

Feb. 16, 1960

D. R. MUNRO, JR
PARTITION STRUCTURE

2,925,154

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2 Sheets-Sheet 1

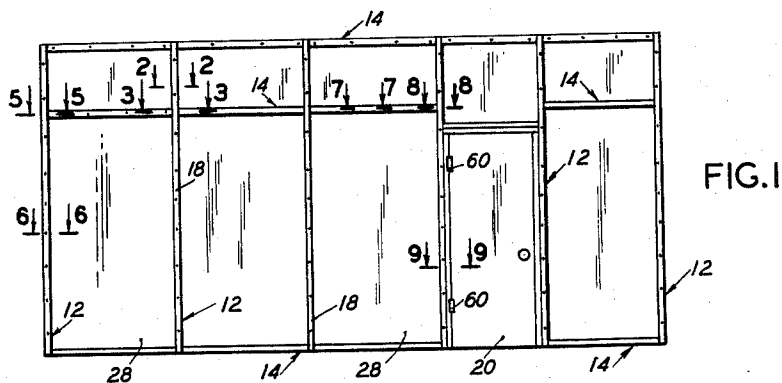


FIG. 2

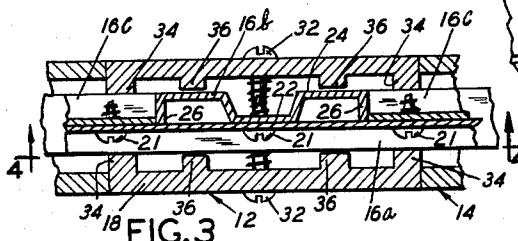
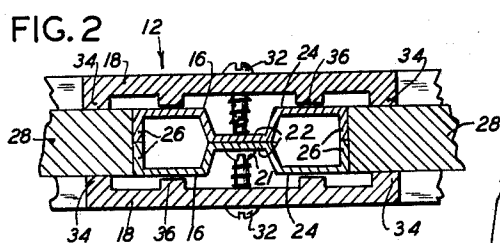


FIG. 3

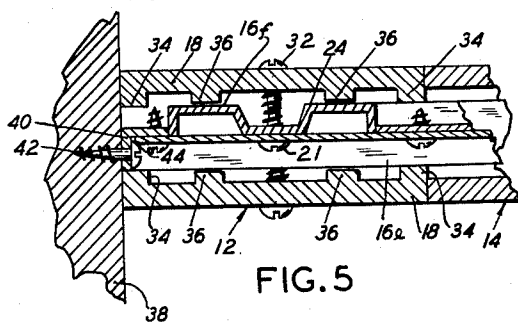


FIG. 4

FIG. 5

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FIG. 7

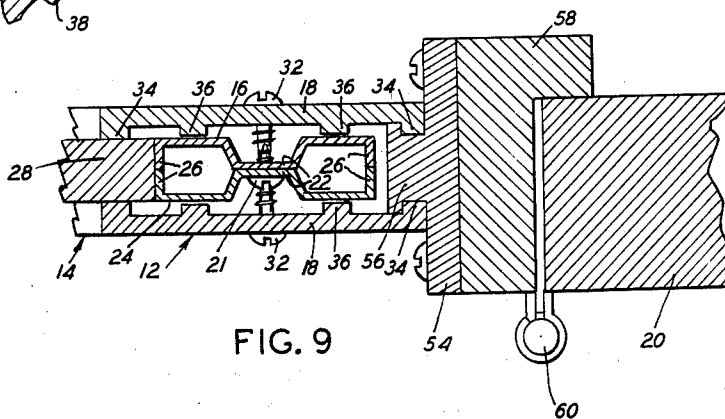
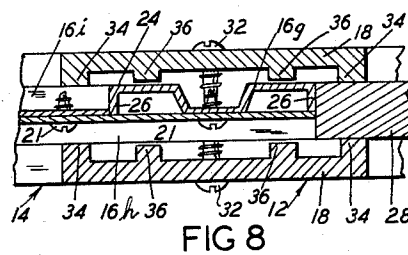
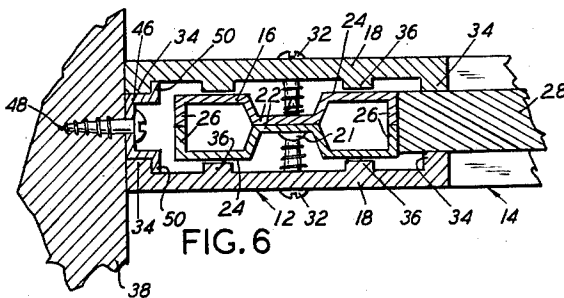
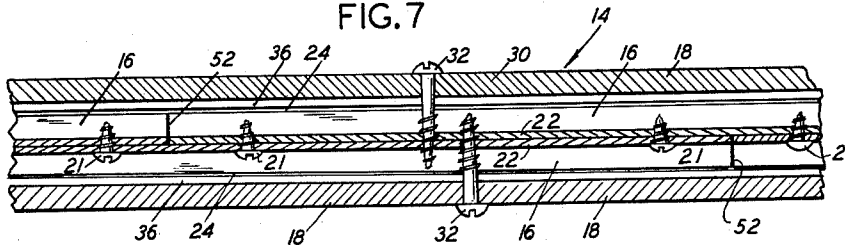
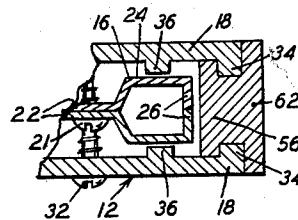


