No. 651,019. Patented June 5, 1900.

E. L. RANSOME.

MOLD.

(Application filed Jan. 4, 1900.)

(No Model.) 2 Sheets—Sheet 1.

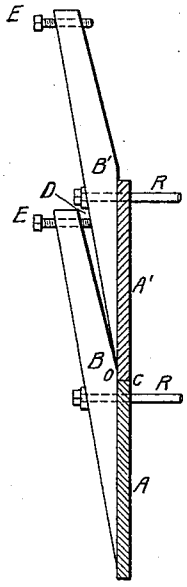


Fig. 1.

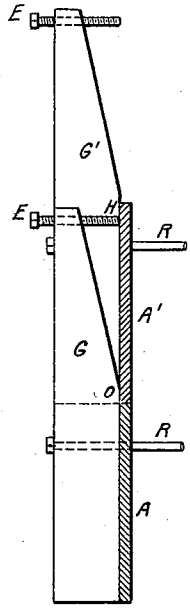


Fig. 2.

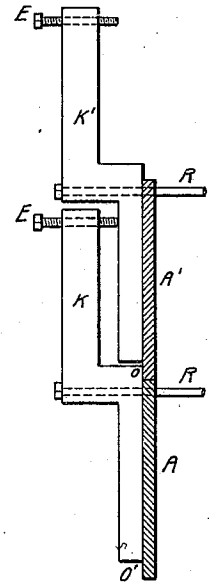
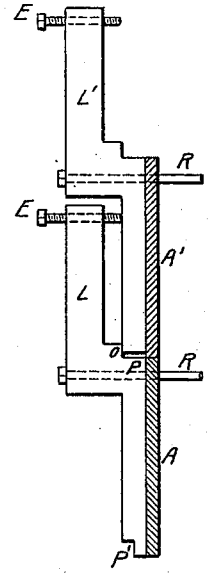


Fig. 3.



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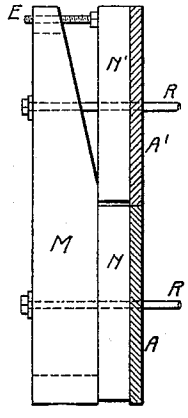

Fig. 5.

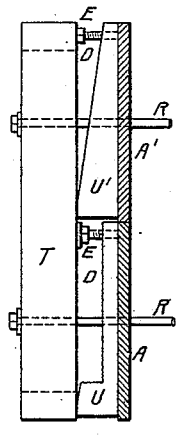

Fig. 6.

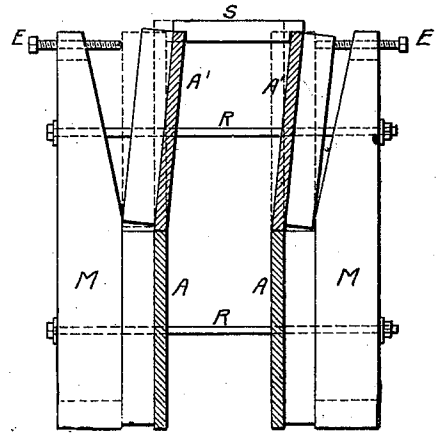

Fig. 7.

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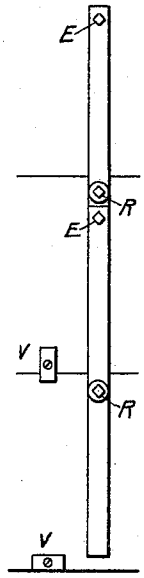
(No Model.) 2 Sheets—Sheet 2.



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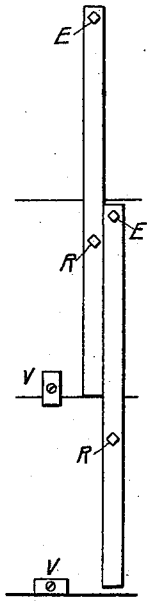

Fig. 9.

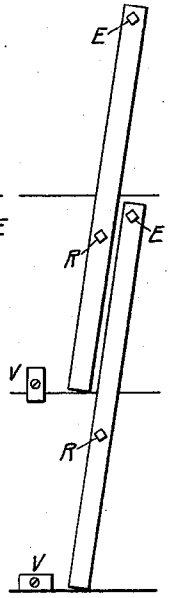

Fig. 9a.

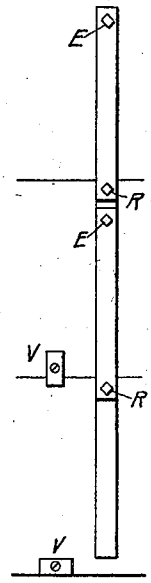

Fig. 10.

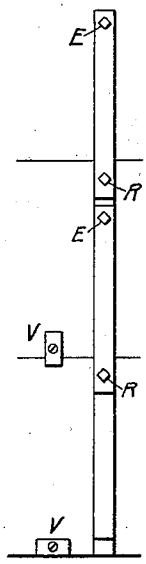

Fig. 11.

