Dec. 14, 1965 H. L. WOODRUM 3,222,833

MOUNTING MECHANISM FOR SECTIONAL METAL DOOR FRAMES

Filed Aug. 8, 1963 4 Sheets-Sheet 1

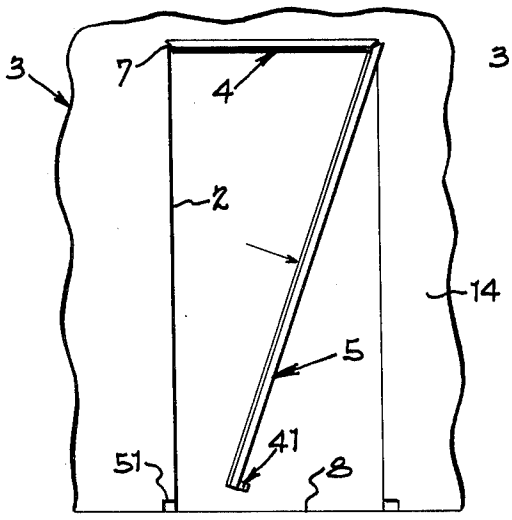


Fig. 1

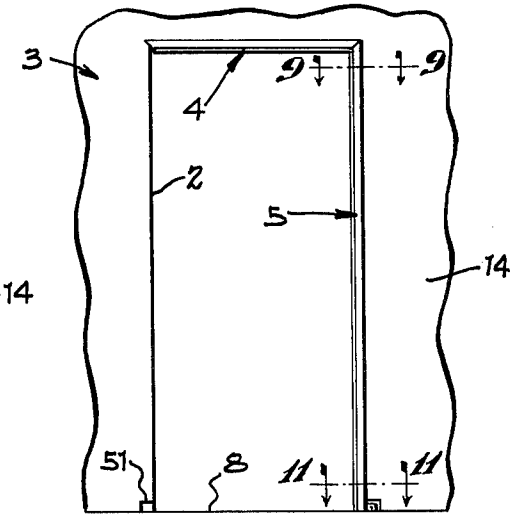


Fig. 2

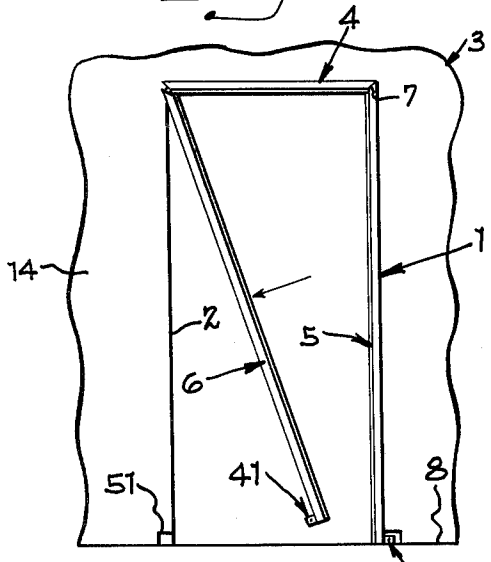


Fig. 3

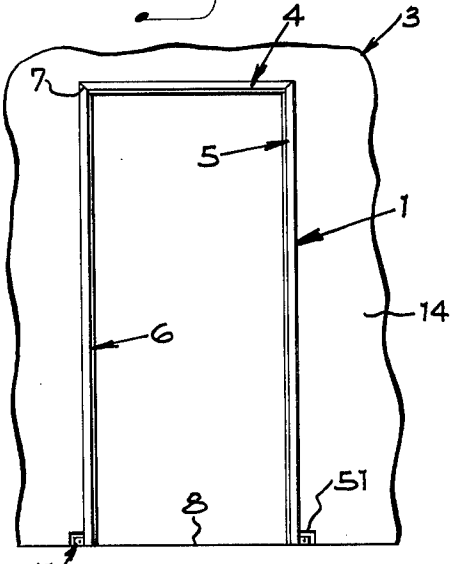


Fig. 4

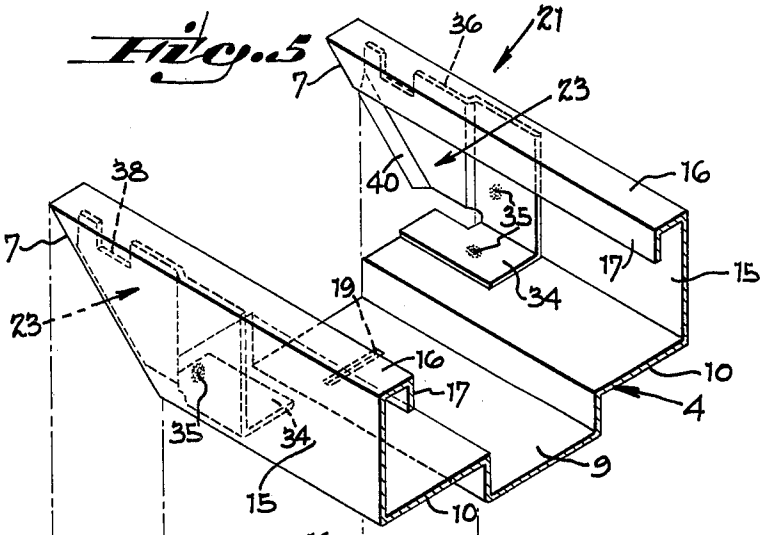
INVENTOR.
Harold L. Woodrum
BY
Wood, Herron & Evans.
ATTORNEYS.

