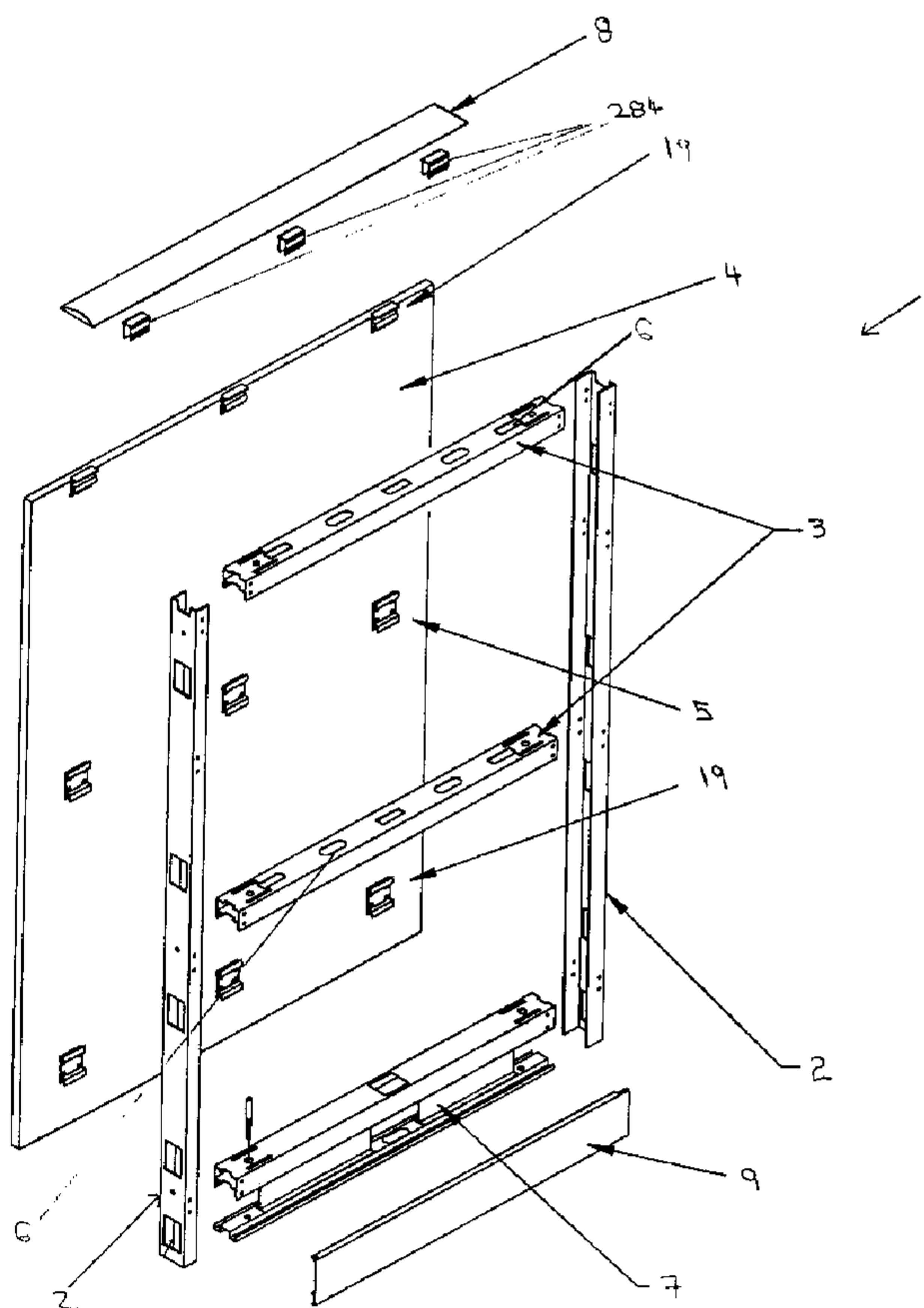




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(54) Title: PARTITION FRAME STRUCTURE



(57) Abrégé/Abstract:

A partition frame structure capable of accepting wall panels of different thicknesses while maintaining a flush and continuous exterior surface. Said partition frame structure also provides a bottom horizontal levelling member which may be in continuous contact with an uneven floor and provides a continuous and aesthetically appealing appearance between adjacent wall panel members. A flat blade gap concealing means conceals the vertical gaps between adjacent wall panel members.

## ABSTRACT

A partition frame structure capable of accepting wall panels of different thicknesses while maintaining a flush and continuous exterior surface. Said partition frame structure also provides a bottom horizontal levelling member which may be in continuous contact with an uneven floor and provides a continuous and aesthetically appealing appearance between adjacent wall panel members. A flat blade gap concealing means conceals the vertical gaps between adjacent wall panel members.

## PARTITION FRAME STRUCTURE

Field of the Invention

The present invention relates to a partition frame structure capable of utilizing wall panel members of various thicknesses while still providing an exterior surface that is flush and continuous. The partition frame structure is particularly useful in offices.

Background of the Invention

Known partition structures have been formed with demountable wall panels. This allows partitions of a variety of different functions to be produced using the same basic or common frame, and allows a partition installation to be modified, adapted or repaired by substituting new wall panels in place of the existing ones.

In certain instances it may be necessary to use a wall panel member which is thicker than an adjacent wall panel member (this may be for insulation or security reasons). Unfortunately using wall panel members of different thickness produces an irregular and non-continuous exterior surface. This is aesthetically unappealing and may prove to be a safety hazard.

Additionally, wall partitioning systems have been created and are well known in the art, which allow the structural members to be adjusted vertically to compensate for irregular floor surfaces. While these partitioning systems do provide a level wall partition they do not address the unsightly gap that is formed between the bottom horizontal structural member and the uneven floor.

Many wall partitioning systems provide openings along the sides of their vertical structural members. These openings detract from the overall appearance of the wall partition. These openings maybe useful, for example, for mounting support brackets for shelving.

