Sept. 30, 1969 H. LANGE 3,469,350

DOOR FRAME ASSEMBLY AND METHOD FOR MAKING SAME

Filed Sept. 14, 1967

FIG_1

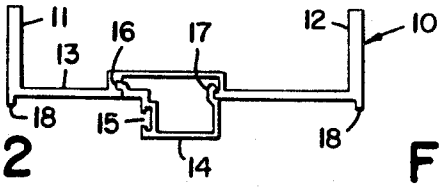


FIG_5

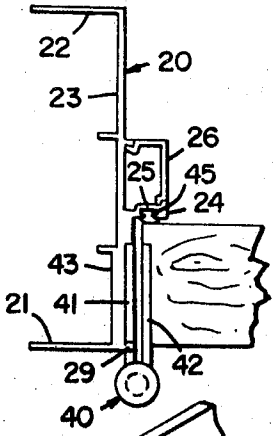


FIG_2

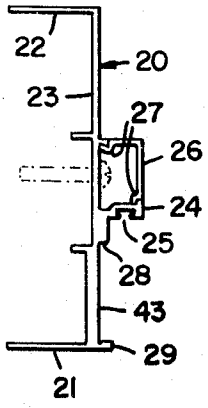
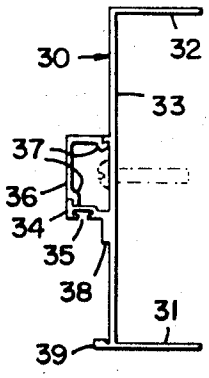


FIG_3



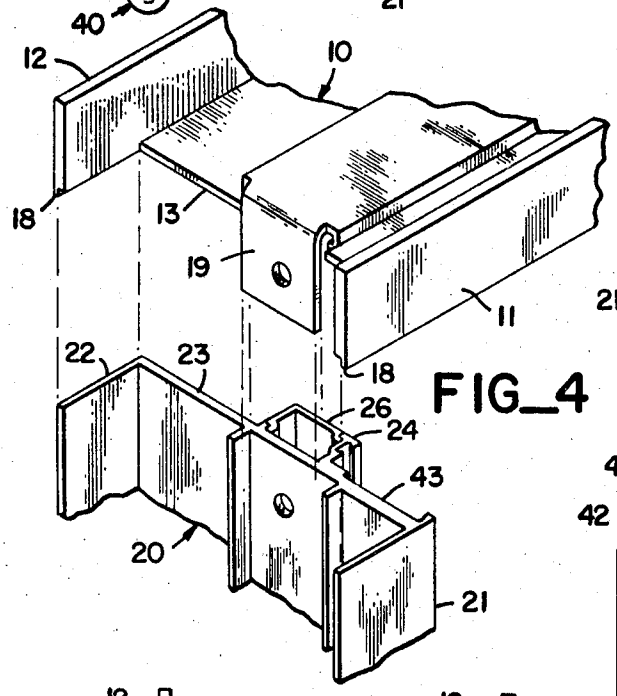
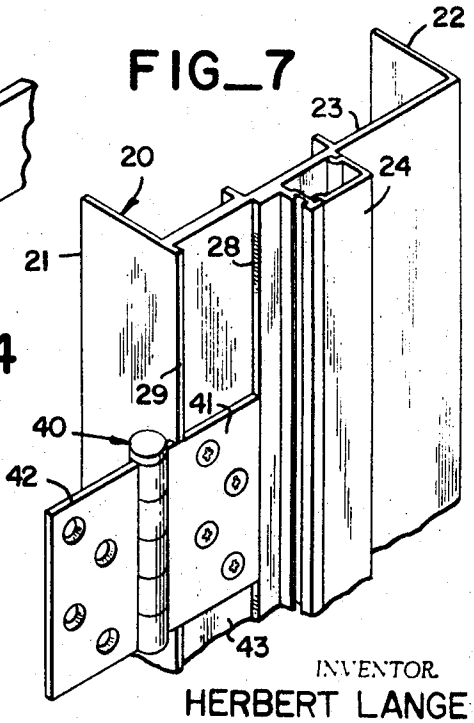


