United States Patent

Linder et al.

[15] **3,681,876**

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[54] **DOOR FRAME CONSTRUCTION**

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[52] **U.S. Cl.** **49/504**

[51] **Int. Cl.** **E06b 1/04**

[58] **Field of Search** 49/504, 505, 399, 400, 401; 52/217

[56] **References Cited**

UNITED STATES PATENTS

2,760,814	8/1956	Watter	49/398 X
3,287,856	11/1966	Passovoy	49/504
3,274,735	9/1966	Stackhouse	49/504
3,469,350	9/1969	Lange	49/504
2,910,154	10/1959	Hammitt et al.	49/504 X
3,458,955	8/1969	Brooks	49/399 X

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[57] **ABSTRACT**

An improved frame member for a door frame assembly wherein the frame member has a web portion to which one or more hinge butts can be secured, and a cover member releasably mounted on the frame member in a position to cover the web portion and the hinge butts secured thereto. The frame member can be provided with a striker plate to present a space sufficient in depth to receive a latch bolt of a door having a dead locking feature. The frame member can be used at either side or at the top of a door opening.

6 Claims, 6 Drawing Figures

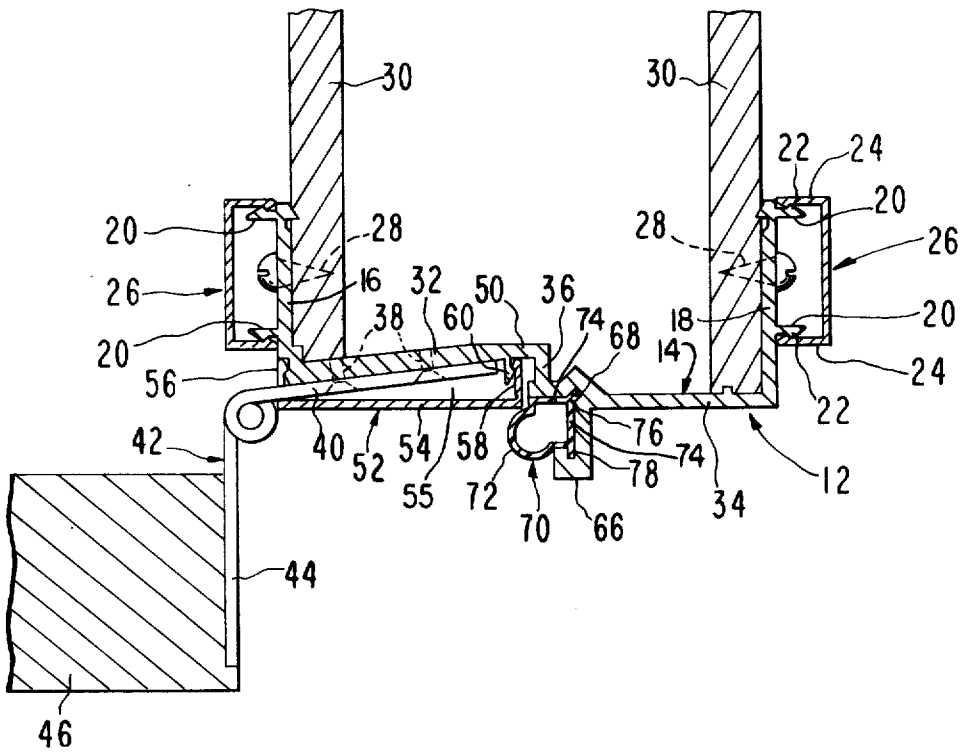


FIG. 1

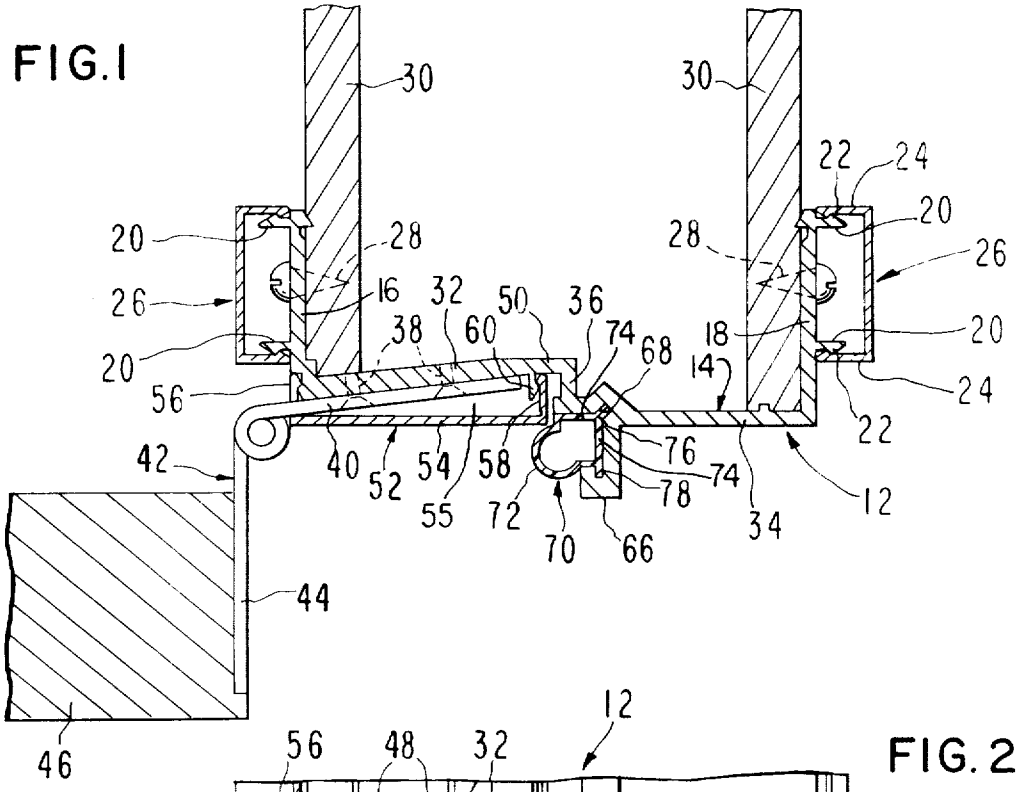


FIG. 2

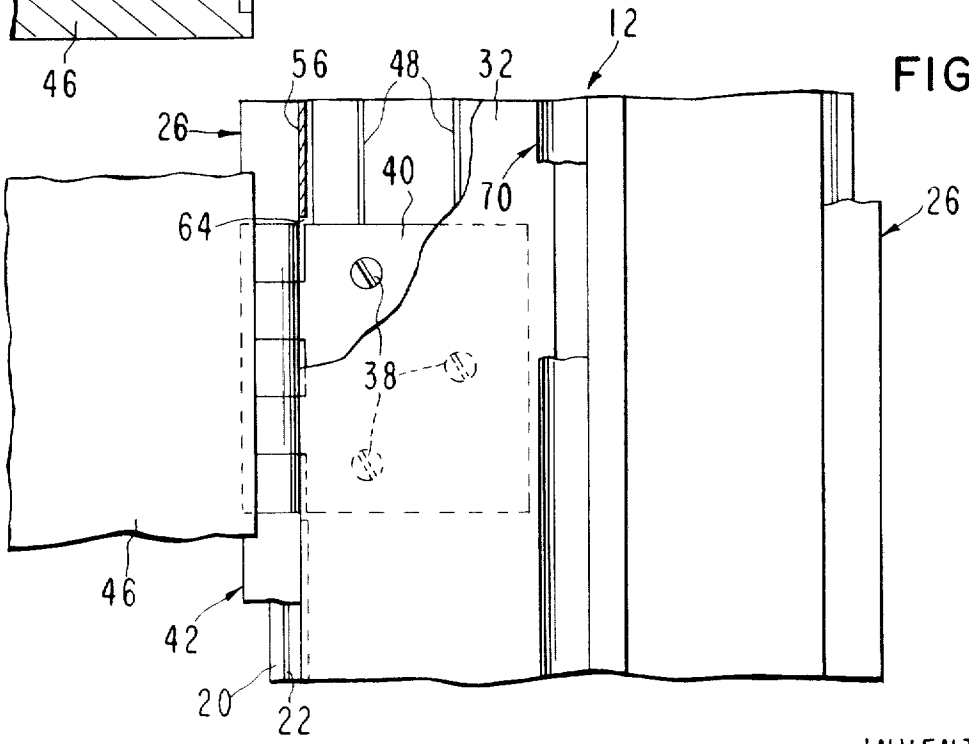
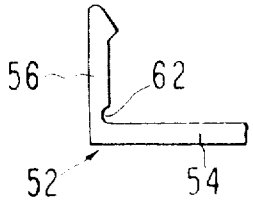