FIG. 10



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PARTITION STRUCTURE

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4 Claims. (Cl. 189—34)

This invention relates to a partition structure and more particularly to a panel supporting frame structure including spaced uprights and spaced crosspieces, each of which is a composite frame member made up of two different types only of formed or extruded metal members, which frame structure can be readily assembled to produce a lightweight and inexpensive but attractive panel supporting frame structure.

The composite frame members of the panel supporting frame structure of the present invention are each made up of a pair of similar frame elements and a pair of similar trim elements, all of which are elements extending longitudinally of the composite frame members. The frame elements are of multiple channel formation and have one face of each in contact and secured together. The panel supporting frame structure is made up of intersecting composite frame members and where the composite frame members cross, one of the frame elements of each pair of frame elements can extend continuously through the resulting intersection so as to produce an easily formed and effective joint of high mechanical strength. The frame elements thus secured together form a grid for receiving panels of any suitable material, such as plywood, hardboard, metal, glass or plastic. The panels are held in position by trim elements forming part of the composite frame members. The trim elements are secured to and extending longitudinally of the frame elements so as to cover their other faces. The trim elements are of greater width than the frame elements and provide spaces between their edges for receiving the edges of the panels. The structure is such that the edges of the panels are securely gripped between the edges of the trim elements. The result is a lightweight inexpensive partition structure which is of pleasing appearance; which may be easily installed in new or existing structures and also which can be easily disassembled and moved to other positions.

It is therefore an object of the present invention to provide an improved partition structure made up of a relatively few different types of elements secured together.

Another object of the invention is to provide a partition structure in which composite frame members are made up of pairs of similar frame elements to produce a panel supporting grid in which the panels are held in position by pairs of trim elements which grip the edges of such panels.

A further object of the invention is to provide a panel supporting frame structure which may be installed in new or existing structures, which includes a relatively few number of different types of elements and which is light in weight and pleasing in appearance.

A still further object of the invention is to provide a partition frame structure for holding panels of plywood or other material in which the uprights and crosspieces of the frame structure are similar and are each made up of a pair of longitudinally extending metal ele-

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ments, the elements of each pair having similar cross sections.

Other objects and advantages of the invention will appear in the following description thereof given in connection with the attached drawing of which:

Fig. 1 is an elevation of a partition structure in accordance with the present invention;

Fig. 2 is a horizontal section through a composite frame member on an enlarged scale and taken on the line 2—2 of Fig. 1;

Fig. 3 is a horizontal section on the same scale as Fig. 2 through a joint between vertical and horizontal composite frame members and taken on the line 3—3 of Fig. 1;

Fig. 4 is a vertical section taken on the line 4—4 of Fig. 3;

Fig. 5 is a horizontal section similar to Fig. 3 through another type of joint and taken on the line 5—5 of Fig. 1;

Fig. 6 is a horizontal section similar to Fig. 2 through another composite frame member and taken on the lines 6—6 of Fig. 1;

Fig. 7 is a horizontal section on the same scale as Fig. 2 showing a splice between frame elements and taken on line 7—7 of Fig. 1;

Fig. 8 is a horizontal section similar to Fig. 3 through another joint and taken on the line 8—8 of Fig. 1;

Fig. 9 is a horizontal section on the same scale as Fig. 2 showing a door casing structure and taken on the line 9—9 of Fig. 1; and

Fig. 10 is a view similar to Fig. 9 showing a type of terminal construction for the partition structure of the present invention.

