

No. 640,123.

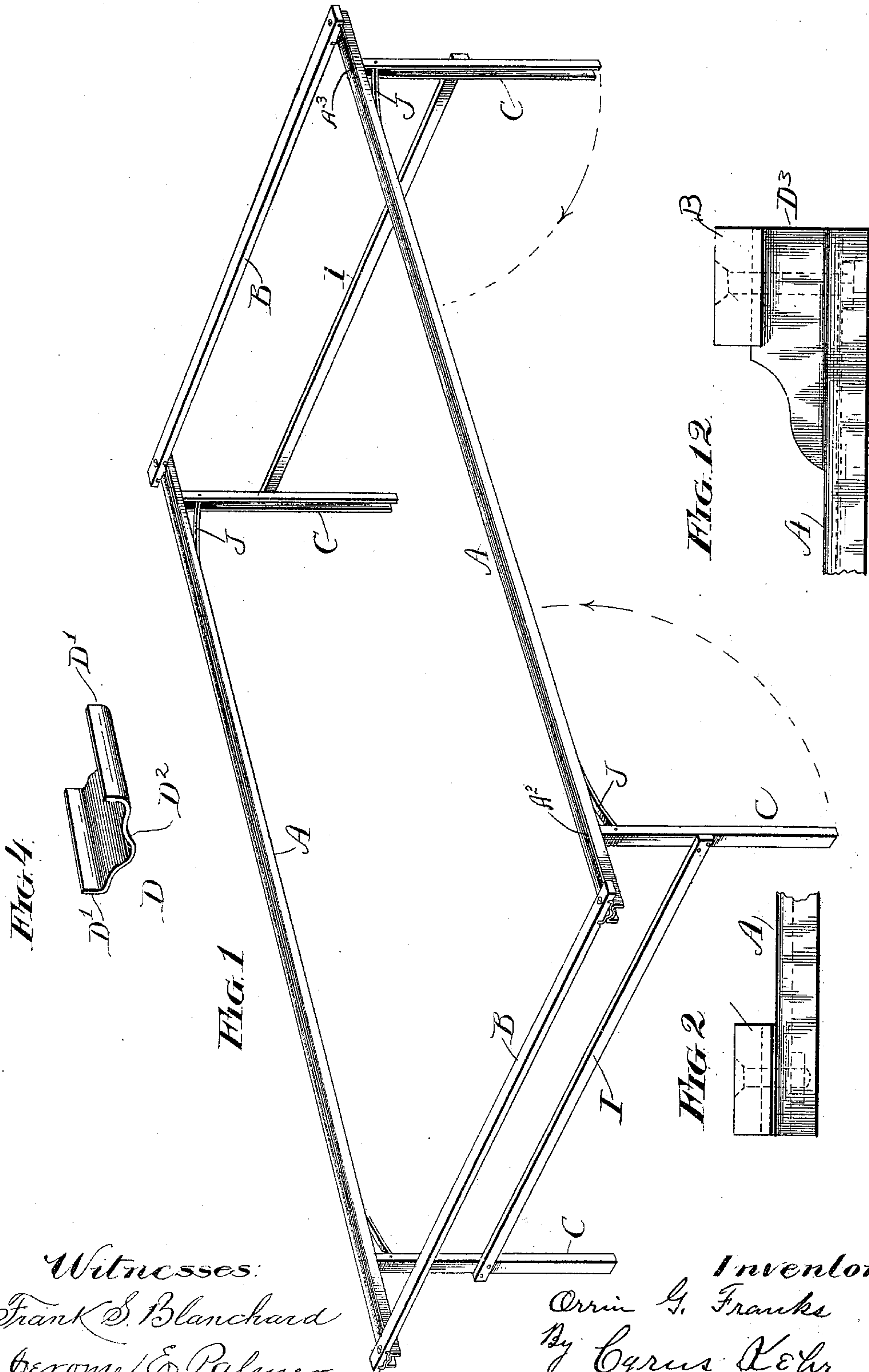
Patented Dec. 26, 1899.

