

No. 735,938.

PATENTED AUG. 11, 1903.

F. A. BORST & J. GROSCOP.  
MACHINE FOR MANUFACTURING HOLLOW CONCRETE BUILDING BLOCKS.

APPLICATION FILED MAR. 2, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

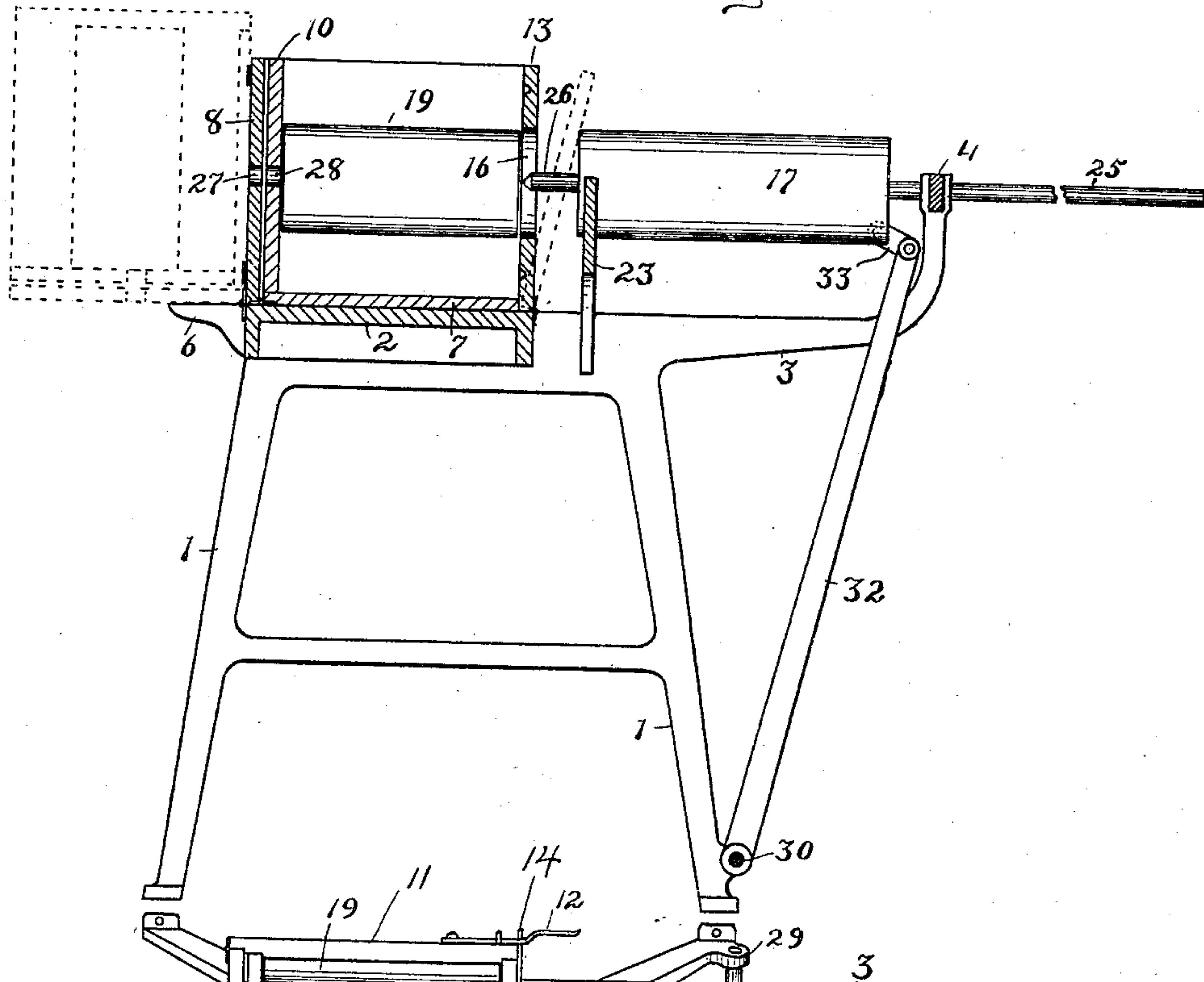
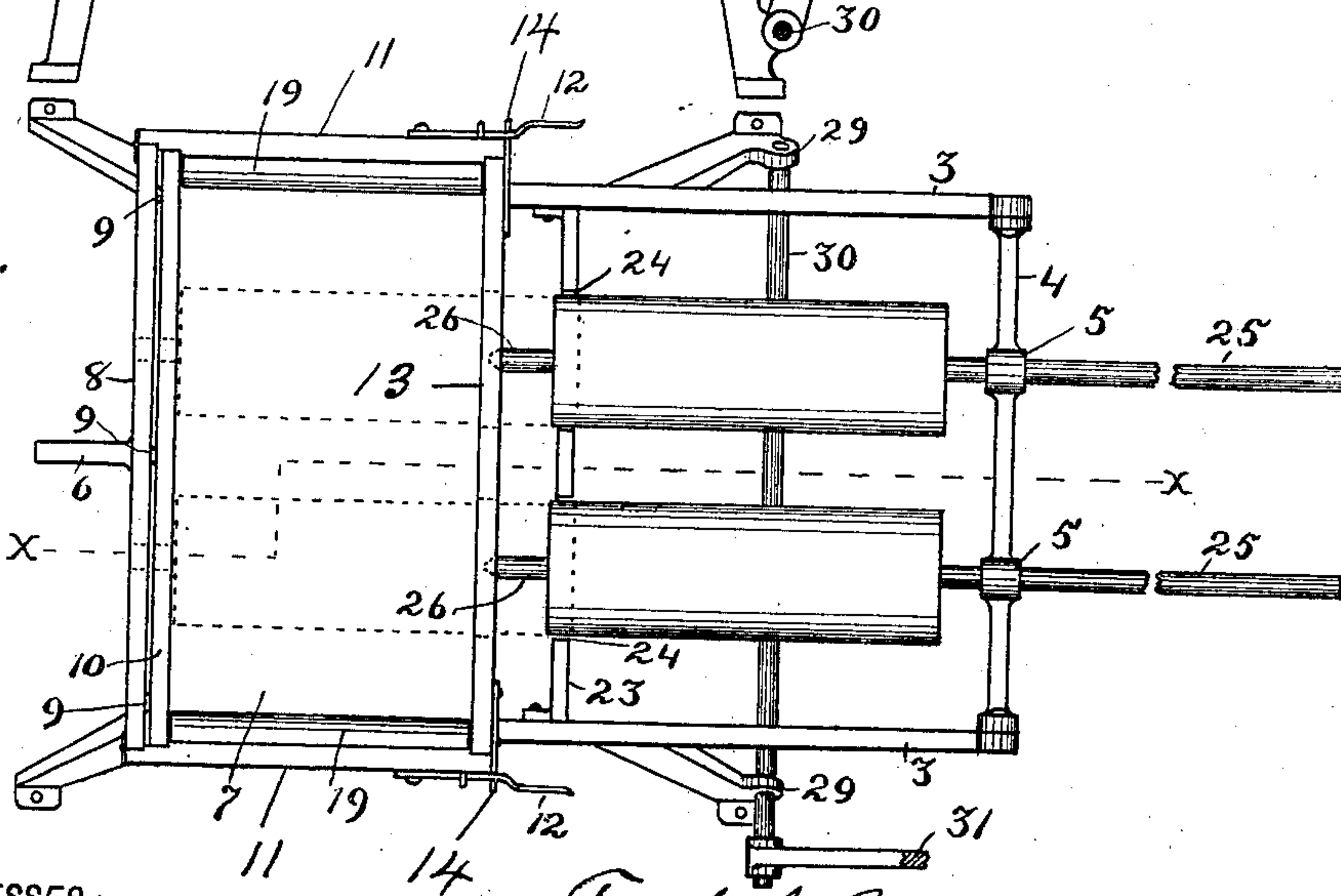


