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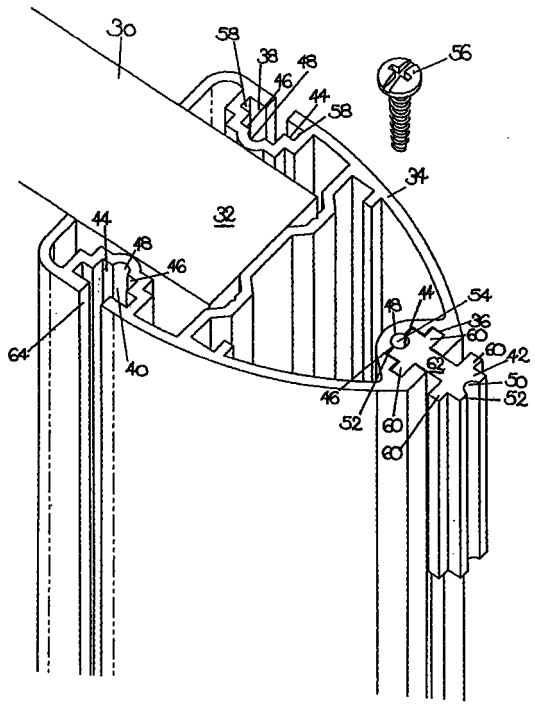
(54) Screen panel connectors

(57) A panel connector comprising a panel connector part and a link part 42, said respective parts having interengaging formations for locating said parts relative to one another and further comprising locking means for securing the parts together, said locking means comprising a locking port 54 for receiving a locking fastener 56, said locking port 54 being defined by respective formations 48, 50 provided in opposed surfaces of the respective parts, the link part formation 50 being provided in an end face of the link part 42.

FIGURE 3



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Description

[0001] The present invention relates to connectors for screen panels, and in particular to connectors for screen panels as are used in screen assemblies for use in for example offices, public places or the like.

[0002] The use of screens to divide a space into a number of different areas is well known. The screens may for example be used to provide individual workstations, reception areas, meeting areas and the like.

[0003] A typical screen system is modular in design with a number of screen panels being connected together by suitable connectors to provide a desired division of a space. This generally provides an inexpensive, attractive and versatile method of defining a work area in a space.

[0004] Various connectors have been proposed for joining together such screen panels. One such system is illustrated in Figures 1 and 2 of the accompanying drawings. In this arrangement respective panel end posts are mounted to the ends of respective screen panels 6, 8, and a link member 10 connects together the two panel end posts 2, 4. The link member 10 has a pair of flanges 12, 14 each having a channel 16, 18 provided therein. On the side walls of each channel is provided a groove 20 which faces an opposed groove 22 provided on the end posts 2, 4. The port 24 defined between these respective grooves receives a locking screw 26, as shown in Figure 2.

[0005] Two problems have been identified with this particular design. Firstly, because the screw ports are defined so closely together the screw heads can foul on each other as the screws are tightened. This may lead to incomplete tightening of the screws and also in the attachment of cosmetic covers over the end post. A further problem that has been identified is that the forces produced by the locking tend to force the screens out of alignment when the fixing screws are tightened. This is shown diagrammatically by the arrow 28 in Figure 2. The end posts and link member are usually extruded aluminium or aluminium alloy components, and this particular problem has been found to arise when the dies from which the components are made become older and wear.

[0006] The present invention in its various preferred embodiments seeks to overcome these various problems.

[0007] From a first aspect provides a screen panel connector comprising a panel part and a link part, said respective parts having interengaging formations for locating said parts relative to one another and further comprising locking means for locking the parts together, said locking means comprising a locking port for receiving a locking fastener, said locking port being defined between respective formations provided in opposed surfaces of the respective parts, the link part formation being provided in an end face of the link.

[0008] By providing the link part formation on an end face of the link, it is possible more easily to align the forces generated by the tightening of the screw in a direction generally parallel to the axis of the link connector part, thereby reducing the likelihood of misalignment of the panel parts during tightening.

[0009] Preferably one of the locking formations is provided in the base of a channel formed in one of the respective parts, with the other part then extending into the channel, so that the locking port is defined within the bottom of the channel. This arrangement has the advantage of locating the respective parts with respect to one another and also in directing the locking forces in the desired direction, most preferably along the axis of the channel.

[0010] This in itself is an advantageous arrangement in its own right, so from a further aspect the invention provides a screen panel connector comprising a panel part and a link part, said respective parts having interengaging formations for locating said parts relative to one another and further comprising locking means for locking the parts together, said locking means comprising a locking port for receiving a locking fastener, said locking port being defined between the respective parts at the base of a channel formed in one of said parts, the other part extending into said channel.

[0011] Although it would be possible to provide the channel in the link part it is preferred that this channel is formed on the panel connector part, most preferably facing directly away from the panel in use.

[0012] To assist in the axial and lateral location of the respective parts relative to one another, preferably a locating slot is provided which extends laterally from the mouth of the channel to receive a locating flange on the other part. Depending on the particular configuration of the parts, a single slot may be provided to one side of the channel, but in other embodiments a pair of slots may be provided, one on each side of the channel.

[0013] The connecting link may take a number of forms. In a simple embodiment, the link may comprise a single limb which is provided with locking formations at its respective ends. Preferably the locking formations are substantially the same so that the link may be engaged with a corresponding connector part either way round. In another embodiment, however, which may be more suited to connecting thicker screen panels, each link may comprise a pair of limbs each limb being provided with both locking formations at one or both ends thereof, the limbs being connected by a connecting web.

[0014] Typically the link part will be symmetrically about its longitudinal and transverse axis to allow it to be engaged with a corresponding panel connector panel part irrespective of its orientation relative thereto.

[0015] Turning now to the panel connector part, this may be affixed to or adapted to fitted to the end of a screen panel.

