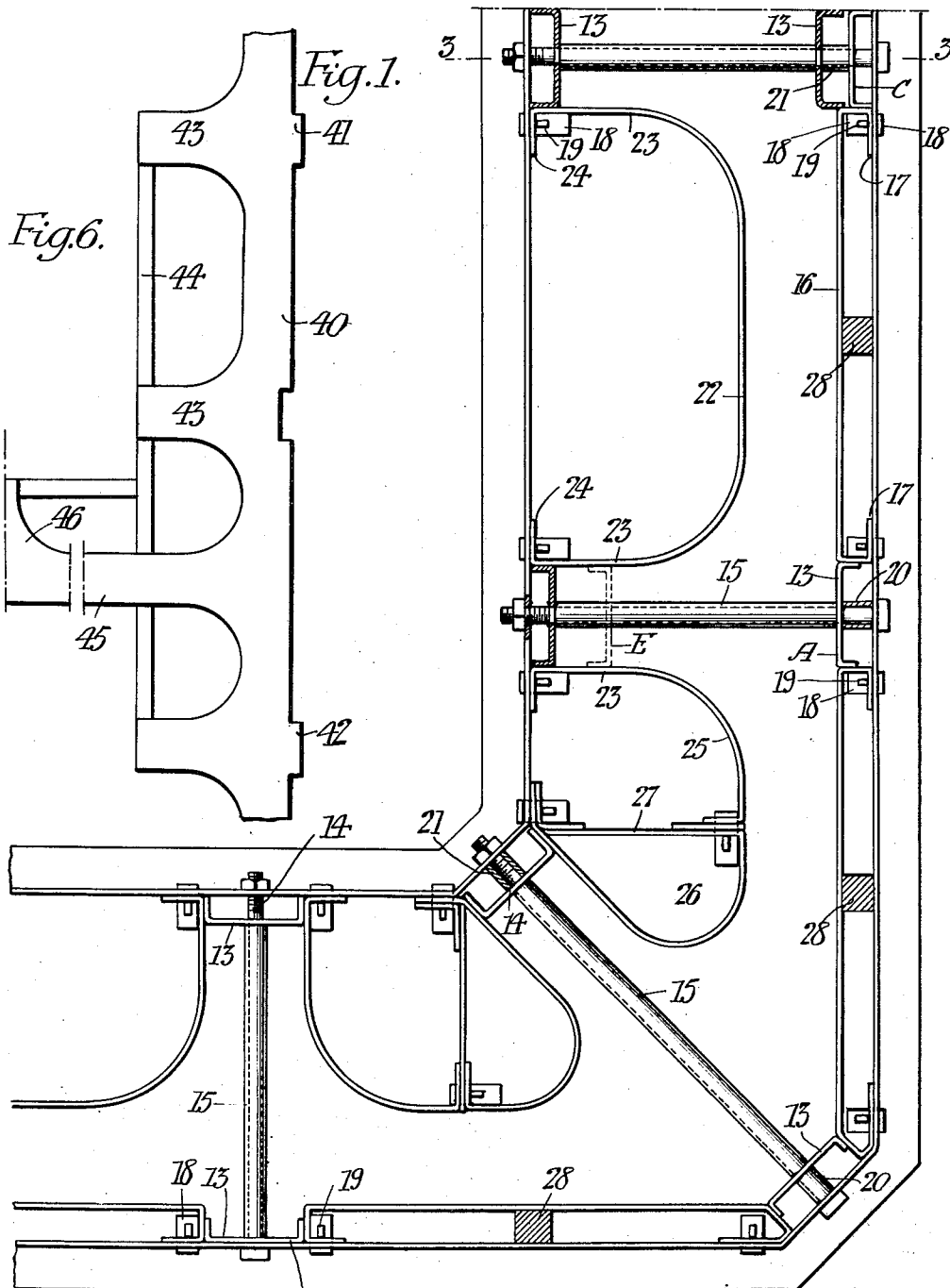


J. W. MULDOON.
FORM FOR MONOLITHIC WALLS.
APPLICATION FILED JUNE 19, 1912.

1,109,934.

Patented Sept. 8, 1914.