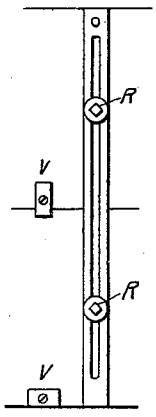

Fig. 12.

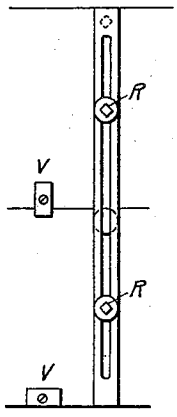

Fig. 13.

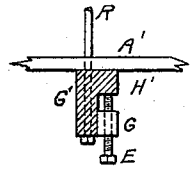

Fig. 14.

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UNITED STATES PATENT OFFICE.

ERNEST LESLIE RANSOME, OF NEW YORK, N. Y.

MOLD.

SPECIFICATION forming part of Letters Patent No. 651,019, dated June 5, 1900.

Application filed January 4, 1900. Serial No. 404. (No model.)

To all whom it may concern:

Be it known that I, ERNEST LESLIE RANSOME, a citizen of the United States, residing at New York city, State of New York, have invented certain new and useful Improvements in Molds; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, that form part of this specification.

The object of my invention is a mold for molding concrete *in situ* that will permit of ready alinement, and this is accomplished by the aid of braces of peculiar design and arrangement.

Primarily my invention is an improvement upon the mold or cribbing for which Letters Patent No. 314,398, dated March 24, 1885, were issued to me; but it is of broader application and is therefore not limited thereto.

In my older invention the mold-panels are held in place by braces slotted longitudinally, and through these slots the attaching-bolts are passed. Upon slacking the bolts of any standard it is free to move in a vertical direction either way until stopped by the end of the slot reaching one of the bolts.

In using a mold for building concrete *in situ* it has been customary to set one or more panels thereof on edge, fastening them in place by various means, and then to fill up the space bounded on one or more sides by them with soft concrete. When this concrete has sufficiently hardened, other panels are set in like manner upon the upper edges of those previously placed, and sometimes the upper panel is fastened by bracing it from the previously-placed parts of the mold. Hitherto it has been difficult to keep such molds plumb and true to line or to correct the misplacements occasioned by packing in the concrete.

My invention consists in an improvement of the braces and cleats of such molds and of a method of bracing that overcomes the difficulty just described.

For the purpose of more clearly describing this invention I divide the mold into the following principal parts—viz., panels, cleats, braces, adjusting-screws, and tie-bolts. The panels are units of the sheeting against which the concrete is molded. The cleats are pieces used for holding the boards of the panel together and for purposes hereinafter described. The braces are pieces placed outside the panels to hold the panels (two or more) in their relative positions. The adjusting-screws are for the alinement of the panels. The tie-bolts are used to hold the mold in place.

The accompanying drawings illustrate my invention.

Figure 1 is an end view of my improved mold, in which A and A′ are two panels, to which are attached, respectively, braces B and B′. E E are the adjusting-screws, C is the joint between the panels, D the space for adjustment between the braces, and R R are the tie-bolts. Figs. 2, 3, and 4 are illustrations of the braces in several modified forms, as hereinafter specified. Fig. 5 is an end view of the mold, in which the slotted brace M of my previous invention is shown beveled and adapted to the present improvement. Fig. 6 is another modification of this invention, in which the slotted brace T is used and the adjusting-space D obtained by beveling the cleats U and U′. In this case the adjusting-screws E are preferably affixed in the cleats. Fig. 7 illustrates the method of alining panels. Figs. 8, 9, 10, 11, 12, and 13 are front elevations of the braces of Figs. 1, 2, 3, 4, 5, and 6, respectively. Fig. 9ª is an alternative front elevation of the braces of Fig. 2. Fig. 14 is a horizontal section of brace G′ at top of panel A, showing set-off H′ and top of brace G.

In carrying out my invention to any suitable panel A, I attach the brace B, Fig. 1. This brace is peculiar, in that instead of following the line of the panels A A′, as is usual, it deviates outwardly therefrom along its inner edge adjacent to the panels from about the point of juncture of the panels at C to its upper end. Also in its primary form instead of running parallel with the line of the panels A A′ its outer edge deviates therefrom inwardly toward the panels from the top to the bottom. The deviation of the inner edge of the brace is greater in degree than that of the outer edge, so that when one brace is superimposed directly above the other, as at B and B′, Fig. 1, the space D is left between them.

This clearance-space is sufficient to permit of an outward movement of the top panel, if

in its alinement it is needed. Furthermore, the lower edge of the upper panel is stayed in close alinement with the upper edge of the lower panel by the brace B, while the upper edge of the top panel is also not only stayed but adjusted from the same brace by means of the screw E, working in the head of the brace. Ordinarily two or more braces are used in the length of a panel. This deviation of the brace may be formed in several ways. It may be made by beveling its inner and outer edges, as in Fig. 1. It may be made by beveling the inner edge only, as in braces G G', Fig. 2, in which case the braces are set a little out of line or askew, as in Figs. 9 and 9ª, so that they may clear one another, and in order to meet the requirement thus created the adjusting-screw works against the panel instead of against the upper brace, as shown at H, Fig. 2, or the screw may work against a lug or set-off attached to or a part of the upper brace, as shown in section at H', Fig. 14. It may be made by inner and outer offsets, as in braces K K', Fig. 3, and for purposes hereinafter explained it may be made by double offsets, as shown in braces L L', Fig. 4; but preferably I apply this invention to the slotted standard of the patent hereinbefore mentioned by beveling off the inner edges of the upper portion thereof, as shown in brace M, Fig. 5, in which case I form the panels by fastening the boards thereof with cleats N N', against which the brace M works and which receive the support of the screw E.

