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(54) **Improvements in and relating to a modular furniture system**

Verbesserungen eines modularen Möbelsystems

Améliorations d'un système modulaire de meubles

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EP 1 470 773 B1

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Description

[0001] The present invention relates to an improved furniture system. In particular, the furniture system may be used to produce items of furniture for use in an office environment or the like. Such furniture systems are required to permit of readily assembly and disassembly, while being of sturdy and robust construction when assembled during use.

[0002] However, due to these difficulties many so-called modular systems are no more than a collection of separate items of furniture that may permit of different arrangements when placed together. It is an object of the present invention to provide for a truly modular furniture system in which a number of different items of furniture may be constructed from similar or common parts.

[0003] DE 2 99 17 483U discloses a shelving unit comprising a plurality of panel members arranged to be secured together vertically or horizontally in which the ends of one panel member are adapted to be secured in an end piece.

[0004] US 3 513 606 A discloses a joint structure for enabling the construction of a structural framework in various combinations within panels, including curved panels, to create, for example, furniture or display racks.

[0005] According to a first aspect of the present invention, a modular furniture system comprises a plurality of panel members, at least one panel member having a curvature, a plurality of end pieces adapted to be located between and secured to adjacent panel members, the end pieces and the at least one panel member forming a curved framework, the ends of each panel member being provided with a recessed channel within which one of the end pieces is received, and the or each end piece has at least one outwardly extending flange formed as a lug extending from the or each end piece characterised in that the channel comprises a first part and a second part, the first part adapted to receive a thickness of the end piece and a second part adapted to receive the at least one flange of the end piece, the end piece being hollow and of generally rectangular section.

[0006] This has as an advantage that the curvature enhances the overall strength of an item of furniture produced from the system.

[0007] Preferably a plurality of through bores extend from a one side of the panel member through to the second part of the channel.

[0008] Preferably each end piece is formed with a plurality of slots.

[0009] The furniture system preferably further comprises one or more fixing members to be fitted into the one or more of the plurality of slots and a furniture component securable to the one or more fixing members.

[0010] Conveniently the furniture component comprises one of the following:

- a shelf unit;
- a side shelf member;

- a desktop;
- a seat; or
- a seat back.

5 **[0011]** Preferably where more than one panel has a curvature, the curvature of each curved panel is the same.

[0012] The invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 shows in section adjacent panel members secured to an end piece according to a first embodiment of the present invention;

15 Figure 2 shows in section adjacent panel members partially secured to an end piece;

Figure 3 shows a side view of an end piece and a plurality of fixing means;

20 Figure 3a shows a side shelf member for attachment to the end piece of Figure 3;

Figure 4 shows a suitable fixing member;

25 Figure 5 shows a plan view of a fixing blade secured to a first and second panel members;

Figure 6 shows a side view of a fixing blade and desktop;

30 Figure 7 shows a side section of a shelf unit connected to a fixing blade;

Figure 8 shows a side view of a seat unit and seat back;

35 Figure 9 shows somewhat schematically in section a number of different arrangements illustrating possible combinations of the furniture system according to the present invention;

Figure 10 shows somewhat schematically in section a number of additional different arrangements illustrating possible combinations of the furniture system according to the present invention; and

40 Figure 11 shows somewhat schematically in section a number of further different arrangements illustrating possible combinations of the furniture system according to the present invention.

[0013] Referring first to Figure 1 there may be seen a furniture arrangement formed in accordance with a first embodiment of the present invention comprising adjacent first and second panel members 2,4 secured to an end piece 6. Each of the first and second panel members 2,4 can be seen to possess a curvature. On each side of the first and second panel members 2,4 a furniture component 8 is secured to the end piece 6 by a fixing member 10. The end piece 6 is provided with first and second outwardly extending flange members 12. Each of the first and second panel members 2,4 is secured to a respective outwardly extending flange member 12 by secondary fixings 14.

[0014] Each of the panel members 2,4 may be formed from any suitable material. In a preferred embodiment each panel member 2,4 comprises one or more sheets

of laminated plywood 28. Preferably, each panel member has a span of a metre. The laminated plywood 28 may additionally be provided with a surface covering 30. Each panel member 2,4 and associated end piece 6 is of a suitable height for the furniture arrangement to be constructed. In addition to the inherent strength of the material forming the panel member, the curvature increases the strength of the panel member and the furniture arrangement produced using such a panel member.

[0015] Each end of the respective first and second panel members 2,4 is provided with a channel 16. The channel 16 comprises a first part 18 and a second part 20, the first part 18 adapted to receive a thickness of the end piece 6 and the second part 20 adapted to receive the at least one flange member 12 of the end piece 6. In the preferred embodiment, the channel 16 is formed as a routed rebated slot.

[0016] Openings 22 are provided in one side of each panel member between an outer face of the respective panel member 2,4 and the second part 20 of the recess 16. The secondary fixings 14, such as lug or grub screws, extend through and are retained within the openings 22 to secure the respective panel member 2,4 to the end piece 6. The secondary fixings 14 may then be used to secure a furniture component 8 to create a furniture arrangement formed in accordance with the present invention. The openings 22 may be provided with a taper or beveled edge to aid the introduction of the secondary fixings 14 into the openings 22.

[0017] As may be seen from Figure 2, each panel member 2,4 is first generally arranged in position in relation to the end piece 6. It will not always be possible precisely to align the panel member 2,4 to the end piece 6. However, the presence of a tapered recess 24 on a first surface of the flange member 12 ensures that when the secondary fixing 14 is tightened to the flange member 12 the panel member 2,4 is drawn into position against the end piece 6. When the respective panel members 2,4 are drawn into position only a shadow line between the respective panel members 2,4 is visible to a user of the furniture arrangement.