[0016] Each panel connector part may be provided with a plurality of locking formations. For example, in the

arrangement described above in which the link part has a pair of limbs connected by a connecting web, the connecting panel may have two locking formations provided in, for example, respective channels facing away from the panel body.

[0017] Whereas the invention is intended primarily for the connection of screen panels together in an end to end arrangement, it also facilitates the connection of such parts in another orientation. For example, the panel connector part may be adapted so that rather than, or in addition to having its locking formation facing axially away from the edge of the panel a formation is provided on a side wall of the panel connector part so that another panel may be connected to the first panel at an angle thereto, most preferably at 90°. Thus the panel connector part may comprise locking formations which permit both edge to edge and edge to side connections. In such an arrangement, typically the respective locking formations may be formed at 90° to one another.

[0018] The panel connector part may be integral with or attached to the panel. Preferably, it comprises an end post.

[0019] It will be appreciated that the present invention also extends to a screen assembly comprising one or more connectors in accordance with the invention. Normally respective end posts will be attached to the ends of the panels to be joined and one or more link parts then extend between them. Generally the link part will extend generally parallel to the axis of the screen once assembled.

[0020] The invention also extends to the individual components of the connector, more specifically in a further aspect to a link for connecting two screen panels together, comprising an end face provided with a locking formation which defines, with another connector part, a port for receiving a locking fastener. The link may have the preferred features as discussed above.

[0021] The invention also extends in another aspect to a panel connector part attached to or adapted to be attached to a screen panel, said connector part comprising a channel with a locking formation for receiving a locking fastener in the base of said channel.

[0022] Again the panel connector part may have the features of the panel connectors as discussed above.

[0023] Some embodiments of the invention will now be described by way of example only with reference to the accompanying drawings in which:

Figure 1 shows a prior art connector arrangement;
Figure 2 shows further detail of the arrangement of Figure 1;
Figure 3 shows a perspective view of a connector in accordance with the invention;
Figure 4 shows two screen panels connected using the connector of Figure 3;
Figure 5 illustrates the assembly of the screen panels of Figure 4;
Figure 6 shows three panels connected together using the connector of Figure 3;
Figure 7 shows a second connector in accordance with the invention; and
Figure 8 shows two screen parts connected by the connector of Figure 7.

[0024] Figures 1 and 2 show a prior art arrangement, which has been discussed in the above introduction, and as such need not be discussed further below.

[0025] With reference to Figure 3, a screen panel 30 is provided at one end 32 with an end post 34.

[0026] The end post part 34 is formed as an extrusion, for example of aluminium or aluminium alloy, and extends along substantially the entire length of the panel edge 32, as shown in Figure 4. The end post part 34 is attached to the end of the edge 32 of the screen panel 30 by suitable means (not shown).

[0027] The end post part 34 is provided with three connection formations 36, 38, 40. Each of these formations is adapted to receive a link part 42.

[0028] As can be seen from Figure 3, a link part 42 (which is also an extruded part, for example of aluminium or aluminium alloy) is located at one end of the end post 34. It does not extend along the length of the end post part 34, and in fact, a second link part 42 will be provided at the other end of the end post part 34.

[0029] The respective connector formations 36, 38 and 40 provided on the panel connector part 34 each comprise a channel 44 having a base wall 46 in which is formed a groove 48. The groove 48 defines, with a groove 50 arranged in the end face 52 of the link part 42 a locking port 54 for receiving a self tapping locking screw 56. The end of the link part 42 extends into the channel 44 part and is located generally laterally therein.

[0030] Respective locating slots 58 are provided on the panel connector part, on either side of the mouth of the channel 44. These slots 58 receive locating flanges 60 provided on the link part 42. It will be understood that the interengagement of the locating flanges 60 and the locating slots 58 locates the respective connector parts axially, and to some extent, transversely.

[0031] The respective ends of the link part 42 are connected by a body part 62 which is received in an opening 64 in the connector formation.

[0032] It will be understood from Figure 3 that when the self tapping screw 56 is screwed into the screw port 54 the interengaging flanges and slots 58, 60 will be tightly pressed against one another, thereby firmly holding the link part 42 and the end post part 34 together. The forces created by the fastening operation will be generally axially of the respective connector formations and will not, therefore, result in off axis deformation which might lead to possible to misalignment of the components.

[0033] Turning now to Figure 4, this shows two screen panels 30 connected together by a pair of end

post parts 34 and a link part 42. It will be noted from this Figure since the locking ports 48 are defined at the respective ends of the link part 42, the locking fasteners 56 are spaced apart substantially from one another meaning that they do not foul one another during tightening.

[0034] The panels shown in Figure 4 are assembled together as shown in Figure 5. Firstly, a first link part 42a is affixed to one end of one of the end posts 34a and is are secured thereto by a first locking screw 56. A second link member 42b is then located and secured at the opposite end of the other panel end post 34b and secured therein by a second fastener 56. The two panels 30 can then be brought together as shown by the arrow A such that the free ends of the respective links 42a, 42b enter the end posts 34a, 34b and assembly completed by insertion and tightening of a further locking screw 56.

[0035] With reference now to Figure 6, it will be seen that not only does the present invention allow for an edge to edge joining of screen panels, but also edge to face joining. To this end, the connection formations 38, 40 which are arranged to the side of the panels rather than opposite the edge of each panel can each receive a link 42. Such an arrangement is shown in Figure 6 where two screen panels 30 are joined end to end and a third panel 30 is joined to one of those at 90°. This arrangement has the advantage that it obviates a need for a separate corner post or linking extrusion. Should a side panel not be required, the connection formations 38,40 can be shut off by a cosmetic cover strip (not shown).

[0036] A second embodiment of the invention is described with reference to Figures 7 and 8.

[0037] In this embodiment, an end post part 70 is suitably attached to the edge of a panel 72. However, rather than having just a single connecting formation on its face, the end post part 70 has a pair 74,76 of such formations.

