

Dec. 14, 1965

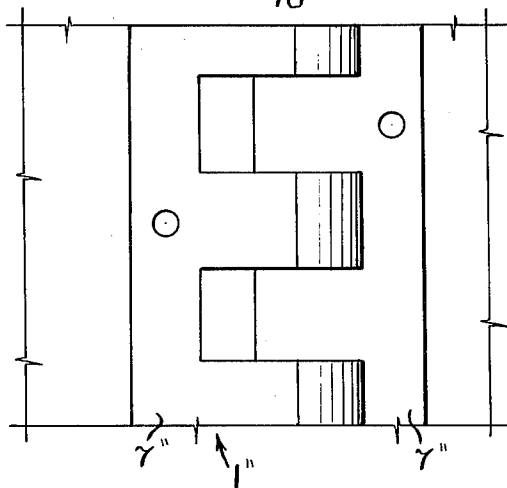
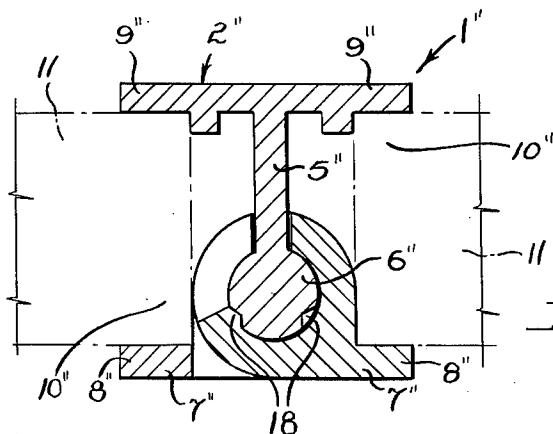
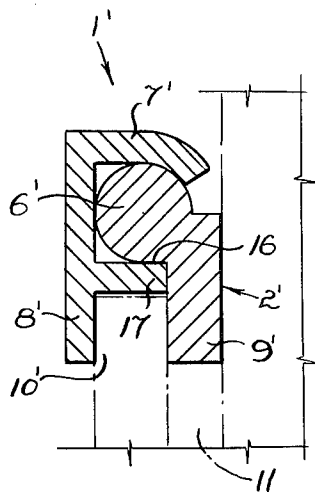
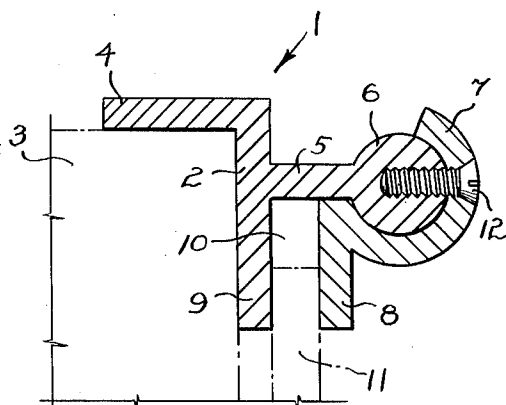
A. A. PHILPOT

