

1,022,448.

Patented Apr. 9, 1912.

2 SHEETS—SHEET 1.

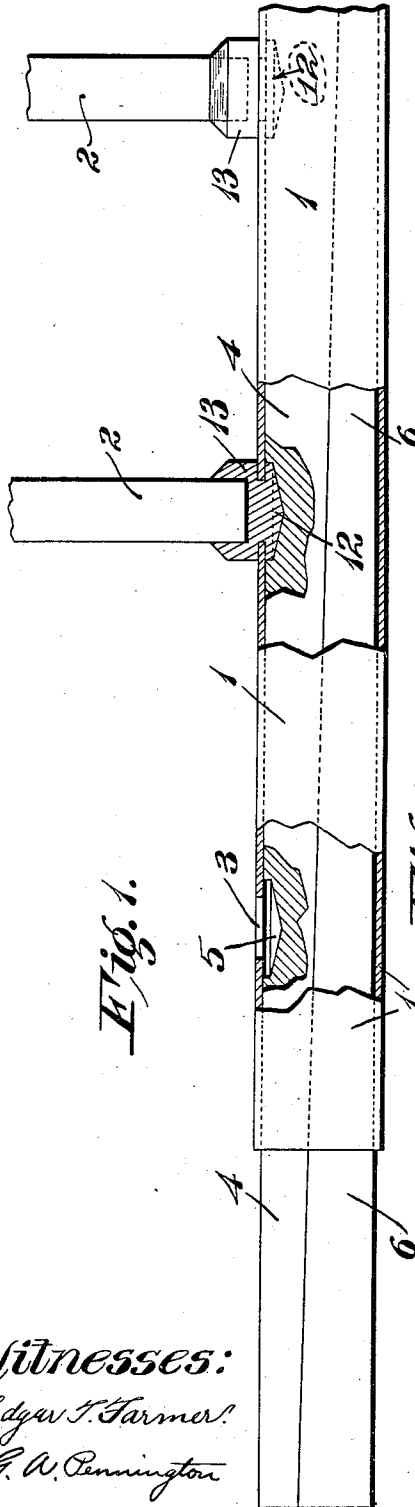


Fig. 1.

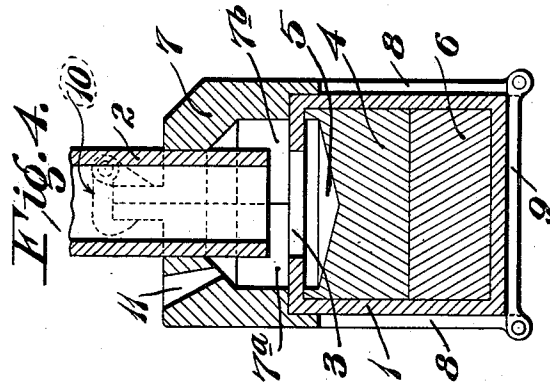


Fig. 4.

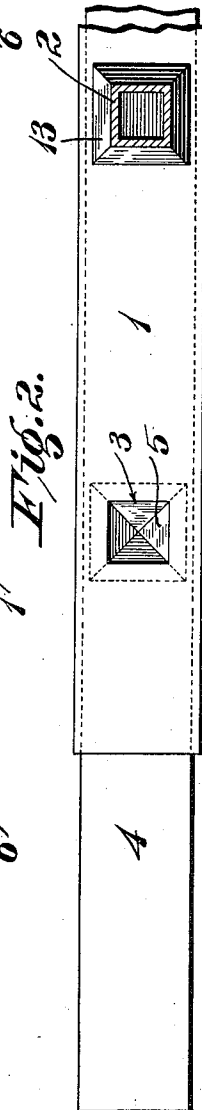


Fig. 2.

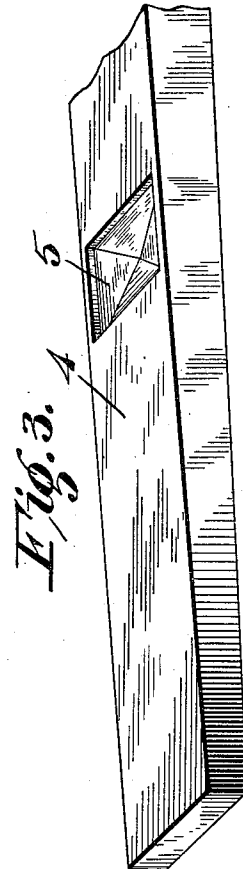


Fig. 3.

