C. J. & F. HELM.

E. HELM, ADMINISTRATRIX OF F. HELM, DEC'D.

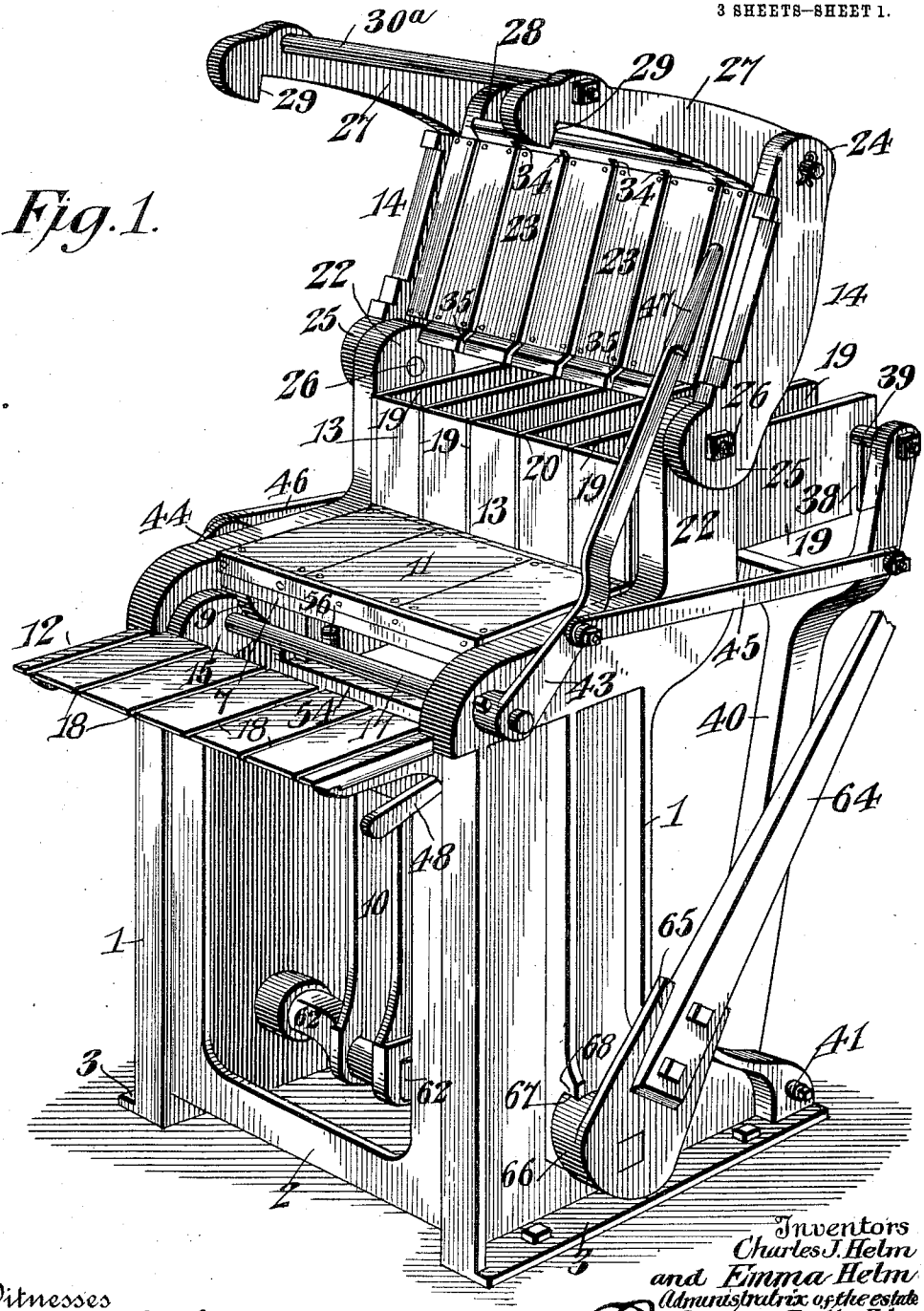
BRICK MOLDING MACHINE.

APPLICATION FILED JUNE 9, 1909.

998,577. Patented July 18, 1911.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses

Jas. F. McCathran

H. F. Riley

Inventors

Charles J. Helm

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Administratrix of the estate

of Franklyn Helm

deceased.