[0038] As in the earlier embodiment, each of these formations 74, 76 comprises a channel 78, in whose base 80 is formed one half 82 of a screw port 84 for receiving respective self-tapping screw fasteners 86. In this embodiment, however, only a single locating slot 88, 90 is provided on the outer edge of the channel 76.

[0039] The link part 92 comprises two limbs 94, 96 connected by a connecting web 98. Each limb 94, 96 of the link part 92 is generally similar to that of the earlier embodiment, with a locking formation 100 formed in the respective end faces thereof. However, unlike the earlier embodiment, only a single locating flange 98 is provided adjacent each end face for engagement within the locating slot 88, 90 provided on the end post part 70.

[0040] It will be appreciated in this embodiment that when the screw fastener 86 is affixed into the screw port 84 the fastening forces will be transmitted generally axially of the connector parts 70, 92 thereby avoiding possible misalignment of the parts. Furthermore a single locating slot and flange arrangement need only be provided for location purposes on each side of the connector, although a double flange arrangement, as in the earlier embodiment could be provided if desired.

[0041] Furthermore, the end post part 70 can be adapted, as in the earlier embodiment, to allow for attachment of panels at 90° to each other.

[0042] The fitting of the connector parts of this embodiment to a screen panel and the subsequent assembly of the screen parts together is the same as in the earlier embodiment and need not, be further described further here.

[0043] The above embodiments are merely exemplary of the invention and the skilled person will recognise that various modifications may be made to the detail thereof without departing from the scope of the invention. The invention extends to cover those modifications.

Claims

1. A panel connector comprising a panel connector part and a link part, said respective parts having interengaging formations for locating said parts relative to one another and further comprising locking means for securing the parts together, said locking means comprising a locking port for receiving a locking fastener, said locking port being defined by respective formations provided in opposed surfaces of the respective parts, the link part formation being provided in an end face of the link.

2. A connector as claimed in claim 1 wherein one of said opposed surfaces is provided in the base of a channel formed in the respective part, the other part extending into the channel.

3. A connector as claimed in claim 2 wherein the channel is formed in the panel connector part.

4. A connector as claimed in claim 2 or 3 wherein a locating slot is arranged to extend laterally from the mouth of said channel to receive a locating flange of the other part.

5. A connector as claimed in claim 4 wherein locating slots are provided on both sides of the channel mouth.

6. A connector as claimed in any preceding claim wherein said link part comprises a single limb and is provided with locking formations at both ends thereof.

7. A connector as claimed in claims 1 to 5 wherein said link comprises a pair of limbs each limb being provided with a locking formation at at least one end thereof, said limbs being connected by a con-

necting web.

8. A connector as claimed in claim 7 wherein said limbs have locking formations at both ends thereof.

9. A connector as claimed in any preceding claim wherein said panel connector part is adapted for fitting onto the end of a panel.

10. A connector as claimed in any preceding claim wherein said panel part is provided with a plurality of locking formations.

11. A connector as claimed in claim 10 wherein said formations are arranged generally at 90° to each other.

12. A connector as claimed in any preceding claim wherein said locking formation is a groove.

13. A connector as claimed in any preceding claim wherein the panel connector part is an end post.

14. A panel system comprising a connector as claimed in any preceding claim.

15. A link for connecting two panels together comprising an end face provided with a locking formation which defines, with another connector part, a port for receiving a locking fastener.

16. A link as claimed in claim 14 wherein said formation is a groove.

17. A link as claimed in claim 14 or 15 wherein a said locking formation is provided at both ends of said link.

18. A link as claimed in claim 14, 15 or 16, wherein a locating flange is provided displaced from the end face of the link for engagement with a slot in another connector part.

19. A link comprising a pair of links as claimed in any of claims 14 to 17 connected by a connecting web.

20. A panel connector part attached to or adapted to be attached to a panel comprising a channel, with a locking formation for receiving a locking fastener being provided in the base of said channel.

21. A panel connector part as claimed in claim 19 wherein a locating groove is provided on at least one side of the channel for engagement with a locating flange provided on another connector part.

22. A panel connector part as claimed in claims 20 or 21 wherein the panel connector part is an end post.

23. A screen panel connector comprising a panel part and a link part, said respective parts having interengaging formations for locating said parts relative to one another and further comprising locking means for locking the parts together, said locking means comprising a locking port for receiving a locking fastener, said locking port being defined between the respective parts at the base of a channel formed in one of said parts, the other part extending into said channel.

