



A PANEL SCREENING SYSTEM

5 The present invention relates generally to a panel screening system and in particular to connecting arrangements for coupling individual members of the system together.

Panel screening systems are widely used in partitioning open area spaces, and have particular application in partitioning offices to form work stations and the like. Typically the screening system is arranged to be modular and self supporting and include panels which can be assembled together in end to end
10 relationship in various configurations. In this way, the screening system can enable a partitioning arrangement to be designed and installed in a desired layout.

Typically the panels comprise a frame and at least one panel surface member which is mounted within the frame. The frame is formed from an
15 extruded member and is cut and assembled to a desired size. The extruded member includes at least one channel which when the panel is assembled is located on the peripheral edge of the frame. Typically connectors are arranged to be inserted into the respective channels of adjacent panels for interconnecting the panels in end to end relationship.

20 To provide additional design options using the panel system, it is preferable that different panels can be provided with different panel surface members. For example, some panels may be formed with glass panel members whilst others may include fabric covered panel members. To accommodate the different panel surface members, different shaped extruded members are used to
25 form the frame. To provide even further design options using the panel system, it is preferable that the panels can be interconnected at different angles and in the past structural members, in the form of posts, have been provided to act as connecting members at junctions with a particular post being used depending on the angle at which the panels are to be interconnected.

30 The appearance of the panel system is important and it is preferable that the panel system when assembled gives the impression of a unitary structure.

A problem with previous panel systems is that the assembly of the panels is time consuming particularly to obtain the desired appearance of a unitary

structure in the assembled system. For example, to enable the connectors to be located within the channels, they are designed to be fairly loosely fitted within these channels. However to provide a rigid connection such that the system gives an appearance of a unitary structure, it is often necessary that the connectors are fastened to the respective frames after they have been inserted into the channels. In another example, different connectors are often required depending on the type of panels as well as the angle in which they are to be interconnected. This can result in problems in assembly as it is necessary to select the correct connector from the range of different connectors for a particular application.

An aim of the present invention is to provide a panel system which ameliorates this problem by providing improved connecting arrangements which simplify the assembly of the panel system.

According to a first aspect, the present invention provides a connector piece for interconnecting members of a panel screening system together in end to end relationship, the connector piece including a body portion mountable to an edge region of a respective one of said members, and engaging means extending from said body portion and being cooperable with engaging means of a corresponding connector piece mountable to an edge region of the other of said members.

An advantage of this connecting arrangement is that the means by which the connector piece is connected to the member is separate from the engaging means which interconnects the connector pieces and therefore the members. This enables the connector pieces to be secured to the member before interconnecting the members. This simplifies the assembly of the panel system as it enables easier access to secure the connector piece to the member, gives greater options for the type of securing means used, and enables the connector piece to be secured to the member off site if required. Furthermore, the engaging means can be designed to be cooperable with a corresponding connector piece in a simple one step operation which simplifies the assembly of the panel system on site.

Preferably the engaging means is elongate and adapted to extend in the direction of the edge region of the member to which it is connected such that the

engaging means is cooperable with the engaging means of a corresponding connector piece through relative movement of the two members along the respective edge regions.

5 Preferably the body portion of the connector piece includes a peripheral edge which is adapted to align with a peripheral edge of the corresponding connector piece on cooperation of the engaging means of the connector pieces. With this arrangement, the thickness of the connector can be minimised to facilitate an arrangement wherein, when the members are interconnected in end to end relationship, the connector pieces are fully concealed and the members
10 are arranged to be in abutting relationship.

Preferably the engaging means includes an arrangement of interfitting projections and recesses. In a particularly preferred arrangement, the engaging means includes a projection which is adapted to interfit in a recess in the corresponding connector piece, and a recess which is adapted to receive a
15 projection included in the engaging means of the corresponding connector piece.

In a particular preferred arrangement, the connector piece is adapted to be mounted with a channel included in the edge region of the member. Preferably, the body portion includes a first flange which is locatable within the channel and a second flange which is adapted to be located on an outer surface of the member
20 such that the connector piece is in frictional engagement with the edge region of the member.

