

M. S. HOTCHKISS.
FORM FOR CONCRETE STRUCTURAL WORK.
APPLICATION FILED APR. 15, 1909.

955,800.

Patented Apr. 19, 1910.

2 SHEETS—SHEET 1.

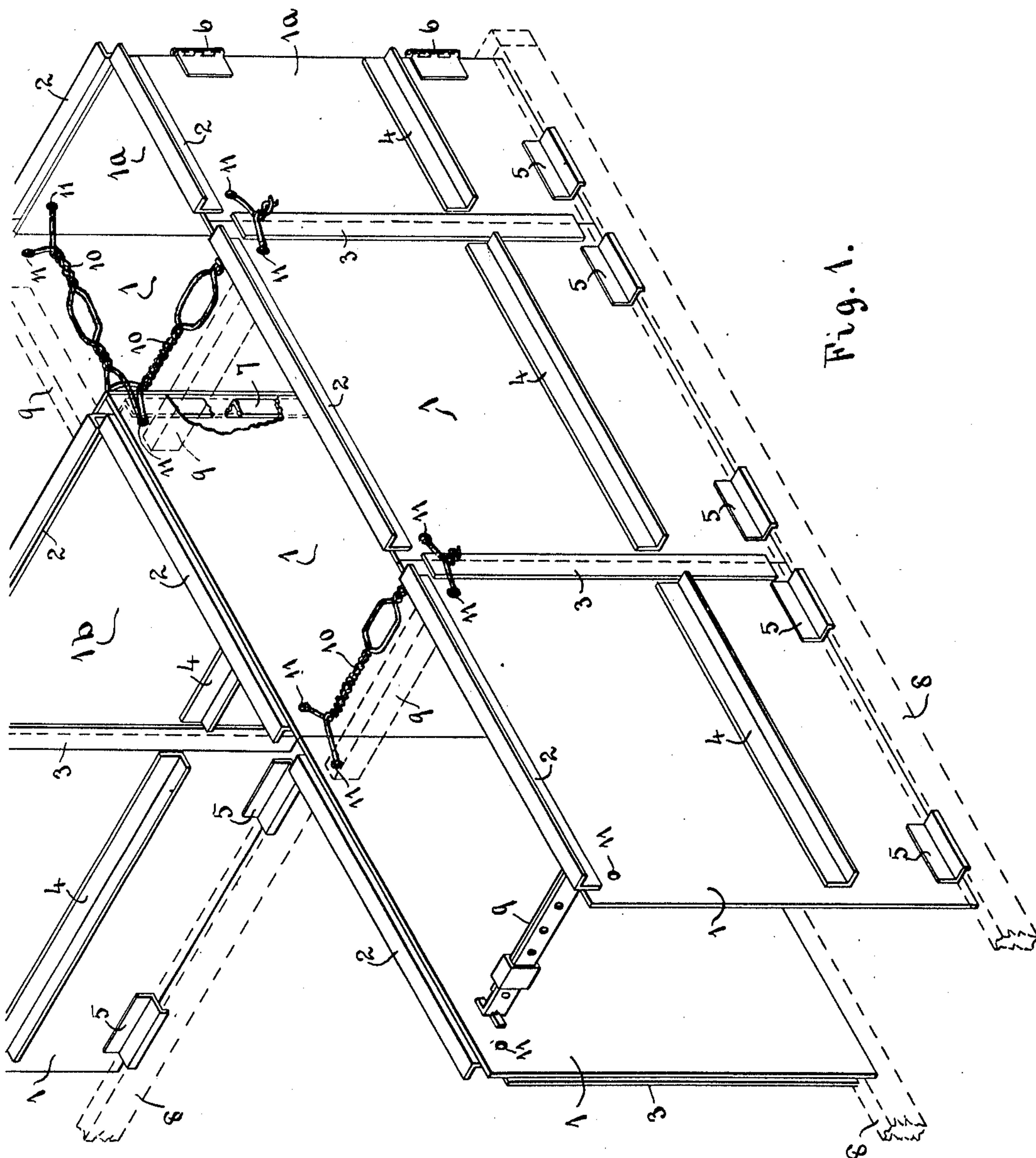


Fig. 1.