The following prior art patents deal with various aspects of partitioning frame structures:

U.S. Patent No. 5,486,041 discloses a cabinet structure with interconnected side, top and back panels. This apparatus uses coupling members to hold the panels together. The cabinets are stackable and configurable in various different arrangements.

U.S. Patent No. 4,905,428 discloses a partition structure having a rigid rectangular frame and rigid rectangular panels received in openings on opposite sides of the frame. The panels are held in place by resilient U-shaped hooks.

U.S. Patent No. 5,524,402 also discloses a partition structure having a rigid rectangular frame and rigid rectangular panels received in openings on opposite sides of the frame. This patent further discloses the use of corner members and frame elements for the leveling of the frame structure on an uneven floor.

U.S. Patent No. 4,779,392 discloses a building wall comprising channel-shaped uprights and metal-clad insulating panels. The panels are arranged in alternating sequence so that the interior faces form the interior walls and the exterior faces form the exterior

walls.

U.S. Patent No. 6,128,877 discloses a partition frame system that allows the use of variable width wall panels. The width of the wall panel may be customized on the site and the frame structure adjusted accordingly to accept it.

U.S. Patent No. 6,134,845 discloses a partition frame system whereby wall panels are hung on a structural frame via hooks.

None of the above mentioned prior art patents resolve the problem of providing a flush and continuous surface when using wall panel members of different thicknesses.

Also none of the above mentioned prior art patents address the problem of the unsightly gap that is formed between a bottom horizontal structural member and an uneven floor. Nor do any of these prior art patents address the issue of the unsightly vertical gap formed between adjacent wall panel members.

#### Summary of the Invention

Various aspects of the invention disclosed herein resolve one or more of the above identified problems in novel and unique ways.

In one aspect, the partition frame structure disclosed herein comprises a structural frame having vertical and horizontal members. The horizontal members

are longitudinally continuous, have a hollow cross-section and have spaced apart openings in discrete areas.

In a further aspect, the panel assembly includes a plurality of panels for attachment to a partition frame structure. The plurality of panels vary in thickness by at least one thickness measurement. The assembly includes a plurality of frame engaging means for securing the plurality of panels to the partition frame structure. Each panel in the plurality of panels includes an associated frame engaging means. The assembly also includes a plurality of panel engaging means in the partition frame structure for receiving the plurality of frame engaging means to secure the plurality of panels to the partition frame structure. For each panel, the associated frame engaging means is securable to each of the plurality of panel engaging means at a plurality of different distances to vary a spacing of the panel from the partition frame structure by the at least one thickness measurement.

In a further aspect, a partition structure comprises an adjustable leveling channel having a floor contacting upwardly opening lower channel member telescoping within a downwardly opening upper channel member. A threaded rod extends through the upper channel member and contacts a base of a lower channel member. Rotation of the threaded rod causes extension of the lower channel member relative to the upper channel member.

In a still further aspect, a partition structure comprises a resilient filler material situated in a gap

formed between two adjacent wall panel members. The resilient material acts to hide the openings in the vertical structural member, while being displaceable to allow access to said openings.

#### Brief Description of the Drawings

FIG. 1 is a perspective view of a partition in a semi-assembled state in accordance with a preferred embodiment of the present invention;

FIG. 2 is an exploded perspective view of the clips and the openings of Figure 1;

FIG. 3 is a cross-sectional exploded view of the clips in place, supporting various size wall panels;

FIG. 4 is a cross-sectional view of the adjustable floor leveling channel of Figure 1;

FIG. 5 is a perspective view of the adjustable floor leveling channel of Figure 1;

FIG. 6 is a cross-sectional view of a fully assembled partition frame structure system in accordance with a preferred embodiment of the present invention;

FIG. 7 is a cross-sectional view of the resilient gap concealing means in accordance with a preferred embodiment of the present invention; and

FIG. 8 is an exploded view of part of the partition of Figure 1.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, FIGS. 1 and 8 show a partition frame structure 1 comprising channel section vertical structural members 2, and two channel section horizontal structural members 3. FIGS. 1 and 8 also show partition elements including wall panel member 4, intermediate clips 5, openings 6, adjustable wall

leveling channel 7, top cap member 8 and a baseboard member 9. The horizontal structural members 3 are longitudinally continuous open channels with a hollow cross-section and spaced apart openings 6 in discrete areas.

The vertical structural members 2 and the horizontal structural members 3 are connected to form a substantially rectangular structure. Each end of a horizontal structural member 3 is received within a vertical structural member 2 and the members 2 and 3 are connected together, for example with mechanical fasteners such as rivets passed through holes 2a and 3a (see FIG. 5). The clips 5 are mounted to the inner surface 12 of the wall panel member 4.

In addition to the intermediate clips 5, the panel 4 has upper and lower clips 19 attached to it. The panel 4 is mounted to the frame structure by engaging intermediate clips 5 in openings 6 in an intermediate horizontal member 3, and engaging clips 19 in similar openings 6 in upper and lower horizontal members 3. In a preferred form, the outer surface of wall panels 4 of differing thickness are maintained at a constant distance from the partition frame structure 1, thus maintaining a continuous and flush exterior surface.

Preferably, the vertical and horizontal structural members 2 and 3 are composed of a steel alloy. Preferably, the members 2 and 3 are made from rolled steel channels. Alternatively, vertical and horizontal structural members 2 and 3 are constructed of aluminum, in which embodiment members 2 and 3 are attached together

by screws acting on screw bosses extruded into the members 2 and 3, instead of by rivets that pass through holes 2a and 3a as shown in Figure 5.

Preferably, the openings 6 are formed by being punched into the partition frame structure 1.

The vertical structural members 2 may have a vertically extending array of openings in them, such as discrete slots 18 which run along the length of the member. The slots 18 may, for example, be for supporting bracket arms for shelving.

