R. W. FULLER.

CONCRETE WALL MOLDING DEVICE.

APPLICATION FILED APR. 20, 1910.

1,005,016.

Patented Oct. 3, 1911.

3 SHEETS—SHEET 1.

Fig. 1.

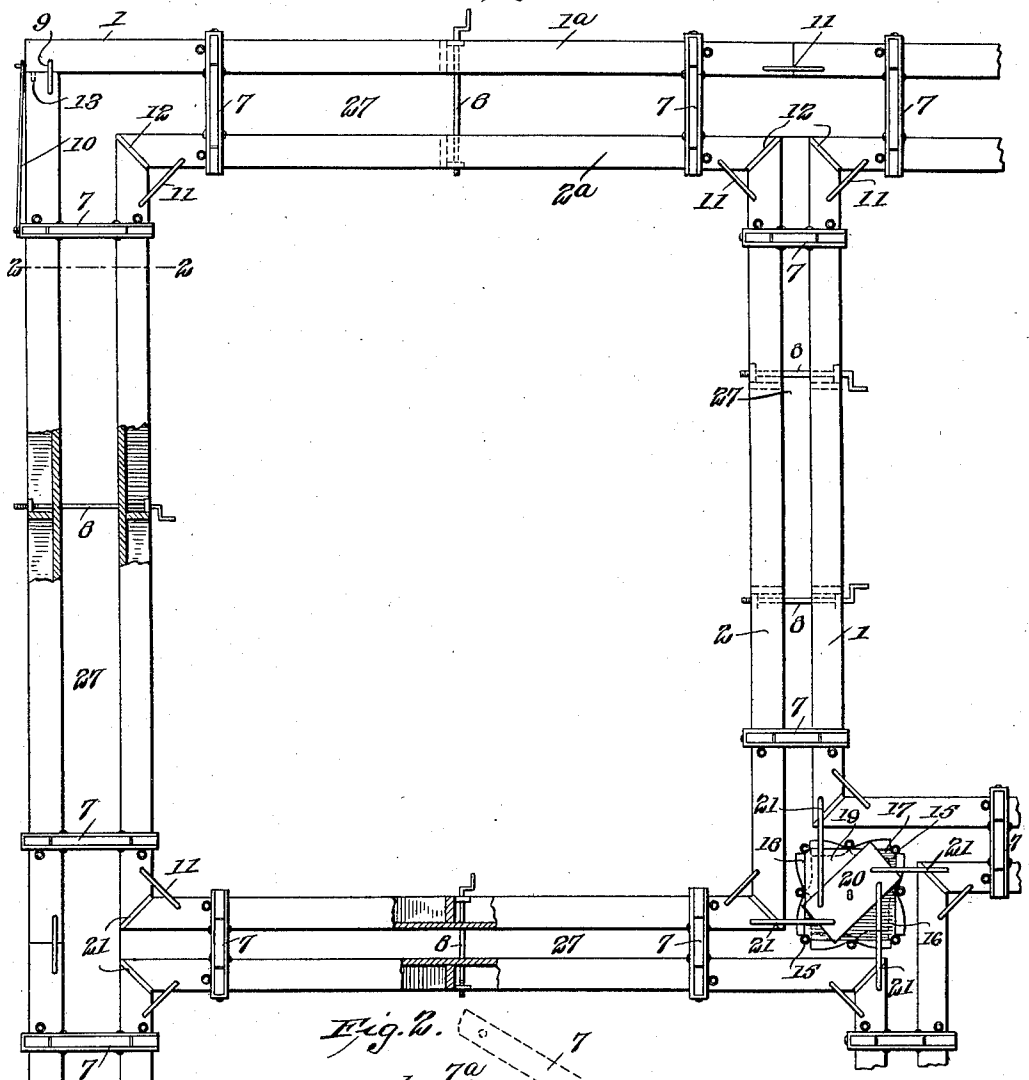


Fig. 2.