[0018] It will be understood that for an enhanced appearance the panel member at each end of a furniture arrangement may have a channel 16 only at one end. The other end of such a panel member will have a suitable finish, such as a rounded edge.

[0019] The construction of a suitable end piece 6 is shown more clearly in Figure 3. The end piece 6 is hollow and of generally rectangular section. The flange member 12 may take the form of a plurality of lugs 32 (in the embodiment illustrated two) rather than a single flange 12 to each side of the end piece 6. Normally disposed between the flange members 12 are a plurality of vertical slots 34 extending through a thickness of the end piece 6. The slots 34 are spaced at predetermined intervals on both a front and rear surface of each end piece 6. In a preferred embodiment, the end piece 6 is formed from a hollow steel section to which the plurality of lugs 32 have

been welded.

[0020] The slots 34 are adapted to be engaged by the fixing members 10. Figure 3a shows a furniture component 8 in the form of a side shelf member 40 having two fixing members 10 extending from a rear surface. The fixing members 10 are arranged on the side shelf member 40 at suitable intervals to fit into corresponding vertical slots 34. The side shelf member 40 has a plurality of parallel fixing points 41 to which the ends of a suitable member may be fixed to provide a shelf. By fixing a side shelf member 40 at each end of a panel member 2,4 a plurality of shelf elements (each having a rear surface of curvature matching that of the panel member against which the shelf element is adjacent) may then be secured between the side shelf members to form a shelf unit.

[0021] A suitable fixing member 10 is shown in Figure 4. The fixing member 10 comprises a front portion 36 and a rear portion 38. The front portion 36 comprises a plate having a depending hook 37 for insertion and retention within a suitable end piece slot 34. The rear portion 38 comprises a locking portion for securing to a furniture component 8. In the illustrated embodiment the locking portion comprises a serrated tongue for driving into a furniture component 8 to engage therein.

[0022] The fixing member 10 may be provided to a user as an integral part of the furniture component 8 (as in the case of the side shelf member 40 described above) or be formed separately for subsequent attachment to a furniture component 8 when inserted and retained within an end piece slot 34.

[0023] An example of attachment of a furniture component 8 such as a blade fixing 42 is shown in Figure 5. Blade fixings 42 are used to provide additional support for furniture components 8 such as desk tops 44 and the like. The blade fixing 42 is secured by one or more fixing members 10 to an end piece 6 between adjacent first and second panel members 2,4. A through bore may conveniently be formed by an internally threaded bushing 50 extending through both the blade fixing 42 and the fixing member 10, or alternatively solely through the blade fixing 42. A first end of respective first and second brackets 51,52 may then be bolted to each side of the blade fixing 42. Each of the first and second brackets 51,52 is substantially L-shaped, an end in use remote from the blade fixing 42 being conveniently secured to an adjacent panel member 2,4. Conveniently, the end of the bracket 51,52 adjacent the blade fixing 42 may be adapted to hang over a shaft of a bolt 53,54 extending into the threaded bore.

[0024] Figure 6 shows a desktop 44 to blade fixing 42 detail in which it can be seen that following attachment of the blade fixing 42 to an end piece 6 at each end of a panel member 2, 4 of the furniture system the desktop 44 need only be lowered into position and then fixed to the blade fixing 42 at suitable fixing points 41. In use, the desktop 44 bears onto the blade fixing 42. The blade fixing 42 may additionally be provided with an aperture 56 to serve as a cable guide. Additionally, or alternatively,

recesses may be formed in the edge of a desktop 44 to serve as a cable guide.

[0025] The forward facing edges of the furniture components 8 are conveniently provided with a finish such as a moulded polyurethane edge trim to protect against wear.

[0026] As shown in Figure 6, the blade fixing 42 may also be provided with additional fixing points 41 to which may be secured furniture components 8 in the form of shelf units. In Figure 7 attachment of a furniture component such as a shelf unit 46 to a blade fixing 42 is shown. The blade fixing is provided with a through bore that is conveniently formed by an internally threaded bushing 50. A first end of a shelf unit 46 may then be bolted to the blade fixing 42 as shown in Figure 7.

[0027] In Figure 8 a blade fixing 42 can be seen, together with the fixing members 10 extending rearwardly therefrom. A seat 46 is shown in position on the blade fixing 42. Above the seat 46 can be seen a seat back 48, again having a fixing member 10 extending from the rear thereof.

[0028] Figure 9 shows a first arrangement of furniture produced in accordance with the present furniture system. To the left a relatively high set of panel members have been used to provide a low bookcase 60 to one side of the panel members and a shelf unit with table top 62 and upper shelf unit 64 to the other. To the right, a relatively low set of panel members have been used to construct a seating unit 66 with a back rest 48 to one side of the panel members and a desk unit 68 to the other.

[0029] Figure 10 shows a second arrangement of furniture produced in accordance with the present furniture system. To the left, a set of panel members of intermediate height have been used to construct a seating unit 66 to one side of the panel members and a desk unit 68 to the other. To the right a relatively high set of panel members have been used to provide a tall bookcase 70 to one side of the panel members and a seating unit 66 with a back rest 48 to the other.

[0030] Figure 11 shows a third arrangement of furniture produced in accordance with the present furniture system. To the left a relatively high set of panel members have been used to provide a tall bookcase 70 to one side of the panel members and a desk unit 68 to the other. To the right, a relatively high set of panel members have been used to construct a tall bookcase 70 to one side of the panel members and a desk unit 68 and upper shelf unit to the other. In the desk unit to the left the desktop 44 does not extend to the panel member but is spaced in relation thereto. The space may be used to pass cables through to computers or the like in use located on the desktop 44.

