No. 779,219. PATENTED JAN. 3, 1905.

E. E. HARTWICK.

MACHINE FOR MAKING BUILDING BLOCKS.

APPLICATION FILED OCT. 8, 1904.

2 SHEETS—SHEET 1.

Fig. 1.

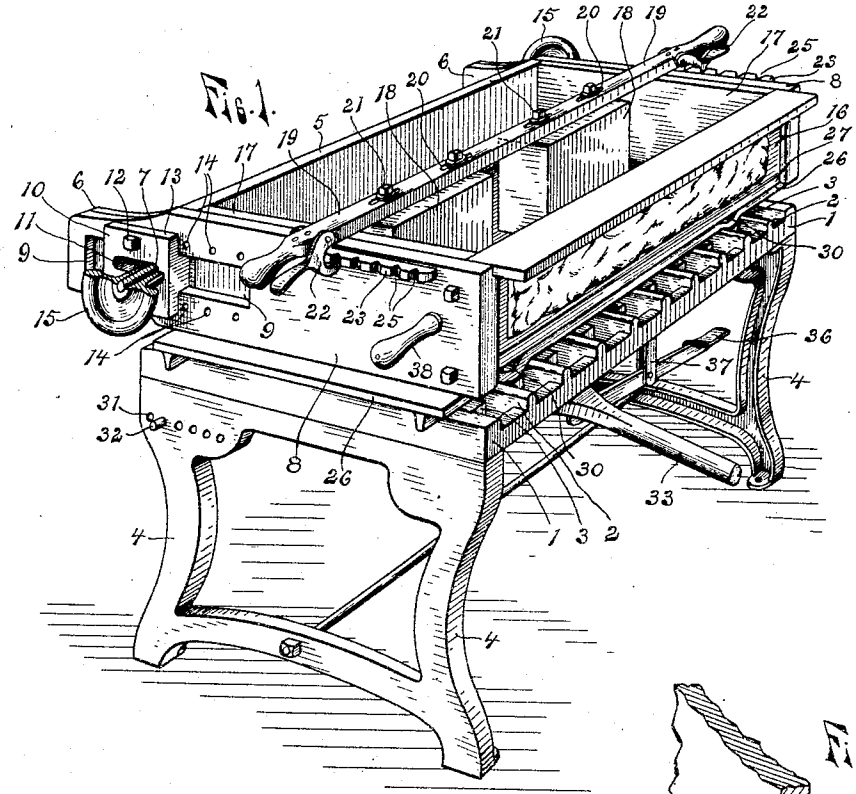


Fig. 6.

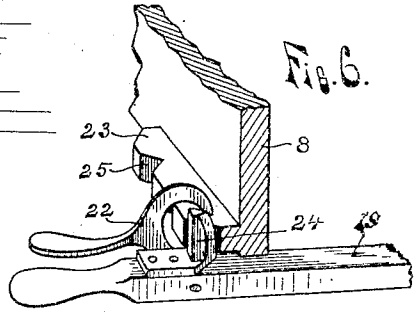


Fig. 7.

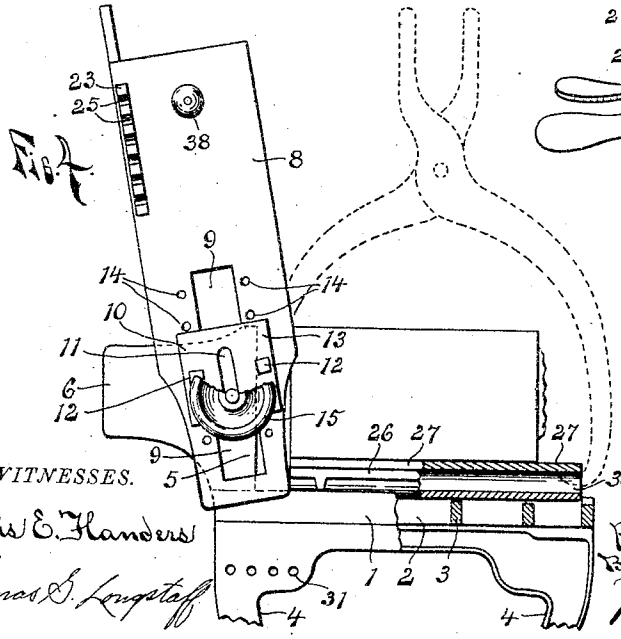
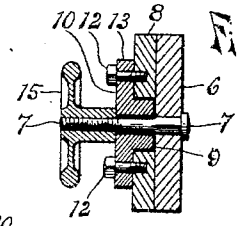


Fig. 5.