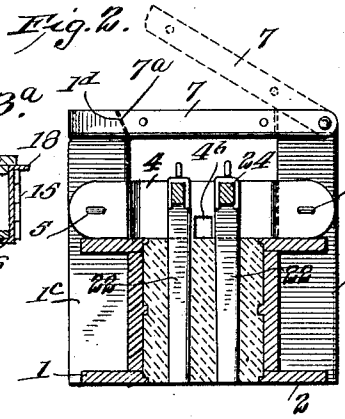


Fig. 3.a

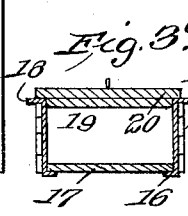
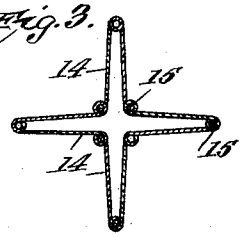


Fig. 3.



WITNESSES:

E. M. Callaghan

L. A. Stanley

INVENTOR

RICHARD W. FULLER

BY Munn & Co.

ATTORNEYS

R. W. FULLER.

CONCRETE WALL MOLDING DEVICE.

APPLICATION FILED APR. 20, 1910.

1,005,016.

Patented Oct. 3, 1911.

3 SHEETS—SHEET 2.

Fig. 4.

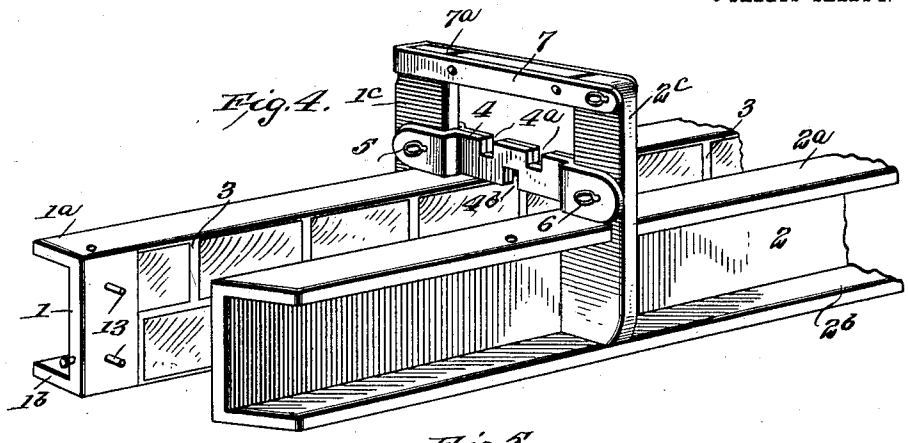


Fig. 5.

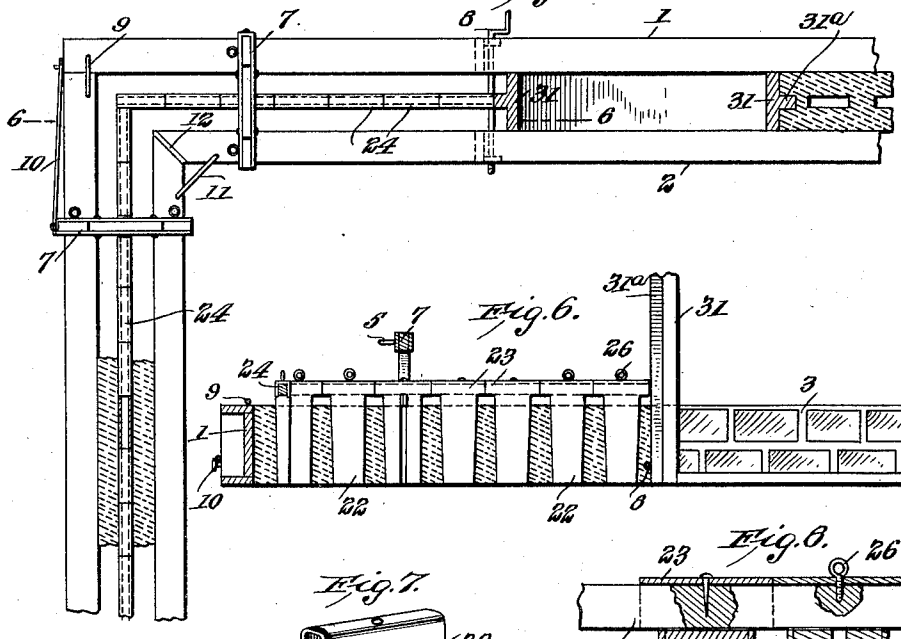


Fig. 6.

