Jan. 6, 1970 J. B. JAMES 3,487,601

SUPPORT BASED, PANEL ATTACHMENT

Filed Dec. 21, 1967 2 Sheets-Sheet 1

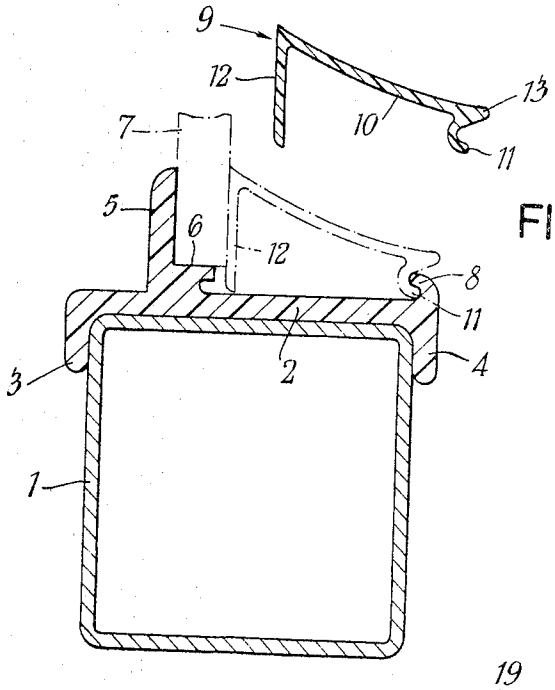

FIG. 1

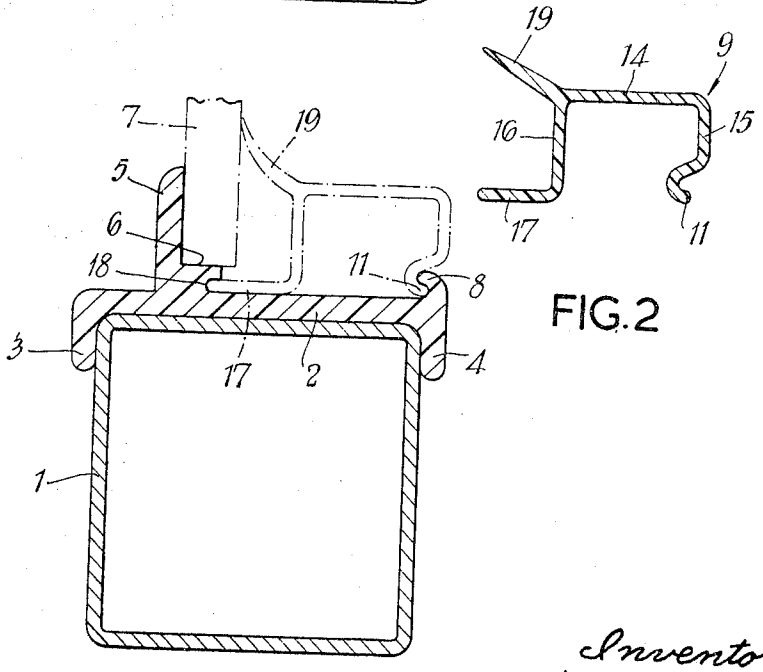

FIG. 2

Inventor
John B. James
by Sommers & Young
Attorneys

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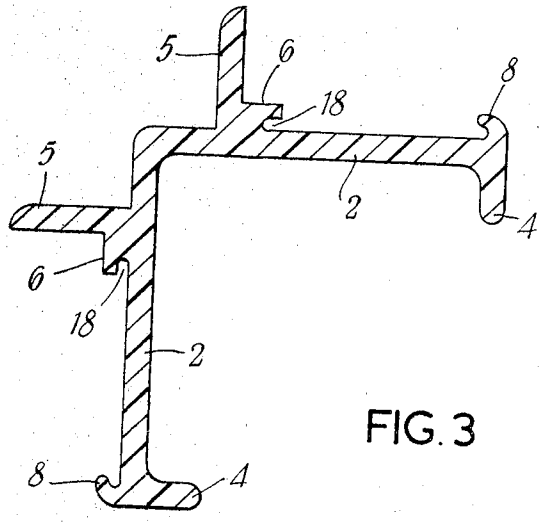