By E. G. Siggers

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3 SHEETS—SHEET 2.

Fig. 3.

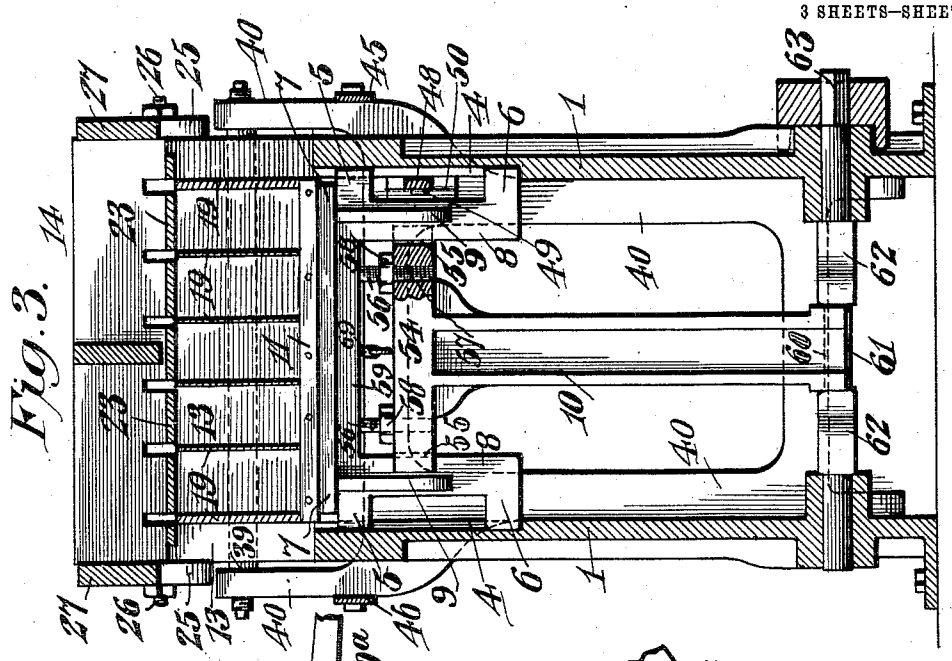
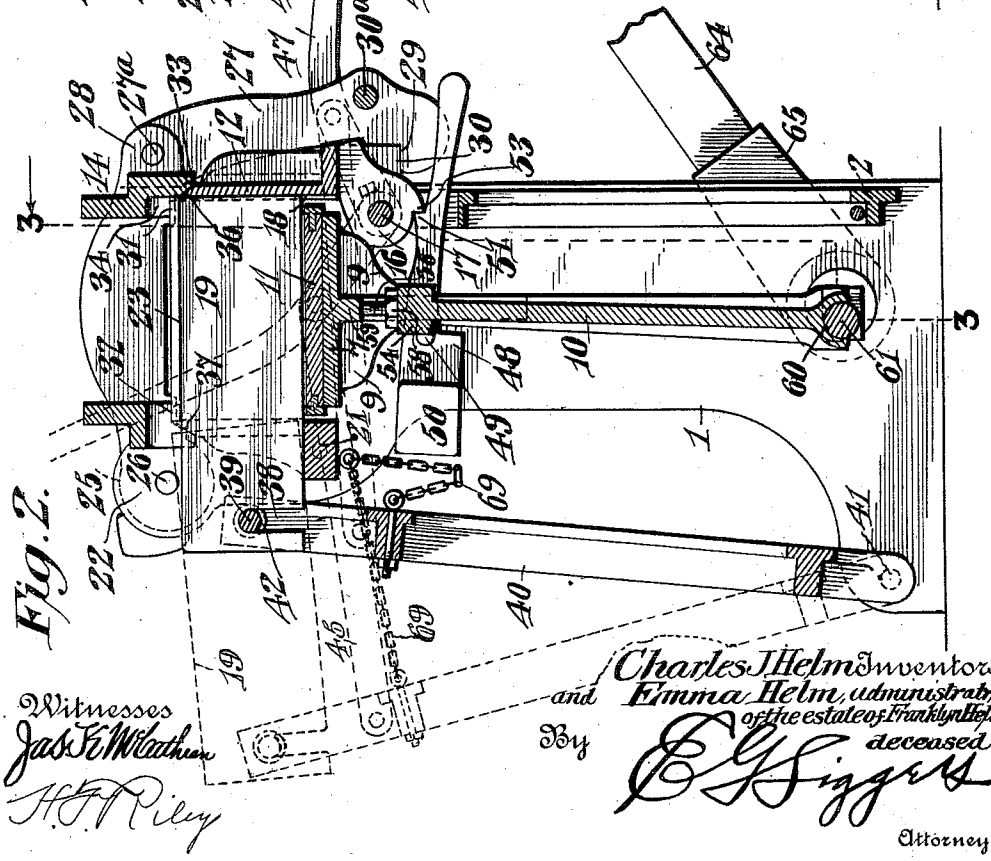