Fig. 7.

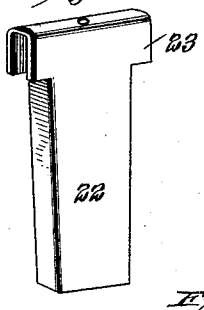


Fig. 8.

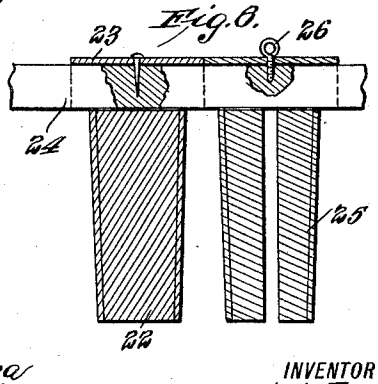
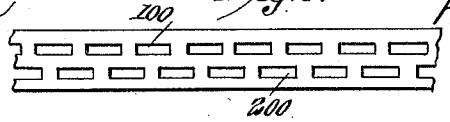


Fig. 8a.



WITNESSES:

E. M. Callaghan

L. A. Stanley

INVENTOR

RICHARD W. FULLER

BY Munn & Co.

ATTORNEYS

R. W. FULLER.

CONCRETE WALL MOLDING DEVICE.

APPLICATION FILED APR. 20, 1910.

1,005,016.

Patented Oct. 3, 1911.

3 SHEETS—SHEET 3.

Fig. 10.

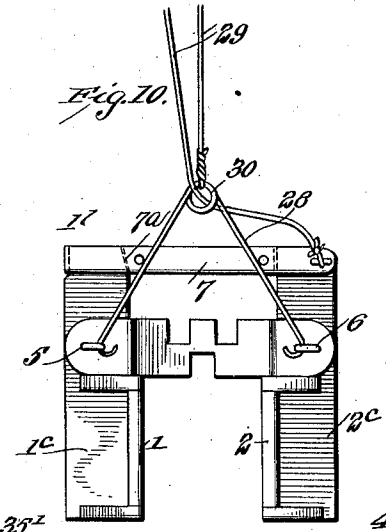


Fig. 9.

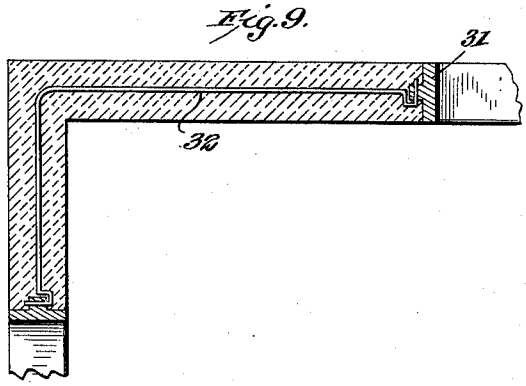


Fig. 11.

