Apr. 10, 1923. 1,451,049

D. C. NEWMAN

MECHANISM FOR MOLDING CONCRETE BLOCKS

Filed Mar. 17, 1922 3 sheets-sheet 1

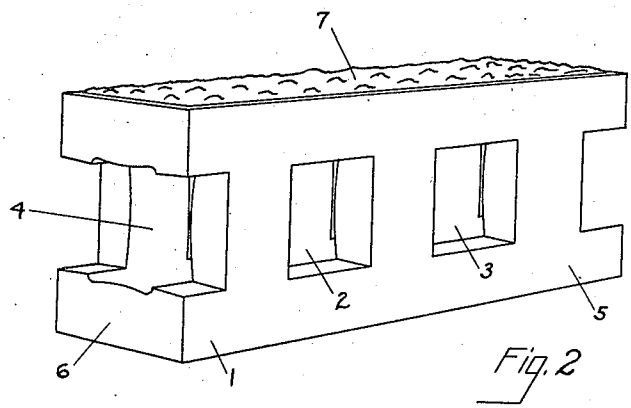


Fig. 2

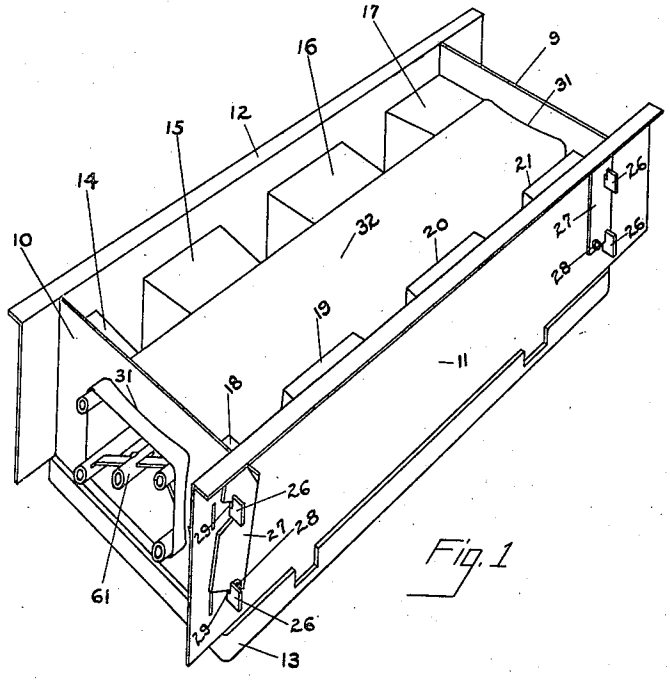


Fig. 1

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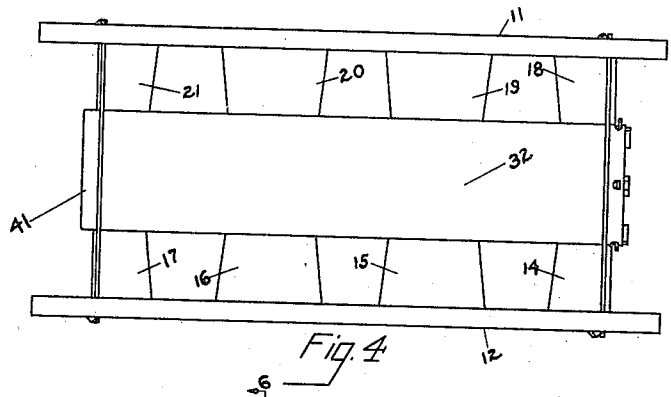