3,222,839

SUPPORTING PANELS IN FRAMES

Filed Jan. 13, 1961

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

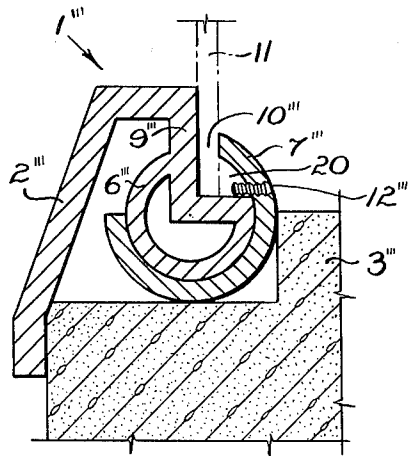


FIG 5

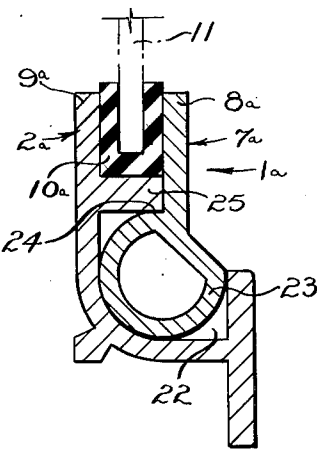


FIG 6

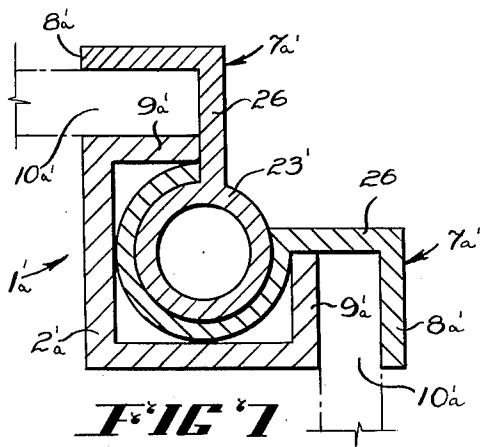


FIG 7

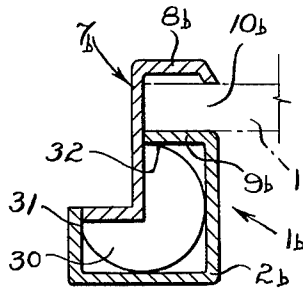


FIG 8

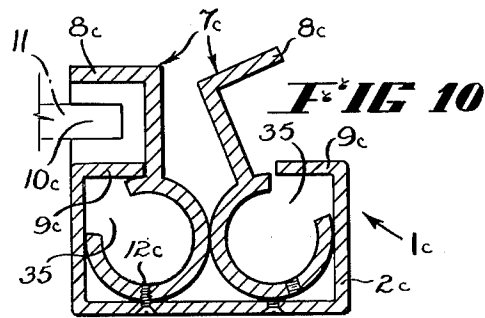


FIG 10

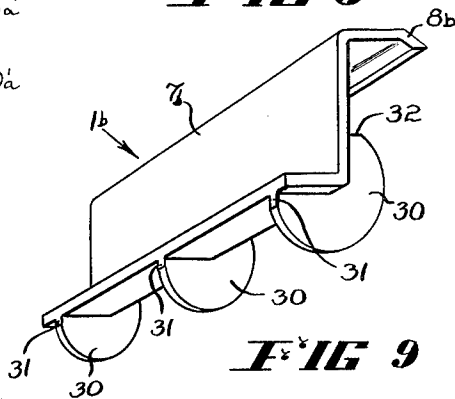


FIG 9

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3,222,839

SUPPORTING PANELS IN FRAMES

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This invention relates to improvements in and to frames for supporting panels therein and in particular it relates to frames which are used in building construction or the like, such as in window construction, which frames are to support glass or other panels.

Present window construction usually involves the use of beadings or keepers which hold the glass or other panels in place, and certain difficulties exist in the fixing of the panels to ensure correct holding and yet to make possible the rapid and simple fixing.

It is an object of this invention to provide an improved form of frame by means of which the panels can be held and this is achieved by providing a frame which comprises a pair of members with panel supporting portions on each member, the members being hinged to each other, the panel supporting portions being so arranged that they can be positioned near each other to form a panel retaining recess, but can be moved apart, and locking means which are releasable are disposed between the members, the locking means being operable to retain the members in their recess forming position.

It will be realized that a hinged section on such a frame in itself presents a problem, as the hinge must not detract from the appearance of the frame, nor must it be of such a nature that moisture or dust can pass through the frame or be lodged in crevices, but by use of this invention the hinged section may be held to the frame by providing a longitudinal channel in the one member engaged by a complementary cyclic portion on the other member. In this way it is possible to achieve an aesthetically pleasing appearance on both sides of the panel supporting frame.

The invention is described hereunder in further detail with reference to four species which are illustrated in the accompanying drawings.

The first species which is characterized by an extruded section in which an internal cyclic portion is disposed on a frame member and is embraced by a rotatable supporting member is illustrated by embodiments which are shown in the drawings in which:

FIG. 1 is a cross-sectional view showing a frame member engaged by a panel supporting member according to a first embodiment of the first species,

FIG. 2 is a corresponding cross-sectional view according to a second embodiment of the first species,

FIG. 3 is a corresponding view illustrating a third embodiment of the first species,

FIG. 4 is an elevation of portion of a frame constructed according to FIG. 3, and

FIG. 5 is a cross-sectional view according to a fourth embodiment of the first species.

A second species which is characterized by an extruded strip in which an internal cyclic portion is disposed on a panel supporting member, and is embraced by a frame member, as illustrated in the drawings in which:

FIG. 6 is a cross-section of a frame member and panel supporting member according to a first embodiment of the second species, and

FIG. 7 is a cross-section through a corresponding assembly according to a second embodiment of the second species.

