L. M. FOSTER.

FORM FOR CONCRETE WALLS.

APPLICATION FILED JULY 30, 1919.

1,331,191.

Patented Feb. 17, 1920.

3 SHEETS—SHEET 1.

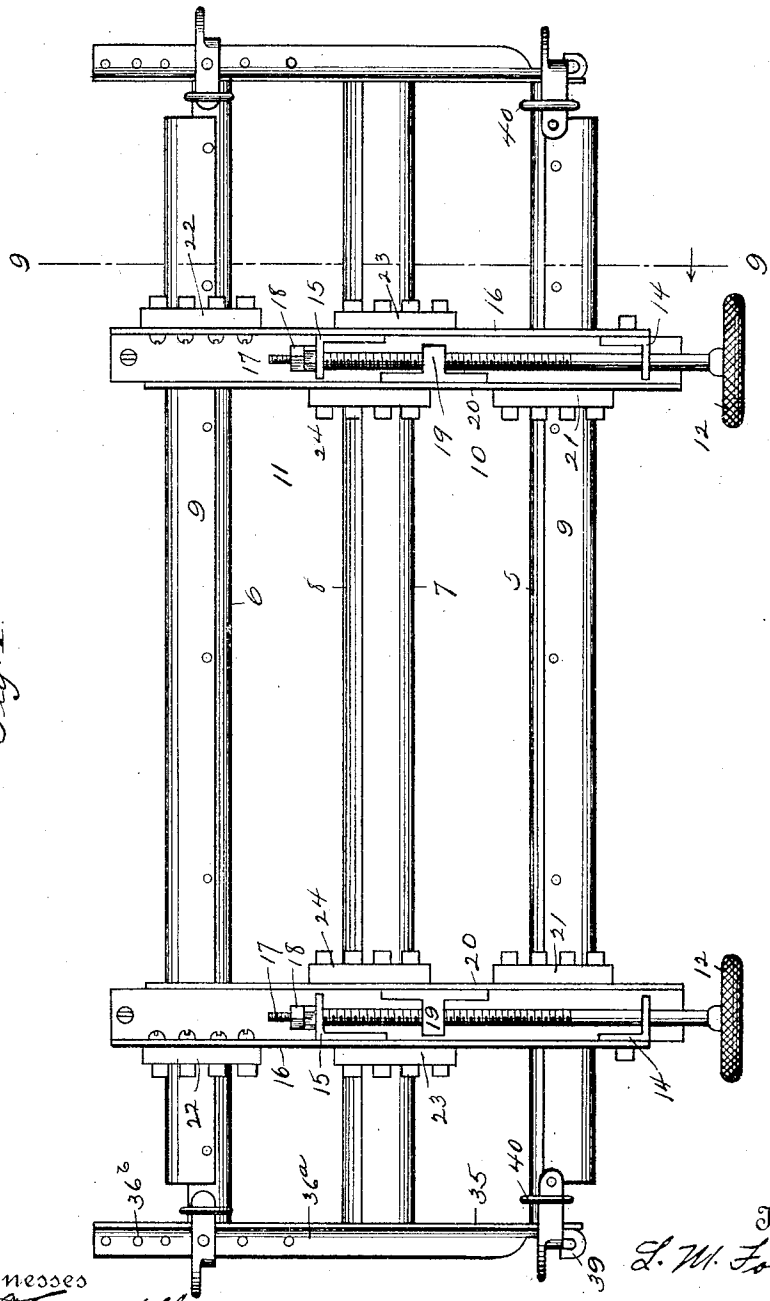


Fig. 1.