Preferably the connector piece is formed as an extruded section having a longitudinal axis, the connector piece including a peripheral edge incorporating outwardly extending flanges extending along the longitudinal axis which are
25 engagable with the member channel. Preferably the connector piece further includes a plurality of bores extending along the longitudinal axis. The bores are arranged to open onto the peripheral edge and to form at least part of the engaging means of the connector piece. Preferably the connector piece further includes a pin, which is mounted to a respective one of the bores to extend
30 outwardly from the peripheral edge. With this arrangement, the pin is adapted to interfit in a respective recess included in the engaging means of the corresponding connector piece. Preferably the other of the bores is adapted to receive a pin included in the engaging means of the corresponding connector

piece.

In a further aspect, the present invention provides an end trim for a panel system, including a body portion adapted to be mounted to an edge region of a member of the panel system, the body portion having an exterior surface formed from first and second surface portions, the end trim being arranged such that when connected to the member, the first and second portions extend along the edge region to provide mutually inclined abutment surfaces adapted to cooperate with the exterior surface of a like end trim to form a coupling element for the panel system.

Preferably the body portion is arranged such that the first and second portions are inclined at approximately 45° to each other. The advantage of this arrangement is that the end trim can act as a connector for interconnecting panels at right angles or to provide a junction where three or more panels converge. Furthermore to extend the panel system, it is not necessary that the end trim be removed as it is adapted to form part of a coupling element of the panel system. With this arrangement, the assembly of the panel system is simplified and the number of components required for the panel system is reduced as compared to prior art systems.

It will be convenient to hereinafter describe a panel system according to an embodiment of the invention in greater detail with reference to the accompanying drawings.

The particularity of these drawings in the related description is not to be understood as superseding the generality of the preceding bore description of the invention.

In the drawings:

Figure 1 is a perspective view of a panel screening system according to an embodiment of the invention;

Figure 2 is a section view along section line II-II of Figure 1;

Figure 3 is a section view along section III-III of Figure 1;

Figure 4 is a perspective view of a connector according to an embodiment of the invention coupled to adjacent panels;

Figure 5 is an exploded perspective view to enlarged scale of the connector of Figure 4;

Figure 6 is a perspective view of adjacent panels interconnected by end trim according to an embodiment of the invention;

Figure 7 is a sectional view along section lines VII-VII of Figure 6;

Figure 8 is a variation of Figure 6 showing three panels interconnected by the end trim;

Figure 9 is a sectional view along section line IX-IX of Figure 8;

Figure 10 is a further variation of Figure 6 showing four panels interconnected by the end trim; and

Figure 11 is a sectional view along section line XI-XI of Figure 10.

10 A panel screening system 10 is disclosed which is modular and formed from interconnected panels 11 aligned in end to end relationship. The screening system further includes end trim 12 secured to the free end of the end most panel and a top cover 13 which extends across a top edge of the panels.

15 Each panel includes a frame 14 and at least one panel surface member mounted with the frame. Two types of panel surface members are illustrated; namely a fabric covered panel member 15, and glass panel member 16. The glass panel member 16 is centrally mounted on an inner side of the frame 14 whereas the fabric panel member 15 is formed in a box like construction and extends across substantially the whole width of the frame inner side.

20 The panel frame 14 has two main functions, one is to mount the panel frame, and the other is to enable interconnection of the panel to another panel or to other members of the screen system such as the end trim 12 or the top cover 13. To achieve this function, each panel frame 14 is formed from an assembly of frame parts.

25 The frame parts include a fabric panel frame element 17 which is formed as an extruded section having an inner surface 18 which is substantially flat and an outer surface which incorporates a channel section 19. The channel section incorporates a recess portion 20 having opposed inwardly extending flanges 21, 22 on an outer edge of the recess portion 20. The channel further includes an outwardly extending engaging surface 24 located on the outer peripheral edge of the channel. The fabric panel 15 is adapted to be secured to the inner surface 18 of the frame element 17 and in the illustrated arrangement, this is achieved by self tapping screws 25.