A third species which is characterized by a frame

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formed from roll form strip which is fabricated is illustrated in the drawings, in which,

FIG. 8 is a cross-section through a frame member and panel supporting member assembly, and

FIG. 9 is a perspective view of the panel supporting member.

A fourth species which is characterized by extruded panel support member disposed in a drain channel is illustrated in the drawings, where

FIG. 10 is a cross section through a frame member and panel supporting member.

The term "cyclic" is used in this specification to denote a cross-sectional shape of a member which has a portion, the envelope points of which lie substantially on a circle.

The term is used to embrace shapes where the circular form is deliberately departed from to a small extent in order to achieve locking of the cyclic portion within the member in which it is positioned.

Referring first to species 1 of the invention:

FIG. 1 illustrates an embodiment in which a panel supporting frame 1 comprises a frame member 2 which is adapted to be secured to a support 3, the support 3 normally being portion of a building. The frame member 2 in this embodiment comprises an angle section portion 4 with an outstanding web 5 to which a cyclic portion 6 is attached, the cyclic portion 6 being of cylindrical form, and being embraced by the narrow mouthed channel of the panel supporting member 7, the panel supporting member 7 having flanges 8 which are spaced parallel to and adjacent to a panel supporting portion 9 on the frame member 2.

In this position, the flanges 8, which are also panel supporting portions, define with the panel supporting portion 9 a panel supporting recess 10, into which a panel 11 is fitted. In this embodiment, the panel supporting member 7 is nonrotationally held to the frame member 2 by means of the screw 12 in the position where the recess 10 is defined, but by removal of the screw 12, the flange 8 is separable from the panel supporting portion 9 to a panel release position by simply rotating the panel supporting member 7 about the cyclic portion 6 of the frame member 2, and this separation of the flanges 8 from the panel supporting portion 9 enables an easy removal or reinsertion of the panel 11 to the panel supporting frame 1.

Furthermore, it will be seen that the aesthetic properties of the frame are good since smooth unbroken lines are achieved for the length of the frame 1.

FIG. 2 illustrates a second embodiment of the first species, and the panel supporting frame 1' comprises a frame member 2' which is adapted to be secured to a support, the frame member 2' having a cyclic portion 6' thereon, the cyclic portion 6' having a flat surface 16 which is engaged by the tongue 17 of the panel supporting member 7' forming part of a narrow mouthed channel, the tongue 17 being sufficiently flexible to enable relative rotation between the cyclic portion 6' of the frame member 2' and the panel supporting member 7' which embraces it. However the tongue 17 engaging the flat surface 16 tends to retain the shape of the panel supporting recess 10' and considerable effort is required to commence relative rotation between the panel supporting member 7' and the frame member 2', although once started, continuation of this relative rotation is comparatively easy to effect.

The third embodiment of the first species is illustrated in FIGS. 3 and 4, which show a pair of panels 11 joined end to end by the panel supporting frame 1'', the panel supporting frame 1'' comprising a single frame member 2'' and a pair of panel supporting members 7'' which are notched and have narrow mouthed channel portions en-

gaged over the cyclic portion 6'' of the frame member 2'' in a hinge-like manner as shown in FIG. 4. The cyclic portion 6'' is channelled with the notches 18 which are engaged by complementary projections on the panel supporting member 7'', so that the flanges 8'' of the panel supporting members 7' are normally retained parallel to the panel supporting portions 9'' of the frame member 2 but are separable therefrom to a panel release position to allow removal of the panels 11.

The fourth embodiment of the first species is illustrated in the cross-section of FIG. 5. In this case however the cyclic portion 6''' of the frame member 2''' is formed hollow and has a quadrant 20 cut away from its outer periphery, the quadrant 20 forming part of the panel supporting portion 9''' and the panel 11 being retained by the arcuate shape panel supporting member 7''' which constitutes a narrow mouthed channel and is retained in position by the screw 12'''.

Referring now to species 2 of the invention:

The first embodiment of the second species is illustrated in FIG. 6, wherein the frame member 2a is formed with a narrow mouthed channel 22 in which the panel supporting member 7a is retained by means of its cyclic portion 23, and the panel supporting recess 10a is maintained by the flat surface 24 on the cyclic portion 23 of the panel supporting member 7a when the flange 8a is parallel to and adjacent the panel supporting portion 9a. This flat surface 24 is engaged by the tongue 25 which forms part of the frame member 2a.

