Dec. 5, 1967 C. M. FRENCH 3,356,400

CLAMP ASSEMBLY FOR PRE-HUNG FRAME ASSEMBLIES

Filed Oct. 21, 1965 2 Sheets-Sheet 1

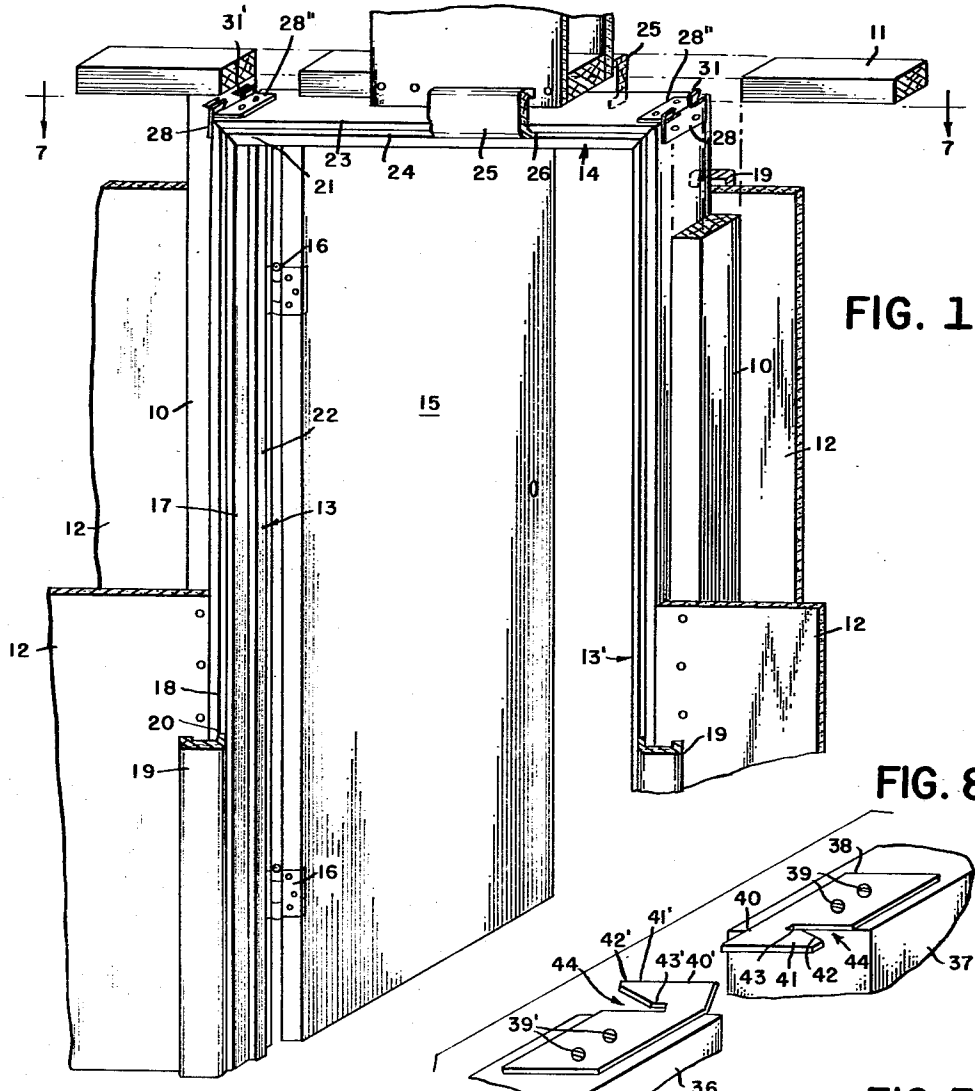


FIG. 1.

FIG. 8.

FIG. 2.

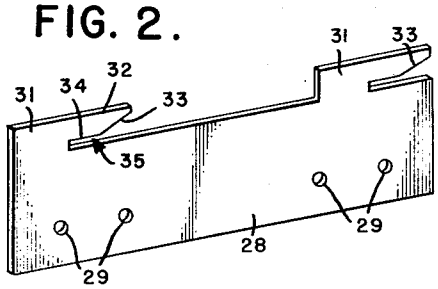
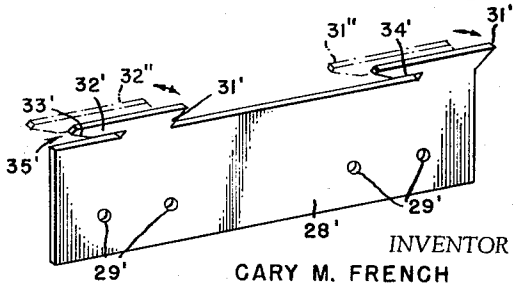


FIG. 3.