Fig. 4

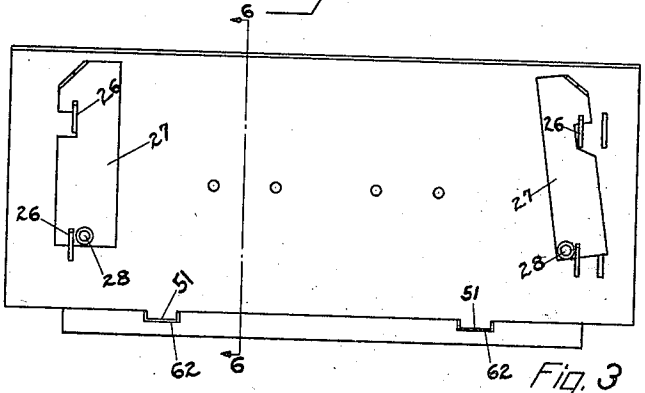


Fig. 3

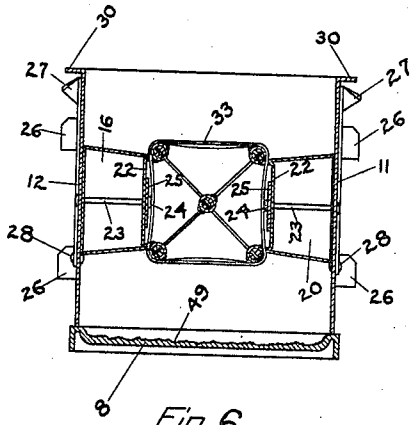


Fig. 6

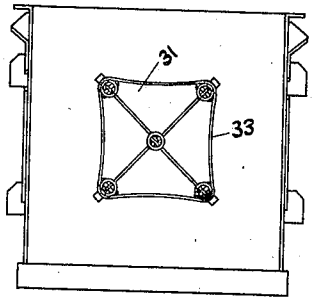


Fig. 5

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MECHANISM FOR MOLDING CONCRETE BLOCKS

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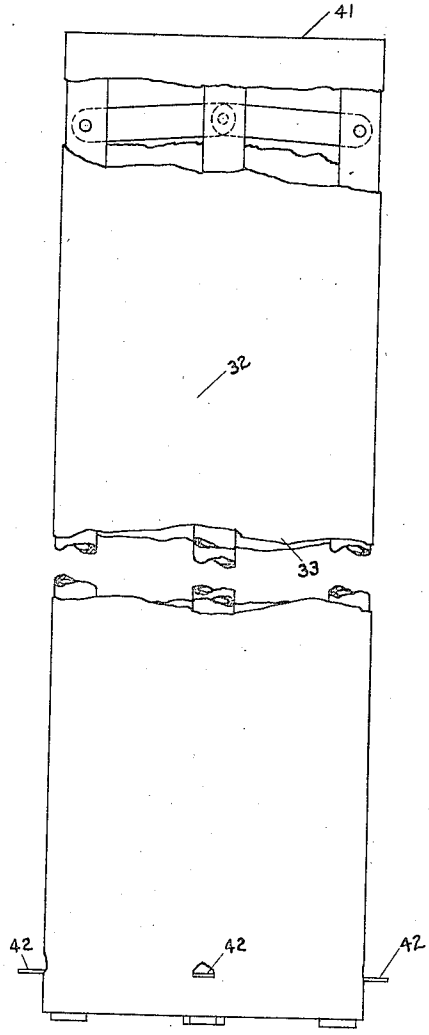