FIG_4

FIG_7



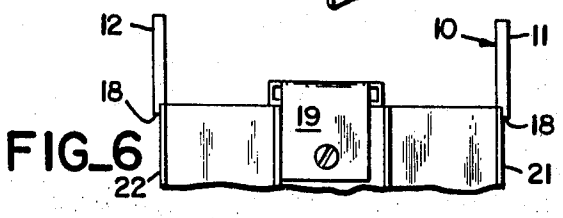


FIG_6

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DOOR FRAME ASSEMBLY AND METHOD FOR MAKING SAME

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U.S. Cl. 49—504 6 Claims

ABSTRACT OF THE DISCLOSURE

A door frame assembly in which a head bar having depending tabs is fastened to the jamb bars and the jamb bars secured within overlapping flanges on the head bar. The jamb bars are provided with a raised outer lip and a parallel raised shoulder, the lips being notched to receive door hinge butts and a lock strike which abut the raised shoulders.

This invention relates to door frame assemblies and more particularly to a novel extruded metal door frame and method of making such a frame.

Extruded metal door frames have become particularly popular in recent years, being widely employed in modern building construction. They are generally easily installed in rough openings in the partitions. Since they are usually extruded from aluminum, they are pleasing in appearance and the metal lends itself to various color treatments well-known in the art in addition to the usual painting.

One of the continuing problems associated with the use of such door frames, however, is the installation of the door hinges to the jambs and the lock strike on the opposite jamb which usually requires mortising, that is, cutting out recesses to accommodate the hinge butts and the lock strike. A number of solutions have been proposed, including the use of cover plates between the hinge butts such as in U.S. Patent No. 3,287,856 or of a separate plate to which the hinge butts are affixed such as in U.S. Patent No. 2,910,154.

The present invention was designed to eliminate the necessity for the supplemental pieces required by the prior art devices in the mounting of hinge butts to the jamb. This is accomplished in the present construction by the provision of a raised lip along the outer edge of the jamb member together with a raised shoulder parallel to the lip against which the edge of the hinge butt will rest which together form a channel along the jamb. All that is required for installation of the hinge is a milling out of a notch in the raised lip to permit the hinge butt to be fitted in the notch and against the raised shoulder.

Still another problem associated with the use of prior art door frame assemblies is the lack of rigidity of the assembly when the jamb members are assembled with the head member. In the present construction this rigidity is assured by the use of formed tabs integral with the head member which may be bolted directly to the jamb members. There is further provided in the present construction a novel arrangement which permits the outer edges of the jamb members to be secured within the flanges of the head member so that the three constituents of the frame form a rigid unit.

Still another feature of the present construction is the

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provision on the jambs of a door stop flange having a removable cover section. This permits the screws or bolts used to affix the jambs in the wall opening to be concealed. This results in a door frame completely free from exposed fasteners.

In the drawing:

FIG. 1 is a vertical section through a typical head member;

FIG. 2 is a horizontal section through a typical hinge jamb member;

FIG. 3 is a horizontal section through a typical strike jamb member;

FIG. 4 is an enlarged isometric view of the ends of a head member and hinge jamb member showing how the two are assembled together;

FIG. 5 is a horizontal section through a hinge jamb member showing the placement of a hinge and door;

FIG. 6 is a fragmentary view of the joint between a head member and jamb member showing how the jamb is engaged by the flanges of the head member; and

FIG. 7 is an isometric view of a hinge jamb showing the placement of a hinge butt.

Referring now more particularly to the drawing in which similar characters of reference represent corresponding parts in each of the several views, FIG. 1 is the head member or head bar shown generally at **10**. The head bar comprises face flange **11** and a parallel rear flange **12** joined together by the connecting web **13**. In the head bar the door stop flange which is perpendicular to the bottom surface of connecting web **13** comprises a cover section **14** having an integral groove **15** therein within which a mohair, plastic or rubber draft stop may be mounted. The door stop flange section **14** is snapped into place by means of longitudinal tongues **16** and **17**. Flanges **11** and **12** of the head bar **10** extend past the connecting web **13**, forming retaining flanges **18**, the function of which will be described in detail below.