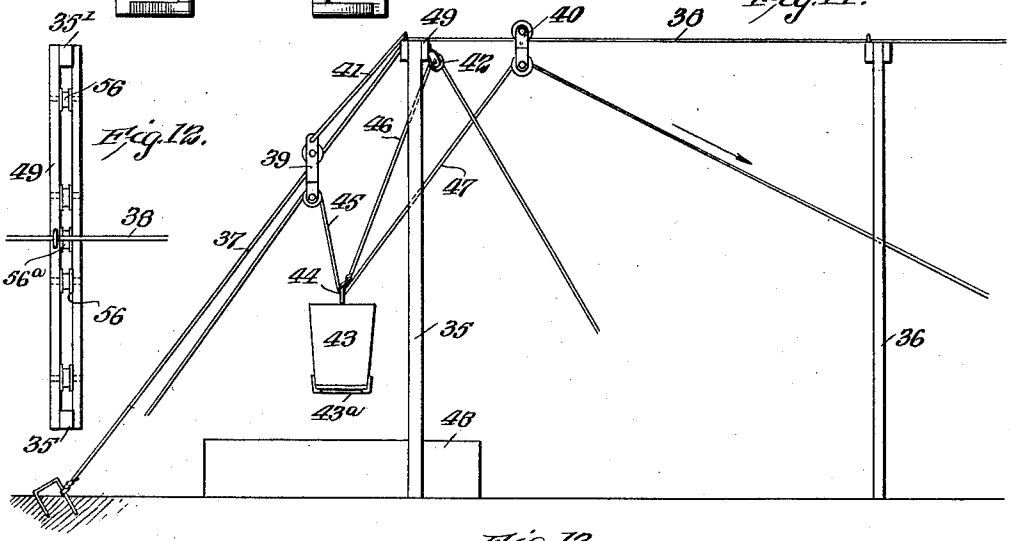


Fig. 12.

Fig. 13.

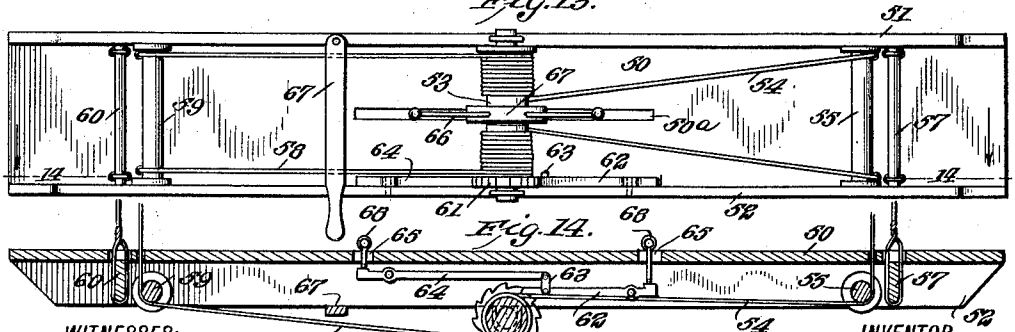
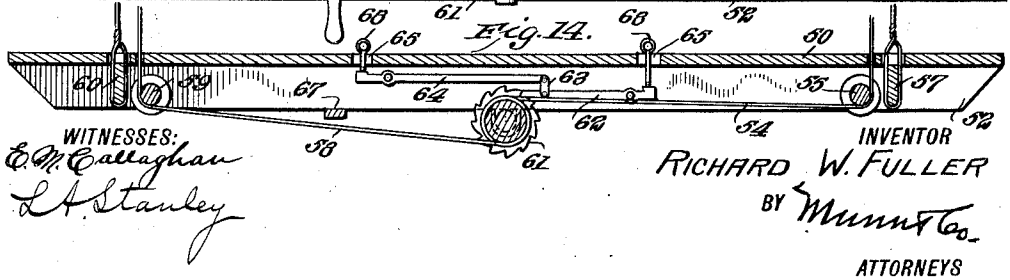


Fig. 14.



WITNESSES:

E. M. Callaghan

L. A. Stanley

INVENTOR

RICHARD W. FULLER

BY Munn & Co.

ATTORNEYS

UNITED STATES PATENT OFFICE.

RICHARD W. FULLER, OF WOODWARD COUNTY, OKLAHOMA.

CONCRETE-WALL-MOLDING DEVICE.

1,005,016. Specification of Letters Patent. Patented Oct. 3, 1911.

Application filed April 20, 1910. Serial No. 556,464.