WITNESSES.

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2 SHEETS—SHEET 2.

Fig. 2.

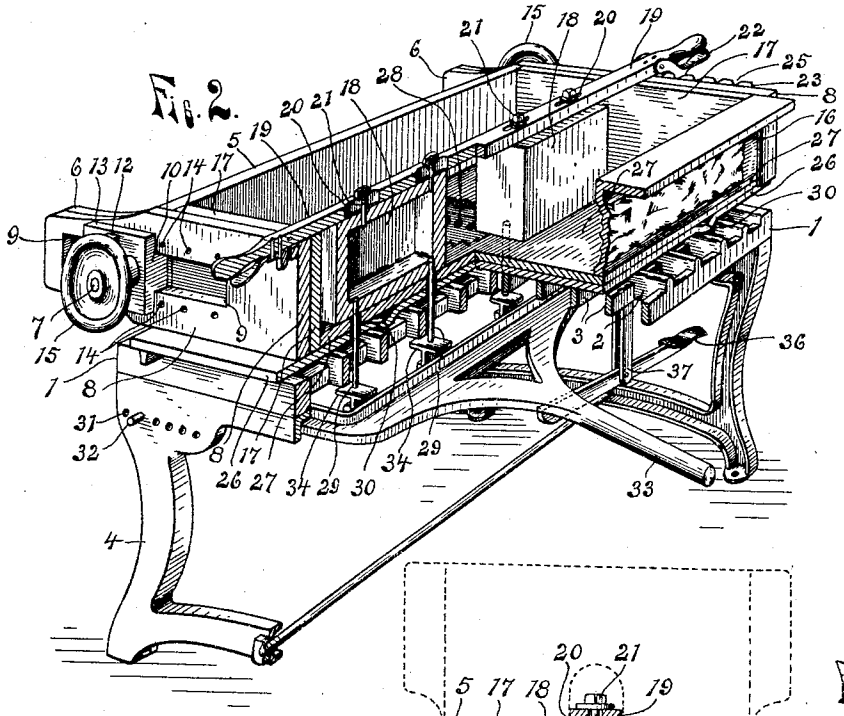


Fig. 3.

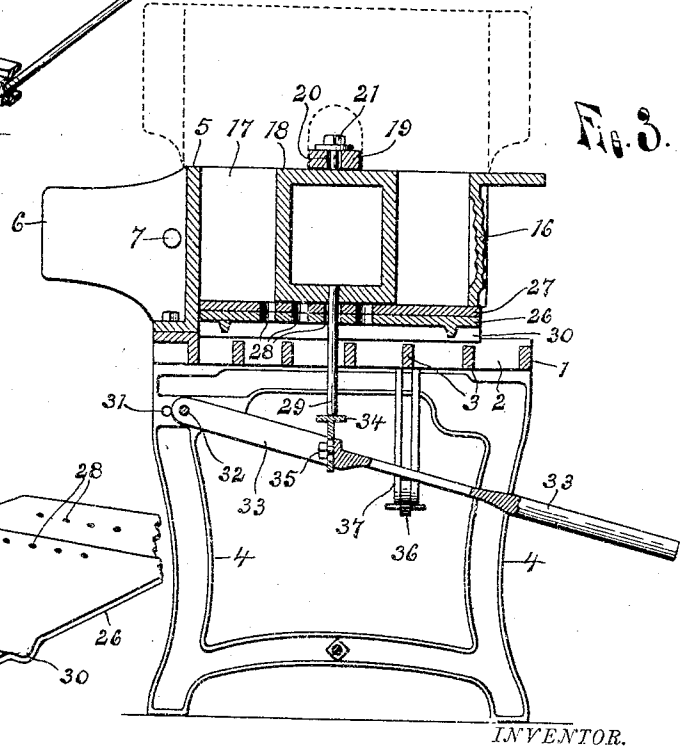
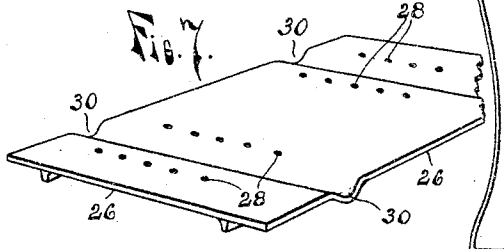


Fig. 7.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR MAKING BUILDING-BLOCKS.