Dec. 14, 1965 H. L. WOODRUM 3,222,833

MOUNTING MECHANISM FOR SECTIONAL METAL DOOR FRAMES

Filed Aug. 8, 1963 4 Sheets-Sheet 2

Fig. 5



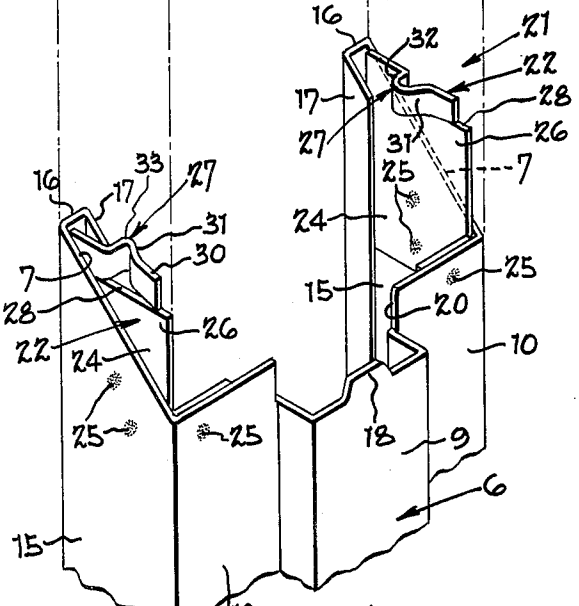
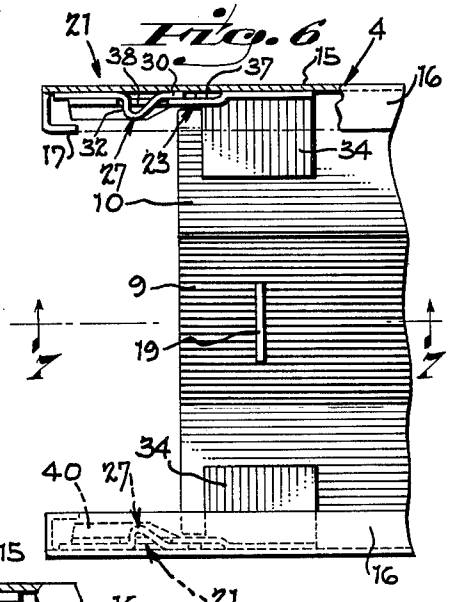


Fig. 6



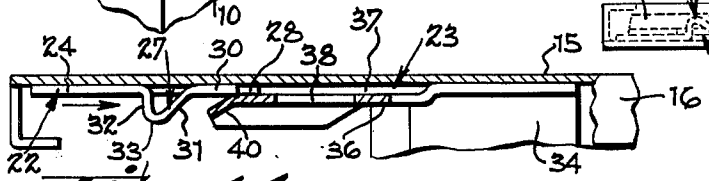


Fig. 14

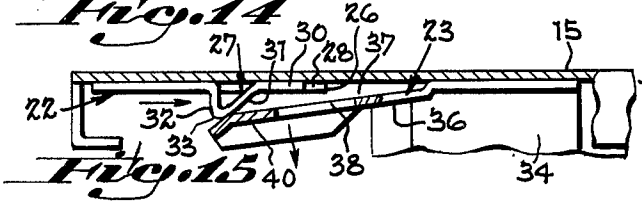


Fig. 15

INVENTOR.
Harold L. Woodrum
BY
Wood, Herron & Evans,
ATTORNEYS.