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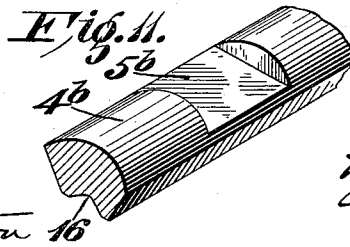
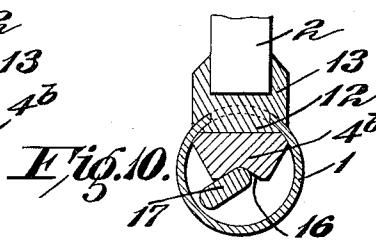
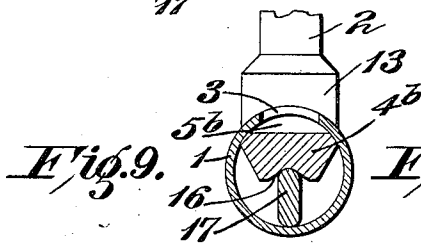
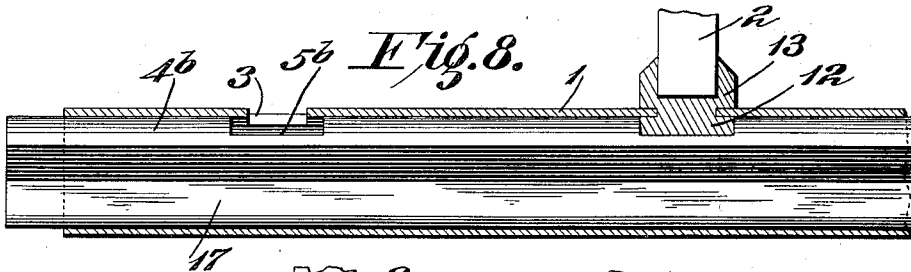
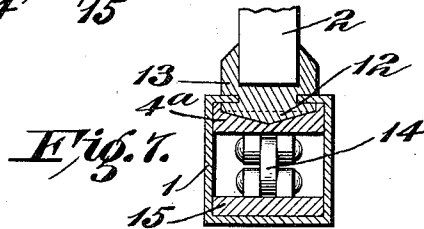
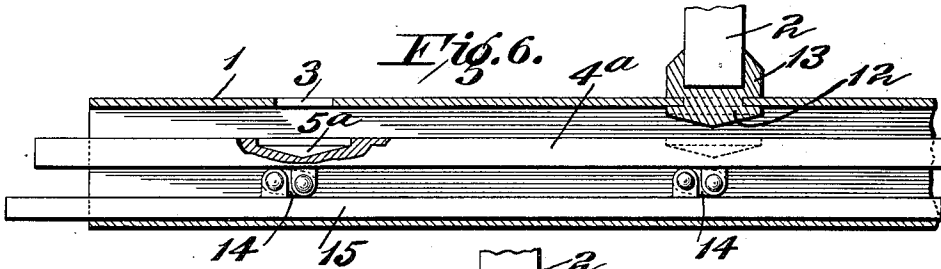
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F. B. UPTON.
 FRAME CONSTRUCTION.
 APPLICATION FILED JUNE 15, 1910:

1,022,448.

Patented Apr. 9, 1912.

2 SHEETS-SHEET 2.



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UNITED STATES PATENT OFFICE.

FRANK B. UPTON, OF CHATTANOOGA, TENNESSEE, ASSIGNOR OF ONE-FOURTH TO
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FRAME CONSTRUCTION.

1,022,448.

Specification of Letters Patent.

Patented Apr. 9, 1912.

Application filed June 15, 1910. Serial No. 566,905.

To all whom it may concern:

Be it known that I, FRANK B. UPTON, a citizen of the United States, and a resident of the city of Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Improvement in Frame Constructions, of which the following is a specification.

This invention relates to metal frame constructions for bedsteads and other structures.

It has for its principal objects to secure a simple, inexpensive, rigid and durable connection between a tubular member and the end of a laterally disposed frame member, and to secure certain advantages hereinafter more fully appearing.