To all whom it may concern:

Be it known that I, RICHARD W. FULLER, a citizen of the United States, and a resident of the county of Woodward and State of Oklahoma, have made certain new and useful Improvements in Concrete-Wall-Molding Devices, of which the following is a specification.

My invention relates to improvements in means for making concrete walls and it consists in the constructions, combinations and arrangements herein described and claimed.

An object of my invention is to provide a device comprising movable side members forming parts of a mold, said side members being so arranged that they may be securely fastened together when the form is being molded, and can be removed laterally from the wall when it is desired to remove the mold.

A further object of my invention is to provide means for making either single or double air spaces in the walls.

A further object of my invention is to provide means for strengthening the wall sections.

A further object of my invention is to provide means by which the molds, together with the cores for forming the air spaces, may be raised as the wall is being built.

A further object of my invention is to provide means for hoisting and distributing concrete or cement to various parts of the building under construction.

A further object of my invention is to provide a novel form of scaffold for use in erecting concrete buildings.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming part of this application in which similar reference characters indicate like parts in the several views and in which—

Figure 1 is a plan view of the molds as set up in position for forming the walls of a building. Fig. 2 is a section along the line 2—2 of Fig. 1. Fig. 3 is a transverse section through the collapsible chimney core. Fig. 3ª is a vertical section through the chimney core. Fig. 4 is a perspective view showing the means for attaching the side members of the mold. Fig. 5 is a plan view partly in section showing the window frames in position and the use of the core blocks. Fig. 6 is a section on the line 6—6 of Fig. 5. Fig. 7 is a perspective view of a core block. Fig. 8 is a sectional view of a split and a solid core block. Fig. 8ª is a plan view of a section of the wall having double air spaces. Fig. 9 is a horizontal section showing the means for reinforcing the corners of the wall. Fig. 10 is a detail view showing the means for lifting the molds. Fig. 11 is a side view showing the concrete conveying device. Fig. 12 is a plan view looking down on one of the supports shown in Fig. 11. Fig. 13 is a bottom view of my improved scaffold, and Fig. 14 is a longitudinal section along the line 14—14 of Fig. 13 looking in the direction of the arrow.

In carrying out my invention I make use of the molding devices best shown in Fig. 1. These comprise oppositely disposed molding members having a relative movement toward and away from each other. These members may be of greater or less extent. It will be understood that they are intended preferably to form means by which sections of a complete wall of a room may be formed and are not intended for merely molding individual blocks. A description, therefore, of the means for forming the wall will be sufficient since obviously the remaining walls are formed in precisely the same manner. Referring now particularly to Figs. 1 and 4 it will be seen that I provide oppositely disposed molding members 1 and 2. Fig. 4 shows that the member 1 is provided on its inner face with marking devices 3 to indicate blocks. These may be recessed to represent mortar in the finished block, or may be projections to leave a recess in the finished block, in which different colored mortar may be applied after the wall is finished. The molding members 1 and 2 are provided with upper and lower strengthening flanges 1ª and 2ª and 1ᵇ and 2ᵇ respectively. The member 1ª has near its ends upwardly extending arms 1ᶜ which are designed to register with similar arms 2ᶜ on the member 2. These arms are pivotally connected together in the yoked ends of a spacing bar 4 by means of the pins 5 and 6. At the top of the arm 2ᶜ is pivoted a second spacing bar 7, having an opening 7ª at its end arranged to receive the upper end of the arm 1ᶜ. The lower spacing member 4 is provided with recesses 4ª on one

edge, and a central recess 4^b on the opposite edge. In order to hold the molding members 1 and 2 together while the wall is being made, I provide crank bolts 8 which extend through one member and are threaded in lugs on the other.

The molding members 1 and 2 as described are connected at the corners in the manner shown in Fig. 1. Referring now to the upper lefthand corner it will be seen that the outer member 1 is connected to a similar member 1 at right angles to it, by means of the staple 9 and the hook and pin connection 10. The inner molding member 2 is connected with the molding member 2 at right angles to it, by means of the staple 11. Between the ends of the inner molding members or at the corners thereof is a removable spacing member 12, whose purpose will be more clearly explained hereinafter. By reference to Fig. 4 it will be seen that I have provided the dowel pins 13 in the member 1, which enter the similar member 1 at right angles to it.

