

Jan. 7, 1958

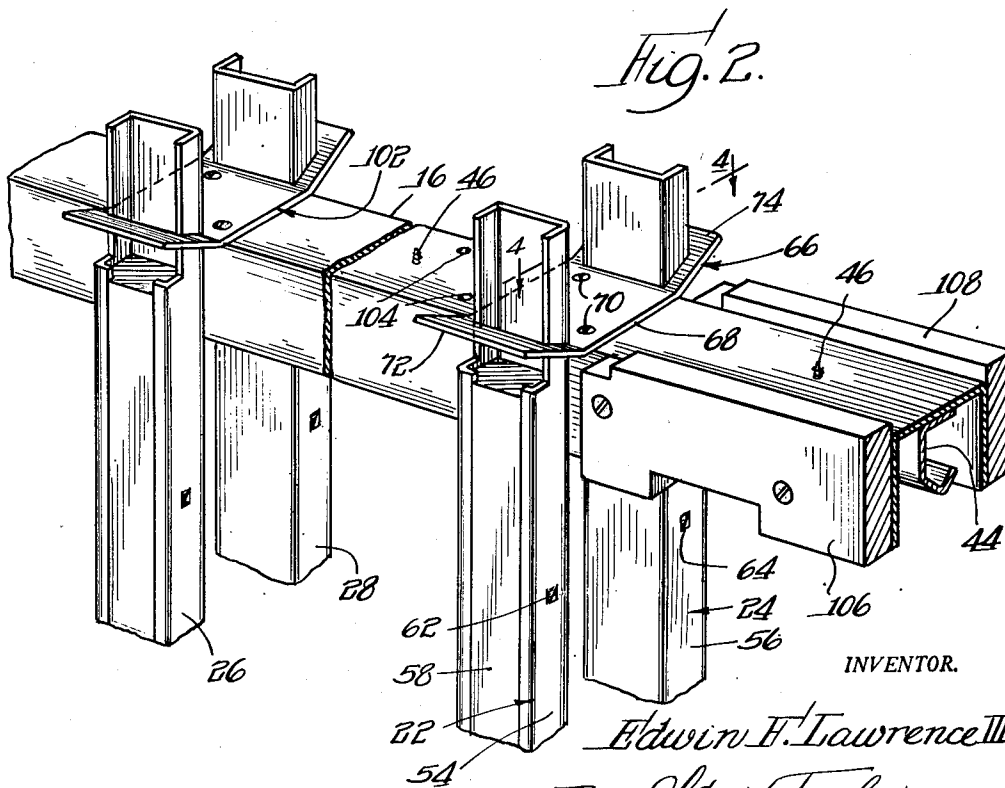
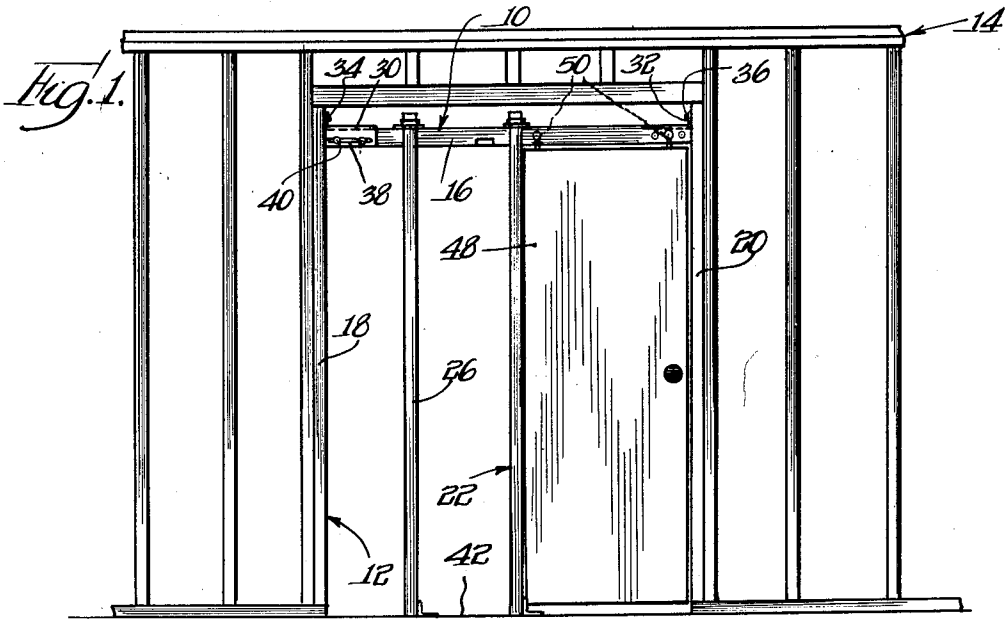
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SLIDING DOOR FRAME STRUCTURE

