Oct. 4, 1966 J. G. O'BRIEN 3,276,802

STRUCTURAL MEMBER AND CONNECTION MEANS THEREFOR

Filed May 6, 1963 2 Sheets-Sheet 1

Fig. 1.

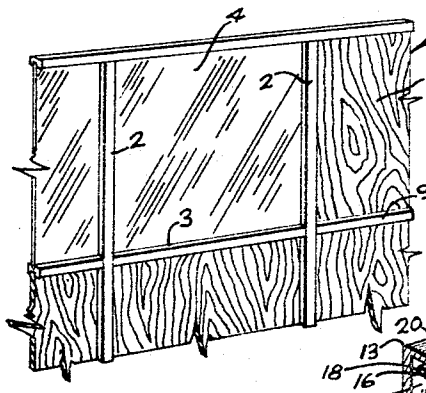


Fig. 2.

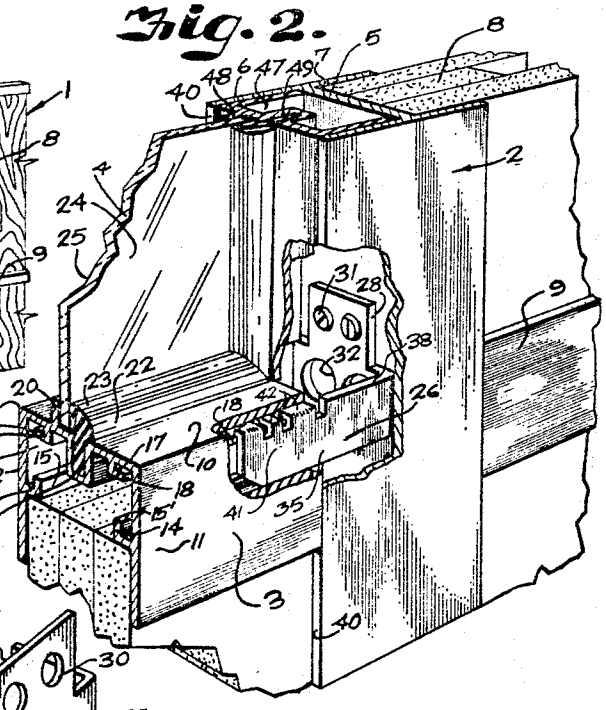


Fig. 3.

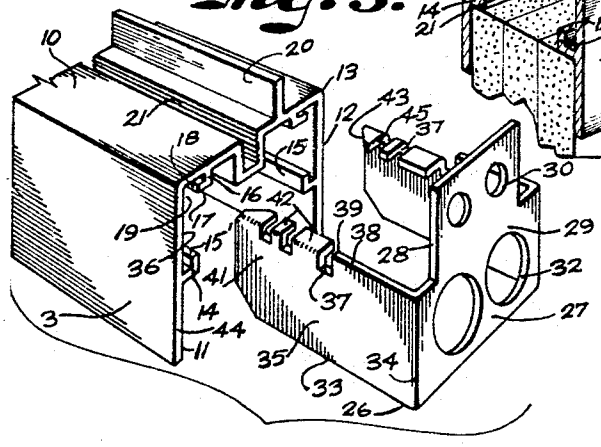


Fig. 4.

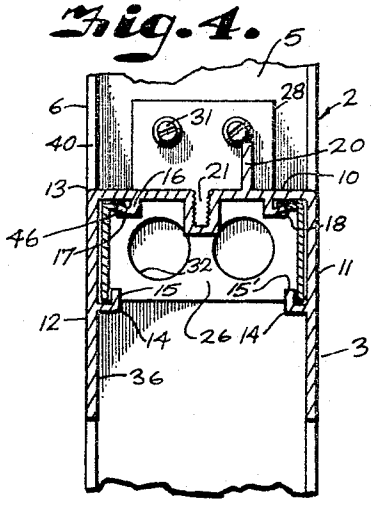
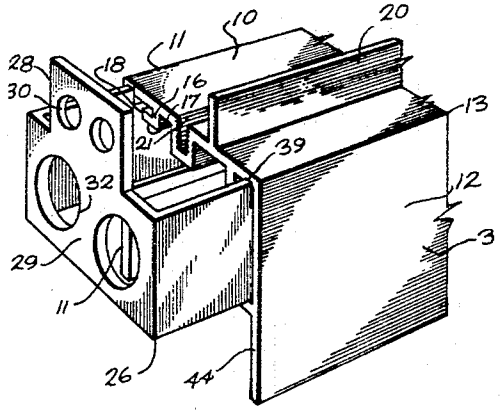


Fig. 5.



