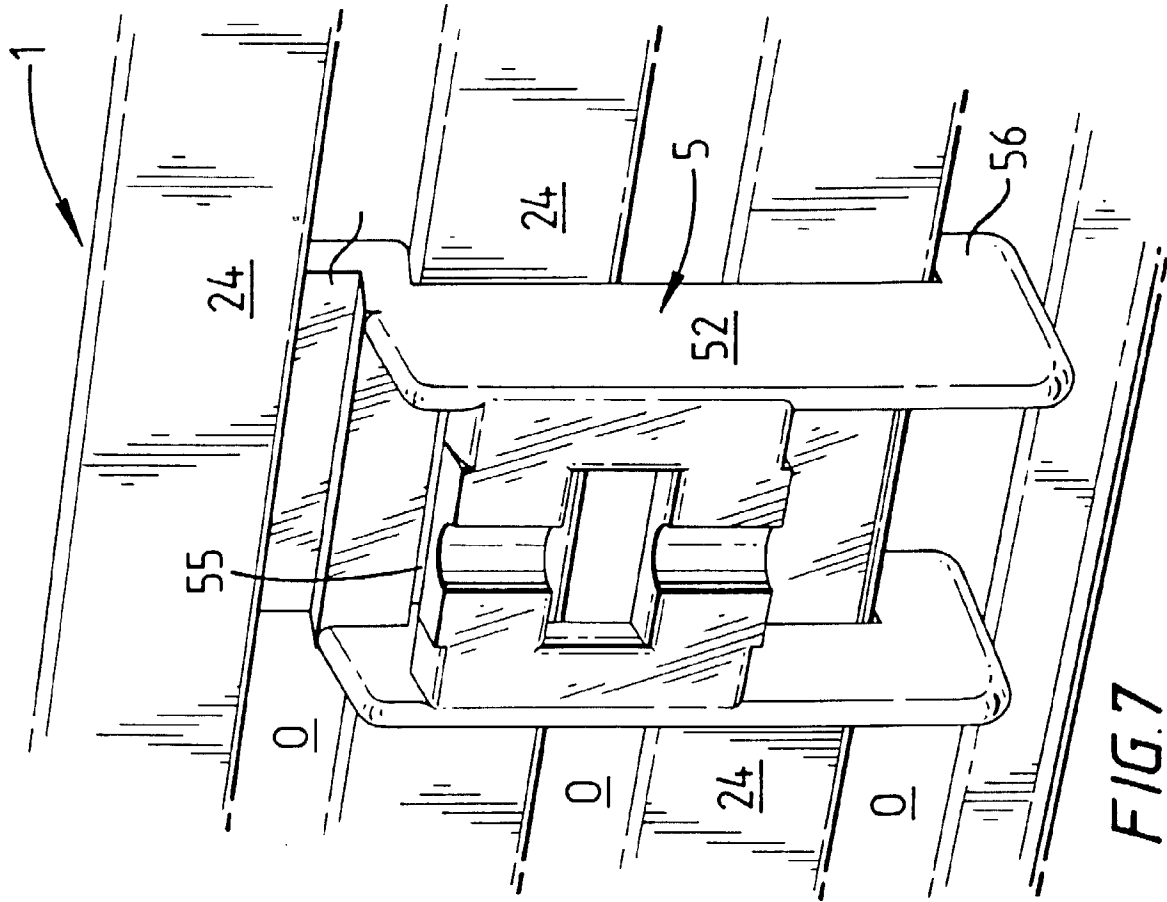


FIG. 7

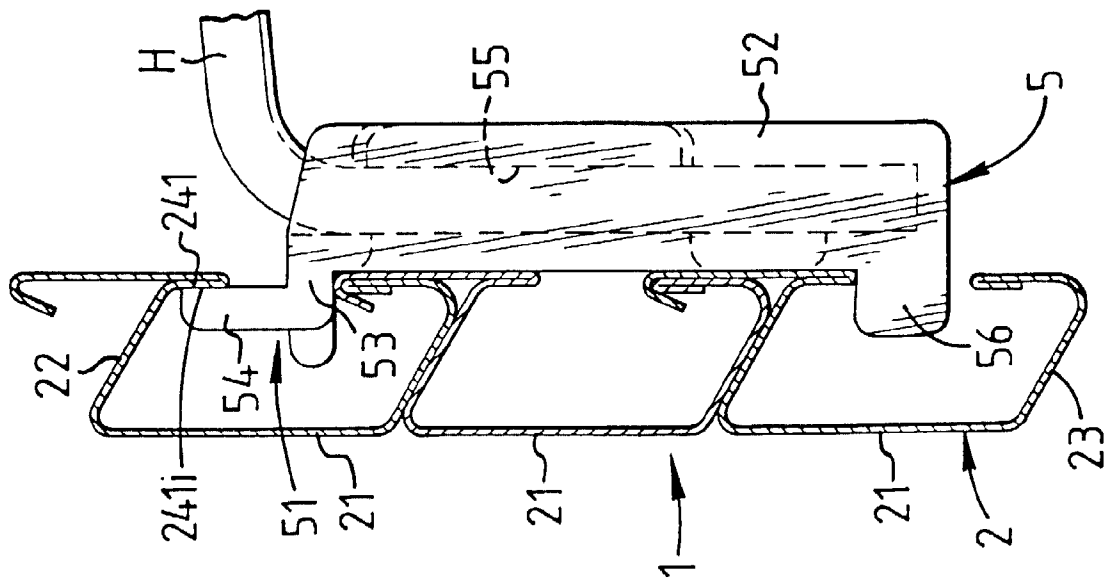


FIG. 6



European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 98 30 4514

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)
Y A	DE 39 29 252 A (EBERT) 7 March 1991 * the whole document *	1,2,5 7,8	A47F5/08
Y A	GB 2 123 277 A (DAIFUKU MACHINERY WORKS LTD.) 1 February 1984 * page 3, line 102 - page 4, line 15; figures 17,18 *	1,2,5 6-9	
D,A	DE 21 38 627 A (WEBER) 10 February 1972 * page 5, line 20 - page 9, line 9; figures *	1,3,6,9	
D,A	US 4 607 753 A (RADEK) 26 August 1986 * figures *	1,3,4,6	
D,A	US 4 450 970 A (SHEPERD) 29 May 1984 * column 1, line 60 - line 65; figures *	1,3,6	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A47F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 7 October 1998	Examiner Pineau, A
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			

EPO FORM 1503 03/82 (P04/C01)