The provision for forming the chimney core is shown in Figs. 1 and 3. These consist of a hollow core formed of the sides 14 which are hinged together at 15 in such a manner that the core may be spread out as shown in Fig. 1 to form a regular molding member. The bottom part of the core has inwardly turned flanges (similar to the one shown at 16) on its edges to support a wooden block 17. To keep the core in extended position, the upper edge of the core is provided with outwardly turned flanges 18. A spreading block 19 fits into the core and may be held in position by means of a pivoted locking member 20 which may be turned so as to have its corners project over the flanges 18 to keep the spreading member 19 in position, as clearly shown in Fig. 1. The core thus formed is held in position by means of the staples 21 which are secured to the adjacent mold sections.

In order to provide air spaces in the walls, I make use of the core blocks which are best shown in Figs. 2, 5, 6, 7 and 8. Referring now particularly to Fig. 7 I have shown therein a core block 22, provided with a loop 23 at its upper end for securing it to a suspension bar 24, see Fig. 8. These cores, it will be seen, taper from their upper to their lower ends. The core block 25 in Fig. 8 is split for the purpose of straddling the spacer bar 4. In Figs. 5 and 6 I have shown a series of blocks 22 suspended from a common bar 24. These core blocks may be used to provide single air spaces such as shown in Fig. 5 or double air spaces such as shown in Fig. 8^a. In the latter case the air spaces 100 are preferably staggered with the air spaces 200, or in other words the air spaces of one overlap the air spaces of the other.

From the foregoing description of the various parts of the molding device the operation thereof may be readily understood. In beginning the foundation of the building the parts are set up as illustrated in Fig. 1. The cement or concrete is placed in the space 27 between the molding members and around the chimney core and is tamped down solidly. In order to prevent the spreading of the bottom portions of the molding members 1 and 2, I provide the spacing bar 7 with a cam surface 7^b, which engages a similar cam surface 1^d on the arm 1^c. As the spacing bar 7 is pushed downwardly, this forces the upper ends of the arms 1^c and 2^c slightly apart, thereby bringing the members 1 and 2 closer together and holding them securely in place. Before the concrete has set, the crank bolts 8 are removed. Now when the concrete has set, the staples 9 and 11 are removed and the hook 10 thrown back. The corner wedges 12 are then removed, the spacing bar 7 is then thrown upwardly into the position shown in Fig. 2. The sides 1 and 2 may be swung apart on their pivots 5 and 6 respectively. It will be noted that the provision of the removable wedges 12 at the ends of the molds permits the inner wall 2 to have a movement away from the outer wall. As the outer wall is swung away, the dowel pins 13 are disengaged from the corresponding member 1 at right angles thereto. The mold sections 1 and 2 may now be lifted by means of a spring grapple such as that shown in Fig. 10, at 28 whose ends are hooked in the screw-eyes 5 and 6 respectively. The upper end of the cable is secured by means of the rope 29 which passes over a pulley 56^a (see Fig. 12), and then downwardly through the eye 30 of the cable. This is for the purpose of steadying the same and moving the mold as desired.

I have spoken thus far of the means of forming the foundation wall. Now when it is desired to complete the building, the core blocks are used. In Fig. 4 I have shown the spacing member 4 as provided with recesses 4^a for two rows of core blocks, and a recess 4^b for one row of core blocks when the spacing member 4 is reversed. In Fig. 2 I have shown two rows of core blocks in position. These core blocks are suspended upon the spacing members 4, the split core block 25 straddling the spacing member and the upper part of the block fitting into the recesses 4^a. In building the wall, the molds are set in position in a similar manner to that already described, care being taken to set the crank bolt 8 to prevent the spreading of the molds at the center. After the concrete is filled in, the core blocks are removed by attaching the hooks or cables to the screw-eyes 26 and lifting them vertically. I find it expedient sometimes to place a board on the top of the wall on each side of the core

block with its edges in engagement therewith. Now by standing on the board the concrete which might adhere to the core block is prevented from coming out with it, thereby leaving a smooth air space. When it is desired to have only a single air space the member 4 is reversed as stated and the recess 4^b is used for the single row of core blocks. The remaining sections of the wall may be completed in the manner described.