INVENTOR.
JOHN GLENNON O'BRIEN
BY
Fishburn and Gold
ATTORNEYS

Oct. 4, 1966 J. G. O'BRIEN 3,276,802

STRUCTURAL MEMBER AND CONNECTION MEANS THEREFOR

Filed May 6, 1963 2 Sheets-Sheet 2

Fig. 6.

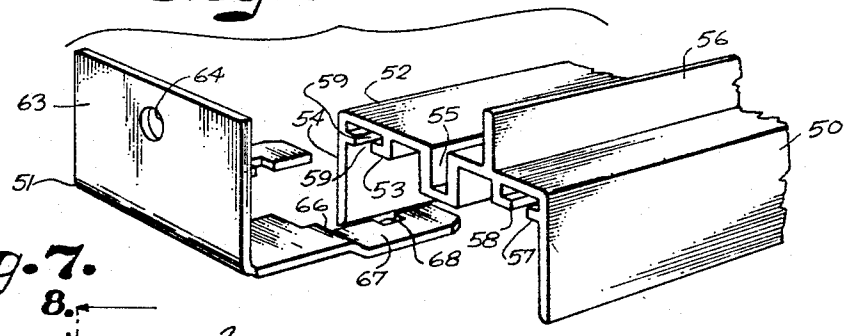


Fig. 7.

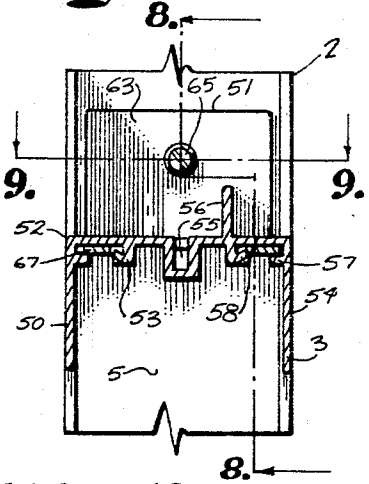


Fig. 8.

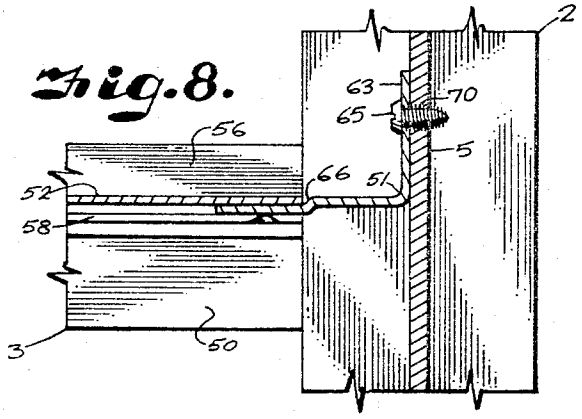


Fig. 10.