[0031] Figures 9, 10 and 11 illustrate the versatility of the modular furniture system provided for by the invention. It will be understood that the furniture system may also use panel members without a curvature in constructing a furniture module, but that in order to provide appropriate strength and rigidity at least one, and preferably

more, panel members having a curvature should be used.

[0032] In addition to the furniture components discussed other furniture components may be used, including but not limited to, lighting units.

[0033] In this way a variety of furniture arrangements may be provided for, including, but not limited to, in addition to those discussed above, workstations, reception areas, meeting areas, conference areas, training areas, screens, changing areas, play areas.

Claims

1. A modular furniture system comprises a plurality of panel members (2,4), at least one panel member (2,4) having a curvature, a plurality of end pieces (6) adapted to be located between and secured to adjacent panel members (2,4), the end pieces (6) and the at least one panel member (2,4) forming a curved framework, the ends of each panel member (2,4) being provided with a recessed channel (16) within which one of the end pieces (6) is received and the or each end piece (6) having at least one outwardly extending flange portion (12) formed as a lug extending from the or each end piece (6) **characterised in that** the channel (16) comprises a first part (18) and a second part (20), the first part (18) adapted to receive a thickness of the end piece (6) and a second part (20) adapted to receive the flange portion (12) of the end piece (6), the end piece (6) being hollow and of generally rectangular section.
2. A furniture system according to claim 1, **characterised in that** a plurality of through bores (22) extend from a one side of the panel member (2,4) through to the second part (20) of the recessed channel (16).
3. A furniture system according to claim 1 or claim 2, **characterised in that** each end piece (6) is formed with a plurality of slots (34).
4. A furniture system according to claim 3, **characterised in that** the system further comprises one or more fixing members (10) which may be fitted into the one or more of the plurality of slots (34) and a furniture component securable to the one or more fixing members (10).
5. A furniture system according to claim 4, **characterised in that** the furniture component comprises one of the following:
 - a shelf unit (60, 64 ,70);
 - a side shelf member;
 - a desktop (44,68);
 - a seat (46,66); or
 - a seat back (48).

6. A furniture system according to any of claims 1 to 4, **characterised in that** where more than one panel (2,4) has a curvature, the curvature of each curved panel (2,4) is the same.

Patentansprüche

1. Modulares Möbelsystem, das mehrere Tafелеlemente (2, 4), wobei wenigstens ein Tafелеlement (2, 4) eine Krümmung hat, und mehrere Endstücke (6), dafür eingerichtet, zwischen benachbarten Tafелеlementen (2, 4) angeordnet und an denselben befestigt zu werden, umfasst, wobei die Endstücke (6) und das wenigstens eine Tafелеlement (2, 4) ein gekrümmtes Tragwerk bilden, wobei die Enden jedes Tafелеlements (2, 4) mit einem ausgesparten Kanal (16) versehen sind, innerhalb dessen eines der Endstücke (6) aufgenommen wird, und wobei das oder jedes Endstück (6) wenigstens einen sich nach außen erstreckenden Flanschabschnitt (12) hat, der als ein Ansatz geformt ist, der sich von dem oder jedem Endstück (6) aus erstreckt, **dadurch gekennzeichnet, dass** der Kanal (16) einen ersten Teil (18) und einen zweiten Teil (20) umfasst, wobei der erste Teil (18) dafür eingerichtet ist, eine Dicke des Endstücks (6) aufzunehmen, und ein zweiter Teil (20) dafür eingerichtet ist, den Flanschabschnitt (12) des Endstücks (6) aufzunehmen, wobei das Endstück (6) hohl und von allgemein rechteckigem Querschnitt ist.
2. Möbelsystem nach Anspruch 1, **dadurch gekennzeichnet, dass** sich mehrere Durchgangsbohrungen (22) von einer Seite des Tafелеlements (2, 4) aus hindurch zum zweiten Teil (20) des ausgesparten Kanals (16) erstrecken.
3. Möbelsystem nach Anspruch 1 oder Anspruch 2, **dadurch gekennzeichnet, dass** jedes Endstück (6) mit mehreren Schlitzten (34) geformt ist.
4. Möbelsystem nach Anspruch 3, **dadurch gekennzeichnet, dass** das System ferner ein oder mehrere Befestigungselemente (10), die in den einen oder mehrere der mehreren Schlitzte (34) gepasst werden kann, und ein Möbelbauteil, das an dem einen oder mehreren Befestigungselementen (10) befestigt werden kann, umfasst.
5. Möbelsystem nach Anspruch 4, **dadurch gekennzeichnet, dass** das Möbelbauteil eine der folgenden Komponenten umfasst:

eine Fachbodeneinheit (60, 64, 70),
ein Seitenfachbodenelement,
eine Schreibtischplatte (44, 68),
einen Sitz (46, 66) oder

eine Sitzlehne (48).

6. Möbelsystem nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass**, wenn mehr als eine Tafel (2, 4) eine Krümmung hat, die Krümmung jeder gekrümmten Tafel (2, 4) die gleiche ist.