Witnesses

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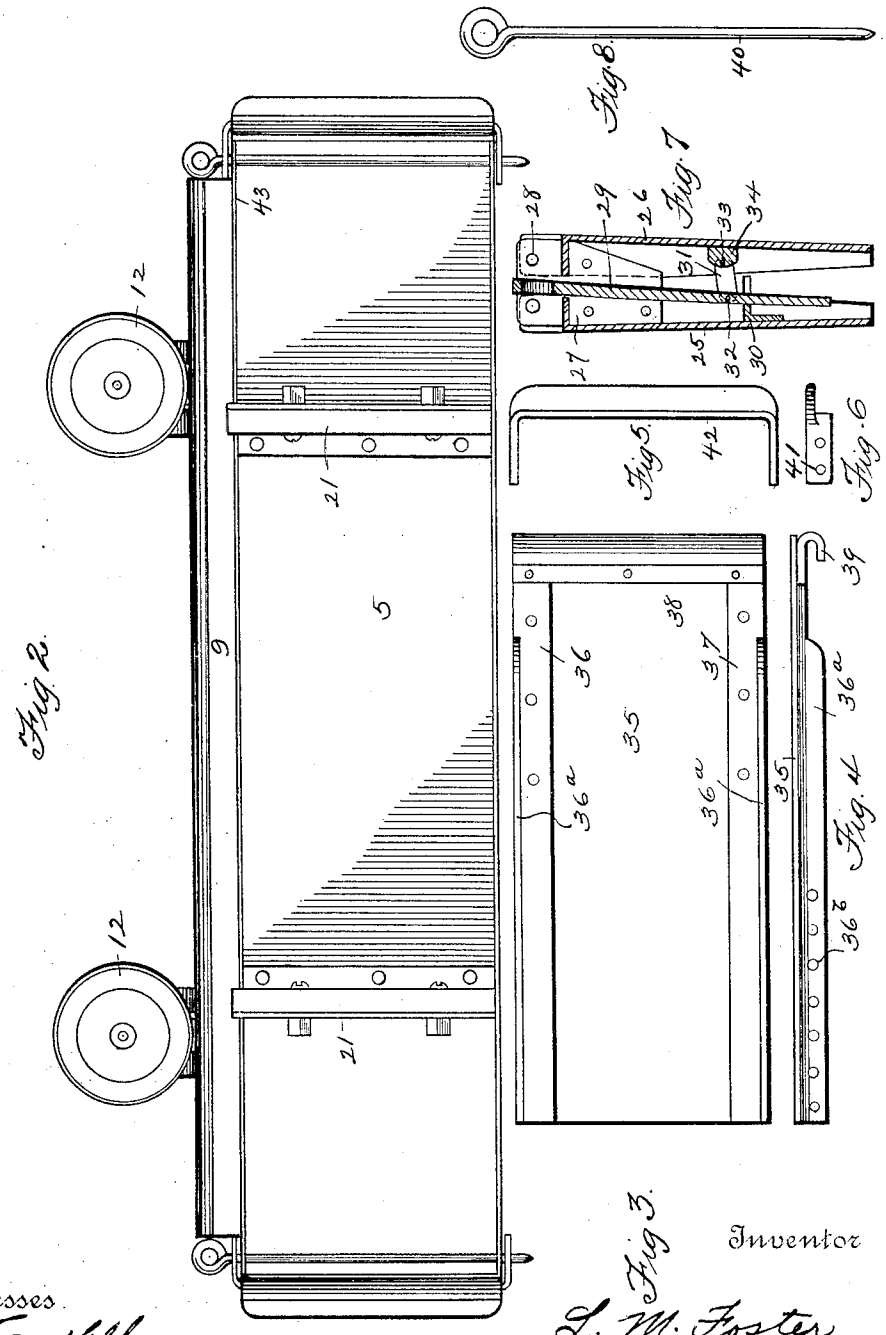
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 9.

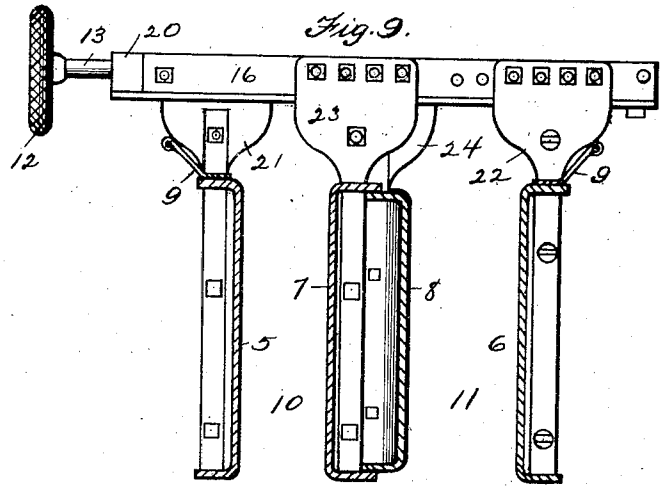


Fig. 10.

