H. C. CRIST.

ADJUSTABLE COLUMN FORM.

APPLICATION FILED JULY 18, 1914.

1,183,169.

Patented May 16, 1916.

3 SHEETS—SHEET 1.

Fig. I.

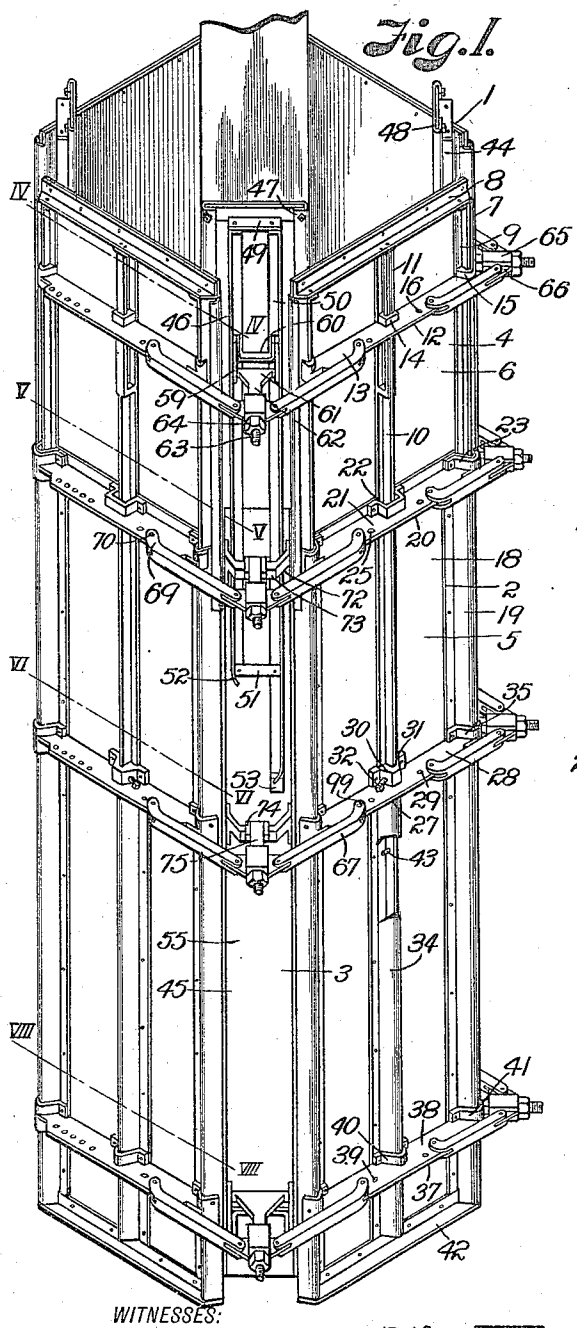


Fig. III.

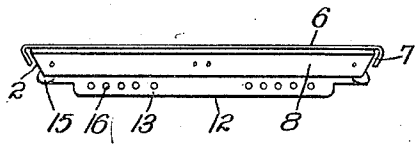


Fig. IV.

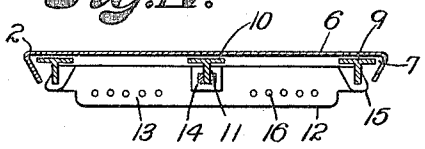


Fig. V.

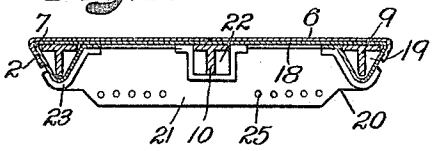


Fig. VI.

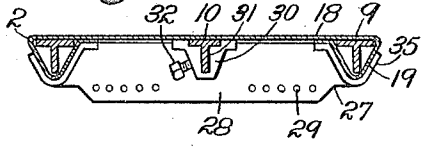


Fig. VII.

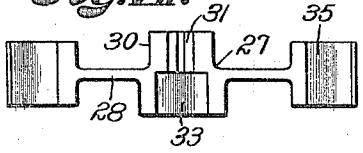
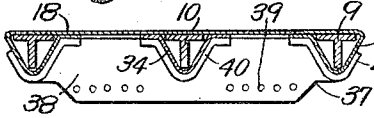


Fig. VIII.