FIGURE 1

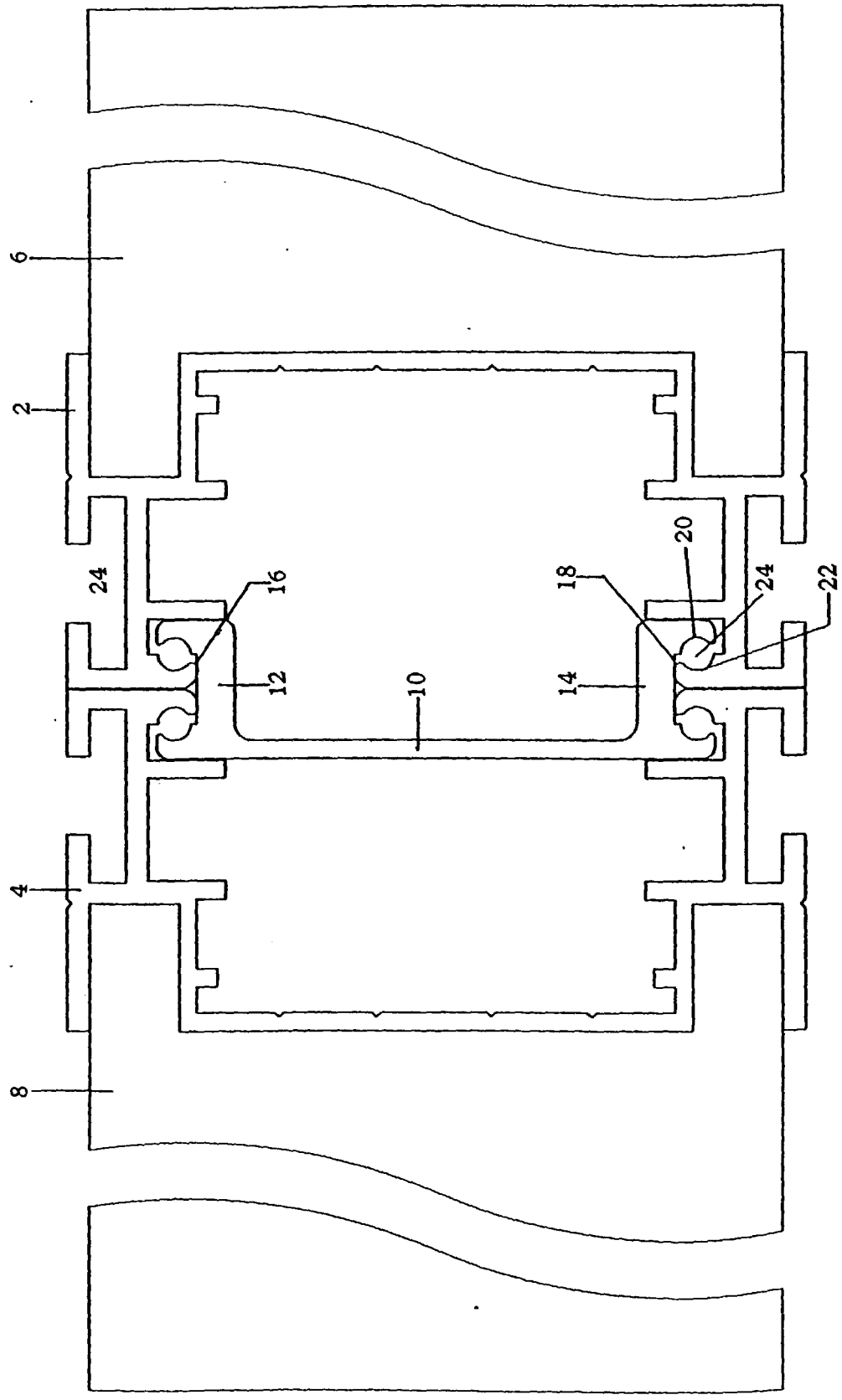


FIGURE 2