The invention consists in the parts and in the arrangements and combinations of parts hereinafter described and claimed.

In the accompanying drawings which form part of this specification and wherein like symbols refer to like parts wherever they occur, Figure 1 is a fragmentary view, partly in elevation and partly in section, showing the manner of constructing a frame according to my invention; Fig. 2 is a fragmentary plan view; Fig. 3 is a fragmentary perspective view of the mold member which is inserted in the tube; Fig. 4 is a sectional view on an enlarged scale showing the co-operative relation of the mold members and the parts to be joined together; Fig. 5 is a view partly in longitudinal section and partly in side elevation showing a modification of the mold device for the interior of the tube; Fig. 6 is a view similar to Fig. 5 showing the mold device in collapsed condition; Fig. 7 is a transverse section through the frame tube and cast metal joint, showing the mold members in the position they occupy in Fig. 5; Fig. 8 is a longitudinal section showing a further modification of the device; Figs. 9 and 10 are transverse sections of the modification illustrated in Fig. 8, showing the manner in which the mold device is applied and removed; and Fig. 11 is a fragmentary perspective view of the mold member shown in Figs. 8 to 10, inclusive.

In the drawings, a portion of a frame is illustrated as comprising a tubular side member 1 and lateral or cross members 2 connected thereto. The tube 1 may be of round or square section and the members 2 may be either square or round, and solid or

tubular, as desired; or the members 2 may be of angle iron section if desirable.

The tube 1 is provided with openings 3 in its side wall at the point or points where the connections are to be made. A removable and indestructible chill or mold member 4 having depressions 5 therein is inserted into the tube 1 so that said depressions register with the openings 3. The area of the depressions 5 in the mold member is greater than that of the respective openings 3 in the tube 1. As shown in Figs. 1 to 4, inclusive, the mold member 4 is held securely in place against the adjacent side of the tube by a securing wedge 6 which is inserted between the mold member and the opposite side of the tube. The opposite outer faces of the members 4 and 6 are straight and parallel with each other and preferably exact counterparts of the interior of the tube adjacent to the openings 3 and their coöperating inner faces are tapered correspondingly so as to be counterparts.

A removable chill or mold box 7 is fitted over the outside of the tube 1 and it is arranged so that it surrounds and engages the end of the member 2 and supports the same in proper position with respect to the hole 3 in the tube 1, in which position the member 2 is to be secured to the tube. This chill or mold box 7 may be of any suitable construction. As shown in the drawings, it comprises two half sections 7^a, 7^b, having downward extensions 8 which are pivotally connected to the opposite ends, respectively, of a cross connecting member 9 which fits against the side of the tube 1 opposite to that on which the mold box proper is mounted. The half sections 7^a, 7^b, are secured together by hooks 10 or any other suitable securing devices. The mold box is provided with a sprue hole 11 through which molten metal is poured into the mold.

The body of metal which is poured into the mold flows into and fills the pocket 5 and thereby forms an interlocking retaining button or head 12 inside the tube 1 integrally on a block of metal 13 which surrounds and unites with the end of the member 2 and also unites with the tube 1. By this construction, a rigid and durable connection is made which is much lighter than if the metal casting were extended around the outside of the tube 1 to secure a bond

therewith. It is, of course, understood that the interior of the external mold box or chill and sides and bottom of the cavity in the removable mold member which is placed
5 in the tube, are coated with graphite or otherwise suitably treated to prevent the cast metal from fusing therewith.

In Figs. 5 to 7, inclusive, a modification of the mold member which is inserted in
10 the tube 1 is illustrated as comprising a flat rectangular bar 4^a having pockets or depressions 5^a therein. This member 4^a is pivotally connected by parallel links 14 to a parallel securing bar 15. By this construction,
15 a collapsible device is provided which may be readily inserted into the tube 1 in collapsed condition, as shown in Fig. 6, and then expanded into the position shown in Fig. 5. The device may be readily removed
20 after the castings have been completed by moving the member 15 endwise and permitting the member 4^a to drop free of the button or head 12 of the casting inside the tube 1.

