May 19, 1959 W. B. ZERN 2,886,860

PLURAL JAMB CONSTRUCTION WITH METAL DOWEL

Filed Oct. 24, 1957

Fig. 1

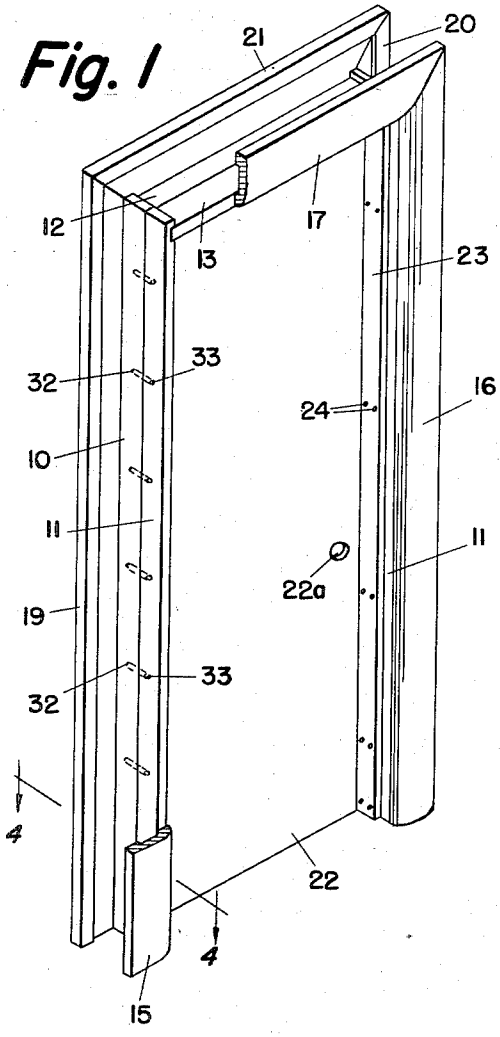


Fig. 2

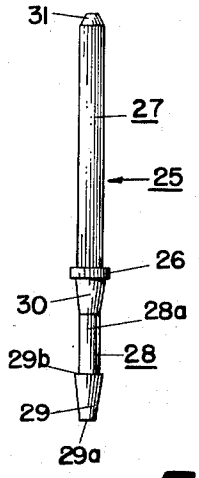
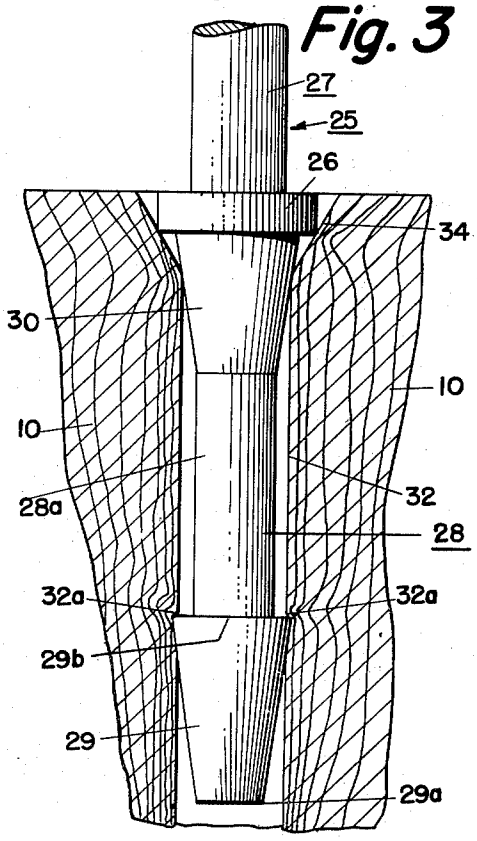


Fig. 3



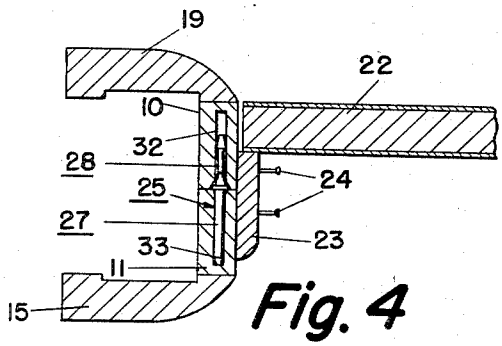


Fig. 4

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PLURAL JAMB CONSTRUCTION WITH METAL DOWEL

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5 Claims. (Cl. 20—11)

This invention relates to plural section jamb construction or the like and has for an object the provision of novel means for securing together a plurality of jamb sections.