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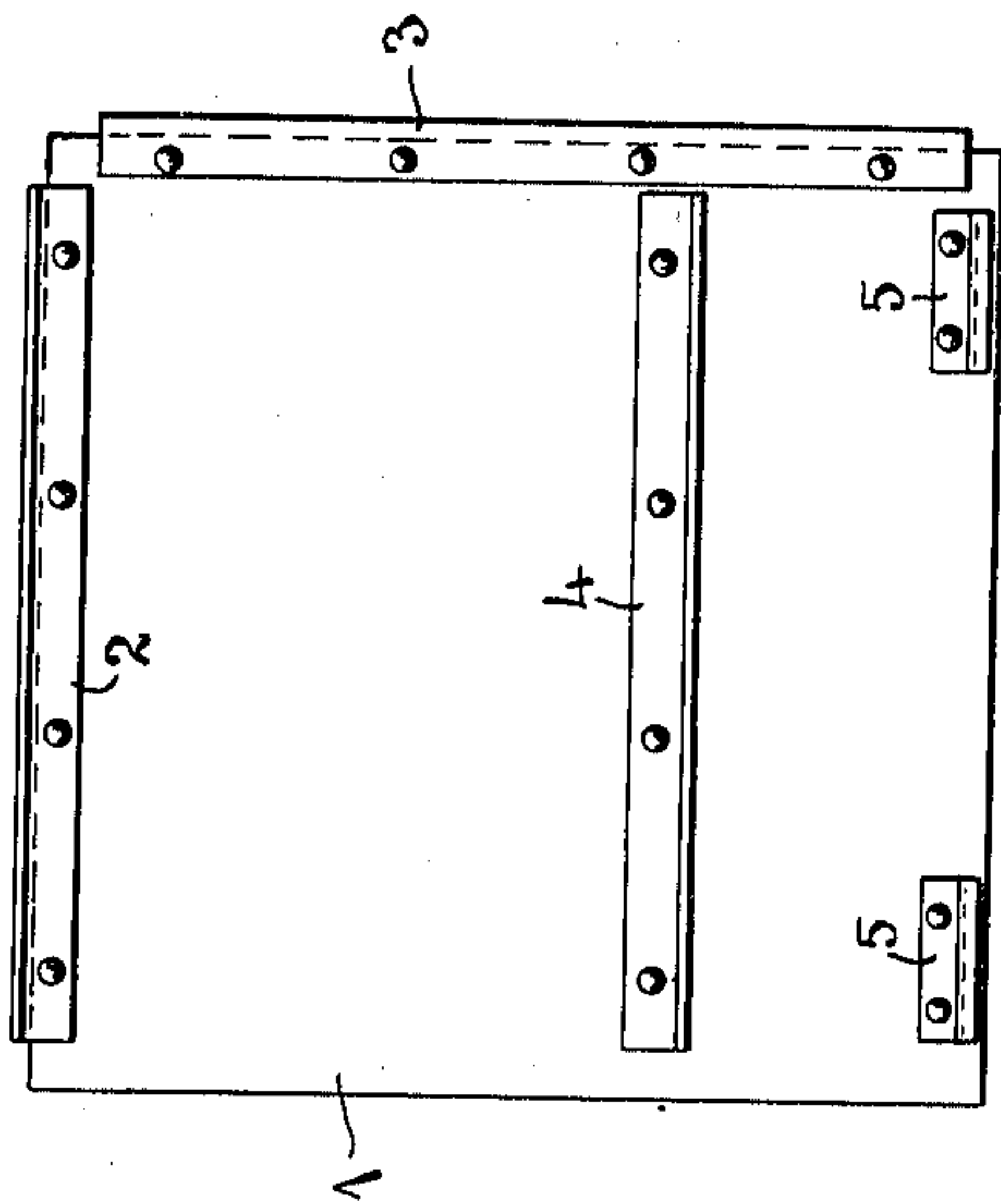


Fig. 3.

