No. 854,098. PATENTED MAY 21, 1907.

O. F. MANN.

CONCRETE WALL FORM.

APPLICATION FILED JULY 12, 1906.

3 SHEETS—SHEET 1.

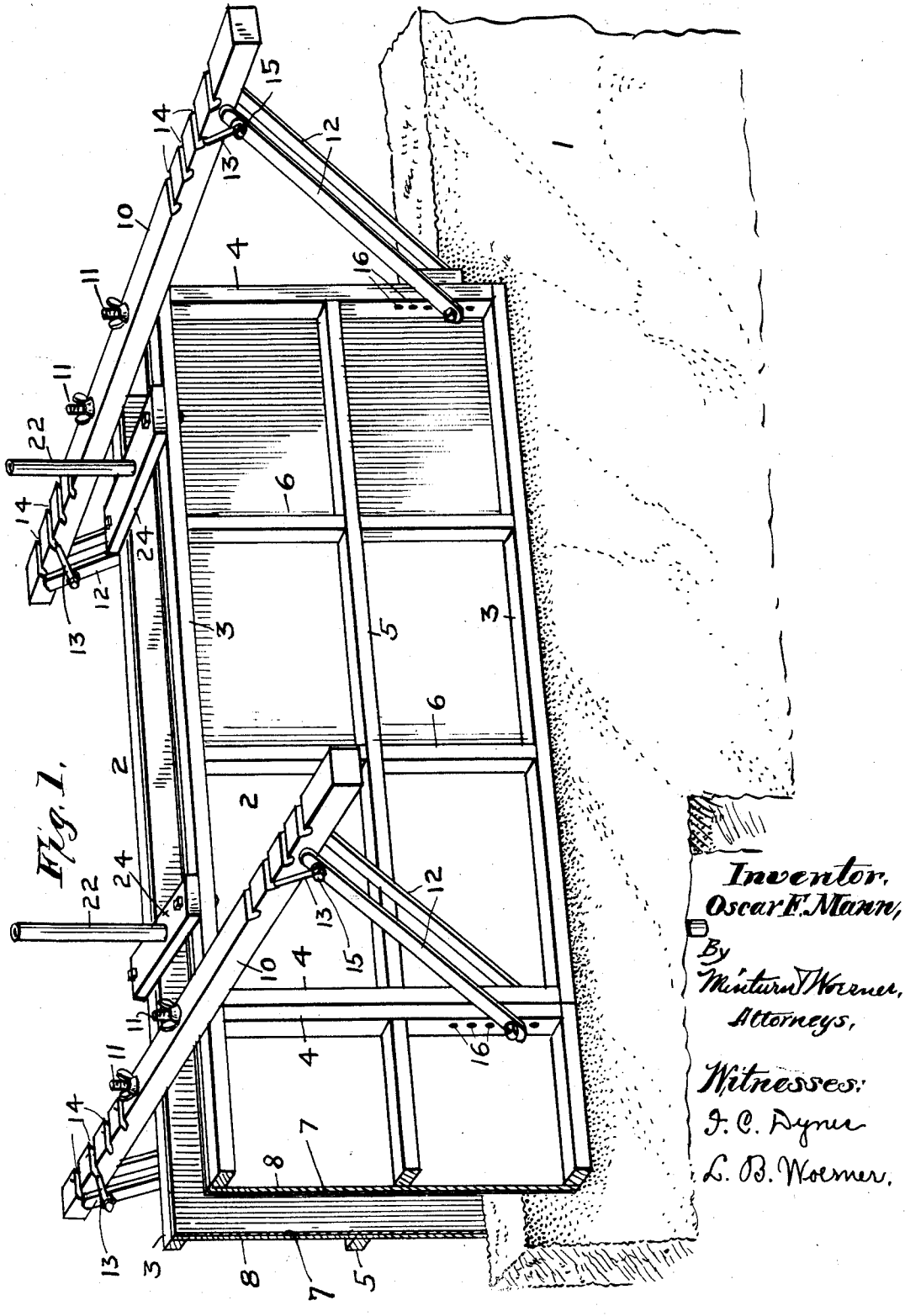


Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