Revendications

1. Système modulaire de meubles, comprenant plusieurs éléments de panneau (2, 4), au moins un élément de panneau (2, 4) comportant une courbure, plusieurs pièces d'extrémité (6), destinées à être agencées entre des éléments de panneau adjacents (2, 4) et à être fixés à ceux-ci, les pièces d'extrémité et le au moins un élément de panneau (2, 4) formant un châssis courbé, les extrémités de chaque élément de panneau (2, 4) comportant un canal évidé (16), dans lequel une des pièces d'extrémité (6) est reçue, la ou chaque pièce d'extrémité (6) comportant au moins une partie de bride s'étendant vers l'extérieur (12) ayant la forme d'une patte s'étendant à partir de la ou de chaque pièce d'extrémité (6), **caractérisé en ce que** le canal (16) comprend une première partie (18) et une deuxième partie (20), la première partie (18) étant destinée à recevoir une épaisseur de la pièce d'extrémité (6) et une deuxième partie (20) étant destinée à recevoir la partie de bride (12) de la pièce d'extrémité (6), la pièce d'extrémité (6) étant creuse et ayant une section généralement rectangulaire.
2. Système de meubles selon la revendication 1, **caractérisé en ce que** plusieurs alésages de passage (22) s'étendent à partir d'un côté de l'élément de panneau (2, 4) à travers la deuxième partie (20) du canal évidé (16).
3. Système de meubles selon les revendications 1 ou 2, **caractérisé en ce que** chaque pièce d'extrémité comporte plusieurs fentes (34).
4. Système de meubles selon la revendication 3, **caractérisé en ce que** le système comprend en outre un ou plusieurs éléments de fixation (10) pouvant être ajustés dans une ou plusieurs des plusieurs fentes (34), et un composant de meuble pouvant être fixé sur un ou plusieurs éléments de fixation (10).
5. Système de meubles selon la revendication 4, **caractérisé en ce que** le composant de meuble comprend un des éléments ci-dessous :

une unité d'étagère (60, 64, 70);
un élément latéral d'étagère;
un plan de travail (44, 68);
un siège (46, 66) ; ou

un dossier de siège (48).

6. Système de meubles selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** dans le cas où plus d'un panneau (2,4) comporte une courbure, la courbure de chaque panneau courbé (2,4) est identique.

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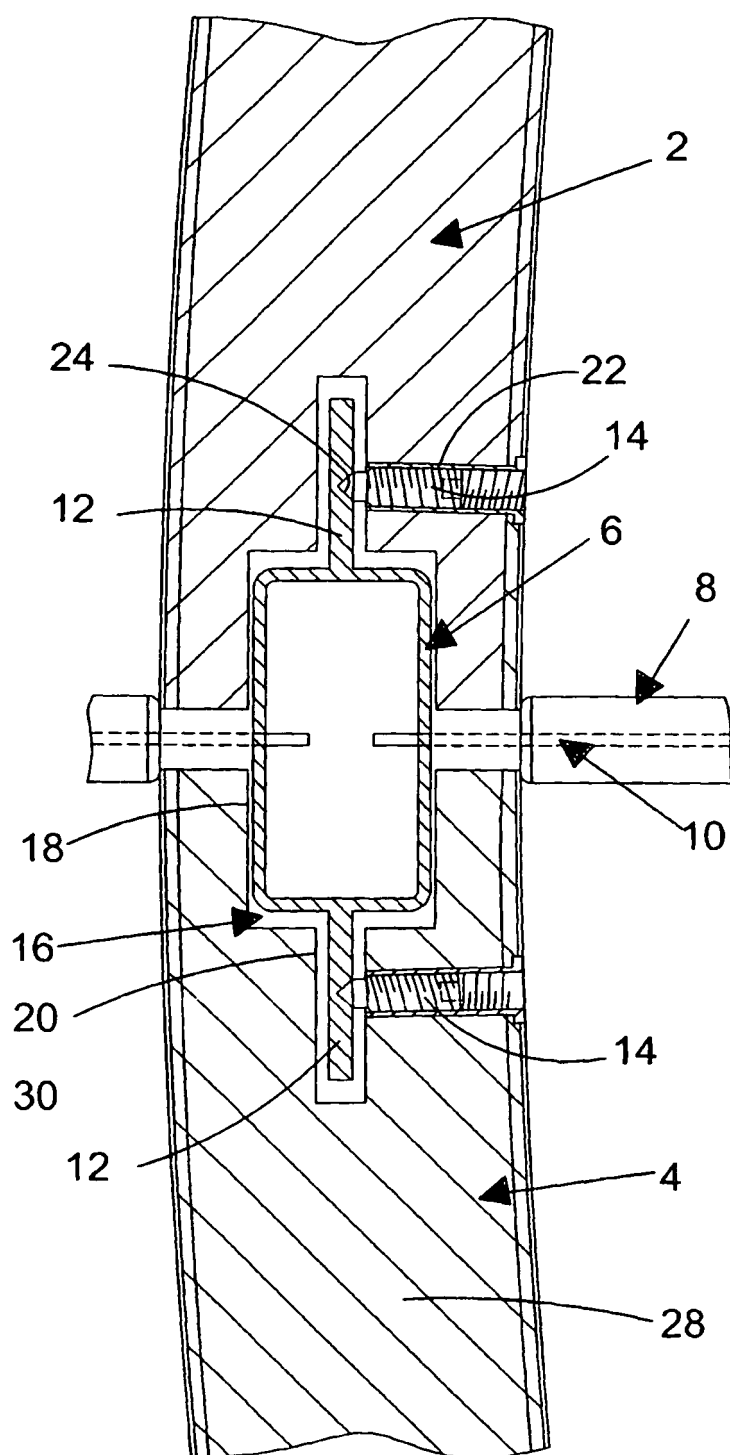