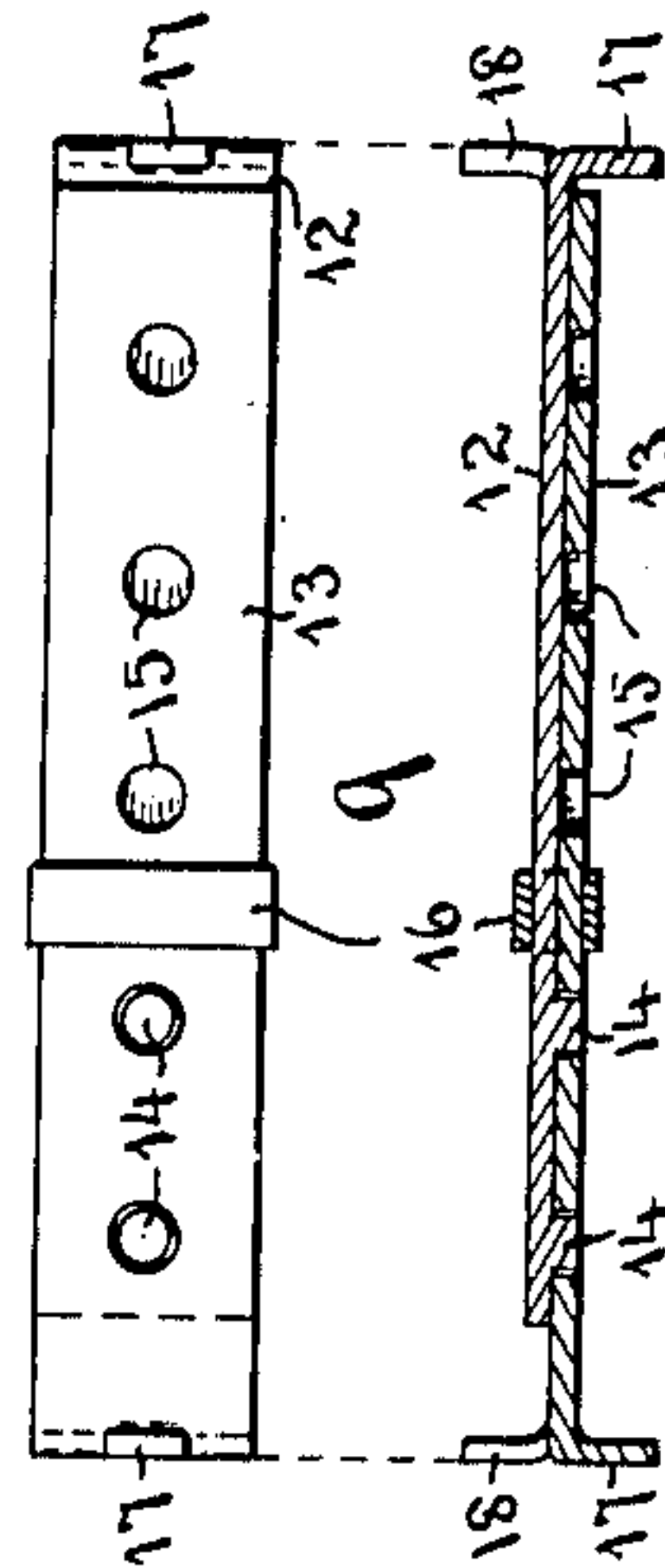


Fig. 5.