The vertical portions of the door frame assembly are the hinge jamb member or hinge bar **20** shown in FIG. 2 and the strike jamb member or strike bar **30** shown in FIG. 3. The hinge bar comprises a face flange **21** and a parallel rear flange **22** joined by a connecting web **23**. Formed integrally with and perpendicular to the web **23** of the hinge bar is stop flange **24** which has a continuous groove **25** formed therein for receiving the mohair draft stop previously mentioned. The door stop flange is completed by means of cover section **26** which is snapped into place and secured by appropriately formed tongues **27**. An integral part of the hinge bar is shoulder **28** which is parallel to the face flange **21** and raised from the surface of the web a distance equal to the thickness of a typical door hinge butt. A raised lip **29** is parallel to the shoulder **28** and a continuation of the front flange **21**. The lip forms the outer edge of the jamb. The raised lip **29** and shoulder **28** together define a channel the depth of which is equal to the thickness of a hinge butt. The elevation of the lip **29** is also equal to that of the thickness of a typical hinge butt. Lip **29** will be notched out to receive the hinge butt so that the edge of the hinge butt abuts shoulder **28** and is received securely within the notch.

In order to make provision for screwing the hinge butts to the jamb bar, the section **43** of web **23** which lies between the shoulder **28** and the lip **29** is of substantially greater thickness than the balance of the web in order to permit a sufficient number of threads to be formed within

the metal in order to securely hold the hinges in place.

The strike jamb member or strike bar **30** corresponds in most respects to the hinge bar **20**. The strike bar is adapted to receive the strike plate, that is, the plate which receives within it the lock bolt which holds the door closed. The strike bar comprises a face flange **31** and a parallel rear flange **32** joined by connecting web **33**. Formed as an integral part of web **33** is the stop flange **34** which is formed with slot **35** to receive the draft stop therein. The stop flange is completed by means of the boxlike cover plate **36** which snaps into appropriate grooves by means of longitudinal tongues **37**. The strike bar **30** is also formed with a longitudinal shoulder **38** parallel to the side flanges and elevated from the surface of the web **33** a distance equal to the usual thickness of the strike plate which is to be affixed to the strike jamb. Strike bar **30** is also formed with raised lip **39** a continuation of the face flange **31** forming a channel similar to that on the hinge bar. Lip **39** is milled out a sufficient width to accommodate the strike plate required for the particular door to be assembled in the frame assembly.

FIG. 4 shows the method of assembling the jamb bars and head bar. The head bar **10** is provided with a tab member **19** which is formed as part of the connecting web **13** and bent downward perpendicular to the connecting web **13**. The head bar **10** fits securely over the end of the jamb bar **20**, the side flanges **21** and **22** being received within the retaining flanges **18** of the head bar. The head bar **10** is provided with tab member **19** at both its ends. When these tab members are formed, the distance between their inner faces is established to close tolerances. This establishes the exact door opening which will result from the use of that head bar. Tab **19** fits against the inner surface of connecting web **23** and is bolted securely to the jamb members **20** and **30** to form the frame assembly. FIG. 6 shows how the parts fit together, with the flanges **21** and **22** locked in place between retaining flanges **18** of the head bar and with tab **19** bolted to the jamb member.

The bolting of the tab **19** to the jamb is done with the stop flange covers **26** and **36** removed. These covers are among the last parts to be assembled since the jambs, when they are placed in the door opening, must be screwed to the studding in the walls. Such screws are shown in dash line form in FIGS. 2 and 3. After the jambs and the head bar are assembled together, the stop flange cover plates **26** and **36** are snapped into place therefore concealing the screw heads from view.