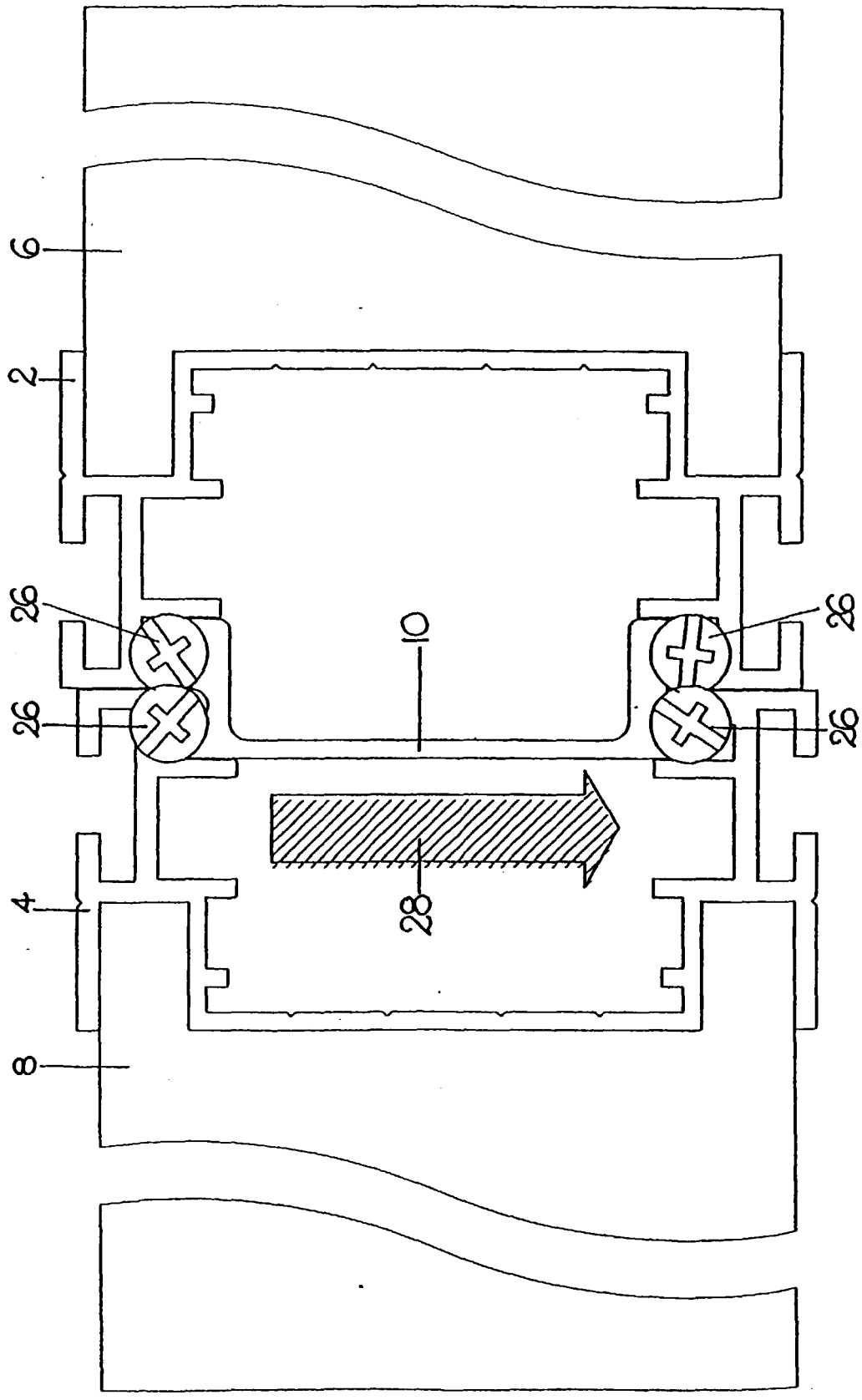
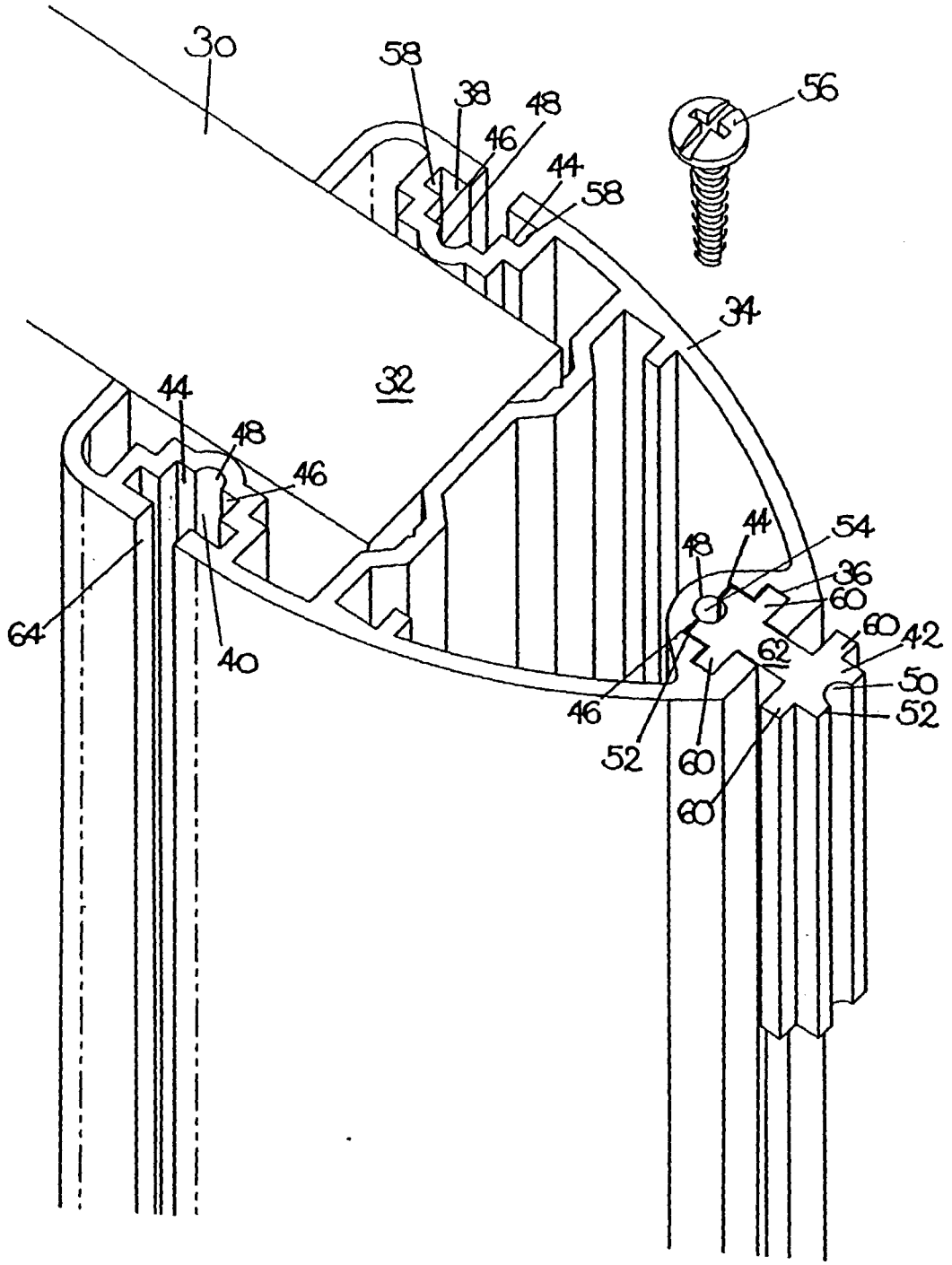