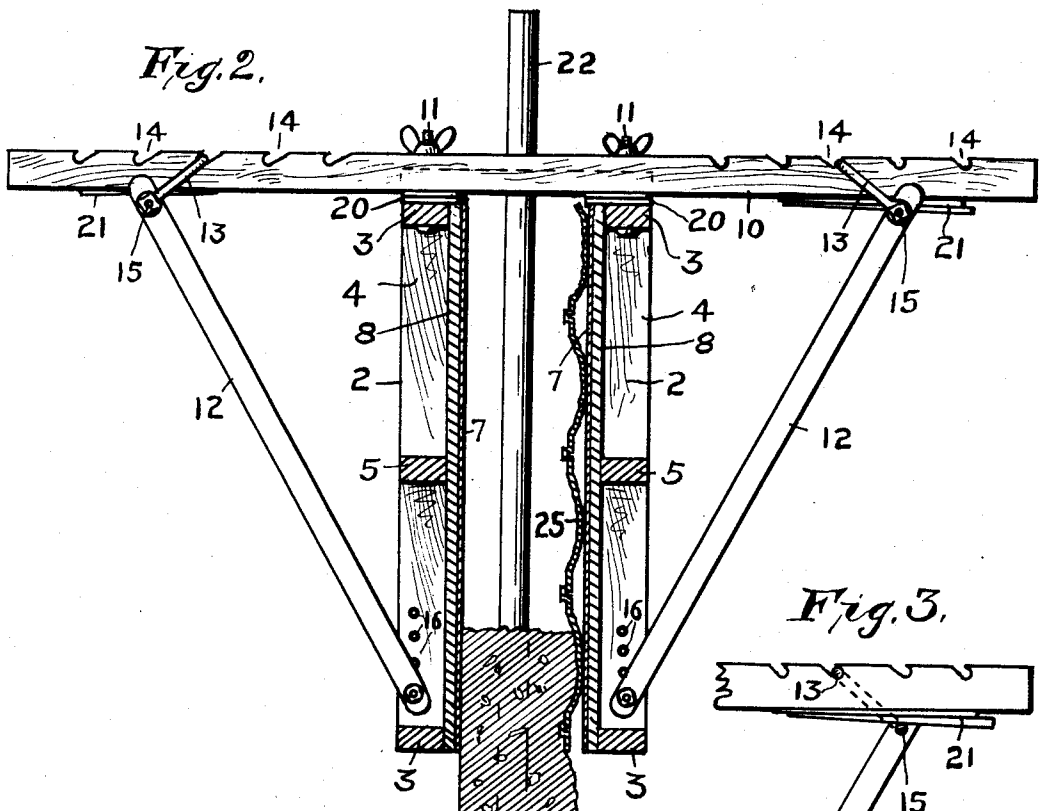
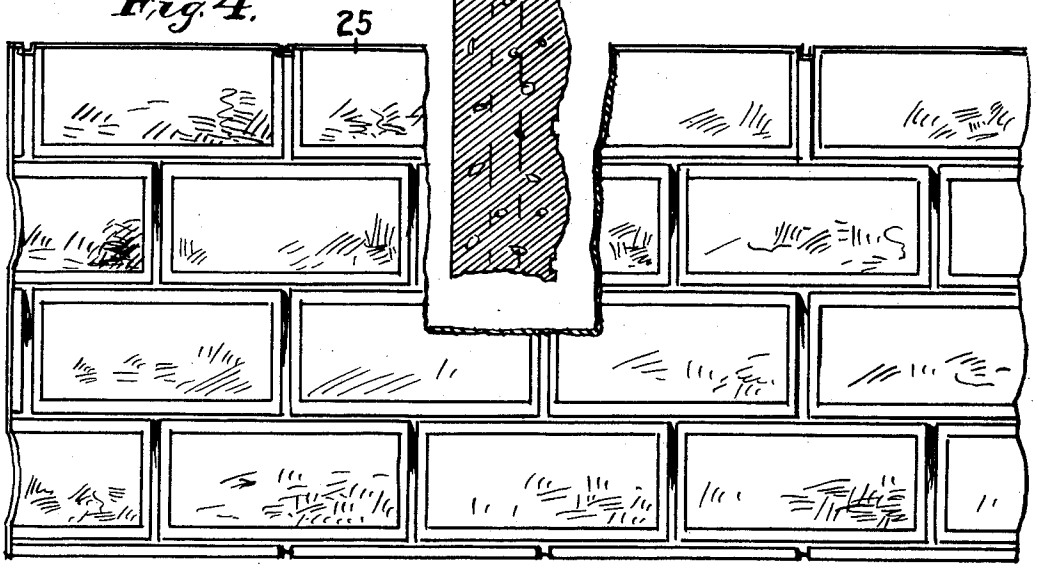



Fig. 3.




Fig. 4.

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3 SHEETS—SHEET 3.

Fig. 5.