Dec. 14, 1965 H. L. WOODRUM 3,222,833

MOUNTING MECHANISM FOR SECTIONAL METAL DOOR FRAMES

Filed Aug. 8, 1963 4 Sheets-Sheet 3

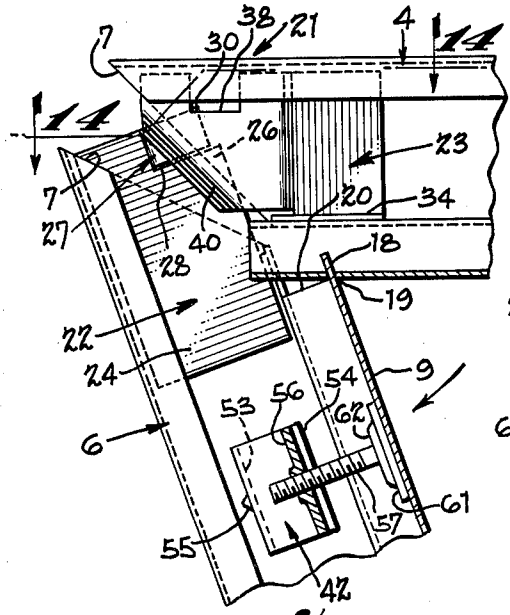


Fig. 7

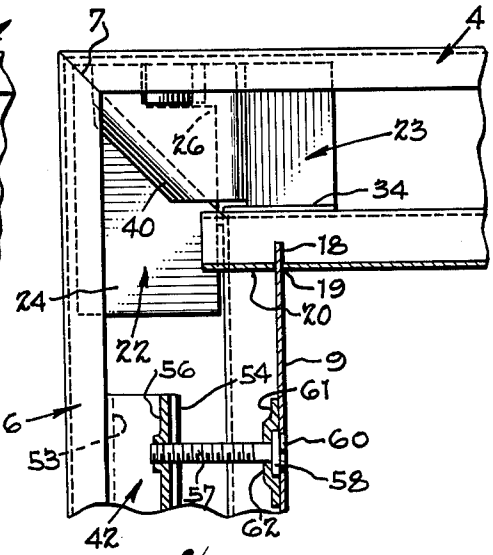


Fig. 8

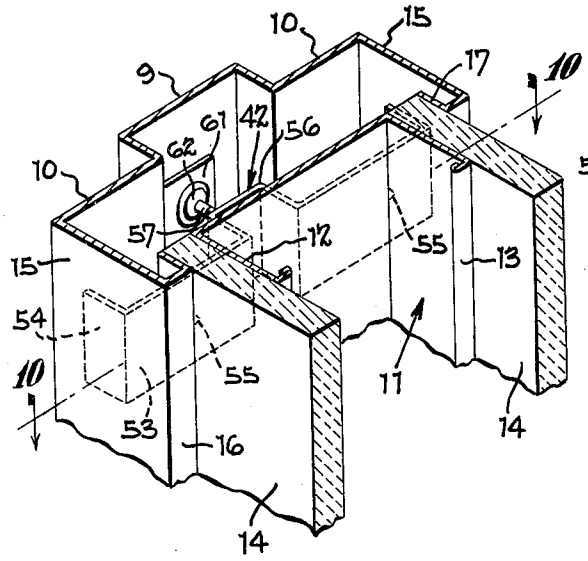


Fig. 9

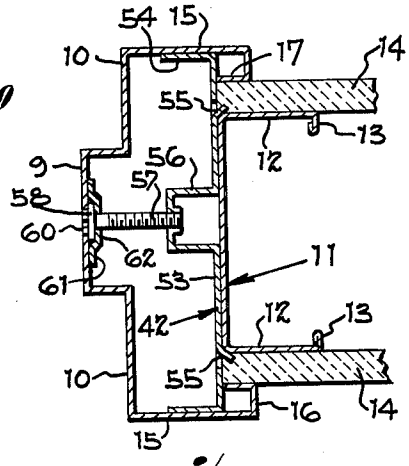


Fig. 10

INVENTOR.
Harold L. Woodrum
BY
Wood, Herron & Evans.
ATTORNEYS.

Dec. 14, 1965 H. L. WOODRUM 3,222,833

MOUNTING MECHANISM FOR SECTIONAL METAL DOOR FRAMES

Filed Aug. 8, 1963 4 Sheets-Sheet 4

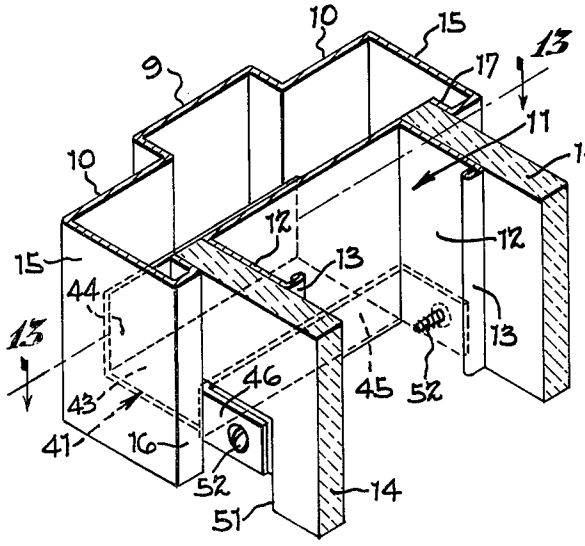


Fig. 11

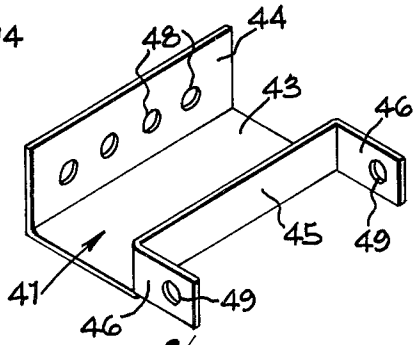


Fig. 12

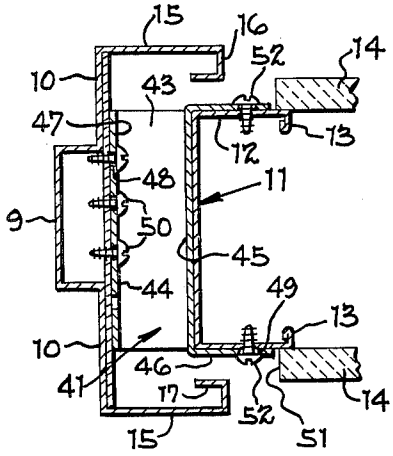


Fig. 13

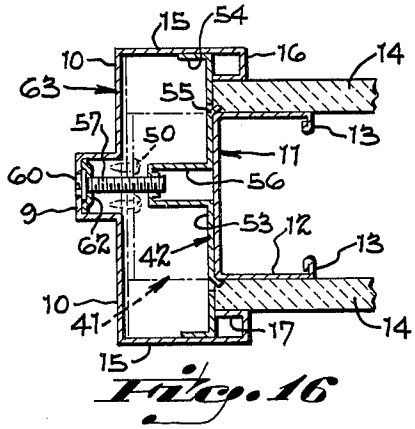


Fig. 16

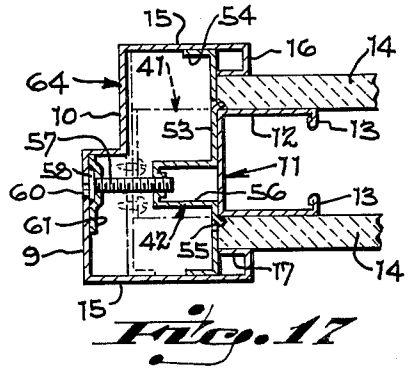


Fig. 17

INVENTOR.
Harold L. Woodrum
BY
Wood, Herron & Evans.
ATTORNEYS.

United States Patent Office 3,222,833 Patented Dec. 14, 1965

3,222,833

MOUNTING MECHANISM FOR SECTIONAL METAL DOOR FRAMES

Harold L. Woodrum, Cincinnati, Ohio, assignor to The Steelcraft Manufacturing Company, Rossmoyne, Ohio, a corporation of Ohio

Filed Aug. 8, 1963, Ser. No. 300,732
3 Claims. (Cl. 52—211)

This invention relates to door frames of sectional construction which are formed of sheet metal; the invention is directed in particular to a sectional frame structure adapted to be installed within the door opening of a building wall after the wall is erected.