Fig. 7

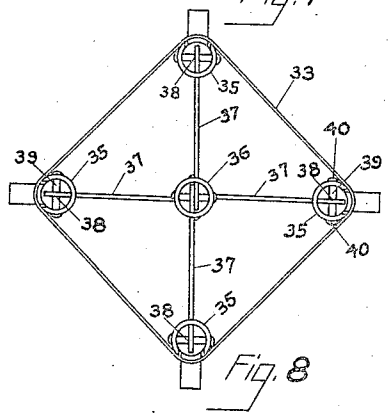


Fig. 8

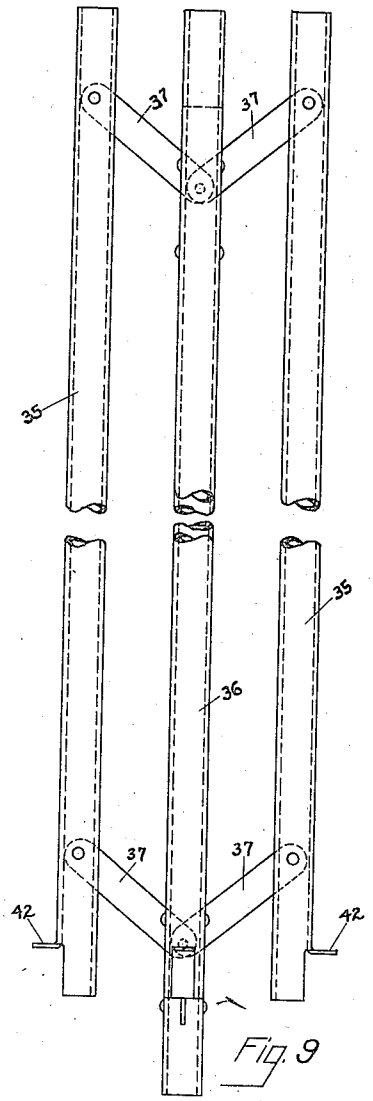


Fig. 9

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Patented Apr. 10, 1923. 1,451,049

UNITED STATES PATENT OFFICE.

DANIEL C. NEWMAN, OF ELYRIA, OHIO.

MECHANISM FOR MOLDING CONCRETE BLOCKS.

Application filed March 17, 1922. Serial No. 544,420.

To all whom it may concern:

Be it known that I, DANIEL C. NEWMAN, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have invented certain new and useful Improvements in Mechanism for Molding Concrete Blocks; and I hereby declare the following to be a full, clear, concise, and exact description of my invention, such as will enable others skilled in the art to which my invention appertains to make and use the same.

My invention relates to mechanism for molding concrete blocks, and more particularly relates to mechanism which may be used for forming hollow blocks, and the like, from concrete or other like material, such blocks being capable of use for building purposes.

My present invention comprises the combination with a suitable mold, of a collapsible core adapted to be inserted into the mold and expanded therein, which after use may be collapsed so as to permit the removal of the core after the mold has been used to mold a building block or the like.

An object of my present invention is to provide a mechanism of the above type which may be manufactured largely from sheet steel, and to provide therefor a collapsible core having an outer wall of fabric material, said material being flexible and adapted to be supported upon an expansible core.

Other objects of my invention and the invention itself will become apparent as the description progresses, reference being had in such description to the accompanying drawings forming a part of this specification. Referring to the drawings—

Fig. 1 shows a perspective view of an embodiment of my invention.

Fig. 2 shows a perspective view of a concrete block which may be made by the use of the mold mechanism shown in Fig. 1.

Fig. 3 shows a side elevational view of the embodiment illustrated in Fig. 1.

Fig. 4 shows a plane view thereof.

Fig. 5 shows an end elevational view thereof.

Fig. 6 shows a transverse vertical sectional view thereof taken on the line 6—6 of Fig. 3.

Fig. 7 shows a plan view of the core for the mold mechanism illustrated in the preceding figures, portions being shown as broken away to illustrate the inner frame core parts.

Fig. 8 shows an end elevational view of the core shown in Fig. 7.

Fig. 9 shows a plan view of the frame for the core shown in Figs. 7 and 8.

Referring now to all of the figures in which like parts are designated by like reference characters, at 1, Fig. 2, is shown a concrete block such as may be molded by the mold apparatus of my invention. It will be seen that the block 1 has a plurality of transverse vertical openings 2 and 3, and a longitudinal medial bore opening 4, the said openings intersecting at right angles on the interior of the block. All except one of the outer walls of the block comprising the top wall 5, the bottom wall, not shown but which is like the wall 5, and the end walls such as 6 are molded with straight smooth sides in the mechanism of my invention, whereas I preferably form the other side wall 7, which, when the block is built into a building, is the outer wall of the building, with an artificially roughened face as shown. This, as will be later referred to, is accomplished by providing an irregularly shaped molding wall 8, Fig. 6, for the outer face of the block.