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FIG. 4.

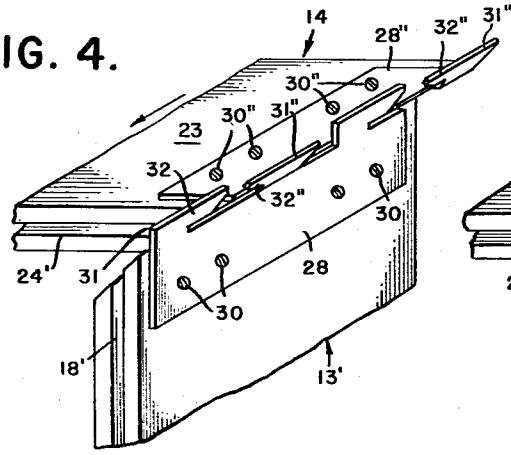


FIG. 5.

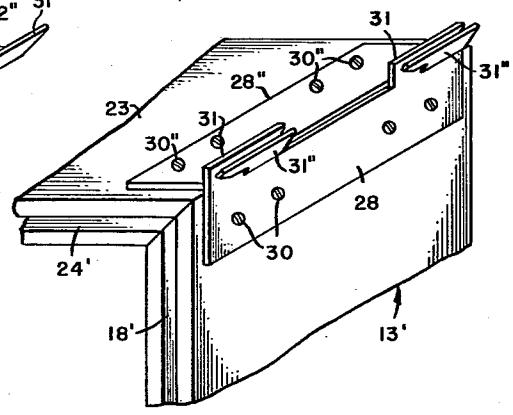


FIG. 6.

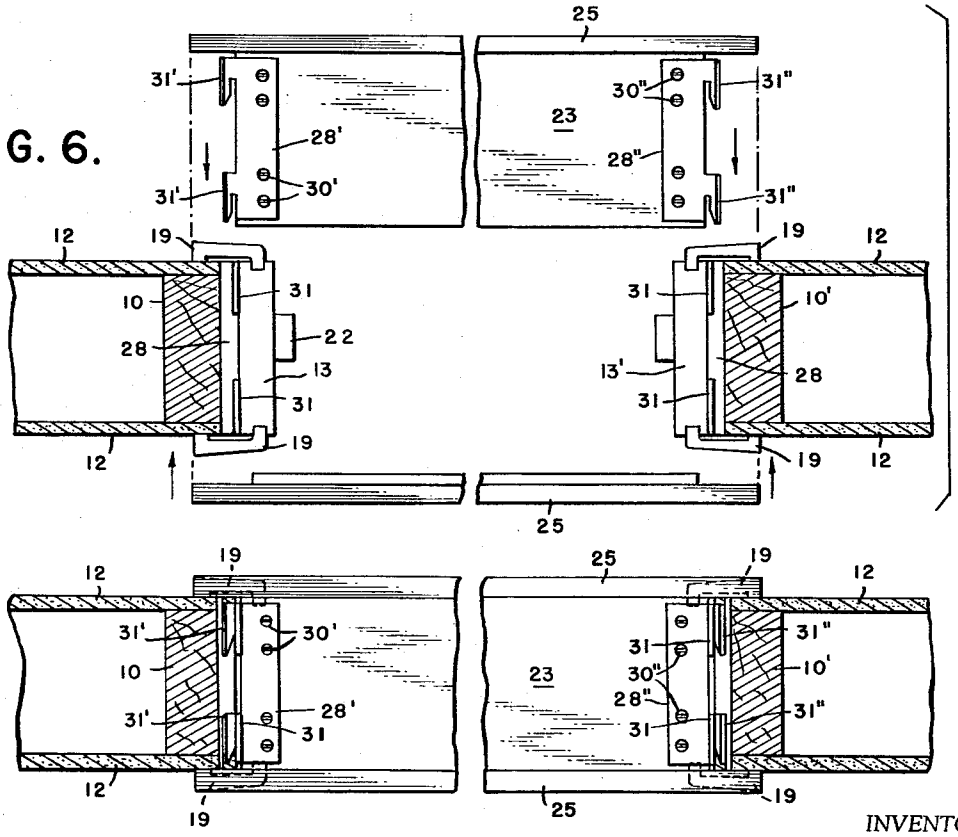


FIG. 7.