In order to hold the lower edge of the upper panel A' in close alinement with the adjoining edge of the lower panel A, the inner offset of the brace starts a little above the top of the lower panel, as at O, and the sheeting extends downward a little below the braces of the mold, as at O', Fig. 3. The rabbet thus formed to receive the upper panel prevents outward movement thereof at its base. In cases where the panel is not of itself sufficiently strong at the aforesaid rabbet the rabbet is strengthened by extending it sufficiently into the braces, as at P, Fig. 4, and thus creating a double offset in the brace at that point; also, when desired, a set-off is made at the bottom of the braces, as shown at P', Fig. 4.

The essential parts of this mold are the panels, braces, adjusting screws and bolts, and, under a certain modification hereinafter mentioned, the cleats.

The mold is set up in position on edge, and if the structure to be built is a wall or other like form a tier of the panels will be set up in pairs, one opposite another, with the space required for the width of the wall between them. In order to hold these panels in place, they are fastened together in the ordinary way by tie-bolts R, which preferably are passed through the braces, as shown in all the figures. Stays S, Fig. 7, are placed temporarily between the panels to prevent the bolts from pushing them too close together, and buttons V, Figs. 8, 9, 10, 11, 12, and 13, are attached to the lower edge of each panel as often as necessary, which when turned down outside the panel below hold the lower edge of their panel from working inward. If only one face of the work requires molding—as, for example, in some retaining-walls—then the bolts after passing through one panel are secured to holdfasts placed either within the structure or beyond it, after any of the well-known ways. After sufficient of the panels are placed concrete is put into the prepared space usually up to about the top edge of the first tier of panels. A second tier of panels is then set in place on edge upon the first tier and bolted in place. The lower edges of this second tier of panels are then held from outward movement by the rabbet of the braces and from inward movement by the buttons V, and the panels are adjusted at the top to the required alinement by means of the screws E and stays S. Notwithstanding all ordinary precautions during the progress of the work as tier is placed upon tier, owing to the want of perfect immovability the mold is apt to be thrown out of alinement, as shown in an exaggerated form in Fig. 7. This movement is usually slight and unimportant if corrected in time; but all means for making this correction hitherto have been extremely difficult and expensive. By my present invention this correction is made with the greatest ease by forcing the upper edge of the misplaced panel or that of the one above it to the required line by means of the screws E and stays S. It is for the purpose of creating space for this adjustment between the braces and the panels and of providing a ready way of adjusting that my invention is made.

The brace may be of any suitable material and may be of one or more pieces. It may be slotted and slide upon the panels, as in my former invention, or it may be attached to the panel and perform the double office of cleat and brace, as in Figs. 1, 2, 3, and 4, provided that in all cases it be so shaped as to give the necessary space for alinement between the panel above and the braces of the panel below, and for the purpose of this invention, in place of providing this required space by beveling the braces as herein described, it may be obtained by enlarging the cleats U and U' at their base, as shown in Fig. 6, in which case the adjusting-screws are preferably attached to the cleats and worked against the braces. In place of the screws E a wedge or block may be substituted. These various alternatives are all included in the principle of this invention, which consists in the provision of the necessary space for readjustment and alinement between the mold-braces and panels.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a mold, a panel, a brace attached thereto, and means engaging between said brace and another panel for causing relative lateral adjustment of said panels, substantially as set forth.

2. A mold, having a plurality of panels, braces attached to said panels and having portions deflected from the plane thereof, and means engaging between said braces and panels for causing relative lateral adjustment of said panels, substantially as set forth.

3. A mold having in combination a series of independent panels, a series of vertical braces each attached to a panel and projecting upward beyond but offset from an adjacent panel and adjusting devices set in the heads of the braces, and working against the upper part of the adjacent panel substantially as described.

4. A mold, having in combination a series of sections, each section comprising a panel, a brace projecting from but divergent from the plane of said section, means for holding the adjacent portion of an adjacent mold-section from lateral movement and means engaging said brace for adjusting the distant portion of an adjacent section, substantially as set forth.

5. In a mold, the combination of a series of panels, a brace or braces attached to one panel, a seat for an adjacent panel, and a screw arranged to engage between the brace and an adjacent panel and afford lateral adjustment to the latter, substantially as set forth.

6. In a mold, the combination of a series of panels arranged in pairs, tie-bolts holding the paired panels from spreading, a series of braces attached to the several panels, devices for giving lateral adjustment, and stays for causing simultaneous movement of the paired panels, substantially as set forth.

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FREDERICK G. FROST.