F. D. LAMBIE.

MOLD FOR BUILDING MONOLITHIC HOUSES.

APPLICATION FILED MAR. 5, 1914.

1,122,285. Patented Dec. 29, 1914.

Fig. 4.

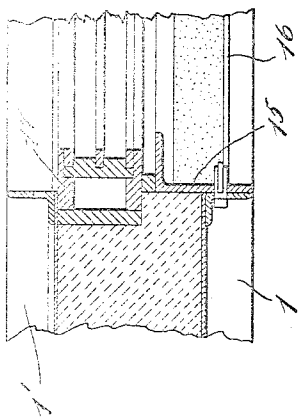


Fig. 3.

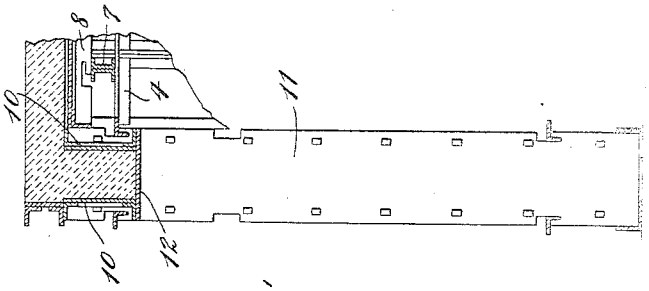


Fig. 2.

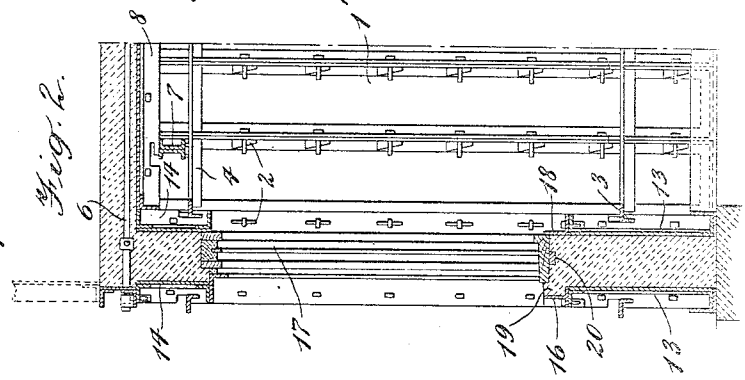
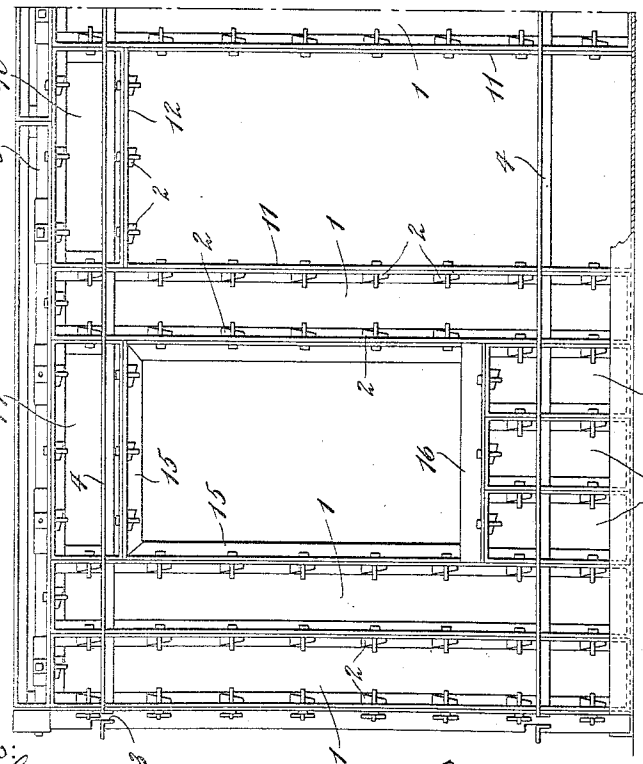


Fig. 1.