In the manufacture of jambs for door frames, or the like, considerable saving in cost can be realized by forming the jamb from various combinations of narrow lumber rather than one wide piece of lumber. By using different combinations of widths of lumber, it is possible to assemble jambs of different overall width which may be readily fitted to the rough frame for the door. Such plural section jamb construction is sometimes referred to as plural layer jambs, or split jambs.

Split jambs of the prior art have left something to be desired, particularly in regard to the ease of assembly. In prior art arrangements, wooden dowels have been employed to hold the plural layers or sections together. In using wooden dowels, it has been necessary either to employ glue to hold the dowels in the jamb sections, or, in some cases, the practice has been to drive a nail transversely through the wooden dowels to pin them to the jamb. Such wooden dowels are subject to the further disadvantage of swelling, thus causing binding during assembly.

The present invention provides a split jamb assembly of variable width to accommodate walls of varying thickness. The split jamb assembly includes a pair of split jamb sections each including a pair of side jamb members connected at one end by a head member and together forming a three-sided frame for a door. Each of the jamb members has a plurality of blind holes spaced lengthwise of an edge thereof and of substantial depth and in alignment with the blind holes in the opposing jamb member. A plurality of metal dowels is provided one in each pair of aligned holes and each dowel having a locking end-portion and a bearing end-portion and outwardly extending shoulder structure intermediate the end-portions. The locking end-portion of each metal dowel is provided with outwardly extending projecting structure in interlocking engagement with a first one of the jamb sections when driven into the blind holes to prevent displacement of the dowels therefrom. The shoulder structure, when one end of each of the dowels is driven into the holes, forms a stop for the dowels by its engagement with the edge of the first one of the jamb sections. Door-stopping means such as strip structure is secured to one of the pair of jamb sections and the strip structure is of width adequately to overlap the space between the sections of the jamb assembly when spaced apart in matching relationship with a wall of given thickness. The bearing end-portions of the dowels extend into the blind holes of the other jamb section for slidably supporting one of the jamb sections for slidable movement towards and away from the other of the jamb sections in accommodation of the total thickness of the jamb in respect to a given wall thickness. The bearing end-portions of the dowels are of substantial length to provide a range of separation distances between the jamb sections. The strip structure is nailable to the other of the jamb sections when in a selected position within the range and the bearing end-portions of the dowels have a smooth outer surface and slightly reduced diameter to provide slip-fit bearing surfaces for the jamb section supported thereon.

The present invention overcomes the disadvantages of the wooden-dowel arrangement and the form specifically disclosed herein is an improvement over that disclosed in my co-pending application, Serial No. 585,086, filed May 15, 1956, now abandoned, of which the present application is a continuation-in-part. In that application one end of the metal dowel was provided with a point so that it could be driven into one section of the jamb a predetermined distance and thus locked to the jamb section. While that form of metal dowel has been successfully employed in the construction of plural layer jambs, it does require that the dowel be driven into the solid wood of the jamb section with a hammer or similar tool. If the jamb section is narrow in width, there is a possibility that the wood may be split. By employing a metal dowel of the novel construction disclosed herein, there is avoided the disadvantages of the wooden dowel and also there is avoided the possibility of splitting the jamb section.

In accordance with another aspect of the invention there is provided a split jamb for a door, or the like, comprising a pair of jamb members each having holes bored in an edge thereof to a predetermined depth and diameter. There is also provided a metal dowel having a shoulder intermediate the ends thereof dividing the dowel into two rigid sections. Each of the sections has a length less than the depth of the holes and is adapted to be inserted into a corresponding mating pair of the holes. One of the dowel sections is provided adjacent its outer end with a conical surface which tapers from a small diameter at the outer end thereof to a larger diameter at the inner end of the conical surface. The inner end of the conical surface forms a sharp edge circular in shape and having a diameter greater than the holes bored in the jamb members. This section of the dowel is provided with a second conical surface disposed adjacent the shoulder and tapering from a diameter smaller than the diameter of the bores in the jamb to a diameter greater than these bores. The conical surfaces are separated by a rigid portion having a diameter smaller than the diameter of the bores in the jamb. The sharp edge on the first conical surface is adapted to cooperate with the wooden fibers in a bore of one of the jamb members to lock that section of the dowel in the bore of the jamb member and the other conical surface on the dowel is adapted to provide a bearing surface for cooperation with the surface of the jamb member adjacent the outer end of the bore. The other section of the dowel is provided with a smooth outer surface of diameter slightly smaller than the diameter of the holes bored in the jamb members and is adapted to have a slip fit in a mating bore in the other of the jamb members to form the split jamb.