As seen in more detail in FIGS. 2 and 3, the intermediate clips 5 comprise a base 20 having an outer side 22 adapted to be applied to the inner surface 12 of a wall panel member 4. The clip 5 has first and second flanges 24 and 26 at opposite sides of the base 20. Each of the flanges 24 and 26 has a lip 28 and 28a thereon respectively, adapted to be engaged with an edge 27 of the opening 6. The lip 28a on flange 26 is spaced inwardly from said outer side 22 a greater distance than the lip 28 on the other flange 24. Wall panel members 4 and 4a of differing thicknesses may be attached on said frame structure 1 with their outer faces 25 maintained at the same distance from the frame structure 1 by engaging the first flange 24 or the second flange 26 selectively with said edge 27 of said opening 6.

For example, as seen in the left hand half of FIGS. 2 and 3, when attaching a panel 4 of greater thickness, the intermediate clip 5 is oriented so that the lip 28 spaced a smaller distance from the base 20 is lowermost and engages the edge 27 of opening 6. As seen in the right hand half of FIGS. 2 and 3, when applying a thinner panel 4, the intermediate clip 5 is oriented so that the lip 28a spaced a greater distance from base 20 is lowermost and engages the edge 27 of the opening. With this arrangement, the outer sides 25 of the panels 4 and 4a are disposed the same distance from the centre line of the frame structure 1, so that the outer side of adjacent panels can be disposed flush with one another, even where the panels are of differing thicknesses. The panels 4 and 4a may, for example, be of 12 mm and 9 mm thickness, respectively, and the difference between the opening of the lips 28 and 28a from the base 20 may in such case be 3mm.

For the upper and lower clips 19, differences in thickness between panels 4 and 4a may be accommodated by rebating the margins 34 of the thicker panel 4, as seen in FIG.2, and affixing the clips 19 to the rebated margins 34. For example, in the case in which the panels 4 and 4a are 12 and 9 mm thick, respectively, the margins 34 may be rebated 3 mm.

FIGS. 2 and 3 show the upper and lower clips 19 having a base 200 having an outer side 220 adapted to be applied to the inner surface 12 of a wall panel member 4. The upper and lower clips 19 have first flanges 240 and second flanges 260 at the same side of the base 200. Flange 260 has a lip 280 thereon adapted to be engaged

with an edge 27 of opening 6.

The clips 5 and 19 may be attached to the panels 4 and 4a using, for example, screws passed through holes 270 in the bases 20 and 200.

FIG. 6 illustrates a preferred method of attachment of the top cap 8 to an upper horizontal structural member 3.

Top cap 8 comprises an extrusion, for example of plastics material, with a channel 280 with re-entrant lips 282 moulded on its lower side. Short lengths of a resilient plastics channel section extrusion 284 are engaged in the channel 280 at intervals (see also FIGS. 1 and 8) and are snapped through openings 14 preferably punched in the upper member 3.

FIGS. 4 and 5 illustrate one preferred form of adjustable leveling channel 7, which compensates for uneven floor surfaces. The adjustable leveling channel also allows a lower channel member 40 to be in more nearly continuous contact with the floor surface.

Upwardly opening lower channel member 40 telescopes within downwardly opening upper channel member 42. Each end of channel members 40 and 42 are secured and fit within vertical members 2. An auxiliary downwardly open channel section member 290 is secured within lower horizontal member 3. The base of channel 290 engages and retains an internally threaded collar 54 received in an opening in the base 56 of channel 42. Collar 54 has an upper annulus resting on the upper side of base 56. A

threaded rod 44 passes through an opening 50 in lower horizontal member 3, through a smaller opening in the base 292 of channel 290 and engages in the threaded collar 54.

Access to the tool engagable head portion 52 is provided through circular opening 50.

Rotation of the threaded rod 44 in the direction causing the rod 44 to extend downwardly relative to channel 42 causes extension of the lower channel member 40 relative to the upper channel member 42 as the lower end of rod 44 bears on the inner side of channel 40.

Preferably, the lower channel member 40 is friction fit inside the upper channel member 42.

Preferably, the lower channel member 40 is made of a resilient material, more preferably, of resilient plastic material.

The vertical structural members 2 may have a vertically extending array of openings in them, such as discrete slots 18 which run along the length of the member. The slots 18 may, for example, be for supporting bracket arms for shelving.

When the wall panel members 4 are affixed to the partition frame structure 1 via the clips 5 and 19, there remains a relatively small vertical gap 72 as seen in FIG.7 between adjacent wall panel members 4. A flat blade gap concealing means 70 is placed on either side of the vertical wall panel member adjacent to the vertical

gap 72 to hide the slots 18, but is displaceable resiliently to one side to allow access to the slots 18, for example, or insertion of a member 294 adapted to engage in slots 18, such as, for example, a shelf bracket. The flat blade 70 is made of a resilient material.

FIG. 7 also shows a length of generally L-section corner extrusion 76 adapted to be attached to vertical members 2 at a corner and to retain a corner cap extrusion 78 that is snap-fitted to extrusion 76.

If a window is to be installed instead of a wall panel member 4, the horizontal structural members 3 are replaced with window framing members 48 (see FIG. 4). The window framing members 48 extends around the interior perimeter of the horizontal structural members 3 and the vertical structural member 2.

The window framing member 48 may comprise two halves which engage the window between them.

The present invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. Therefore, the presently discussed embodiments are considered to be illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than the foregoing description, and all changes which come within the meaning and range of the fluency of the claims are therefore intended to be embraced therein.