FIG. 3



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FIG. 4

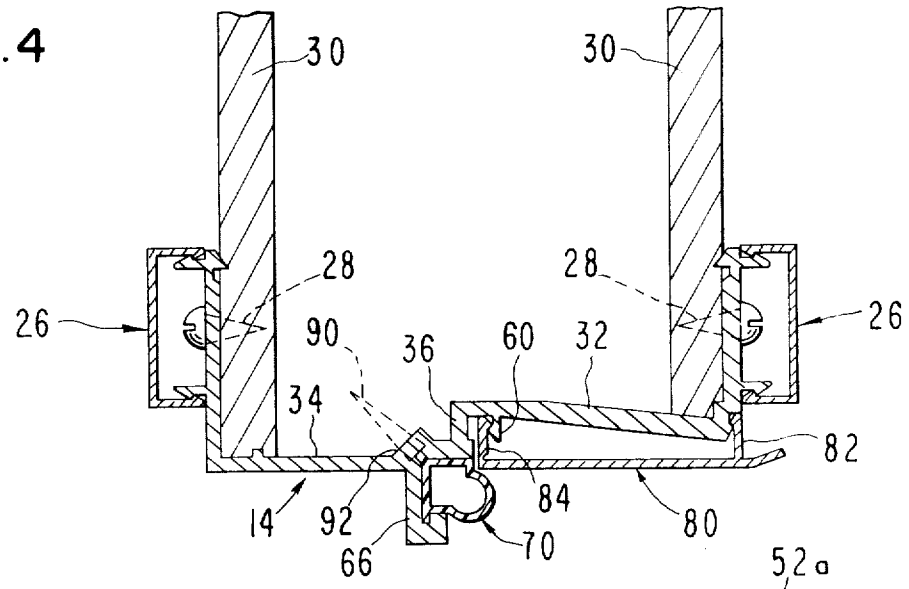
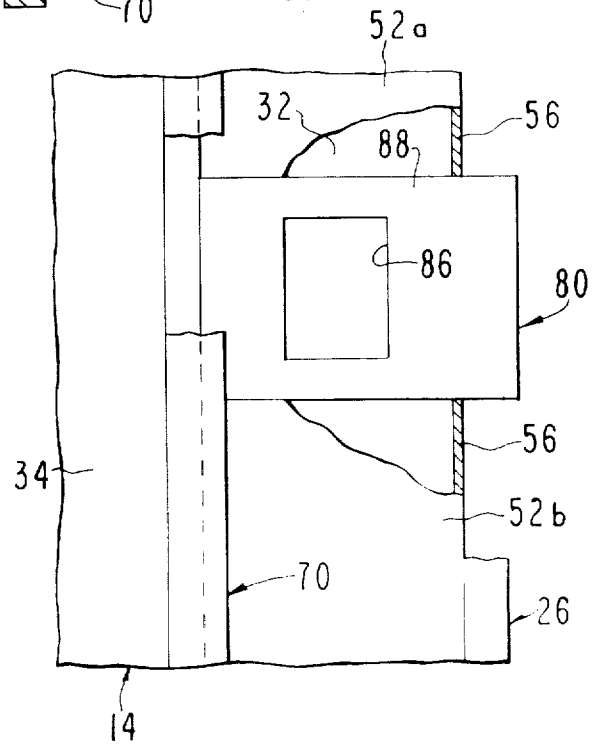