FIG.1

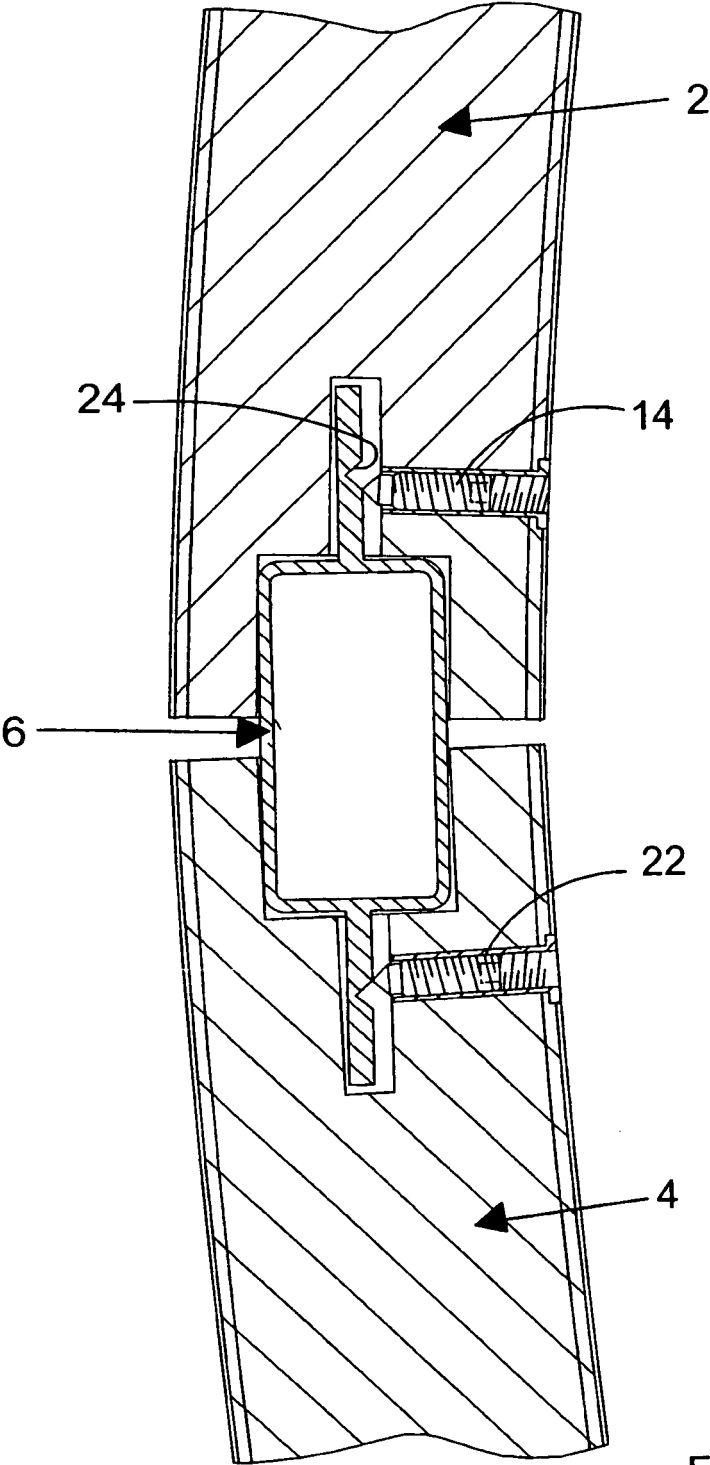


FIG.2

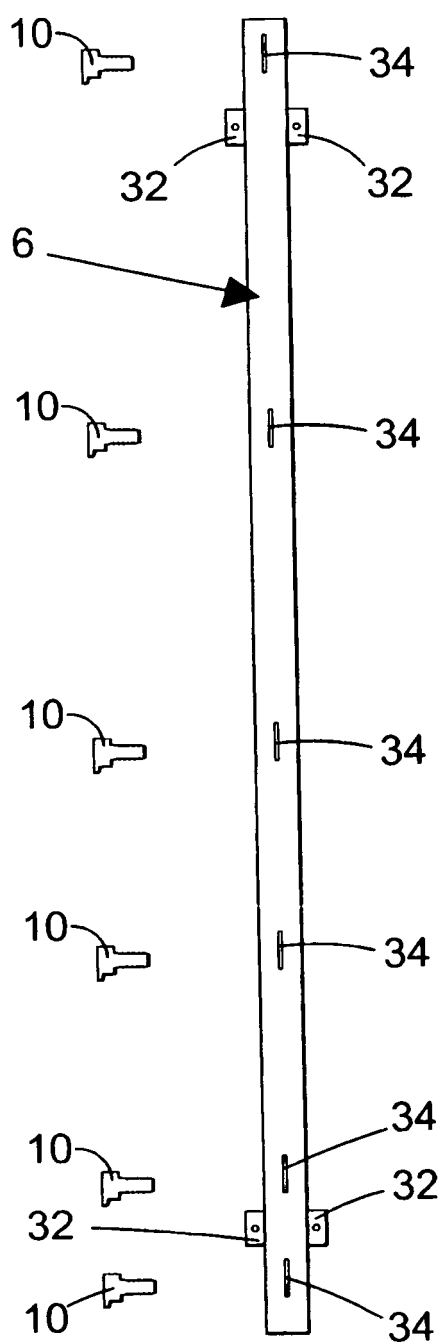


FIG. 3