Fig. 2.



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3 SHEETS—SHEET 3.

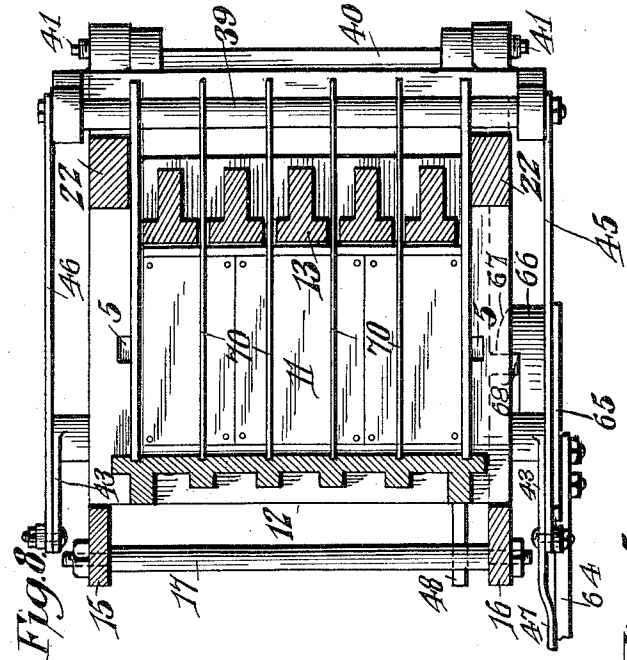

Fig. 8.

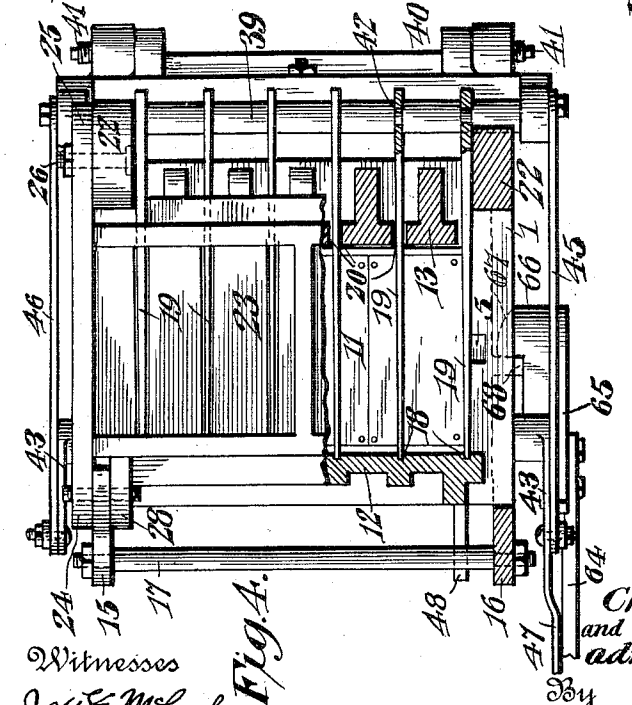

Fig. 4.

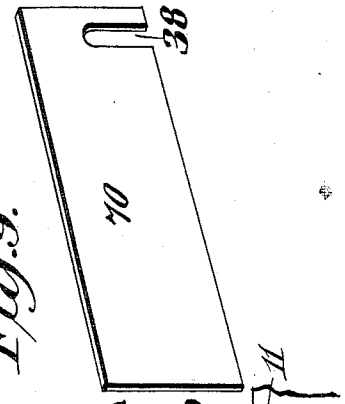

Fig. 9.

