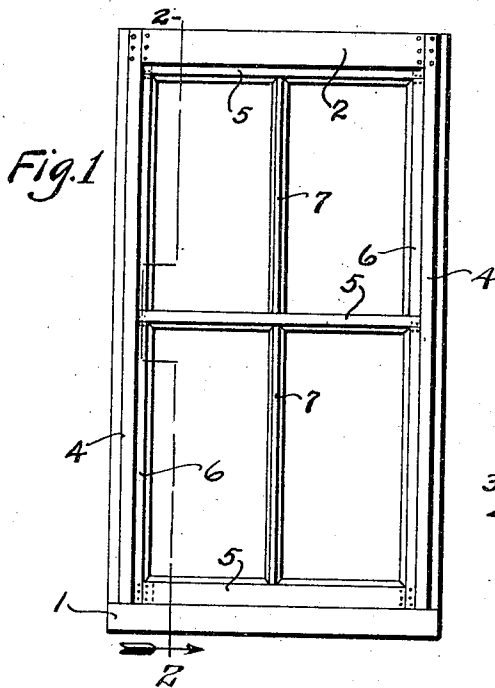
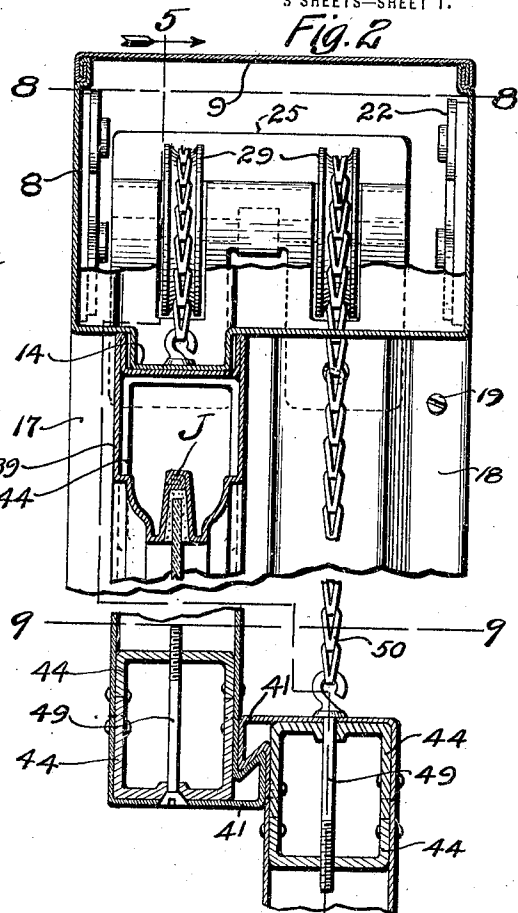
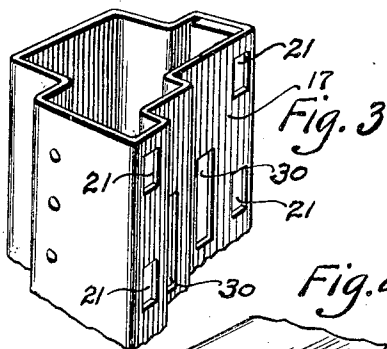
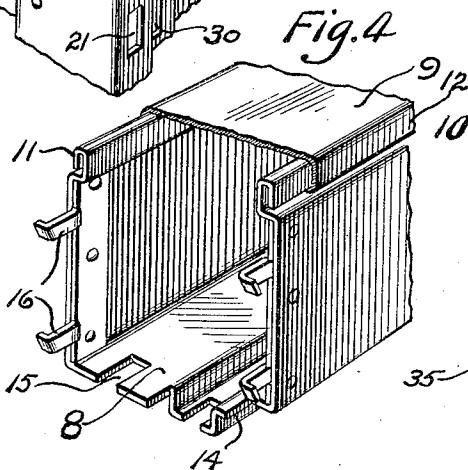
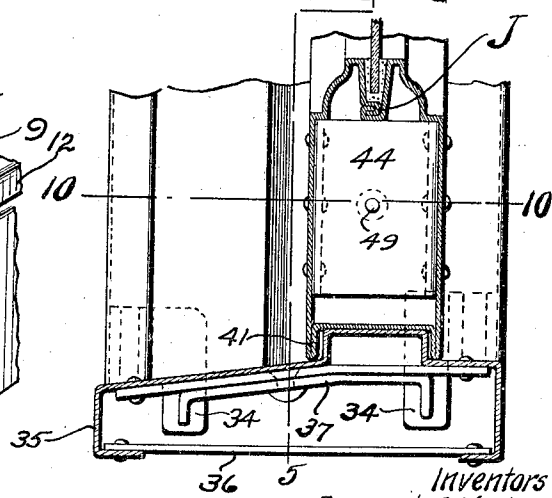