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3 SHEETS—SHEET 2.

Fig. IX.

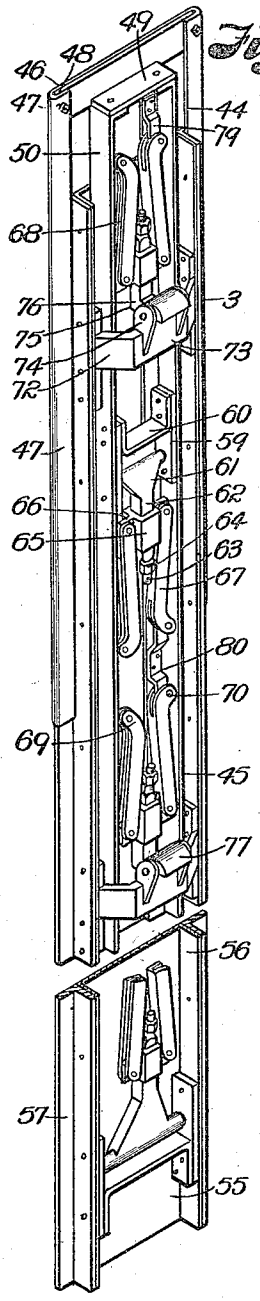
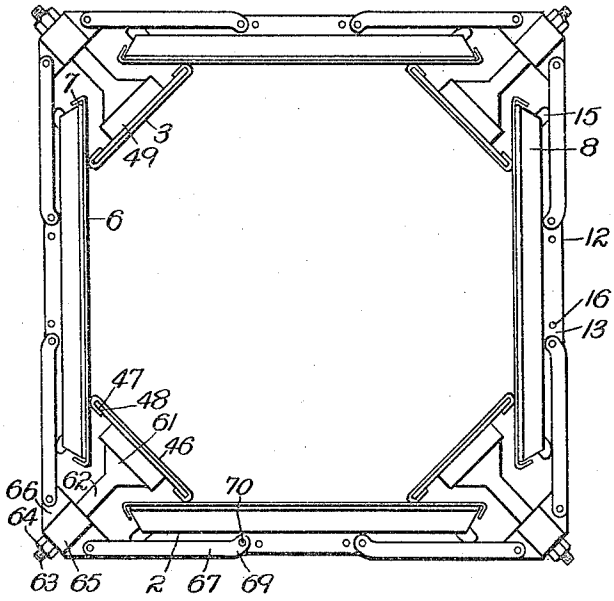


Fig. II.



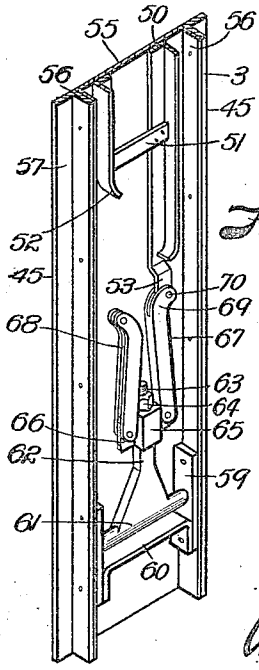


Fig. X.

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ADJUSTABLE COLUMN FORM.

APPLICATION FILED JULY 18, 1914.

1,183,169.

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3 SHEETS—SHEET 3.

Fig. XI.