CLAIM:

1. Partition frame structure comprising:  
a structural frame having vertical members and horizontal members, wherein  
said horizontal members have hollow cross-sections and are longitudinally continuous open channels with spaced apart openings formed through them in discrete areas, and  
said vertical members and horizontal members are connectable to form the structural frame.
2. The partition frame structure of claim 1 wherein the structural frame is composed of a steel alloy.
3. The partition frame structure of claim 1, wherein the openings are punched into the frame structure.
4. The partition frame structure of claim 1, wherein the structural frame comprises rolled steel channels.
5. The partition frame structure of claim 1, wherein the horizontal structural member at the bottom of the structural frame comprises an adjustable leveling channel.
6. The partition frame structure of claim 1 wherein the structural frame is constructed of extruded aluminum.
7. A panel assembly for attaching a plurality of panels to a partition frame structure, wherein the plurality of panels vary in thickness by at least one thickness measurement, the assembly comprising:  
a plurality of frame engaging means for securing the

plurality of panels to the partition frame structure, each panel in the plurality of panels including an associated frame engaging means; and

a plurality of panel engaging means in the partition frame structure for receiving the plurality of frame engaging means to secure the plurality of panels to the partition frame structure;

wherein for each panel, the associated frame engaging means is securable to each of the plurality of panel engaging means at a plurality of different distances to vary a spacing of the panel from the partition frame structure by the at least one thickness measurement.

8. The panel assembly as defined in claim 7 wherein the at least one thickness measurement comprises a thickness amount;

the plurality of panels comprises at least one thin panel and at least one thick panel, the at least one thick panel being thicker by the thickness amount than the at least one thin panel;

each frame engaging means in the plurality of frame engaging means comprises a clip;

each panel engaging means in the plurality of frame engaging means comprises a clip-receiving aperture;

each clip includes an associated first flange and an associated second flange, the associated first flange having a first lip for engaging an edge of a clip-receiving aperture and the associated second flange having a second lip for engaging the edge of the clip-receiving aperture; and,

the associated second lip is spaced further from the panel than the first lip by the thickness amount such

that a plurality of outer faces of the plurality of panels can be aligned when the plurality of panels are secured to the frame structure by engaging the second lip of the second flange of the clip for the at least one thin panel with the edge of the clip-receiving aperture, and by engaging the first lip of the first flange of the clip for the at least one thick panel with the edge of the clip-receiving aperture.

9. A partition frame structure comprising:

an adjustable leveling channel having a floor contacting upwardly opening lower channel member telescoping within a downwardly opening upper channel member, a displacement means extending through the upper channel member and contacting a base of a lower channel member, the displacement means being operable to displace the lower channel member relative to the upper channel member.

10. The partition frame structure of claim 9, wherein displacement means is a threaded rod.

11. The partition frame structure of claim 10, wherein the lower channel member is friction fit inside the upper channel member.

12. The partition frame structure of claim 11, wherein the lower channel member is made of a resilient material.

13. The partition frame structure system of claim 9, wherein the lower channel member is made of plastics material.

14. A partition structure comprising:

a plurality of adjacent frame structures, each having a vertical member having a vertically extending array of openings;

a separate wall panel member attached on each vertical member with an edge spaced inwardly from an outer edge of said vertical member, thereby providing a gap between the adjacent separate wall panel member, and

an elongated resilient filler material extending into the gap and between said edges of the adjacent separate wall panel member, the elongated resilient filler material being resiliently displaceable to allow access to the openings.

15. The partition structure of claim 14, wherein said openings comprise vertically elongated slots.

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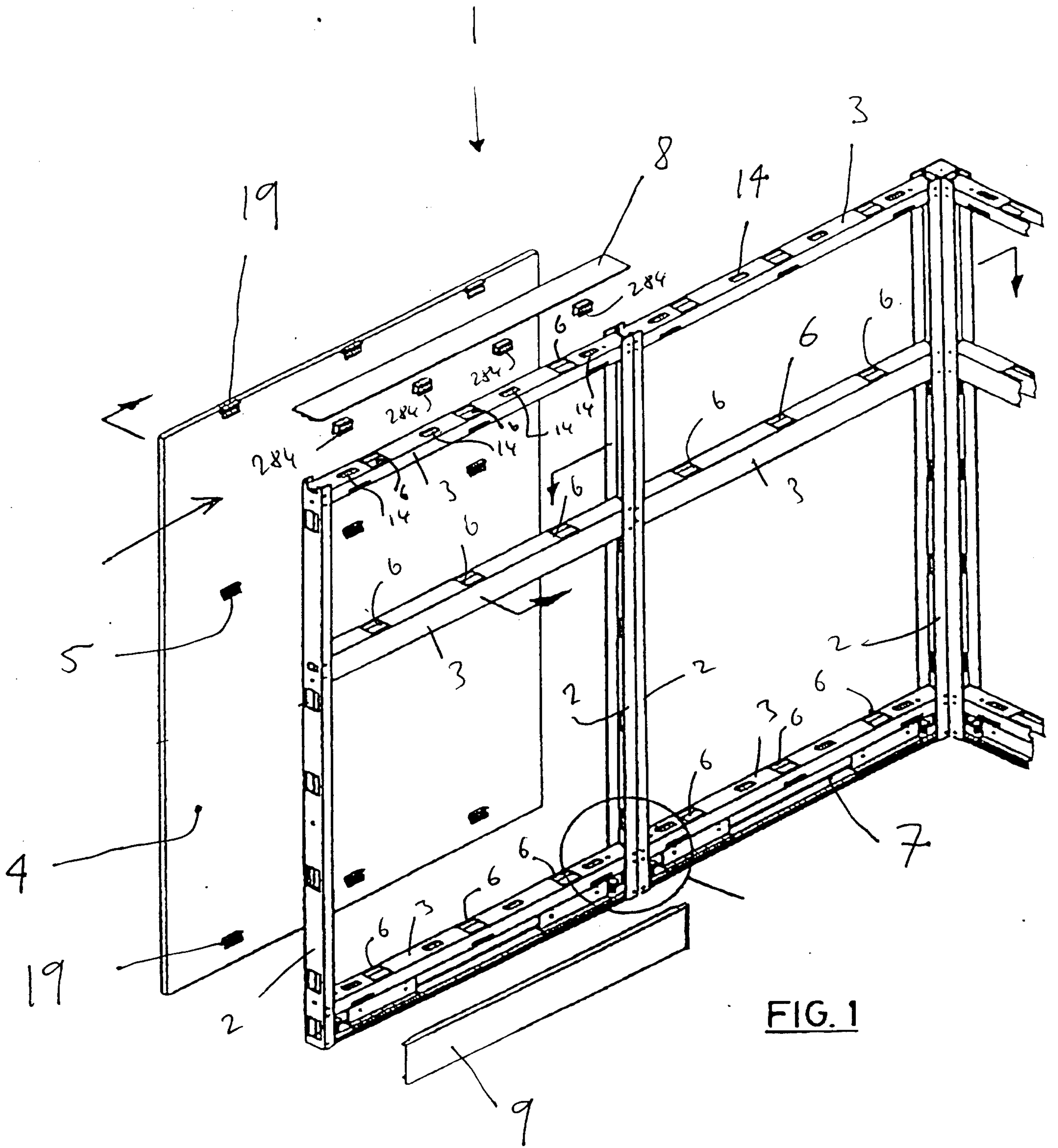