3 SHEETS-SHEET 1.



Witnesses
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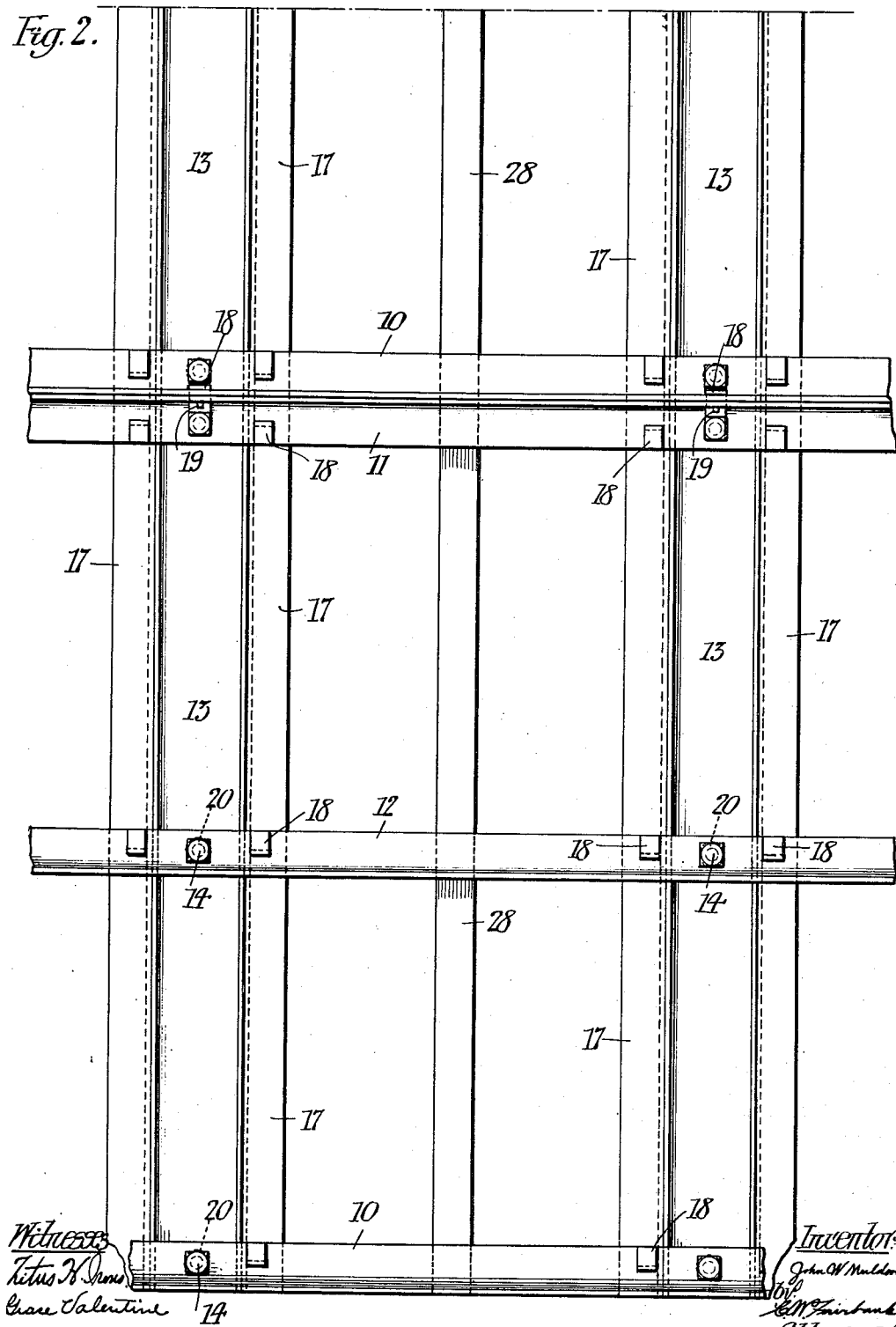
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Fig. 2.



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3 SHEETS-SHEET 3.

Fig. 3.