Witnesses:
Geo. C. Ahney.
Henry Mosley.

Inventor
Frank D. Lambie
By his Attorneys
Rosenbaum Stickney & Cox.

UNITED STATES PATENT OFFICE.

FRANK D. LAMBIE, OF UPPER MONTCLAIR, NEW JERSEY, ASSIGNOR TO LAMBIE BROTHERS CORPORATION, A CORPORATION OF NEW YORK.

MOLD FOR BUILDING MONOLITHIC HOUSES.

1,122,285. Specification of Letters Patent. Patented Dec. 29, 1914.

Original application filed July 16, 1913, Serial No. 779,267. Divided and this application filed March 5, 1914. Serial No. 822,741.

To all whom it may concern:

Be it known that I, FRANK D. LAMBIE, a citizen of the United States, residing at Upper Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Molds for Building Monolithic Houses, of which the following is a full, clear, and exact description.

This invention relates to molds for constructing monolithic concrete buildings and more specifically to mold frames for providing the door and window openings in the walls of the building during the construction of the same.

In my parent application, Serial No. 779,267, filed July 16, 1913, of which application the present case is a division, I have disclosed a mold consisting of substantially rectangularly-shaped exterior and interior mold-frames which are spaced apart sufficiently to give the necessary thickness to the concrete walls, the frames being composed of vertically disposed flanged plates securely fastened together, the interior frame supporting the ceiling plates and having substantially the form of an inverted box, whereby the mold frames for casting one complete story of the building, including a floor, is completely assembled at the same time and the concrete may be poured in a single cast. If a mold of this description is used, it is necessary to provide access to the interior frame so that it may be removed after the walls and floor of the building have set and one of the aims of the present invention is to provide alining openings in both the exterior and interior mold frames which are adapted to be used for this purpose and which are of a size and so located that they can be used to form the door and window openings when the walls are cast.

Another object of the invention is the provision of a mold frame in which the window frame proper may be utilized as a part of the mold to form the openings in the wall frames through which free access may be had to the interior mold frame, which window frame remains embedded in the concrete after the same has been cast.

A still further object of the invention is to provide a concrete window sill offset from the main surface of the wall which is formed simultaneously with the casting of the latter and thereby adds to the attractiveness of the building.

With these and other objects in view, my invention consists of the combinations and constructions which will be hereinafter set forth in the specification and particularly pointed out in the appended claims.

In the accompanying drawings: Figure 1 is a front elevation of one exterior face of a mold embodying the features of my invention; Fig. 2 is a transverse section through the interior and exterior mold frames showing the window construction; Fig. 3 is a transverse section through the mold showing the door construction; and Fig. 4 is a transverse horizontal section of a detail of the window mold frame on an enlarged scale.

As disclosed in the parent application hereinbefore referred to, the exterior mold frame is composed chiefly of standard wall plates 1 which are vertically disposed and are provided with projecting flanges flush with their edges. These plates or panels are relatively long and narrow and in the best practical constructions are generally of sufficient height to complete one story of the building. At intervals in the side flanges of the panels are uniformly spaced square apertures or holes, which register when the plates are arranged with their flanges abutting and their surfaces flush.

Fastening devices consisting of clips 2 provided with shanks having rectangular slots therein pass through the registering apertures and wedges or keys are driven into the rectangular slots which draw the flanges of the plates close together to form a water-tight joint preventing the formation of ridges on the surface of the wet concrete during the casting operation. Each of the standard plates or panels is provided with L-shaped locking notches 3 in their side flanges near their upper and lower ends, respectively, which notches receive the liner locks 4 which lock the panels together with their surfaces flush, and which will also prevent any relative lateral movement of the plates before or while the concrete is being poured, thereby avoiding any irregularities or defects in the walls of the house. Secured to the upper ends of the wall plates or panels are belting course plates 5, the exterior frame being supported against lateral