FIG. 1

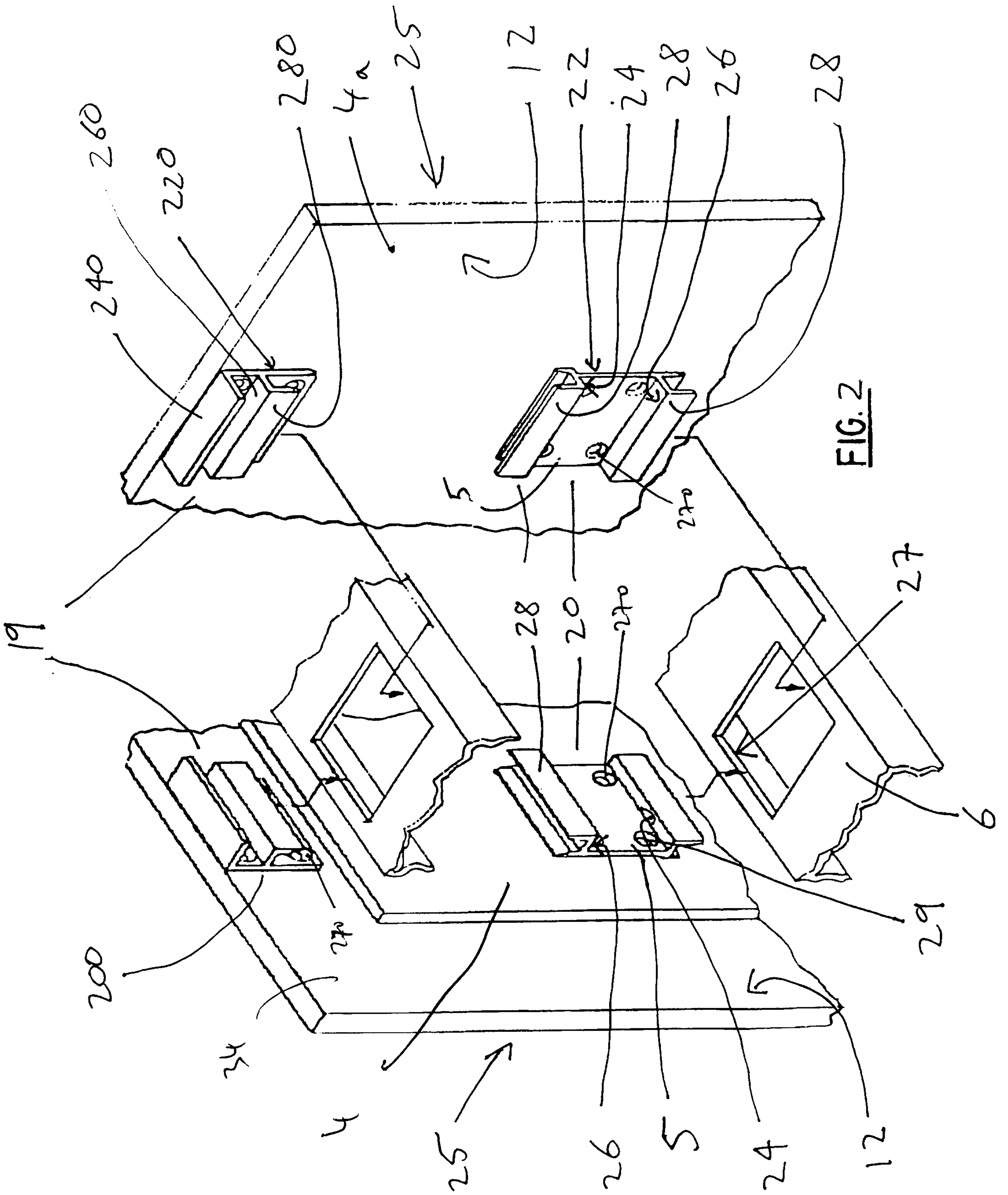


FIG. 2

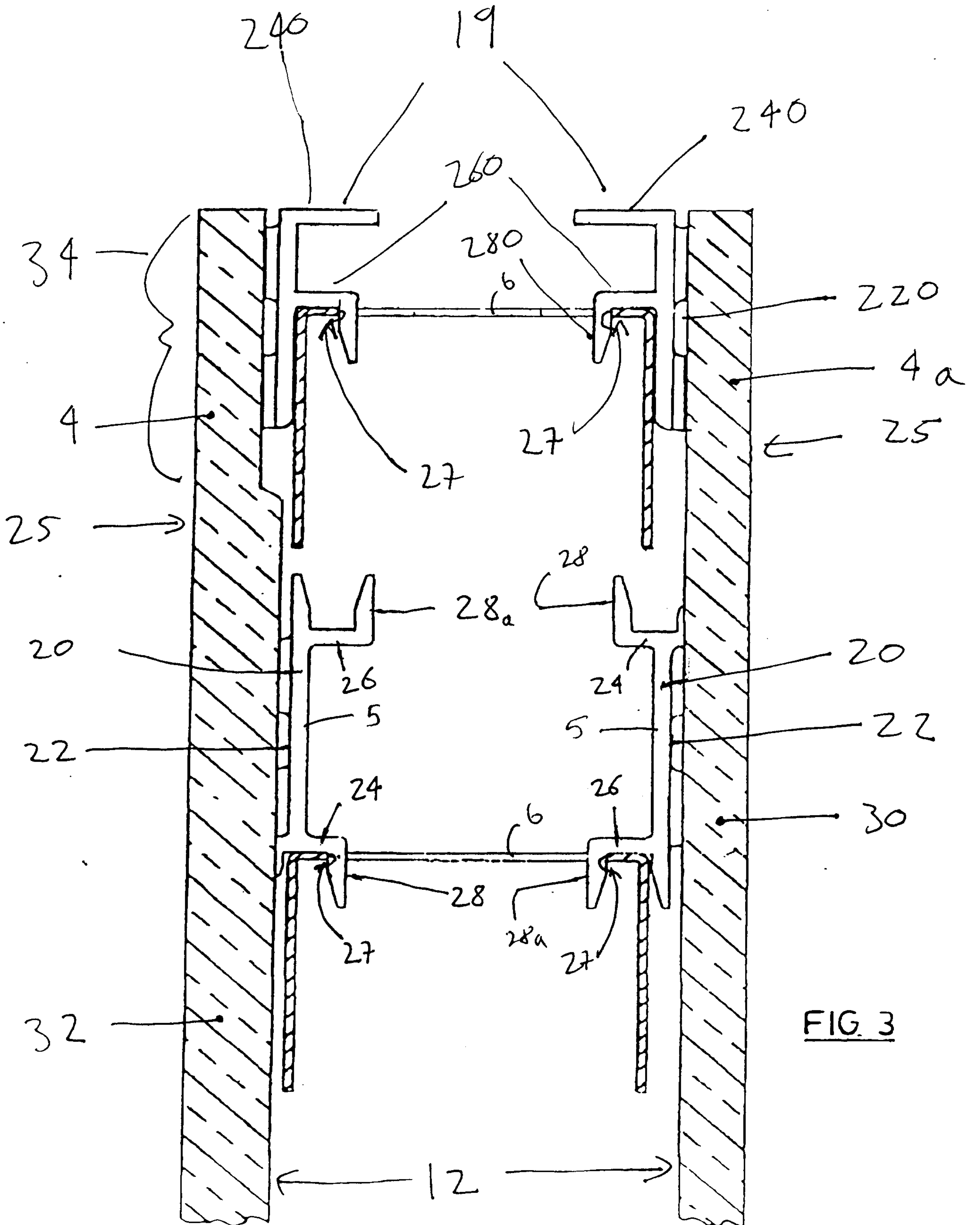