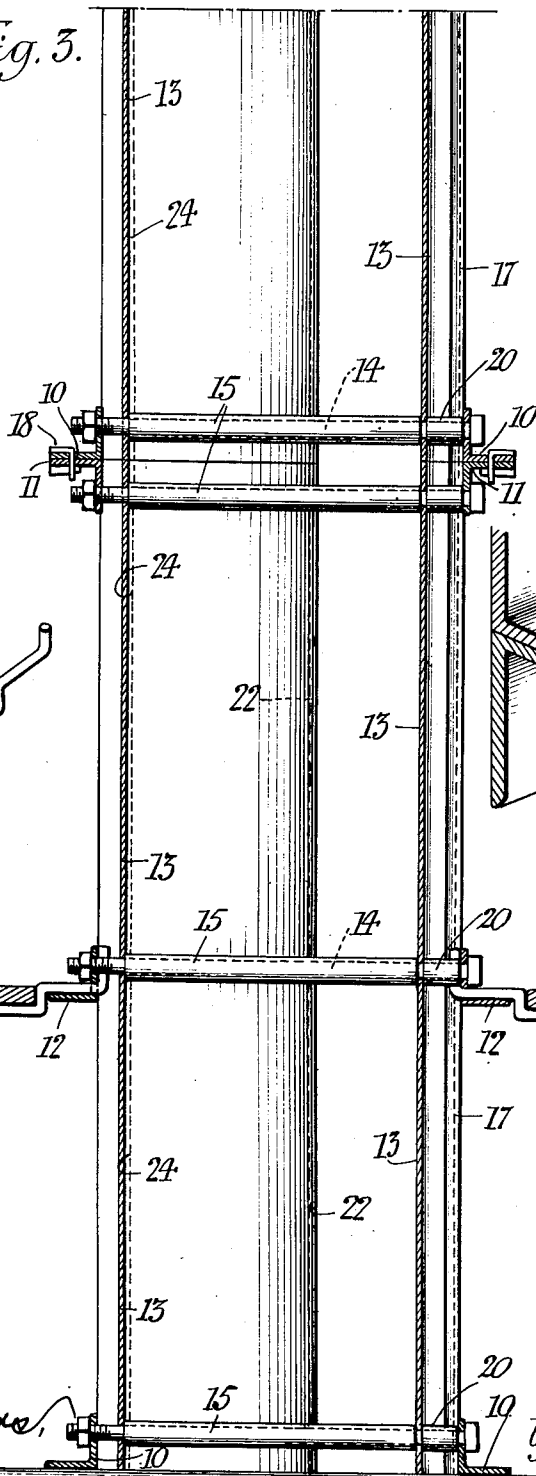


Fig. 4.

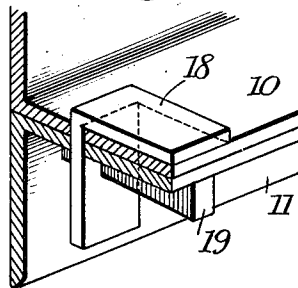
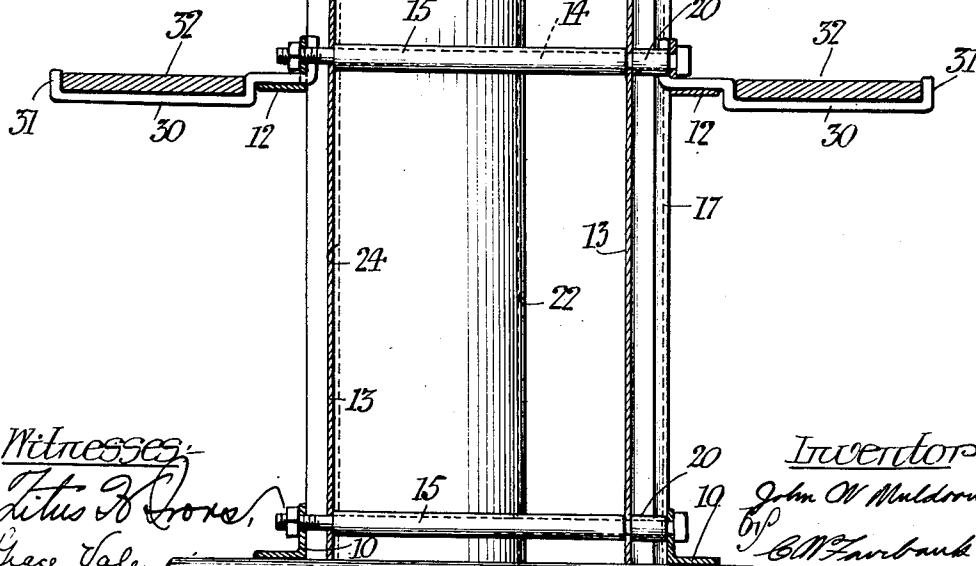
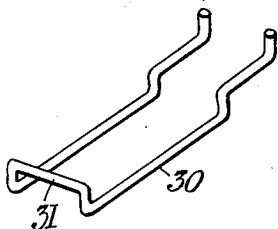


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN W. MULDOON, OF NEW YORK, N. Y.