FIGURE 3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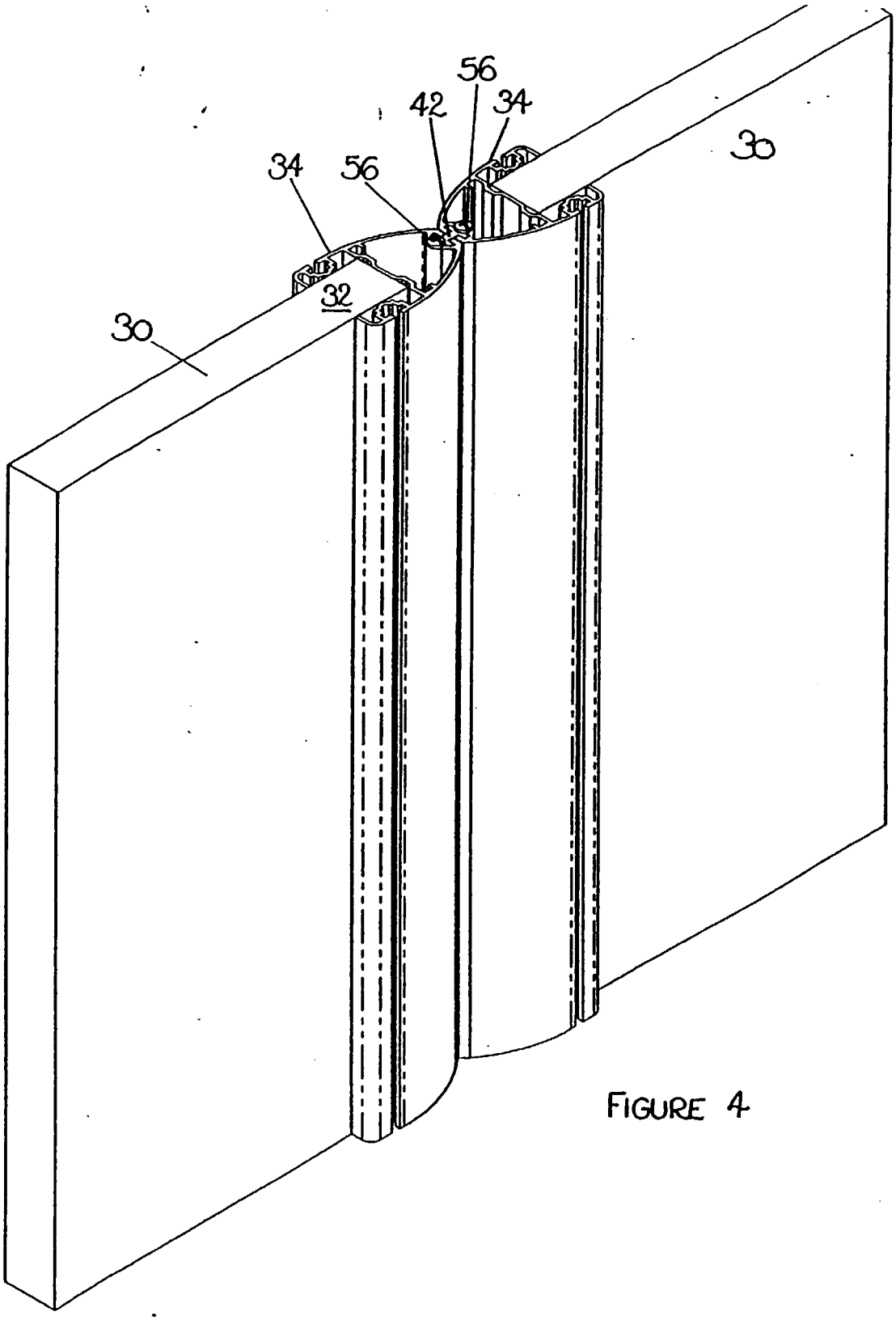