displacement by tie-rods 6 which pass through the belting course plates to opposite sides of the frame and hold it rigidly in position, a portion of one of said rods being shown in Fig. 2. The interior frame is also composed of a plurality of vertically-disposed standard plates or panels 1', which are clipped and locked together by liner locks in the manner which has been described; the plates in the interior frame being arranged in exact alinement with corresponding plates of the exterior frame. The upper row of liner locks 4 support eyebeams or channel irons 7 carrying ceiling plates 8 which are also standard plates, and which are supported with their surfaces substantially flush with the top flanges of the wall plates. These ceiling plates are adapted to sustain the layer of concrete forming the floor of the next story.

Where a door opening is to be provided in the wall of the building, a plurality of standard wall plates or panels are omitted from both the interior and exterior frames to provide an opening of the desired size, the edges or flanges of the plates facing the opening being in exact alinement, since all of the plates in both the exterior and interior frames are so arranged. Horizontally-disposed flanged plates 10 are fastened by clips 2 to the side flanges of the wall plates of both the interior and exterior frames at the upper ends of the same with the side flanges of the plates 10 which face upwardly flush with the top flanges of the wall plates. To fill the space between the exterior and interior frames, and surrounding the door opening thus formed, side door plates 11 are secured to the side flanges of the plates of the interior and exterior frames by means of clips 2 and a top door plate 12 is secured to the downwardly facing flanges of the horizontally-arranged plates 10, thereby forming a water-tight box around which the concrete will spread when poured, so that after the frames are removed, a door opening having finished walls will be produced. Since the openings are made in both the exterior and interior frames, it is manifest that free access to the interior frame may be had at all times during the assembling of the same and also after the concrete has set to permit the plates forming the interior frame to be removed, which is essential since no access to the interior frame may be had from above or below.

The window construction is somewhat similar and the opening for the same is formed by utilizing short-length plates 13 in both the exterior and interior frame which are secured and locked in place with their bottoms flush with the bottoms of the standard wall plates. Horizontally-disposed plates 14 are fastened to the exterior and interior frames at the upper ends thereof similar to the manner described for the door construction, thus forming a window opening of the proper size. Secured to the side flanges of the standard plates of the exterior frame which face the opening are the top and side reveal plates 15 having apertures therein alining with the apertures in the flanges of the wall plates through which clips 2 are passed. These plates comprise right angle L's whose free legs extend inwardly into the wall space beyond the surface of the plates of the exterior wall frame, as is shown in Figs. 2 and 4. A bottom reveal plate 16 consisting of a T-shaped strip of iron is fastened to the upper ends of the short-length plates 13 of the exterior frame, which plates have suitable apertures in their top flanges for this purpose. The up-standing leg of the T is offset from and lies in a plane outside of the surface plane of the wall plates to form the projecting window sill as will be later referred to. A wooden window frame 17, which is of the usual box frame construction, is secured to the free legs of the top and side reveal plates 15 by screws or other fastening means which frame is of such a width and thickness that it abuts the surfaces of the plates of the interior frame surrounding the window opening along its top and side surfaces and extends downwardly to a point just below the top of the offset plate 16. An L-shaped strip of iron 18 is attached to the upper ends of the special plates 13 of the interior frame against which the inner bottom edge of the window frame abuts, thus completely closing the opening between the interior frame and the window frame. The space between the interior frame and the window frame is therefore entirely closed, and the space between the exterior frame and window frame is closed along the top and sides of the frame by the reveal plates 15 to which the frame is fastened, but since the T-shaped strip 16 is offset from the surface of the wall plates, a space 19 is left between the outer bottom edge of the window frame and the exterior frame through which access may be had to the concrete beneath the window while the same is being cast.

