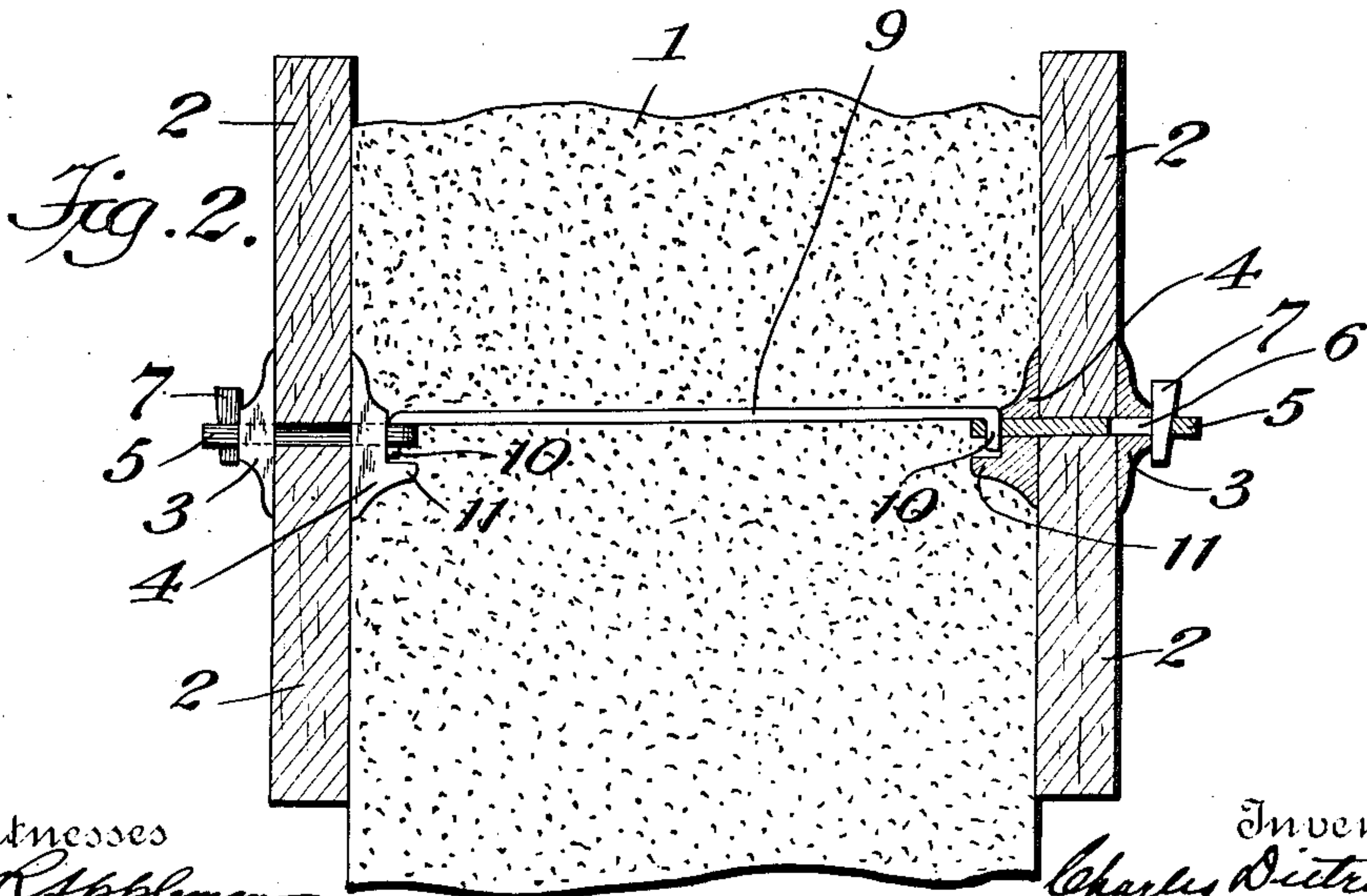