Filed March 29, 1956

2 Sheets-Sheet 1



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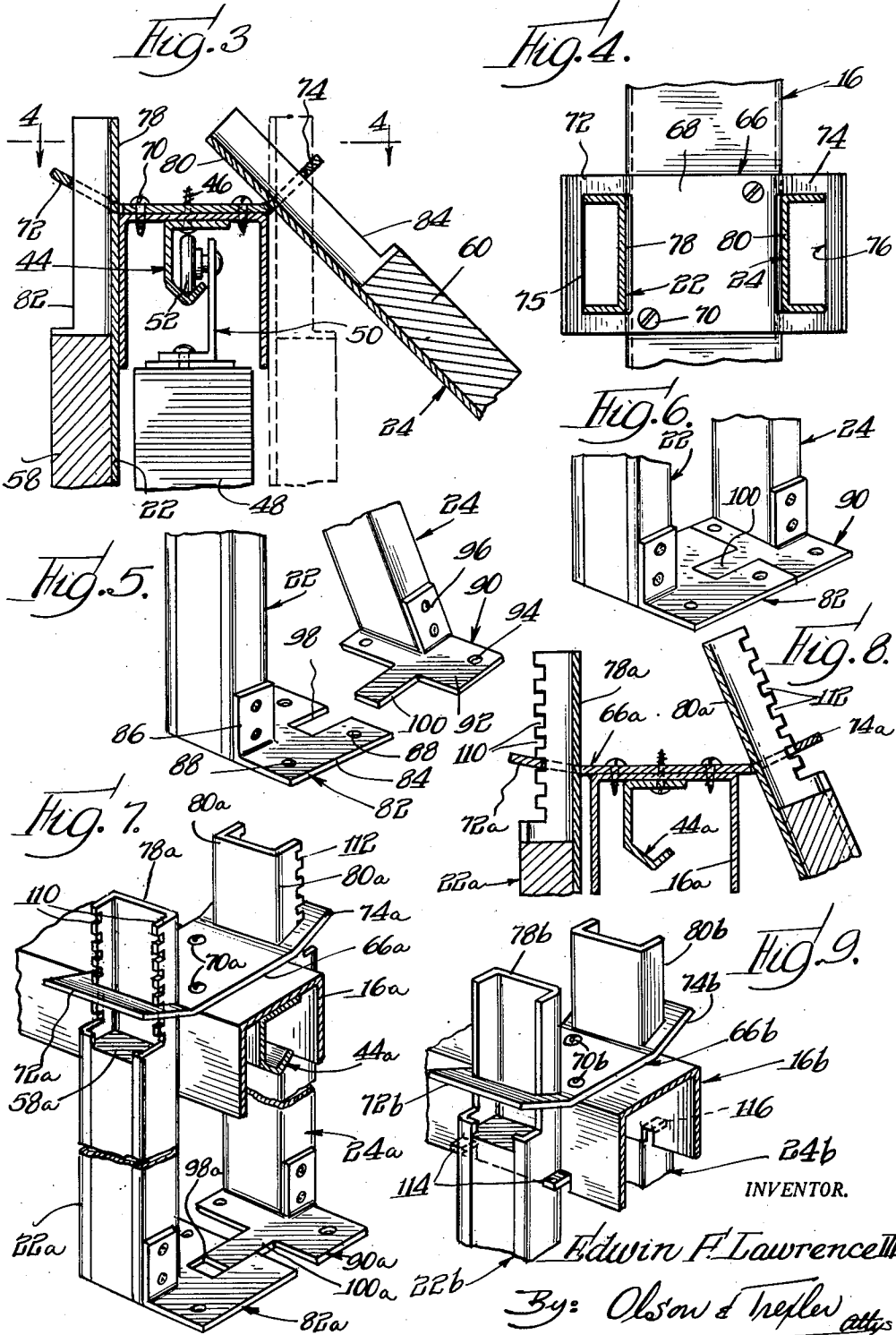
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SLIDING DOOR FRAME STRUCTURE

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Application March 29, 1956, Serial No. 574,727

9 Claims. (Cl. 20—11)

The present invention relates to a novel sliding door frame structure, and more particularly to a novel pocket-type frame structure.