For a more detailed disclosure of the invention and for further objects and advantages thereof, reference is to be had to the following description taken in conjunction with the following drawings in which:

Fig. 1 is a perspective view with certain parts broken away showing the construction of a split jamb in connection with a pre-assembled door and jamb unit;

Fig. 2 is an elevational view of one of the novel dowels;

Fig. 3 is an enlarged sectional view showing one end of the dowel inserted into a bore in a jamb section; and

Fig. 4 is a sectional view taken along the lines 4—4 in Fig. 1 and showing the two sections of the split jamb in assembled relation with the improved dowel.

Referring to the drawings, there is shown in Fig. 1 a

pre-assembled door and jamb unit employing split jamb construction. Each of the side jambs comprises a pair of jamb members 10 and 11 and the head jamb comprises a pair of members 12 and 13. The jamb members 10 and 11 of each side jamb are adapted to be secured together with the new improved dowel 25, Fig. 2. The side jamb members 11, 11, Fig. 1, and the head jamb member 13, which form one section of the split jamb assembly, are adapted to have secured thereto their respective trim members 15, 16 and 17. Corresponding trim members 19, 20 and 21 are secured to the corresponding side jamb members 10, 10 and head jamb member 12 which form the other section of the split jamb assembly. The trim members are secured to the jamb sections in any suitable manner, such as by nailing. One of the side jamb members, such, for example, as member 10, is provided with hinge seat recesses which are adapted to receive hinge plates for supporting a door 22. The door 22 is provided with an opening 22*a* adapted to receive suitable hardware such as a handle and lock, not shown. The door is adapted to abut against a stop comprising two side sections and a head section which are adapted to cover the spacing between the split jamb sections, two sections of said stop being illustrated as members 23 in Figs. 1 and 4. The stop members 23 are adapted to be secured to their respective sections of the split jamb as by a plurality of nails 24.

The improved dowel 25 to be employed in the foregoing split jamb construction has been shown in detail in Fig. 2. The dowel 25 is adapted to be constructed from a metal rod such, for example, as steel and has a shoulder 26 formed intermediate the ends of the rod dividing the dowel into sections 27 and 28. It will be noted that section 28 is of shorter length than section 27 and it is by reason of the new and improved locking arrangement which enables the section 28 to be shortened and thus results in a saving of material in making the dowels. Section 28 is provided, at its outer end, with a conical surface 29 which tapers from a small diameter at the outer end 29*a* to a shoulder of larger diameter and having a sharp edge at 29*b*. The section 28 is also provided with a second conical surface 30 which is spaced from the conical surface 29 with the larger end of the conical surface 30 terminating at the shoulder 26 which separates section 28 from section 27. The two conical surfaces 29 and 30 are rigidly interconnected by means of a portion 28*a* which has a diameter corresponding to the smaller diameter ends of the conical surfaces 29 and 30. The opposite section 27 of the dowel has a smooth outer surface and its end is chamfered as at 31.

Each of the split jamb sections, respectively including members 10 and 11, is adapted to be drilled along its respective edges to provide a plurality of recesses 32 and 33 at spaced locations as shown in Figs. 1 and 4. The recesses 32 and 33 are drilled to the same depth, such depth corresponding at least to the length of the longer section 27 of the dowel 25. As may be seen in Fig. 3, in connection with bore 32, each of the holes 32 and 33 is provided at its outer end with a counter-bore or counter-sink 34 of sufficient depth to receive the enlarged shoulder 26 on the dowel 25. By drilling both of the jamb sections, including members 10 and 11, in identical manner, the dowel 25 may have either of its sections 27 or 28 inserted into either of the jamb sections. This permits greater flexibility in the manner of assembly of the units. It is, of course, understood, however, in a particular unit all of the same sections of the dowel will be inserted into the same jamb member. Thus, if section 28 is inserted into jamb member 10, then the same section of the other dowels should be inserted into jamb member 10 with the opposite sections 27 of the dowels being adapted for insertion into the mating jamb member 11.