O. G. FRANKS.  
FURNITURE FRAME.

(Application filed Aug. 14, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:  
Frank S. Blanchard  
Jerome E. Palmer.

Inventor:  
Orvin G. Franks  
By Cyrus Kehr  
Atty.

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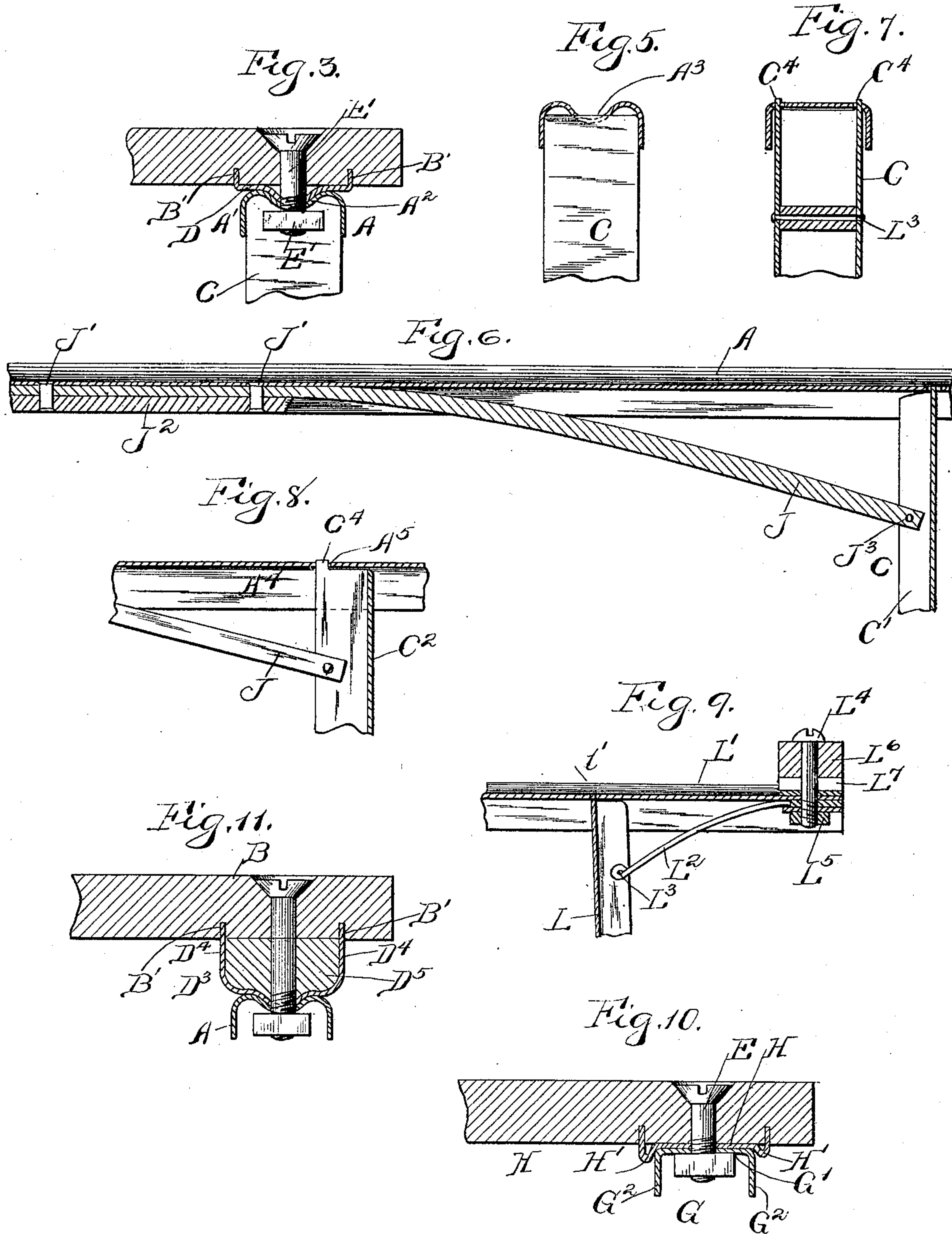
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Orrin G. Franks  
By Cyrus K. L. W.  
Atty.