SPECIFICATION forming part of Letters Patent No. 779,219, dated January 3, 1905.

Application filed October 8, 1904. Serial No. 227,627.

To all whom it may concern:

Be it known that I, EDWARD E. HARTWICK, a citizen of the United States of America, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Machines for Making Building-Blocks, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to improvements in machines for molding building-blocks or similar articles from cement or like plastic material; and its object is to provide a simple, cheap, and efficient device so constructed as to greatly facilitate the manufacture of such blocks and providing for its adjustment to manufacture blocks of any desired width.

It is also an object of the invention to provide a readily-adjustable core-block and means for securing the same in place and means for releasing and removing the core; and a further object of the invention is to provide the device with the several advantages of the particular construction, arrangement, and combination of parts, all as hereinafter more fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of a device embodying the invention; Fig. 2, a similar view with parts broken away to show the construction; Fig. 3, a transverse vertical section of the same. Fig. 4 is an end elevation showing the parts in position to release the molded block and with parts broken away to show the construction. Fig. 5 is a sectional detail of the adjustable pivot for the end walls of the mold. Fig. 6 is a perspective detail showing the fastening for the core-holding bar in an inverted position, and Fig. 7 is a perspective view of the base-plate.

As shown in the drawings, 1 represents a grated bed or supporting-table formed of transverse ribs 2, which project slightly above its longitudinal ribs 3 and is supported by detachable legs 4. Bolted to the table near the rear edge thereof is a vertical mold side or wall 5, having rearwardly-extending guide-arms 6, and extending longitudinally outward from each end of said wall is a fixed bolt or stud 7, forming pivots for the end walls 8 of the mold, said walls being each provided with longitudinal slots 9 to receive an adjusting-block 10, which is formed with a longitudinal slot 11, through which the stud-bolt 7 extends and which is secured in said slot by tap-bolts 12, extending through its flanges 13 into screw-threaded openings 14 in the wall, a series of which openings is provided above and one below each slot. The outer ends of studs 7 are screw-threaded to engage hand-wheels 15, which form binding-nuts to engage the surface of the blocks and force the end walls into frictional contact with the guide-arms 6 on the walls 5 to hold said walls from turning or moving longitudinally on said studs.

A front side wall 16 is bolted to the forward ends of the end walls and is provided with a flange or shelf extending forwardly from its upper edge. Facing-plates 17 of a length equal to the width of the block being molded are placed in the mold against the end walls, and these plates may have a smooth face or may be shaped to form a rock-face on the end of the block or give thereto any desired form. The wall 16 may also be made so as to give any desired form to that side of the block.

To form hollow building-blocks, core-blocks 18 are provided, and to hold these cores in the center of the mold a bar 19 is provided having longitudinal slots 20 to receive upwardly-extending stud-bolts 21, provided with nuts to adjustably secure the blocks to the bar, said bar extending longitudinally of the mold and engaging the upper edges of the end walls, to which it is detachably secured at each end by handled hooks 22, pivotally secured to each edge of the bar and adapted to hook beneath an outwardly-projecting ledge 23 on the end wall, the handles of said hooks being extended outward adjacent to a handle formed on the end of said bar, so that they may be readily grasped to release said hooks. To accurately center the bar relative to the mold and prevent the same from moving laterally thereof, a lug 24 is secured to the under side of each end of the bar, which lug is provided with a V-shaped edge to engage a series of V-notches 25 in the ledges 23.

A base-plate 26, having strengthening-ribs on its lower side, rests upon the table 1 with

its rear edge against the rear wall 5, and upon this plate the end walls of the mold rest when in position for forming the block, the ends of said base-plate projecting a short distance beyond the end walls. A bottom plate 27 of a length to fit closely between the facing-plates 17 is placed upon the base-plate with its forward edge projecting beneath the front wall 16 of the mold, which wall is the thickness of said plate narrower than the end walls, and in said base and bottom plates are four series of holes 28 to receive downwardly-extending pins 29 on the core-blocks, said pins extending through said holes 28 and downward between the ribs forming the grated table. Two transverse depressions or grooves 30 are formed in the upper face of the base-plate, so that after the block is molded and stands upon the bottom plate, which lies flat upon the base-plate, said bottom plate and its block may be removed by suitable grappling-tongs, as shown in dotted lines in Fig. 3, the ends of which tongs may be engaged beneath the bottom plate by inserting the same in the said grooves.