As shown in Figs. 8 to 10, inclusive, the tube 1 is cylindrical. In this modification, a segmental bar 4^b is provided with notched portions or gains 5^b, and the rounded portion of the bar corresponds to the interior
25 curvature of the tube or, in other words, is substantially a counterpart thereof. In the bottom of a bar 4^b is formed a longitudinal groove 16 having a rounded bottom and flaring sides. A bar 17 having rounded
30 edge portions is arranged so that one edge can be seated in the groove in the bottom of the bar 4^b and its opposite edge bears against the bottom of the lowermost portion of the inner side of the tube 1 when said
35 bar is set on edge as shown in Figs. 8 and 9, so as to hold the mold member 4^b in position in the tube 1. In applying the device, the bar or member 4^b is inserted into the tube 1 so that the respective notches or gains
40 5^b register with the openings 3 in the tube. The bar 17 is then inserted in angular position as shown in Fig. 10 and then rocked to the vertical position shown in Fig. 9. After the castings have been completed, the
45 bar 17 is removed to permit the member 4^b to drop free of the button 12 on the casting 13 and the member is then readily removable from the tube 1.

Obviously the device admits of considerable modification without departing from my invention. Therefore, I do not wish to be limited to the specific construction and arrangement shown.

What I claim is:

60 1. The combination with a tubular metal frame member having an opening in its wall at its point of connection with a lateral frame member, of a collapsible and indestructible mold member insertible and re-
65 movable in said tube and having a recess

therein approximately coincident with the opening in the wall of said tube, substantially as and for the purpose set forth.

2. The combination with a tubular metal frame member having an opening in its wall
70 at its point of connection with a lateral frame member, of an indestructible mold member insertible and removable in said tube, said mold member having a portion which is a counterpart of the inside of the
75 tube adjacent to said opening therein, and said mold member having a recess approximately coincident with said opening, and a collapsible device for releasably holding said mold member in contact with the wall of
80 said tube.

3. The combination with a tubular metal frame member adapted for connection with the ends of lateral frame members, said tube having openings in its wall or walls at its
85 places of connection with the respective lateral frame members, of a mold member insertible and removable in said tube and having a series of recesses therein approximately coincident with the respective open-
90 ings in the wall or walls of said tube, and a collapsible device adapted to hold said mold member in operative position in said tube, substantially as and for the purposes
95 specified.

4. The combination with a tubular metal frame member having an opening in its wall at its point of connection with a lateral frame member, of a collapsible mold member having a portion which is a counterpart
100 of the interior of said tube adjacent to said opening therein, and said mold member having a recess in said counterpart portion approximately coincident with the opening in the wall of said tube.
105

5. In a metal frame construction, the combination with a tubular member having an opening in its wall and a lateral member to be secured to said tubular member at the place where the opening therein is located,
110 of a mold box detachably secured to said tubular member and to said lateral member so as to position said members with respect to each other and to form a mold external of said members, a removable member inserted in said tubular member and having a mold pattern adapted to cover the opening
115 in said tubular member so as to cooperate with said external mold to complete the mold for an interlocking cast metal connection between said tubular member and said lateral member, and releasable means for holding said removable member in engagement with said tubular member.
120

6. In a metal frame construction, the combination with a tubular member having
125 an opening in its wall and a lateral member to be secured to said tubular member at the point where the opening therein is located, of an external mold detachably secured to
130

said tubular member and to said lateral member so as to position said members with respect to each other and to form a cast metal connecting body between said tubular member and said lateral member, and a removable member inserted in said tubular member and having a pocket arranged and adapted to register with the openings in said tubular member and to cooperate with said external mold whereby an integral interlocking portion is formed on said cast metal connecting body inside of the tubular member.

7. In a metal frame construction, the combination with a tubular member having an opening in its wall and a lateral member to be secured to said tubular member at the point where the opening therein is located, of a removable mold member inserted in said tubular member, said removable mold member having a pocket arranged and adapted to register with the opening in said tubular

member so as to form an interlocking portion on the inside of said tubular member integrally with a cast metal connecting body which is external of the tubular member.

8. The combination with a tube having an opening in its wall, of an indestructible mold element insertible into said tube endwise thereof, said mold element having a recessed portion approximately coincident with the opening in the wall of said tube, and means for releasably holding said mold element with its recessed portion in cooperative relation to the wall of the tube adjacent to the opening therein so as to constitute a mold box.

Signed at Chattanooga, Tennessee, this 1st day of June, 1910.

FRANK B. UPTON.

Witnesses:

L. G. BROWNE,
H. T. SHELTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."