# UNITED STATES PATENT OFFICE.

ORRIN G. FRANKS, OF BUFFALO, NEW YORK.

## FURNITURE-FRAME.

SPECIFICATION forming part of Letters Patent No. 640,123, dated December 26, 1899.

Application filed August 14, 1899. Serial No. 727,102. (No model.)

*To all whom it may concern:*

Be it known that I, ORRIN G. FRANKS, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Furniture-Frames, of which the following is a specification.

My invention relates particularly to frames for such pieces of furniture as bed-bottoms, cots, tables, benches, chairs, and stools.

The improvement is well adapted to folding furniture and to furniture which is to be shipped in knockdown form.

The object of the invention is to produce a construction embodying the qualities of rigidity and lightness and which may be made at a comparatively low cost.

In the accompanying drawings, Figure 1 is a perspective view of a frame embodying my improvement. Fig. 2 is an elevation of a corner. Fig. 3 is a sectional view of a corner-joint. Fig. 4 is a perspective of a corner-plate. Figs. 5, 6, 7, 8, and 9 are detail views illustrating folding legs of the frame. Figs. 10, 11, and 12 illustrate modifications of the corner-joints.

Referring first to Fig. 1 of said drawings, the frame shown by said figure may be the frame of a bed or cot or of a table or bench or other similar piece of furniture. For the sake of convenience I will describe it as being the frame of a cot having folding legs.

A A are the side rails. B B are the end rails. C C are the legs. The side rails are made of channel-iron, the channel being turned downward. The end rails B are composed of wood having plain lower faces and placed on top of the side rails and secured to the latter by the joint illustrated by Figs. 2 and 3. Each side rail has the lateral depending flange A' and the back or web A<sup>2</sup>, which is depressed along its middle, as seen best in Fig. 3.

D is a corner-plate placed between the end rail and the side rail for the purpose of effecting an engagement between said end rail and said side rail. Said corner-plate is shown in cross-section in Fig. 3 and in perspective in Fig. 4. It is preferably made by cutting a piece of the proper length from a channel-iron, like the side rail, excepting that it is

ribbed or raised along the web or back where the side rail is depressed, the rib of the corner-plate conforming substantially to the depression of the said side rail, so that the corner-plate when inverted and laid lengthwise upon the side rail will rest in the depression of the latter and thus interfit with the rail and be held against turning on a vertical axis. The lateral flanges D' D' of the corner-plate D are pressed into saw-cuts B' B', located in the lower face of the end rail B at right angles to the latter, the saw-cuts being just wide enough to allow the flanges D' to enter under pressure. A bolt E extends through the end rail B, corner-plate D, and side rail A and then receives a nut E' and binds these three parts together. The corner-plate is held firmly against movement on the end rail by the engagement of the flanges D' in the saw-cuts and the corner-plate and side rail are held against movement upon each other, as already explained. A frame constructed in this manner is very rigid and retains its rectangular form, which is an important consideration as to bed-bottoms, cots, and similar structures. This structure has, moreover, the advantage of cheapness. The saw-cuts in the end rails are readily and accurately made by machinery. The corner-plates are made by merely cutting a long piece of channel-iron into a large number of pieces of the proper length, and the bolt is not of special form. Any one of several of the common forms may be used. In the transverse saw-cuts the flanges of the corner-plates bear against the ends of the wood fibers instead of bearing against the sides of the fibers. Pressure against the sides of the fibers would result in compression and consequent distortion of the bed bottom. Under the endwise pressure there is substantially no compression.