FIG. 3

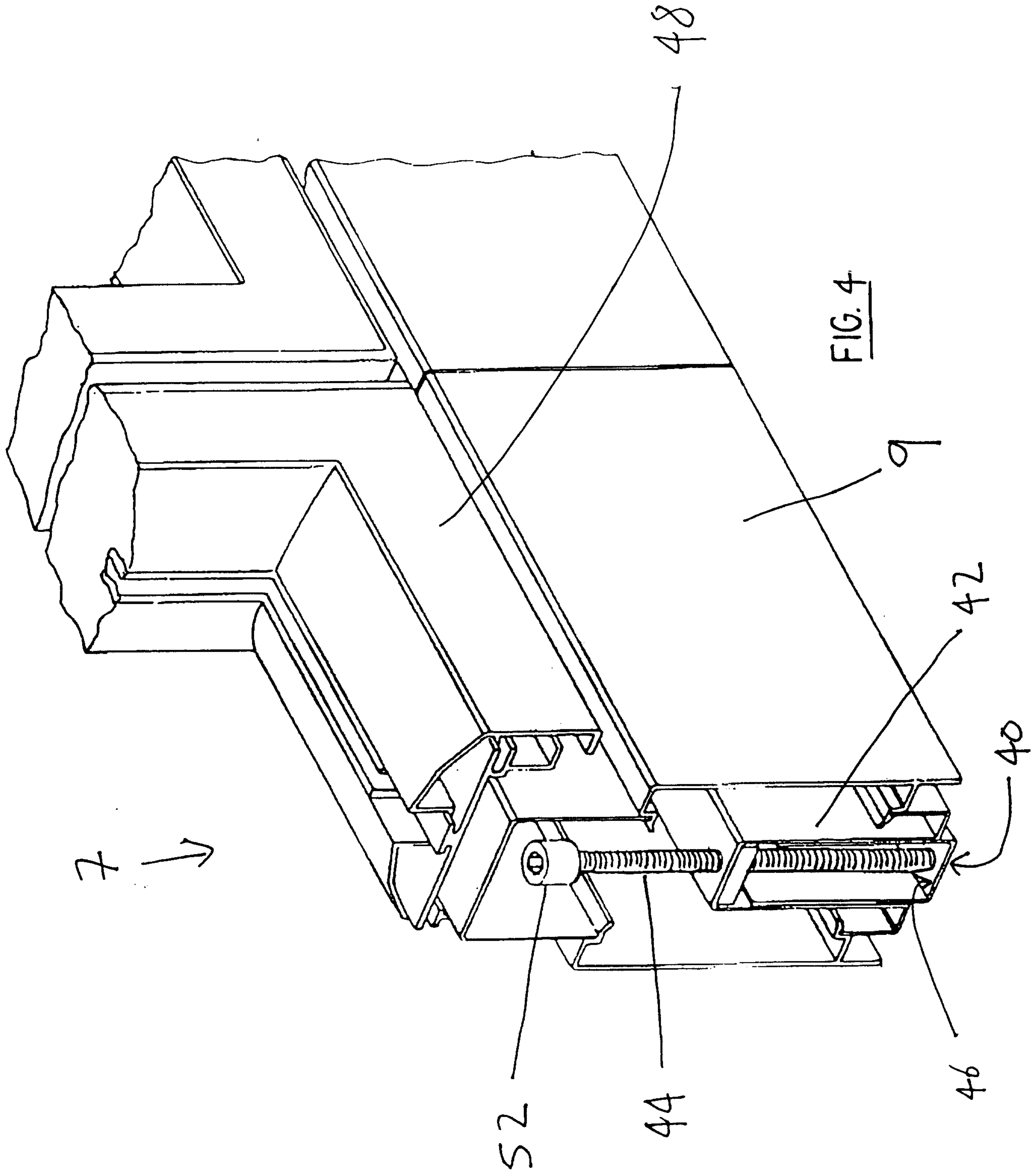


FIG. 4