FIG. 5



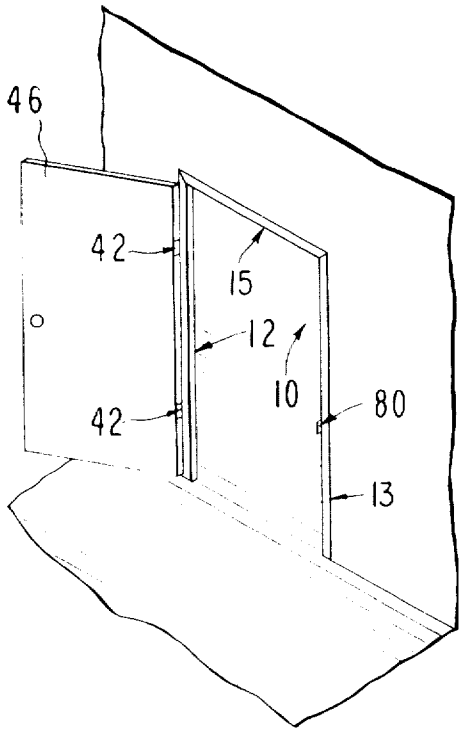


FIG. 6

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DOOR FRAME CONSTRUCTION

This invention relates to improvements in door frame assemblies and, more particularly, to an improved frame member for such an assembly.

In the construction of metallic door frames, such a frame is comprised of a pair of upright frame members and an overhead frame member interconnecting the upright ends of the upright frame members. One of the upright frame members is the support for the hinge butts of a door and the other upright frame member is the support for a striker plate which receives the latch bolt of the door.

In door frame assemblies of the prior art, such as the assembly shown in U.S. Pat. No. 3,287,856, the hinge butts secured to one of the upright frame members are exposed, thus, providing an appearance which, although not unsightly, is unattractive and reveals shoddy workmanship in the installation of the door on the door frame assembly. Moreover, the attempts to provide a finished appearance to such an installation, such as disclosed in the above patent have generally been unsuccessful for one reason or another. For instance, in the patent, cover plates are disclosed for attachment on opposite sides of each hinge butt of a door installation. Not only is the hinge butt exposed, but also the cover plates oftentimes are not flush with the surface of the hinge butt, thus, resulting in an appearance which is evidence of poor workmanship. Also, to utilize a striker plate with the disclosure in the patent results in rendering the dead locking feature of the latch bolt of the door substantially uneffective. The reason for this is that the latch bolt cannot move beyond the striker plate a sufficient distance to render such feature effective unless the adjacent frame member is cut away to accommodate the latch bolt. This requirement results in an unsightly appearance for the frame member and necessitates additional work at the installation site.

The present invention circumvents the problems described above by providing a frame member for a door frame assembly wherein the frame member has means for releasably mounting a cover plate thereon in a manner such that both the web portion of the frame member and the hinge butts connected thereto are covered and thereby concealed from view. Thus, any flaws in workmanship in installing the door cannot be seen.

Another aspect of the invention is the fact that a striker plate coupled to the frame member will assure the operation of the dead locking feature of the latch bolt of a door associated therewith. The reason for this is that the frame member and the striker plate will define a space of sufficient distance to receive enough of the latch bolt to render the dead locking feature effective.

A further aspect of the invention is that the frame member can be used on either side and at the top of a door opening. Thus, the frame member can be cut at the job site from stock material and can be readily secured in place at the boundary of a door opening.

The primary object of this invention is to provide an improved frame member for a door frame assembly wherein the frame member has means for mounting a cover member thereon along its entire length so that the cover member can conceal not only the entire length of a particular web portion of the frame member, but can also conceal one or more hinge butts secured to the web portion.

A further object of this invention is to provide a frame member of the type described wherein the frame member has means for mounting a striker plate thereon and to present, with the striker plate, a space of sufficient depth to receive the latch bolt of a door and to render effective the dead locking feature of the latch bolt.

A further object of this invention is to provide a door frame assembly formed from a number of frame members of the type described wherein the hinge butts secured to one of the frame members for mounting a door thereon can be concealed, a striker plate carried by another frame member can effectively accommodate the latch bolt of the door having a dead locking feature, and the upright frame members of the assembly are interchangeable to permit the use of stock material in the installation of the assembly.