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A further frame part comprises a glass panel frame element 26 which is used to mount the glass panel frames 16. The glass panel frame element 26 is also formed from an extruded section and has an inner surface 27 which incorporates a central mounting portion 28 adapted to receive the glass panel member 16 and an outer surface 29 which incorporates a channel section 30 which has the same configuration as the channel section 19 of the fabric panel element 17.

A race way 31 forms a third frame part and is arranged to extend along the lower edge of the panels 11. The race way is formed in a box like construction and incorporates opposing skirting boards 32 which are pivotally mounted to the race way 31 such that the interior of the race way can be accessed. In the illustrated arrangement, a resilient catch 33 is incorporated to releasably secure the respective skirting boards 32 to the race way. Typically the catch 33 can be released using a screw driver or other common tool which is inserted into an opening 34 formed at the top edge of the respective boards 32.

The race way 31 is designed to accommodate cabling such as telephone, power, and computer cables which can be easily installed and accessed through the skirting boards 32.

The race way 31 further include height adjustable base 35 which extends from a lower edge of the race way. The base 35 incorporates a threaded shank 36 which is secured to a nut 37 which is captured within a cavity in the race way 31. In this way, the height of the base 35 can be adjusted by rotation of the shank 36 relative to the nut 37.

In the illustrated arrangement, the race way 31 is connected to the fabric panel 15 through self tapping screws 38. However it should be appreciated that other fastening arrangements could be used.

The end trim 12 has a generally triangular configuration having a body 39 including mutually inclined first and second portions (40, 41) such that a channel 42 is formed which is defined by an interior surface of the body 39. A pair of recesses 43, 44 are formed within the channel 42 by virtue of three flanges 45, 46 and 47 which project into the channel from the inner surface of the wall of the body. The exterior 48 of the end trim is smooth and the first and second portions 40 and 41 are adapted to be inclined at approximately 45° at this exterior surface.

The top cover 13 includes a wall 49 having an interior surface 50 which defines a channel 51. Flanges 52 and 53 extend downwardly from the interior of the top cover 13 and include inwardly facing projections 54 and 55.

5 The frame 14 of each panel 11 is assembled from the frame parts described above such that an outwardly facing channel is located along the panel sides and the top edge, and a race way is located along the bottom edge.

To interconnect the members of the screening system 10, a connector 56 is used which is locatable in the respective channels of adjacent members to be interconnected. This connector is best illustrated in Figure 5.

10 The connector 56 includes an upper part 57 and a lower part 58. Each part includes a body 59 which incorporates a first end 60 and a second end 61 interconnected by side edges 62 and 63. A pair of outwardly extending flanges 64 and 65 are located on each of the sides 62 of the body 59. A pair of bores 66, 67 extend along the body between the first and second ends (60, 61).

15 Each connector part includes a pin 68 which is mounted in a respective one of the bores 66 and which extends outwardly from the first end 60 of the body 59.

20 The parts 57, 58 of the connectors 56 are arranged to interengage with the pin 68 on one connector part locating in the free bore 67 of the other connector part. In the illustrated arrangement, the free bore 67 is slightly larger than the bore 66 incorporating the pin to facilitating engagement of the connector parts.

25 The body 59 of each of the parts 57 and 58 are formed from the same extruded section and are typically formed from an aluminium alloy. In the illustrated arrangement, the lower part 58 is formed as a slightly longer section as it may be required to bear the weight of the panel and for ease of differentiating the upper and lower connector parts during assembly of the screening system. Further the body 59 of each of the parts 57 and 58 incorporate fastening apertures 71 to enable the respective connector parts to be attached to the channel section by screws as will be discussed hereinafter.

30 The screen system 10 is adapted to be assembled as follows.

Panels 11 are assembled using the required frame parts, and panel surface members. To interconnect the panels together in end to end relationship one part of the connector 56 is secured within the channel located on the side



edge of one of the panels, and the other connector part is located on the channel on the side edge of the other panel. To secure the connector part within the channel, the body 59 of the connector part is located within the recessed portion 20 of the channel. The flanges 64 and 65 of the connector part are arranged to be in frictional engagement with the flanges 21 and 22 of the channel. Once the connector part is in the correct position within the channel, the connector part is secured in place by screws inserted through the fastener apertures 71.

