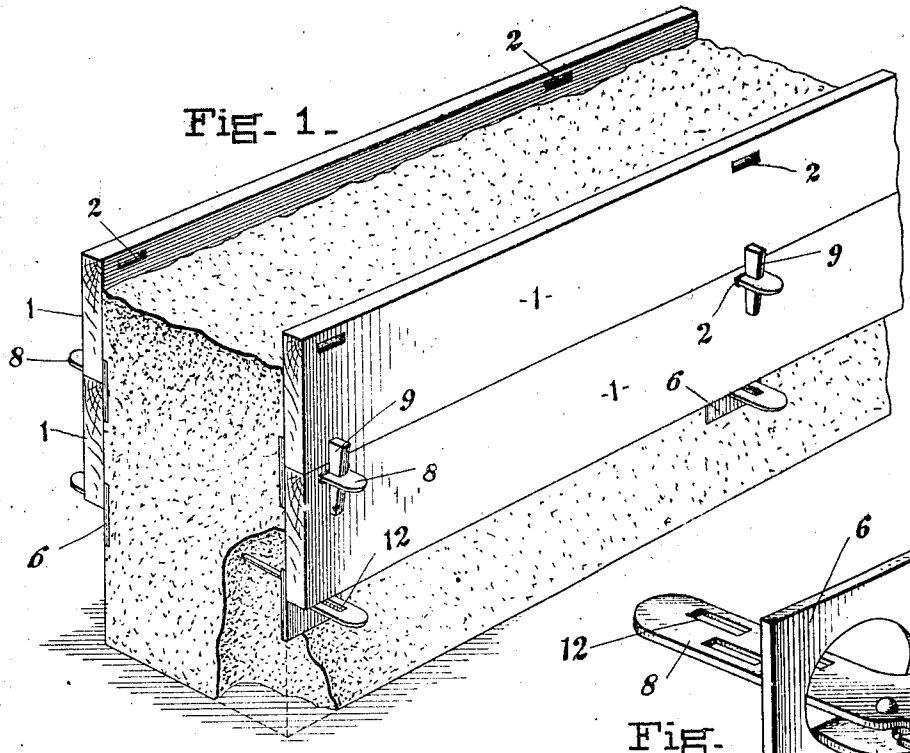
No. 871,390. PATENTED NOV. 19, 1907.

C. DIETRICHS.

DEVICE FOR MOLDING CONCRETE AND OTHER PLASTIC MATERIALS.

APPLICATION FILED APR. 20, 1907.

Fig. 1.



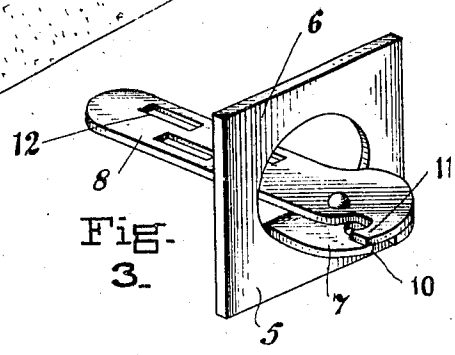
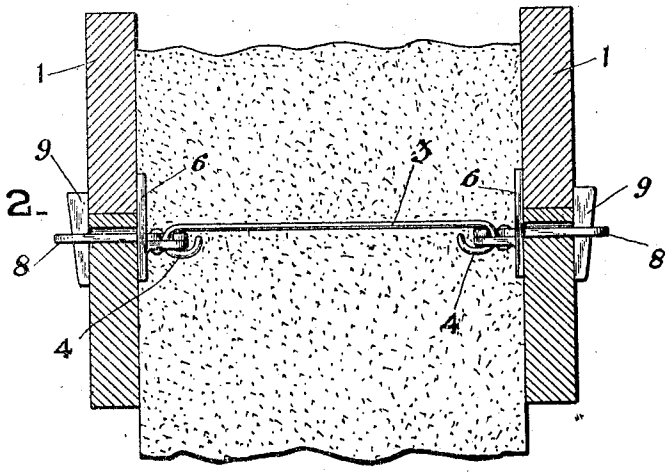


Fig. 3.

Fig. 2.



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DEVICE FOR MOLDING CONCRETE AND OTHER PLASTIC MATERIALS.