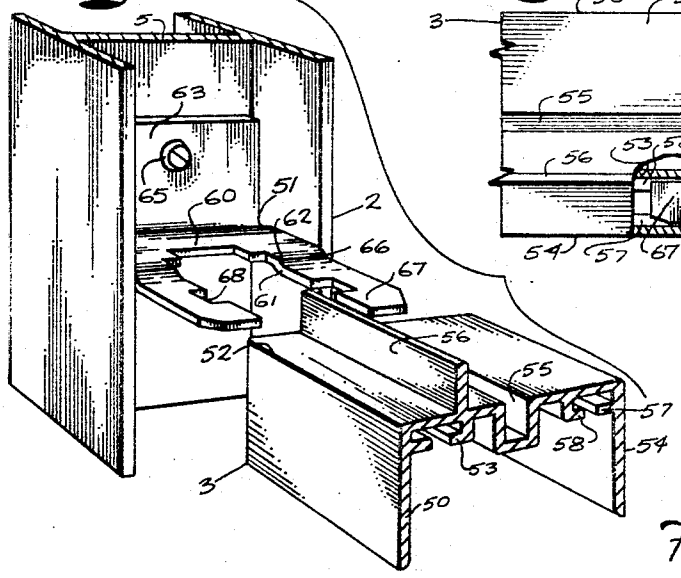
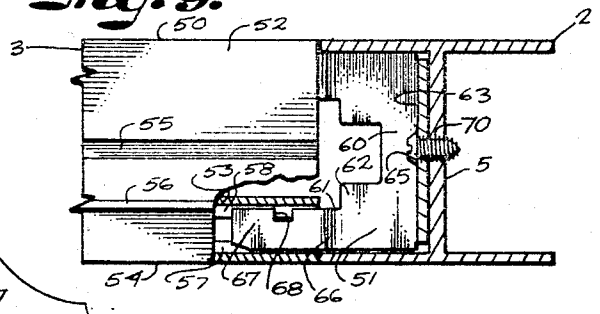


Fig. 9.



INVENTOR.
JOHN GLENNON O'BRIEN
BY
Fishburn and Gold
ATTORNEYS

United States Patent Office 3,276,802 Patented Oct. 4, 1966

3,276,802

STRUCTURAL MEMBER AND CONNECTION MEANS THEREFOR

John Glennon O'Brien, 4905 Lister St., Kansas City, Mo.

Filed May 6, 1963, Ser. No. 278,341
6 Claims. (Cl. 287—189.36)

This invention relates to structural members and connection means therefor, and more particularly to frame members for walls of partitions for buildings and the like such as movable partitions with connection means which may be readily assembled for subdividing interior space into individual rooms, offices and the like.

The principal objects of the present invention are to provide structural members and connections for walls, partitions and the like which can be readily secured together to provide a rigid assembly that can be assembled and disassembled quickly and with a minimum of effort; to provide a partition frame member with portions forming longitudinally extending ways arranged whereby the member may be formed by extrusion and mounted on a connecting means having spaced arms to extend into the ways and be secured thereto; to provide such a structure wherein the arms are secured to the frame member after assembly by selective deformation of the way-defining portions; to provide a wall structure with a plurality of studs with the connecting means secured thereto and the spaced arms extending outwardly therefrom into ways of a frame member with the connecting means having abutment portions for engagement by ends of the frame member to limit relative longitudinal movement; to provide such a structure wherein the frame member is adapted to receive a panel thereon in resiliently retained relation; and to provide wall structural members and connecting members that are economically manufactured and easily assembled into a strong, substantially rigid structure.

Other objects and advantages of this invention will become apparent from the following description taken in connection with the accompanying drawings wherein are set forth by way of illustration and example certain embodiments of this invention.

FIG. 1 is a partial perspective view of a partition wall with frame members arranged therein in accordance with the present invention.

FIG. 2 is an enlarged detail partial perspective view of a partition with a panel-supporting frame member and a connecting member therefor secured to a stud, portions being broken away to show the connecting member.

FIG. 3 is a disassembled perspective view of a portion of a frame member and the connector member.

FIG. 4 is a vertical sectional view through the frame member and connector member arms.

FIG. 5 is a perspective view of a portion of the frame member with the connecting member assembled thereto.

FIG. 6 is a disassembled perspective view of a modified form of connector member and frame member.

FIG. 7 is a vertical sectional view through the modified form of frame member and connector arm.

FIG. 8 is a vertical sectional view through a frame member connector and stud taken on the line 8–8, FIG. 7.

FIG. 9 is a horizontal sectional view through the stud and connector taken on the line 9–9, FIG. 7, with portions of the frame member broken away to show the position of a connector arm in a way.

FIG. 10 is a partial disassembled perspective view of a wall stud, frame member and connector member.