Referring to Figs. 1 and 2, the partition structure of the present invention may include a plurality of vertical composite frame members 12, all of which may be of identical construction, and also a plurality of composite horizontal frame members 14, all of which may also be of identical construction and of the same construction as the vertical composite frame members 12. Such composite frame members include frame elements 16 and trim elements 18 and have a small number of other frame elements associated therewith, including devices for attaching the frame members to walls, ceilings and floors and to door or window casing members, for example, the casing for the door 20. Fig. 2 is a typical cross section through a composite frame member 12 or 14 and as shown therein each frame member includes a pair of the frame elements 16 suitably secured together, for example, by small thread cutting screws 21. The frame elements 16 are identical in cross section and are preferably made of sheet metal formed either by rolling or by a metal bending operation. As also shown in Fig. 2, each frame element 16 includes a central channel portion 22 having a web at the bottom of the channel portion and opening toward one face of the frame element. Each frame element 16 also has an edge channel portion 24 defined by longitudinally extending edges or flange portions 26, the channel portion opening toward the opposite face of the frame element. The flange portions 26 preferably extend substantially normal to the web of the channel 22 and terminate substantially in the plane of such web.

The frame elements 16 are shown approximately full scale in Fig. 2 and it will be noted that they are of considerably greater width than thickness and that the faces of the frame elements toward which the channel portions 24 open are secured together. That is to say, it is the base or web portions of the channel portions 22 which abut each other and are secured together by the screws 21. The edge channel portions 24 open toward each other and their intumed outer edges 26 abut each

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other and form an edge surface against which panel members 28 abut. The composite frame members 12 and 14 also include the trim elements or strips 18. Such trim elements are of greater width than the width of the frame elements 16 so that their edge portions extend laterally past the edges of the frame elements 16. The extending edges of the trim elements provide spaces between such edge portions to receive the edges of the panel members 28. The trim elements 18 are secured to the frame elements 16 in any suitable manner, for example, by screws 32, which may be of the thread cutting type and which may extend through suitable bores in the base or web portions of the central channel portions 22 of the frame elements.

The trim elements 18 are preferably made of metal, such as extruded aluminum and preferably have the shape shown in Fig. 2. That is to say, the trim elements 18 may have plain or decorated outer surfaces and have inwardly extending edge projections 34 which engage the edges of the panel members 28. The trim elements 18 also preferably have intermediate projections 36 extending inwardly toward the outer faces of the frame elements, i.e., toward the web portion of the edge channel portions 24 of the frame elements 16. The projections 34 are preferably slightly longer than the projections 36 so that panel members 28, which are approximately the same thickness as the combined thickness of the two edge channel portions 24 of the frame elements 16, are gripped tightly between the edge portions 34 of the trim element 16 when the screws 32 are tightened.

Where a vertical frame member 12 crosses a horizontal frame member 14, one of the frame elements of each frame member, for example, the horizontal frame element 16a in Figs. 3 and 4, may extend continuously through the joint and the opposed vertical frame element 16b may also extend continuously through the joint while the remaining horizontal frame elements 16c terminate at the joint and the same is true of the remaining vertical frame elements 16d. The trim elements 18 of either the vertical or horizontal composite frame members may extend continuously through the joint, the continuous extension of vertical trim elements being shown in Fig. 1, or, if desired, the ends of the trim elements may be mitered at the joints. By the structure shown in Figs. 3 and 4 a very rigid joint is formed between intersecting frame members without employing any special or additional type of joint elements. That is to say, the longitudinally extending frame elements 16 themselves make up the joint in conjunction with the longitudinally extending trim elements 18.

One manner of securing the partition structure of the present invention to a wall, ceiling or floor surface is shown in Fig. 5. The end of a frame element 16 is secured to the surface 38 of a wall, ceiling or floor by attaching to such surface a small angle element 40 in any suitable manner, for example, by screws 42. The end of a frame element 16e which is perpendicular to such surface and extends continuously across another frame element 16f which is parallel to such surface is secured to the upstanding flange of the angle element 40 by means of a screw 44. The angle element 40 will ordinarily be of sufficient length that a plurality of screws 42 can be used. The structure just described is particularly adapted to secure the panel frame structure to a wall, ceiling or floor surface at a joint where a horizontal member intersects a vertical member adjacent such surface. It will be apparent, however, that short lengths of frame elements 16 extending perpendicular to a surface can be employed anywhere along a frame element which extends parallel to such surface and be secured to the surface by means of an angle member 40.