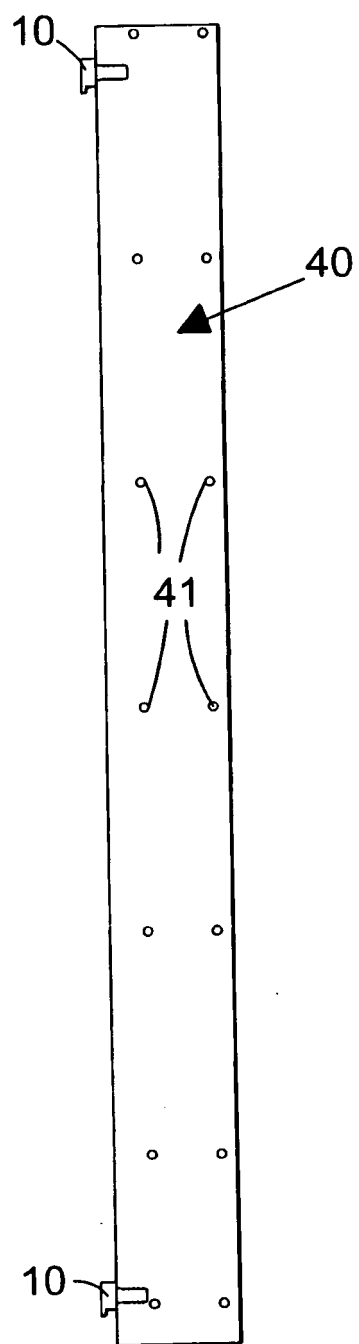
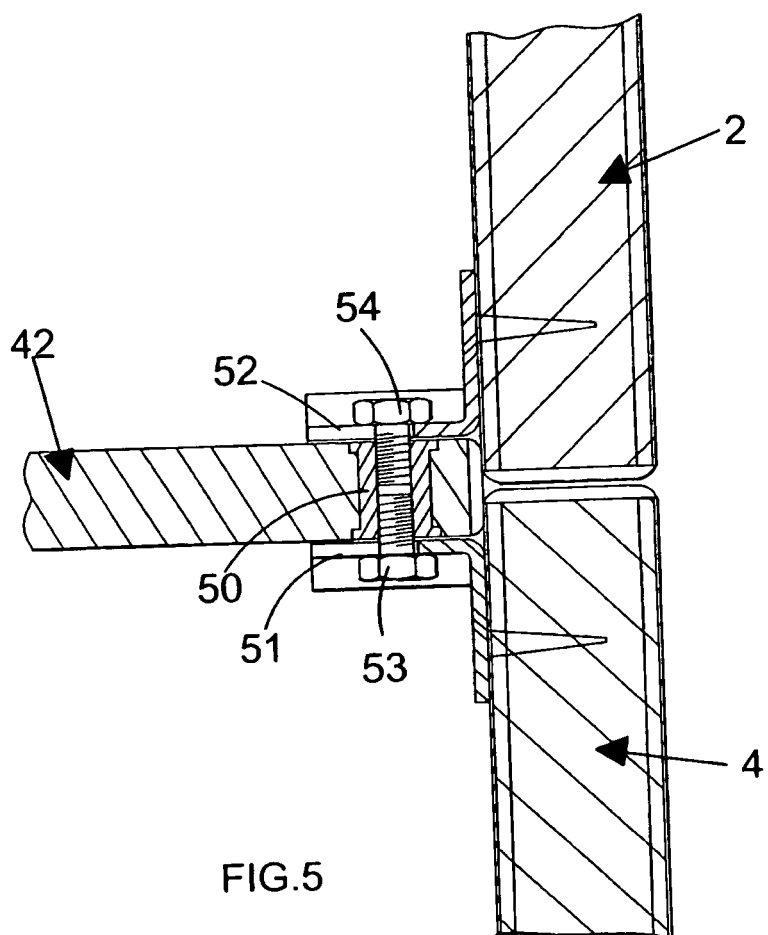
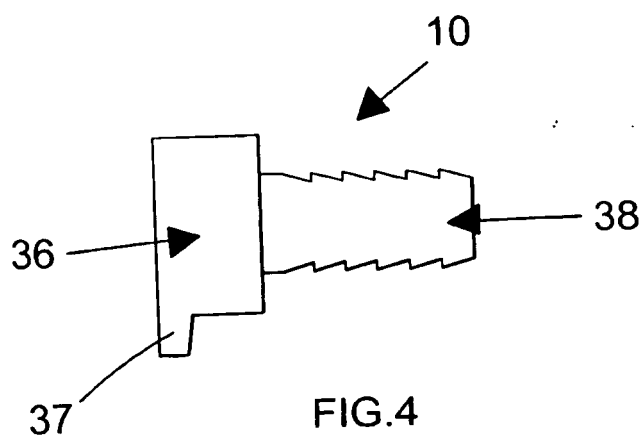