A horizontal row of holes 31 is provided in each leg-frame at the rear side thereof to receive a pivot-rod 32, adapted to engage eyes on a hand-lever 33 and pivotally attach said lever to the frame. Tables 34, adapted to engage the lower ends of the pins 29, are adjustably secured to the lever 33 by bolts 35 passing through vertical slots in the standards of said tables, so that said tables may be raised relative to the lever as the pins wear off, and when the cores are shifted to bring the same in the center of the mold when said mold is adjusted to increase or diminish the size of the block the pivot of the lever may be changed by removing the rod 32 and inserting it in one of the other holes 31 to bring the tables beneath the pins.

A foot-lever 36 is pivoted intermediate its ends to a bracket 37 and extends at right angles to the hand-lever 33, engaging said lever at one end and projecting outward at its opposite end beyond the end of the structure, so that the hand-lever may be operated either by foot or hand and by a person standing at the front or end of the machine.

When the desired width of the building-block has been determined by adjusting the pivot-blocks 10 in their slots and securing the same by the bolts 12, the end walls are turned down upon the base-plate and moved rearwardly by means of the handles 38 until the studs 7 engage the forward ends of the slots 11. The bottom and facing plates are then placed in the mold and the hand-wheels 15 turned up hard against the pivot-blocks to hold the end walls from moving. If a hollow block is desired, the cores are placed in the mold with their pins 29 engaging the proper holes 28 to bring the cores in the center of the mold and the bar 19 secured in place by its hooks 22 and lugs 24 to firmly hold the cores. The mold is then in the position shown in Fig. 1 and ready to receive the plastic material to form the block. After the material has been tamped in and the top leveled off by a suitable tool (shown in dotted lines in Fig. 3) having a notch in its lower edge, so that it will straddle the bar and rest upon the edges of the mold, the cores are removed by disengaging the hooks 22 from their ledges and then raising the hand-lever 33, thus pushing upward on the pins 29 and raising the cores. The hand-wheels are then turned to release the end walls, which are then pulled forward by means of the handles 38 until the studs 7 engage the rear ends of their slots. This moves the front wall of the mold away from the molded block and permits the same to be raised, the end walls turning on said studs. Said end walls extend rearwardly of their pivots, so that when turned thereon said extended ends will simultaneously engage the projecting ends of the base-plate 26 and move the same, together with the bottom plate and block, away from the rear stationary wall of the mold. This frees the block and moves it into a position where the bottom plate may be readily engaged by the grappling-tongs and carried away. In this construction a very simple and accurate adjustment is secured, and the cores and mold-walls are removed from the block without danger of injuring it, the block being also freed from its rear wall and moved into a position where it may be readily removed by the turning of the end walls.

Having thus fully described my invention, what I claim is—

1. In a mold, the combination with a fixed side wall, of studs in the ends of said wall, end walls having longitudinal slots to receive said studs, a side wall opposite the fixed wall and carried by said end walls and means for preventing the end walls from moving on said studs.

2. In a mold, the combination with a fixed wall, of screw-threaded studs on the ends of said wall, walls having longitudinal slots to receive said studs, a wall secured to the ends of the slotted walls and opposing the fixed wall, and hand-wheels on said studs to clamp the slotted walls to the stationary wall.

3. In a mold, the combination with a fixed wall, of screw-threaded studs extending outward from the ends of said wall, walls having longitudinal slots, a wall secured between the ends of said slotted walls opposite the fixed wall, blocks adjustably secured in said slots and each provided with an opening to receive the studs, and hand-wheels on said studs to engage the blocks and clamp the slotted walls to the fixed wall.