Generally speaking, the sectional door frame structure, to which the invention is addressed, comprises a header adapted to be mounted in a horizontal position across the top of the door opening, a hinge jamb adapted to be installed in a vertical position along one side of the door opening, and a strike jamb adapted to be installed in vertical position along the opposite side of the door opening. The door opening is framed by studs in the usual way, with the wall panels secured to the opposite sides of the studs. The header and jambs of the door frame of the invention are generally channel-shaped in cross section arranged to overlap the wall panels on opposite sides of the door opening, the sections being anchored securely in place with respect to the studs of the wall structure by the mounting mechanism of this invention. The arrangement is of particular advantage in connection with dry wall construction, consisting of wall panels mounted on opposite sides of the studs—a type of construction extensively used at the present time in residential buildings.

One of the primary objectives of the invention has been to provide an improved snap-type latching mechanism for joining the upper ends of the vertical jambs to the opposite ends of the horizontal header, whereby the door frame structure may be installed within the door opening more rapidly and conveniently than is possible with metal door frames of conventional design.

In general, the latching mechanism comprises pairs of latching elements permanently mounted in the upper end portion of each jamb and arranged to coact with respect to pairs of keeper elements permanently attached to the opposite end portions of the header. Each latching element includes a latching detent and each keeper element includes a yieldable arm including an open slot adapted to receive the latching detent of the jamb at opposite sides. The adjoining ends of the header, and the upper ends of the jambs are correspondingly mitered, the arrangement being such that the mitered ends of the jambs and header mate with one another to provide a neat, trim joint upon snap-on assembly within the door opening.

A further objective of the invention has been to provide a pivotal connection between the header and jambs coacting with the snap-type latching mechanism, whereby each jamb acts as a lever in rotating the coacting latching and keeper elements forcibly into engagement, thereby permitting the door frame to be installed rapidly and conveniently without special tools.

According to this aspect of the invention, the upper end of each jamb includes an upwardly projecting tongue adapted to interfit a slot formed in the corresponding end portion of the header to provide a pivotal connection. In installing the frame, the header is first placed in horizontal position across the top of the door opening, then the tongue at the upper end of one jamb is inserted into the slot of the header, with the jamb held in an angular position within the door opening. The jamb is then pivoted towards its vertical position

about the fulcrum point provided by the tongue, such that the latching detents of the jamb are forced under camming action with respect to the yieldable keeper elements of the header until the detent elements provide the snap-on connection between the jamb and header. The snap-on connection occurs as the jamb reaches its vertical position so as to connect the end of the header securely to the upper end of the jamb, with the mitered ends closely interfitting one another. The opposite jamb is then pivotally connected, swung to its vertical position and latched to the opposite end of the header in the same manner.

A further objective of the invention has been to provide an arrangement of anchors engageable with the studs, the anchors arranged to coact with the latching mechanism to adjust the jambs relative to one another to parallel vertical relationship and also arrange to secure the assembled frame rigidly and permanently in position within the door opening.

Generally speaking, each jamb includes a base anchor and a top anchor engageable with the studs which delineate the door opening. The base anchor is arranged to pivotally connect the lower end of each jamb to its stud by means of screws. The top anchor is located immediately below the snap-type latching mechanism and provides a clamping action between the stud and jamb. Essentially, each top anchor comprises a shiftable anchor clip carried by a captive screw, the head of which is accessible for screw driver engagement at the upper end portion of the jamb.

After the snap-type latching mechanism is brought into engagement to connect the jambs to the header, the base anchors of both jambs are connected to the lower ends of the studs, then the captive screws, at the upper portion of the jambs, are rotated in a direction to force the anchor clips inwardly against the studs at opposite sides of the opening. This clamping action shifts the upper ends of the jambs inwardly toward the opposite ends of the header to force the mitered ends into mating engagement, thereby to provide a hairline joint. Adjustment of the captive screws also acts upon the jambs to adjust them accurately and conveniently into vertical parallel alignment with one another. After alignment is checked, both screws are tightened so as to clamp the frame assembly permanently and rigidly in place within the door opening.

The various features and advantages of the invention will be more fully apparent to those skilled in the art from the following description, taken in conjunction with the attached drawings.

In the drawings:

FIGURE 1 is a diagrammatic view showing the header of a door frame of the present invention installed in the door opening, with the right hand jamb pivotally connected to an end of the header.

FIGURE 2 is a view similar to FIGURE 1, showing the right hand jamb pivoted to its vertical position and attached to the marginal edge portion of the door opening.

FIGURE 3 is a view similar to FIGURE 2, showing the left hand jamb pivotally connected to an end of the header ready for attachment to the edge portion of the door opening.

FIGURE 4 is a view similar to FIGURE 3, showing the left hand jamb mounted in the door opening and secured in place.

FIGURE 5 is an enlarged fragmentary perspective view showing a portion of the header and jamb before being interconnected, particularly illustrating the coacting latch elements which provide the snap-on connection between the header and the jamb.

FIGURE 6 is an enlarged fragmentary top plan view

showing the coacting latch elements which interconnect the adjoining ends of the header and the jambs.

FIGURE 7 is a fragmentary sectional view taken along line 7—7 of FIGURE 6, showing the header mounted in place in the door opening, with the jamb in position to be pivoted into locking relationship with the header.

FIGURE 8 is a view similar to FIGURE 7, showing the relationship of the parts after the jamb has been pivoted to its upright position and latched in place with respect to the header.

FIGURE 9 is a fragmentary perspective view, taken along line 9—9 of FIGURE 2, showing one of the top anchors which are located at the upper end portion of the jamb to forcibly clamp the jamb into engagement with the stud.