FIG. 3a



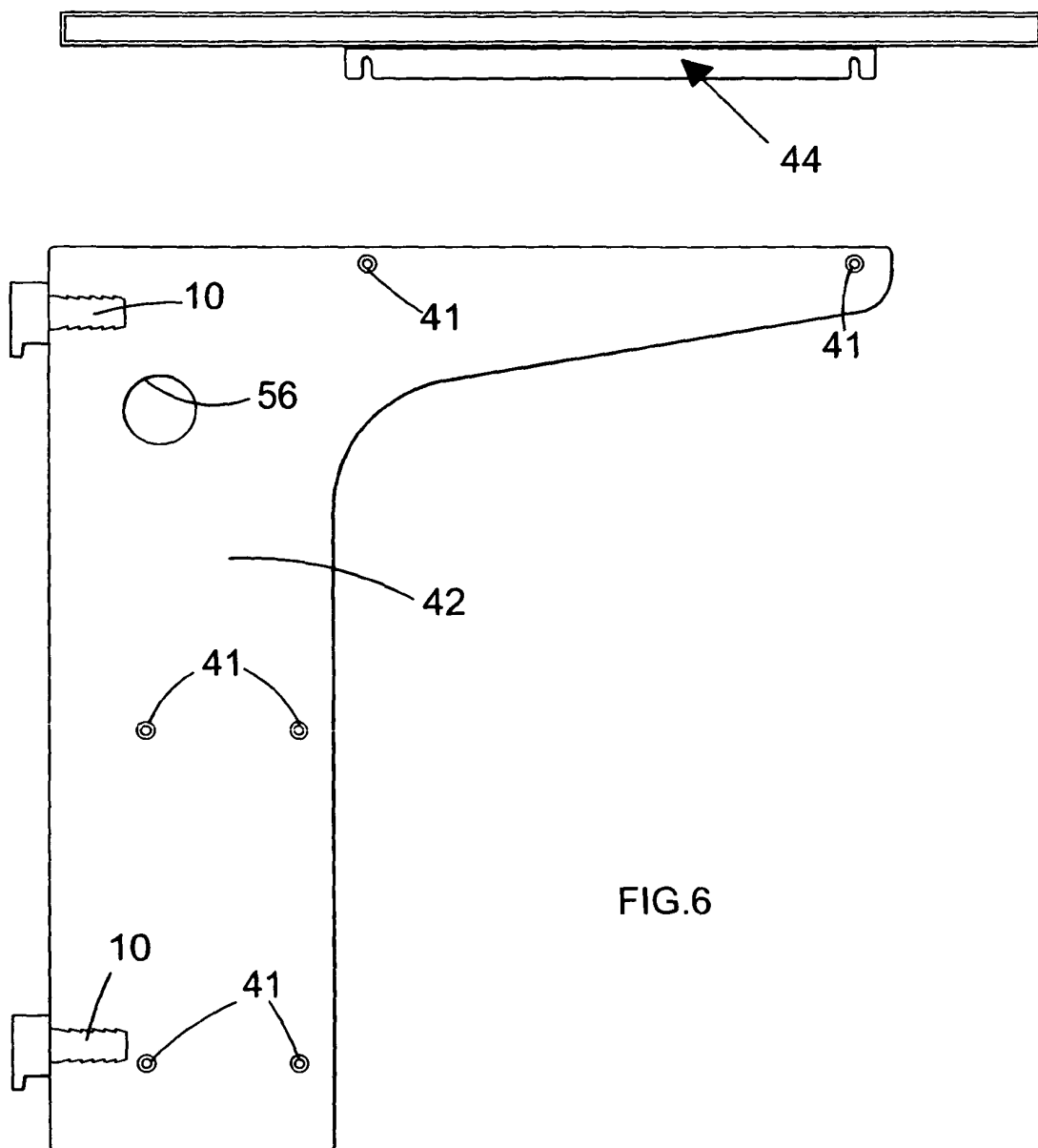


FIG.6

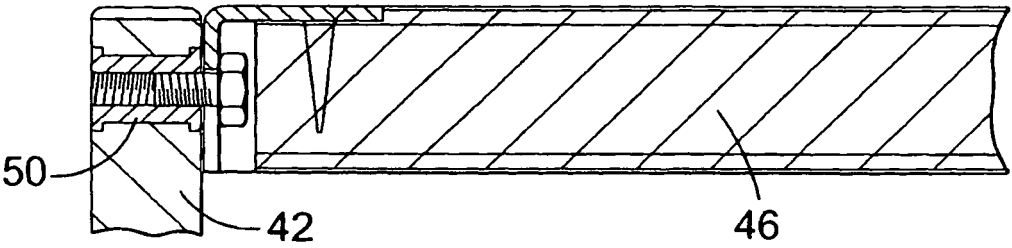


FIG.7

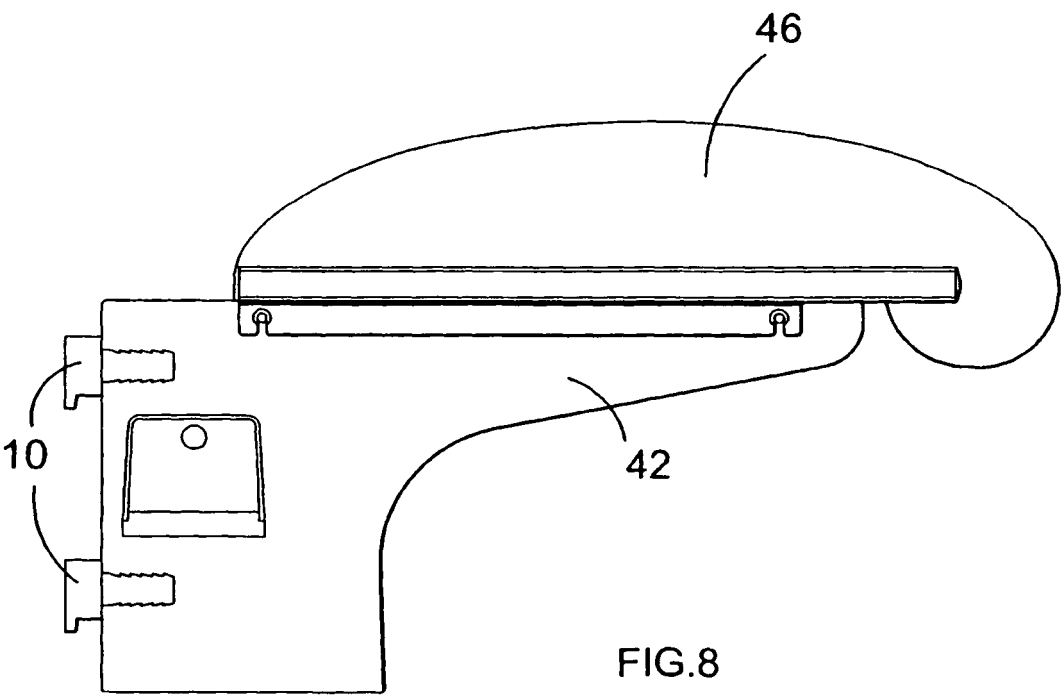
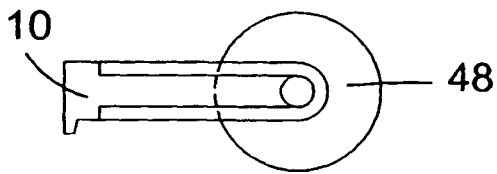


