

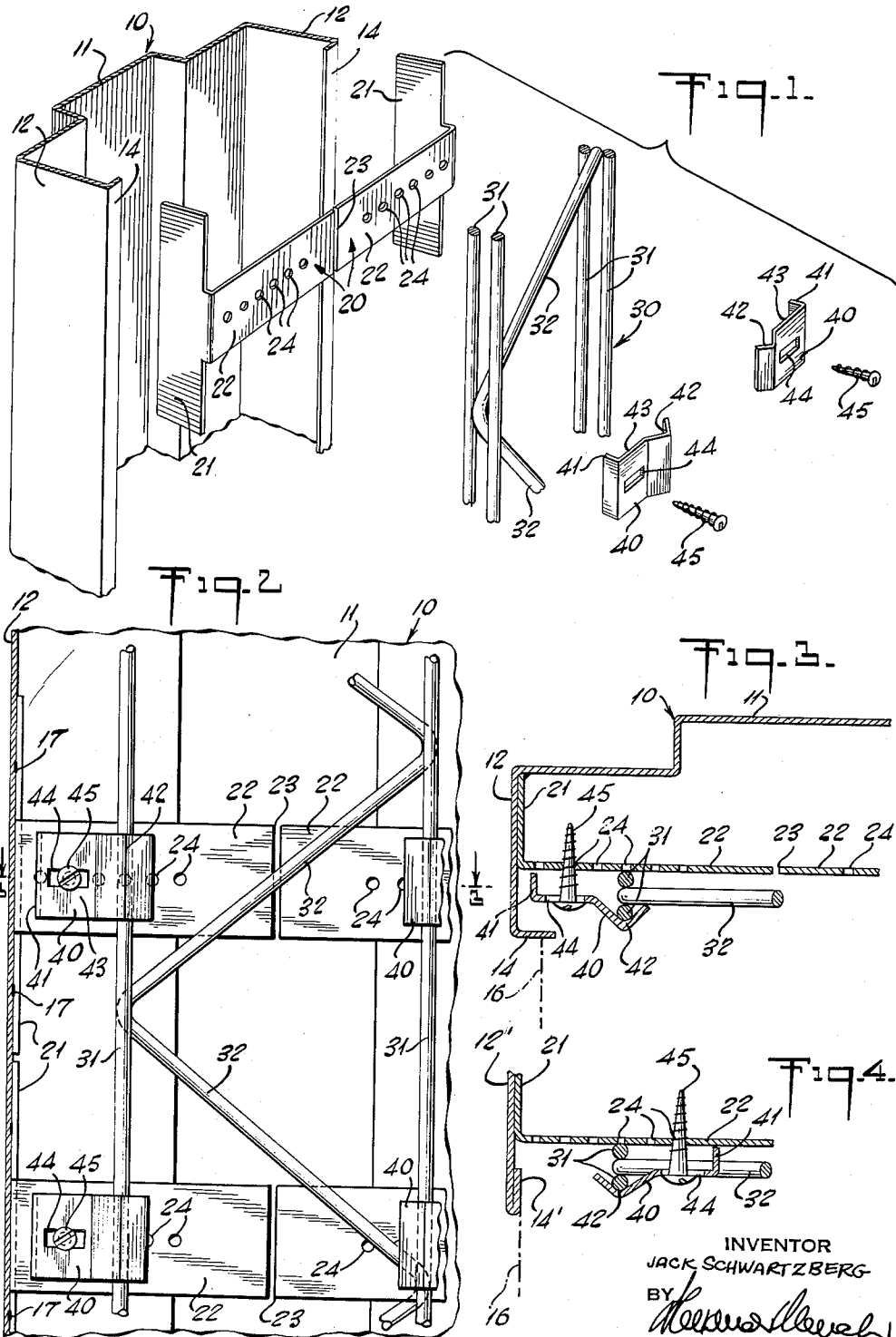
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METAL DOOR AND WINDOW-FRAME ANCHORAGE TO STEEL STUDS

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METAL DOOR AND WINDOW-FRAME ANCHOR- AGE TO STEEL STUDS

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This invention relates to metal doorframes and metal windowframes; and more particularly, to metal doorframes and metal windowframes of the type used with steel studding.