No. 871,390. Specification of Letters Patent. Patented Nov. 19, 1907.

Application filed April 20, 1907. Serial No. 369,271.

To all whom it may concern:

Be it known that I, CHARLES DIETRICHS, a citizen of the United States, residing at Little Ferry, county of Bergen, and State of New Jersey, have invented a new and useful Improvement in Devices for Molding Concrete and other Plastic Materials, of which the following is a specification.

This invention relates to devices for molding concrete and other plastic materials and has for its object the provision of simple and effective means for securing the boards or other side pieces of a mold in the formation of walls of concrete or other plastic materials.

In constructing walls of concrete and the like the ordinary practice is to form a mold of boards or plank arranged horizontally and secured rigidly so as to present a receiving space of uniform width throughout. The mold is usually extended upward as the construction of the wall progresses and the means ordinarily employed to secure the boards or plank in position are pieces of studding to which the boards are nailed, the studding members being braced from the outside in any desired manner. This mode of holding the side members of the mold is objectionable because it makes it practically impossible to use the boards or plank a second time and, therefore, renders the cost of a concrete wall considerably greater than it would be if the lumber employed in forming the mold could be advantageously used again. Various devices for securing the boards which form the sides of the mold have been proposed, but most of these devices are either too expensive in first cost or too difficult to adjust properly without considerable loss of time. It is, of course, essential that devices which are to be used in securing the side members of molds for concrete structures should be simple in design, inexpensive in construction and of such character that they can be easily operated by unskilled laborers. It is also necessary that they should hold the mold members with perfect security when in use but be susceptible to easy disengagement when it is desired to remove the mold members after the completion of the wall.

The present invention is designed to afford a device adapted to meet all of the conditions enumerated, and in the accompanying drawings I have illustrated one form of device embodying the present invention.

In the drawings, in which corresponding parts are designated by similar characters of reference in the several views: Figure 1 is a perspective view of a section of concrete wall in process of construction, the side members of the mold being secured in place by the devices forming the present invention, and a portion of the concrete of the wall being broken away to show the position of the stay rod therein; Fig. 2 is a vertical section showing a portion of concrete wall structure in the plane of one of the stay rods, showing the clamping action of the devices upon the side members of the mold; Fig. 3 is a perspective view of one of the devices for gripping the stay rods.

Referring to the drawings by the reference characters, the boards or plank which are used to form the side members of the mold are designated 1 and each of these boards is provided near its upper margin with a plurality of slots 2 to receive and support the devices for securing the boards in position. Each securing device comprises a stay rod 3 provided at each end with an eye 4, a gripping device for engagement with each eye, and means associated with each gripping device for clamping two boards placed one above another and holding them securely in alinement. Each of the devices which have this double function is designated generally as 5 and comprises a plate 6 having a laterally projecting lip 7 and pivoted member 8 carried by the lip 7 and a wedge 9 which cooperates with the plate 6 and the member 8 to clamp the boards 1.

The gripping of the tie rods 3 is effected by means of a notch 10 formed in the lip 7 to receive the eye at the end of the tie rod and a hook 11 formed on the pivoted member 8 and adapted, when the member 8 is in alinement with the tie rod, to extend through the eye of the tie rod, as shown in Fig. 2. On the opposite side of the pivot upon which the member 8 turns a plurality of slots 12 are formed in the member 8 to receive the wedge 9. Several slots are provided in order that the device may be adapted for use with boards or plank of different thickness.

The operation of the securing devices will be clear from an inspection of Fig. 2. The board which is to form the bottom tier of one side of the mold is set in position. The device 5 with the tie rod gripped therein is placed in position with the member 8 extending through the slot 2 in the board. A