In Figs. 5 and 6 I have indicated the manner of making windows or doors which may be done in two ways, either in inserting a frame 31 having a tongue 31^a and filling in with concrete up to the frame and around the tongue, or inserting a strip corresponding to the tongue 31^a with a removable backing to retain the cement in place of the frame 31 so that when the wall is finished the strip 30, corresponding to 31^a, may be retained in the wall to which the door or window frame may be secured.

In order to further strengthen the building I may use rods 32 like that shown in Fig. 9. These rods are hooked into or affixed to the frames 31 as shown.

The conveyer system which is best adapted for use with the molding apparatus is illustrated in Figs. 11 and 12. In Fig. 11 I have shown the uprights 35 and 36 which, of course, are preferably braced in any suitable manner and are provided with the carrying cables or wires 37 and 38. The former also serves as a brace for the device. In Fig. 12 I have shown therein a support 35′ similar to the support 35 and there is a support corresponding to the support 36. Upon the wire 37 is a double pulley 39, while the wire 38 bears a double pulley 40. The pulley 39 is limited in its downward movement by a cord 41 but may be moved toward the frame. A similar pulley 42 is fastened to the corner of the framework. The concrete bucket is shown at 43. To the pole 44 is attached the operating ropes or wires 45, 46 and 47. The rope 45 passes through the lower roller of the double pulley 39. The rope 46 passes through the pulley 42 and the rope 47 passes through the lower roller of pulley 40. The mixing box is shown at 48. It will be apparent that when it is desired to convey concrete the bucket 43 may be lowered by slackening up on the ropes. After it is filled it may be raised vertically by pulling on the ropes 46 or 47, it being understood that the rope 45 is either held or secured to a stake during the vertical movement of the bucket. When the bucket reaches the pulley 39 the rope 45 is slackened up while the rope 47 is pulled. The bucket therefore will pass from the pulley 39 underneath the cross pieces 49 and on toward the pulley 40. On further pulling of the rope 47 in the direction indicated in the figure, the pulley 40 may be moved along the wire 38 to any part of the wall, the rope 45 being slackened in the meantime. Now by slackening the rope 47 the bucket may be made to descend to any place where it is to be used, and the load may be dumped by operating the slide 43 in the bottom of the bucket, after which the bucket may be brought up to its original position by reversing the operation.

In practice I prefer to have two such devices as illustrated in Fig. 11 with a cable extending at right angles to the cable 38 toward the interior of the building. This cable is also provided with a pulley similar to that shown at 40 over which another operating wire or rope may play. It will therefore be apparent, that as soon as the pulley 40 reaches the end of its travel, the weight of the bucket may be shifted on to the pulley running on the cable at right angles, so that the charge may be traversed along the partition wall to a chimney or any other place on the interior partition. The bucket may also likewise be manipulated so as to pass to the outer wall by means of the rope 46. It will thus be seen that I have provided a conveying device in which the bucket may be brought from the mixing box, placed at any convenient position, be carried up over the wall and lowered as desired.