An object of the present invention is to provide a novel pocket-type sliding door frame structure which may be essentially prefabricated at a factory and shipped to a building site in a knocked down condition and which is constructed to facilitate easier and faster installation in a previously prepared rough opening in a wall structure of a building or the like.

A more specific object of the present invention is to provide a novel door frame structure having a header member and a plurality of jamb members, which structure is adapted to enable the jamb members to be quickly, easily and securely connected to the header member without need for a workman doing the installation work to apply or tighten fastening devices such as screws, rivets, bolts or the like.

Another object of the present invention is to provide a novel pocket-type door frame structure of the above described type wherein the jamb members are secured to the header in a manner which provides a rigid connection so as to improve rigidity of the ultimate wall structure and to obtain support for intermediate portions of the header member.

A further object of the present invention is to provide a novel pocket-type door frame structure of the above described type, which is constructed so that upon assembly of individual jamb members with a previously installed horizontal header member, the jamb members are automatically brought substantially into vertical plumb positions.

Still another object of the present invention is to provide a novel door frame structure of the above described type which may easily be adapted for installation in walls of various thicknesses and/or for accommodating doors of various thicknesses.

Other objects and advantages of the present invention will become apparent from the following description and the accompanying drawings wherein:

Fig. 1 is an elevational view showing a pocket-type sliding door frame structure embodying the features of the present invention installed within a rough opening in a framed wall structure;

Fig. 2 is an enlarged fragmentary perspective view showing the manner in which the jamb members are connected with the header member in accordance with the present invention;

Fig. 3 is a cross sectional view showing one jamb member in a fully assembled condition and showing an opposite jamb member in a partially assembled condition; Fig. 4 is a sectional view taken along line 4—4 in Fig. 2;

Fig. 5 is a fragmentary perspective view showing the manner of bringing the lower end of one jamb member into registration with a previously assembled jamb member;

Fig. 6 is a fragmentary perspective view showing lower end portions of a pair of cooperable jamb members in

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fully assembled condition for a wall of standard width such, for example, as a four inch wall;

Fig. 7 is a fragmentary perspective view showing a slightly modified structure for connecting the jamb members to the header member and also showing the jamb members fully assembled and spaced for installation in a wall having an increased thickness;

Fig. 8 is a fragmentary sectional view showing the manner of assembling the modified jamb members of Fig. 7; and

Fig. 9 is a fragmentary perspective view showing another modified form of the present invention.

Referring now more specifically to the drawings wherein like parts are designated by the same numerals throughout the various figures, a door frame structure 10 incorporating the features of the present invention is shown fully installed within a rough opening 12 in a wall structure 14 which is formed in the usual manner. The door frame structure 10 comprises a header member 16 which is adapted to be secured in a horizontal position to upstanding studs 18 and 20 defining opposite sides of the rough opening 12. The frame also includes pairs of separate and cooperable jamb members 22—24 and 26—28 which are detachably connectable to the header member in the manner described below so that the frame structure may be shipped to the building site in a knocked down condition and then quickly and easily installed in the rough opening.

In the embodiment shown, the header member 16 is in the form of an inverted steel channel having a length similar to but less than the distance between the studs 18 and 20 defining the opposite sides of the rough opening. Bracket members 30 and 32 are connected with opposite ends of the header member 16 and have flanges adapted to be secured to the studs 18 and 20 by a plurality of nails 34 and 36 or the like. Preferably, these brackets are axially adjustably connected to the header member to adapt the header member for installation in rough openings of various widths. This is accomplished by providing the bracket 30, for example, with elongated slots 38 in its opposite sides through which connecting screws 40 extend. As will be understood, the header may be easily installed in a proper horizontal position by nailing one of the end brackets to a stud at a previously marked height above the floor 42 and then levelling the header and nailing the opposite end bracket to its associated stud. The end brackets are provided with sufficient holes for accommodating several nails, and, if desired, the header may be initially secured by a single nail through each bracket so that any slight deviation from the proper horizontal position may be corrected by tapping one end of the header with a hammer prior to final securing by additional nails.