The advantage of this arrangement is that the connector parts can be easily secured to the channel as it is easy to obtain access the edge region of the panels. Furthermore the connector parts can be connected to the panels off-site if required.

Once the connector parts are in place, the panels are simply connected together by moving the respective channels of the panels into abutting relationship and then through relative movement of the two panels along these channels, the connector parts are arranged to cooperate such that the respective pins are located in the respective bores to thereby interengage the panels. A particular advantage of this arrangement is that the connectors are able to be located within the space defined by opposing channels when in abutting relationship. In this way, the connecting arrangement is fully concealed and the panels are able to abut one another.

The connector 56 is also used to interconnect the end trim 12 to a panel 11. The connecting process is substantially the same as described above except that a plate 69 is located within the recess 44 in the end trim channel. The plate is adapted to be interconnected to the connector part, typically by a screw arrangement, where on tightening of the screw the plate and connector part are drawn together to thereby increase the frictional engagement between the two parts which in turn secures the connector part to the end trim.

The connector 56 can also be used to interconnect the top cover 13 to the top edge of the panels 11. However as the connection between the top cover and the panel does not have to be as strong as the panel to panel connection, in the illustrated arrangement, a snap fit connector 70 is used which enables the top cover 13 to be pressed fitted onto the channel on the top edge of the panels.



The end trim 12 is also adapted to provide a connecting arrangement for panel to panel connection. This is illustrated in Figures 6 to 11.

5 The exterior surface of the end trim is adapted to cooperate with the exterior surface of a like end trim. Because of the mutually inclined portions of the exterior surface, the end trim is able to act as a connector for interconnecting panels at right angles, and/or to provide a junction where three or more panels converge. The end trims may be coupled together by any suitable form. However in the illustrated arrangement, the exterior surfaces are merely abutted against each other and a rivet is driven through the respective wall portions to
10 secure the members together.

An advantage of this arrangement is that it minimises the number of component parts required for the screening system as the end trim has a dual function. Furthermore in many case, it will enable an extension of the screening system without the need for removing the existing end trim as the new portion of
15 the system can be coupled directly to the end trim.

Consequently, the panel screening system of the invention simplifies the assembly process of the system without reducing the design options available in using the system.

20 Finally, it is to be understood that various alterations, modifications and/or additions may be introduced into the construction and arrangement of the parts previously described without departing from the spirit or ambit of the invention.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:



1. A connector piece for interconnecting members of a panel screening system together in end to end relationship, the connector piece including a body portion mountable to an edge region of a respective one of said members, and engaging means extending from said body portion and being cooperable with engaging means of a corresponding connector piece mountable to an edge region of one other of said members.
2. A connector piece according to claim 1, wherein the engaging means is elongated and is adapted to extend in the direction of the edge region of said one member such that the engaging means is cooperable with the engaging means of the corresponding connector piece through relative movement of the two members along the respective edge regions.
3. A connector piece according to either claims 1 or 2, wherein said body portion includes a peripheral edge and wherein said connector piece is adapted to substantially align with a peripheral edge of the corresponding connector piece on co-operation of the engaging means of the connector pieces.
4. A connector piece according to claim 3, wherein said engaging means is located on said peripheral edge.
5. A connector piece according to any preceding claim, wherein the engaging means includes a projection which is adapted to interfit in a recess included in the engaging means of the corresponding connector piece.
6. A connector piece according to any preceding claim, wherein the engaging means includes a recess adapted to receive a projection included in the engaging means of the corresponding connector piece.
7. A connector piece according to any preceding claim, wherein at least part of the body portion is mountable within a channel included in the edge region of the one member.
8. A connector piece according to either claim 1 or 2, wherein the connector is formed as an extruded section having a longitudinal axis, the connector piece including a peripheral edge incorporating outwardly extending flanges extending along said longitudinal axis which are engagable with a channel included in the



edge region of the one member, and a plurality of bores extending along said longitudinal axis, the bores opening onto said peripheral edge and being arranged to form at least part of the engaging means of said connector piece.