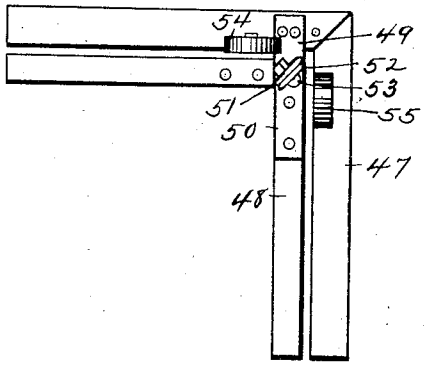


Fig. 11

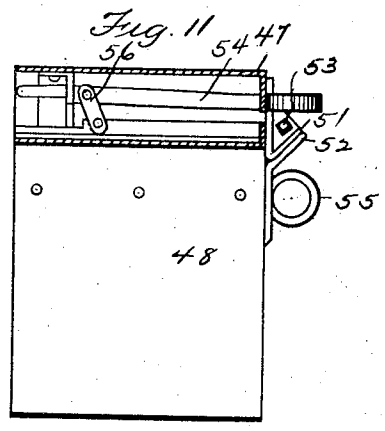
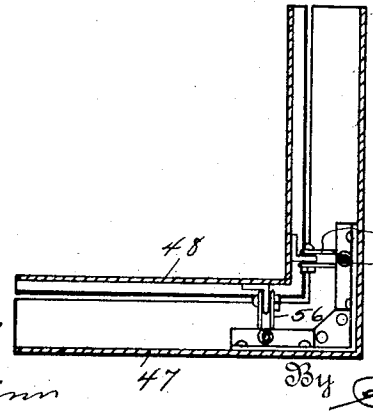


Fig. 12



Witnesses

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UNITED STATES PATENT OFFICE.

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FORM FOR CONCRETE WALLS.

1,331,191. Specification of Letters Patent. Patented Feb. 17, 1920.

Application filed July 30, 1919. Serial No. 314,221.

To all whom it may concern:

Be it known that I, LLEWELLYN M. FOSTER, a citizen of the United States of America, residing at Red Bluff, in the county of Tehama and State of California, have invented certain new and useful Improvements in Forms for Concrete Walls, of which the following is a specification.

This invention relates to forms for concrete walls and it has for its object the provision for an improved device of this character by means of which a monolithic building having hollow concrete walls, may be constructed.

One of the important objects of the invention is to provide a form, comprising a pair of side walls together with a collapsible core and operating means whereby the side walls may be moved toward the core while the core is being expanded to thereby diminish the space between the side walls and the core within which the concrete is received, and thereafter simultaneously collapsing the core and moving the side walls away from the core to thereby increase the space between the core and the side walls to free the structure of the completed walls in such manner that the form may be shifted bodily longitudinally to a new position and the work of constructing the wall continued around the building.

A further object of the invention is to provide improved collapsible filling blocks adapted to be placed in position between the core and the sides of the form during the time that the wall is being formed and being thereafter readily removable to leave recesses for joists or beams in the finished wall.

A further object of the invention is to provide an improved angular collapsible corner core adapted for use in conjunction with the remainder of the apparatus.

A further object of the invention is to provide a form which may be very quickly set in place and as quickly removed, and in which the several parts thereof will be permanently united to avoid the necessity of assembling and disassembling each part of the form every time the same is shifted from one place to another.

Further objects and advantages of the invention will be set forth in the detailed description which now follows.

In the accompanying drawing:

Figure 1 is a plan view of a form constructed in accordance with the invention;

Fig. 2 is a side elevation of the form;

Fig. 3 is a side view of an extension plate hereinafter described;

Fig. 4 is a plan view of the extension plate;

Fig. 5 is a detailed side view of a yoke hereinafter described;

Fig. 6 is a plan view of said yoke;

Fig. 7 is a detailed sectional view of an expansible block hereinafter described;

Fig. 8 is a detailed view of a pin hereinafter described;

Fig. 9 is a transverse vertical section upon line 9—9 of Fig. 1;

Fig. 10 is a plan view of a collapsible corner core hereinafter described;

Fig. 11 is an end elevation of the collapsible corner core; and

Fig. 12 is a horizontal sectional view of the collapsible corner core, looking from the bottom.