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CLAMP ASSEMBLY FOR PRE-HUNG FRAME ASSEMBLIES

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7 Claims. (Cl. 287—20.924)

ABSTRACT OF THE DISCLOSURE

A clamp assembly for locking together adjacent edges of frame units, the assembly including clamp plates secured to the outside surfaces of the frame parts to be held together, each clamp plate including a body portion and an extension comprising a locking element beyond the terminal of the frame unit, the locking element being formed to provide a laterally extending lug having a free end with a lug receiving slot between the lug and the body portion, the locking element and lug of one of the clamp plates being disposed at an obtuse angle to its body portion to effect binding and locking of the clamp plate upon entry of the lug of one clamping plate into the lug-receiving slot of the other clamping plate.

This invention relates to a clamp assembly for pre-hung frame assemblies, an object of which is to provide simple component parts of the same basic construction which are carried by the frame parts and urged into interlocking engagement without the use of special tools or devices.

Another object is to provide a clamp assembly including clamp plates carried by adjacent frame parts, one of said plates being uniplanar and the other being non-planar to permit meshing together of locking elements of the clamp plates.

Other objects are to provide a clamp assembly composed of complemental flat plates, preferably of metallic construction, which may be strategically positioned on the mitered legs and header of a prefabricated door frame and which are of configuration to interlock when pressured together in accordance with the teaching of this invention; to provide an assembly which obviates the use of pressure screws or shimming devices for accurately positioning a door frame in place; and to provide an assembly which is of simple, economical construction, is readily applicable to frame parts and is readily installed at the job site in a minimum of time.

A further object is to provide a clamp assembly which is adapted to member a butted or coped joint such as conventionally employed in wood window frames.

Other objects of the invention will be manifest from the following description of the present preferred forms of the invention, taken in connection with the accompanying drawings, wherein:

FIG. 1 is a perspective view of a pre-hung door frame assembly illustrating the application of the present invention, portions thereof being broken away to disclose details of construction;

FIG. 2 is a perspective view of a clamp plate forming a part of the clamp assembly of the present invention;

FIG. 3 is a view similar to FIG. 2, of a clamp plate adapted for interlocking engagement with the clamp plate of FIG. 2 to form a clamp assembly;

FIG. 4 is a fragmentary perspective view of a pre-hung door frame assembly header and leg, equipped with the clamping plates of the present invention, the header and legs being shown in position to initiate interlocking of the clamp plates;

FIG. 5 is a view similar to FIG. 4, showing the clamp plates interlocked to form the present clamp assembly;

FIG. 6 is a top plan view of a door frame assembly header equipped with clamp plates illustrating the manner in which the pre-hung door assembly is positioned in place;

FIG. 7 is a section view taken along the lines 7—7 of FIG. 1, showing the pre-hung door assembly with the clamp assembly of the present invention in locking engagement; and

FIG. 8 is a fragmentary sectional view of a modified form of the invention, showing use of the clamp assembly for locking together a butt joint of a frame unit.

The clamp assembly of the present invention is particularly adapted for application to pre-hung frame assemblies such as door frames and window frames. These frame assemblies may be made of wood, as illustrated, or of any other suitable material.

In FIG. 1, the clamp assembly of the present invention is illustrated as applied to a pre-hung packaged door assembly set in a roughed-in frame including spaced vertical studs **10**, joined at their upper extremities by a horizontal stud **11**. Walls are indicated at **12**. The pre-hung door assembly equipped with the clamp assembly of the present invention includes a hinge leg **13**, a strike leg **13'** and a header **14**. A door **15** is hingedly connected to hinge leg **13** as indicated at **16**. Hinge leg **13** includes a frame **17**, the lateral edges of which are provided with longitudinal grooves **18**. Casings **19** are adapted for engagement with frame **17**, the casings being provided with longitudinally extending tongues **20**, adapted for insertion in longitudinal grooves **18** of the frame. The upper extremities of the frame and casings of hinge leg **13** are mitered, as indicated at **21**. A vertical door stop **22** is fixed to the central portion of frame **17** and extends longitudinally thereof.

Strike leg **13'** is similar in construction to hinge leg **13** and like parts are accordingly identified by like, primed numbers.