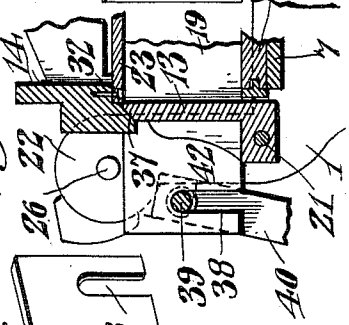

Fig. 5.

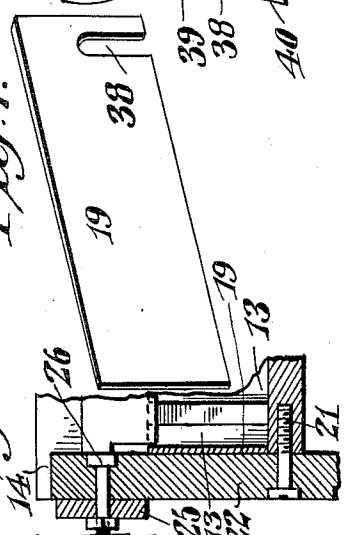

Fig. 7.

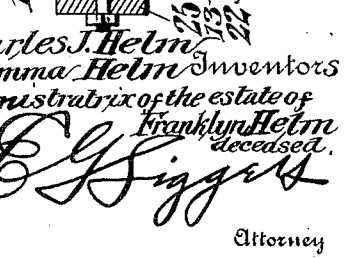

Fig. 6.

Witnesses

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Charles J. Helm and Emma Helm Inventors

administratrix of the estate of Franklyn Helm deceased.

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UNITED STATES PATENT OFFICE.

CHARLES J. HELM, AND FRANKLYN HELM, DECEASED, EMMA HELM, ADMINISTRATRIX, OF TRAVERSE CITY, MICHIGAN.

BRICK-MOLDING MACHINE.

998,577. Specification of Letters Patent. **Patented July 18, 1911.**

Application filed June 9, 1909. Serial No. 501,196.

To all whom it may concern:

Be it known that we, CHARLES J. HELM, a citizen of the United States, residing at Traverse City, county of Grand Traverse, State of Michigan, and EMMA HELM, a citizen of the United States, residing at Traverse City, county of Grand Traverse, State of Michigan, administratrix of the estate of FRANKLYN HELM, late a citizen of the United States, and a resident of Traverse City, in the county of Grand Traverse and State of Michigan, deceased, (as by reference to the duly certified copy of letters of administration hereto annexed will more fully appear,) do hereby declare that the said CHARLES J. HELM and FRANKLYN HELM invented a new and useful Improvement in Brick-Molding Machines, of which the following is a specification.

The invention relates to a brick molding machine.

The object of the present invention is to improve the construction of molding machines, and to provide a simple and comparatively inexpensive one, designed for molding bricks and blocks of cement and other plastic material for various purposes.

Another object of the invention is to provide a molding machine of this character, equipped with means for enabling pressure to be readily applied to the material, and adapted to be easily opened for exposing the bricks or blocks for the convenient removal of the same.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a perspective view of a molding machine, constructed in accordance with this invention and shown open. Fig. 2 is a vertical sectional view of the same, the molding machine being closed. Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 2. Fig. 4 is a plan view partly in section. Figs. 5 and 6 are detail sectional views, illustrating the construction and manner of mounting the hinged rear wall. Fig. 7 is a detail view of one of the tapered division plates. Fig. 8 is a horizontal sectional view, illustrating another form of the invention in which straight division plates are employed. Fig. 9 is a detail view of one of the flat division plates of uniform thickness.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