A depending track member 44 is secured within the header member by a plurality of screws 46. A door 48 is supported from this track member by a pair of hangers 50 secured to the top edge of the door and having rollers 52 riding on the track member.

The jamb members 22 and 24 respectively comprise similar elongated steel channels 54 and 56 which, in the embodiment shown, combine with the header member 16 to provide the frame structure with an over-all thickness substantially equal to the width of the studs 18 and 20. In order to facilitate attachment of wall covering material such as wallboard, plaster lath or the like to the jamb members, nailing strips 58 and 60 of wood or the like are disposed within the channels. A plurality of detents 62 and 64 are preferably struck inwardly from the sides of the channels 54 and 56 for preventing axial displacement of the nailing strips.

In accordance with a feature of the present invention, a bracket 66 is secured to and preferably presassembled

with the header 16 whereby the jamb members 22 and 24 may be easily, quickly and securely connected with the header. The metal bracket 66 comprises a base portion 68 adapted to be connected to the header by a plurality of screws 70, and a pair of end portions 72 and 74 which extend upwardly and outwardly from opposite sides of the header member. These end portions are respectively provided with rectangular openings 75 and 76 adapted to receive upper end portions of the jamb members 22 and 24. The upper end portions 78 and 80 of the jamb members respectively have their opposite sides cut away as at 82 and 84 so that they may be inserted through the openings in the attachment plate or bracket while at the same time the terminal ends of the attachment plate do not project laterally beyond the outer surfaces of the main portions of the jamb members. Thus, the terminal ends of the attachment bracket will not interfere with the wall covering material secured to the jamb members.

It should be noted that the end portions 72 and 74 of the attachment bracket extend upwardly at a substantial angle from the horizontal, which angle, for example, may initially be about 45° as shown by the position of the end portion 74 in Fig. 3. Furthermore, the major length of each of the openings is such that the opposite sides or flanges of the jamb member upper end portions 78 and 80 are closely retained by portions of the bracket defining opposite ends of the opening. These features tend to prevent the jamb members from shifting in planes parallel to the longitudinal axis of the header when the jamb members are fully assembled with the header. Thus, when the jamb members are applied to a horizontally positioned header member, they will automatically assume approximately vertical positions.

The minor width of the openings 75 and 76 is similar to but slightly greater than the width of the jamb member upper end portion side flanges. As a result the jamb members must be arranged in inclined positions as indicated by the jamb member 24 in Fig. 3 before their upper end portions can be inserted through the openings. Then when the jamb members are swung by toward the header member and toward vertical positions, their upper end portions bind between inner and outer edges of the openings. Furthermore, the end portions of the attachment bracket or plate will be flexed downwardly as shown by the end portion 72 in Fig. 3 so that the inner and outer edges of the openings aggressively engage the jamb members and resist any axial movement of the jamb members to the opening. Thus, the connection between the jamb members and the header member is sufficiently rigid and secure so that any force such as the weight of the door tending to bow the header member downwardly is transmitted to and at least partially supported by the jamb members whereby the header member may be formed from lighter weight and more economical material. Preferably, the inner edges of the openings 75 and 76 are located substantially in vertical alignment with the outer side surfaces of the header member as shown best in Figs. 3 and 4. Thus, the opposite sides of the header member serve as abutments limiting inward movement of the jamb members so that when the jamb members are swung inwardly during assembly thereof, they are automatically located in substantially vertical positions.

