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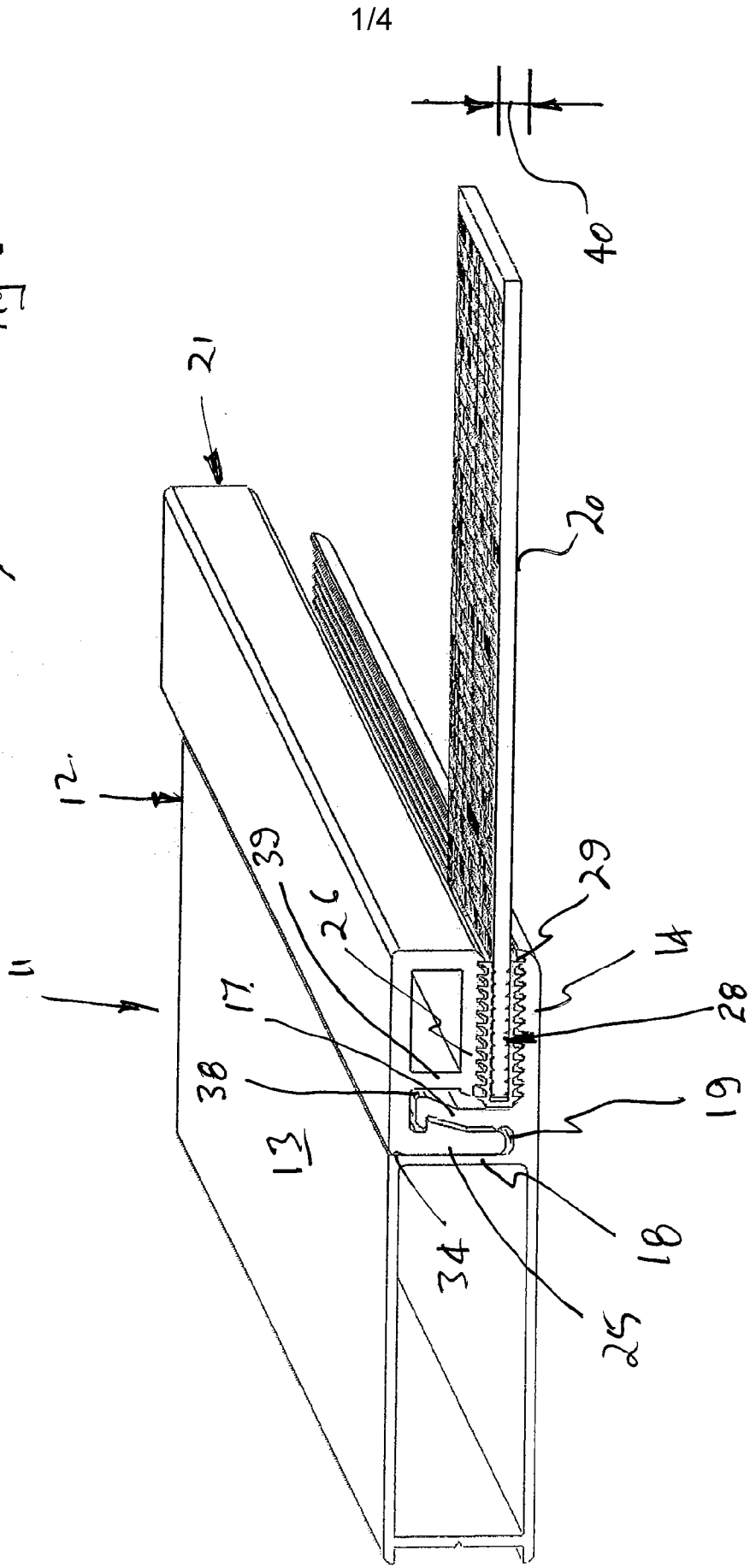
(56) Related Art  
**AU 2006100242 A4**  
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**AU 2003244563 A1**  
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**WO 2005/010310 A1**

## A FRAME TO RECEIVE A MESH PANEL

### ABSTRACT

A frame assembly (11) for a security door or window. The assembly (11) includes a mounting member (12) that provides a base (13) that is hollow and that is generally square or rectangular in cross-section. The mounting member (12) includes a mounting flange (14) and a securing flange (17) that engage and cooperate with a securing member (21) to secure a mesh panel (20) to the frame (11).