In modern building construction, low-cost construction materials and low labor costs have become very important considerations. Today's builder is constantly on the lookout for materials which will give improved performance while reducing labor costs through ease of installation.

Within the last several years, two materials which are finding ever wider public acceptance are metal doorframes and steel studding. Among the commercially available types of steel studding is the open truss type of stud which has gained wide use in schools, hospitals, shopping centers, office buildings, apartments, dormitories and hotels as a functional, economical and practical partition member. This open truss type of stud is formed of steel wire rods, for example No. 7 gauge, with a continuous diagonal wire web welded to double wire flanges, and used for the erection of hollow, non-load bearing, fire-resistant partitions. These studs are commercially available in various standard widths and are mill cut to job lengths. This stud member, together with accessories also commercially available, provides a framework for easy direct or resilient attachment of metal lath or sheet gypsum lath plaster bases.

Metal door frames lend themselves quite readily to the same type of buildings described wherein such metal studding is used. The conventional one-piece doorframe, however, has certain disadvantages, especially when used in connection with such wire steel studding, which disadvantages have been overcome by the metal frame of the present invention.

One of the problems involved in fastening the metal frame to the metal studding is the difficulty in maintaining the flanges and flange returns of the frame rigid enough to control chip cracking of the plaster due to vibration in the frame. Furthermore, the methods and devices previously used for attaching the metal doorframe to the steel studding have required a considerable amount of hand labor of the mechanical trades during the installation, and had to be specially made or altered according to the size of the particular studding being used. The shape and size of accessories necessary to fasten the metal doorframe to the steel stud varied also with the type of frame used, i.e., the reveal type frame, the flush type frame and the thin reveal type frame each had its own corresponding accessories for attaching the metal frame to the steel studding.

It is therefore an object of the present invention to provide a unitary metal frame which will result in reduced labor costs through ease of installation in a building.

It is another object of the present invention to provide means for rigidly attaching a metal frame to a building stud wherein the same attaching means is adaptable for building studs of varying widths, and wherein the attaching means is hidden from view within the completed wall.

It is a further object of the present invention to provide means for retaining the flanges and flange returns of a metal doorframe rigid without the necessity for the use

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of mortar or grouting within the frame to minimize vibration.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings in which like reference numerals designate like parts throughout the figures thereof and wherein:

FIG. 1 is an exploded perspective view of the components of the metal frame according to the invention illustrating a linear fragment or section of the frame and of a typical steel stud;

FIG. 2 is a fragmentary elevation view, partly in section, showing the metal frame and stud in assembled condition;

FIG. 3 is a cross-section taken along lines 3—3 of FIG. 2, taken in the direction of the arrows;

FIG. 4 illustrates the method of attaching the same device of FIGS. 1—3 to a steel stud which is wider in relation to the overall width of the metal frame.

Referring now to the drawings, there is shown in FIG. 1 a portion of a doorframe or windowframe indicated generally as 10, which may constitute either the jamb member or the head member of the frame. Metal frame 10 has an outer face 11 which faces the door or window opening, and side flanges 12. Depending upon the distance which the side flange 12 is to protrude from the wall 16, a return flange 14, or 14' (FIG. 4), is bent in various manners. In the standard reveal type frame shown in FIG. 3, the return flange 14 forms a right angle with flange 12, while in the thin reveal type frame shown in FIG. 4 the return flange 14' is doubled back against the inside of flange 12'. Similarly, in the flush type frame (not illustrated) where the plaster line of the wall is on a line with the outside of flange 12, the return flange 14 will make a reverse acute angle with flange 12. A pair of anchor angles 20, having a flange or heel portion 21 and a rear or toe portion 22 are arranged symmetrically opposed, mutually and spacedly adjacent each other and are spot welded at 17 through flange portions 21 to fasten them securely to the inside of side flanges 12 of the frame 10. The rear portions 22 of anchor angles 20 have a plurality of holes 24 formed therein to receive a standard size self-threading screw 45. Several opposed pairs of anchor angles 20 (for example four pairs) are welded along the length of the jamb or header member, the longitudinal distance between the pairs of anchors being determined by the height of the jamb or length of header so that sufficient rigidity in the connection between the anchor angles 20 and the stud is achieved.