A slight variation to the first embodiment of the second species is the second embodiment which is illustrated in FIG. 7, and in this embodiment the panel supporting frame 1a'' is adapted to support a pair of panels at right angles to each other. The frame member 2a' is of hollow square channel section with a narrow mouth which allows the outstanding webs 26 which extend outwardly from the cyclic portions 23' of both the panel supporting members 7a' to be rotated through an angle of almost 90 degrees thereby allowing the flanges 8a' to be separable from the panel supporting portions 9a' and opening the panel supporting recesses 10a' to a panel release position to allow engagement or disengagement of the panels.

Referring to species 3 of the invention:

FIGS. 8 and 9 illustrate an embodiment according to a third species which shows a fabricated arrangement. Both the frame member 2b and the panel supporting member 7b are formed by a roll forming process from flat strip, but the panel supporting member 7b has a plurality of cyclic projections 30 welded thereto. These cyclic projections 30 engage in the hollow square frame member 2b which constitutes a narrow mouthed channel and when the flange 8b is adjacent and parallel to the panel supporting portion 9b to define the panel supporting recess 10b, the flats 31 and 32 on the cyclic projections 30 become engaged by the metal walls which form the frame member 2b and prevent inadvertent separation of the flange 8b from the panel supporting portion 9b.

However, if the panel supporting member 7b is rotated within the frame member 2b, it will be seen that it may be removed transversely of the longitudinal axis. Furthermore it will be appreciated that the frame member 2b is shaped to channel water.

Referring to species 4 of the invention:

FIG. 10 is illustrative of the fourth species in which the panel supporting members 7c are formed by an extrusion process, and two panel supporting members 7c are disposed in a single frame member 2c which is of narrow mouthed channel shape, but has inturned panel supporting portions 9c. Each of the panel supporting members 7c is formed with a longitudinal slot 35, the longitudinal slot being disposed out of sight and within the frame member 2c when the flanges 8c of the panel supporting members 7c are parallel to and adjacent to the panel supporting portions 9c of the frame member

2c to define a pair of aligned panel supporting recesses 10c. However, upon removal of the retaining screws 12c, the panel supporting members 7c may each be rotated as shown on the lower part of FIG. 10 to a panel release position and removed transversely of the longitudinal axis.

Once again it will be seen that both the frame member 2c and the panel supporting member 7 may be used to channel water which may otherwise tend to pass the frame if the frame is used on a building.

The invention can be made use of with cast, extruded, rolled or pressed metal, or with moulded or extruded plastics.

A consideration of all the above embodiments of each species will indicate that it is a very easy matter to utilize this invention to obtain an aesthetically pleasing appearance of a frame member, it will be seen that the retention of panels, whether they be of glass or other material, is simply and effectively achieved, and that the replacement of the panels upon breakage or for other reasons is also simple and requires very little labor.

What I claim is:

1. A panel supporting frame comprising a frame member, said frame member being of constant cross-sectional shape, the walls of said frame member defining a narrow mouthed channel wherein the minimum distance between opposite walls exceeds the width of the channel mouth, a panel supporting portion integral with said channel walls, a panel supporting member, a plurality of cyclic projections on the panel supporting member rotatably engaged in the channel of the frame member by the walls thereof, the panel supporting member having a flange integral with the cyclic projections and projecting through the mouth of said channel, flats on the projections, said flats releasably engaging said channel by spring of the walls thereof when said flange is disposed parallel to but displaced from said panel supporting portion to define a panel supporting recess, but said panel supporting flange being movable in said mouth to a panel release position upon rotation of said cyclic projections within said channel.

2. A panel-supporting frame comprising a frame member, the walls of said frame member defining a narrow mouthed channel wherein the minimum distance between opposite walls exceeds the width of the channel mouth, a panel-supporting portion on the frame member, a panel-supporting member, a cyclic portion on the panel-supporting member rotatable within the channel of the frame member, a panel-supporting flange on the panel-supporting member extending outwardly through the mouth of the channel and positionable in spaced relationship with the panel-supporting portion on the frame member to define therewith a panel retaining recess, said panel supporting flange being movable in said mouth to a panel release position upon rotation of said cyclic portion within said channel, and releasable engagement means between the frame member and the panel-supporting member restraining rotation of the panel-supporting member from its panel retaining position.