Fig 1



## **A FRAME TO RECEIVE A MESH PANEL**

### **Field**

[0001] The present invention relates to frames that receive a panel, such as frames for security doors and windows that receives a metal mesh panel.

### **BACKGROUND**

[0002] Security doors and windows include a generally rectangular or square frame that receives a sheet (panel) of metal mesh. The frames include an elongated base providing a longitudinally extending slot into which the mesh is inserted. A “wedge” member is then inserted in the slot with the mesh. More particularly the wedge member is inserted by means of a hammer (impact) so that it is “sandwiched” with the mesh in the slot to fix the mesh to the frame.

[0003] An alternative construction is the base having a flange to which the mesh is secured to by means of threaded fasteners. The threaded fasteners engage a clamp member, with the mesh located between the flange and clamp member.

[0004] The above discussed constructions have a number of disadvantages including the considerable time required to construct the assembly.

[0005] A further disadvantage is use of wedge members. The wedge members are engaged by a hammer, which applies an impact force to the wedge member in a direction generally parallel to the plane of the door frame. This can often cause distortion of the door or window frame.

[0006] In respect of the abovementioned threaded fasteners, a disadvantage is that in order to reduce assembly time, a full complement of threaded fasteners is frequently not employed. This makes the assembly vulnerable.

### **OBJECT**

[0007] It is the object of the present invention to overcome or substantially ameliorate at least one of the above disadvantages.

## SUMMARY OF INVENTION

[0008] The present invention provides a frame assembly to engage a panel, the assembly including:

a longitudinally elongated panel mounting member including a base, a panel mounting flange extending longitudinally of the base and transversely outwardly from the base, and a securing flange adjacent the mounting flange, the securing flange extends generally parallel to the base and borders a securing slot, the slot extending longitudinally generally parallel to the base and has a transversely direction of extension away from the mounting flange; and

a securing member having a longitudinally extending engaging flange for projecting into the slot and engaging the securing flange so as to secure the securing member to the panel mounting member, the securing member also having a panel mounting portion adjacent the mounting flange so that a mounting slot is defined between the mounting portion and the mounting flange to receive the panel so that the panel is clamped between the mounting portion and mounting flange to secure the panel to the base; and

wherein the mounting member base has a longitudinally extending mounting member wall, and wherein the mounting member wall has a projection that extends into the securing slot to engage the engaging flange to at least aid in resiliently deforming the securing member to urge the securing member toward the mounting flange and therefore the panel.

[0009] Preferably, the securing member has a base, with a wall of the securing member base providing said mounting portion.

[0010] Preferably, the securing slot and the mounting slot both extend longitudinally generally parallel to the mounting member base, with the slots having transverse directions of extension that are substantially perpendicular.

[0011] Preferably, the securing member has a longitudinally extending receiving slot that receives the mounting member securing flange.

[0012] Preferably, the securing slot is located between the mounting member wall and the securing flange.

[0013] Preferably, the securing slot and receiving slot are generally parallel with each having a transverse direction of extension that is transverse relative to the mounting slot.

[0014] Preferably, the mounting member and the securing member are configured so that the securing member is resiliently deformed by a bending moment being applied thereto, resulting in the securing member being urged toward the mounting flange so that the securing member is urged into engagement with the panel.

[0015] Preferably, the securing flange and/or the engaging flange have a catch to aid in retaining the engaging flange in the securing slot.

[0016] As is described above, the mounting member wall has a projection that extends toward the engaging flange to engage the engaging flange to at least aid in resiliently deforming the securing member so that a bending moment is applied to the securing member to urge the securing member toward the mounting flange and therefore the panel.

[0017] Preferably, the securing flange has a projection to engage the engaging flange to at least aid in resiliently deforming the securing member so that a bending moment is applied to the mounting member to urge the mounting member toward the mounting flange, and therefore the panel.

[0018] There is further disclosed herein a method of securing a panel to a frame assembly, the method including the steps of:

providing a frame assembly of a generally square or rectangular configuration so as to surround a generally square or rectangular opening to be closed by the panel;

applying the panel to the frame assembly with the panel having a periphery engaged with the frame assembly, and being generally planar in configuration; and

applying at least one securing member to the frame assembly in a direction generally perpendicular to the panel, and applying an impact in said direction so that the panel is clamped between the frame assembly and the securing member.