The frame of the machine is composed of spaced sides 1 and a rigid connecting front member 2 of substantially rectangular form, provided at its inner face with side flanges, which are suitably secured to the sides 1 of the machine. The sides, which are provided with exterior upright reinforcing flanges, have horizontal attaching flanges 3, adapted to be bolted or otherwise secured to the supporting surface. The sides of the frame are provided at their inner faces with vertical guide grooves 4, formed in the upper portions of the sides and receiving upper and lower outwardly extending horizontally disposed lugs 5 and 6 of a table 7, which is vertically movable to apply pressure to the material, as hereinafter explained. The table is provided at opposite sides of the machine with depending legs 8, and the lower lugs 6 extend from the lower ends of the legs. The depending legs, which are arranged vertically, are reinforced by front and rear webs or flanges 9 and form guides for an upright plunger 10, which actuates the table during the upward movement thereof. The table forms a support for a removable pallet 11, which is arranged flush with the upper edges of the sides of the frame, when the table is at the limit of its downward movement. When the table is in this position, it is supported by the lower end walls of the guide grooves, and the plunger has a limited vertical movement independent of the table and does not actuate the same until it reaches the upper ends of the legs.

The table constitutes the bottom of the mold box, which is provided with a hinged front gate 12, a hinged rear wall 13 and a hinged cap 14. The front gate is provided with depending ears 15 and 16, and is hinged to the upper portion of the sides of the frame at the front thereof by a transverse rock shaft 17, which pierces the sides of the

frame and the ears 15 and 16, the latter being located at the inner faces of the said sides. The front gate is preferably reinforced at its outer face by vertical ribs or flanges, and it is provided at its inner face with a series of parallel vertical grooves 18, arranged to receive the front ends of a plurality of division plates 19, which extend through vertical openings 20 of the rear wall of the mold box for dividing the molding chamber into a plurality of separate molds or compartments. The rear wall is mounted between the sides of the frame by suitable pivots 21, and it is located between upwardly extending rigid supporting arms 22, to which the cap of the mold box is hinged. The pivots 21 are located adjacent to the lower edge of the rear wall, which is reinforced at the outer or rear face by spaced vertical webs or flanges, and a transversely disposed integral bottom bar or flange. The hinged walls and other portions of the molding machine may be reinforced in any other desired manner to adapt the machine to the character of the material to be molded and the force required to compress the same.

The rigid supporting arms 22 extend upward at the rear edges of the sides of the frame and the cap 14, which is provided with removable spaced plates 23, consists of a substantially rectangular frame composed of parallel sides and connecting transverse portions, located intermediate of the ends of the sides, the front and rear terminals 24 and 25 being extended to form ears. The rear ears 25 are secured to the supporting arms 22 at the upper ends thereof by suitable pivots 26, and locking arms 27 are pivoted to the front arms 24 by pins 27^a or other suitable fastening devices. The front of the cap is also provided adjacent to the front ears 24 with integral ears or flanges 28, spaced from the ears 24 to receive the upper ends of the locking arms 27. The lower ends of the locking arms are provided with heads having horizontal shoulders 29, located at the inner edges of the arms 27 and arranged to engage with corresponding horizontal shoulders 30 of the frame of the machine, whereby the cap is locked in its closed position. The lower portions of the arms are connected by a transverse rod 30^a, which forms a convenient handle for operating the same. The transverse connecting bars of the cap are provided with spaced front and rear seats 31 and 32 for the reception of the ends of the spaced top plates 23, which are detachably secured to the said seats by suitable fastening means. The front transverse bar, which is provided with a depending flange 33 to engage the upper edge of the front gate, is recessed in rear of the flange 33 to form the seats 31, and it is provided at intervals with grooves 34, spacing the seats and adapted to receive the front portions of the division plates. The rear seats 32 are formed by substantially L-shaped lugs spaced apart to provide intervening grooves 35 and having depending portions arranged in alinement with and engaging the spaced portions of the rear wall of the mold box. The upper edges 36 and 37 of the front gate and the rear wall of the mold box are beveled exteriorly to engage with the transverse bars of the hinged cap, which, when closed, operates to brace the mold at the front and back thereof and prevent the front gate and the rear wall from swinging outward when the material is subjected to pressure.

The division plates, which are arranged at intervals, may be of any desired number and they are provided at their rear ends with slots or recesses 38, extending upward from the lower edges of the division plates and adapted to receive a transverse rod 39 of an oscillatory member 40, which is in the form of a frame. The oscillatory member is composed of two side bars and upper and lower connecting portions spaced from the terminals of the side bars. The lower terminals of the side bars of the oscillatory member 40 are pivoted to the inner faces of the sides of the frame by means of suitable pivots 41, piercing the lower rear extensions of the sides of the frame of the machine. The transverse rod 39, which is suitably mounted between the upper ends of the side bars of the pivoted member 40, is provided at intervals with grooves 42, in which the rear portions of the division plates are arranged, whereby the latter are detachably connected with the oscillatory member. The detachable connection between the division plates and the oscillatory member also permits an independent vertical movement of the division plates independent of the said member when applying pressure to the material, as hereinafter explained.