4. In a mold, the combination with a fixed wall, of screw-threaded studs extending outward from the ends of said wall, walls having

longitudinal slots and a series of screw-threaded openings above and below said slots, a wall secured between the ends of said slotted walls and opposing the fixed wall, blocks in said slots having slotted openings to receive said studs, flanges on said blocks overlapping the adjacent edges of the slots and provided with openings, bolts in said openings to engage the series of openings in the walls and secure the blocks in the slots, and hand-wheels on the studs.

5. In a machine for molding blocks, the combination with a supporting-table, of a fixed mold-wall secured to the table, mold-walls pivotally attached intermediate their ends to the ends of the fixed wall, a wall secured between the ends of the pivoted walls opposite the fixed wall, and a detachable bottom for the mold supported by the table and adapted to be engaged by the edges of the pivoted walls when the same are turned on their pivots and moved away from the fixed wall.

6. In a machine for molding blocks, the combination with a supporting-table, of a fixed mold-wall secured to said table, end walls having longitudinal slots, a side wall opposite the fixed wall secured to the ends of the end walls, studs on the fixed wall, blocks adjustably secured in said slots and having slotted openings to receive the studs, hand-wheels on the studs, facing-plates to engage the inner surface of the end walls, and a base-plate extending beneath the end walls and engaging the fixed wall and adapted to be engaged by the end walls and moved away from the fixed wall when said end walls are turned on the studs.

7. In a mold having side and end walls, of a detachable bottom plate upon which the molded block is formed, and a movable base-plate for supporting the bottom plate and having transverse grooves in its upper face whereby a suitable tool may be inserted beneath the bottom plate in said grooves to lift said plate.

8. In a mold, the combination with the side and end walls thereof, of a core-block in said mold, a bar to which the core is secured supported upon the upper edges of said walls, and means for detachably securing the ends of the bar to the walls.

9. In a mold, the combination with the side and end walls thereof, of a core-block removably supported within the mold, a bar extending across the mold and engaging the walls thereof at its ends and to which the core is secured, ledges on the walls provided with notches, lugs on the bar engaging said notches, and means engaging the ledges to secure the ends of the bar to the walls.

10. In a mold, the combination with the side and end walls thereof, of core-blocks in said mold, a bar engaging the edges of the walls and to which the cores are adjustably secured, ledges on the walls having **V**-notches, lugs on the bar having **V**-shaped edges to engage the notches, and hooks pivotally secured to the bar to engage the under side of the ledges.

11. In a machine for molding blocks, the combination with a supporting-table, and mold-walls supported thereon, of a bottom for the mold having openings, a core supported by the bottom, downwardly-extending pins on said core engaging the said openings, and a lever to engage the lower ends of said pins to lift the core.

12. In a machine for molding blocks, the combination with a supporting-table and mold-walls supported thereon, of a mold-bottom having openings, a core on said bottom, pins on said core extending downward through the openings, a pivoted lever, and tables adjustably secured to said lever to engage the lower ends of the pins.

13. In a machine for molding blocks, the combination of a supporting-table provided with two opposed series of holes, a fixed mold-wall secured to the table, end mold-walls pivotally attached to the fixed wall, a side wall secured at its ends to the ends of the end walls, a removable bottom having openings, a core, pins on said core extending downward through said openings and through the table, a hand-lever provided with eyes at one end, a rod engaging said eyes and the holes in the table, stands adjustably secured to the hand-lever to engage the ends of the pins, a bracket on the table, and a foot-lever pivoted intermediate its ends on said bracket and extending at right angles to the hand-lever into engagement with the same.

14. In a machine for molding building-blocks, the combination with a supporting-table, of a fixed mold-wall secured to the table, studs extending outward from the ends of said wall, end walls having longitudinal slots, pivot-blocks adjustably secured in said slots and provided with slotted openings to receive the studs, hand-wheels on the studs, a side wall secured to the ends of the end walls, a base-plate supported on the table with its ends extending outside the end walls and provided with two or more series of holes and two transverse grooves in its upper face, a bottom plate supported by the base-plate and provided with openings corresponding to the openings in the base-plate, core-blocks, a bar engaging the walls at its ends, to which bar the cores are adjustably secured, means for securing the bar to the walls, pins secured to said cores and extending downward through the holes in the bottom and base plates, and a lever engaging the lower ends of said pins.

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

EDWARD E. HARTWICK.

Witnesses:

OTTO F. BARTHEL,

THOMAS G. LONGSTAFF.