## **BRIEF DESCRIPTION OF DRAWINGS**

[0019] Preferred forms of the present invention will now be described by way of example with reference to the accompanying drawings wherein:

[0020] Figure 1 is a schematic isometric view of portion of a panel assembly that is to be incorporated in a security door or window;

[0021] Figure 2 is a schematic end elevation of the portion of Figure 1;

[0022] Figure 3 is a schematic end view of the portion of Figure 1 in a none finished assembly;

[0023] Figure 4 is a schematic end elevation of a panel mounting member of the assembly portion of Figure 1;

[0024] Figure 5 is a schematic end elevation of a securing member employed in the portion of Figure 1; and

[0025] Figure 6 is a schematic end elevation of a gasket employed in the portion of Figure 1.

## **DESCRIPTION OF EMBODIMENTS**

[0026] In the accompanying drawings there is schematically depicted a portion 10 of a panel assembly. The panel assembly may be an assembly employed in a security door or window. The panel assembly would include a generally rectangular or square frame assembly that supports a mesh panel. Typically the mesh would be metal mesh.

[0027] The abovementioned frame assembly would include a top and a bottom frame part, as well as upwardly extending side frame parts. Each frame part would be a frame assembly 11, as described below, with the frame parts encompassing a generally square or rectangular area that would receive the metal mesh panel 20.

[0028] The frame assembly 11 includes a longitudinally elongated mounting member 12 that would typically be an aluminium extrusion. The mounting member 12 includes a base 13 that is hollow and is generally of a square or rectangular cross-section.

[0029] The mounting member 12 also includes a mounting flange 14 that projects transversely outward from the base 13 while extending longitudinally with the base 13. Preferably the mounting flange 14 has an internal surface 15 that is provided with a series of longitudinally extending teeth or ridges 16.

[0030] The mounting member 12 further includes a securing flange 17 that is attached to the base 13. In this embodiment the flange 17 extends from the flange 14 so as to be spaced from a

longitudinally extending wall 18 of the base 13. Between the flange 17 and wall 18 is a longitudinally extending slot 19.

[0031] As mentioned above, typically the member 12 would be an extruded aluminium section. Accordingly the base 13 and flanges 14 and 16 are integrally formed.

[0032] The generally planar mesh panel 20 is secured to the mounting member 12 by means of a securing member 21. Typically, the securing member 21 would also be an aluminium extrusion.

[0033] The securing member 21 includes a base 22 that is hollow and is preferably of a square or rectangular configuration. The securing member 21 further includes an “L” shaped securing flange 23 projecting from the base 22. The flange 23 includes a first portion 24 extending from the base 22, with the portion 24 connecting a further portion 25 to the base 22.

[0034] The portion 25 is received in the slot 19 so as to secure the securing member 21 to the mounting member 12.

[0035] The base 22 has a panel mounting portion provided by a wall 26. The wall 26 has a plurality of longitudinally extending ribs or teeth 27.

[0036] The wall 26 is spaced from, but generally parallel and co-extensive with respect to the flange 14, so that a slot 28 is provided therebetween. The panel 20 is received in the slot 28 and is secured to the mounting member 12 by the flange 14 and wall 26 being urged together so that the panel 20 is clamped therebetween. The slot 28 has a depth 40.

[0037] Preferably a gasket 29 is located between the flange 14 and panel 20, and wall 26 and the panel 20 to aid in securing the panel 20 to the mounting member 12. The gasket 29 is formed of resilient plastics material.

[0038] As is best seen in Figure 4, the flange 17 has a longitudinally extending catch lip 30 that engages a longitudinally extending catch lip 31 of the securing member 21. Preferably, as the catch lip 31 passes the catch lip 30, there should be snap engagement to securely attach the securing member 21 to the mounting member 12.



[0039] Preferably, the portion 25 would include a ramp surface 32 that engages the lip 30 when the lip 30 is being moved into engagement with the lip 31, to provide for resilient deformation of the flange 17 so that the lip 30 can pass the lip 31.

[0040] The flange 17 also includes a longitudinally extending ridge 33 that engages the portion 25 to urge the portion 25 toward the wall 18.

[0041] As is best seen in Figure 3, when the securing member 21 is being moved into engagement with the mounting member 12, the portion 25 engages a longitudinally extending projection 34 of the base 13 to cause the portion 25 to be inserted at an acute angle 35 to the wall 18. This causes the wall 26 to be inclined by the acute angle 37 to the flange 14.