The conical surface 29 tapers from a diameter 29*a* which is smaller than the bore of hole 32 to a diameter at its sharp edge 29*b*, which is approximately .008 inch greater than the diameter of bore 32. The upper conical surface 30 tapers from a small diameter corresponding to the diameter of portion 28*a* which interconnects the conical surfaces 29 and 30, and has a diameter smaller than the diameter of bore 32. The conical surface 30 tapers to a larger diameter adjacent the shoulder 26, such larger diameter being greater than the diameter of the bore 32. It will be noted that the only portion of the section 28 which enters the bore 32 and which is larger in diameter than the bore 32 is the sharp-edged shoulder 29*b*. Since this shoulder 29*b* is only about .008 inch greater in diameter than the bore 32, and since it is preceded by a tapered or conical surface 29, the section 28 of the dowel can be readily inserted into the bore 32 in jamb 10 with relatively small pressure.

In view of this, an operaotr can insert section 28 of the dowel into the bore in the jamb by hand and without the aid of any driving tool such, for example, as a hammer. Even though the dowel 25 is not driven in to the solid wood of the jamb, the novel construction of the dowel prevents the section 28 from being withdrawn from the bore of the jamb once it has been inserted. When the section 28 of the dowel is inserted into the bore 32, the wooden fibers tend to be pressed away from the axis of the bore 32 by the conical surface 29 and after the sharp edge 29*b* passes such fibers they tend to spring back towards the axis of the bore 32 and thus move in behind the sharp edge 29*b* as indicated at 32*a*. The wooden fibers thus cooperate with the sharp edge 29*b* to provide a locking action which holds the section 28 of the dowel within the bore 32. This locking action further arises by reason of the second conical surface 30 which is adapted to engage the bore 32 and the shoulder 26 which is adapted to engage the counterbore 34 and limit the depth penetration of the dowel section 28 into the bore 32. The conical surfaces 29 and 30 automatically center the dowel 25 within the bore 32 with the surface 30 providing a bearing for the dowel adjacent the open end of bore 32.

From the foregoing description it will be seen that the novel construction of dowel 25 represents a substantial improvement over the prior art. It permits the dowel to be inserted into the jamb by the application of only a small amount of pressure and thus the dowels may be inserted by hand without the need of a hammer or similar driving tool. This permits the assembly to be accomplished more quickly than in the past and also eliminates the possibility of splitting the jambs since the dowel is not driven into the solid wood, but merely extends into the bore in the jamb. This improved construction further insures that the dowels will project exactly perpendicular and uniformly from the edges of the jamb due to the self-centering of the spaced conical surfaces 29 and 30. It has been found in the past that with dowels in the prior art the workmen sometimes get the dowels started off-center and, as a result, they do not project exactly perpendicular from the edges of the jamb. This means that the various dowels along the jamb section will not project parallel to each other and thus create considerable difficulty when the split jamb sections are assembled with each other. Furthermore, by constructing the dowel from metal, or material having similar characteristics, there is eliminated the difficulty experienced in the past with the assembly of jamb sections with wooden dowels.

In one embodiment of the invention, the length of section 27 was about two inches and the depth of the holes 32 and 33 was also about two inches. The length of section 28 of the dowel was approximately one inch. The diameter of dowel section 27 was approximately 3/16 inch with the diameter of bores 32 and 33 being slightly greater to provide a slip fit of section 27 within one of the bores. The sharp edge shoulder 29*b* on section 28 had a diameter about .008 inch greater than the diameter

of the bores in the jambs. Dowels of such dimensions have been successfully used with split jamb members made from wood, such as pine, and fir, varying in width from 1¾ inches to 2¾ inches and with various combinations thereof.

To complete the assembly of the door and jamb unit after the sections 28 of the dowels have been inserted into the split jamb section which includes jamb member 10 as shown in Fig. 3, the other jamb section including jamb members 11 is assembled therewith, Figs. 1 and 4, the smooth section 27 of the dowels being inserted into the mating holes 33 in jamb section which includes jamb members 11. The door stop members 23, when secured to the respective split jamb sections as by nails 24, will hold the sections securely together.