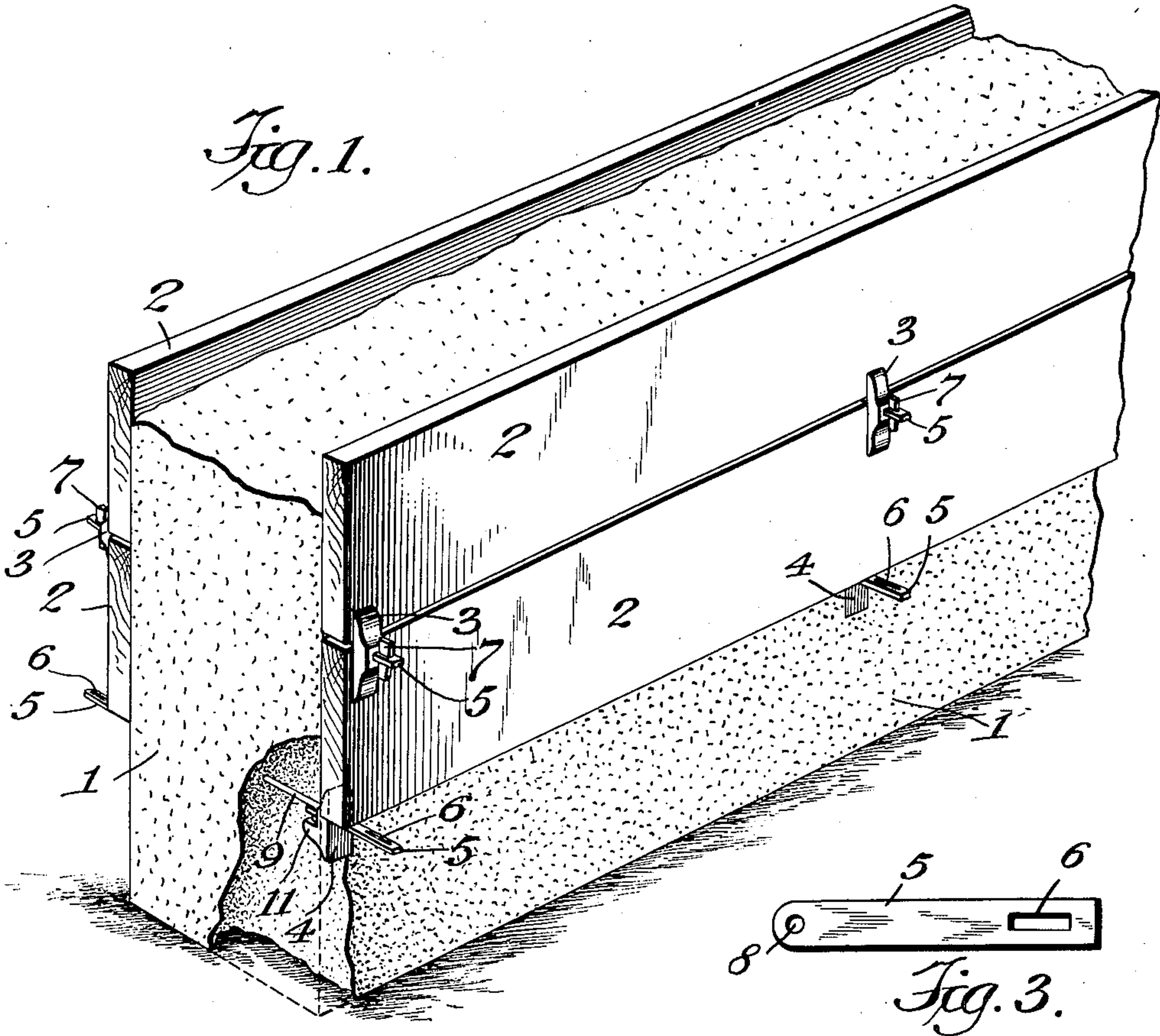