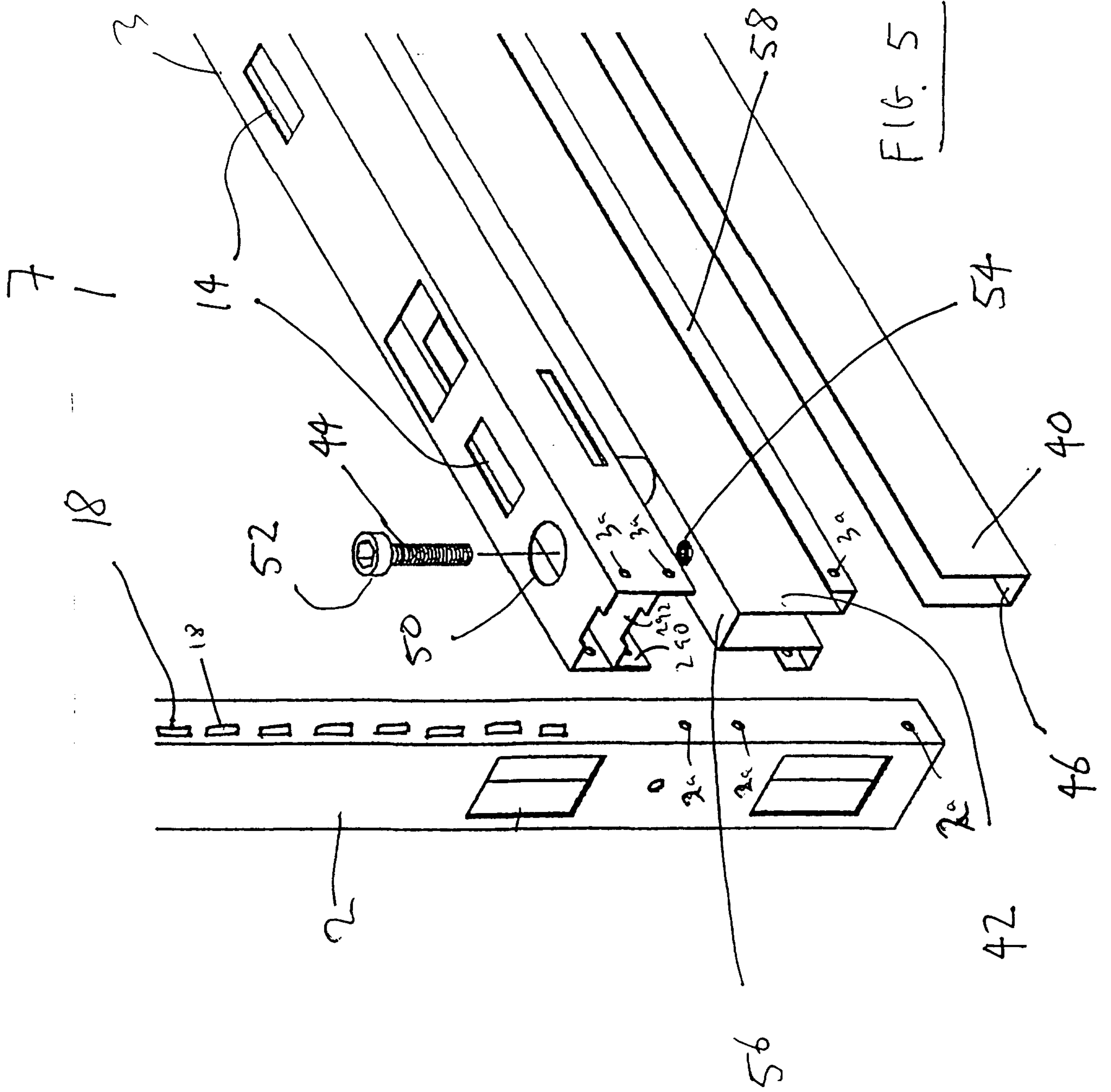
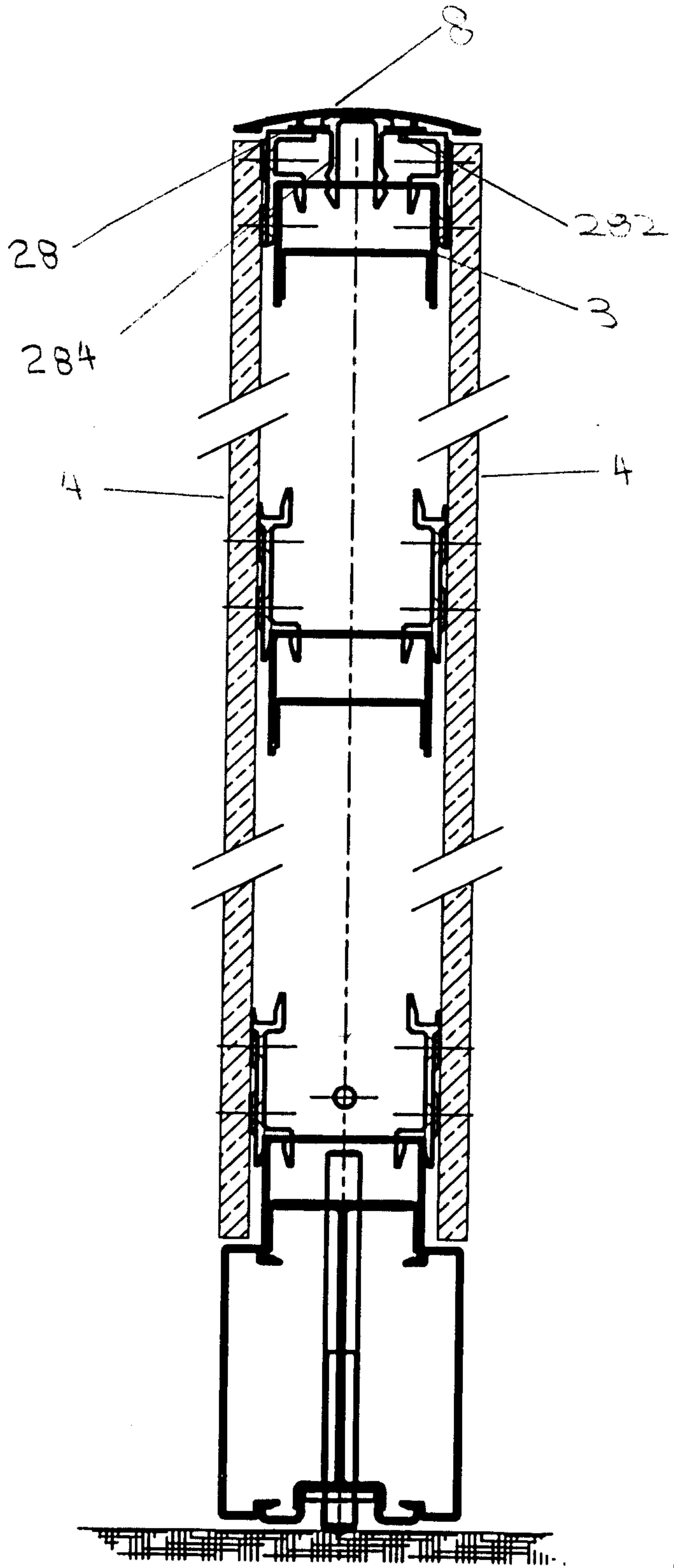