[0042] As the portion 25 progresses into the slot 28, the longitudinal edge portion 28 of the wall 26 engages the gasket 29 and panel 20 before the remainder of the wall 26. Once the catch lip 31 has passed the catch lip 30, the portion 25 is still engaged with the projections 34. This causes resilient deformation of the members 12 and 21 so that the wall 26 is urged into engagement with the gasket 29 and panel 20. The gasket 29 is compressed.

[0043] Essentially, due to resilient deformation of the members 12 and 21, a bending moment is applied to the member 21.

[0044] The slot 28 extends longitudinally parallel to the base 13.

[0045] The securing member 21 has a longitudinally extending slot 38 between the engaging flange 25 and the wall 39 of the base 22, that receives the flange 17.

[0046] The slots 19 and 38 are generally parallel longitudinally, as well as transversely, with the transverse direction of extensions being generally perpendicular to the panel 20. That is, once assembled, the slots 19 and 38 have a transverse direction of extension 41, which is generally perpendicular to the transverse direction of extension 42 of the slot 28.

[0047] The slots 19 and 38, as mentioned above, have a transverse direction of extension 41, that is generally parallel the direction 36.

[0048] Preferably, the gasket 29 is “U” shaped in transverse cross-section so that the panel 20 is located therein, and is provided with a plurality of teeth or ridges 35 to aid in securely engaging the mesh 20, flange 14 and wall 26.

[0049] In an alternative embodiment there may be added to the gasket 29, or as a replacement for the gasket 29, adhesive tape be applied to the major surfaces of the sheet 20 so that the adhesive tape is sandwiched between the mesh 20 and the flange 14, and the mesh 20 and the wall 26.

[0050] When assembling the securing member 21 to the mounting member 12, an impact is applied to the member 21 in the direction 36 to drive the portion 25 into the slot 19.

[0051] The above described preferred embodiment has the advantage that the impact force is in the direction 36 that is generally perpendicular to the plane of the sheet 20, and generally perpendicular to the overall plane of the frame assembly and panel 20. This reduces the possibility of distortion of the frame due to the impact. Assembly time is also reduced.