Fig. 2.



WITNESSES:

*H. J. Burns*  
*Augusta Viberg*

*Frank A. Borst* INVENTORS:  
*John Groscop*

BY *Chapin & Denny*  
THEIR ATTORNEYS.

No. 735,938.

PATENTED AUG. 11, 1903.

F. A. BORST & J. GROSCOP.

MACHINE FOR MANUFACTURING HOLLOW CONCRETE BUILDING BLOCKS.

APPLICATION FILED MAR. 2, 1903.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 3.

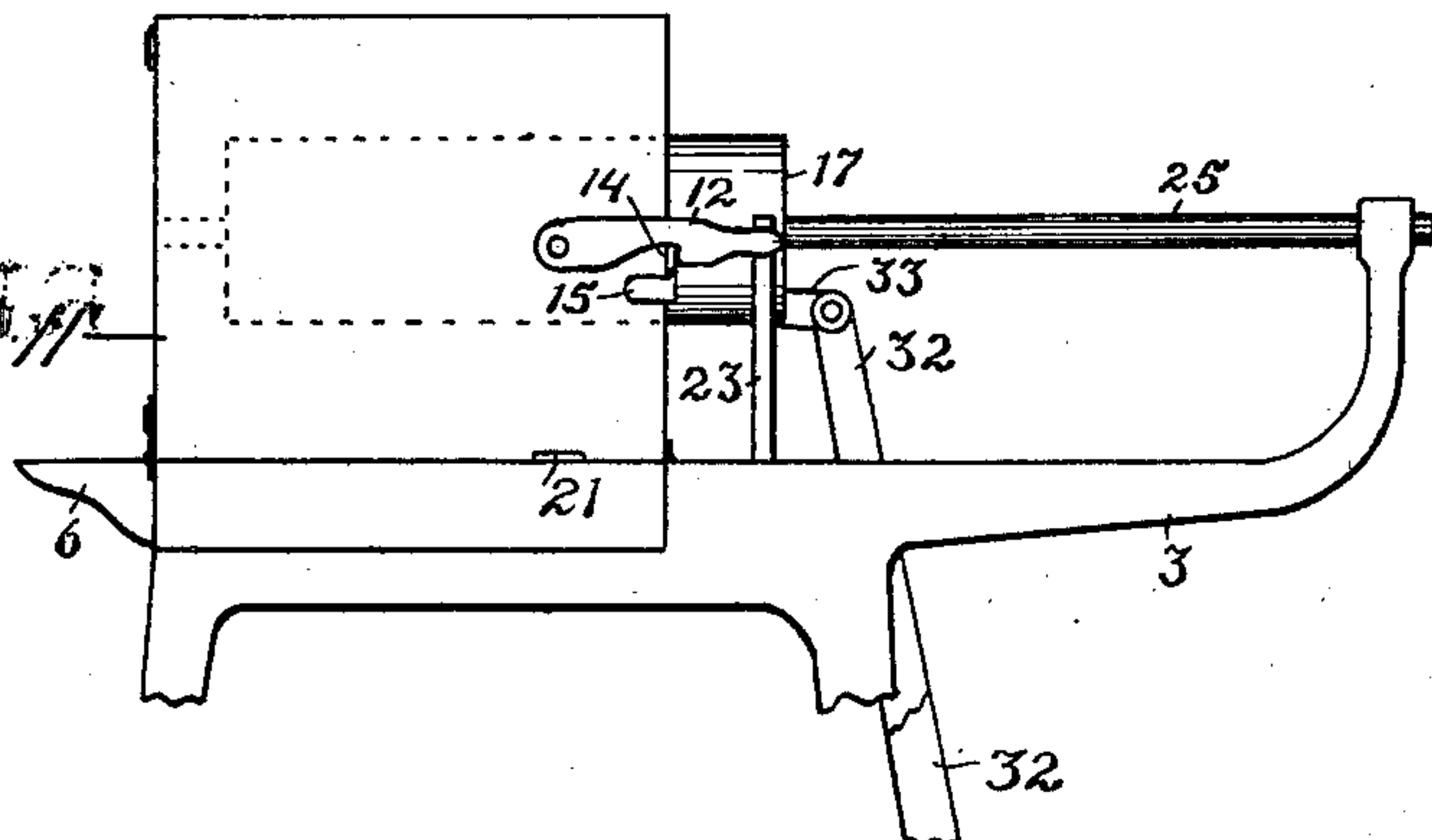
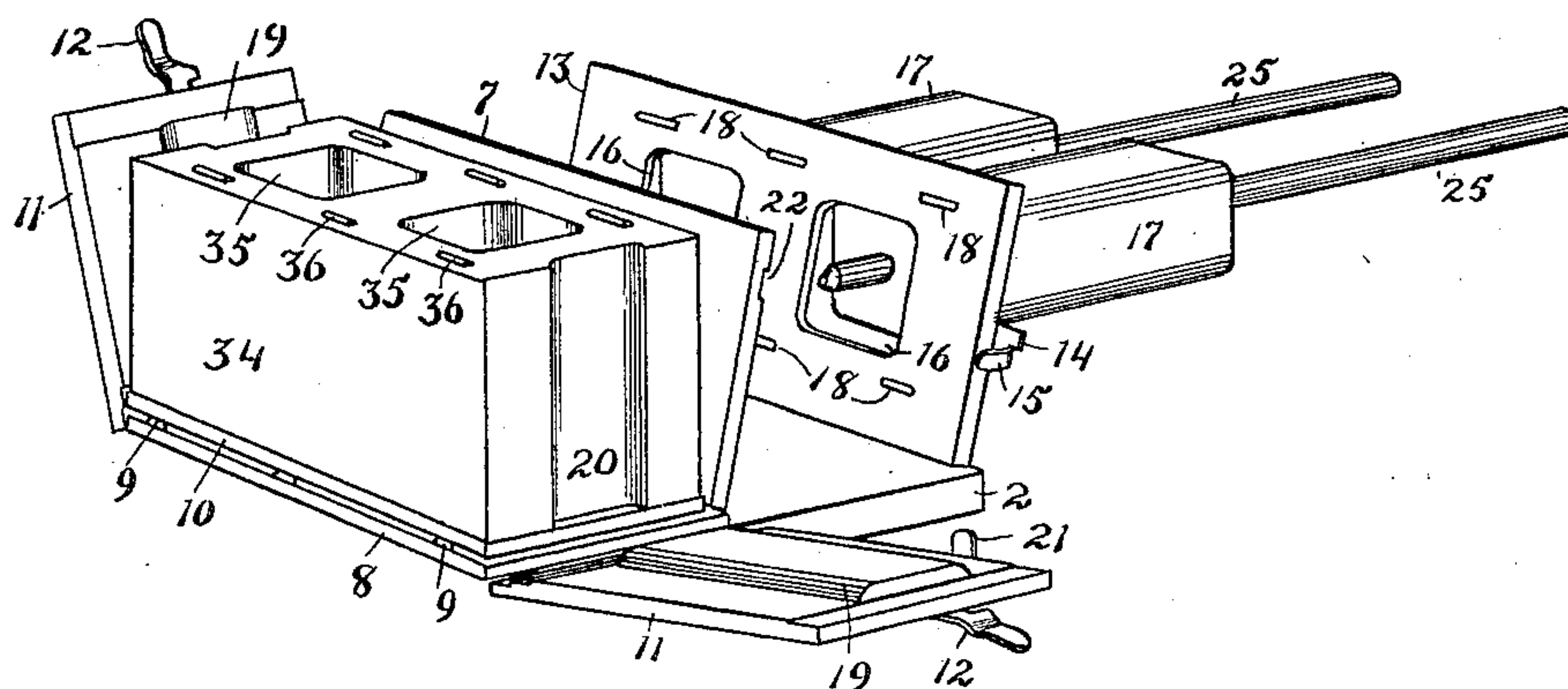