Figs. 11 and 12 illustrate a modification by means of which the end rail may be raised somewhat above the side rails. A is again the side rail and is of the same form as the side rail illustrated in Fig. 3, and B is the end rail, of the same form as shown in Fig. 3. The corner-plate (marked D<sup>3</sup>) differs from the corner-plate D in that it is longer than the plate D and has the flanges D<sup>4</sup> of sufficient width to allow the insertion of a block D<sup>5</sup>,



said block being preferably of proper size to fill the space between the corner-plate and the end rail after the flanges  $D^4$  have entered the saw-cuts  $B'$ . The bolt  $E$  is no different from that shown in Fig. 3, excepting that it is as much longer as the thickness of the block  $D^5$ .

It will be understood that in the construction shown in Figs. 3 and 4 the depression and ribs of the side rail and corner-plate may be reversed, the side rail being given an upward-extending rib, while the corner-plate has a corresponding upward-extending groove at its bottom.

Figs. 7 and 10 show a side rail  $G$ , having a channel-rail with a straight back or web  $G'$  between the flanges  $G^2$ . In order that the corner-plate (marked  $H$ ) may engage this side rail, it is made wider than the side rail and rises along the middle sufficiently to form the ribs  $H'$ , extending down over each side of the rail  $G$ , whereby the side rail and corner-plate are made to interfit and prevent the rotation of the corner-plate upon a vertical axis. The bolt  $E$  is the same as that shown in Figs. 3, 10, and 11.

The legs  $C$  are intended to fold into the channel of the rails  $A$ . Each leg may be independent of the other, or the two at the same end of the frame may be united by a wooden bar  $I$ , extending across the legs at the side of the latter. The legs may be of channel form, and the bar  $I$  may be secured thereto with joints like those used at the corners of the frame. The legs illustrated by the drawings are of channel form, and the lower ends of the legs fold toward the middle of the length of the side rail. Referring first to Figs. 1, 3, 5, and 6, the leg is cut from a piece of channel-iron just narrow enough to allow folding lengthwise into said rail, the channel of the leg facing the channel of the side rail.  $J$  is a suitable blade-spring laid into the channel of the side rail at the side of the leg opposite the end of the rail and suitably secured to the said side rail, as by rivets  $J'$ , extending through the side rail, said spring, and a reinforcing-plate  $J^2$ . The end of the spring  $J$  which extends into the channel of the leg is bent downward and suitably hinged to the leg, as by a pin  $J^3$ , extending transversely through the flanges  $C'$  of the leg. (See also Fig. 7.) At its upper end the leg engages the side rail by entering a notch  $A^3$  cut transversely into the depressed part of the web of the side rail, and the spring (which also constitutes a brace) holds said leg firmly in said cut. The upper end of the leg may be straight, as shown in Fig. 5, and yet enter said notch, because the uncut metal at either side of the notch is raised above the notch. In folding the leg is pulled downward until it is disengaged from the notch  $A^3$ .

When the web of the side rail is straight, the leg must be provided with one or more lugs to reach into corresponding holes or notches in the rail. Figs. 7 and 8 illustrate

such a modification. Lugs  $C^4$  extend from the leg  $C^2$  into the corresponding holes  $A^5$  in the side rail  $A^4$ .

Fig. 9 illustrates a modified application of the leg and spring-brace. The leg  $L$  is of the form shown in Figs. 3, 5, and 6; but the channel is turned toward the adjacent end of the side rail  $L'$ , while the spring-brace  $L^2$  is hinged within the channel of the leg by a pin  $L^3$ , as is shown of the pin  $J^3$  in Fig. 6; but the spring-brace  $L^3$  extends within the channel of the rail  $L'$  to the corner of the frame, where it is engaged by the bolt  $L^4$  and nut  $L^5$ , which are applied to the end rail  $L^6$ , corner-plate  $L^7$ , and side rail  $L'$ , as described of the corresponding parts in Fig. 3. In folding the lower end of the leg  $L$  is moved toward the middle of the length of the side rail, the spring-brace falling into the channel of the leg at the upper end of the latter.