To produce such a block as herein shown and described, I provide a mechanism comprising a box having end walls 9 and 10, and side walls 11 and 12, and a bottom 13 for the box, and securing means adapted to secure the said walls together.

Secured to the side walls 11 and 12 are a plurality of inwardly projecting metallic hollow cores, 14, 15, 16 and 17 for the wall 12, and corresponding oppositely extending core members 18, 19, 20 and 21 for the wall 11.

These inwardly projecting core members 14 to 21 inclusive are adapted to so form the concrete block 1 as to provide the transverse vertical openings such as the openings 2 and 3 of the block as shown in Fig. 2. These core members are tapered from their supporting walls inwardly so that their greatest cross sectional area is at their bases, i. e., their junctions with the supporting walls.

I preferably make these core members with four side walls, although I might make them circular or any other desired shape depending upon the desired contour of the inner walls of the concrete block transverse openings. I preferably also close the ends

of the cores 14 to 21 inclusive by an end wall 22 secured to the four side walls thereof, and I provide a bolt 23 passing through the walls 11 and 12 and the end walls 22 for the transverse core members, said bolts 23 carrying enlarged washers 25 at their ends 24, said washers adapted to support a considerable area of the walls 22 to reinforce the same, the bolts 23 being adapted to hold the hollow core members such as the core members 16 to 20, Fig. 6, tightly against the end walls 12 and 11.

The side walls 11 and 12 are secured to the end walls 9 and 10, all of said walls being of sheet metal, by means of interlocking hook and latch members comprising the projecting hook extensions 26 of the end members 9 and 10, and the rotatable latch members 27 rotatably secured at 28 to the side walls 11 and 12, the said projecting extension hook 26 being adapted to project through slots 29 in the side walls 11 and 12. The side walls 11 and 12 flare outwardly at their upper portions 30 so as to strengthen these mold side walls. The end walls 9 and 10 are provided with openings 31 of suitable shape to admit the inner longitudinal medial core 32, the said core comprising an inner expansible collapsing frame carrying an outer wall of fabric material, said fabric material being in the form of a tube adapted to be stretched tightly over the said expansible frame when the said frame, in its collapsed condition, is inserted through the tube and expanded.

The fabric tube is constructed in any suitable way, but may be formed from a relatively long rectangularly shaped piece of fabric, such as heavy canvas, or equivalent material, which is made into a closed tube by sewing or otherwise securing the outer long edges together. The expansible core frame comprises a plurality of longitudinally extending frame members, herein shown as metallic tubes or pipes, five in number, the pipes 35, four in number, and a centrally disposed pipe 36, the centrally disposed pipe being connected to the other pipes 35 by means of metallic links 37, four in number, and which are pivoted to the pipe 36 and extend therefrom in different directions 90-degrees apart, and which links 37 are pivoted likewise at 38 to the outer pipes 35.

There are two sets of links 37 pivotally secured at their ends to the inner pipe 36 and outer pipes 35, each set comprising four such link members each extending at right angles to the adjacent links. The central pipe 36 when reciprocated in a direction away from the mold end, as if to withdraw the core 32 from the mold, will move the inner ends of the links 37 with it, and the outer pipes 35 carrying the fabric sheet 33 will be restrained, frictionally, by the frictional contact had between the expanded fabric wall 33 with the contacting portions of the transverse cores 14 to 21 inclusive, and the concrete block inner walls formed by the core, until such action results in the outer pipes 35 moving inwardly and causing the collapsing of the outer fabric wall 33 of the longitudinal core 32.

The links 37 are pivotally connected to the pipes by means of openings through the ends of the links encompassing rivets 39 passing through the walls of the pipes and riveted on the opposite outer sides thereof as shown at 40, Fig. 8.

The different links 37 of a set may radiate from a common point in the pipe 36, or from points disposed at different positions along the pipe 36, and it is important, for the securing of best results, that there be a plurality of like links 37 extending radially from the central operating longitudinal bar or pipe 36 in the same direction, so that both ends of a given outer bar or pipe 35 will be moved outwardly or inwardly together.