Associated with the lower end of the jamb member 22 is a foot member 82 having a base plate 84 and upstanding tab 86 welded or otherwise secured to the jamb member. Apertures 88 are provided in the base plate through which nails or the like may be driven for securing the foot member and, thus, the lower end of the jamb 22 to the floor. A separate foot member 90 is connected with the lower end of the jamb member 24, which foot member has a base plate 92 provided with nail receiving apertures 94 and an upstanding tab 96 welded or otherwise secured to the jamb members. A slot 98 is formed

in the inner edge of the base plate 84 and a complementary tongue 100 projects from the inner edge of the base plate 92 and is adapted to enter the slot as shown in Fig. 6. Thus, after one of the jamb members has been properly located in a vertically plumb position and secured to the floor, the other jamb member may be automatically properly positioned by relatively moving the foot members 82 and 90 into abutting relationship with the tongue extending into the slot as shown in Fig. 6.

The above mentioned jamb members 26 and 28 are identical to the jamb members 22 and 24 and are adapted to be connected to the header by a bracket or plate member 102 which is identical to the attachment plate 66. It is also to be understood that the jamb members 26 and 28 are provided with separate foot members respectively identical to the foot members 82 and 90.

In order to adapt the frame structure for defining door openings of various widths, a plurality of sets of apertures 104 is provided in the header member for receiving the connecting bracket securing screws 70 at locations spaced along the header member. The bracket 66 will normally be assembled at the factory in the position shown adjacent nailing plates 106 and 108 of wood or the like which are secured to opposite sides of the header by a plurality of screws. This is the proper location for the majority of the door openings, but in the event a wider opening is desired, a workman may easily remove and relocate the attachment plate or bracket 66. The nailing plates 106 and 108 each have a thickness substantially equal to the thickness of the jamb members 22 and 24 respectively and are provided for enabling wall covering material to be nailed or otherwise secured to the header above the door opening.

Figs. 7 and 8 show a modified door frame structure which is similar to the construction described above as indicated by the application of identical reference numerals with the suffix "a" added to corresponding elements. This embodiment differs in that the opposite side flanges of the upper jamb member portions 78a and 80a are respectively provided with series of notches 110 and 112. These notches are adapted to receive outer terminal end sections of the attachment bracket or plate 66a when the upper ends of the jamb members are inserted through the openings and swung toward vertical positions so that the jamb members and the attachment plate or bracket are positively interlocked to restrain movement of the jamb members out of vertical positions and to provide an even more positive support for the intermediate portions of the header member.

Another advantage of the structure of this invention is illustrated in Figs. 7 and 8. More specifically, the frame structure is adapted easily to be modified for installation in a wall having a thickness greater than the usual thickness when the wall is framed with standard two-by-four studs. This may be accomplished by replacing the standard bracket or plate 66 with a longer plate 66a so that the jamb members are spaced the desired distance laterally from the header member to increase the overall thickness of the wall. Of course, the lower ends of the jamb members will also be spaced farther apart, but it should be noted, that the interlocking tongue and slot of the foot members will still enable the lower ends of the jamb members to be quickly and easily aligned as shown in Fig. 7. The nailing plates on the header member above the door opening may be easily adapted for a thicker wall structure merely by securing wooden shim members or the like thereto. It is to be understood that the embodiment of Figs. 1 through 6 may be adapted for various wall thicknesses by substituting attachment brackets or plates of different lengths and that the embodiment of Figs. 7 and 8 may be adapted for a wall having a standard thickness by substituting a shorter attachment bracket or plate.

In Fig. 9 there is shown another modified form of the

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present invention which is essentially identical to the structures described above as indicated by the application of identical reference numerals with the suffix "b" added to corresponding elements. In this embodiment pairs of spaced tabs 114 and 116 are respectively struck from opposite sides of the header member 16b. The tabs 114 are disposed for snugly embracing the jamb member 22b when it is moved into its vertical position for even more securely retaining the jamb member against movement out of the proper vertical position in a plane parallel to the longitudinal axis of the header member. The tabs 116 are disposed for snugly embracing and similarly restraining the jamb member 24a. It will be appreciated that the header member 16b may be provided with similar tabs for restraining jamb members, not shown, corresponding to the above described jamb members 26 and 28.

While the preferred embodiments of the present invention have been shown and described herein, it is obvious that many structural details may be changed without departing from the spirit and scope of the appended claims.