## CLAIMS:

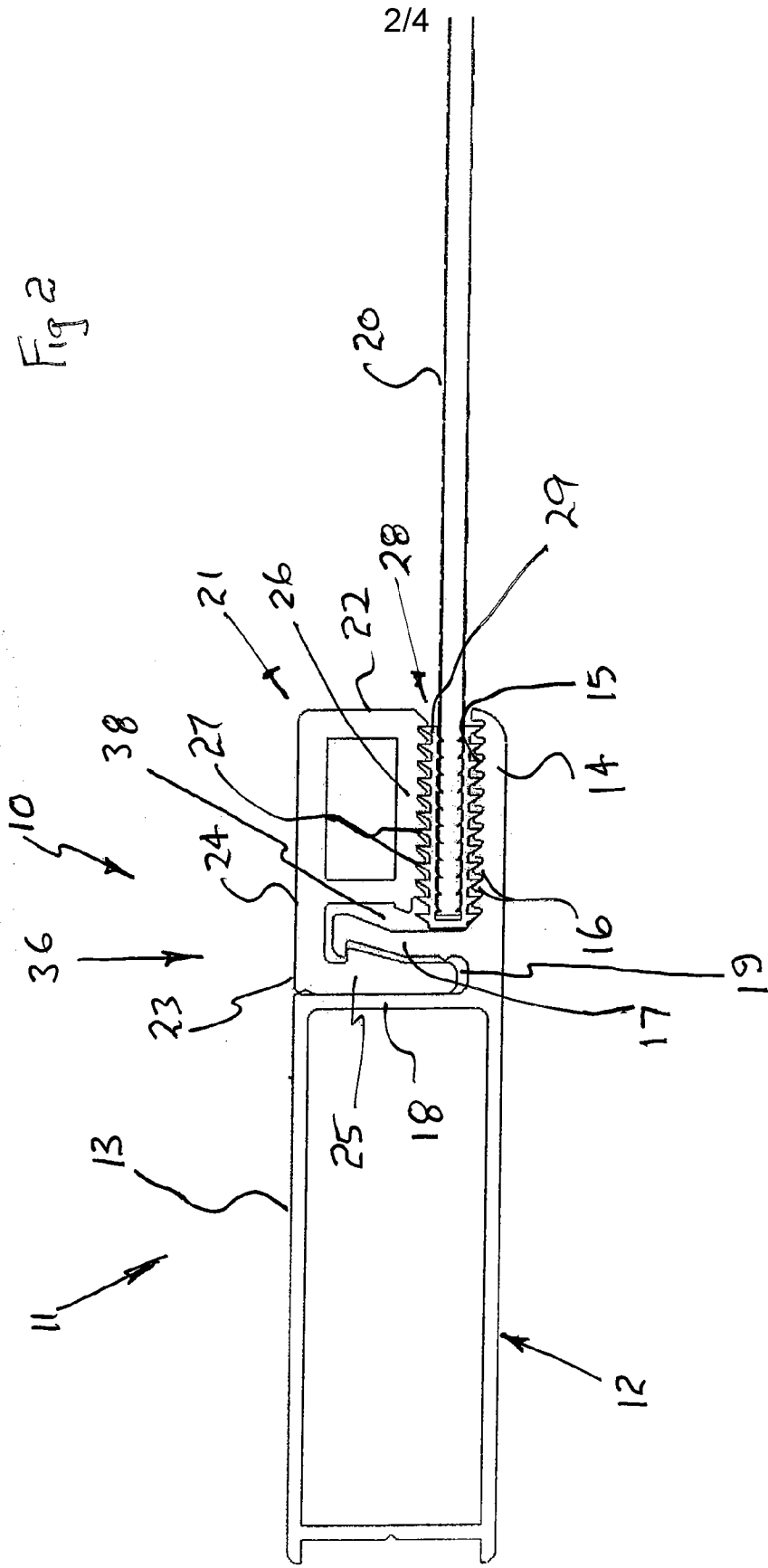
1. A frame assembly to engage a panel, the assembly including:  
a longitudinally elongated panel mounting member including a base, a panel mounting flange extending longitudinally of the base and transversely outwardly from the base, and a securing flange adjacent the mounting flange, the securing flange extends generally parallel to the base and borders a securing slot, the slot extending longitudinally generally parallel to the base and has a transversely direction of extension away from the mounting flange; and  
a securing member having a longitudinally extending engaging flange for projecting into the slot and engaging the securing flange so as to secure the securing member to the panel mounting member, the securing member also having a panel mounting portion adjacent the mounting flange so that a mounting slot is defined between the mounting portion and the mounting flange to receive the panel so that the panel is clamped between the mounting portion and mounting flange to secure the panel to the base; and  
wherein the mounting member base has a longitudinally extending mounting member wall, and wherein the mounting member wall has a projection that extends into the securing slot to engage the engaging flange to at least aid in resiliently deforming the securing member to urge the securing member toward the mounting flange and therefore the panel.
2. The frame of claim 1, wherein the securing member has a base, with a wall of the securing member base providing said mounting portion.
3. The frame of claim 1 or 2, wherein the securing slot and the mounting slot both extend longitudinally generally parallel to the mounting member base, with the slots having transverse directions of extension that are substantially perpendicular.
4. The frame of claim 1, 2 or 3, wherein the securing member has a longitudinally extending receiving slot that receives the mounting member securing flange.
5. The frame of claim 4, wherein the securing slot and receiving slot are generally parallel with each having a transverse direction of extension that is transverse relative to the mounting slot.
6. The frame of any one of claims 1 to 5, wherein the securing slot is located between the mounting member wall and the securing flange.