Other objects of this invention will become apparent as the following specification progresses, reference being had to the accompanying drawings for an illustration of the invention. In the drawings:

FIG. 1 is a cross-sectional view of the frame member of this invention showing the way in which the hinge butt mounted on a door is coupled thereto;

FIG. 2 is a fragmentary, side elevational view of the frame member of FIG. 1;

FIG. 3 is an enlarged, fragmentary and an elevational view of the cover member for concealing the hinge butt secured to the frame member;

FIG. 4 is a view similar to FIG. 1 but showing the way in which a striker plate is secured to the frame member;

FIG. 5 is a view similar to FIG. 2 and showing the striker plate in place between a pair of cover members; and

FIG. 6 is a perspective view of a door frame assembly utilizing the present invention.

The present invention is adapted especially for use in defining a door frame **10** (FIG. 6) which is comprised of a pair of vertical frame members **12** and **13** and an overhead, horizontal frame member **15** interconnecting the upper ends of frame members **12** and **14**. The frame members have substantially the same cross-section; thus, they can all be cut from the same piece of material if desired. Also, the frame members can be formed by an extrusion process. A description of one of the frame members will suffice for all three. For purposes of illustration, frame member **12** will be described with reference to FIGS. 1 and 2.

Frame member **12** includes a web **14** having a pair of opposed side margins to which side flanges **16** and **18** are secured, flanges **16** and **18** being generally parallel with each other. Each flange has a pair of ribs **20** projecting laterally therefrom with each rib having a cross-section of the type shown in FIG. 1 to present a shoulder **22** for releasably holding the ribbed sides **24** of a cover plate **26**. Thus, when the flange is secured by screws **28** to the adjacent wall panel **30**, cover plate **26** will conceal the screws. Cover plate **26** is formed from a material, such as aluminum which allows sides **24** to yield outwardly as the cover member moves into position on ribs **20** so that ribs on the inner surface of sides **24** will snap into place behind shoulders **22**, thereby releasably maintain the cover plate attached to the flange.

Web 14 comprises a pair of web portions 32 and 34 which extend toward each other and are interconnected at their inner extremities by a segment 36. Web portion 32 extends at an acute angle from flange 16 and web portion 34 extends at a right angle from flange 18. Web portion 32 is adapted to be secured by screws 38 to a hinge butt 40 of a hinge 42 whose other hinge butt 44 is secured in the usual manner to the end face of a door 46. The outer surface of web portion 32 may be provided with centering grooves 48 for facilitating the drilling of holes therethrough for receiving screws 38. Web portion 32 has an inner segment the numeral 50 near segment 36 which is substantially perpendicular to the latter and parallel with web portion 34.

A cover member 52 has a plate-like body 54 provided with sides 56 and 58, whereby the cover member is transversely U-shaped. Sides 56 and 58 are of substantially the same width and each side has an inwardly extending rib on the inner surface thereof as shown in FIG. 1. Cover member 52 is releasably secured in covering relationship with web portion 32 to conceal the web portion and the hinge butts connected thereto, there being generally two or three hinge butts connected to web portion 32 for coupling door 46 thereto. To secure the cover member in place, web portion 32 has a rabbet at the outer end face thereof for receiving the rib on side 56. A rib 60 is secured to and extends outwardly from segment 50 of web portion 32 in spaced relationship to segment 36 (FIG. 1) and rib 60 has a lateral projection defining a shoulder about which the rib on side 58 can be coupled, such as by a snap action. Widths of sides 56 and 58 and ribs 60 and the location of the rabbet are selected such that body 54 of the cover member is spaced a sufficient distance away from web portion 32 to form a transversely wedge-shaped space 55 to accommodate hinge butt 40 therein at any one of a number of locations along the frame member. Thus, if three hinge butts 40 are required to mount the door on channel member 12, cover member 52 will extend along the entire length of the channel member and conceal the hinge butts and the outer surface portions of web portion 32 on opposite sides of hinge butts.