Another means of securing the panel structure of the present invention to the surface 38 is shown in Fig. 6. In such figure, a composite frame member extends parallel to the surface 38. In order to secure such frame

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member to the surface, a channel member 46 is first secured to the wall, for example, by means of screws 48. The channel member has flanges including portions extending perpendicularly to the surface 38 and terminating in outwardly projecting edge portions 50. When the trim elements 18 of the composite frame member of Fig. 6 are applied, their edge projections 34 engage the flanges of the channel member 46 so as to securely fasten the frame member to the surface 38. It will be apparent that the structure of Fig. 6 can be used in conjunction with the structure of Fig. 5. That is to say, short lengths of the angle members 40 of Fig. 5 may be installed opposite those sections of a surface of a wall, ceiling or floor where a trim element 18 extends perpendicular to the surface and intersects a frame member extending parallel to the surface. Channel members 46 of Fig. 6 can be installed so as to extend between such angle members 40 along such surface. The angle members 40 may then be employed to initially hold the partly fabricated frame structure in position while it is being assembled and while panels 28 are being installed. Application of the trim elements 18 will then clamp the panels in position and at the same time more securely attach the partition structure to the surfaces of the wall, ceiling or floor.

Figure 7 illustrates a splice in a frame member, such as a horizontal frame member 14. In the structure shown in Fig. 7, frame elements 16 overlap and abut other frame elements 16 at joints 52. The various frame elements 16 are held together by means of the screws 21 and the trim elements 18 are held in position on the frame elements 16 by means of the screws 32. The structure of Fig. 7 shows how random lengths and short lengths of frame elements 16 may be used without waste.

Figure 8 is a sectional view through a joint between composite frame members 12 and 14 in which one of the frame members terminates and the other one extends above and below the joint. Thus, the vertical frame element 16g extends continuously through the joint whereas a horizontal frame element 16h terminates at the right side of the joint in Fig. 8 adjacent a panel 28 held between the edges of vertically extending trim element 18. The other horizontal frame element 16i terminates at the left side of the joint.

Figure 9 illustrates one manner in which a door 20 may be supported in the panel structure of the present invention. As shown in Fig. 9, a vertically extending framing element 54 may have a T-shaped projecting portion 56 positioned between and fitting the edge portions of the trim elements 18 including the inwardly projecting portions 34 thereof. When the screws 32 are tightened, the T-shaped portion 56 is clamped by the edge portions 34 of the trim elements 18 so as to securely hold the framing element 54 in position. A door jamb 58 may be secured to the framing element 54 in any suitable manner and the door 20 mounted thereon by means of hinges 60. It will be apparent that any other suitable type of casing members, such as window casing members, can be secured to the framing element 54 and that such framing element can be employed around any sized opening surrounded by composite frame members 12 and 14.

A modified structure is shown in Fig. 10 including a cap trim element 62 having a T-shaped projection 56 held in position between the edges of trim elements 18 in the same manner that the framing element 54 of Fig. 9 is held in position. The cap trim element 62 of Fig. 10 may be employed at any termination of the partition structure of the present invention to provide a decorative trim and the exposed surface of the cap trim element 62 may be plain or any desired decorative form. It will be apparent that any type of casing or other finish structure can be secured to the cap trim elements 62, if desired, so that the cap trim element becomes a framing element and, also, that such cap trim element or the framing element 54 of Fig. 9 can be employed to fasten

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the partition structure of the present invention to a surface such as the surface of a ceiling, wall or floor. It will also be apparent that the supporting frame structure of the present invention can be made up of two different types of elements only, namely, the frame elements 16 and the trim elements 18. These two different types of elements are sufficient to fabricate a complete frame structure and hold the panels securely in position therein. The only other elements required are fastening elements, such as the angles 40 of Fig. 5 and the channels 46 of Fig. 6, for fastening the edges of the partition structure to the surfaces of a room and one or more terminal elements, such as the framing element 54 of Fig. 9, or the cap trim element 62 of Fig. 10. The various elements can be furnished in any length desired and are easily cut to the required length and the required screw holes can be drilled either in the shop or on the job, such that an entire partition structure may be rapidly and inexpensively fabricated and installed employing a minimum number of different types of parts. The entire structure, including the panels 28, may, of course, be given any desired decorative finish.