Fig. 4.



WITNESSES:

*W. B. Burns*  
*Augusta Viberg.*

*Frank A. Borst*  
*and*  
*John Groscop* INVENTORS

BY *Chapin & Denny*  
THEIR ATTORNEYS.



# UNITED STATES PATENT OFFICE.

FRANK A. BORST AND JOHN GROSCOP, OF AUBURN, INDIANA.

MACHINE FOR MANUFACTURING HOLLOW CONCRETE BUILDING-BLOCKS.

SPECIFICATION forming part of Letters Patent No. 735,938, dated August 11, 1903.

Application filed March 2, 1903. Serial No. 145,666. (No model.)

*To all whom it may concern:*

Be it known that we, FRANK A. BORST and JOHN GROSCOP, citizens of the United States, residing at Auburn, in the county of De Kalb, in the State of Indiana, have invented certain new and useful Improvements in Machines for Manufacturing Hollow Concrete Building-Blocks; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

Our present invention relates to improvements in machines for manufacturing hollow concrete building-blocks.

The principal object of our invention is to provide a cheap, simple, and efficient machine for molding hollow concrete building-blocks so constructed and arranged that the design or configuration of the front face or either end thereof can readily and conveniently be changed or modified at pleasure by the substitution of a single plate.

Our invention consists of a pivotally-mounted mold formed of hinged sections, a pair of horizontally-movable cores or plungers for forming the hollow interior of the blocks, an upright supporting-frame on which the molds and movable cores are mounted, and means for moving the said cores into and out of the mold.

The principal novel feature of our invention resides in the construction of the mold and the arrangement of the movable cores by which the blocks are formed with their face downward, and the configuration thereof can be conveniently changed at pleasure.

Similar reference-numerals in the accompanying drawings indicate like parts throughout the several views, in which—

Figure 1 is a view of our invention in vertical section taken on the line *xx* of Fig. 2 and showing in dotted outline the pivotal mold thrown back into position for removing the completed block therefrom. Fig. 2 is a plan view of the machine with the movable cores withdrawn from the mold and also shown in dotted outline in position in the mold, the operating-lever being broken away

in part. Fig. 3 is an end of the machine with the supporting-frame broken away, showing the cores in position in the mold and the manner of securing the hinged sections together. Fig. 4 is a perspective view of our invention with the hinged sections of the mold thrown open, the cores withdrawn, and a completed building-block in position thereon ready for removal and the supporting-frame omitted.

The support for the operating mechanism consists of an upright frame, preferably of metal and having four legs 1, a rigid top 2, and a pair of rigid rearwardly-extended horizontal arms 3 in parallel relation, having their outer ends upturned and rigidly connected by a cross piece or bar 4, laterally apertured at 5 for the guide-rods of the movable cores, hereinafter described. The top 2 has a fixed bracket 6 on its front face approximately midway of its ends, to support the mold when thrown forward.

The mold consists of a bottom plate 7, hinged to a side plate 8, having upon its upper face a plurality of transverse strips 9, upon which is loosely arranged a plate 10, and to the front edge of which are hinged a pair of plates 11, Fig. 4, which are provided upon their rear edge with a latch 12 and a plate 13, hinged at its lower edge to the said top 2, having upon its outer face near its opposite ends a proper catch 14 to form a holding engagement with the said latch 12 and provided with forwardly-projecting lugs 15, adapted to overlap and engage the adjacent edge of the end plates 11 when the mold is closed. The plate 13 has a pair of lateral openings 16, adapted to snugly admit the longitudinally and horizontally movable cores 17 in the manner about to be described and is also provided upon its inner face with a plurality of recesses 18. The end plates 11 have upon their inner face a raised portion 19 to form a recess 20 at each end of the blocks, although for molding corner-blocks an end plate 11 is employed in which the raised portion 19 is omitted. To the lower edge of the end plates 11 and near their rear end is fixed a metal lug 21, adapted to fit within a corresponding recess 22 in the lower face of the bottom plate 7, thereby securing these plates in a



holding engagement until the end plates 11 are disengaged by opening them outwardly, as shown in Fig. 4.

At suitable points on the supporting-frame 5 are rigidly fixed the pendant ends of the cross-bar 23, provided upon its upper edge with proper recesses 24 to loosely receive, support, and guide the cores 17. These cores, two in number and identical in construction, are 10 mounted in the said recesses 24, have upon their rear end a fixed guiding-stem 25, loosely mounted in the said lateral openings in the cross-bar 4, and are provided upon their forward end with a short stem or projecting lug 15 26, adapted to enter the registering openings 27 and 28 in the adjacent plates 8 and 10, respectively, when the cores are in position within the mold.

At any suitable points upon the rear legs 1 20 of the supporting-frame are provided apertured lugs 29, in which is rotatably mounted the horizontal shaft 30, having upon one extended end thereof a fixed upwardly-extended hand-lever 31 of proper form and dimensions.