FIGURE 4

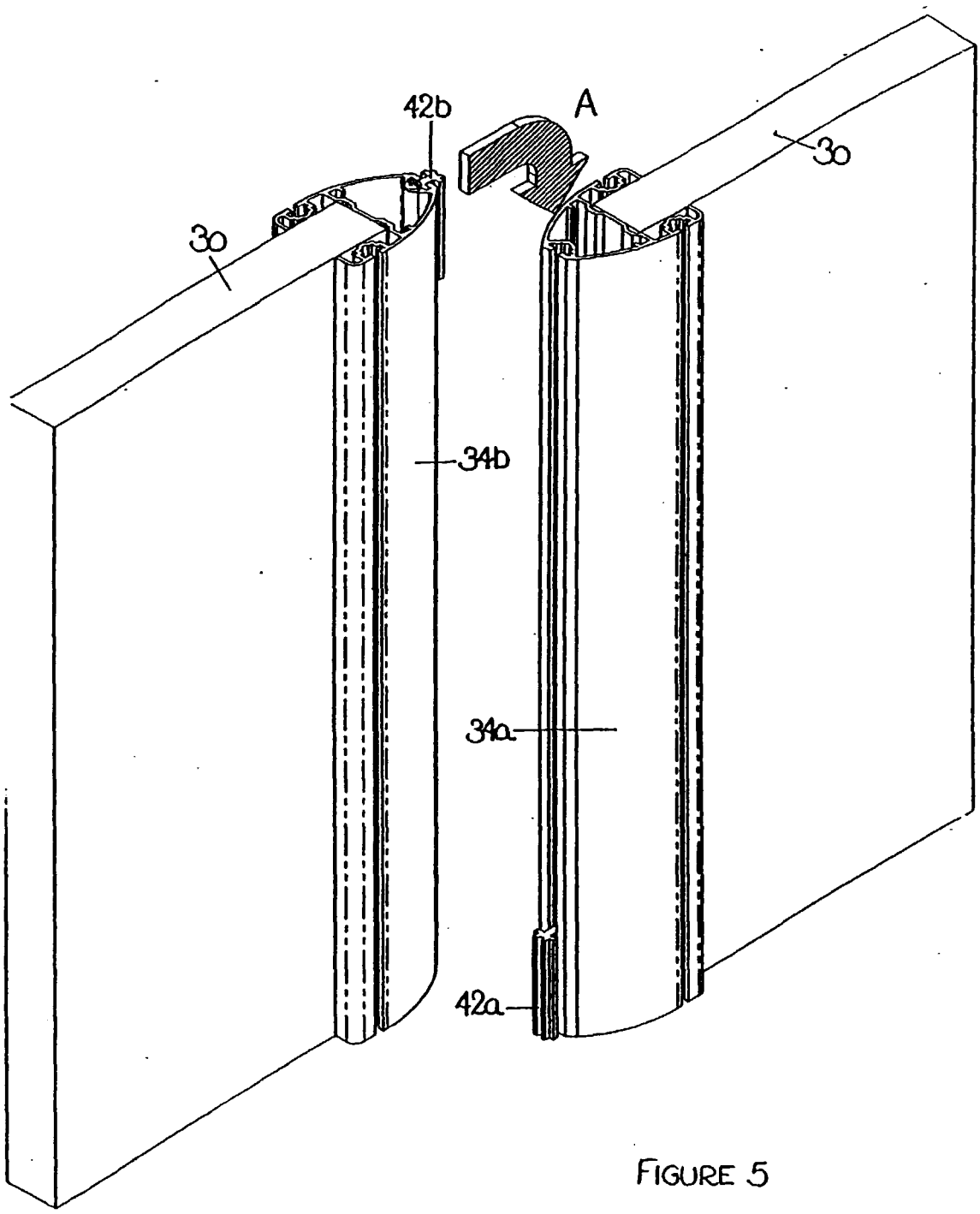


FIGURE 5

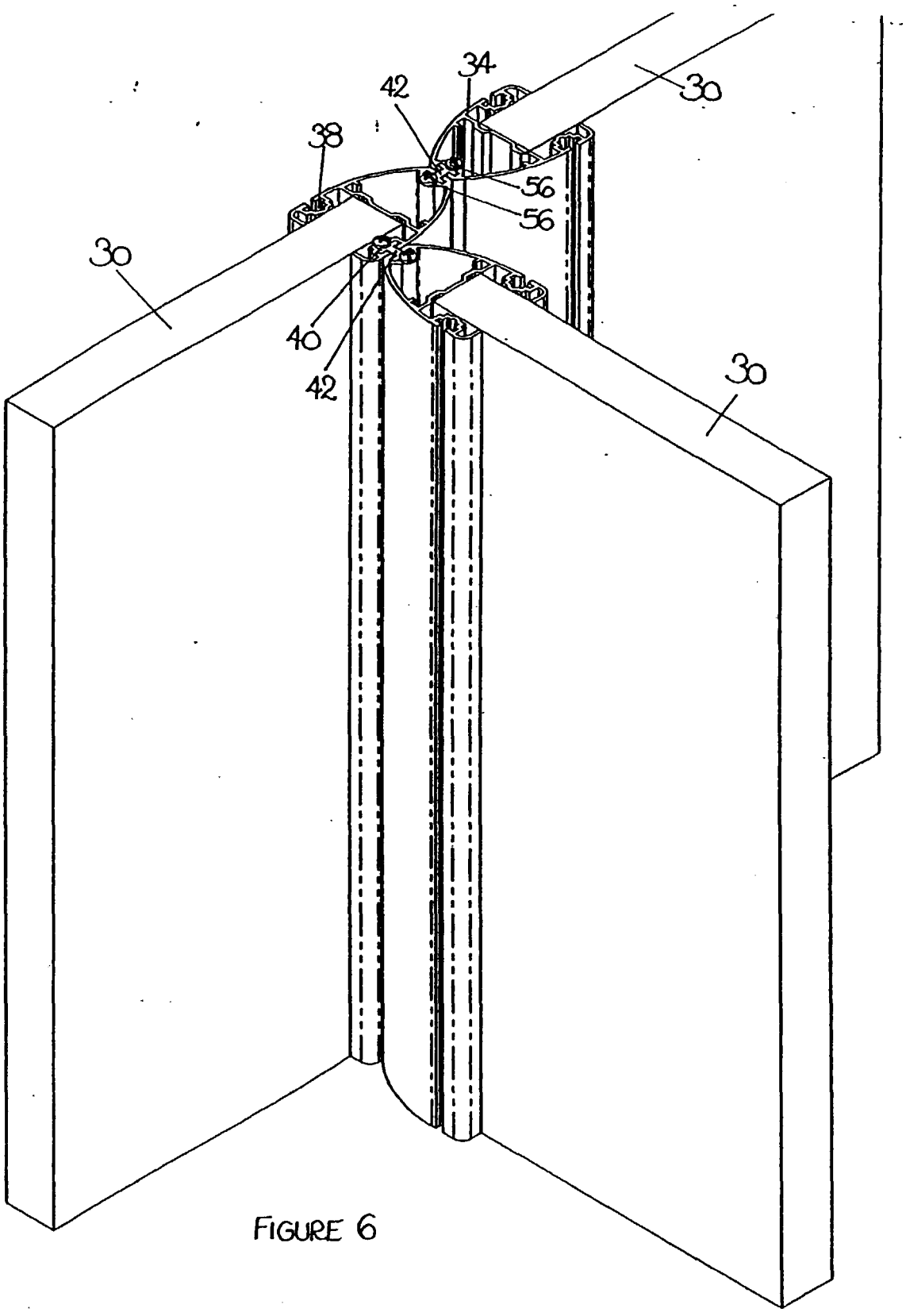
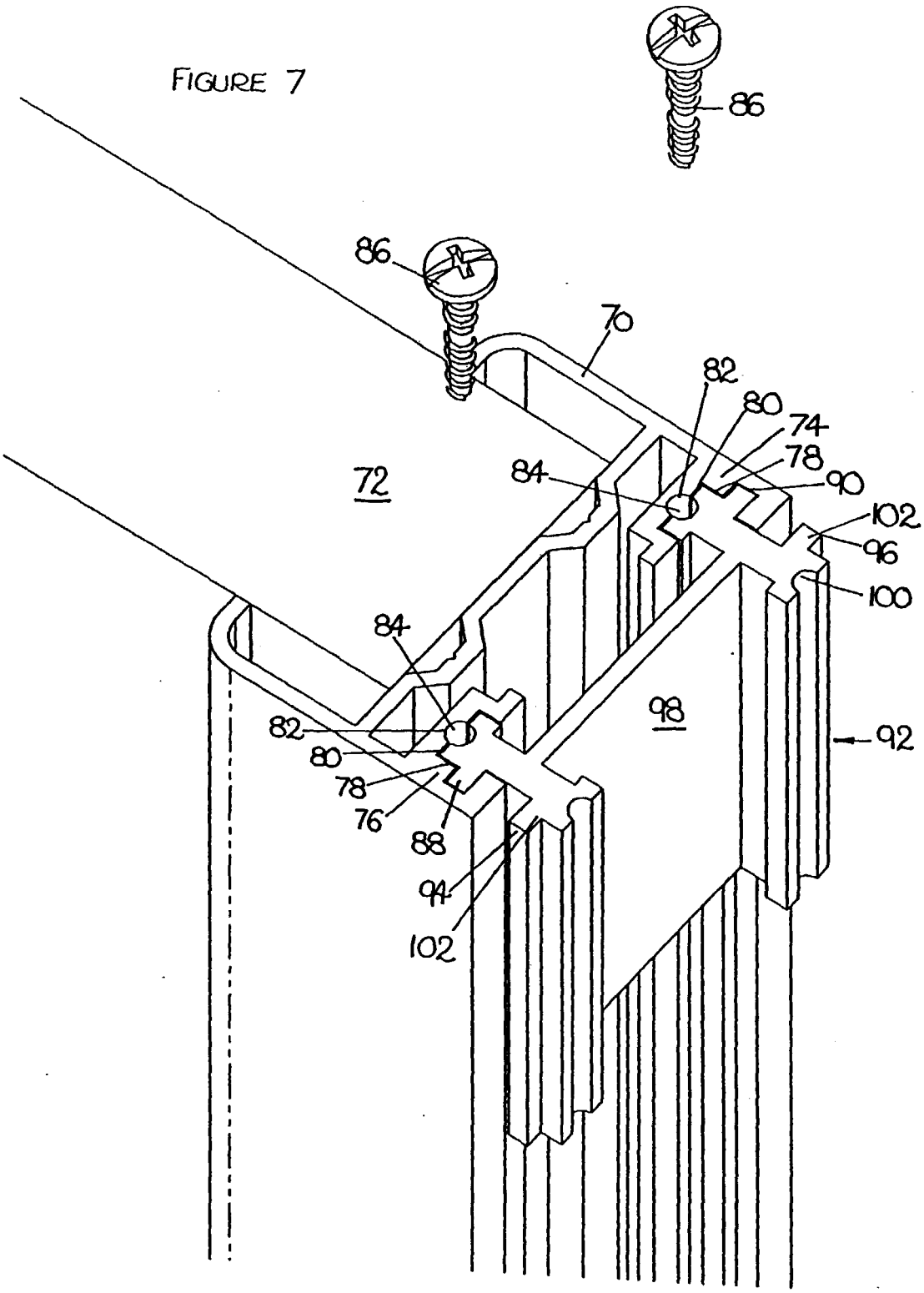