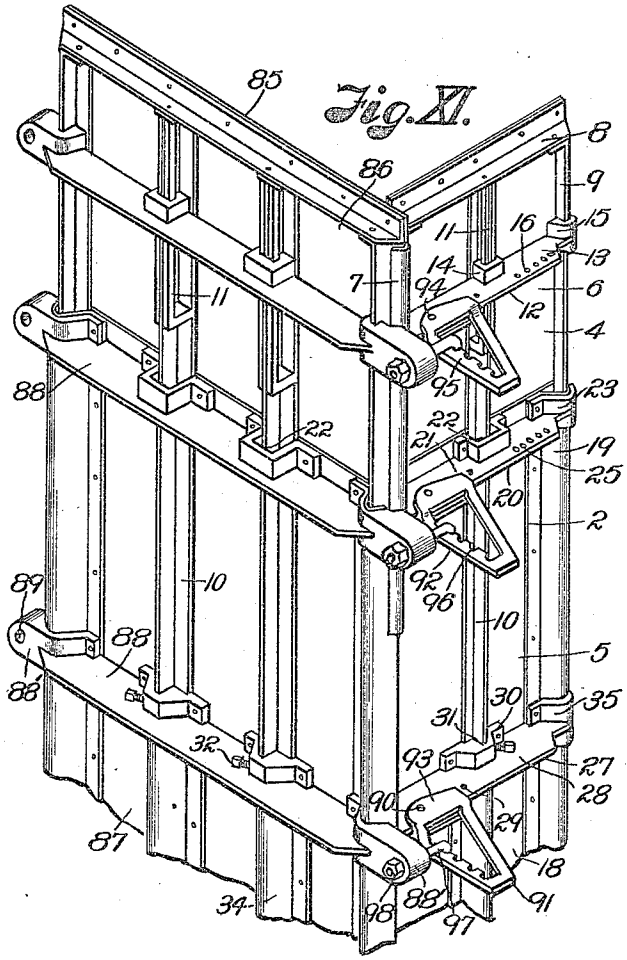


Fig. XIII.

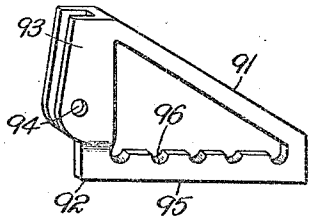
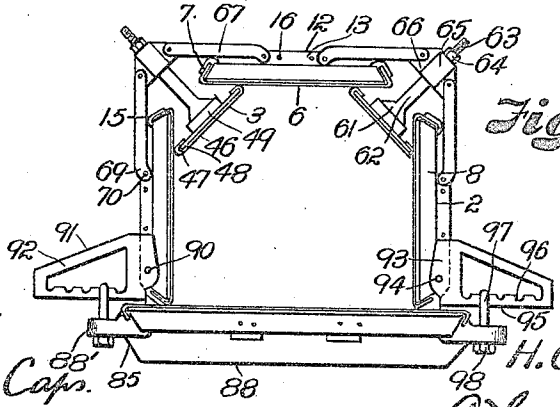


Fig. XII.



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UNITED STATES PATENT OFFICE.

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ADJUSTABLE COLUMN-FORM.

1,183,169. Specification of Letters Patent. Patented May 16, 1916.

Application filed July 18, 1914. Serial No. 851,727.

To all whom it may concern:

Be it known that I, HUNTER C. CRIST, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Adjustable Column-Forms; and I do declare the following to be a full, clear, and exact description of the invention, 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, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in adjustable column forms, and has for its principal object, to provide a sectional form which may be adjusted both as to length and cross section, together with means for locking the parts in extended position, and comprising clamps for rigidly holding the sections together to form a mold.

A further object of the invention, is to provide a device in which the clamps are formed as a part of the sections, and in which the clamp parts may be inconspicuously folded against the sections when not in use.

In accomplishing these and other objects of the invention, I have provided the improved details of structure hereinafter described and illustrated in the accompanying drawings, wherein:—

Figure I is a perspective view of a column form constructed in accordance with my invention. Fig. II is a plan view of the same. Fig. III is a plan view of one of the side sections. Figs. IV, V and VI are sectional plan views of one of the side members, taken on the lines IV—IV, V—V, and VI—VI, Fig. I. Fig. VII is a rear face view of the cross brace shown in Fig. VI. Fig. VIII is a sectional plan view of one of the side members on the line VIII—VIII, Fig. I. Fig. IX is a perspective view of one of the corner members, showing the parts collapsed and a portion removed for better illustration. Fig. X is a perspective view of the lower portion of one of the corner sections. Fig. XI is a detail perspective view of a portion of one corner of the form, showing the parts set up for making wall columns. Fig. XII is a plan view of the device used in making wall columns. Fig. XIII is a detail perspective view of a clamp bracket used in the latter arrangement.