FIGURE 10 is a sectional view taken along line 10—10 of FIGURE 9, further illustrating the top anchor in relation to the jamb and stud which delineates the wall opening.

FIGURE 11 is a fragmentary perspective view taken along line 11—11 of FIGURE 2, illustrating the base anchor which connects the lower end portion of each jamb to the sheet metal stud which delineates the door opening.

FIGURE 12 is a perspective view further illustrating the base anchor bracket.

FIGURE 13 is a sectional view further illustrating one of the jambs and its associated base anchor in relation to the sheet metal stud of the door opening.

FIGURE 14 is an enlarged fragmentary view, taken along line 14—14 of FIGURE 7, showing the relative positions of the latch and keeper (corresponding to FIGURE 7) as the jamb is pivoted to its vertical position with respect to the header.

FIGURE 15 is an enlarged fragmentary sectional view similar to FIGURE 14, showing the latch and keeper units approaching the latching position.

FIGURE 16 is a sectional view, generally similar to FIGURE 10, showing the upper and lower anchors in relation to a modified door jamb.

FIGURE 17 is a sectional view similar to FIGURE 16 showing the anchors in relation to another modified door jamb.

FRAME STRUCTURE GENERALLY

As best shown in FIGURES 1–4, a metal door frame, embodying the principles of the present invention, is indicated generally at 1 in relation to the door opening 2 of a wall structure 3. The wall may represent either an external building wall or an internal partition wall. The present door frame structure, as noted above, is intended particularly for installation in partition walls known as "dry wall," and the frame structure is illustrated in relation to a dry wall of this character. However, it will be understood that the frame may be installed in building walls of various other types of construction without substantial change in the principles of the invention.

As shown generally in FIGURES 1–4, the door frame 1 of this invention, which is formed of sheet metal, comprises a header 4 which is mounted across the top framing member of the door opening. A pair of jambs 5 and 6 are secured to the vertical studs of the door opening 2 to complete the door frame. As shown in FIGURES 1–5, the ends of the header 4, and the mating upper ends of the jambs 5 and 6 are mitered as at 7 in the usual way to interfit one another. The mitered ends of the jambs are held in alignment with the mitered ends of the header by means of the interlocking latching elements of the invention, and by the upper and lower anchors, as explained below. It will be noted that the lower ends of the jambs are squared so as to provide a flush engagement with the floor surface, which is indicated at 8.

It will be understood that the sides of the door opening 2 are delineated by vertical framing studs and that the top of the opening is delineated by a horizontal framing stud. In many residential buildings, the framing studs comprise wood two-by-fours, which are usually arranged in pairs along the sides and across the top of the opening to impart the necessary strength. In the present disclosure, the door opening is delineated by studs formed of sheet metal, as described later.

In installing the door frame 1 of the invention, the header 4 is first installed across the top of the door opening and is held in place preferably by frictional engagement with the wall panels at opposite sides. Thereafter, one of the jambs, for example, the right hand jamb 5 (FIGURE 1), is pivotally connected to one end of the header by means of the latching mechanism of this invention, as explained later. After being pivotally connected, the jamb 5 is pivoted to its vertical position (FIGURE 2) and then anchored in place. In a similar manner, the left hand jamb 6 (FIGURE 3) is pivotally connected to the opposite end of the header 4, swung to the vertical position, and secured in place in the door opening, as shown in FIGURE 4. For purposes of illustration, the right hand jamb 5 (FIGURE 4) may represent the hinge jamb, that is, the jamb to which the door is hinged (not shown) while the jamb 6 may represent the strike jamb, that is, the jamb which receives the swinging edge portion of the door.

In the door frame structure in FIGURES 1–13, the sheet metal header 4 and the jambs 5 and 6 are identical in cross section and are of the double rabbet type including a door stop 9 delineating the rabbets 10—10. The door (not shown) may be hinged on either side of the stop 9, depending upon the required door swing and interfits the rabbets 10—10 in the usual way.

In the present disclosure, which illustrates the door frame mounting device in relation to a dry wall structure, the door opening 2 (FIGURES 9–11) is delineated by studs 11 which are formed of sheet metal, as noted above, the studs being channel-shaped in cross section. The limbs 12—12 of each stud 11 include inturned flanges or lips 13—13 to impart additional stiffness to the studs. The horizontal stud (not shown), which delineates the top of the door opening, preferably is of identical configuration.

In the present disclosure, the dry wall comprises panels 14—14 (FIGURES 9–11) which are secured to the studs 11—11 in a conventional way. As explained later in detail, the header 4 and the jambs 5 are installed after the dry wall panels 14 are erected, the jambs and headers being arranged to snugly embrace the panels 14 on opposite sides to provide a neat, trim appearance.

FRAME LATCHING MECHANISM

As best shown in FIGURE 5, the jambs 5 and 6, and header 4 are generally channel-shaped in cross section, each having yieldable limbs 15—15 which embrace the wall panels 14—14 on opposite sides of the door opening (FIGURES 9–11), as noted above. The framing members, being formed of sheet metal, may be fabricated by a stamping or rolling operation and the free end of each limb 15 includes an inturned flange 16 which includes a lip 17, parallel with limb 15, and engageable with the outer surface of the wall panels 14—14.

In order to provide the pivotal connection between the horizontal header 4 and the vertical jambs 5 and 6, the upper edge of each door stop section 9 is provided with an upwardly projecting hinge tongue 18 (FIGURES 5 and 6) which interfits a slot 19 formed in the sheet metal door stop 9 of the header 4.

As explained earlier, the header 4 is first installed in the door opening and held in place by frictional engagement of its yieldable limbs with the wall panels 14. Thereafter, one of the jamb sctions 5 or 6 is placed in a canted or angular position with its tongue 18 inserted through the slot 19 of the header (FIGURES 1, 5 and 7). It will be noted in FIGURE 5, that the upper portion of each jamb 5 and 6 includes a cut-out area 20 in

its mid-portion. This cut-out area has a width equal to the width of the door stop 9 so as to interfit the door stop 9 of header 4, thereby permitting the tongue 18 to be inserted through the slot 19.