Header **14** includes a frame **23**, the lateral edges of which are provided with longitudinal grooves **24**. Casings **25** having complemental tongues **26**, are adapted to be fitted into grooves **24**. The longitudinal extremities of frame **23** and casings **25** at both ends of header **14** are mitered, as indicated at **27**, for membering with mitered portions **21** and **21'** of hinge leg **13** and strike leg **13'**.

The clamp assembly of the present invention comprises a pair of interconnected clamp plates preferably of metal construction, one clamp assembly being provided to interlockingly engage the hinge leg to the header and another clamp assembly interlockingly engaging the strike leg to the header. The clamp plates employed in the clamp assembly are of the same basic construction, the clamping plate for application to the hinge leg and strike leg being of uniplanar construction, as illustrated in FIG. 2. The clamp plates affixed to opposite ends of header **14**, although similar to that shown in FIG. 2, are not uniplanar, but have the interlocking elements thereof bent at an angle to the body of the clamp plate in one direction or the other, as indicated, to effect proper engagement with the clamp plate of the hinge leg or strike leg.

Referring now to FIG. 2, it will be seen that the uniplanar clamp plate applied to the hinge leg and strike leg comprises a flat rectangular body portion **28** having a plurality of spaced openings **29** for screws of other fastening devices **30**. One of the longitudinal edges of body **28** is provided with extensions comprising a pair of spaced locking elements which are beyond the upper terminals of the hinge leg and strike leg. Locking elements **31** are symmetrical and each includes a laterally extending lug portion **32**. The terminal of lug portion **32** is chamfered at **33**, which chamfered portion issues into a wall **34** which is in spaced parallel relation to the longitudinal

edge of body portion 28, thereby forming a slot 35. The width of slot 35 substantially corresponds to the thickness of the clamp plate for interlocking of one clamp plate with another. Lug portion 32 is therefore of tapered or bill shape with the bills of each plate extending in the same direction.

In FIG. 3 there is illustrated the non-planar clamp plate adapted for securement to header 14. It will be noted that the parts of this plate are similar in construction to the parts of the plate illustrated in FIG. 2 and are accordingly identified by like, primed numbers. However, the locking elements 31', including lug portions 32' are bent forwardly, as viewed in FIG. 3, at approximately a 45° angle to the longitudinal axis of body portion 28' for interlocking engagement of the header clamp plate with the clamping plate secured to hinge leg 13.

In FIG. 3 there is also illustrated in phantom lines, the manner in which the basic clamp plate of FIG. 2 is adapted for use as the header clamp plate which is interlockingly engaged with the clamp plate secured to strike leg 13'. This clamp plate is shown to advantage in FIGS. 4 to 7 and the parts thereof, similar to the parts of FIG. 2, are identified by like, double primed numbers. It will be noted from the drawings that locking elements 31'' and lug portions 32'' are bent at approximately a 45° angle to body portion 28'' in the direction opposite to that in which locking elements 31' and lug portions 32' are bent. It will also be noted from the drawings that the locking elements of both clamping plates secured to header 14 extend beyond the longitudinal terminals of header 14.

In installing the pre-hung door assembly equipped with the present invention, hinge leg 13 and strike leg 13' are inserted in the door opening as shown in FIG. 6. The distance between studs 10, 10' allows freedom of movement of hinge leg 13 and strike leg 13' to permit the legs to be pushed apart so that the leading locking elements of the legs may be moved past the first locking element of the header. Header 14 is then positioned to initiate movement thereof from the door side into engagement with the upper terminals of the hinge and strike legs. It will be noted from FIG. 6 that one of casings 25 is disengaged from the header to permit sliding movement of the header frame 23 through the door opening. The header is positioned or tapped into interlocking member with legs, usually one leg at a time, until it is in proper position on top of the legs. In carrying out this step, as illustrated in FIGS. 6 and 7, the angular locking elements 31', 31'' and lug portions 32', 32'' mesh with locking elements 31 and lug portions 32, meshing being facilitated by the tapered lug portion to permit entry of locking elements 31', 31'' into slots 35, and the corresponding entry of locking elements 31 into slots 35', 35''. It will be seen from FIGS. 4 and 5 that when the clamp plates are interlockingly engaged, a binding action occurs, causing slight bending of the interlocking parts and effecting locking into a positive lateral position. Casing 25 is then replaced in complemental longitudinal groove 24 of header 14. The balance of the installation procedure is carried out in the same manner as with any other pre-hung unit.

