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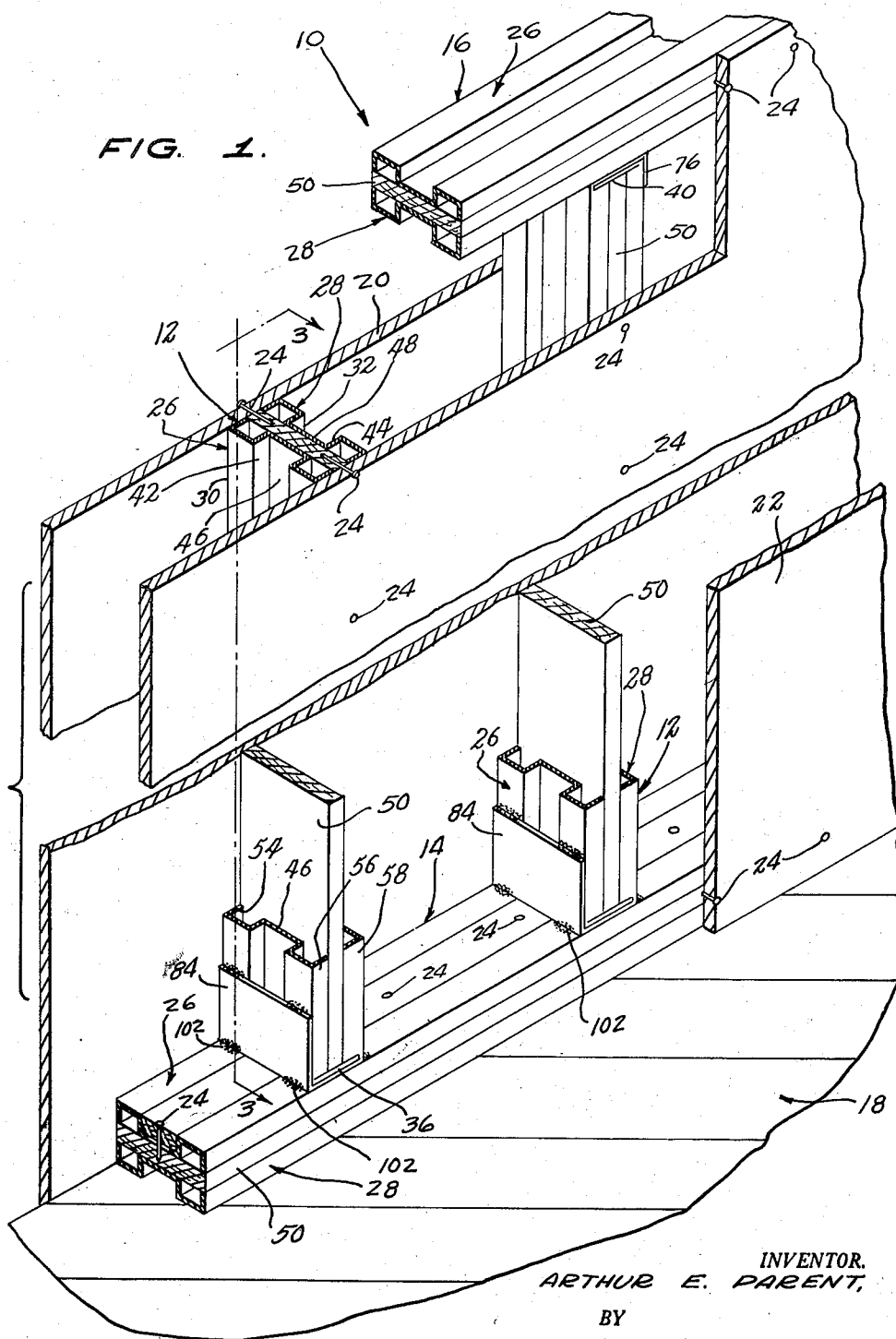
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2,845,152