Referring more in detail to the drawings:

The reference numeral **1** generally designates a wall structure having spaced studs **2** with frame members **3** extending therebetween to support a wall panel such as

glass pane **4**. The studs **2** are preferably of structural shape and may be channels; however, in the illustrated structure, the stud is vertical or upright and is in the form of an H-section with a web **5** having oppositely disposed flanges **6** and **7** extending from opposite edges thereof. The wall **1** includes panels **8** suitably connected to the studs **2** and preferably supported by frame members **9** that extend longitudinally of the wall between the studs. The frame members **3** and **9** may vary in the configuration defining a seat for the panels **8** and panels **4**; however, it is preferred that each of said frame members have a web portion **10** with a pair of side walls **11** and **12** connected along corresponding edges **13**. In the structure illustrated, the frame members **3** preferably extend horizontally between the studs **2** and the side flanges **11** and **12** depend from the side edges **13** of the web **10**.

In the form of the invention illustrated in FIGS. 2 to 5 inclusive, the frame member **3** has member portions or ribs **14** projecting inwardly from the side walls **11** and **12** with longitudinal edge portions **15** of said ribs turned toward the web **10** in inwardly spaced relation to the side walls, said edge portions **15** each terminating in an edge **15'** spaced from said web. Laterally spaced ribs or member portions **16** project inwardly or downwardly from the web in spaced relation to the side walls **11** and **12** respectively with longitudinal edge portions **17** of said ribs being turned toward the adjacent side wall and each edge portion **17** terminating in an edge **18** spaced from the adjacent side wall. The ribs **14** and **16** with their edge portions **15** and **17** cooperate with the intersection of the web **10** and adjacent side wall to form an L-shaped way **19** extending longitudinally at each side of the frame member for the entire length thereof. The portions of the side walls **11** and **12** extending downwardly below the ribs **14** are adapted to receive panel members **8** therebetween and in a frame member adapted to support a pane of glass **4** there is an upstanding rib **20** on the web **10** extending longitudinally of the frame member, and said web is shaped to have a longitudinal groove **21** extending downwardly therein and spaced from the rib **20** sufficiently for a pane **4** to be seated on the web therebetween. A resilient seal strip **22** is positioned in the groove **21** and has an upstanding portion **23** to engage one side face **24** of the pane **4** with the other side face **25** engaging the rib **20**. However, it is to be understood that any width of panel could be seated on the frame member **3** with upstanding ribs or flanges suitably spaced to engage opposite faces of the panel including panels of width such as would be received between the lower portions of the side walls **11** and **12** with no change in the connection of the frame member to the studs, as later described. The frame members **3** are preferably of uniform configuration throughout the length thereof whereby they may be extruded metal and economical to manufacture.

A securing or connecting member **26** is constructed to engage the frame member **3** and be secured to the stud to form a connection therebetween. In the structure illustrated in FIGS. 2 to 5 inclusive, the connector member **26** is in the form of an anchor bracket preferably cut and formed from a single flat strip. The connector member has a flat bar **27** with a flange **28** having a face **29** adapted to engage a face of the web **5** of the stud **2**, said flange having apertures **30** to receive fastening devices **31** for securing the flange to the stud web. The bar **27** also has apertures **32** which, when necessary, may accommodate conduit that extends longitudinally of the frame member and through suitable holes in the web **5** of the stud when desired. Laterally spaced arms **33** are connected to side edges **34** of the bar **27** and extend therefrom in parallel relation with the outer faces **35** having a spacing corresponding to the spacing of the inner faces

36 of the frame member side walls 11 and 12 in the ways 19. The arms 33 preferably have notches 37 extending downwardly from the upper edge 38 in spaced relation to the surface 29 of the flange 28 to form an abutment or shoulder 39 that is preferably in a plane defined by the free edges 40 of the flanges 6 that extend in the same direction from the web 5 of the stud 2. The arm portions 41 beyond the shoulders 39 have upper edge portions 42 turned inwardly whereby said extending arm portions have a cross-sectional shape that is generally L-shaped and substantially corresponds to the respective ways 19 whereby said end portions 41 of the arms are slidable into said ways. The free end portions 41 of the arms are beveled as at 43 to facilitate entry into the ways. The portion of the arms defining the abutment 39 is of greater height than the outer end portions 41 whereby the abutment will engage the end 44 of the frame member 3 adjacent the sides of the web 10, as illustrated in FIG. 5, when the end portions 41 of the arms are moved into the ways 19. The edge portions or flanges 42 of the end portions 41 of the arms 33 preferably have a plurality of serrations or notches 45 and the ribs or edge portions 17 thereof defining the ways 19 are formable whereby they may be selectively deformed into the notches 45 to secure the frame member 3 to the connector arms 33 and hold same against relative longitudinal movement.