FIGURE 6

FIGURE 7



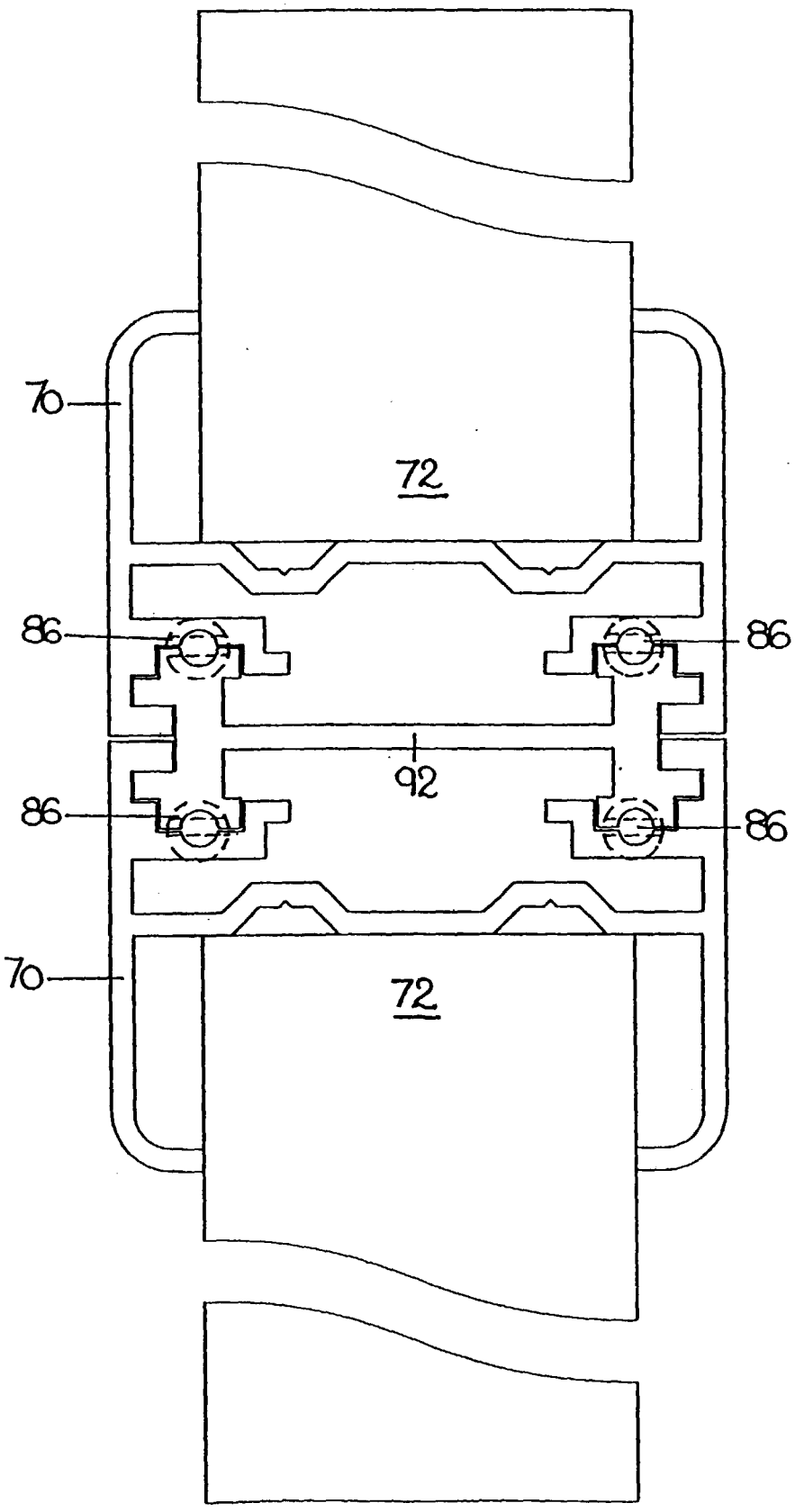


FIGURE 8