At suitable points on the shaft 30 are rigidly fixed the lower ends of the actuating-levers 32, which are pivotally connected to the rear end of the respective cores 17 by means of a short link 33, Fig. 1.

The operation and manner of employing 30 our invention thus described are briefly stated as follows: The mold is first firmly closed and secured by means of the latches 12 and lugs 21, the cores 17 being withdrawn, as shown 35 in Figs. 1 and 2. The operator now fills the mold up to the bottom of the openings 16 in the side plate 13 with the desired material to form the front face of the block, which is generally made with finer and more expensive 40 material and which may be colored, if desired. While forming this portion of the block the openings 16 may be closed in any proper manner, as by a thin metal plate suspended by a flange from the upper edge of the side 13 or otherwise, after which it is removed, and the cores 17 are moved forward 45 simultaneously into their position within the mold, as described, by a forward movement of the hand-lever 31. When the cores are in 50 this position within the mold, their rear ends are firmly supported by the cross-bar 23 and their forward ends are supported by the respective pins or lugs 26, which rest within the openings 27 and 28. The operator now fills up 55 the mold with cement, preferably of a coarser grade than that which was first placed therein, to form the front face of the block, as above described, packs it down in a proper manner, and then removes all surplus cement 60 by scraping it off even with the top edge of the mold. To remove the completed block thus formed from our improved machine, the operator first withdraws the cores 17 from the mold into the position shown in Fig. 1, then 65 disengages the latches 12, and then tips block

34 forward with the remaining portion of the mold, as shown in dotted lines in Fig. 1 and in full lines in Fig. 4, being supported in such position by the bracket 6, after which the ends 11 are thrown back on their hinges and 70 the bottom plate 7 is tilted rearward on its hinges. This leaves the completed block 34 resting upon its bottom face upon the removable plate 10, which in practice is removed with the block to its place of deposit. The 75 block 34 thus formed has the openings 35 for the well-known ventilating and sanitary purposes for which hollow building-blocks are designed, has the end recesses 20, which will of course register with the corresponding 80 end recess of the next adjacent block when laid up in a wall, and has a series of small lugs or beads 36 upon its upper face to permit a proper layer of mortar between the blocks in the wall and also to aid in protect- 85 ing the corners of the blocks in handling and laying them into a wall.

When it is desired to form corner-blocks with our machine, a hinged plate 11, having plane inner face instead of the one shown, is 90 substituted.

Having thus described our invention and the manner of operating the same, what we desire to secure by Letters Patent is—

1. A hollow-building-block machine con- 95 sisting of a supporting-frame having a table for the hinged mold, and rearwardly-extended arms for the core-guides; a mold consisting of a rear side plate hinged to the rear edge of said table and having a pair of lateral 100 core-openings, a forward side plate hinged to the forward edge of said table, having a bottom plate hinged to its lower edge, and having end plates hinged to its opposite ends, as shown, and a removable plate arranged adja- 105 cent to the inner face of the said forward side plate; a pair of movable cores adapted to enter the mold through the said lateral openings therein; and means for moving said cores into and out of the mold. 110

2. In an apparatus of the class described, a supporting-frame having a table upon its front edge and extended arms upon its rear edge for the core-guides; a knockdown mold whose opposite sides are hinged to the said 115 table, and whose outer side has bottom and end sections hinged to its lower edge and ends respectively; means for securing these hinged sections together; a plurality of movable cores adapted to be adjusted into and out of 120 the mold through suitable openings in the said rear side plate; and means for operating the said cores.

3. In a hollow-building-block machine a knockdown mold formed of hinged sections 125 and consisting of a rear side plate hinged to a fixed base or support and provided with lateral openings for the horizontally-movable cores; a front side plate or section hinged at its lower edge to the said base; a base-plate 130



hinged to the lower edge of said front side plate, end plates or sections hinged to the said front side plate, a removable plate arranged adjacent to the inner face of the said front side plate; and means for rigidly securing the said hinged sections together, as described.

Signed by us at Auburn, De Kalb county,

State of Indiana, this 26th day of February, A. D. 1903.

FRANK A. BORST.  
JOHN GROSCOP.

Witnesses:

PRICE D. WEST,  
MICHAEL HEBEL.