Like numerals designate corresponding parts throughout the several figures of the drawing.

The form constituting the principal element of the invention comprises side walls 5 and 6, and a collapsible core consisting of the sections 7 and 8 (see Fig. 9). Each of the side walls 5 and 6 carries a longitudinally extending baffle plate 9 which extends substantially the full length thereof and aids in guiding the concrete into the spaces 10 and 11 within which the walls are to be formed.

When the form is set in position to construct a wall the operating mechanisms hereinafter described are manipulated to simultaneously expand the core by moving the sections 7 and 8 away from each other and to move the side walls 5 and 6 toward the core. This results in restricting the spaces 10 and 11 as will be readily understood.

The mechanism by which the several parts are moved in the manner described comprises operating hand wheels 12 that are carried by threaded stems 13. These stems

turn freely in brackets 14 and 15 that are carried by angle plates 16, but are held against endwise movement with respect to the brackets 15 by being provided with reduced ends 17 upon which nuts 18 are screwed. The stems 13 engage nuts 19 that are carried by angle plates 20. It will thus be seen that if the hand wheels are rotated the plates 16 and 20 will be moved in opposite directions. By referring to Figs. 1 and 9 it will be seen that the wall 5 is carried by hangers 21 and these hangers are in turn connected to the plates 20.

The wall 6, upon the other hand, is supported by hangers 22 that are connected to the plates 16. The section 7 of the collapsible core is supported by hangers 23 that are carried by the plate 16 while the section 8 is carried by the hangers 24 that are connected to the plate 20.

By virtue of the foregoing construction the sections 7 and 8 will be moved toward each other to collapse the core when the walls 5 and 6 are moving away from each other and the sections 7 and 8 will be moved away from each other to expand the core when the walls 5 and 6 are moved toward each other and toward said core.

In operation the core is expanded and the walls 5 and 6 are moved toward each other and the spaces 10 and 11 are then filled with tamped concrete. After the latter has set to a sufficient extent the core is collapsed and the walls 5 and 6 are moved away from each other a sufficient distance to free the form of the completed part of the wall. The form is then moved longitudinally to a new position, one end thereof, however, being left in engagement with the wall section just completed, while the other end may, if desired, be closed by one of the extension plates presently to be described. This operation of building the wall and moving the form will be continued around the building until the wall has been built up to the desired height.

It is frequently desirable, in forming walls of the character indicated, to leave notched out portions or spaces for the reception of the ends of beams, joists and the like and with this end in view I provide collapsible blocks of the nature indicated in Fig. 7 comprising sections 25 and 26. The section 25 carries a fixed plate 27 to which the section 26 is pivotally connected at 28. An operating stem 29 passes downwardly between the sections 25 and 26 and its lower portion bears against an angle plate 30 carried by the section 25. A toggle link 31 is pivoted at 32 to the operating stem 29 and is pivoted at 33 to a bearing lug 34 carried by the section 26. When the stem 29 is thrust downwardly the link is straightened sufficiently to move the sections 25 and 26 away from each other to thereby expand this block and since the link 31 moves to "past center" position it follows that the block will stay in this expanded condition until the stem 29 is drawn upwardly. When the link 31 is pulled to a considerable distance beyond the center the block will be collapsed sufficiently to permit it to be withdrawn, it being understood that when in use this block is fixed into position in the spaces 10 and 11 and that when withdrawn it leaves a recess in the finished wall for the reception of the ends of joists and the like.

The extension plates in Figs. 3 and 4 may be utilized to close the end of the form in the manner indicated in Fig. 1, or they may be secured in longitudinal alinement with the sides 5 and 6 to constitute extensions thereof. These plates comprise sheet metal backings or body portions 35 and stiffening angle irons 36, 37 and 38, the latter being bent to hook like formations as indicated at 39. Pins 40 are adapted to pass through openings 41, see Fig. 6, of yokes 42 and to traverse the out turned edges 43 of the side walls 5 and 6, at which time these yokes serve to hold the plates in position to close the otherwise open ends of the form. The reason for providing this particular construction and for shaping the angle 38 to form a hook like structure is to permit the necessary movement of the sides and the core toward and from each other. In other words, the construction is such as to permit a limited sliding movement of the several sections of the form with respect to the plate.