FIG. 3

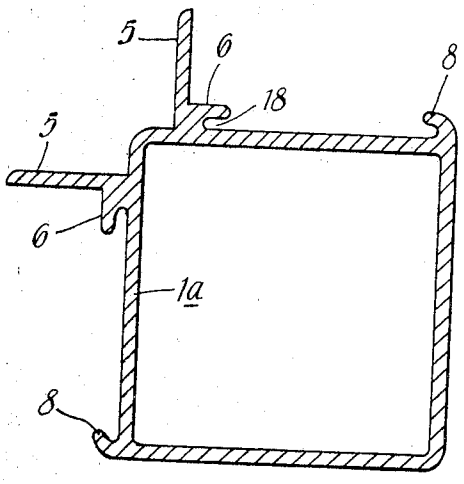

FIG. 4

Inventor
John B. James
by Sommers & Young
Attorneys

United States Patent Office

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SUPPORT BASED, PANEL ATTACHMENT

John Brian James, Wembley, England, assignor to Dexion Limited, Wembley Park, Middlesex, England, a corporation of Great Britain

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Int. Cl. E04b *1/62;* E04f *15/14, 15/22*

U.S. Cl. 52—400

7 Claims

ABSTRACT OF THE DISCLOSURE

Means for securing a panel to a framework member takes the form of a part which is either part of at least one wall of said member or is fitted over such a wall part and which has, adjacent to one longitudinal edge, a platform on which an edge of the panel can bear and an upstanding flange, adjoining said platform, against which a marginal portion of one face of the panel can bear and, at the opposite longitudinal edge, a hook formation engageable by a bead or clip for bearing against a marginal portion of the other face of the panel.

This invention concerns improvements relating to frameworks, particularly but not exclusively frameworks composed of tubular members of square section such as are described in the specification of our United States Patent No. 3,218,097. An object of the invention is to provide means by which glass or other cladding, display or like panels can be secured in a framework composed of hollow members.

According to the invention, means for the purpose set forth includes a part which either comprises part of a wall of a hollow framework member or is adapted for fitting over such a wall part and which has, on the side remote from the said member and adjacent to one longitudinal edge of the said part, a platform, preferably an elevated platform, on which an edge of the panel can bear, an upstanding flange, adjoining the said platform, against which a marginal portion of one face of the panel can bear and, at the opposite longitudinal edge of the said part, a hook formation engageable by a bead or clip for bearing against a marginal portion of the other face of the panel.

If the said part is an auxiliary member it may have flanges engageable over the framework member.

Advantageously, for some purposes, the said part either comprises two adjacent walls of the framework member or is adapted for fitting over two such walls. Preferably, in this case, respective platforms and adjoining flanges are located adjacent to a common longitudinal edge of the walls, while the hook formations are located at the other longitudinal edges thereof.

A bead or clip for use with such a member may comprise a curved springy strip having a hook formation at one edge for engagement with the hook formation on the aforesaid part and a dependent flange at the opposite edge for bearing against the marginal portion of the said other face of the panel.

Alternatively the bead or clip may comprise a strip of channel section whose one flange has at its free edge a hook formation for engagement with the hook formation on the aforesaid part, while the other flange has at its free edge an out-turned projection engageable with the said part below the platform. The bead may advantageously have a flexible lip for bearing against the marginal portion of the said other face of the panel.

One embodiment of the invention will now be more fully described by way of example and with reference to the accompanying drawings, in which:

FIGURE 1 is a cross section through a tubular framework together with an auxiliary member and bead,

FIGURE 2 a similar view showing another form of bead,

FIGURE 3 a cross section through a different form of auxiliary member, and

FIGURE 4 a cross section illustrating a tubular framework member which is itself provided with formations shown in the previous figures.