When the concrete is poured it will pack solidly around the top and sides of the window frame which, together with the reveal plates, forms a water-tight box preventing the flow of the concrete into the opening designed for the window, but since wet concrete is not particularly fluid in its nature, the concrete will not pack around the bottom of the window frame and a shallow U-shaped space will be left beneath the window into which the concrete will not flow. The space 19 permits access to the concrete beneath the window and the workman may

either stir the same bringing the concrete against the bottom of the window frame, or additional concrete may be poured in so that the level of the concrete will be brought up to the top edge of the free leg of the T-shaped strip 16. The concrete is then troweled off at a slight angle forming the window sill, and since the free leg of the T-shaped piece 16 is offset from the surface of the plates forming the exterior frames, the window sill will be integral with and offset from the wall of the house and thus add to the attractive appearance of the same.

After the concrete has set the frame and reveal plates are removed and the window frame will remain securely embedded in the concrete and the windows may then be placed in position. A weather-strip 20 is preferably secured to the bottom of the window frame which strip is embedded in the concrete upon the casting of the same.

I claim:—

1. In a knock down mold for the construction of concrete structures, an interior and exterior frame, having openings therein for a window, top and side reveal plates secured to the exterior frame and extending into the space between the two frames, a window frame positioned between said frames and secured to said reveal plates along one face thereof, the other face of said window frame abutting the outer surface of the interior casing, a bottom reveal plate offset outwardly from the surface of the exterior frame leaving a space between the window frame and the exterior mold frame and forming a projecting window sill when the concrete wall is cast.

2. In a mold for constructing a monolithic concrete building, exterior and interior mold frames composed of separable plates having marginal flanges, said frames having alining openings therein formed by the omission of a plurality of plates from the exterior and interior frames, other plates having marginal flanges filling a part of said openings in said frames and secured to the adjoining plates of said frames, and means extending into the space between said frames adapted to secure a window frame in the space between said frames and surrounding the openings therein, said means being detachably secured to the flanges of the plates of one of said frames surrounding the opening therein.

3. In a mold for a monolithic concrete building, exterior and interior mold frames composed of separable plates secured together, and said interior mold frame having the form of an inverted box, said frames having alining openings therein, flanges on said plates surrounding the openings therein, and means secured to the flanges of the plates surrounding the opening in one of said frames adapted to secure a window frame in the space between said frames and surrounding the openings therein.

4. In a mold for the construction of a monolithic concrete building, spaced exterior and interior wall frames having openings therein for a window, means for completely filling the space between said frames and surrounding the openings therein on three sides thereof while leaving a space along the inner edge of the bottom wall of the opening in the exterior frame, and a plate secured to said bottom wall and offset outwardly from the inner surface of the wall exterior frame whereby free access to the concrete between the wall frames and beneath the window openings is permitted during the cast and a projecting window sill is formed when the concrete wall is cast.

5. In a mold for the construction of a monolithic concrete building, exterior and interior frames composed of separable plates, said frames having openings therein, angle irons detachably secured to the surface of said plates forming the top and sides of the opening in one of said frames, said angle irons extending into the space between said frames, a window frame positioned between the said frames and secured to said angle irons whereby the window frame is positioned in place when the concrete wall is cast and free access is given to the concrete below the window frame during the casting operation.

6. In a mold for the construction of a monolithic concrete building, spaced exterior and interior wall frames having openings therein for a window, means including a window frame for completely filling the space between said frames and surrounding the openings therein on three sides thereof while leaving a space along the inner edge of the bottom wall of the opening in the exterior frame, and a plate secured to said bottom wall and offset outwardly from the inner surface of the wall exterior frame whereby free access to the concrete between the wall frames and beneath the window openings is permitted during the cast and a projecting window sill is formed when the concrete wall is cast.

In witness whereof, I subscribe my signature, in the presence of two witnesses.

FRANK D. LAMBIE.

Witnesses:
WALDO M. CHAPIN,
JOSEPH BUCKLEY.

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