FORM FOR MONOLITHIC WALLS.

1,109,934.

Specification of Letters Patent.

Patented Sept. 8, 1914.

Application filed June 19, 1912. Serial No. 704,519.

To all whom it may concern:

Be it known that I, JOHN W. MULDOON, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented new and useful Improvements in Forms for Monolithic Walls, of which the following is a full, clear, and exact description.

10 This application includes certain subject-matter divided out of my prior application Serial No. 688,118, filed April 2, 1912.

My present invention relates to forms for use in making monolithic walls, and the
15 the main object of my invention is to facilitate the formation of vertical grooves or recesses in one or both surfaces thereof and separated by ridges or flanges. The height of the ridges or flanges determines the thin-
20 ness of the wall, while the said recesses or grooves may be used as ventilating passages, storage chambers, or as spaces for steam, gas, water, sewerage, or hot-air pipes, substantially as disclosed in my said
25 prior application. In my improved construction, I employ a series of vertically-extending sections detachably secured together to constitute the side walls of the mold or form. These sections may be
30 of various different shapes, but the mold wall is preferably made up of two series of alternately arranged sections, certain of which project inwardly to a greater extent than the others, so as to form the desired
35 recesses or ridges on the surface of the finished monolithic wall. In the preferred embodiment of my invention, each alternate section is formed of a channel and the intermediate sections are formed of sheet metal and are bowed, bent, or otherwise constructed so as to project inwardly a considerable
40 distance beyond the normal plane of the channels. In giving the monolithic wall a plane smooth surface, the intermediate sections may have their inner surfaces flush with the webs of the channels. One important feature of my invention involves the mounting of certain of the sections in such
45 manner that they may be adjusted inwardly or outwardly within certain limits, so as to vary the height of the main flanges or ridges, and thus vary the effective thickness of the wall. The same means may be employed for varying the positions of certain
50 of the sections going to make up the outer wall of the mold, so that the finished mono-

lithic wall may have either narrow, shallow, vertical grooves or ridges for ornamental purposes instead of being plane and smooth. Certain of these sections, particularly if
60 they be comparatively narrow, may form part of a skeleton framework to which the remaining sections are secured. This skeleton framework also includes transversely-extending members, which transverse mem-
65 bers are preferably employed for supporting a platform upon which the workmen may stand during the construction of the wall.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a top plan view of a mold constructed in accordance with my invention, certain of the parts being shown in section; Fig. 2 is a face view of the outer surface of a portion of the mold; Fig. 3 is a vertical
75 transverse section on the line 3—3 of Fig. 1; Fig. 4 is a transverse view of a detail showing the means for detachably securing adjacent parts together; Fig. 5 is a perspective view of one of the platform supports; and
80 Fig. 6 is a top plan view of a portion of a wall which may be constructed by the use of my improved forms.

In the preferred embodiment, all of the parts of my improved mold or form are made of metal and are adapted to be secured
90 together in a plurality of different positions, so as to make walls having different characteristics. For securing the several sections together, going to make up one layer or course of the mold, I employ trans-
95 verse members preferably in the shape of angle irons. There is preferably an angle iron 10, at the lower end of each layer or course, and an angle iron 11 at the upper end. If desired, there may be an inter-
100 mediate angle iron 12 parallel to the other two and serving to reinforce or support the sections and prevent bulging. These angle irons may be considered as a part of a skeleton framework, the vertical elements of
105 which are in the form of vertical channels 13. Transversely-extending tying bolts 14 connect each vertical member of the framework with the vertical member in the opposite wall of the mold at each point of inter-
110 section of a vertical member and a transverse member. The vertical members when

in the form of channels may engage with the vertical flanges of the angle irons and may be spaced apart by spacing tubes or sleeves 15 encircling the tie rods. In the open spaces within the skeleton frame, I employ wall sections which are preferably formed of sheet metal and detachably secured in place.