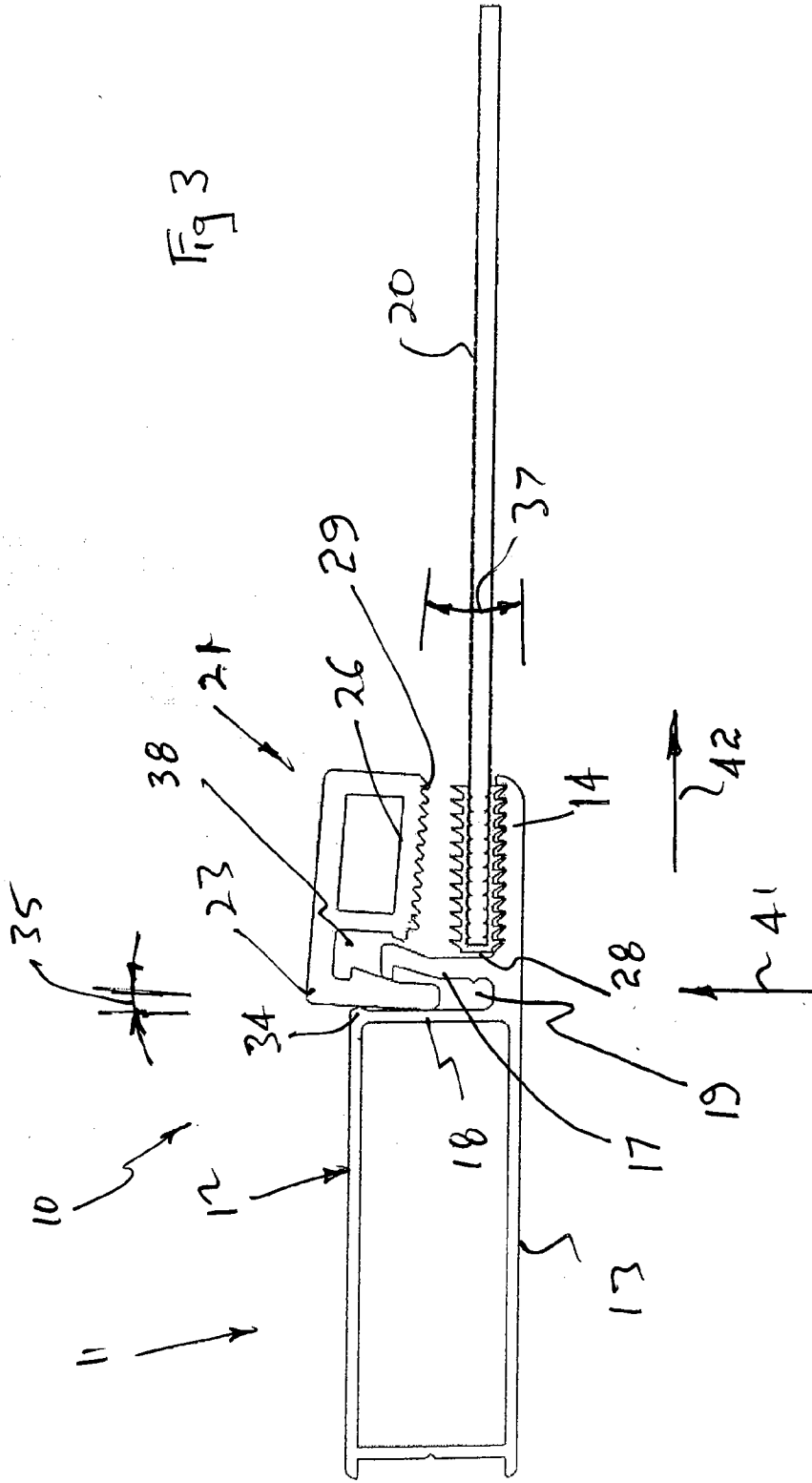
7. The frame of any one of claims 1 to 6, wherein the mounting member and the securing member are configured so that the securing member is resiliently deformed by a bending moment being applied thereto, resulting in the securing member being urged toward the mounting flange so that the securing member is urged into engagement with the panel.
8. The frame of any one of claims 1 to 7, wherein the securing flange and/or the engaging flange have a catch to aid in retaining the engaging flange in the securing slot.
9. The frame of any one of claims 1 to 8, wherein the securing flange has a projection to engage the engaging flange to at least aid in resiliently deforming the securing member so that a bending moment is applied to the securing member to urge the mounting member toward the mounting flange, and therefore the panel.
10. The frame of any one of claims 1 to 9, wherein a gasket is located between the panel mounting flange and panel, and the panel mounting portion and the panel to aid in securing the panel within the mounting slot.
11. The frame of claim 10, wherein the gasket is formed of resilient plastics material.
12. The frame of claim 10, wherein the gasket is “U” shaped in transverse cross-section so that the panel is located therein.
13. The frame of claim 10, wherein the gasket is formed of adhesive tape applied to the panel so that the adhesive tape is sandwiched between the panel mounting flange and panel, and the panel mounting portion and the panel.