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METALLIC WINDOW CONSTRUCTION.
APPLICATION FILED JULY 7, 1916.

1,327,441.

Patented Jan. 6, 1920.

3 SHEETS—SHEET 1.



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By

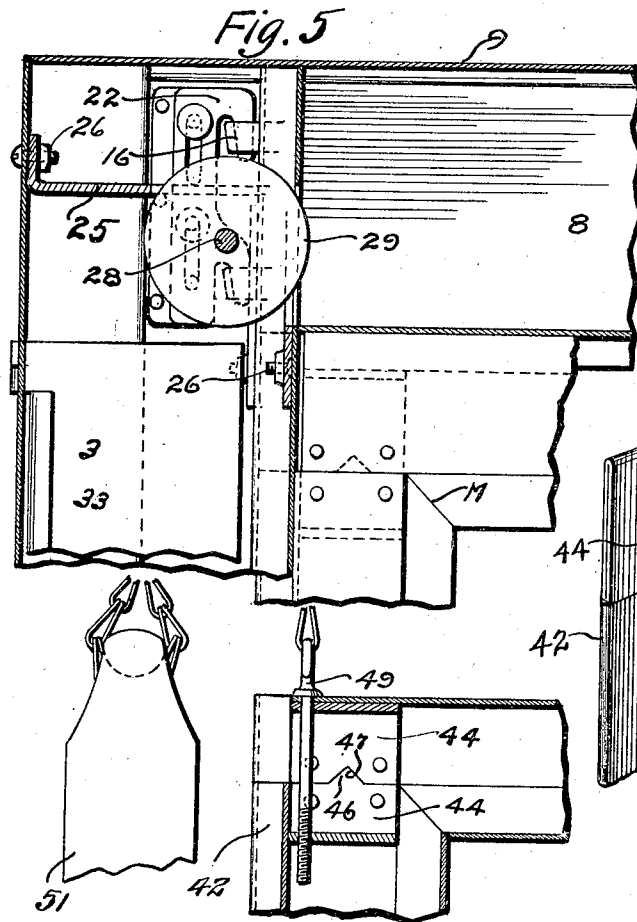
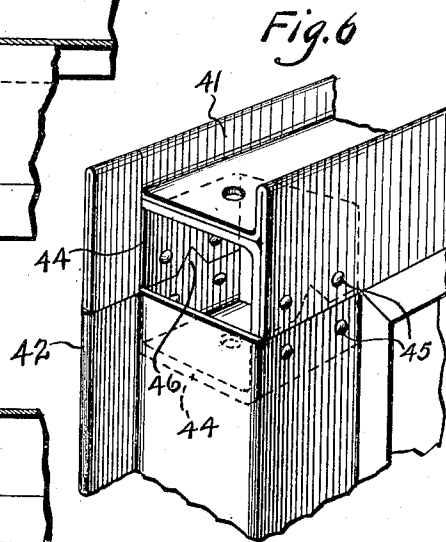
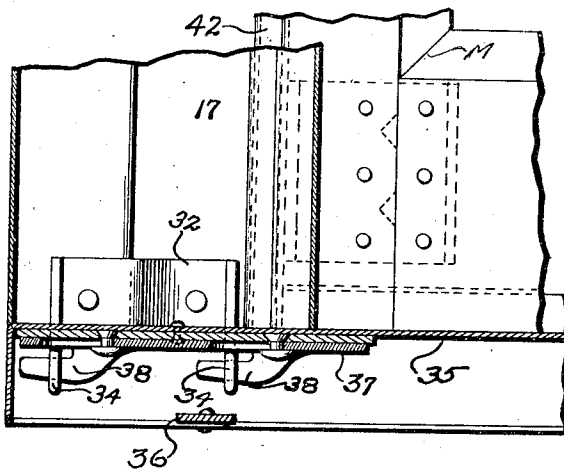
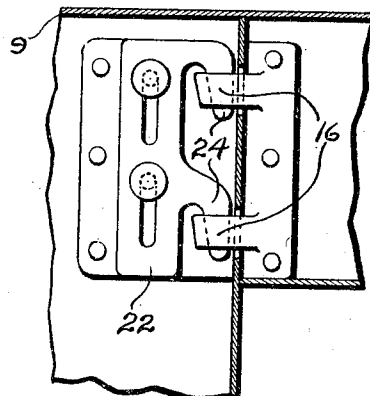
J. Cornwall atty