For giving the monolithic wall a smooth flat surface, I may employ sections 16 having a main body portion and peripheral flanges 17 bent around to lie parallel to the body portion and to space the body portion from the angle irons forming the transverse members of the frame. These flanges 17 may be detachably secured to the vertical flanges of said angle irons by the use of substantially L-shaped fastening members 18 extending through registering slots and held in place by wedges 19. Substantially the same form of fastening means may be employed in securing together the bottom angle iron of one layer or course and the top angle iron of the layer or course below, as is shown in detail in Fig. 4. The channels 13 may have side flanges substantially equal in height to the side flanges on the sections 16, so that their webs will lie in the same plane with the body portion of the sections 16, or the flanges of the channel may be somewhat less, as is illustrated in the drawing. By spacing these channels inwardly a slight distance from the angle irons by tube sections 20 of the proper length, the webs of the channels and the body portions of the sections 16 may be brought into alinement, as shown at A in Fig. 1. By using somewhat longer spacing tube sections 21, the channel may be brought inwardly, so that its web will lie inside of the plane of the body portions of the sections 16, as shown in dotted lines at E in Fig. 1, and the resulting monolithic wall will have narrow, shallow grooves in its outer surface. By showing the channel outwardly, so as to engage with the angle irons, as shown at C in Fig. 1, the spacing tube sections may be omitted and the webs of the channels will lie outside of the plane of the body portions of the sections 16, and the resulting monolithic wall will have narrow ridges or flanges upon its outer surface, which may serve merely as ornamentation by giving a panel effect, or may serve as an ornamental casing upon the opposite sides of a window or door. By reversing the channels, so that they lie with their webs against the angle irons, as shown at D in Fig. 1, somewhat higher ridges may be formed on the otherwise plane surface of the wall. If it is desired to give these ridges any particular or distinctive color or to form them out of a different kind of material to give ornamentation to the wall, the channel when arranged, as shown at D in Fig. 1, may have the space these flanges

filled with a colored cement or concrete which will unite with the main body of the concrete going to make up the wall and become practically integral therewith although of a different color, composition, texture, or appearance.

For forming the inner surface with deep recesses or vertical grooves, I may employ the channels 13 as the molding surface for the outer edges of the ridges or flanges between said grooves, and employ between the channels wall sections 22, each of which projects inwardly a considerable distance beyond the channels and toward the sections 16 constituting the opposite side of the mold. These sections 22 may be of sheet metal and bowed or bent as illustrated, so as to present substantially parallel side walls 23 extending inward at substantially right angles to the general direction of the wall. These side walls 23 may terminate in flanges 24 secured to the angle irons by suitable L-shaped fasteners 18 and wedges 19. By forming the wall portions 23 substantially parallel, the resulting monolithic wall will have the opposite sides of its ridges or flanges substantially parallel and of a width determined by the width of the webs of the channels 13.

One important feature of my invention involves this forming of the wall sections so as to permit the ready adjustment of the parts and the formation of the ridges or flanges on the monolithic wall of any height desired within reasonable limits. As all of the sections 23, 23 are parallel, it is evident that the channel 13 between one section 22 and the next, may be moved inwardly to any desired position, for instance, that shown in dotted lines at E in Fig. 1, the position of said channel being dependent upon the relative lengths of the two spacing tubes employed upon opposite sides thereof. By shortening the inner spacing tube and lengthening the outer spacing tube, the same molds may be employed for making walls of different thicknesses, for instance, an eight-inch wall or a twelve-inch wall, or any thickness therebetween. This difference in thickness of the wall results merely from a difference in the position of the channels between the wall sections 22 and does not necessitate any change in either the form or the position of the straight wall sections 22. If it is desired to use the forms merely for a wall of a given thickness, it is evident that the wall sections 23 may diverge instead of being parallel. It is, of course, evident that even though they do diverge, a thinner wall might be formed by employing a wider channel. The side walls 23 are shown as merging into the inner body portion within rounded corners, but it is evident that these corners might be of any other suitable shape.

In arranging the mold sections to form a corner in the monolithic wall, it is evident that the inner and outer sections may have to be slightly modified in shape. In giving the wall a ridge or flange extending in diagonally at the corner, as shown in Fig. 1, I may employ two wall sections 25 and 26 in place of the one wall section 22, as the recess is undercut. These two sections may be connected together at their inner edges by fastening members of the character above described, and they may be braced at their meeting line by one or more inwardly-extending bars 27. The main sections 22 may also be braced intermediate of their side edges in the manner shown in my prior application above referred to, although if the sections be made sufficiently small and of sufficiently stiff material, such bracing is not necessary. The outer wall sections 16, I have illustrated as being braced by wooden bars 28 disposed vertically along the outer surface of the sections 16 and held in place behind the vertical flanges of the angle irons.