I claim:

1. Partition frame structure comprising panel holding composite frame members each including a first elongated frame element and a second elongated frame element, said frame elements each being sheet metal strips of multiple channel formation and being of greater width than thickness and each having a longitudinally extending central channel portion opening toward one face of said frame element and providing a web adjacent the opposite face of said frame element and each having side channels opening toward said opposite face, said first and second frame elements of each frame member having said opposite faces in contact and having said web portions secured together to provide frame members of greater width than thickness and with each frame element having its said one face parallel to the general plane of said frame structure, pairs of said frame members intersecting and being secured together to form a joint, the first frame element of one frame member of a pair of intersecting frame members extending continuously through said joint and the second frame element of the other frame member of said pair extending continuously through said joint and being secured to the first frame element of said one frame member, the other frame elements of said pair of frame members terminating at said joint, a panel holding trim element extending longitudinally of each said frame element and covering said one face of such frame element, said trim elements being secured to said frame elements and being of greater width than said frame elements to provide spaces between the edges of said trim elements for receiving the edges of panels.

2. Partition frame structure comprising spaced panel holding composite frame members each including a first elongated frame element and a second elongated frame element, said frame elements each being sheet metal strips of multiple channel formation and being of greater width than thickness and each having a longitudinally extending central channel portion opening toward one face of said frame element and providing a web portion adjacent the opposite face of said frame element and each having a longitudinally extending channel portion upon each side of said central channel portion and opening toward the opposite face of said frame element, said first and second frame elements of each frame member having said opposite faces in contact and having said web portions secured together to provide frame members of greater width than thickness and with each frame element having its said one face parallel to the general plane of said frame structure, pairs of said frame members intersecting and being secured together to form a joint, the first frame element of one frame member of a pair of intersecting frame members extending contin-

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uously through said joint and the second frame element of the other frame member of said pair extending continuously through said joint and being secured to the first frame element of said one frame member, the other frame elements of said pair of frame members terminating at said joint, a panel holding trim element extending longitudinally of each said frame element and covering one face of such frame element, said trim elements being secured to said frame elements and being of greater width than said frame elements to provide spaces between the edges of said trim elements for receiving the edges of panels.

3. Partition structure comprising panel holding composite frame members including spaced vertical columns and spaced horizontal cross members intersecting said vertical columns, said vertical columns and horizontal cross members each including a first elongated frame element and a second elongated frame element, said frame elements each being sheet metal strips of multiple channel formation and being of greater width than thickness and each having a longitudinally extending central channel portion opening toward one face of said frame element and providing a web portion and each having a longitudinally extending channel portion upon each side of said central channel portion and opening toward the opposite face of said frame element, said first and second frame elements of each frame member having said opposite faces in contact and having said web portions secured together to provide frame members of greater width than thickness and with each frame element having its said one face parallel to the general plane of said frame structure, the first frame element of a horizontal cross member extending continuously through the intersection of a column and the last mentioned cross member and the second frame element of the last mentioned column extending continuously through said intersection, the other frame elements of the intersecting column and cross member terminating at said intersection, a panel holding trim element extending longitudinally of each of said frame elements and covering one face of such frame element, said trim elements being secured to said frame elements and being of greater width than said frame elements to provide spaces between the edges of said trim elements, and panels having their edges positioned in said spaces and abutting the edges of said frame elements.

4. Partition structure comprising panel holding composite frame members including spaced uprights and spaced crosspieces intersecting said uprights, said uprights and crosspieces each including a first elongated frame element and a second elongated frame element, said frame elements each being sheet metal strips of multiple channel formation and being of greater width than thickness and each having a longitudinally extending central channel portion opening toward one face of said frame element and providing a web adjacent the other face of said frame element and each having a longitudinally extending flanged portion on each side of said central channel portion, said frame elements of each frame member having said opposite faces in contact and having said web portions secured together to provide frame members of greater width than thickness and with each frame element having its said one face parallel to the general plane of said frame structure, means for securing the ends of at least certain of said uprights and crosspieces to a wall structure, a panel holding trim element extending longitudinally of each of said frame elements and covering said one face of each said frame element, said trim elements being of greater width than said frame elements to provide spaces between the edges of said trim elements, panels having their edges positioned between said edges of said trim elements and abutting the edges of said frame elements, and means for securing said trim elements to said web portions of said frame elements for clamping the edges of said panels between the edges of said trim elements, one frame element of each upright extending

continuously through each intersection of an upright and a crosspiece and the other of the frame elements of said crosspiece extending continuously through said intersection and being secured to said one frame element.

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