The invention is claimed as follows:

1. A knockdown door frame structure comprising header means adapted to be mounted in a horizontal position, attachment plate means on said header means and including portions with openings therethrough extending laterally and inclined upwardly from opposite sides of said header means, and a pair of separate jamb members having upper end portions extending through said openings and removably bound between laterally inner and outer margins of the openings of said plate means portions.

2. A knockdown door frame structure comprising header means adapted to be mounted in a horizontal position, attachment bracket means on said header means and including portions with openings therethrough extending laterally from opposite sides of the header means, a pair of separate jamb members having upper end portions extending through and removably confined within the openings of said bracket means portions, and separate foot members adapted to be secured to a floor and the like respectively connected with lower ends of said jamb members, said foot members including complementary engageable guide means extending transversely with respect to said jamb members for aligning lower ends of said jamb members in various laterally spaced positions.

3. A knockdown door frame structure comprising header means adapted to be mounted in a horizontal position, attachment plate means on said header means including portions extending laterally and inclined upwardly from opposite sides of said header means, said portions having openings therethrough, a pair of separate jamb members having upper end portions removably extending through said openings, margins of said plate means defining said openings closely confining opposite sides of said jamb members for restraining movement of the jamb members in planes parallel to the axis of the header means.

4. A knockdown door frame structure comprising header means adapted to be mounted in a horizontal position, attachment bracket means on said header means including portions extending laterally and inclined upwardly from opposite sides of said header means, means providing openings in said portions, and a pair of separate jamb members having upper end portions removably extending through said openings, said openings each having a width transversely of the header means similar to but greater than the corresponding width of an associated jamb member upper end portion for facilitating insertion of the jamb member end portions into the openings when the jamb members are arranged in first positions substantially perpendicular to planes of said bracket portions, projections of said openings in a horizontal plane

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having a width less than said width of the jamb member upper end portions so that the jamb members will securely bind in said openings when the jamb members are positioned substantially vertically to provide secure and rigid connections between the jamb members and the header means.

5. A knockdown door frame structure comprising header means adapted to be mounted in a horizontal position, attachment bracket means on said header means including portions with openings therethrough extending laterally from opposite sides of the header means, a pair of separate jamb members having upper end portions extending into and removably confined within the openings of said bracket means portions, and means providing notch means on said upper end portions for receiving margins of said bracket means portions defining said openings for positively interconnecting the jamb members with said bracket means portions for restraining movement of the jamb members in planes parallel to a longitudinal axis of the header means.

6. A knockdown door frame structure comprising header means adapted to be mounted in a horizontal position, attachment bracket means on said header means including portions with openings therethrough extending laterally from opposite sides of the header means, a pair of separate jamb members having upper end portions extending through and removably confined within said openings, and pairs of projection means respectively extending from opposite sides of said header means and spaced vertically from said laterally extending bracket means portions, said pairs of projections means respectively embracing said jamb members and restraining said jamb members against movement in planes parallel to a longitudinal axis of said header means.

7. A knockdown door frame structure comprising header means adapted to be mounted in a horizontal position, a bracket member secured to said header means and having opposite end portions extending laterally from opposite sides of said header means and disposed in planes inclined upwardly from said header means, and a pair of separate upstanding jamb members including upper end portions having predetermined exterior dimensions, said bracket member end portions including means defining openings therethrough having dimensions similar to those of said jamb member upper end portions, said upper end portions respectively removably extending through said openings and being bound by margins of said openings to restrain movement of the jamb members relative to the bracket member.

8. A knockdown door frame structure, as defined in claim 7, wherein inner edges of said opening are respectively disposed in substantially vertical alignment with opposite vertical sides of said header means whereby said opposite sides assist in locating the jamb members in substantially vertical positions.

9. A knockdown door frame structure, as defined in claim 7, wherein inner edges of said openings are respectively disposed laterally outwardly of opposite sides of said header means for positioning the jamb members laterally outwardly of said header means, and which structure includes a pair of separate foot members respectively secured to lower ends of said jamb members and adapted to be fastened to a floor or the like, said foot members including complementary guide edges extending transversely of said jamb members for aligning lower ends of said jamb members in various laterally spaced positions.

References Cited in the file of this patent

UNITED STATES PATENTS

2,753,223

Anderson ----- July 3, 1956