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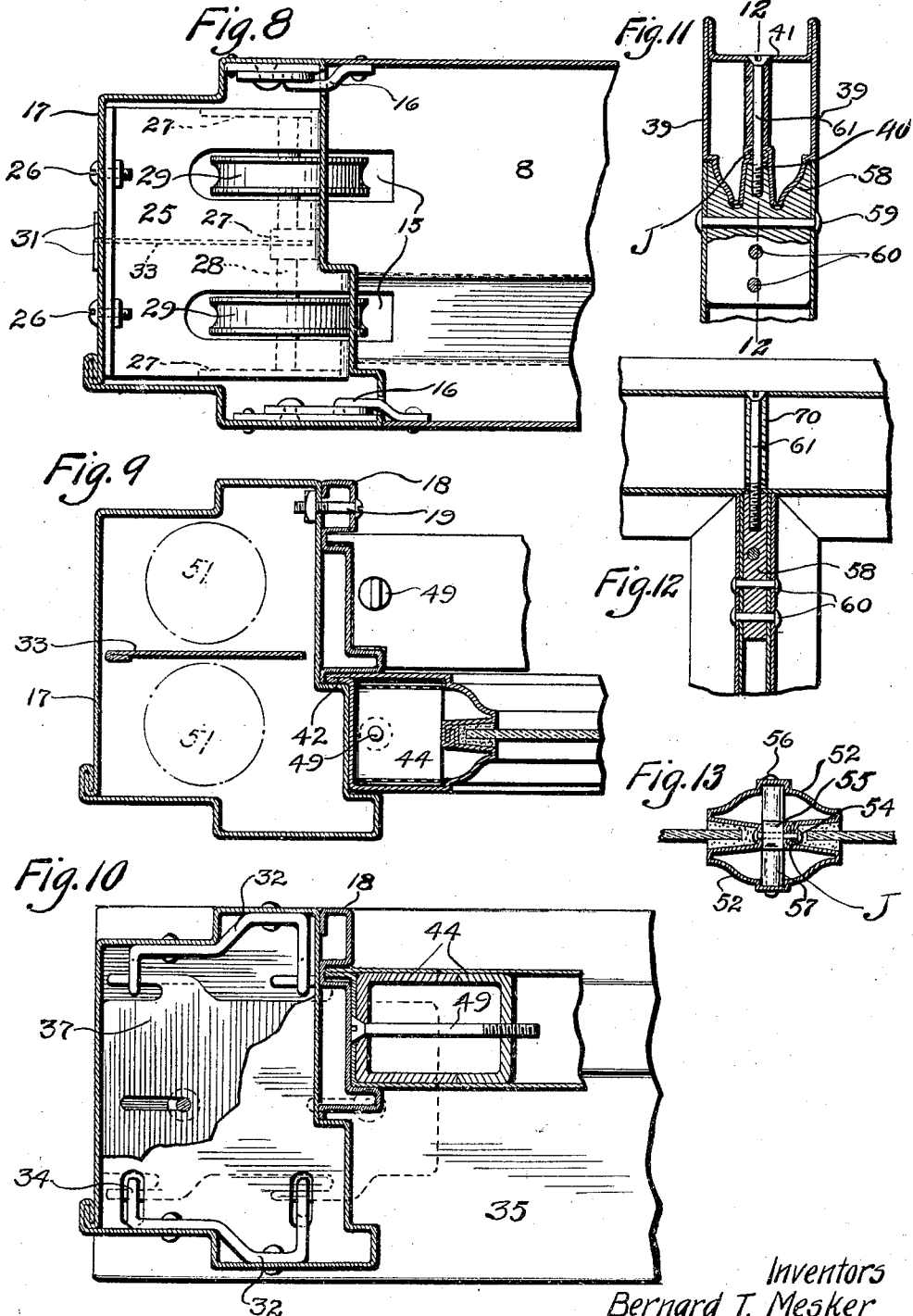
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