The framework member **1** shown in FIGURES 1 and 2 is of square cross section, as in the specification of our aforesaid patent. For the purposes of description, it will be assumed that an auxiliary member **2** is applied to the upper face of a horizontally disposed member **1**. The auxiliary member **2** has narrow downturned flanges **3**, **4** at its longitudinal edges, so that it can be fitted tightly over the upper face of the member **1**, as illustrated. At about one quarter of the width inwardly from one edge, the member **2** has an upstanding flange **5** and, on the inside of that flange, a shallow elevated platform or ledge **6**. The platform **6** is of such width that a panel **7** of the thickness normally to be used will, when abutted against the flange **5**, overhang the free edge of the platform. At the opposite longitudinal edge of the member **2**, there is a small upwardly and inwardly extending lip **8** affording a hook formation.

For holding the panel **7** against the flange **5**, a shaped springy bead **9** is provided. Two forms of such bead **9** are shown in FIGURES 1 and 2, in full lines detached and in chain lines in the assembled position. The bead **9** of FIGURE 1 consists of an upwardly concave strip **10** with a small downwardly and outwardly extending hook formation **11** at one longitudinal edge for interlocking with the lip **8** of the member **2** and a wide downwardly extending flange **12** at the opposite edge. The flange **12** is designed to bear flat against the marginal portion of the panel **7** overhanging the platform **6** when the formations **11**, **8** have been engaged and the bead **9** is pressed down into place. The panel **7** can thus be held in position by the substantially normal pressure of the flange **12** maintained by the springiness of the bead **9**. The concave shape resists any tendency of the bead **9** to spring out of place. Nevertheless the bead can be released, when so required, by the exercise of thumb pressure at its edge **13**. Due to the flexibility of the bead, substantial variation in thickness of panels **7** used can be tolerated.

Preferably a continuous bead **9** is used, but short lengths of such bead may be provided at intervals so as to serve as clips.

The auxiliary member and the bead may suitably be made of a rigid polyvinyl-chloride material.

The preferred form of bead **9** shown in FIGURE 2 is of inverted channel section with a flat web **14** and two flanges **15**, **16**. A hook formation **11** is provided at the free edge of the flange **15**. The flange **16** has an outtured flange **17** engageable in an undercut groove **18** formed in the side face below the platform **6** on the member **2**. Finally, extending from the corner between

the web **14** and flange **16**, there is a wide lip **19** which is engageable with the face of the panel **7**. The lip **19** is moulded or extruded integrally with the rest of the bead, but whereas the latter is made of a springy stiff material, for instance a rigid, polyvinyl-chloride material, the lip **19** is of a more flexible material, for example plasticised polyvinyl-chloride material, capable of considerable resilient deformation. When the bead is pushed into position, therefore, the lip **19** can flex considerably, as shown in chain lines, and will accommodate itself readily to a considerable range of thicknesses of panels **7**. It also makes a neat seal against the panel.

If one integral auxiliary member is to embrace two faces of a framework member, it may, as illustrated in FIGURE 3, have a shape corresponding to two of the above-described members **2** united at right angles at a common longitudinal edge and having flanges **4**, as well as hook formations **8** at the other, free, edges only. Panels in two planes at right angles can thus be accommodated against respective flanges **5**. Either form of bead **9** can be employed.

For some purposes, it may be advantageous, in effect, to combine one, two, three or four auxiliary members **2** with the tubular framework member. FIGURE 4 illustrates such an arrangement which is similar to that of FIGURE 3 except that the formations of the members **2** are integral with the tubular member **1***a*. If the tubular member **1***a* has the same, or substantially the same, internal and external dimensions as the member **1**, such members **1***a* can be used wherever required in a framework otherwise composed of plain tubular members **1**.

With any of the above-described arrangements, a panel **7** can be secured in the manner described to all of four framework members **1** or **1***a* surrounding the panel.

Provision may be made for securing panels to any one, two or more walls of a tubular framework member.

Similar panel-securing means can be used with framework members of other hollow cross sections, for instance a round section or a lipped or plain channel section.

The tubular members may be made of metal or a strong plastics material, as may also the members **2**.