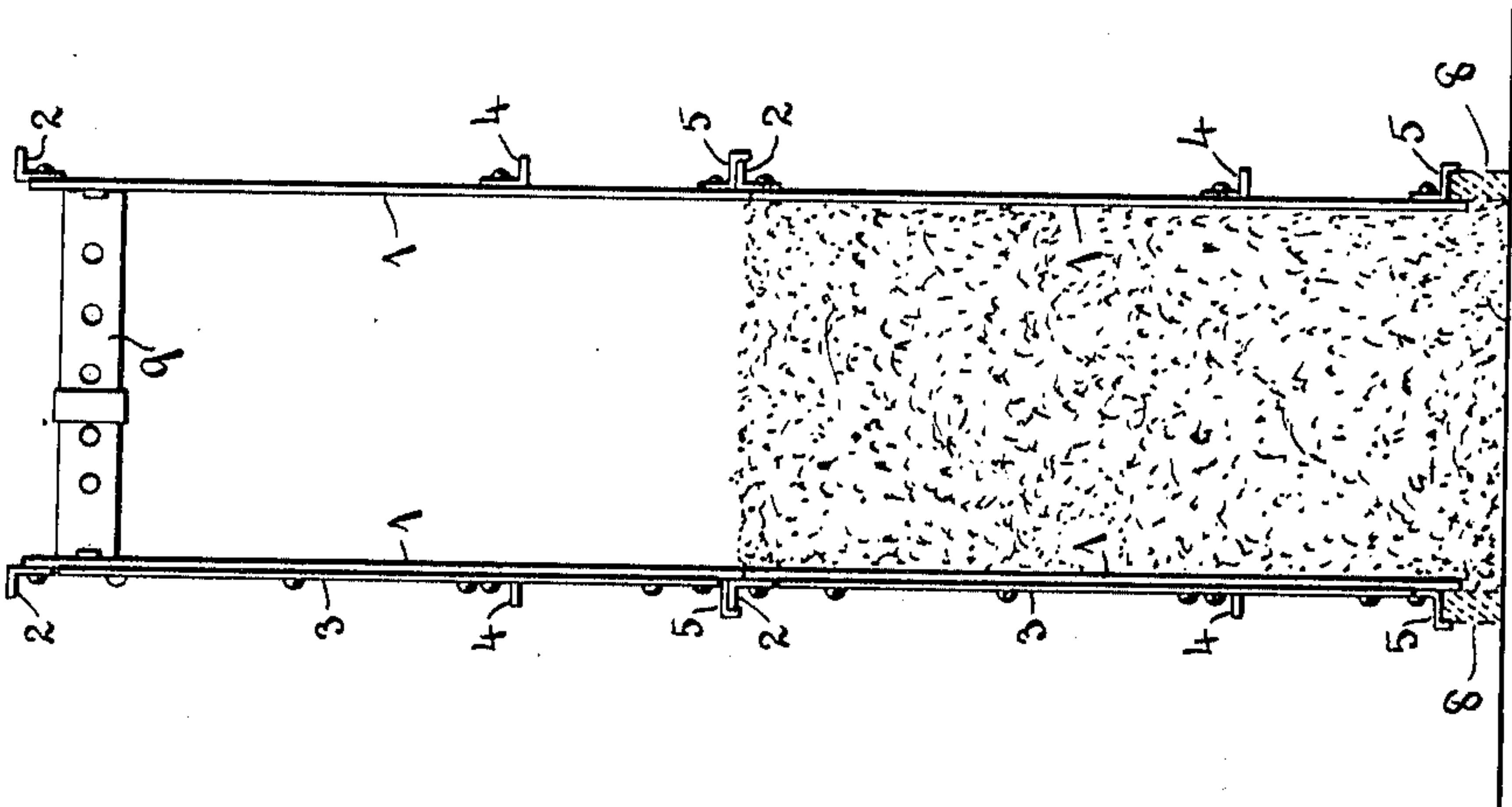


Fig. 2.