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PATENTED JAN. 8, 1907.

C. DIETRICH.
APPARATUS FOR CONSTRUCTING WALLS OF CONCRETE.
APPLICATION FILED JULY 10, 1906.



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APPARATUS FOR CONSTRUCTING WALLS OF CONCRETE.

No. 840,998.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed July 10, 1906. Serial No. 325,490.

To all whom it may concern:

Be it known that I, CHARLES DIETRICH, a citizen of the United States, residing in Little Ferry, Bergen county, New Jersey, have
5 invented a new and useful Improvement in Apparatus for Constructing Walls of Concrete, of which the following is a specification.

This invention relates to apparatus for
10 constructing walls of concrete and other plastic materials; and it has for its principal object the provision of simple, inexpensive, and effective devices for securing boards or
15 planks in suitable position to form a chamber or casing to receive the concrete or other plastic material of which the wall is constructed and to permit the ready disengagement of the planks from the securing devices as the
20 material of which the wall is built hardens or sets, so permitting boards or planks to be used over and over again in the course of construction of a single wall.

In the construction of walls of concrete or other similar plastic materials the procedure
25 ordinarily followed is to construct a box or casing of plank or boards of suitable thickness into which the plastic material of whatever character is introduced and allowed to set. The box or casing is low when the first
30 material for forming the wall is introduced thereinto, but is gradually extended upward as the height of the wall increases. The means employed for securing the plank or boards in position to form the box or casing
35 vary somewhat in character; but, as a rule, the boards or plank which form the portion of the box or casing to receive the bottom of the wall remain in position until the entire wall is completed. In consequence the
40 quantity of lumber required to form the casing for a wall of considerable height is large, and the cost of the lumber used adds very largely to the cost of the wall. Moreover, the means employed for securing the boards
45 or plank in position are often such that in removing the boards or plank after the wall is completed the boards or plank become so damaged that it is practically impossible to use them again for the same purpose.

50 The improved apparatus which constitutes the present invention is designed to hold the boards or plank which form the casing to receive the concrete for a wall with perfect security and yet to permit of the ready removal
55 of the boards or plank without injury thereto

as soon as the plastic material of which the wall is formed takes a permanent set. Accordingly it is possible to make use of a comparatively small amount of lumber in the construction of a wall of concrete or the like
60 by using the same lumber over and over again.

In the accompanying specification I have described improved apparatus forming the present invention, reference being had to the
65 accompanying drawings, in which corresponding parts are designated by similar characters of reference throughout, and the scope of the invention is clearly defined in the appended claims. 70

In the drawings, Figure 1 is a perspective view of a portion of a concrete wall under construction and showing the mode of using the improved apparatus forming the present invention. Fig. 2 is a transverse sectional
75 view through a portion of a concrete wall under construction, showing the action of the improved devices for securing the casing boards or plank in position. Fig. 3 is a detail view of one of the binding-links. 80

Referring to the drawings, 1 designates the body of concrete or other plastic material of which the wall is formed, and 2 designates the boards or plank forming the sides of the casing or chamber which receives the
85 concrete.

In Fig. 1 the wall is shown as having the lower portion permanently set or hardened and the upper portion is still held in form by means of the casing. The boards or plank
90 2 2, between which the lowermost portion of the wall is formed, may be secured in position in any suitable manner, and on these boards or plank are placed the devices for securing the next course of boards or plank. These
95 securing devices are shown most clearly in Fig. 2, and they include a pair of clamp-plates for each side of the casing, a binding-link extending through each pair of clamp-plates, a stay connecting the securing devices
100 at one side of the casing with those at the other, and wedges or the like for bringing the clamp-plates into proper engagement with the boards or plank to hold them in position. The external clamp-plates 3 differ somewhat
105 in form from the internal clamp-plates 4, but both are provided with flat clamping-faces for engagement with the boards or plank 2. Each clamp-plate is slotted for the passage of one of the binding-links 5, and each bind- 110

ing-link is slotted at 6 near one end to receive a wedge 7. At the other end it is provided with a small opening 8 to receive one end of a stay 9. Each stay 9 consists, preferably, of a piece of heavy wire having end portions 10, which are bent substantially at right angles to the intermediate portion, the length of the intermediate portion of each stay being exactly determined, so that the boards or plank 2 may be secured at exactly a certain distance apart. Each internal clamp-plate 4 is provided with a projecting lug 11, which extends under the adjacent downturned end of the stay 9.

The mode of using the improved apparatus for constructing walls will be plainly seen from an inspection of the drawings. Assuming that the boards or plank forming the lowermost course of the casing are properly secured in position, the next course of plank or boards is secured by laying the binding-links 5 on top of the lowermost boards, setting the next course of boards or plank in position on top of the binding-links, then applying the clamp-plates to the binding-links, introducing the stay 9, then wedging the clamp-plates into close gripping engagement with the boards or plank of the first course as well as of the second. The wedging of the clamp-plates into close engagement with the boards or plank serves also to bind the angular ends of the stay securely in engagement with the openings 8 in the binding-links. Consequently, if the lowermost course of boards or plank is properly placed and secured in position the next course will be held in complete alinement with the first course, and succeeding courses will be similarly alined. The wall therefore will be perfectly plumb and of uniform thickness from bottom to top.