FIG.8

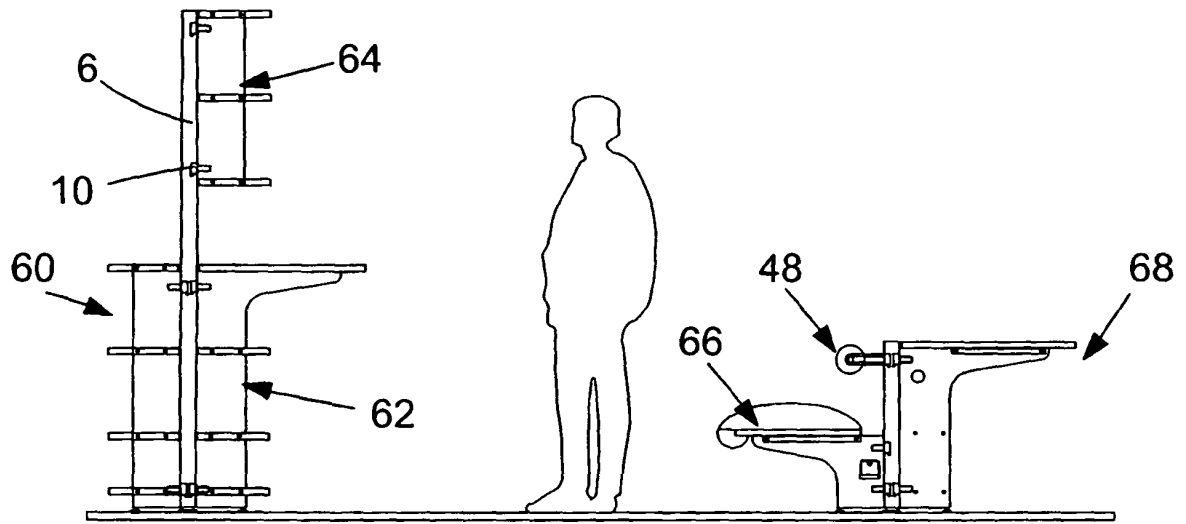


FIG. 9

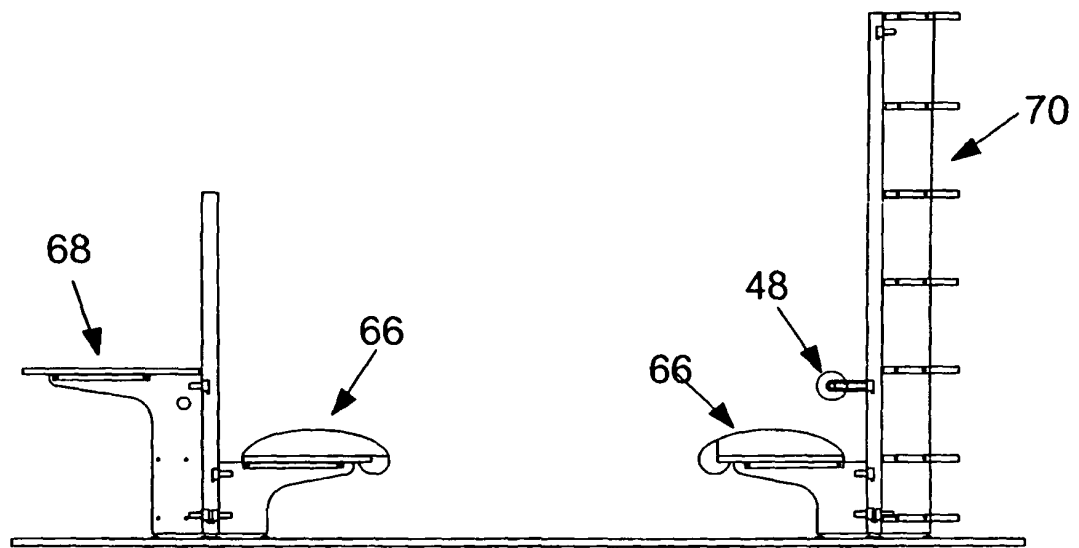


FIG. 10

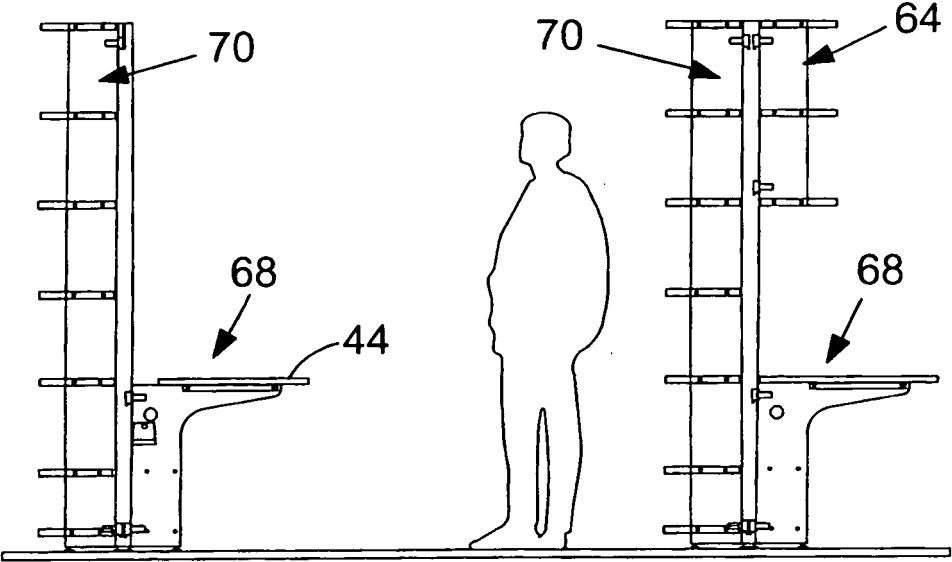


FIG.11