With the parts thus interconnected (FIGURE 7), the jamb is pivoted from the canted toward the vertical position, as indicated by the arrow in FIGURE 7 so as to bring the mitered ends 7 of the header and jamb into mating relationship (FIGURE 8). Upon reaching this position, the coacting elements of the latch mechanism of the header and jamb, indicated generally at 21 (FIGURE 8), snap into engagement so as to secure the jamb in its vertical position to the header.

It will be understood, at this point, that the latch mechanism 21 comprises pairs of latching elements which are duplicated at both ends of the header and at the upper end of each jamb. It is also to be noted that the jambs 5 and 6 provide a lever action to force the coacting elements of the latch mechanism into snap engagement as the upper end of the jamb pivots about the tongue 18, which acts as a fulcrum. The lever action thus reduces the effort by the installer in erecting the jambs and eliminates the need of tools to force the parts into locking engagement, thereby avoiding damage to the jambs or header.

Described in detail (FIGURES 5–8, 14 and 15), the latch mechanism 21 comprises a pair of latch elements or stampings, indicated generally at 22—22, mounted in the upper end portion of each jamb 5 and 6, and a coacting pair of keeper elements or stampings, indicated generally at 23—23, mounted in the opposite end portions of the header 4. It will be noted at this point (FIGURE 5) that the latch stampings 22—22 are of symmetrically opposite design so as to coact with the symmetrically opposite keeper stampings 23—23.

Each latch stamping 22—22 comprises a sheet metal latch bracket 24 which is right angular in cross section (FIGURE 5) so as to interfit the upper corner portion of the jamb. Each latch bracket 24 is spot welded permanently in place in the jamb as indicated at 25. As shown in FIGURES 5 and 7, each latch bracket 24 includes a corner portion 26 which projects outwardly beyond the mitered end 7 of the jamb. The corner portions 26 form the leading ends of the latch stampings 22 and are designed to act as a pilot or guide to align the latch stampings (and jamb) with the keeper stampings 23 (and header) as the jamb is pivoted to its final upright position.

A latching detent 27 resides at the upper end of the corner portion 26 of each latch bracket 24 and forms an integral part of the corner portion 26. In forming the detent 27, the upper edge of corner portion 26 is severed along the line 28 (FIGURE 5), then the latching detent is bent to its configuration. As best shown in FIGURES 14 and 15, each latching detent 27 comprises a leading end portion 30 which is flush with the corner portion 26, with an inclined camming section 31 rising from the leading end portion 30. The camming section 31 leads to a right angular section 32 which blends with the rearward edge of corner portion 26. The detent sections 31 and 32 are joined by a curved outer end portion 33 at the apex of the two sections (FIGURES 14 and 15).

The keeper stamping 23 (FIGURE 5) is also in duplicate at opposite sides of the header (and at opposite ends of the header) to engage the latch stampings 22 at opposite sides. Described in detail, each keeper stamping 23 comprises a keeper bracket 34 which is right angular in configuration so as to interfit the right angular portion of the header. The keeper bracket is spot welded to the header as indicated at 35. As best shown in FIGURES 5–8 and 14 and 15, the keeper bracket includes a yieldable keeper arm 36 which is spaced outwardly as at 37 from the limb 15 of the header. The upper portion of the keeper arm 36 includes an open slot 38 adapted to provide the snap connection with the latching detent 27 when the jamb is pivoted to its upright position.

Upon installation of the frame, as best shown in FIGURES 7, 8, 14 and 15, the corner portions 26—26 of the latch brackets 24 first enter the spaces 37—37 as the jamb is pivoted about the tongue 18 towards its upright position. The corner portions 26—26 thus coact to provide a pilot action to guide the leading ends 30 of the latching detents 27 behind the keeper arms 36 at opposite sides of the header. The corner portions also align the jambs with the header. As the pivotal motion continues, the inclined camming section 31 of each latching detent 27 engages the free end portion of its keeper arm 36 to spring the arm outwardly in the direction indicated in FIGURE 15.

It will be noted in FIGURES 7 and 8, that the outer end portion of each keeper arm 36 is mitered and that the mitered portion is flared outwardly as at 40 to facilitate the entry of the latching detents 27 into the space 37 during the initial pivotal motion of the jamb. During the pivotal motion of the jamb, each latching detent 27 slides against the limb 15 to sustain the detent against the camming force which is exerted against the keeper arm 36. By virtue of the opposed relationship of the latching elements within the header and jamb, the opposed wedging forces developed during this pivotal motion substantially counteract one another. The camming action continues until the curved portion 33 of each latching detent 27 passes beyond the edge of the coacting keeper slot 38. At this point the keeper arm 36 springs back to its original position (FIGURE 6), with the slot 38 securely embracing the latching detent 27, thus latching the jamb securely to the header, as shown in FIGURE 8.

TOP AND BASE ANCHORS

After both jambs 5 and 6 have been pivoted to their upright positions and latched to the header, the jambs are secured permanently within the door opening by means of base anchors and top anchors. As best shown in FIGURES 11–13, each jamb includes a base anchor 41 at its lower end engageable with the stud 11, combined with a top jamb anchor indicated generally at 42 in FIGURES 9 and 10.

As described later in detail, the base anchors 41 are arranged to secure the lower ends of the jambs in fixed position with reference to the studs 11, while the top anchors provide adjustment to permit the jambs to be plumbed and brought into accurate alignment with one another and clamped in the door opening. The top anchor 42 also forces the upper ends of the jambs into intimate engagement with the opposite ends of the header to bring the mitered ends 7 into intimate engagement, thereby to provide a neat, trim appearance.