BERNARD T. MESKER AND CLARENCE E. SMITH, OF ST. LOUIS, MISSOURI, ASSIGNORS TO
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METALLIC WINDOW CONSTRUCTION.

1,327,441.

Specification of Letters Patent.

Patented Jan. 6, 1920.

Application filed July 7, 1916. Serial No. 107,942.

To all whom it may concern:

Be it known that we, BERNARD T. MESKER and CLARENCE E. SMITH, citizens of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Metallic Window Constructions, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to metallic building structures, and more specifically to hollow metal frame and sash construction for wall openings.

For the purpose of illustration and disclosure, we herein show and describe a window frame and sash construction, although it is obvious that the invention is not confined to window construction, but is equally applicable to door, skylight, and other constructions.

The objects of this invention are to provide a fire proof or fire retardant construction which will be strong and rigid and which will retain its shape and integrity when subjected to high temperatures such as would be occasioned by fire; to provide such a structure which may be completely fabricated in a shop and shipped in knocked-down condition, the construction being such as to enable the rapid, accurate and facile assembling of the structure by a mechanic at the place of installation; to do away with the necessity for riveting in the assembling of the structure; and to reduce the cost of construction.

Other objects contemplate the provision of a hollow metal frame and sash construction in which the joints or seams are so disposed as to be most fully protected from weather, and also to provide a construction wherein external joints are so devised as to obviate the necessity of soldering the edges of the sheet metal for the purpose of weather protection, our construction being of such nature that all external joints and edges are fully protected from weather and corrosion when painted.

Other and further objects will be obvious or hereinafter pointed out.

For the purpose of illustration, we have shown in the accompanying drawings a window of the double hung type with vertically sliding sash each of which is counter-balanced by its own system of weights and suitably glazed.

In said drawings,—

Figure 1 is an elevational view of the inside or chamber side of a window frame and sash of our improved construction.

Fig. 2 is a fragmentary detail of the various members in section on line 2—2 of Fig. 1, the various portions thereof being broken away.

Fig. 3 is a perspective showing the upper end of one of the vertical frame members.

Fig. 4 is a perspective showing the end of the head member of the frame.

Fig. 5 is a vertical section substantially on line 5—5 of Fig. 2.

Fig. 6 is a perspective showing the corner construction of the sash.

Fig. 7 is a detail illustrating the method of securing the head frame member to the jambs.

Fig. 8 is a horizontal section approximately on line 8—8 of Fig. 2.

Fig. 9 is a horizontal section approximately on line 9—9 of Fig. 2.

Fig. 10 is a horizontal section approximately on line 10—10 of Fig. 2.

Fig. 11 is a sectional detail illustrating the connection between a stile or rail member and a muntin.

Fig. 12 is a section of the same construction approximately on line 12—12 of Fig. 11.

Fig. 13 is a cross section of the muntin.

By reference to these drawings, it will be seen that the frame is made up of a sill 1, a lintel or head 2, and jambs 4. The sash is made up of rails 5, stiles 6, and muntins 7. These members are all made up of sheet metal parts suitably shaped and secured together.