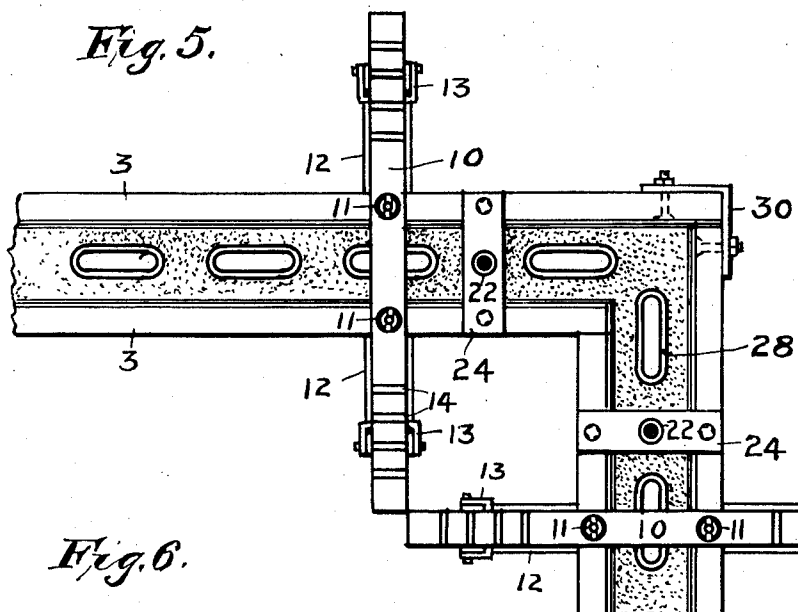
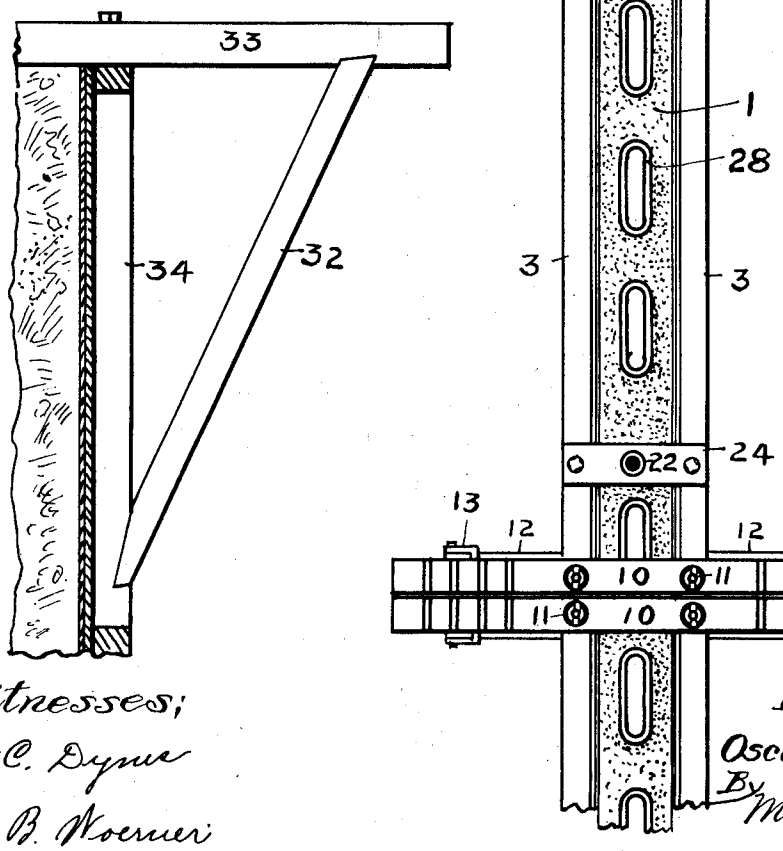



Fig. 6.

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# UNITED STATES PATENT OFFICE.

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## CONCRETE-WALL FORM.

No. 854,098. Specification of Letters Patent. Patented May 21, 1907.

Application filed July 12, 1906. Serial No. 325,849.

*To all whom it may concern:*

Be it known that I, OSCAR F. MANN, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Concrete-Wall Forms, of which the following is a specification.

This invention relates to improvements in forms for the construction of concrete walls and has special reference to the construction of the walls for houses of all sizes and shapes and for all purposes.

The object of the invention is to provide forms by means of which the walls of a house may be constructed from the ground up including the basement walls and footings, as an integral whole, the door and window openings, offsets for joists, and all necessary irregularities being formed as the work progresses.

Another object of the invention is to provide an overhead support for the bracing of the sides of the form, so as to avoid the necessity for the introduction of transverse tie wires and supporting bolts and rods in the wall, as has been commonly required heretofore.

The object of the invention is to provide a simple inexpensive durable and easily operated form for the purposes here mentioned.