STRUCTURAL BUILDING MEMBER

Filed March 13, 1956

2 Sheets-Sheet 1



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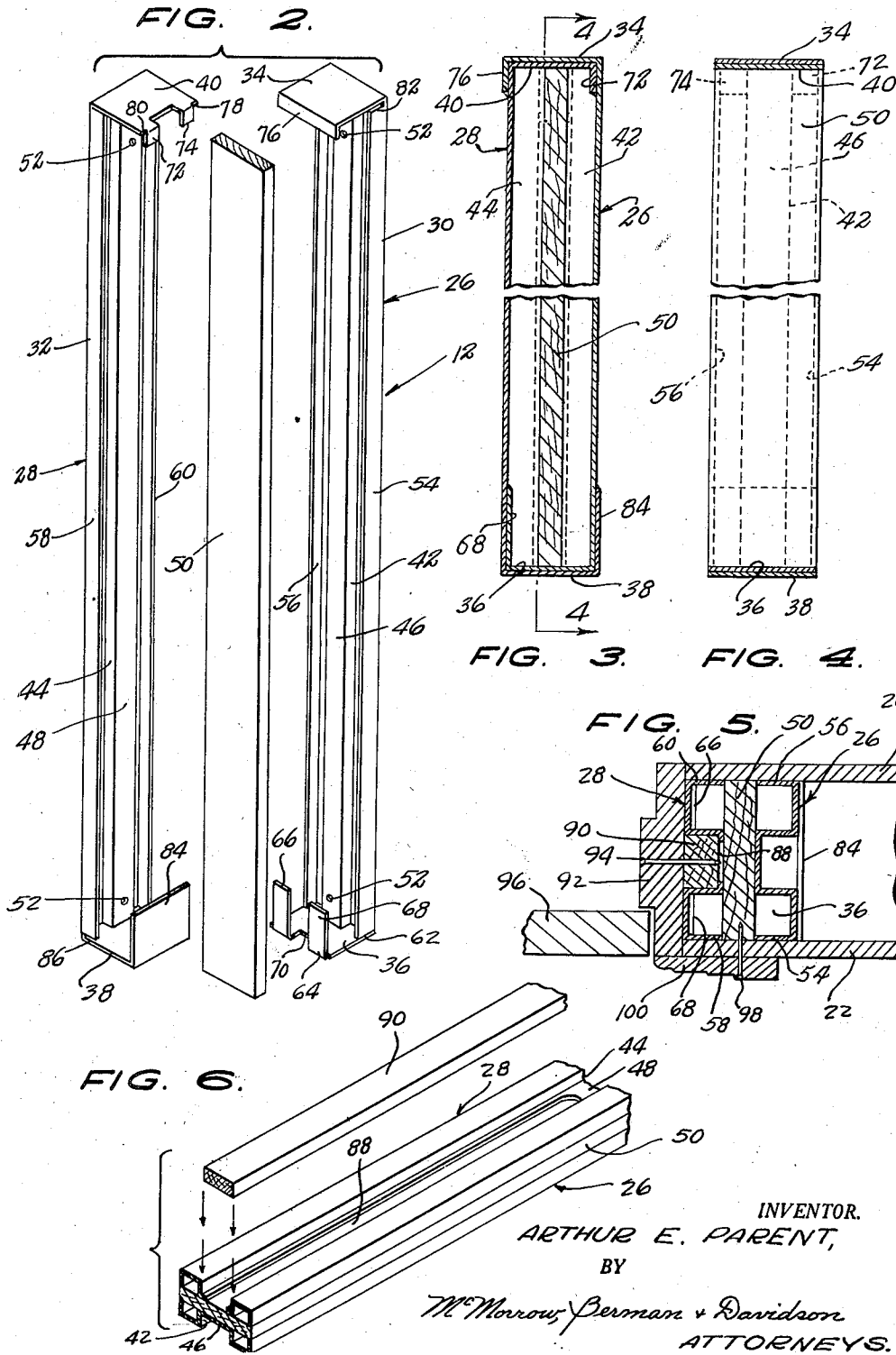
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STRUCTURAL BUILDING MEMBER

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2 Claims. (Cl. 189—40)

This invention relates generally to structural building members and is more particularly concerned with a novel metal structural building member usable as a beam, column, stud, floor plate, header, etc., incorporating therein means for receiving driven fasteners such as screws, nails, and the like.

The primary object of invention in conformance with that set forth is to provide a novel metal structural building member for receiving driven fasteners therein which is constructed from a pair of mating members readily susceptible to mass production procedures, wherein the mating members are secured by means of overlapping end flange portions and including thereon longitudinally extending rib portions having secured therebetween a filler member of a suitable material for receiving said driven fasteners in an edge portion thereof.

A further object of invention in conformance with that set forth is to provide a structural building member of the character set forth which includes a transverse aperture means in one of the longitudinal web portions permitting a second filler member to be secured in the longitudinal rib portion of the structural member.