The fabric tube 33 is preferably closed at one end 41 by an end wall, which may be of any suitable material, but which is preferably of the same fabric material as the tube walls 33. Projecting outwardly from the outer longitudinally extending frame members 35, at one end of each said longitudinally extending frame member 35, is provided an outwardly extending flange 42, such flanges limiting the distance to which the core 32 may be inserted into the mold box. The bottom wall 8 of the mold box is adapted to have an irregular inside face 49 which will give the block to be formed an irregular outer surface 7, Fig. 2.

The mechanism of my invention may be used to mold concrete building blocks by assembling it as shown in Figs. 1, 3, and 3 to 6 inclusive with the wall 8 lowermost, and the expansible core 32 expanded as shown in the said figures, the side wall projections 51 fitting into depressions 62 provided for them in the bottom wall side edges; the cement is then poured into the mold between the outwardly flared portions 30 of the side walls 11 and 12 until all of the space within the box is filled with the exception of the space occupied by the transversely extending cores 14 to 21 inclusive, and the intermediate longitudinally extending central core 32 expanded by the expanding frame illustrated in Figs. 7, 8, and 9.

The cement is then allowed to solidify in the mold and about the said cores, after which the operator will unlatch the interlocked latch and catches 27 and 26 to remove the side walls from the mold mechanism, thus removing the tapered cores 14 and 21 inclusive, after which the operator, by grasping the handle end 61 of the core frame member 36 extending through the longitu-

dinal center line of the mold, and reciprocating the said rod by pulling the handle, the core frame mechanism comprising the longitudinally extending members 35 will collapse, thus collapsing the stretched fabric tube 33 carried over the said members 35, after which the collapsible core is easily removed through the opening 31 at the front end of the mold.

The end wall members 9 and 10 are then easily removable, and the block, as illustrated in Fig. 2, remains upon the bottom wall plate 8, where it may remain until the cement of the block has set hard enough that it will not fracture when removed from the said plate. In practice, a number of plates 8 comprising bottom walls for the mold mechanisms may be employed greater in number than such mechanisms, or one of such plates may be employed with each such mechanism. In using the term "fabric" or "fabric material" in this specification and in the claims, I contemplate any equivalent material which may be employed for the purpose.

Having thus described my invention in a specific embodiment, I am aware that numerous and extensive departures may be made from the embodiment herein illustrated and described, but without departing from the spirit of my invention, I claim:—

1. In a block mold mechanism, a bottom wall, side walls, end walls having openings, a collapsible core for the said mechanism insertible through the said openings, said collapsible core comprising a plurality of longitudinally extending parallel rods, a fabric tube placed over the said rods, expanding mechanism extending between the said rods and parallel therewith and having arms connecting with the said means for operating the said expanding mechanism from an end of the said core to force said rods apart or to draw them inwardly whereby the said core may be inserted through the said openings when collapsed, expanded after being inserted, and may be removed after a subsequent collapsing.

2. In a concrete block permanent mold mechanism, the combination with side and end walls, a bottom wall, a collapsible core, and an opening in one of said end walls through which the said collapsible core may be inserted, said collapsible core comprising a collapsible frame, and a fabric tube placed over the said frame.

3. In a concrete block permanent mold mechanism, the combination with side and end walls, a bottom wall, a collapsible core, an opening in one of said end walls through which the said collapsible core may be inserted, said collapsible core comprising a collapsible frame, and a fabric tube placed over the said frame, and inwardly extending tapered cores carried by each side wall and adapted to contact at its reduced end with sides of the said collapsible core when in place and expanded.

4. In a concrete block permanent mold mechanism, the combination with side and end walls, a bottom wall, a collapsible core, an opening in one of said end walls through which the said collapsible core may be inserted, said collapsible core comprising a collapsible frame, and a fabric tube placed over the said frame, and inwardly extending tapered cores carried by each side wall and adapted to contact at its reduced end with sides of the said collapsible core when in place and expanded, and interlocking means for removably interlocking the said end and side walls.