The head or lintel, as will be best seen in Figs. 2, 4 and 5 and 8 is made up of a hollow rail 8 and top member 9. The rail is shaped to form the lintel for the frame and side portions extending up therefrom. Its upper edges are turned over to form hook members 11 which are adapted to interengage with similar hook members 12, on the top member 9 whereby to secure the two

head members together, the top member co-operating with the upper edges of the lintel member to hold them properly spaced apart, and form a closure and the fourth side of the head member. The top member 9 is slid into position on the lintel from the end. The lintel is shaped to provide a weather lap 14 for the sash and is pierced with slots 15 for the passage of the suspension chains. At the ends the lintel is provided with extending lugs 16, the ends of which are bent laterally and inclined so as to provide beveled inner faces.

The jambs, as will be best seen in Figs. 2, 3, 5, and 7 to 10 inclusive, are made of two pieces, one forming the face, sides and back, and hereinafter referred to as the face piece 17, and the other being a removable stop strip 18 which is secured to the face of the jamb with screws 19 (see particularly Figs. 9 and 10), the stop strip 18 terminating at the bottom of the head member 8. The face member 17 is provided with apertures 21 through which the lugs 16 of the lintel are adapted to pass when the jamb and head are disposed in assembled relationship. On the inner sides of the face member 17 are slidable plates 22, from one end of each of which projects a pair of locking wedges 24 which are adapted to engage the beveled inner faces on the laterally turned ends of the lugs 16. When driven into engagement with the lugs 16, the wedges 24 on locking plate 22 will draw the lintel firmly against the face member forming a very rigid butt joint. The top member 9 when slid into engagement with the lintel and against the end of the jamb, likewise stiffens the joint between the lintel and jamb members.

In the upper portion of the jamb member is a bracket 25 secured thereto by bolts 26, and formed with ears 27, in which is supported the spindle 28, carrying the chain sheaves 29. The sheaves project through apertures 30 in the face member above the slots 15 of the lintel. Below bracket 25 the jamb is divided into two compartments by a partition member 33 which is secured in place by small extensions 31 which are projected through slots in the outer portion of the face member, and then turned over on the outside.

At its lower extremity, the jamb is provided with keeper members 32 riveted on the interior thereof, which keeper members have slot or eye portions 34 projecting beyond the lower extremity of the face member (see particularly Figs. 2, 5 and 10).

The sill is formed of a sheet 35 suitably shaped into top and side portions, the margins of which are tied together at intervals by tie strips 36. At the ends of the sill member and to its underside are secured sliding lock plates 37 provided with wedge members 38. Above these wedge members,

the plate 35 is slotted for the passage of the eye members 34. When the jambs are disposed upon the sill, and the eye members 34 projected through the slots, the wedge member 38 may be driven into engagement with the eye members 34, drawing the jambs and sill firmly together to form a tight joint.

The rails, as will be best seen in Figs. 2, 5, 6 and 12, are formed of a single piece of metal shaped to form sides 39, a glass groove 40, and weather lock 41. In the case of the top and bottom rails the weather lock is opposite the glass groove, while in the case of the meeting rails it is formed on the side (see Fig. 2); in the case of the top and meeting rails the ends of the rails overlap the stiles, while in the case of the bottom rail, the ends of the rail abut the stiles. The joints between the rails and stiles are square except in the portions forming the glass groove where the joint is mitered as shown at M in Fig. 5.

The stiles are each made of one piece of sheet metal shaped to form the groove, sides and back. The seams in the rails and stiles are in the form of hook joints J which are disposed along the bottoms of the glass grooves, in which position said seams are completely protected from the weather, both by their interior position, and by the putty with which the glass grooves are filled when the sash is installed. The back is shaped to form the flange 42 which engages the jamb to hold the sash in place. At their meeting extremities the rails and stiles are provided with joint members 44 secured in place by rivets 45 and provided with registering tongue 46 and groove 47. These joint members are U-shaped so that a registering tongue and groove is provided on each side. When the rails and stiles are placed together in assembled position, the engaging joint members and the side portions prevent sliding displacement and a bolt 49 inserted through a suitable aperture in one of the joint members and threaded into the cooperating joint member, is employed to draw and clamp the rails and stiles firmly together. In the case of the meeting rail of the lower sash, these bolts 49 are eye bolts or hooks to provide attachment for the suspension chains 50, as best illustrated in Fig. 2. These chains pass over the sheaves 29 and carry suspension weights 51 which operate within the compartments of the jamb. The muntins, as will be best seen in Figs. 11 to 13 inclusive, are each made of one piece of sheet metal which is shaped to form face portions 52 and intermediate oppositely disposed glass grooves, the seam, as in the case of the rails and stiles, being disposed along the bottom of one of the grooves. Rivets 54 passing through spacers 55 are disposed at intervals in the bottoms of the glass grooves so as to provide stiffening and