I accomplish the objects of the invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a detail in perspective of a concrete wall showing my improved form in position for use on said wall, one section being in vertical cross section. Fig. 2 is a vertical cross section of a wall having a rock-faced outer face, the said view showing my improved form applied to the top of the wall in position for the continued vertical extension or upbuilding of the wall. This view shows the removable pattern sheet for imparting a rock finish to the outer face of the wall. Fig. 3 is a detail of the end of the horizontal beam showing the diagonal brace and attachments of the brace to the beam in vertical section and the wedges for tightening up the brace. Fig. 4 is a front perspective view of the pattern sheet for imparting a rock finish to the face of the outer wall. Fig. 5 is a plan view of a concrete wall under construction with the use of my improved form, the view showing the manner in which the members of the form are assembled for the purpose of shaping a corner, and Fig. 6 is a detail in side elevation and partial vertical section of a modified form of my device showing a different method of securing the brace bars.

Like characters of reference indicate like parts throughout the several views of the drawings.

1 represents a concrete wall, 2 2 the parallel sides of a form between which sides the concrete wall is developed. The drawing Fig. 1 shows one complete section of my improved form, at the right, and a portion of the next form joining it on the left. Each of these sides comprises a rectangular frame, usually constructed of 2x4 inch wooden pieces 3 and 4, stiffened by a suitable number of horizontal pieces 5 and vertical pieces 6, upon which frame a sheet-metal facing 7 will be secured. Between this facing 7 and the above-described frame is the backing 8 preferably of wood, the purpose of which is to stiffen the metal sheets and keep them from buckling. Transverse beams 10 of wood or metal are laid upon the sides 2 and are connected to said sides by means of the bolts 11. There will be at least two of the beams 10, and as many more may be used as may be necessary.

12 are diagonal braces which are bolted to the frame pieces 4 near the lower ends of the latter, and the upper ends of the braces are made fast to the beam 10. In the construction shown in the drawing, a U-shaped bar or clevis 13 is inverted and laid in a notch 14 in the top of the beam, and a bolt 15 through the ends of the clevis passes through the brace bars 12 and bears against the underside of the beam 10. A plurality of transverse notches 14 will be provided in the beam 10, and a plurality of holes 16 will be provided in the frame ends 4 for the purpose of permitting an adjustment of the brace bars. By a movement toward the sides 2, of the upper ends of the bars 12, the clevis 13 will be loosened and the dimensions of the clevis will be sufficient to enable it to be lifted out of its notch into one of the other notches when an adjustment of the braces is desired.

Referring to Fig. 2, the washers 20 may be introduced between the beam 10 and sides 3

to tighten up the form and additional means for tightening the form is provided by driving the wedges 21 between the beam 10 and bolt 15. These wedges will preferably be wooden shingles, of the kind in common use for roofs and afford convenient means for tightening the form when it becomes loose from use or wear. 22 are iron pipes such as are in common use for conveying gas and are allowed to remain in the concrete walls, which are built around them, to tie the walls together and stiffen and strengthen them, but primarily these pipes serve as guides to direct the forms in correct vertical movement. 24 are transverse boards connecting the tops of the sides 3, these boards have suitable openings for the passage through them of the pipes 22. In starting a wall, the pipes 22 are first set accurately in position and are secured in that position and they thus form guides to direct the forms and compel the construction of a straight vertical wall. After the forms have been properly set the space between the sides 2 2 is filled in with concrete, and when the top is reached, the form is raised nearly to the top of the recently finished wall portion, and the construction of the wall is continued in the manner above described until the desired height has been secured. Window and door frames will be placed in their proper position between the sides 2 of the form, before the concrete has reached higher than the bottom of the frame, and after the frames have thus been set, the concrete will be filled in around them. Or, if desired, transverse auxiliary forms may be inserted between the sides 2 so as to reserve the desired opening for windows or doors without the requirement of a frame, as may be desirable in the construction of cheap houses. Horizontal channels at the floor lines on the inside walls to receive the ends of the floor joists, will be readily produced by laying a wooden timber of the desired dimensions against the proper side of the form within the latter, and when the form is raised above the inserted timber, the latter can be removed which will leave the correspondingly required recess or channel. In somewhat the same manner, any desired ornamentation of the outer face of the wall, such as the formation of grooves representing joints between blocks representing stone masonry or the representation of rock face or carved designs may be produced by introducing a suitable pattern or mold 25 in the inclosure between the sides 2 of the form, in the manner clearly shown in Fig. 2. The desired shape will be imparted to the outer wall of the building, as my improved frame on being raised after the wall is finished will slide up past the molds 25 without disturbing the latter. When the form has been entirely removed from the mold 25, the latter will be readily detached from the wall just formed in it and the mold 25 will be inserted above, between the newly adjusted sides 2 and will extend the ornamentaion of the wall in the same manner as the preceding section was fashioned.