I claim:

1. Apparatus for securing a panel in sealed relation to a planar walled support comprising:

a connector comprising an elongated web,

said web including a gripping flange along each edge thereof extending in the same direction and generally normal to the plane of the web and said web being adapted to overlie a first planar wall of said support and said flanges being adapted to frictionally grip opposed planar walls of said support to clamp said connector to said support,

an abutment flange on said web projecting generally normal thereto and extending in a direction opposite to said gripping flange,

an enlargement disposed at one side of the intersection of said web and abutment flange,

said enlargement having one surface generally parallel to and spaced from the plane of said web and a second surface generally normal to the plane of said web,

said second surface having a first groove extending therealong,

a projection extending along the other edge of said web, said projection including a second groove extending therealong,

said first and second grooves being in opposed parallel relation,

a generally channel-shaped retaining member joined to said connector,

said retaining member including a web and a pair of spaced generally parallel legs,

each leg having a hook portion at the terminals thereof,

said hook portions projecting outwardly of the respective leg and being disposed in said opposed grooves to thereby fasten said retaining member to said connector,

means on said retaining member projecting toward said abutment flange,

whereby a panel may be seated on said one surface of said enlargement and against said abutment flange and retained thereagainst by said means on said retaining member.

2. The apparatus of claim **1** in which said projecting means on said retaining member has greater flexibility than the remainder of said retaining member.

3. The apparatus of claim **1** in which both said connector and said retaining member are formed of a plastic material.

4. Apparatus for securing two panels at right angles to to each other in sealed relation to a planar walled support, comprising:

a connector comprising two elongated webs at right angles to each other and with the adjoining edges of each web integrally joined,

each said web including a gripping flange along the free edge thereof and generally normal to the plane of the web, said webs being adapted to overlie a first pair of adjoining planar walls of said support and said flanges being adapted to frictionally grip a second pair of adjoining planar walls of said support to clamp said connector to said support,

an abutment flange on each said web projecting generally normal thereto and extending in a direction opposite to said gripping flange,

an enlargement disposed at one side of the intersection of each said web and the respective abutment flange,

said enlargement having one surface generally parallel to and spaced from the plane of said web and a second surface generally normal to the plane of said web,

said second surface having a first groove extending therealong,

a projection extending along the other edge of each said web, said projection including a second groove extending therealong,

said first and second grooves being in opposed parallel relation,

two generally channel-shaped retaining members joined to said connector along each said web,

each said retaining member including a web and a pair of spaced generally parallel legs,

each leg having a hook portion at the terminals thereof,

said hook portions projecting outwardly of the respective leg and being disposed in said opposed grooves to thereby fasten said retaining member to said connector,

means on said retaining member projecting toward said abutment flange,

whereby a panel may be seated on each said one surface of said enlargement and against said abutment flange and retained thereagainst by said means on said retaining member.

5. The apparatus of claim **4** in which said projecting means on said retaining member has greater flexibility than the remainder of said retaining member.

6. The apparatus of claim **4** in which both said connector and said retaining member are formed of a plastic material.

7. Apparatus for securing two panels each in sealed relation to a generally planar walled support of generally rectangular cross-section comprising:

two elongated webs comprising respectively different planar walls of said support,

an abutment flange integral with each said web projecting generally normal thereto and extending in a direction outwardly from said support,

an enlargement integral with each said web and dis-

posed at one side of the intersection of the web and the respective abutment flange,

each said enlargement having one surface generally parallel and spaced from the plane of the relevant web and a second surface generally normal to the plane of said web,

said second surface having a first groove extending therealong,

a projection extending along the other edge of said web, and integral therewith,

said projection including a second groove extending therealong,

said first and second grooves being in opposed, parallel relation,

a generally channel-shaped retaining member for each panel,

said retaining member including a web and a pair of spaced generally parallel legs each adjoining a respective edge of said web,

each leg having a hook portion at the terminals thereof,

said hook portions projecting outwardly of the respective leg and being disposed in said opposed grooves to thereby secure said retaining member,

means on said retaining member comprising a flexible lip projecting toward the respective abutment flange substantially from the junction of one said leg and

said web, whereby a panel may be seated on said one surface of said enlargement and against said abutment flange and retained thereagainst by said means on said retaining member.

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HENRY C. SUTHERLAND, Primary Examiner

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