5 9. A connector piece according to claim 8, further including at least one pin, the or each pin being mounted to a respective one of said bores to extend outwardly from said peripheral edge, the or each pin being adapted to interfit in a respective recess included in the engaging means of the corresponding connector piece.

10 10. A connector piece according to either claim 8 or claim 9, wherein at least one of the bores is adapted to receive a pin included in the engaging means of the corresponding connector piece.

11. A connector piece according to any one of claims 7 to 10, wherein the body portion includes a first flange locatable within the channel and a second flange which is adapted to be located on an outer surface of said one member
15 such that said connector piece is in frictional engagement with the edge region of said one member.

12. A connector according to any preceding claim wherein the body portion includes at least one aperture adapted to receive fastening means for securing the body portion to the edge region of said one member.

20 13. A connector piece according to claim 12, wherein the connector piece includes fastening means locatable within the or each aperture and adapted to secure the body portion to the edge region of said one member.

14. A connector piece according to claim 13, wherein the or each fastening means comprises a screw.

25 15. A connector for connecting two members of a panel system together in end to end relationship, the connector including two of said connector pieces as defined in any preceding claim, the body portion of the respective connector pieces being mountable to an edge region of a respective one of the members and wherein the engaging means of the respective connecting pieces being
30 cooperable to interconnect the two members in said end to end relationship.

16. An end trim for a panel system, including a body portion mountable to an edge region of a member of said panel system, said body portion having an



exterior surface formed from first and second surface portions, said end trim being arranged such that when connected to said member, said first and second portions extend along said edge region to provide mutually inclined abutment surfaces adapted to cooperate with the exterior surface of a like end trim to form
5 a coupling element for said panel system.

17. An end trim according to claim 16, wherein the body is arranged such that the first and second portions are inclined at approximately 45° to each other.

18. An end trim according to either claim 16 or 17, wherein the body portion includes opposing edges interconnected by said first and second portions, said
10 opposing edges defining a recess which in use extends along said edge region of said member and which is adapted to accommodate coupling means to mount the end trim to the edge region of said member.

19. An end trim according to claim 18, wherein the recess is adapted to accommodate coupling means in the form of a said connector piece as defined
15 any one of claims 1 to 14 to mount the end trim to the edge region of said member.

20. A panel system including a plurality of members each incorporating an edge region, and at least one connector comprising a plurality of said connector pieces as defined in any one of claims 1 to 14, wherein a respective one of said
20 connector pieces is adapted to be mounted to the edge region of respective ones of the members, and wherein said panel system is arranged to such that the engaging means of the connector pieces are cooperable to interconnect the members in end to end relationship.

21. A panel system according to claim 20, wherein the engaging means of the
25 respective connector pieces are shaped such that one engaging means is cooperable with another engaging means through relative movement of the two members along their respective edge regions.

22. A panel system according to either claim 20 or 21, wherein at least one of the members includes a panel.

30 23. A panel system according to claim 22, wherein the edge region of the panel includes a channel in which at least part of the body portion of a respective one of the connector pieces is adapted to be mounted.



24. A panel system according to either claim 22 or 23, wherein the panel includes a frame incorporating the edge region and at least one panel surface member mounted within said frame.
- 5 25. A panel system according to claim 24, wherein the panel surface member comprises a glass panel.
26. A panel system according to claim 24, wherein the panel surface member comprises a fabric covered panel.
27. A panel system according to claim 26, wherein the panel frame includes a race way incorporating a skirting board, said skirting board being pivotably
10 mounted relative to said race way to provide access to an interior of said race way.
28. A panel system according to any one of claims 20 to 27, wherein at least one of the members includes an end trim as defined in any one of claims 16 to 19.
- 15 29. A panel system according to any one of claims 20 to 28, wherein when the members are interconnected in end to end relationship, the connector pieces are fully concealed and the said members are arranged to be in abutting relationship.
30. A connector piece for a panel system substantially as herein described with reference to the accompanying drawings.
- 20 31. An end trim for a panel system substantially as herein described with reference to the accompanying drawings.
32. A panel system substantially as herein described with reference to the accompanying drawings.
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