Referring more in detail to the parts:— 1 designates a column form comprising side members 2 and corner members 3, which are assembled and locked together to form an octagonal mold. Each of the side members 2 comprises upper and lower telescoping sections 4 and 5, the upper one of which comprises a sheet metal plate 6, having its longitudinal edges turned backwardly and inwardly to form edge channels 7. Rigidly secured to the top of the plate 6, is an angle iron 8, and rigidly secured near each end of said angle iron and spaced from grooves 7 are T-irons 9, which lie close to and extend beyond the lower edge of the plate 6. Near the center of the angle iron 8, is secured another T-iron 10 which, like the T-irons 9, lies close to and extends beyond the lower edge of the plate 6, and which is provided, near the top, with track members 11 upon which is slidably mounted a cross bar 12.

The cross bar 12 comprises a web 13 having a central boss 14 slidably mounted on the track members 11, end bosses 15 slidably mounted on the T-irons, and a plurality of apertures 16, for the purpose presently described.

The lower section 5 comprises a sheet metal plate 18, having its longitudinal edges turned back and secured to the face of the plate to form triangular channeled members 19, which are slidably mounted in the channels 7 of the upper section, and which are adapted to receive the T-irons 9.

Rigidly mounted on the upper end of the plate 18, is a cross bar 20 comprising a web 21 having a central boss provided with a square aperture 22 for slidably receiving the T-iron 10 of the upper section, end bosses 23 which are rigidly secured to the channeled portions 19, and a plurality of apertures 25.

Near the center of the lower section, is a cross bar 27 comprising a web 28, having a plurality of apertures 29, and a central boss 30 the upper portion of which is provided with a T-groove 31 for receiving the T-iron 10 and with a set screw 32 for clamping the T-iron in the groove. The lower portion of the boss has a V-groove 33 in which is rigidly mounted a V-shaped piece of sheet metal 34 that is also secured to the face of the plate 18 and adapted to receive the lower

end of the T-iron 10. At each end of the cross bar 27 is a boss 35, which is riveted or otherwise secured to the channeled members 19.

Near the base of the section 5 is a cross bar 37 comprising a web 38 having a plurality of apertures 39 and central and end bosses 40 and 41, which are rigidly secured to the central and edge V-shaped channel members 34 and 19 respectively of the plate 18. The base of the section is provided with a piece of angle iron 42, which is secured to the face of, and reinforces the end of the plate 18.

Projecting laterally through the outwardly extending leg of the T-iron is a pin 43, which slides freely in the V-shaped member 34 and is adapted to abut against the lower face of the T groove 31 in the boss 30 to limit the extension of the movable sections.

Each corner member 3 comprises upper and lower sections 44 and 45, the upper one of which comprises a sheet metal plate 46 having its longitudinal edges 47 turned backwardly to form edge grooves 48, within the upper ends of which is secured an angle iron 49, having its other leg cut away at each side and adapted to support angle irons 50, which lie close to and extend beyond the lower edge of the plate 46; the lower ends of said angle irons being fastened together with a strap 51 and the extremities of the outwardly extending legs being curved inwardly as shown at 52; the opposite leg of one of the members being offset at 53 to form a retaining hook, for the purpose presently described.

The lower section of the corner member comprises a plate 55, having its longitudinal edges 56 turned backwardly at right angles and secured to one of the legs of angle irons 57, so that the opposite leg projects outwardly and is slidably mounted in the grooves 48 of the upper section.

Rigidly mounted on the inner faces of angle irons 50 on the upper section, are plates 59, between each set of which extends a brace 60, which not only braces the plates 59, but also strengthens the entire section. Pivotally mounted in the plates 59 are the heads of clamp screws 61, which comprise square shanks 62 and threaded end portions 63 that are provided with nuts 64. Slidably mounted on the square shanks 63 are heads 65, having laterally extending ears 66 upon which are pivotally mounted arms 67 having grooved inner faces 68 and slotted, curved heads 69 provided with apertures 70, which are adapted for registration with the apertures 16 or 39 of the cross bars 12 and 37. Also rigidly secured to the inner faces of angle irons 57 are castings 72 having arched portions 73, which extend over the angle irons 50 and are provided with spaced ears 74 in which are pivotally mounted the clamp screws 75. Each of the clamp screws is offset at 76, so that when the parts are folded, as shown in Fig. IX, it will lie close to plate 55, and each screw is provided with a lug 77, which engages the face of the casting 72 to limit the outward movement of the screw. The clamp screws 75 are similar to screws 62 and are provided with clamp parts identical with the parts 65, 66 and 67 previously described.