In assembling a frame member 3 to a stud 2, particularly to support a pane 4, the frame member 3 is cut to length to extend between the adjacent studs with the ends of the side walls 11 and 12 engaging the edges 40 of the studs. The connector members 26 are then arranged at the ends of the frame member, the end portions 41 of the arms 33 inserted in the respective ways 19 until the abutment 39 engages the end 44 of the frame member 3. The rib portions 17 are then deformed inwardly as at 46 at a selected notch 45 to fix the connector member 26 to the frame member 3. The frame member 3 and the connecting members 26 are then moved into position between the studs 2 over a panel 8 and when in selected position holes are drilled into the web 5 in alignment with the apertures 30 and the fastening devices 31 assembled therein to anchor the connecting members to the stud. When positioning the pane 4, the adjacent portion of the stud is provided with a filler member 47 having a rib 48 and a groove 49 aligning with the rib 20 and groove 21 respectively in the frame member 3. The pane 4 is moved into position with the face 25 engaging the ribs 20 and 48 and then the resilient strip 22 is placed in the grooves 21 and 47 whereby the upper portion 23 engages the face 24 of the pane resiliently holding same in position. It is to be understood that the frame members may be inverted or otherwise arranged with the connector members secured thereto in the manner described and said connector members suitably secured to other structural members to accommodate various desirable arrangements of the wall portions.

In the form of the invention illustrated in FIGS. 6 to 10 inclusive, the frame member 50 is adapted to be connected to a stud 2 by a connector 51. The frame member 50, in the illustrated structure, has a web 52 with ribs 53 extending therefrom in substantially the same manner as the ribs 17 extend from the web 10 of the frame member 3 but with greater spacing from the side walls 54. The web also has the groove 55 and upstanding rib 56. Ribs 57 extend inwardly from the side walls 54 of the frame member 50 substantially in opposed alignment with the adjacent edge portion 58 of the rib 53 to cooperate with the connecting portions of the side walls 54 and web 52 to form ways 59. The frame members 50 are also of substantially uniform configuration throughout the length thereof whereby they may be of extruded metal.

The connector member 51 preferably is cut and formed from a flat strip of metal and includes a bar 60 having laterally spaced arms 61 extending therefrom with a portion 62 of the arms 61 being substantially coplanar with the bar 60. A flange 63 extends from the bar 60 and has an aperture 64 for receiving a fastening device 65 for securing the connector member 51 to the web 5 of a stud 2. The arms 61 at the outer ends of the portion 62 are offset to provide a shoulder 66 with the end portions 67 of the arms extending outwardly from the shoulder 66 being coplanar and of a size to slidably extend into the ways 59 in the frame member 50. The shoulder 66 is preferably positioned relative to the flange 63 whereby when the connector member is mounted on the web of the stud the end portion of the connector member will engage the shoulder and also the edges 40 of the flanges of the stud. The outer portions 67 of the arms 61 have notches 68 whereby in assembling the structure with the frame member 50 to cut to length the arm portions 67 are moved into the ways 59 until the shoulder 66 engages the end 68 of the frame member. The edge portion 58 of the rib 53 is then deformed into the notch 68 to secure the connector member 51 to the frame member 50. The frame member is then moved into position between the studs 2 and when in selected position a hole 70 is drilled into the web in alignment with the aperture 64 and the fastening device 65 applied to secure the connector member 51 and frame member 50 to the stud 2. The variations in the frame member and mounting of panels relative thereto are substantially the same as described relative to the structure shown in FIGS. 2 to 5 inclusive.