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Fig 2





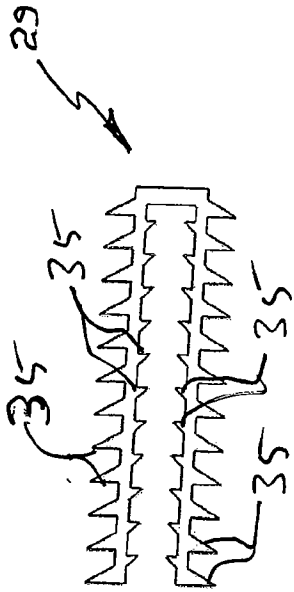


Fig 6

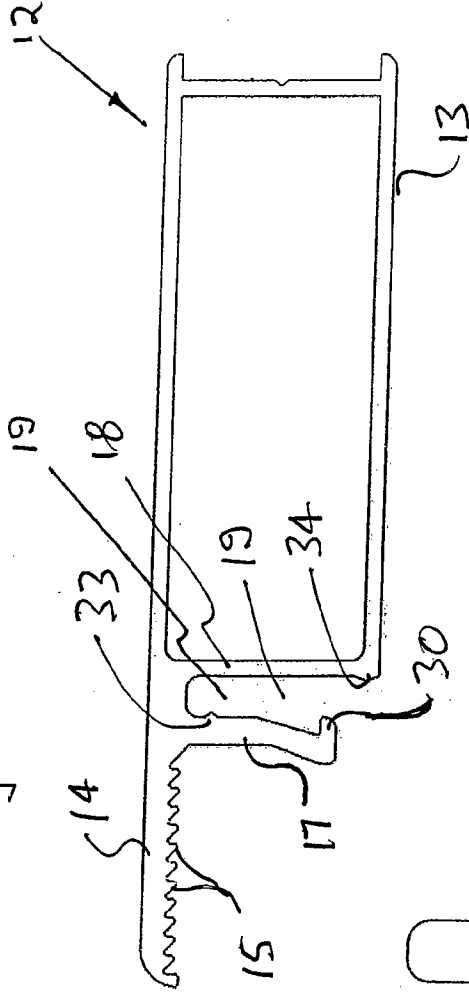


Fig 4

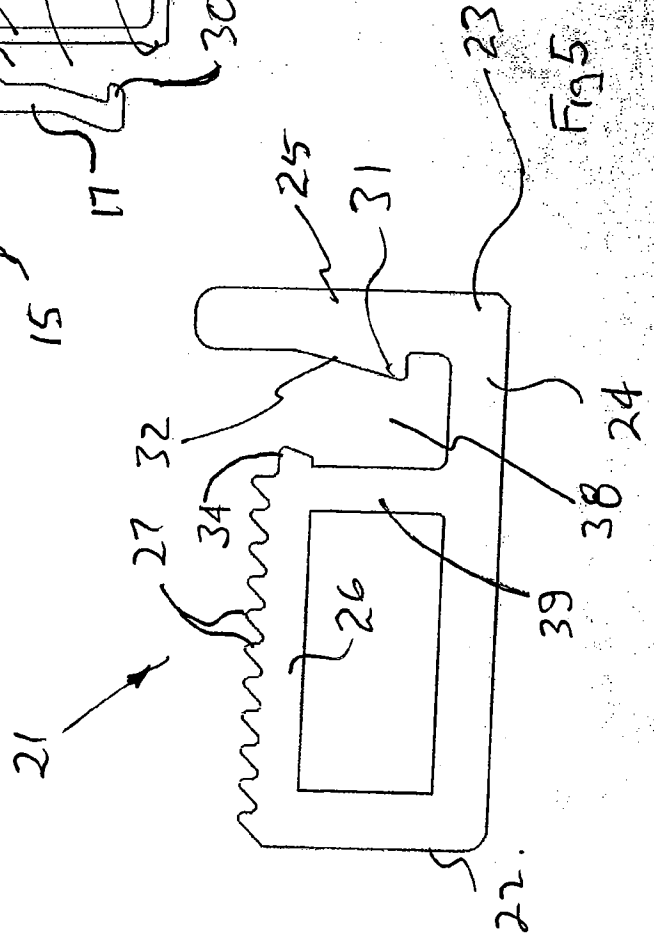


Fig 5