The present invention has been described in connection with a pre-assembled door unit and has particular utility in this connection. Pre-assembled door units are extensively employed in construction today because they provide a properly hung door at a minimum cost. In order for the cost to be kept low, it is necessary that the units be adapted for assembly by the manufacturer in a minimum amount of time. It is further necessary that these units be adapted for rapid disassembly and re-assembly by the builder when the units are being installed on the construction job. Applicant's invention enables the time for performing all of these operations to be minimized and thus contributes to a substantial saving in cost for the units.

While a preferred embodiment of this invention has been illustrated, it is to be understood that other modifications may be made within the scope of the appended claims, including the embodiment disclosed in my parent application, Serial No. 585,086, now abandoned in favor of the present application.

What is claimed is:

1. A split jamb assembly of variable width to accommodate walls of varying thickness comprising a pair of split jamb sections each including a pair of side jamb members connected at one end by a head member and together forming a three-sided frame for a door, each of said jamb members having a plurality of blind holes spaced lengthwise of an edge thereof and of substantial depth and in alignment with the blind holes in the opposing jamb member, a plurality of metal dowels one in each pair of said aligned holes, each said dowel having a locking end-portion and a bearing end-portion and outwardly extending shoulder structure intermediate said end-portions, said locking end-portion of each said metal dowel having outwardly extending projecting structure in interlocking engagement with a first one of said jamb sections when driven into said blind holes to prevent displacement of said dowels therefrom, said shoulder structure when one end of each of said dowels is driven into said holes forming a stop for said dowels by its engagement with the edge of said first one of said jamb sections, and door-stopping means comprising strip structure secured to one of said pair of jamb sections, said strip structure having a width adequate to overlap the space between said sections of said jamb assembly when spaced apart in matching relationship with a wall of given thickness, said bearing end-portions of said dowels extending into said blind holes of the other said jamb section for slidably supporting one of said jamb sections for slidable movement towards and away from the other of said jamb sections in accommodation of the total thickness of the jamb in respect to a given wall thickness, said bearing end-portions of said dowels being of substantial length to provide a range of separation distances between said jamb sections, said strip structure being nailable to said other of said jamb sections when in a selected position within said range, said bearing end-portions of said dowels having a smooth outer surface and a slightly reduced diameter to provide slip-fit bearing surfaces for the jamb section supported thereon.

2. The split jamb assembly of claim 1 in which at least one of said jamb sections has a counterbore at each of said holes of depth to receive said shoulder structure to permit adjustment of said two jamb sections into contacting face-to-face relationship for maximum overlap of said door stopping strip structure.

3. A split jamb assembly according to claim 1 wherein said outwardly extending projecting structure on said locking end-portion of each of said metal dowels comprises a conical surface at the outer end of said locking end-portion which tapers from a small diameter at said outer end to a larger diameter at the inner end of said conical surface, said inner end of said conical surface forming a relatively sharp edge having a diameter greater than the diameter of said blind holes in said first one of said jamb sections, said sharp edge being adapted to cooperate with the wood fibers in the corresponding one of said blind holes to lock said locking end-portion in said first one of said jamb sections.

4. A split jamb assembly according to claim 3 wherein said locking end-portion of each of said metal dowels includes a second conical surface, said second conical surface being disposed adjacent said shoulder structure and tapering from a diameter smaller than the diameter of said blind holes in said first one of said jamb sections to a diameter greater than said blind holes therein, said conical surfaces being separated from each other by a rigid portion having a diameter smaller than the diameter of said blind holes, said second conical surface being adapted to provide a bearing surface for cooperation with the surface of said first one of said jamb sections adjacent the outer end of the corresponding one of said blind holes.

5. A split jamb assembly according to claim 1 wherein said locking end-portion comprises spaced conical surfaces thereon separated by a portion having a diameter corresponding to the smaller ends of said conical surfaces, said conical surfaces tapering towards said shoulder structure to a diameter larger than the diameter of said bearing end-portion of said metal dowels to provide surfaces for automatically centering and locking said locking end-portion of said dowels to said first one of said jamb sections.

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