FIGS. 5 and 7 show a hinge **40** fastened into place on a jamb bar. The lip **29** is milled out a width sufficient to accommodate the hinge butts **41**, the standard butt being four inches in height. The hinge butt **41** may then be slipped through the lip **29** to abut the shoulder **28**. Appropriate holes are then drilled and tapped through the web section **43** and screws inserted through the hinge butt **41** to firmly affix the hinge to the jamb bar. The other hinge butt **42** is fastened to the door **44**.

As may be seen in FIG. 5, the door **44** is spaced a short distance from the face of stop flange **24**. That space is filled by a mohair or other resilient material draft stop **45** inserted into the slot **25** on the hinge jamb bar. Such "weather stripping" is also inserted into slots **15** and **35** in the jamb and head bars to make a continuous draft stop around the perimeter of the door.

The result of the use of the present invention is a rigid door frame assembly which is easily assembled and installed in a wall opening and which has no exposed assembly screws.

Although the foregoing invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be practiced within the spirit of the invention as limited only by the scope of the appended claims.

I claim:

1. A door frame assembly comprising a head member, a jamb member adapted to receive a hinge butt, and a jamb member adapted to receive a lock strike, said head member having at least one depending flange member for engaging an end of a jamb member and holding said jamb member in alignment therewith, said head member provided with means for fastening said head member to a jamb member, said hinge jamb member having a surface for receiving door hinge butts, said surface defined by a raised lip along an outer edge of the member and by a raised shoulder parallel thereto and spaced from said raised lip, said raised lip having a notch whose depth extends to said hinge receiving surface, the length of said notch being sufficient to receive the hinge butt therein, the height of the raised lip above the hinge butt receiving surface and the height of the shoulder above said surface equal to the thickness of the hinge but received thereon.

2. The door frame assembly of claim **1** and wherein the head member is provided with a pair of depending parallel flange members extending substantially the length of the head member and wherein said fastening means comprises a pair of downward extending tab members at the opposite ends of said head member, said tab members spaced apart a fixed distance so that the jamb members will be spaced apart a dimension defining a door opening when fastened thereto, and said parallel flanges spaced apart a dimension equal to the depth of said jamb members for securely engaging the outer edges of the jamb members therebetween.

3. The door frame assembly of claim **1** and wherein the strike jamb member has a surface for receiving a lock strike, said surface defined by a raised lip along an outer edge of the member and by a raised shoulder parallel thereto and spaced from said raised lip, said strike jamb lip having a notch whose depth extends to the strike receiving surface, the length of the notch being sufficient to receive the lock strike therein, the height of the strike jamb lip above the lock strike receiving surface and the height of the shoulder above said surface equal to the thickness of the lock strike received thereon.

4. A method for assembling a door frame comprising:

(a) providing a head member having first and second flanges in parallel spaced relation joined by a connecting web normal thereto; a hinge jamb member having a channel formed therein with a generally flat bottom and perpendicular sides, the depth of said channel being equal to the thickness of a hinge butt, one side of said channel defining an outer edge of said jamb; and a strike jamb member having a strike channel formed therein with a generally flat bottom and perpendicular sides, the depth of said strike channel being equal to the thickness of a lock strike, one side of said strike channel defining an outer edge of said strike jamb;

(b) assembling said head and jamb members so that the outer edges of said jambs are received within the first and second flanges of the head member;

(c) removing a portion of said channel defining outer edge of the strike jamb so that a lock strike may be received therein; and

(d) removing a portion of said channel defining outer edge of the hinge jamb so that a hinge butt may be received within the removed edge section.

5. The method of claim **4** and wherein said head member is provided with first and second depending tab members generally orthogonal with respect to the flanges and web thereof and

(a) fastening said jambs between said tab members.

6. The method of claim **4** and wherein said jamb members are provided with door stop flanges comprising a rib generally parallel to the channel and cover means adapted for engagement with the rib and

(a) fastening said jambs into a wall opening by insert-

ing fastening means through said jambs adjacent said stop flange rib, and

(b) engaging said cover means with said rib so that the fastening means are concealed.

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KENNETH DOWNEY, Primary Examiner

U.S. Cl. X.R.

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