Cover member 52 is also formed by an extrusion and has a groove 62 (FIG. 3) at the junction between body 54 and each of sides 56 and 58. Grooves 62 define lines of weakness which permit segments of either side to be cut and removed from body 54 to permit hinge butt 40 to extend outwardly from the space between web portion 32 and body 54. The cover member is formed from a suitable material, such as aluminum whereby side 56, for instance, can be cut at locations determined by the length of the hinge butt and then the segment between the locations is then moved back and forth until it is severed from body 54, thereby leaving an opening 64 (FIG. 2) in the side of the cover member through which hinge butt 40 can extend. The formation of a number of openings 64 can be accomplished at a job site.

Web 14 has a transversely J-shaped extension 66 thereon which projects laterally from web portion 34 in alignment with a groove 68 extending into web portion 34 at an angle with respect thereto. Extension 66 defines a doorstop to which a tubular, resilient cushion or mute 70 is releasably coupled. The mute is formed from any suitable material, such as vinyl or the like, and has a convex outer, door engaging surface 72 and a pair of generally perpendicular, converging sides 74 which are joined together by a rib 76 removably received within groove 68. One of sides 74 has a rib 78 which is received within the groove formed by the J-shaped construction of extension 66.

When cover member 52 is in its operative position as shown in FIG. 1, it is substantially coplanar with web portion 34 to provide a finished appearance for the assembly. The cover member does not interfere with mute 70 since the convex outer surface of the mute extends away from body 54 in the vacinity of side 58.

A striker plate 80 is releasably secured to frame member 13 in alignment with a latch bolt on the door. Striker plate 80 has a pair of flanges 82 and 84 which are coupled with the rabbet and rib 60, respectively, of web portion 32 of frame member 13. Plate 80 has a rectangular opening 86 therethrough for receiving the latch bolt. The main body portion 88 of striker plate 80 is spaced a sufficient distance from the outer surface of web portion 32 so that the latch bolt can have a dead-locking feature. Engagement of the dead-locking feature is controlled by the distance in which the latch bolt travels in the door strike. It has been established that travel of the latch bolt into the strike plate should be not less than approximately one-eighth inch. The length of flanges 82 and 84 are such as to assure that the distance between body 88 at opening 86 from web portion 32 is at least this distance.

A pair of cover members 52*a* and 52*b* are releasably secured to frame member 13 on opposite sides of the striker plate. The way in which cover members 52*a* and 52*b* are connected is described above with respect to cover member 52 of frame member 12. Other aspects of frame member 13 are substantially identical with the corresponding aspects of frame member 12.

Frame member 15 is substantially identical in all respects to frame members 12 and 13 except for length. Also, a cover plate 52 will extend the entire distance of frame member 16 and there will be no need to cut into the side of the cover member, such as is required for the cover member of frame member 12 to accommodate the hinge butts.

It may be desirable to secure the frame members to the walls surrounding the door opening in a manner other than that shown in FIGS. 1 and 4. It is possible to secure each frame member by a number of screws 90 shown only in dashed lines in FIG. 4, the screws extending through holes formed in the inclined projection 92 of each web portion 34. In such a case, screws 28 will not be required so that ribs 20 and cover members 26 can be eliminated. The outer surfaces of flanges 16 and 18 of each frame member will therefore be exposed when the frame member is in an operative position forming one boundary of a door opening.

In use, the door frame formed by frame members 12, 13 and 15 is installed in a door opening such as by attaching each frame member by screws 28 to the adjacent wall panels. The door will be initially provided with hinges 42 thereon and the door can be fitted in the door frame so that web portion 32 of frame member 12 can be marked at the locations aligned with the apertures in the various hinge butts 40. The holes can then be drilled, following which the hinge butts are secured by screws 38 to web portion 32. Rib 60 can be used as a stop for the inner margins of the hinge butts.

Cover member **52** is then cut at the proper location in the manner described above to form side openings **64** therein to accommodate the hinge butts then, the cover member is snapped into place in covering relationship to the hinge butts and to the outer face of web portion **32**. Web members **26** can then be snapped into place on respective ribs **20**.

The striker plate can be snapped into place at the proper location so that the latch bolt will be received within opening **86**. Then, cover members **52*a*** and **52*b*** can be cut to length and snapped into place on opposite sides of the striker plate. Then, the various mutes **70** can be cut to length and inserted in their proper locations in the frame members to thereby complete the installation of the door frame and the door.