strengthening connections, and other rivets 56 passing through spacers 57 secure the face portions 52 together at intervals, said rivets extending transversely of the rivets 54. At the ends of the muntins a plate 58 is inserted, the same being formed to fit over the groove-forming members of the rails and stiles and to project into the glass slot. These plates 58 are secured to and between the face portions 52 by rivets 59 and 60. The muntins are secured to rails or stiles by the screw 61 seated in the groove portion of the rail or stile and in the plate 58.

From the foregoing description, it will be seen that the various members of the frame or sash, such as the jambs, head, sill, rails, stiles and muntins may be made complete in proper size in a factory, and shipped in knocked-down condition. When it is desired to install the structure, the frame is quickly and easily put together by fitting the jambs to the sill by means of eye members 34 and locking plates 37, as above described; then assembling the sash by connecting the lower rails, stiles and muntins, as above described, sliding the glass into the glass grooves and then applying the upper rails and securing them in the manner described. Thereupon, the sash are slid into their proper grooves in the jambs, the suspension chains and weights rigged and finally the head 9 placed and secured in position to close the frame. Thereupon, the frame may be set in the masonry.

The frame and sash, as thus constructed, while susceptible of quick and easy assembling, is exceptionally strong and rigid. Furthermore, it provides a superior fire proof and fire retardant closure. The flange and groove interlocking construction between the frame and the sash, and between the meeting rails provides close fire locks along the lines of separation. The sash may be easily removed for reglazing by removing the bolts 19 and taking out sash stop 18 along with the lower sash, thus permitting the removal of the upper sash. Furthermore, the structure is water tight, particularly if red lead is applied at the joints when assembling, and the structure presents a graceful and pleasing appearance. All of the joints which are externally exposed, such as the joints between rails and stiles, between muntins and rails, and between the vertical and horizontal members of the casing, are close butt joints, the edge of the metal on one of the joining members abutting the edge of the metal on the other. Thus the joint presents a perfectly smooth exterior surface, which may be smoothly painted, and which when so painted is fully protected from the weather. In this fashion, soldering of these joints along the edges of the metal for protection from weather, as is

necessary in the case of lap joints, is obviated.

We are aware that the construction herein illustrated and described may be varied in numerous particulars without departing from the scope of our invention as defined by the appended claims.

We claim:

1. In a structure of the class described, hollow jamb and head members disposed in abutting relationship, one of said members being provided with apertures through an outer wall thereof, the other of said members being provided with projections insertible through said apertures, which projections are provided with beveled shoulders, and wedging means slidably mounted within the apertured member and movable into engagement with the beveled shoulders on said projections whereby to draw said members together and secure them in assembled relationship.

2. In a structure of the class described, hollow members arranged with the end of one member abutting a side of the other member, said members being provided with registering projections and apertures, said projections being provided with beveled shoulders, and adjustable wedging means mounted within one of said members and movable into engagement with the beveled shoulders on said projections for the purpose of drawing and securing the members together.

3. In a structure of the class described, the combination of hollow abutting members, one of said members being provided with wedge members mounted movably therein, the other of said members being provided with projections having beveled shoulders adapted for engagement by said wedge members for securing the members together in abutted position.

4. In a structure of the class described, the combination of hollow abutting members, the wall of one of said members being provided with apertures, a plate mounted for sliding movement within the apertured member, wedges on said plate, projections on the other one of the hollow abutting members, said projections adapted to be inserted through the apertures in the other member, and said projections being provided with inclined shoulders with which the wedges on the sliding plate are adapted to engage.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses, this third day of July, 1916.

B. T. MESKER.
C. E. SMITH.

Witnesses:

H. G. J. MEES,
T. D. BRYAN.