The typical stud 30 illustrated may be a standard commercially available open truss type stud formed of steel wire rods, for example No. 7 gauge, with a continuous diagonal wire web 32 welded to double wire truss flanges 31. Since the metal truss 30 is commercially fabricated in a number of widths, for example, 2½ inch, 3¼ inch, 4 inch and six inch, a plurality of holes 24 are positioned in rear portions 22 of an anchor angle 20 in order to accommodate any of the widths of stud which may be used. The opposing pair of anchor angles 20 are not joined but are separated, leaving an opening at 23 between the adjacent rear toe portions 22 of the respective opposed anchor angles.

Cooperating with the rear portions 22 of anchor angles 20 are a pair of specially formed clips 40 which fit on the opposite side of stud 30 from that of the anchor angles and are fastened to the anchor angles by means of self threading screws 45. Clips 40 have a straight portion 43 in which an elongated slot 44 is formed for receiving bolt 45, and for achieving adjustment in width

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supplementary to that achieved by the plurality of holes 24. Attached to straight portion 43 is a forwardly projecting flange portion 41 on one end, and a rearwardly projecting V-bend portion 42 on the opposite end. As may best be seen in FIG. 3, the V-bend portion 42 of clip 40 is formed and dimensioned to engage and secure the rear flange 31 of the stud 30.

The method of assembly of the device of the present invention in the field is as follows:

The metal frame is securely anchored to the floor at its base by conventional means, such as by power driven attachments through angles (not shown) welded to the frame 10. The clips 40 are then placed on the opposite side of the stud 30 from that of the metal frame and are fastened to the rear portions of respective anchors 20 by means of self-tapping screws 45. When the width of the stud 30 is comparatively less than that of the doorframe, the position of the clip 40 is that shown in FIGS. 1 through 3. For wider widths of studs, the clip 40 is inverted and while V-bend 42 still retains the outer wire 31, the screw 45 is inserted into one of the holes 24 by passing through the central space between the truss flanges of stud 30 (FIG. 4).

It is to be understood that while the above description has referred to metal doorframes, the invention may also be applied to frames for window openings in a similar manner. Furthermore, it is not intended to be limited to use only in connection with metal studding, since a wooden stud may also be inserted between the back face of surface 11 and the front face of rear portion 22 of angle 20, and screws 45 can then serve to fasten the anchor angles 20 into the rear of the wooden stud.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood, that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is claimed is:

1. In a metal construction frame having a front portion and two flange portions, means for rigidly clamping said frame to a truss-type building stud of various dimensions, comprising a pair of angle members having heel members permanently attached to said flange portions of

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said frame and having flat toe members having spaced orifices and symmetrically opposed and mutually spacedly adjacent each other, and fastening means for securing said stud to said toe members adjacent selected orifices.

2. In a metal doorframe for use with truss-type steel studs, means for rigidly clamping a section of said doorframe to said studs of various dimensions, comprising a plurality of pairs of anchor angles, the angles of each pair being symmetrically opposed, toed with orifices therealong and spacedly mutually adjacent each other, said angles being permanently attached to said metal frame, and clamp means removably attachable to said anchor angles at selected orifices for clamping said studs against said anchor angles.

3. A device in accordance with claim 2, in which at least one of said anchor angles comprises a flange portion fixedly attached to said frame, and a rear portion, said rear portion being provided with a plurality of holes aligned transversely to the longitudinal axis of said section of said frame for accommodating varying widths of studs, and engaging means for attaching said clamp means to said rear portion by engaging at least one of said holes.

4. A device in accordance with claim 3, said clamp means comprising a straight portion, a forwardly protruding flange portion for resting engagement against said anchor angle, and a V-bend rearwardly protruding portion for nesting engagement with a portion of said stud to prevent lateral movement in relation thereto.

5. A device in accordance with claim 4, said straight portion of said clamp means being provided with an elongated slot for adjustably receiving said engaging means.

References Cited in the file of this patent

UNITED STATES PATENTS

796,178	Beaton	Aug. 1, 1905
1,367,683	Bentley	Feb. 8, 1921
2,245,351	Mittleman	June 10, 1941
2,271,472	Balduf	Jan. 27, 1942
2,661,483	Tortorice	Dec. 8, 1953
2,851,740	Baker	Sept. 16, 1958