Fig. 6



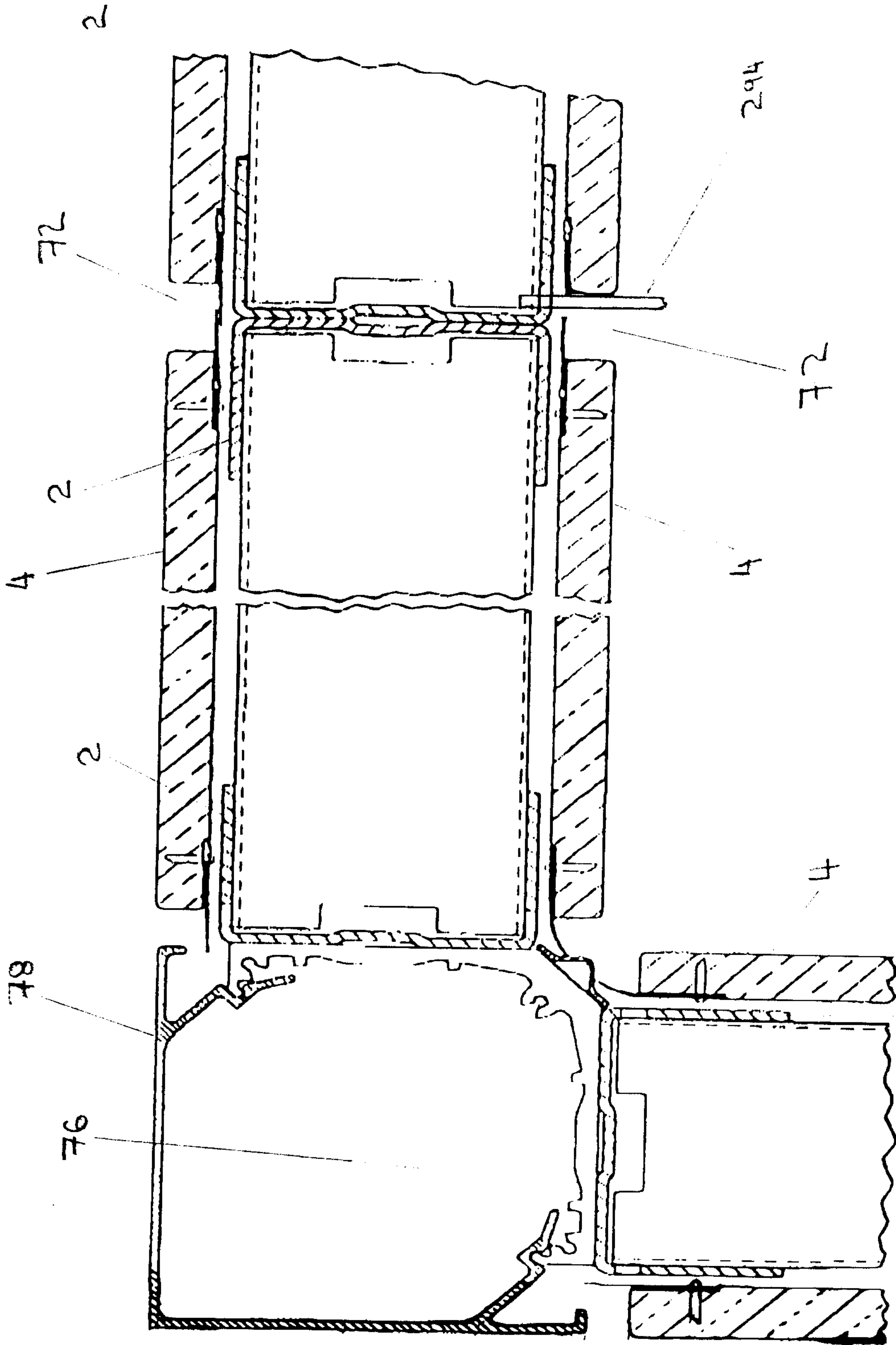


Fig. 1

4 2

Fig. 8