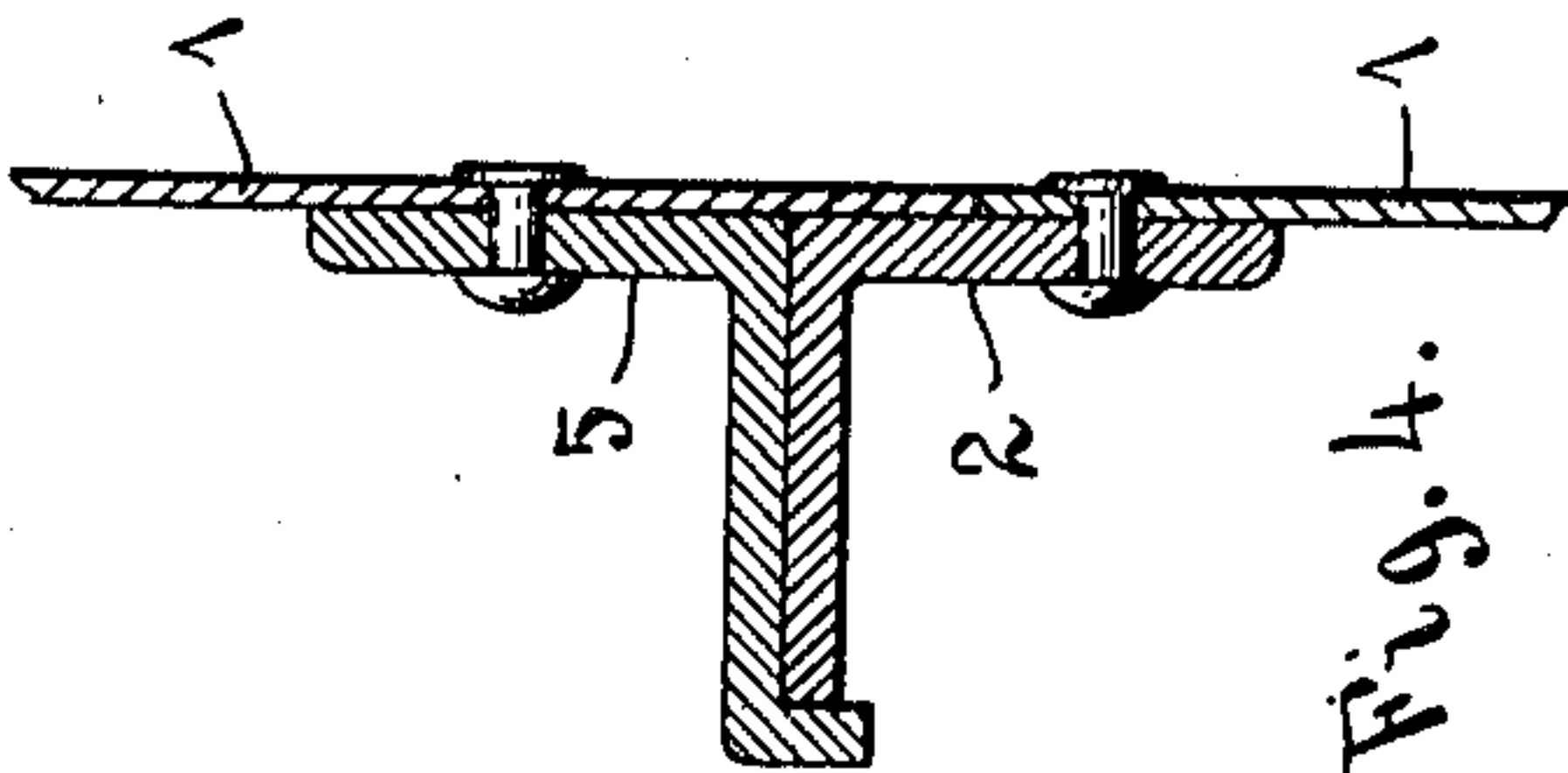


Fig. 4.

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FORM FOR CONCRETE STRUCTURAL WORK.

955,800.

Specification of Letters Patent.

Patented Apr. 19, 1910.

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To all whom it may concern:

Be it known that I, MARK S. HOTCHKISS, a citizen of the United States, residing at Lestershire, in the county of Broome and State of New York, have invented certain new and useful Improvements in Forms for Concrete Structural Work, of which the following is a specification.

This invention relates to improvements in sectional forms to be used in erecting concrete walls, foundations, etc., of buildings and other structures; and my object is to provide light and durable form sections with interlocking joints, so constructed that the sections will be held together with abutting edges so joined as to provide perfectly smooth inside surfaces when the form is set up. I attain my object by constructing the form sections in the manner illustrated in the accompanying drawings, in which—

Figure 1 represents an isometric view of one tier of form sections set up for the angle of a concrete wall; Fig. 2, a transverse view of the form showing the first tier of form sections filled with concrete, and a second tier set in place thereupon; Fig. 3, an elevation of one of the form sections as viewed from the outward side; Fig. 4, a sectional view on an enlarged scale, showing my preferred form of interlocking joint between sections; and Fig. 5, plan and sectional views of an adjustable spreader to be used in connection with these sectional forms.

Like numerals designate like parts in the several views.

The form sections consist of light metal plates, preferably of galvanized iron, cut square or oblong, with true edges and of any desirable dimensions. As illustrated these plates are shown two feet square, so that when set up, as shown in Fig. 1, a wall course two feet high may be filled in. Along the top of each plate I rivet an angle bar 2, said angle bar projecting about three-eighths of an inch above the edge of the plate; and along one side of the plate I rivet a flat strip 3, which also projects beyond the side edge of the plate about three-eighths of an inch; these angle bars and side strips being fastened on corresponding sides of the plates of a set. I also rivet on the plates one or more reinforcing angle bars 4, to give them the necessary stiffness to prevent bulging or bending as the concrete is filled

into the form. At the bottom of the plates I rivet on short bars of Z form 5 three-eighths of an inch above the bottom edge, said Z bars, when one section is placed above another, being adapted to rest upon and engage the angle bar 2 on the section below, as shown in Fig. 4. The lower edge of the upper form section will pass down inside the angle bar of the lower section to rest upon the upper edge of the plate of the lower section; and the Z bar on the upper section will engage the outer edge of the angle bar on the lower section, thereby securely interlocking the sections, and securing a perfectly flush joint between sections, so as to provide a smooth inside surface for the form. The angles 2 also serve to protect the top edges of the plates from the workmen when shoveling the concrete into the forms.