It is to be understood that while I have illustrated and described certain forms of my invention, it is not to be limited to the specific forms or arrangement of parts herein described and shown except insofar as such limitations are included in the claims.

What I claim and desire to secure by Letters Patent is:

1. In a structural assembly having a vertical load-supporting stud, a frame to stud joint comprising, an anchor bracket attached to said stud, a horizontally extending frame member having connected walls, laterally spaced pairs of ribs on said walls and projecting inwardly therefrom and having opposed end portions substantially parallel with and spaced from the respective wall so that each pair defines a way extending longitudinally of said frame member, said anchor bracket having spaced arms extending from said stud with portions of cross-sectional shape to correspond to said ways for slidably extending therein, and abutment means on said arms for engagement by an end of said frame member to limit movement of said arm portions into said ways, said arm portions extending into said ways each having a notch therein spaced from said abutment means, said rib end portions defining the ways being deformable into said notches to retain said frame member against movement longitudinally of said arms.

2. A frame to stud joint construction as recited in claim 1 wherein said connected walls of the frame member are a wall and spaced side flanges extending therefrom and the ribs project inwardly from said wall and flanges with the end portions of each rib of a pair extending toward the other and cooperating therewith whereby said pairs of ribs and respective wall and flanges define L-shaped spaced ways, said frame member being of uniform configuration for the length thereof, said arms being in vertical planes and having inturned flanges at the upper portions to form arm portions of L-shaped cross-section slidable into respective ways.

3. An anchor bracket and frame member construction as recited in claim 2 wherein the notches in the arms are in edge portions of the inturned flanges thereof.

4. In a wall structure having vertical load-supporting studs, a frame member extending horizontally between adjacent studs, said frame member having a pair of side walls connected along a set of corresponding edges thereof by a web portion, said side walls having inwardly extending ribs extending longitudinally thereof for the length of the frame member in spaced relation to the web

portion, said web portion having laterally spaced inwardly extending ribs spaced from and parallel to said side walls with longitudinal edge portions thereof turned toward the respective side walls whereby said ribs cooperate with the web and side wall therebetween to form ways extending longitudinally of the frame member, a securing member at each end of said frame member and having a flange secured to the respective stud, a pair of spaced arms on said securing member with portions within said ways and having serrations in edge portions, the ribs defining the ways on the frame member being deformable into certain of the serrations in said arm edge portions to retain said frame member against movement longitudinally of said arms.

5. A wall structure frame to stud joint as recited in claim **4** where said arms and flange of the securing member are integral being cut and bent from a single flat strip, the serrations in said arm portions in the ways being in underlying relation to the web portion of the frame member and between said web portion and the edge portions on the ribs extending from the web portions.

6. In a wall structure having vertical load-supporting channel shaped studs with each having a wall with spaced flanges extending therefrom toward the other, a frame member extending horizontally between adjacent studs to form a seat for a panel, said frame member having a pair of side walls connected along a set of corresponding edges thereof by a web portion, said side walls having inwardly extending ribs extending longitudinally thereof for the length of the frame member in spaced relation to the portion, said web portion having laterally spaced inwardly

extending ribs spaced from and parallel to said side walls with longitudinally edge portions thereof turned toward the respective side walls whereby said ribs cooperate with the web and side wall therebetween to form L-shaped ways extending longitudinally of the frame member, a securing member at each end of said frame member and having a flange secured to the respective stud wall between the stud flanges, a pair of spaced arms on said securing member extending longitudinally of said frame member with end portions of L-shaped cross section within said L-shaped ways, said end portions of the arms having notches in longitudinal edge portions, said arms having abutment means engaging ends of the frame member to limit movement of said frame member on said arm portions toward said studs, the ribs defining the ways on the frame member being deformable into notches in the respective arm portion to retain said frame member against movement longitudinally of said arms.

References Cited by the Examiner

UNITED STATES PATENTS

2,611,633	9/1952	Webster	287—54
2,627,948	2/1953	Farr	189—36
2,837,153	6/1958	Brown et al.	189—36 X
2,869,694	1/1959	Breckheimer	189—36

FOREIGN PATENTS

918,524	10/1946	France.

RICHARD W. COOKE, JR., *Primary Examiner.*