While the extension plate has been illustrated in position to close the end of the form, in Fig. 1, it is to be understood that this is not the sole function of said plates but that upon the contrary these plates are intended to constitute extensions of the walls 5 and 6. This may be accomplished by placing the extension plates in such position that the flanges or out turned edges 43 of the walls overlap the horizontal portion 36^a of the angle 36, and then passing the pin 40 through these overlapping flanges, it being noted from an inspection of Fig. 4, that the flanges 36^a are provided with spaced openings 36^b for the reception of these pins.

In Figs. 10, 11 and 12 a collapsible corner core is illustrated. This core comprises an outer angular section 47, an inner section 48 and means for pivotally connecting the two at the angle between them. These means comprise brackets 49 and 50 carried by the sections 47 and 48 respectively, said brackets being provided with angular ears 51 and 52 through which a pivot bolt 53 passes. Thus it will be seen that these two sections are pivotally connected to each other at the

upper portions thereof. However, the depending lower portion is capable of limited movement about the pivot 53, so that the structure as a whole may be collapsed or expanded and the means for thus collapsing or expanding the structure closely corresponds to the means illustrated in Fig. 7. In other words, operating stems 54 and 55 operate through toggle links 56 and 57 to thrust the lower portions of the section away from each other or to draw said portions toward each to a degree sufficient to expand or collapse the core as a whole.

While the elements shown and described are well adapted to serve the purposes for which they are intended it is to be understood that the invention is not limited to the precise construction set forth but that it includes within its purview whatever changes fairly come within either the terms or the spirit of the appended claims.

Having described my invention what I claim is:

1. A device of the character described comprising a pair of side walls and a collapsible core disposed therebetween together with means for simultaneously expanding the core and for moving said side walls toward said core and for simultaneously collapsing the core and moving the side walls away from the core, a collapsible block comprising a pair of sections, means for forcing said sections toward and from each other, the width of said block being substantially equal to the distance between the side walls and the core when the core is expanded and the side walls are moved toward the same.

2. A device of the character described comprising a pair of side walls and a collapsible core disposed therebetween together with means for simultaneously expanding the core and for moving said side walls toward said core and for simultaneously collapsing the core and for moving the side walls away from the core, a plate adapted to span the space between said side walls, a yoke adapted to embrace said plate and means traversing the yoke and a portion of the side wall.

3. A device of the character described comprising a pair of side walls and a collapsible core disposed therebetween together with means for simultaneously expanding the core and for moving said side walls toward the said core, a plate adapted to span the space between the side walls, means for securing said plate in position in such manner as to permit movement of one of said walls with respect to the plate and means for securing said plate in longitudinal alinement with one of the side walls.

4. A device of the character described comprising a pair of plates a manually operable threaded stem held against movement with relation to one of said plates, a nut carried by the other of said plates and engaging the stem, a pair of hangers carried by each of said plates, a core section and a side wall carried by the hangers of one of said plates and another core section and another side wall carried by the hangers of the other of said plates.

5. A device of the character described comprising a pair of side walls and a collapsible core disposed therebetween together with means for simultaneously expanding the core and moving said side walls toward the core and for simultaneously collapsing the core and moving the side walls away from the core, a collapsible block comprising a pair of sections, an operating stem depending between said sections and a toggle link to which said stem is connected and operative under movement of said stem to force the sections toward and from each other, the width of said sections being substantially equal to the distance between the side walls and the core when the core is expanded and the side walls are moved toward the same.

6. A collapsible corner core comprising a pair of right angular sections pivotally connected at their upper portions and toggle mechanisms disposed between said sections to move said sections toward and from each other.

7. A collapsible corner core comprising a pair of right angular sections, the members of which lie in substantial parallelism with each other, means for hingedly connecting said sections to each other at the meeting corners thereof and on a line substantially at an angle of forty-five degrees to each of the portions of each section, manually operable rods accessible from the exterior of the sections and projecting therebetween and toggle links connected to said rods for moving the sections toward and from each other.

In testimony whereof I affix my signature in the presence of two witnesses.

LLEWELLYN M. FOSTER.

Witnesses:

ROLLA VESTAL,

A. J. WILSON.