5. In a concrete block permanent mold mechanism, the combination with side and end walls, a bottom wall, a collapsible core, an opening in one of said end walls through which the said collapsible core may be inserted, said collapsible core comprising a collapsible frame, and a fabric tube placed over the said frame, and inwardly extending tapered cores carried by each side wall and adapted to contact at its reduced end with sides of the said collapsible core when in place and expanded, said bottom wall and said side walls being interlocked to prevent longitudinal displacement of the said side and bottom walls.

6. In a concrete block permanent mold mechanism, the combination with side and end walls, a bottom wall, a collapsible core, an opening in one of said end walls through which the said collapsible core may be inserted, said collapsible core comprising a collapsible frame, and a fabric tube placed over the said frame, and inwardly extending tapered cores carried by each side wall and adapted to contact at its reduced end with sides of the said collapsible core when in place and expanded, and interlocking means for removably interlocking the said end and side walls, said bottom walls and said side walls being interlocked to prevent longitudinal displacement of the said side and bottom walls.

7. In a concrete block permanent mold mechanism, the combination with a mold box comprising side walls, end walls and a bottom wall, means for removably interlocking the said walls, openings through an oppositely disposed pair of said walls, a removable core insertable through the said openings and expansible throughout its length after being placed in the mold through the said openings, a plurality of transversely extending tapered core elements carried by a second pair of said walls, said elements adapted to contact at their smaller ends with the said core.

8. In a concrete block permanent mold mechanism, the combination with a mold

box comprising side walls, end walls and a bottom wall, means for removably interlocking the said walls, openings through an oppositely disposed pair of said walls, a removable core insertable through the said openings and expansible throughout its length after being placed in the mold through the said openings, a plurality of transversely extending tapered core elements carried by a second pair of said walls, said elements adapted to contact at their smaller ends with the said core, said bottom wall having its upper inner face figured.

9. In a concrete block permanent mold mechanism, the combination with a mold box comprising side walls, end walls and a bottom wall, means for removably interlocking the said walls, openings through an oppositely disposed pair of said walls, a removable core insertable through the said openings and expansible throughout its length after being placed in the mold through the said openings, a plurality of transversely extending tapered core elements carried by a second pair of said walls, said elements adapted to contact at their smaller ends with the said core, said bottom wall having its upper inner face figured irregularly, said core comprising a fabric tube, a plurality of longitudinally extending substantially rigid tube expanding members, and means disposed intermediate of the said members adapted to be operated to move the said members outwardly or inwardly to expand or cause the collapsing of the said tube.

10. In a concrete block permanent mold mechanism, the combination with a mold box comprising side walls, end walls and a bottom wall, means for removably interlocking the said walls, openings through an oppositely disposed pair of said walls, a removable core insertable through the said openings and expansible throughout its length after being placed in the mold through the said openings, a plurality of transversely extending tapered core elements carried by a second pair of said walls, said elements adapted to contact at their smaller ends with the said core, said bottom wall having its upper inner face figured irregularly, said core comprising a fabric tube, a plurality of longitudinally extending substantially rigid tube expanding members, and means disposed intermediate of the said members adapted to be operated to move the said members outwardly or inwardly to expand or cause the collapsing of the said tube, and a collapsible fabric end wall for the said tube and secured thereto.

11. In a concrete block permanent mold mechanism, the combination with side and end walls, a bottom wall, a collapsible core, and an opening in one of said end walls through which the said collapsible core may be inserted, said collapsible core comprising a collapsible frame, and a fabric tube placed over the said frame, a plurality of core elements of substantially truncated prism shape secured by their larger bases to the said side walls and extending inwardly therefrom, and having their small rear bases contacting with the said core when expanded.

In witness whereof, I have hereunto signed my name this 15th day of March, 1922.

DANIEL C. NEWMAN.