Described in detail with reference to FIGURES 11–13, the base anchor 41 is in the form of a sheet metal bracket comprising a body portion 43 having an upright flange 44 formed along one edge and a U-shaped clip 45 rising upwardly from its opposite edge. The U-shaped clip 45 provides spaced limbs 46—46 adapted to embrace the opposite sides of the metal stud 11.

The base anchor 41 is secured to the lower end portion of the jamb by means of a mounting plate 47 which preferably is spot welded across the lower portion of the jamb. The upright flange 44 includes a series of apertures 48 adapted to receive the sheet metal screws 50 (FIGURE 13) which are threaded into matching apertures formed in the mounting plate 47, thereby to secure the base anchor to its jamb.

The base anchor is attached to the jamb by the screws 50 before the jamb is installed in the door opening (FIGURE 13). In order to permit the location of the jambs to be varied transversely of the building wall, the upright flange 44 preferably is provided with one or more additional holes 48, any three of which match the holes formed in the mounting plate 47.

As the jamb is pivoted toward its vertical position (FIGURES 1–4), the limbs 46–46 of the base anchor 41 slip in place along opposite sides of the limbs 12—12 of stud 11 and embrace the stud (FIGURE 13). In order to provide clearance for the limbs 46, the lower portion of the wall panels 14 are notched out as at 51 (FIGURES 1–4 and 11).

With the parts thus positioned, sheet metal screws 52—52 are passed through the apertures 49 of base anchor 41 and are threaded into matching apertures formed in the lower end portion of the limbs 12 of stud 11, thus anchoring the lower end of the jamb to the stud. The base molding (not shown) subsequently is applied to the wall panels 14 to cover the notches 51 and conceal the limbs 46 and anchor screws 52.

The top anchors, previously indicated at 42—42 (FIGURES 9 and 10), are mounted immediately below the latch stamping 22 of each jamb, as indicated in FIGURES 7 and 8. As noted earlier, the top anchors 42 are adjustable and develop clamping action against the studs 11 to force the upper portion of the jambs away from the studs toward the mitered ends of the header, thereby to clamp the jambs rigidly in adjusted position.

Described in detail (FIGURES 9 and 10) each top anchor comprises a sheet metal clip which is generally U-shaped in cross section, comprising a web 53 having flanges 54—54 at opposite ends which are slidably confined within the limbs 12—12 of the jamb. The web 53 of the clip is provided with a pair of tangs 55—55 struck outwardly and arranged to embrace the opposite corners of the stud 11. The central portion of web 53 is bent to provide a channel formation 56 projecting in the same direction as the side flanges 54 of the clip. A captive screw 57 is threaded through the channel formation 56 to impart the clamping pressure.

The captive screw 57 includes at its outer end an integral collar 58 with a slotted head 60 projecting outwardly beyond the collar 58. The head 60 interfits a circular hole formed in the door stop 9, exposing the head 60 for screw driver engagement. A retaining plate 61 is spot welded to the internal surface of the door stop 9 and includes a circular flange 62 which overlies the collar 58. The collar 58 thus rotatably confines the screw 57 axially between the inner surface of the door stop 9 and the circular flange 62.

In aligning the jambs, the installer simply rotates the screw 57 in a direction to shift the anchor clip 42 outwardly with respect to the jamb until the web 53 of the clip engages the stud 11. The clamping force of screw 57 is transmitted to the collar 58 of the screw and reacts against the door stop 9. The captive screw 57 of the opposite jamb is then rotated in the same manner to shift the web 53 of the clip 42 into engagement with the stud 11 at the opposite side of the door opening. The jambs are then checked for parallel alignment, then the screws 57 are fully tightened to clamp the jambs permanently in place. It will be understood that the header 4 is free to be shifted transversely of the door opening 2 in response to the adjustment and clamping of the jambs by the captive screws 57 and that the header and jambs are locked rigidly to one another under the final clamping pressure.

MODIFIED JAMB STRUCTURES

The modified structure shown in FIGURE 16 represents a double rabbet jamb similar to that shown in FIGURE 13, which is modified to adapt the jamb to wall structures of reduced thickness. For this purpose, the modified jamb 63 is similar in configuration to the jambs 5 and 6 described above, except that the limbs 15—15 are more closely spaced. The door stop 9 of the jamb 63 is also of reduced width. The base anchor 41, which is indicated in broken lines, is also of reduced width corresponding to the reduced width of stud 11. The base anchor 41 is secured to the lower end of the jamb in the same manner as disclosed earlier in relation to FIGURE 13.

The top anchor 42 in the modified structure is designed to interfit the jamb and is adjusted and clamped by a captive screw 57, as described above. In the modified jamb structure, the pair of jambs 63—63 are aligned and clamped in place by adjustment of the captive screws in the manner described above.

The modified jamb shown in FIGURE 17 illustrates a base anchor 41 and a top anchor 42 to be utilized in connection with a jamb 64 of the single rabbet type. This structure is installed in the door opening of walls which are of further reduced thickness, utilizing the narrow studs 11. In this modification, the door stop 9 is located along one side of the jamb and the base anchor 41, shown in broken lines, is equal in width to the reduced stud 11. The captive screw 57 is rotatably confined in the laterally displaced door stop 9 and the channel 56 of the top anchor 42 is displaced laterally in alignment with the captive screw 57. The modified structure of FIGURE 17 is installed and adjusted in the manner described and utilizes the same principles.