3. A panel-supporting frame comprising a frame member, the walls of said frame member defining a narrow mouthed channel wherein the minimum distance between opposite walls exceeds the width of the channel mouth, a panel-supporting portion on the frame member, a panel-supporting member, a cyclic portion on the panel-supporting member rotatable within the channel of the frame member, a panel-supporting flange on the panel-supporting member extending outwardly through the mouth of the channel and positionable in spaced relationship with the panel-supporting portion on the frame member to define therewith a panel retaining recess, said panel-supporting flange being movable in said mouth to a panel release position upon rotation of said cyclic portion within said channel and flats on the cyclic portion of the panel-supporting member releasably engaging within the chan-

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nel thereby restraining rotation of the panel-supporting member from its panel retaining position.

4. A panel-supporting frame comprising a sheet metal frame member of constant cross-sectional open rectangular shape defining a narrow mouthed channel wherein the minimum distance between opposite walls exceeds the width of the channel mouth, a panel-supporting portion on the frame member, a panel-supporting member, a cyclic portion on the panel-supporting member rotatable within the channel of the frame member, said cyclic portion extending for between three quarters and a full circle thereby alternatively engaging the inner walls of the channel or being removable therefrom, a panel-supporting flange on the panel-supporting member extending outwardly through the mouth of the channel and positionable in spaced relationship with the panel supporting portion on the frame member to define therewith a panel retaining recess, said panel-supporting flange being movable in said mouth to a panel release position upon rotation of said cyclic portion within said channel and releasable engagement means between the frame member and the panel supporting member restraining rotation of the panel supporting member from its panel retaining position.

5. A panel-supporting frame comprising a frame member of constant cross-sectional shape, a panel supporting member of constant cross-sectional shape, a cyclic portion extending along one of said members, a narrow mouthed channel extending along the other said member, said cyclic portion being rotatably retained within said narrow mouthed channel by the walls thereof, a panel supporting flange integral with said cyclic portion and extending outwardly through the mouth of said channel, a panel supporting portion integral with said channel walls, said panel supporting portion and panel supporting flange being positionable in an adjacent but spaced relationship defining a panel supporting recess but said panel supporting flange being movable in said mouth to a panel release position upon rotation of said cyclic portion within said channel, and releasable locking means between said members operable to retain said members in the said adjacent but spaced relationship.

6. A panel-supporting frame according to claim 5 wherein said one member is the frame member and said narrow mouth channel extends along the panel supporting member, said panel supporting flange including an outstanding web, said cyclic portion extending along the free edge of the web, said panel supporting flange including a portion extending from the web parallel to but spaced from the cyclic portion, the walls of said panel supporting member being of arcuate cross-sectional shape and circumferentially engaging said cyclic portion, said releasable locking means being screws for engaging both the frame member and the panel supporting member when said portion of the flange is disposed parallel to but displaced from said panel supporting portion to define said panel supporting recess, said panel supporting member being rotatable about said cyclic portion whereby said panel supporting portion is separable from said flange to open said panel supporting recess upon release of said screws.

7. A panel supporting frame according to claim 5 wherein said one member is the frame member and said narrow mouth channel extends along the panel supporting member, said cyclic portion extending along the frame member, said releasable locking means comprising a flat on the cyclic portion releasably engaging one of said

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channel walls when said flange is disposed parallel to but displaced from said panel supporting portion to define the panel supporting recess, said panel supporting member being rotatable about said cyclic portion upon deformation of said one channel wall whereby said flange is separable from said panel supporting portion to open said panel supporting recess.

8. A panel supporting frame according to claim 5 wherein said other member is the frame member, said panel supporting member being provided with the cyclic portion which is rotatably retained within the narrow mouthed channel, said frame further comprising a second panel supporting member including an associated cyclic portion and panel supporting flange, the frame member including a second panel supporting portion adapted for cooperating with said panel supporting flange of the second panel supporting member to define a second panel supporting recess for the accommodation of a second panel, said cyclic portions of the panel supporting members being coaxially mounted one within the other for independent relative rotation each between a first position in which the flange of the particular panel supporting member and the corresponding panel supporting portion of the frame member accommodate a respective panel and a release position for such panel.

9. A panel supporting frame according to claim 5 wherein said other member is the frame member, said panel supporting member being provided with the cyclic portion which is rotatably retained within the narrow mouthed channel, the cyclic portion comprising an open sided tubular member, the open side constituting a longitudinally extending slot, said releasable locking means comprising screws engageable in the frame member and the panel supporting member when said flange is disposed parallel to but displaced from said panel supporting portion to define said panel supporting recesses, said cyclic portion being rotatable in the channel of the frame member upon removal of the screws whereby said flange is separable from said panel supporting portion to open said panel supporting recess, and said slot is positionable over said panel supporting portion whereby said panel supporting member is separable from said frame member.

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