It will be understood that the channeled side rails and legs may be of steel, iron, or other metal, and some features of my improvement are applicable to side rails and legs which are not of channeled metal. For example, the end rail and corner-plate, fitted to each other, as herein described, may be combined with a rail which is solid or non-channeled at the bottom, but with the back of which the corner-plate conforms or interfits. The words "conform" and "conforming" and "interfit" and "interfitting" are used herein in connection with said corner-plate and side rail to indicate that one or the other or both are so shaped as to cause an engagement against rotation on a common axis perpendicular to both rails when said plate and side rail are pressed together.

I claim as my invention—

1. In a furniture-frame, the combination with two rails crossing each other at an angle, of a corner-plate located between said rails and interfitting with the adjacent face of one of said rails and having flanges at an angle to the length of and fitted to the other of said rails, and a bolt extending through said rails and corner-plate, substantially as shown and described.

2. In a furniture-frame, the combination with two rails crossing each other at an angle, of a corner-plate located between said rails and interfitting with the adjacent face of one of said rails and having flanges at an angle to the length of and fitted into cuts in the other of said rails, and a bolt extending through said rails and corner-plate, substantially as shown and described.

3. In a furniture-frame, the combination with two rails crossing each other at an angle and one of which is of wood, of a corner-plate having flanges at an angle to the length of and fitted to the wooden rail and interfitting with the adjacent surface of the other rail, and a bolt extending through said rails and corner-plate, substantially as shown and described.

4. In a furniture-frame, the combination



with two rails crossing each other at an angle and one of which is of wood, of a corner-plate having flanges at an angle to the length of and fitted into cuts in the wooden rail and interfitting with the adjacent surface of the other rail, and a bolt extending through said rails and corner-plate, substantially as shown and described.

5. In a furniture-frame, the combination with two rails crossing each other at an angle and one of which is channeled, a corner-plate located between said rails and interfitting with the back of said channeled rail and having flanges at an angle to the length of and fitted to the other of said rails, and a bolt extending through said rails and corner-plate, substantially as shown and described.

6. In a furniture-frame, the combination with two rails crossing each other at an angle and one of which is channeled, a corner-plate located between said rails and interfitting with the back of said channeled rail and having flanges at an angle to the length of and fitted into cuts in the other of said rails, and a bolt extending through said rails and corner-plate, substantially as shown and described.

7. In a furniture-frame, the combination with two rails crossing each other at an angle and one of which is of wood and the other is of channeled metal, of a corner-plate having flanges at an angle to the length of and fitted to the wooden rail and interfitting with the back of the channeled rail, and a bolt extending through said rails and corner-plate, substantially as shown and described.

8. In a furniture-frame, the combination with two rails crossing each other at an angle and one of which is of wood and the other is of channeled metal, of a corner-plate located between said rails and interfitting with the back of said channeled rail and having flanges at an angle to the length of and fitted into cuts in the wooden rail, and a bolt extending through said rails and corner-plate, substantially as shown and described.

9. In a furniture-frame, the combination of a channeled rail forming one of the sides of said frame and recessed to engage one end of a leg when the latter is in the upright position, a leg arranged to fold into said channel, and a spring-brace having one end secured within the channel of said rail and having the other end hinged to said leg between the ends of the latter, substantially as shown and described.

10. In a furniture-frame, channeled rails located at opposite sides of said frame and recessed to engage one end of a leg when the latter is in the upright position, legs arranged to fold within the channels of said rails and hinged between their ends to one end of a spring-brace, the other end of said spring-brace being secured within the channel of the adjacent rail, substantially as shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

ORRIN G. FRANKS.

Witnesses:

CYRUS KEHR,

CHARLES A. B. SMITH.