I have referred to the channels 13 as constituting a part of the skeleton framework, but it is, of course, evident that they may be considered merely as wall sections, the surface of the mold being made up of alternate narrow and wide sections. The channels may be made very much wider than as shown, in which event they would not properly be considered as part of the framework, and, in fact, they might have their edges secured to the angle irons in the same manner as are the edges of the sections 16 and 22.

For facilitating the insertion of the concrete or other plastic mixture going to make up the monolithic wall, I build up the mold a course at a time and fill one course before placing the form for the next course. The forms for the lower course may be removed and placed above as soon as the concrete has hardened. In fact, I may employ only two courses or forms and alternate them by removing the lower one and placing it above the other each time a new course is to be formed.

For supporting the platform upon which the workmen may stand while assembling the parts of the mold and while filling in the concrete, I preferably employ the brackets shown particularly in Fig. 5. Each bracket is formed of a metal rod bent intermediate of its ends, to form two parallel bar portions 30, 30, connected together at their outer ends by an upturned loop 31, and having their free ends bent to lie across the horizontal flange of an angle iron and thence through holes in the angle iron and upwardly along the inner surface of the vertical flange. With the brackets formed and arranged in this manner, they may support a platform 32 with a considerable load there-

in but may be very readily removed by lifting upwardly on the outer ends and withdrawing the inner ends from the apertures in the angle irons. In Fig. 3, I have shown platforms and their supporting brackets only upon the intermediate angle irons 12, but it is, of course, evident that they may be employed on the lower angle irons as well.

By properly arranging the sections going to make up my improved mold, I may construct the wall with a plane or ridged outer surface and a plane or ridged inner surface, and the ridges may be of such height as to form deep recesses in the wall or merely to form ornamental recesses or ridges. In Fig. 6, I have shown a wall having an exterior surface 40 ornamented by alternate narrow ridges 41 and grooves 42, and with the inner surface provided with deep flanges 43, each having substantially parallel sides. Between these flanges, plates 44 may be mounted to give the finished wall a smooth surface. The mold sections may be arranged to form a branch wall 45 extending inwardly from the main wall and this branch wall may be formed in the same manner as the main wall or may be formed with ridges 46 of less height than the ridges 43.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A form for monolithic wall construction including a skeleton frame having vertical channel members and longitudinal angle members detachably secured together and plates arranged alternately with said channel members and each having its body portion spaced from said frame and having marginal flanges in engagement with and parallel to the side flanges of said channel members and detachably secured to said angle members, the inner faces of said plates being substantially flush with the webs of said channel members.

2. A mold for monolithic wall construction including a plurality of longitudinal frame members and a series of vertical mold wall sections independently detachably secured thereto, each alternate wall section being bowed or bent inwardly and having parallel marginal portions projecting toward said frame members and means for securing the remaining wall sections at different distances from said frame members and in engagement with the parallel marginal portions of successive first-mentioned mold wall sections.

3. A mold for monolithic wall construction including a plurality of longitudinal frame members and a series of vertical mold wall sections independently detachably secured thereto, each alternate wall section being bowed or bent inwardly and having parallel marginal portions projecting toward said frame members and means for securing

the remaining wall sections with either face toward said frame members and in engagement with the parallel marginal portions of successive first-mentioned mold wall sections.

4. A mold for monolithic wall construction including a plurality of mold wall sections, each alternate section having its edges extending outwardly substantially parallel to each other and means for securing the other of said sections between the opposed edge portions of the first mentioned sections and at varying positions inwardly between said parallel edge portions.

5. A mold for monolithic wall construction including longitudinal extending angle irons and a plurality of mold wall sections,

each alternate section being bowed inwardly from said angle irons and having its edges detachably secured to the latter and the intermediate wall sections being in the form of vertically disposed channel members between the adjacent edges of said bowed sections and detachably secured to said angle irons independently of the attachment of said bowed sections.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN W. MULDOON.

Witnesses:

FLORENCE LEVIEN,
CLAIR W. FAIRBANK.