The form of scaffold which I prefer to use in this operation is that shown in Figs. 13 and 14. This consists of the main supporting board 50 having the side flanges 51 and 52 between which is pivotally mounted the drum 53. A cable 54 is wound around the drum, passes over the roller 55, up through the member 1, over a suspending pulley on the scaffold, such as those shown at 56 in Fig. 12, and is secured to the cross member 59 on the scaffold. The rope 58 is wound on the other half of the drum 53 and passes over a roller 59 around the pulley 56 and is secured to the cross member 60. A ratchet 61 is secured on the shaft of the drum 53 and is provided with a pivoted locking lever 62, having a pivotal connection 63 with a second lever 64. The ends of these levers are immediately beneath openings 65 in the board 50. In the center of the board 50 is a slot 50^a through which are adapted to project the sliding handles or spokes 66 which project through the wall 67 forming an enlargement of the drum 53 and are weighted so as to drop below the upper surface of the scaffold when not in use. A lever 67 is adapted to be moved over the end of the slot so as to be in the path of the handles 66. This description of the parts of the scaffold will be sufficient for a clear explanation of the operation thereof.

It will be seen that the normal position

of the scaffold is that shown in Fig. 14, in which the weight of the levers 62 and 64 is sufficient to prevent the ratchet 61 from turning. This will hold the scaffold in position. Now if it is desired to move the scaffold the screw-eyes 68 are inserted in their respective openings and screwed to their respective levers 62 and 64. Now by pressing on either of these screw-eyes with the foot the levers will be released from the ratchet, allowing the latter to turn easily. Before this is done, however, one of the handles 66 is pulled upwardly by the operator. The handle is grasped as it comes through the slot 50^a so that when the ratchet is released the scaffold is under the control of the operator. The handle is now moved either to raise or lower the device and as it moves another handle comes up through the slot and is grasped by the other operator, there being generally two men on the scaffold. After moving the scaffold up or down to the desired place, the handles are permitted to drop by gravity beneath the board, the locking levers being in the meantime released so as to hold the scaffold securely. As a further precaution, in case the ratchet mechanism should not work well, I provide the lever 67 which may be moved in the path of the handle so as to prevent the latter from turning. I use screw-eyes because if only one operator is on the scaffold he may insert the end of a rod in the eye and use the whole rod as a treadle for forcing upon the screw-eye to release the ratchet mechanism.

I claim:

1. In a device for molding concrete walls, a pair of opposed mold members, one of said members being marked off to imitate concrete blocks, and being provided with dowel pins at its ends, upwardly extending registering arms on each of said mold members, a spacing bar pivotally secured to said arms just above the tops of the mold members, said spacing bar being provided with notches on its end, and upper side, a second spacing bar pivotally attached to one of said arms at the top thereof, having a cam surface arranged to engage a similar cam surface on the other arm, a series of core blocks for forming air spaces, a common rod for suspending the core blocks, adapted to be held in the notches in said first mentioned spacing bar, and crank bolts for holding said mold members.

2. In a device for molding concrete walls, a pair of opposed members, upwardly extending registering arms on each of said mold members, a spacing bar pivotally secured to said arms just above the tops of the mold members, a second spacing bar pivotally attached to one of said arms at the top thereof having a cam surface arranged to engage a similar cam surface on the other arm, a series of core blocks for forming air spaces, and a common rod for suspending the core blocks adapted to be held by said first mentioned spacing bar.

3. In a device for molding concrete walls an inner and an outer molding member pivotally secured together at their upper edges, the inner member having beveled ends terminating short of the outer, a second pair of mold members extending at right angles to the first mentioned mold members, means for fastening the respective outer and inner mold members together and a removable wedge inserted between the beveled edges of the inner pair of mold members.

4. In a device for molding concrete walls, an inner and an outer molding member, means for pivotally connecting said members together at their tops, a second inner and outer molding member disposed at right angles to the first mentioned molding members, said second mentioned inner and outer molding members being also pivoted together at their tops, means for locking said members in position and for unlocking them to permit a movement of all of the molding members away from the wall, and a removable wedge inserted between the inner pair of mold members.

5. A hollow core for chimneys comprising hinged side members having inwardly turned flanges on their bottoms, a spacing block arranged to rest on said inturned flanges, a spreading block arranged to enter the upper end of the hollow core when the sides are extended, and a pivoted locking member secured to said spreading block and arranged to engage the sides of the core.

RICHARD W. FULLER.

Witnesses:
TOM. C. BENEDICT,
GRANVILLE D. FARWELL.