The side strip 3 on each form section will overlap the plate on the next adjacent section in a horizontal tier of sections, as shown in Fig. 1, thereby bringing the vertical edges of abutting plates into true alinement. If, however, it is desired to provide a more secure interlocking joint between the abutting vertical edges of the plates, I may use an angle bar in place of the overlapping strip 3 on the one plate, and provide Z bars 5 on the other plate; thus preventing the side edges of the plates from being thrown laterally out of alinement in either direction. In other words, each section will have fastened to its right and left sides, respectively, an angle bar and Z bars corresponding to the angle bar 2 and Z bars 5, fastened to the top and bottom respectively of plate 1 in Fig. 3. In setting up these sections to build the form, footing strips, as indicated by the broken lines at 8 in Fig. 1, will first be laid on the foundation at the proper distances apart, to correspond with the width of the wall to be built, and staked or otherwise fastened in true alinement with the wall lines. The form sections will then be set up as shown with the Z bars 5 resting upon the footing strips. Spacing bars, or spreaders, 9, will then be set in at the top between opposite sections to hold them the proper distance apart, and wires 10 will be looped through holes 11 provided therefor in abutting sections, the ends of said wires being passed across through the opposite sections and

twisted together. The wires are then twisted together inside the form until the sections are set up tightly against the spreaders.

For turning the angles I provide sections as shown at 1^a, made in two parts, hinged together at 6 to form the outward corner of the wall; and for the inside of the corner I provide sections 1^b, having on one side, in place of the overlapping strip 3, an angle bar 7, set back from the edge the thickness of a section plate to receive the plate 1 of the other section which forms the angle, as shown where this section plate is broken away in Fig. 1. As so constructed the sections are adapted to be set up to turn corners of different angles, and are not limited to right angled structures.

Where a cross wall intersects a main wall, a section 1^b will be used to form one angle of the cross wall, in the same manner as shown in Fig. 1, and the other corner will be formed by setting a section 1^b in the main wall form to engage a section 1 in the cross wall form in like manner.

After one tier of form sections has been filled in, as shown in Fig. 2, the next tier of form sections will be set up on and interlocked with the first; and the spreaders which were taken from the first tier, as the concrete was filled in, will be used to space the upper portion of the next tier of sections, the wire binding between the sections of the first tier remaining embedded in the concrete. As soon as the next tier of sections has been filled in, the sections on the first tier may be removed, and set up upon the top of the second tier, the second tier of sections being held in place by the binding wires 10, which are then embedded in the concrete. To remove the sections of the first tier it is simply required to cut the binding wires where they project outside the sections. In this way the contractor is not required to be supplied with an overly large number of these form sections.

These sectional forms may be set up for any width of wall without change, the only requirement being that spreaders be supplied to correspond with the width of the wall. Usually these spreaders are formed from wooden 2×4's, or the like, and cut to a length corresponding to the width of wall required. After being used on a job these wooden spreaders are usually thrown away or wasted in other ways. To avoid this use of lumber and consequent waste of materials, I provide in conjunction with my

forms adjustable spreaders made of metal and constructed in the manner illustrated in Fig. 5. These spreaders consist of two plates, 12 and 13, adapted to set one against the other; the plate 12 being provided with preferably two projecting pins 14, and the plate 13 with a plurality of holes 15 to receive said pins; the two plates being held together by a band 16 adapted to slide thereover. The projecting ends of the plates are cut and bent in opposite directions at 17 and 18, to form bearing surfaces where the spreaders rest at their ends against the opposite section plates. By sliding the band 16 to one side the pins 14 on the plate 12 may be inserted in other holes 15 in plate 13, thereby lengthening the spreader where a wider wall is to be built. These spreaders are light and durable, and can be so constructed as to be adjusted to any of the standard thicknesses of building walls.

Various modifications may be made in the size and thickness of the plates, the method of bracing the plates, and in other details of construction, without departing from the spirit of my invention. Instead of employing short Z bars I may use one continuous bar extending across the bottom or side of a plate, these continuous Z bars, together with the opposite angle bars 2, then forming a continuous brace around the edge of the plate. Where door and window openings occur section plates of the same construction, but narrower, may be employed, so that the forms may be brought up properly to the openings.

What I claim as my invention and desire to secure by Letters Patent is:—

Form sections comprising plates each having on its outward side an angle bar extending along and projecting a certain distance beyond one edge with its outturned member positioned away from the plate, and a Z-bar set back a corresponding distance from the opposite edge and adapted to engage the outward edge of the angle bar on an adjoining section, whereby the section plates may be set up with butt joints and locked against lateral displacement in either direction.

In testimony whereof I have affixed my signature, in presence of two witnesses.

MARK S. HOTCHKISS.

Witnesses:

W. D. EDMISTER,
CASSIE A. ROE.