Having described my invention I claim:

1. A sectional metal door frame adapted to be mounted in the door or window opening of a wall comprising:
- a header adapted to be mounted in a horizontal position across the top of said opening, said header being generally channel-shaped in cross section providing a web and a pair of limbs adapted to embrace the wall surface on opposite sides of the opening;
- a pair of jambs adapted to be mounted in vertical position along opposite sides of said door opening, said jambs being generally channel-shaped in cross section providing a web and a pair of limbs adapted to embrace the opposite sides of the wall adjacent the opening;
- the adjoining ends of the limbs of said header and jambs being mitered to interfit one another upon installation in the door opening;
- a tongue projecting upwardly from the web of each of said jambs at the mitered end thereof;
- respective apertures formed in the opposite end portions of the web of said header adjacent the mitered ends thereof, said apertures adapted to receive said tongues to provide a pivotal connection between the header and jambs, adapting each jamb to be installed in a canted position with the tongue thereof inserted in said aperture;
- said pivotal connection being located relative to said mitered ends of the jambs and header to bring said mitered ends into mating relationship with one another upon pivotal motion of the jambs about said tongue to a vertical position;
- respective pairs of latching elements mounted in the limbs of said jams adjacent the mitered ends thereof, each of said latching elements including a latching detent, said latching detents projecting inwardly toward one another;
- and respective pairs of keeper elements mounted on the limbs of said header on opposite sides and adjacent the mitered end portions thereof;
- said keeper elements each including a yieldable arm projecting outwardly toward the mitered end of the header;
- each yieldable arm of the keeper element including an open slot adapted to receive the latching detent of the latching element.

2. A sectional metal door frame adapted to be mounted in the door or window opening of a wall comprising:
- a header adapted to be mounted in a horizontal position across the top of said opening, said header being generally channel-shaped in cross section providing a web and a pair of limbs adapted to

embrace the wall surface on opposite sides of the opening;

a pair of jambs adapted to be mounted in vertical position along opposite sides of said door opening, said jambs being generally channel-shaped in cross section providing a web and a pair of limbs adapted to embrace the opposite sides of the wall adjacent the opening;

the adjoining ends of the limbs of said header and jambs being mitered to interfit one another upon installation in the door opening;

a tongue projecting upwardly from the web of each of said jambs at the mitered end thereof;

respective apertures formed in the opposite end portions of the web of said header adjacent the mitered ends thereof, said apertures adapted to receive said tongues to provide a pivotal connection between the header and jambs, adapting each jamb to be installed in a canted position with the tongue thereof inserted in said aperture;

said pivotal connection being located relative to said mitered ends of the jambs and header to bring said mitered ends into mating relationship with one another upon pivotal motion of the jambs about said tongue to a vertical position;

respective pairs of latching elements mounted in the limbs of said jams adjacent the mitered ends thereof, each of said latching elements including a latching detent, said latching detents projecting inwardly toward one another;

and respective pairs of keeper elements mounted on the limbs of said header on opposite sides and adjacent the mitered end portions thereof;

said keeper elements each including a yieldable arm projecting outwardly toward the mitered end of the header;

each yieldable arm of the keeper element including an open slot adapted to receive the latching detent of the latching element;

said latching detents each including an outwardly inclined camming surface on the leading end portion thereof adapted to engage the surface of said yieldable arm of the keeper element; the latching detents adapted to swing in an arc to cam the respective keeper arms inwardly toward one another during pivotal motion of the jamb about said tongue, whereby the open slots of the keeper arms snap into latching engagement with said latching detents when the jamb is pivoted to the vertical position with respect to the door opening.

3. A sectional metal door frame adapted to be mounted in the door or window opening of a wall comprising:

a header adapted to be mounted in a horizontal position across the top of said opening, said header being generally channel-shaped in cross section providing a web and a pair of limbs adapted to embrace the wall surface on opposite sides of the opening;

a pair of jambs adapted to be mounted in vertical position along opposite sides of said door opening, said jambs being generally channel-shaped in cross section providing a web and a pair of limbs adapted

to embrace the opposite sides of the wall adjacent the opening;

the adjoining ends of the limbs of said header and jambs being mitered to interfit one another upon installation in the door opening;

a tongue projecting upwardly from the web of each of said jambs at the mitered end thereof;

respective apertures formed in the opposite end portions of the web of said header adjacent the mitered ends thereof, said apertures adapted to receive said tongues to provide a pivotal connection between the header and jambs, adapting each jamb to be installed in a canted position with the tongue thereof inserted in said aperture;

said pivotal connection being located relative to said mitered ends of the jambs and header to bring said mitered ends into mating relationship with one another upon pivotal motion of the jambs about said tongue to a vertical position;

respective pairs of latching elements mounted in the limbs of said jambs adjacent the mitered ends thereof, each of said latching elements including a latching detent, said latching detents projecting inwardly toward one another;

respective pairs of keeper elements mounted on the limbs of said header on opposite sides and adjacent the mitered end portions thereof;

said keeper elements each including a yieldable arm projecting outwardly toward the mitered end of the header;

each yieldable arm of the keeper element including an open slot adapted to receive the latching detent of the latching element;

said latching detents each including an outwardly inclined camming surface on the leading end portion thereof adapted to engage the surface of said yieldable arm of the keeper element, the latching detents adapted to swing in an arc to cam the respective keeper arms inwardly toward one another during pivotal motion of the jamb about said tongue, whereby the open slots of the keeper arms snap into latching engagement with said latching detents when the jamb is pivoted to the vertical position with respect to the door opening;

a plurality of clamping elements mounted within each of said jambs;

and actuating means adapted to force said clamping elements into engagement with the sides of said opening, said clamping elements adapted to force said jambs toward one another into pressure engagement with the opposite ends of said header.

References Cited by the Examiner

UNITED STATES PATENTS

1,068,656	7/1913	Holmes	189—46
1,200,625	10/1916	Landauer	108—156
2,874,420	2/1959	Henderson	20—11
2,958,403	11/1960	Robertson	189—46 XR

HARRISON R. MOSELEY, *Primary Examiner.*

CHARLES E. O'CONNELL, *Examiner.*