The present invention, therefore, provides an improved door frame having an imperforate cover member which effectively conceals the hinge butts of a door, the screws which fasten the hinge butts to the frame, and the fastening means by which the frame members of the door frame are secured to the adjacent wall structure. Also, the striker plate associated with the door frame of this invention is constructed so that it can effectively receive a latch bolt having a dead-locking feature so that no adjustment of the striker plate is necessary to assure that the dead-locking feature is usable.

Cushion **70** provides a sealing strip for assembly **10**. Moreover, the convex surface **72** provides substantially line contact with a door and, because of the tubular nature of the cushion, this feature allows the cushion to be readily collapsed to avoid the problem of applying excessive force to close the door. In prior art devices, such forces are oftentimes necessary since the prior art cushions or sealing strips are either solid in cross-section or make essentially surface contact with the door.

The angularity of web portion **32** of frame member **12** positions the hinge axis properly so that, when the door is closed, it will be correctly located relative to the cover member **52**. Moreover, opening **64** for each hinge butt permits the latter to extend at the same angle as web portion **32**.

What is claimed is:

1. A door frame assembly comprising: a pair of spaced, upright frame members and an overhead frame member interconnecting said upright frame members, each upright frame member having a web portion and being provided with means thereon for securing the same to wall structure adjacent to a respective boundary of a door opening; a cover member for each of said upright frame members, respectively; means on each upright frame member for releasably securing the respective cover member thereto in substantial covering relationship to said web portion thereof, the web portion of each upright frame member being formed so as to be spaced from and disposed at an acute angle relative to the corresponding cover member when the cover member is secured to the respective frame member, the web portion of one of said upright frame members being adapted to mount a number of longitudinally spaced hinge butts for hingedly coupling a door to said one upright frame member, whereby the hinge butts will be disposed at said acute angle between the web portion of said one frame member and the adjacent cover member.

2. In a door frame as set forth in claim **1**, wherein said cover member is transversely U-shaped to present a main body and a pair of opposed sides, the lengths of the sides being sufficient to space said body a sufficient distance from said web portion to permit a hinge butt to be disposed therebetween, the body forming with said web portion a transversely wedge-shaped, hinge-receiving space when the cover member is secured to the frame member.

3. In a door frame as set forth in claim **1**, wherein said cover member is transversely U-shaped to present a pair of opposed sides and a bight interconnecting the sides, there being a line of weakness at the junction of one of the sides and the bight, said cover member being formed of a rigid material capable of being cut, whereby a segment of said one side can be separated from the cover member along said line of weakness.

4. In a door frame as set forth in claim **1**, wherein is included a tubular, resilient cushion having a convex outer surface, and means on the web for releasably securing the cushion in a position with the convex outer surface disposed for engagement by one side of a door.

5. A door frame assembly comprising: a pair of spaced, upright frame members and an overhead frame member interconnecting said upright frame members, each frame member having a web provided with means thereon for securing the same to wall structure adjacent to a respective boundary of a door opening, said web of one of said upright frame members having a portion adapted to mount a number of longitudinally spaced hinge butts for hingedly coupling a door to said one frame member; a cover member for each frame member, respectively; means on each frame member for releasably securing the respective cover member thereto in covering relationship to said web portion thereof, the web portion of said one upright frame member being spaced from and disposed at an acute angle relative to the cover member when the cover member is secured to said one frame member to permit the hinge butts secured to the web portion to be disposed at said angle between the web portion and the last-mentioned cover member; and a striker plate having means thereon for releasably connecting the same to the other upright member in a position to receive the latch bolt of said door when the latter is across said door opening, the cover member of said other upright frame member being in two parts with each part being positionable on a respective side of said striker plate, the latter being spaced a sufficient distance from the adjacent web to permit a latch bolt to extend through the striker plate.

6. A door frame assembly as set forth in claim **5**, wherein each cover member is transversely U-shaped, said securing means includes a pair of spaced, generally parallel ribs on the respective web portion, and including a stop for each frame member, respectively, each stop extending laterally from a corresponding web portion, and a tubular, resilient mute for each stop, respectively, each stop having means for removably mounting the corresponding mute thereon.

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