Another object of invention in conformance with that set forth is to provide in a novel structural building member of the character set forth novel means on the end flange portions of the mating members for positively and rigidly retaining the mating members in secured relationship.

And yet another object of invention in conformance with that set forth is to provide a novel structural building member of the character set forth which is readily and economically manufactured, versatile in use, and highly satisfactory and practical for the purposes intended.

These, together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a fragmentary perspective view of a portion of the building construction, with portions broken away and shown in section for clarity, illustrating a plurality of uses of the novel structural member of the invention;

Figure 2 is an exploded perspective view of the novel structural building member;

Figure 3 is a sectional view taken substantially on line 3—3 of Figure 1, showing the novel structural member removed from the fragmentary building construction;

Figure 4 is a sectional view taken substantially on line 4—4 of Figure 3;

Figure 5 is a horizontal sectional view, showing the manner in which the novel structural member can be used as a portion of a door frame; and

Figure 6 is an exploded perspective view of a fragmentary portion of the novel structural member show-

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ing the manner in which a second filler member can be incorporated therewith providing a structural member to be used as shown in Figure 5.

Referring to the drawings in detail, a fragmentary portion of a wall of a building is indicated generally at 10 in Figure 1, said wall including studs 12 extending between a floor plate 14 and joist 16, the floor plate 14 being suitably secured to the building floor 18 in any suitable manner, the wall being completed by the securement of suitable panel members 20 and 22, which are suitably secured to the floor plate, studs and joist by means of driven fasteners such as the nails 24, or by means of screws or the like.

The novel structural members 12, 14 and 16 are all constructed in an identical manner, and are constructed from a suitable gauge of sheet metal material in any conventional manner, for example, by means of either rolling, extrusion, bending, etc., and subsequent welding, and their construction lends to expeditious mass production and simplicity of assembly. The portions of the novel structural members which incorporate means for accommodating driven fasteners, such as the nails or screws previously mentioned may be of any suitable wood material, or any material which is susceptible to receiving driven fasteners therein. Inasmuch as all of the novel structural members are constructed in the same manner, a description of one of the structural members should be sufficient.

As seen in Figures 2 through 4, wherein the stud, for example, is shown in detail, the novel structural member consists of first and second mating members indicated generally at 26 and 28, each of which includes a central body portion 30 and 32, respectively, which terminate in laterally extending overlying end flange portions 34 and 36, and 38 and 40, respectively.

The central body portions 30 and 32 include longitudinally extending rib portions 42 and 44, respectively, which include inner web portions 46 and 48, respectively, which are disposed in spaced relationship when the mating member is assembled for receiving therebetween a suitable filler member 50 which is of any material suitable to be penetrated by a driven fastener.

The web portions 46 and 48 have extending there-through suitable transverse aperture portions 52 at opposite ends thereof for receiving driven fasteners there-through for retaining the filler member 50 in a fixed position between the mating members 26 and 28. This expedient is only utilized if necessary, however, the filler member 50 will generally be frictionally driven between the aforementioned web members 46 and 48.

The central body portions 30 and 32 of the mating members have extending along the length thereof side flanges 54 and 56, and 58 and 60, respectively, which are parallel to the longitudinally extending rib portions 42 and 44, respectively, the edge portions thereof being in substantially planar alignment with the inner surface portion of the webs 46 and 48, respectively, for engaging longitudinally extending surface portions of the filler member 50, when the structural member is assembled, as will subsequently be described, side flanges 54 and 58, and 56 and 60 will be engaged on opposite sides along the length of said filler member. The engagement of the ribs and side flanges of the pair of mating members with the filler member 50 results in a compact and rigid structural member effective to resist compressive forces, for example, if the structural member is utilized as a header or beam, for example.

The end flange portions 34 through 40 are formed in any suitable manner. Considering flange 36 of Figure 2, the part of the body portion 30 extending beyond the terminating lower ends of the flanges 54 and 56 and rib portion 42 is bent transversely so that it