board to form the second tier on that side of the mold is then placed in position upon the top of the board already placed and the wedge 9 is then driven home through the slot 12. In this way the two boards are clamped together in perfect alinement. At the other end of the tie rod 3 another one of the gripping devices is secured and the board to form the first tier of the other side of the mold is then placed in position with the pivoted member 8 extending through the slot 2. Another board is then placed on top to form the second tier on that side of the mold and a wedge is introduced into the slot 12 and forced home to clamp the two boards in proper relation. When the wedges are driven home the mold members at opposite sides of the mold are securely held and the tie rod 3, being gripped at each end by the combined action of the hook 11 and the slot in the supporting lip 7, the side members of the mold are accurately spaced apart so as to afford a receiving space for the concrete which is of definite width. As concrete is introduced into the mold and tamped down, the mold members are not forced out of their position nor can the tie rod become disengaged so as to permit the spreading of the mold members. As the wall is carried upward and it becomes necessary to provide additional boards to extend the mold upward, the procedure already described which is employed in securing the bottom members of the sides of the mold and the members immediately above is repeated as often as may be necessary. It is not necessary to leave all the side members of the mold in place until the wall is finished. The concrete hardens or sets quite rapidly and as soon as the hardening has taken place at the bottom of the wall the mold members adjacent to the hardened portion of the mass of concrete may be removed and employed in extending the mold upward. The removal of the side members of the mold after the concrete has set is effected by simply withdrawing the wedges 9 from the slots in the members 8 and then removing the boards. As soon as both boards clamped by one of the securing devices have been removed the device can be detached from the tie rod by turning the member 8 on its pivot and so disengaging the hook 11 from the eye in the end of the tie rod. The tie rod 3 is left in position in the concrete, and the openings left in the face of the concrete by the removal of the gripping devices are afterwards filled in with a mixture of cement and sand which will match the surface of the wall.

From the foregoing description it will be seen that the devices for securing the boards forming the sides of the mold can be easily operated; that they will clamp the boards firmly, so as to keep them in proper alinement; and that the tie rods will be so held that the tamping of the concrete in the mold cannot disengage the tie rods from the gripping members. The hooks and slots by means of which the tie rods are gripped will be so formed that practically no play is allowed the tie rod after the gripping devices are brought into engagement therewith, thus making the sides of the mold as solid and unyielding as if outside studding members and braces were provided. It will also be seen that the devices by which the mold members are clamped and the tie rods gripped are simple and inexpensive in construction, and are not likely to be injured by use. If lost, they can be readily replaced. The tie rods themselves are preferably formed of wire of suitable gage, but may be made of other material if desired. Wire is desirable because of its cheapness and the ease with which it can be worked, as well as the degree of rigidity which a wire of comparatively small gage will afford.

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

1. In apparatus of the character specified, the combination of a tie rod having a length less than the thickness of the wall to be constructed, and devices for engagement with the ends of the tie rod adapted to grip the side pieces of a mold, said devices each comprising a clamping plate for contact with the inner face of the mold member, a tie rod engaging member pivoted on said clamping plate, and means coöperating with said tie rod engaging member to clamp a mold member against said clamping plate.

2. In apparatus of the character specified, the combination of a tie rod having a length less than the thickness of the wall to be constructed and having its ends bent for engagement with hooks, and devices comprising hooks for engagement with the ends of said tie rod and means for clamping mold members, each of said devices comprising a clamping plate for engagement with the face of a mold member, a member pivoted on said clamping plate and having a hook for engagement with one end of the said rod, and means coöperating with said pivoted member to hold the said member in engagement with the tie rod and to clamp a mold member against said clamping plate.

3. A clamping device for the members of a concrete mold, comprising a clamping plate, a tongue rotatably secured to said plate, said tongue being slotted at a distance from the clamping plate to receive a wedge and adapted at the other end to interlock with a stay rod, and a wedge for engagement with said slotted tongue to clamp the mold member and hold the tongue in engagement with the stay rod.

4. A combined clamp and tie rod securing device for concrete molds, comprising a clamping plate, a pivoted tongue carried by

the plate, said tongue having a hook at one end to engage a tie rod and the plate having a portion adapted to close the hook when the device is in clamping position, and means coöperating with said tongue and said plate to clamp a mold member.

5. The combination with a tie rod having an eye at the end, of a device for gripping the tie rod and clamping the side members of a concrete mold, said device comprising a plate adapted to form an abutment for the mold members and having a lip disposed at an angle thereto, a member pivotally mounted on said lip and having at one end a hook adapted to engage the eye at one end of the tie rod and having a slot at the other end, and a wedge arranged in said slot and adapted to jam the mold members against the abutment plate.

In testimony whereof, I have signed my name in the presence of two witnesses.

CHARLES DIETRICHS.

Witnesses:
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