The view shown in Fig. 5 represents the top or plan view of a wall being constructed by the aid of my improved form. The tubes 28 are for the purpose of making the walls hollow, for reasons well understood by persons skilled in the cement art. These tubes are withdrawn as the work progresses. This Fig. 5 illustrates the use of longer side members on the outside of the wall than on the inner side, which difference is necessary in order to produce a perfect corner. This difference in length will be most conveniently secured by the use of two sets of forms of the corresponding difference in lengths. When the corners are to be made, the two sides of the longer form will be paired with the corresponding two sides of the shorter form, as will be readily understood from Fig. 5. Where two vertically divided sections are to be united and used together, as shown in Figs. 1 and 5, the adjacent ends 4 of the frame will be bolted between the pair of brace rods for that part of the frame. In Fig. 5 30 is an angle iron which binds the outer corner of the mold, the arms of which are bolted to the outer sides of the mold.

In the modification shown in Fig. 6, the oblique braces 32 are notched into the beam 33 and end 34 of the frame of the side of the form.

The form shown in Figs. 1 and 2 can be moved vertically and also horizontally for the construction of additional portions of the proposed wall.

Having thus fully described my invention, what I claim as new and wish to secure by Letters Patent of the United States, is—

1. In a form for concrete structures, a pair of sides between which the structure is formed, transverse beams above said sides, and diagonal braces extending from near the lower portions of the sides upwardly and outwardly to the beams the above structure being raised vertically as the wall is formed and being supported when raised by the frictional contact of the said sides with the newly formed wall.

2. In a form for concrete structures, a pair of sides between which the structure is formed, transverse beams above said sides, diagonal braces extending from near the lower portions of the sides upwardly and outwardly to the beams and means for varying the length of the braces the above structure being raised vertically as the wall is formed and being supported when raised by the frictional contact of the said sides with the newly formed wall.

3. In a form for concrete structures, a pair of sides between which the structure is formed, said sides having an inner lining of

sheet metal, transverse beams above said sides to which the sides are rigidly secured, diagonal braces from the beams to the lower portions of the sides and means for adjusting the above enumerated parts so as to maintain the sides in parallel relation to each other the above structure being raised vertically as the wall is formed and being supported when raised by the frictional contact of the said sides with the newly formed wall.

4. In a form for concrete walls, a pair of sides between which the wall is formed, transverse beams secured to the upper edges of said sides, diagonal braces extending from the beams to the lower portions of the sides and a removable pattern or mold placed between the two sides and against the outer one of the sides so as to be supported by it without preventing the side from sliding thereon.

5. The combination with a concrete forming device comprising a pair of parallel sides, of a form or mold placed adjacent to one of said sides between the two sides, said form or mold being adapted to impart an ornamental design to the concrete structure, said form or mold being removable and said sides being slidingly movable independently of said form or mold.

6. In a means for forming concrete walls, a plurality of vertical pipes located where the wall is to be built, a pair of sides between which the wall is formed and between which said pipes are located, transverse blocks connecting the sides of the pair of each form, said blocks having perforations for the passage of a pipe whereby the said form will be guided in a vertical direction, transverse beams secured to the tops of said sides, and diagonal braces extending from near the bottom of said sides, upwardly and outwardly to said beams.

7. A form for concrete walls comprising a pair of parallel sides having inner metal faces, transverse beams bolted to the tops of said sides, vertically perforated blocks also bolted to the tops of said sides, adjustable braces extending from the lower portions of said sides upwardly and outwardly to the beams on top of said sides and vertical pipes anchored firmly at their lower ends and extending up through the perforations of the boards connecting said sides to direct the wall forming device in a vertical direction.

8. In a form for concrete walls, a pair of sides between which the wall is formed, transverse beams above said sides said beams having transverse notches in their upper sides, diagonal braces secured at their lower end to the lower portions of the sides, clevises placed astride of and resting in notches of the beams and having their depending ends bolted to the diagonal brace bars and wedges driven between the bottom of the beam and the bolt which connects the clevis with the diagonal brace bars the above structure being raised vertically as the wall is formed and being supported when raised by the frictional contact of the said sides with the newly formed wall.

In witness whereof, I, have hereunto set my hand and seal at Indianapolis, Indiana, this 26th day of June, A. D. one thousand nine hundred and six.

OSCAR F. MANN. [L. S.]

Witnesses:

J. A. MINTURN,

I. W. WOERNER.