One of the angle irons 50 is provided with hooks 79, 80 and 53, so that when the clamp parts are folded and nested within the sections and the sections brought together, as shown in Fig. IX, the hooks will enter the slotted ends 69 of the clamp arms and hold them in position.

The column form heretofore described is adapted for casting an octagonal column for use in either the beam or mushroom systems of concrete construction and is particularly adapted for casting columns which stand out in a room.

In order to cast the wall columns, I have provided a device which operates in conjunction with some of the parts just described, so that a column having a flat outer face and chamfered inner edges may be produced.

The last named device comprises a member 85 comprising upper and lower telescoping sections 86 and 87, which are identical with the sections 4 and 5 of the members 2, except that they are wider and include another longitudinal brace corresponding to the brace 10.

Each of the cross bars 88 is similar to the relative cross bar on the side members 2, except that it is provided with end bosses 88′ which project beyond the plane of the section and are provided with apertures 89.

Rigidly secured on each of the webs 13, 21, 28 and 38, by means of pins 90 which are projected through one of the several apertures in said webs, is a bracket 91, which comprises a triangular frame 92, having a grooved base 93, which seats on the webs 13, 21, etc., and which is provided with an aperture 94 for receiving the pin 90. The straight side 95 of the triangular frame lies adjacent the member 85 when the parts are in functional position, and is provided with a plurality of notches 96 for receiving a hook bolt 97, which projects through the aperture 89 in the boss 88′ and which is provided with a nut 98, whereby the parts may be drawn tightly together.

In using the device, presuming the parts to be constructed and assembled as described, the sides and corner members are first extended to correspond with the height of the column desired, and locked by tightening the set screws 32. The clamp screws are then revolved outwardly and the arms 67

turned, so that the slotted inner face 68 and the slotted end portions 69 engage the webs of the cross bars, after which a pin 99 is inserted in the apertures 70 and one of the apertures 16, 25, etc. The nuts 64 are tightened to draw the corner member outwardly against the inner faces of the side members 2. During the clamping action, the arms 67 are held by the pins 99 and the central portion thereof bears against the bosses 15, 34, etc., of the cross bars thereby holding the block 65 rigid, so that the clamping movement draws the corner member to position. Each of the other corners is clamped in the same manner and the column form locked rigidly in position for forming a column.

In using the column form in connection with the beam system, it is sometimes desirable to extend the corner sections up, beyond the side sections, so that the beam mold may be placed on and extend from the upper edge of the side members, and at the same time stop off the corners of the mold. In accomplishing this feature, I have provided the tracks 11 on the central braces 10, upon which is slidably mounted the cross bar 12, so that when the corner section 44 is extended, the bars 12 may be moved upwardly to register with the arms 67.

The wall column form is set up by erecting the member 85 at the outer line of the wall and setting two of the side members 2, which have been equipped with the triangular brackets 91, perpendicular with the face of the member. The hook bolts 97 are then adjusted, so that the hooked portion seats in corresponding notches 96 in the bracket 91, and, after another side section and corner sections have been placed in position, the nuts 98 are tightened to complete the form.

After using the forms, the side members may be contracted and the arms 67 folded outwardly toward each other and nestedly within the corner member 3 by revolving the clamp screws 61 and 75 downwardly. The sections of the corner member may then be contracted; it being apparent that the clamp on the sliding section passes beneath the arched casting 72, and that all the clamps are locked when the parts are brought together.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters-Patent, is:—

1. An adjustable column form comprising primary sections, a secondary section, a clamp member on the secondary section projected between adjacent edges of the primary sections, and arms on said member removably connected with the primary sections.

2. An adjustable column form comprising primary sections, a secondary section, a clamp post on the secondary section projected between adjacent edges of the primary sections, and arms adjustably mounted on said post and connected with said primary sections.

3. An adjustable column form comprising primary sections, a secondary section, a clamp post on the secondary section projected between adjacent edges of the primary sections, and arms adjustably mounted on said post and removably connected with said primary sections.

4. An adjustable column form comprising primary sections, a secondary section, a clamp member on the secondary section projected between adjacent edges of the primary sections, and arms on said member adjustably connected with the primary sections.