is normal to the terminating ends of the flanges 54 and 56 and rib portion 42 as seen at 62 in Figure 2 and forms the end flange 36, whereupon the part adjacent the free end of the flange 36 and indicated by the numeral 64 is bent so as to lie parallel to the rib portion 42. The part 64 is cut away at the mid portion to form a pair of transversely spaced integral abutment elements 66 and 68 which are of substantially the same width as the space between adjacent parallel inner surfaces of longitudinally extending rib portion and side flange portion of the mating member 28. To accommodate for the longitudinally extending rib between the abutment elements 66 and 68, the edge portion of the end flange 36 includes a transverse notched out portion 70 which will surround the inner periphery of the rib portion of the mating member. The end flange portion 40 of the mating member 28 is constructed similar to the end flange portion 36 including angular and abutment portions 72 and 74 which will extend about the longitudinal rib portion 42 of the mating member 26. The end flange portion 38 of the mating member 26 includes a transverse end flange 76 substantially parallel to the central body portion of said mating member, this flange 76 being engageable on an upper outer surface portion of the central body portion 32 of the mating member 28. Abutment elements 72 and 74 are also inwardly disposed on the side edges of the top flange portion 40 defining portions 78 and 80 which will be received in transverse notched out portions 82 extending from the central body portion 30 of the mating member 26 to the edge of the side flanges 54 and 56. As is readily apparent, when the structural member is assembled the end flange portion 34 is juxtaposed on the end flange portion 40 in secured and fixed position thereon by means of tack welds, for example.

The end flange portion 38 of the mating member 28 includes an angular end flange portion 84 functioning in a manner similar to the flange 76 of the mating member 26, and will be in engagement on the outer surface of the central body portion 30 of the mating member 26. The side flanges 58 and 60 of the mating member 28 include therein adjacent the end flange portion 38 transverse notch portions 86 for receiving therein side edge portions in the flange portion 36. The abutment elements 72 and 74, and 66 and 68, may also be secured at their end portions by means of tack welds to the inner surface portions of the respective mating members with which they are engaged.

The structural member thus far disclosed and described in detail may be used for the various purposes mentioned as clearly shown in Figure 1. Various gauges of metal material may be utilized for constructing the mating members 26 and 28 and different types of material may be used as a filler member 50.

One or both of the web portions of the longitudinally extending rib members may include aperture means therethrough such as a longitudinally extending slot portion 88, see Figure 6, providing a longitudinally extending exposed surface on filler member 50 for receiving driven fasteners therein. A second filler member 90 of any suitable material may be inserted within the rib portion 44 of the mating member 28, for example, to be retained therein by means of suitable transverse fastening elements such as nails, for example. Although but a single web portion is indicated as having the aperture or slot portion 88 extending therethrough, this may be conveniently formed in both web portions of the mating members. As seen in Figure 5, when the second filler member 90 is included with the novel structural member, a door jamb 92 can be secured in transverse juxtaposed relationship thereon by means of suitable driven fastening members such as nails 94 for cooperating with the side edge of a door as indicated

fragmentarily in Figure 5. When used as a portion of a door frame as seen in Figure 5, the filler member 50 will present its vertical edge for receiving nails 98 therein, for example, for securing in wall panel member 22 a suitable molding member 100.

As clearly shown in Figure 1, the novel structural members are conveniently constructed from a material that is readily weldable and accordingly the floor plate 14 and header 16 may be secured to the studs 12 by means of suitable welds 102. Thus the novel structural member is not only in itself readily and economically manufactured, but lends itself to rapid construction methods in building construction.

Thus there has been disclosed a novel structural member which fully conforms with the objects of the invention heretofore set forth.

Various positional directional terms such as "upper," "lower," etc., are utilized herein and have only a relative connotation to aid in describing the device and it is not intended to require any particular orientation with respect to any external elements.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A metal structural building member for receiving driven fasteners and the like therein comprising first and second mating members including a central body portion terminating in opposed angularly related end flange portions extending laterally in the same direction from the central body portion, the end portions of said first and second mating members being secured at their opposite ends in overlying and underlying relationship, respectively, longitudinal rib portions extending the length of the central body portions of the mating members and extending toward each other terminating in spaced web portions defining an uninterrupted slot between said mating members, a first filler member secured between the spaced web portions defining the longitudinally extending slot portion of the mating members and providing an exposed edge portion for receiving driven fasteners therein and resisting compressive forces between the mating members, one of the mating members including a transverse aperture portion extending through the web portion thereof and presenting an exposed intermediate nailing portion of the first filler member, and a second filler member disposed in the rib portion containing the transverse aperture portion for receiving therethrough a driven fastener element extendible into the transverse aperture of said web portion and the exposed nailing portion of the first filler member.

2. The metal structure according to claim 1 in which each of the central body portions of the mating members includes opposed laterally extending side flanges engaging opposite side edge portions of the first filler member in spaced parallel relationship to the rib portions of the mating members.

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