The mitered joints are thereby pulled together with considerable force as header 14 is tapped into place, thereby making a pleasing and permanent joint. Additionally, the miter joint is pressured together at the outer edges near the casings of the frame members where the joint is more exposed, so that even cupped or twisted wood frame pieces will be forced into proper position.

With the clamp assembly of the present invention, particularly as applied to a pre-hung door assembly, the membering mechanism is independent of any variable framing structures or rough opening, thereby permitting the parts of the assembly to be readily brought into member and to hold the joints together.

The present invention requires no pressure screws or like membering devices so that the frame, when membered altogether as a unit, may be centered in the opening to accommodate job conditions. The elimination of pressure screws has the additional advantage of reducing installation time and eliminating parts heretofore required for pre-hung door assemblies.

In FIG. 8 there is illustrated the application of the present invention to a butt joint such as employed in a window frame unit including a vertical portion 36 and a horizontal portion 37. For purposes of joining members 36 and 37 together, the latter member is provided with a clamp plate of uniplanar construction including a flat rectangular body 38 having openings for securing means 39. One of the lateral terminals of rectangular body 38 is extended beyond member 37 to provide a locking element 40 which includes a laterally extending lug portion 41. The terminal of the lug portion is chamfered at 42, the chamfered portion issuing into a wall 43 which is in spaced parallel relation to the lateral edge of body 38 thereby forming a slot 44. The width of slot 44 is substantially equal to the thickness of the clamp plate.

Member 36 is also provided with a clamp plate of similar construction to that which is secured to member 37 and like parts are accordingly designated by like, primed numbers. It will be noted from FIG. 8 that the clamp plates are so arranged that slots 44 face in opposite directions. Just as in the form of invention illustrated in FIGS. 1 to 7, locking elements 40' and lug portion 41' are bent upwardly at approximately a 45° angle to the plane of body 38' to permit interlocking engagement of the clamp plates in the same manner as described above in connection with the clamp assembly of FIGS. 1 to 7. With the clamp assembly of FIG. 8, a tight joint is formed which is permanent, the clamp plates permitting ready erection of the frame unit while at the same time, preventing casual displacement of the component parts of the frame unit.

While preferred embodiments of the present invention have been shown and described, it is nevertheless to be understood that various changes may be made therein, without departing from the spirit and scope of the claims hereto appended.

I claim:

1. A clamp assembly for locking together adjacent edges of frame units, the assembly including clamp plates secured to the outside surfaces of the frame parts to be held together, each clamp plate including a body portion, an extension comprising a locking element beyond the terminal of the frame unit, the locking element being formed to provide a lug having a free end, and a lug-receiving slot between the lug and the body portion of the clamp plate, the slot being at least as wide as the thickness of said clamp plate, the lug of the locking element extending laterally of the body portion, one of said clamping plates being uniplanar, and parallel to the surface to which it is attached, the locking element and lug of the other of said clamping plates being disposed at an included obtuse angle to its body portion to effect binding and locking of the clamp plate upon entry of the lug of one clamping plate into the lug-receiving slot of the other clamping plate, the clamping plates being arranged so that the free end of the lug of one plate faces the open end of the slot of the other plate.

2. The clamp assembly of claim 1, wherein the locking element of one of said clamp plates is disposed at approximately a 135° angle to the longitudinal axis of the body portion.

3. The clamp assembly of claim 1, wherein said clamp plates are applied to a vertical and horizontal portion of a frame unit joined to form a butt joint.

4. The clamp assembly of claim 1, with the addition of a second locking element symmetrically spaced from said first locking element and of the same size and configuration as said first locking element.

5. A clamp assembly for each of the miter joints of door frames, having legs and a header, each assembly

including clamp plates fixed to the outside surface of the header and leg adjacent the miter, each clamp plate including a body portion, symmetrically spaced extensions beyond the limits of said legs and header comprising locking elements formed to provide lugs having free ends, lug-receiving slots at least as wide as the thickness of said clamp plate between said lugs and the body portion of said clamp plates, the locking elements and lugs of the clamp plate secured to each leg being uniplanar with the body portion thereof, and the locking element and lug of the clamp plates secured to the header being disposed at an obtuse angle with respect to the body portion thereof.

6. The clamp assembly of claim 5, wherein the locking element and lug of the clamp plates secured to the header are disposed at approximately a 135° angle to the longitudinal axis of the body portion thereof.

7. The clamp assembly of claim 5, wherein said locking element lugs extend laterally, the terminals of said lugs being chamfered.

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