In the actual construction of walls of concrete or other plastic material by the use of my improved apparatus the boards or plank should be of uniform thickness, and it is desirable that they should also be of uniform length and width. The total number of boards or plank required will depend, of course, upon the size of the wall to be constructed; but in most instances the number of boards or plank required will be merely such as is necessary to form four or five courses. The first course of boards having been secured in position and some of the concrete or other material introduced to form the lower portion of the wall the next course of boards is then placed in position in the manner already explained, and more of the plastic material is added to carry the wall up to a height slightly less than that of the second course of boards or plank. The third course of boards or plank is then secured in position in the manner already described, and more concrete or other plastic material is then introduced in the chamber between the walls of the casing. If the plastic mate-

rial is of a character to set quickly and firmly, the next course of boards or plank may be obtained by withdrawing the wedges 7, removing the external clamp-plates 3, and thereby releasing the lowermost course of boards, which may be then carried upward to form the fourth course. In like manner, after the wall has been carried upward almost as high as the fourth course of boards the wedges 7 and external clamp-plates 3 at the top of the second course of boards may be removed, thus releasing the boards of the second course. After these boards are removed the internal clamp-plates 4 at the top of the first course of boards may be removed from the binding-links 5, leaving small depressions in the face of the wall after they are removed. After the removal of the clamp-plates 4 at the top of the first course of boards the binding-links 5 may be pressed downward at their outer ends, thus bringing down the small amount of plastic material lodged under their inner ends, and the binding-links may then be disengaged from the angularly-turned ends of the stay 9, which is left embedded in the wall. The small apertures left in the face of the wall after the removal of the clamp-plates 4 are filled in or grouted with fresh concrete, and this being smoothed off the former location of a recess in the face of the wall is practically indistinguishable.

From the foregoing description and the accompanying drawings it will be very readily seen that the improved apparatus enables the builder of walls of concrete or other plastic material to reduce the quantity of lumber required to a very considerable extent and permits the same boards to be used over and over again. In view of the repeated use of the boards or plank I have found it desirable to select tolerably heavy boards of approximately two inches in thickness, and it is most desirable that the boards should be very well seasoned, so as to prevent them from warping through contact with the moist concrete. It is also desirable to paint the boards with a thoroughly waterproof paint, as the tendency to warp is almost wholly prevented by this treatment.

While I have illustrated only one form of my invention, it will be obvious that numerous variations may be made therein without departing from the spirit of the invention or sacrificing its advantages.

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 with a pair of clamps each adapted to grip a plank, of a stay having each end adapted for engagement with one of the clamps and adapted to cooperate in the action of the clamps.

2. In apparatus of the character specified,

the combination with a pair of clamps each comprising two clamp-plates and a binding-link, of a stay adapted at each end for engagement with the binding-link of one of the clamps to coöperate in the action of the clamp.

3. In apparatus of the character specified, the combination with a pair of clamps each comprising a pair of clamp-plates and a binding-link extending through said clamps and having an aperture near one end, of a stay having end portions adapted to pass through the apertures in said binding-links to coöperate with said binding-links in holding the clamp-plates in clamping engagement, said stay being itself secured in position by means of said clamps.

4. In apparatus of the character specified, the combination with a pair of clamps each adapted to hold two boards superposed edge-wise in alinement, of a connecting member adapted to hold said clamps at a fixed distance apart and adapted to be held in secure

engagement with said clamps by the clamping action thereof on the boards.

5. In apparatus of the character specified, the combination with a connecting member or stay of fixed length having end portions disposed substantially at right angles to the intermediate portion, of a pair of clamps each comprising two clamping-plates, a binding-link and a wedge, each binding-link passing through the two clamping-plates and being provided at one end with an aperture for the reception of one end of the connecting member or stay and being slotted adjacent to the other end for the reception of a wedge by which the clamping-plates are forced together and the connecting member or stay jammed against one of the clamping-plates.

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

CHARLES DIETRICH.

Witnesses:

WM. BRADFORD,
BAXTER MORTON.