5. An adjustable column form comprising primary sections, a secondary section, a clamp member pivotally mounted on the secondary section and projected between adjacent edges of the primary sections, and arms on said member removably connected with the primary sections.

6. An adjustable column form comprising primary sections, a secondary section, a clamp member on the secondary section projected between the primary sections and having a threaded shank, a block slidably mounted on said shank, arms on said block connected with said primary sections, and a nut on said shank bearing against said block, for the purpose set forth.

7. An adjustable column clamp comprising primary sections, a secondary section, a clamp member on the secondary section projecting between the primary sections, a block slidably mounted on the clamp member and provided with wings, arms pivotally mounted on said wings, means connecting said arms with the primary sections, and means on the clamp member, bearing against said block, to draw the secondary section against the primary sections.

8. The combination with primary sections, of a secondary section, an arch on the secondary section, a clamp member on the arch, and means connecting the clamp member with said primary sections.

9. In an adjustable column form, side sections, each comprising separate sheets, one having its longitudinal edges turned outwardly to form grooves and the other having V-shaped edge portions slidably nested in said grooves, a longitudinally extensible corner section, and means for clamping the corner section to said side sections.

10. In an adjustable column form, side sections, each comprising separate sheets, one having its edges turned back to form grooves, rails on said section adjacent the grooves, guide members on the other section adapted for movement over said rails and having free edges slidably nested in said

grooves, a longitudinally extensible corner section, and means for clamping the corner section to said side sections.

11. An adjustable column form comprising a plurality of longitudinally extensible side and corner sections; the side sections being provided with a plurality of apertured cross bars, and the corner sections with a plurality of clamps adapted for cooperation with the apertured cross bars to clamp the parts together.

12. An adjustable column form comprising a plurality of longitudinally extensible side sections, a plurality of apertured cross bars on said side sections, a plurality of corner sections, and a plurality of clamps on said corner sections adapted for coöperation with said apertured cross bars to clamp the sections together.

13. An adjustable column form comprising a plurality of longitudinally extensible side sections, a plurality of cross bars rigidly mounted on said sections, a movable cross bar on each of said sections, a plurality of corner sections, a plurality of clamps on each of said corner sections adapted for cooperating with said rigid mounted cross bars, and with said movable bars, whereby the corner members may be extended independently of and locked to the side sections, for the purpose set forth.

14. An adjustable column form comprising a plurality of longitudinally extensible side sections, a plurality of apertured cross bars on said side sections, a plurality of longitudinally extensible corner sections, a plurality of clamps on said corner sections, pins for securing said clamps to corresponding cross bars on adjacent sections, and nuts on said clamps, whereby the corner sections may be drawn tightly against the side members, for the purpose set forth.

15. In an adjustable column form, a plurality of corner members and a plurality of side members comprising upper and lower telescoping sections; the upper section comprising a sheet metal plate having its longitudinal edges turned backwardly to form edge grooves, and side and central T-irons lying close to and extending beyond the lower edge of said section, and the lower section comprising a sheet metal plate having its longitudinal edges turned backwardly and secured to the face of the plate to form triangular channels for receiving the extended ends of the side T-irons and for sliding engagement with the grooved edges of the upper section, a grooved piece of sheet metal secured to the central portion of said plate for receiving the extended end of said central T-iron, a plurality of cross bars on said upper and lower sections, a pin extending transversely through said central T-iron and adapted for abutment with one of said cross bars, and means carried by the corner sections and adapted for coöperation with the cross bars for clamping the parts together.

16. In an adjustable column form, a plurality of telescoping side members comprising upper and lower telescoping sections and a plurality of apertured cross bars on said sections, a plurality of telescoping corner members comprising an upper sheet metal plate having longitudinal edge grooves, and angle braces secured to the top of and extending beyond the base of said plate, and a lower plate having backwardly turned longitudinal edges, angle irons fixed to said edges and slidably mounted in the edge grooves of the upper section, a plurality of clamps pivotally mounted on said corner members and adapted to nest between said angle irons, and means for holding the clamps in extended position for clamping the parts together.

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

HUNTER C. CRIST.

Witnesses:

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L. E. COATS.

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