The pivoted member 40 is oscillated by the rock shaft 17, provided at its ends with arms 43 and 44, which are connected by links 45 and 46 with the upper portions of the side bars of the oscillatory member. The arm 43 is extended to form an operating lever, which is provided with a suitable handle 47, adapted to be grasped by the operator to rock the shaft and swing the oscillatory member toward and from the mold box of the machine. The oscillatory movement of the pivoted member 40 carries the division plates into and out of the mold box.

When it is desired to arrange the molding machine for operation, a pallet is placed upon the table and the front gate is swung upward to a vertical position, being automatically locked against downward and outward movement by a gravity latch 48, pivoted at an intermediate point by a pin 49 to the right hand side of the frame of the machine and provided in rear of the pivot

with a weight 50 and having a shoulder 51, arranged in advance of the pivot and adapted to engage with a shoulder 53 of the ear 16 of the hinged gate. The front or outer portion of the gravity latch is shaped into a suitable handle, and is adapted to be depressed to release the front gate to permit the same to be swung downward. The rock shaft is then oscillated by the operating lever to move the division plates forwardly through the openings of the hinged rear wall of the mold box to the front gate thereof. The gravity latch is sufficient to retain the front gate in a vertical position until the cap is closed, as the pressure is not applied until the cap is locked in engagement with the upper edges of the front and rear walls of the mold box. After the division plates have been moved forward to their operative position, the molds or compartments, formed by them and the front and rear walls, are filled with the material to be molded into blocks or bricks, the material being smoothed off level with the upper edges of the said plates. Pressure is then applied through the plunger 10, which is provided at its upper end with a transverse head 54, having terminal recesses 55 and slidably embracing the inner vertical edges of the legs 8 of the table. The head of the plunger is equipped with adjustable studs 56, supporting the table and operating in openings 57 of the head of the plunger. The threaded studs engage threaded openings in the head of the plunger, and are movable upwardly and downwardly to level and properly position the table, and they are locked in their adjustment by nuts 58. The table is provided at its lower face with a transverse rib or flange 59, which is engaged by the adjustable studs of the plunger head. The lower end of the stem of the plunger is provided with a bearing recess 60, and is supported upon a crank bend 61 of a rock shaft 62, journaled in suitable bearings in the sides of the frame and having a squared portion 63, which receives a lever 64. The lever 64, which is oscillated to apply pressure to the material, is provided at its lower end with a plate or member 65, having an approximately semi-circular flange 66, forming terminal shoulders 67, located at opposite sides of a vertical web or flange 68 of the adjacent side of the frame of the machine, and coöperating with the same to limit the movement of the lever 64. When the pressure producing lever 64 is swung upward from the upwardly and rearwardly inclined position, illustrated in Fig. 1 of the drawings to that shown in Fig. 2, the rock shaft is partially rotated and the crank bend carries the plunger upward, causing the same to lift the table with the division plates and the material, and forcing the spaced plates of the cap to a greater or less degree into the compartments or molds of the mold box, and thereby compressing the material. The grooves of the hinged cap and the spaces between the plates thereof receive the upper edges of the division plates during such upward movement of the plunger. After the pressure has been applied, the division plates are moved rearward beyond the mold box or chamber, and the hinged cap is then swung upward and the hinged front downward, which exposes the molded blocks or bricks and enables the same to be readily removed from the machine. The rearward movement of the oscillatory member 40 is limited by a chain 69, or other suitable flexible connection secured at one end to the rear wall of the mold box and to the upper connecting bar of the oscillatory member.

In the embodiment of the invention illustrated in Figs. 1 to 7 of the accompanying drawings, the machine is equipped with the forwardly tapered division plates 19 to adapt it for molding bricks out of iron borings for getting such material into a shape that will enable it to be passed through a cupola for saving the iron. Material of this character offers considerable frictional resistance to the movement of the division plates, and the friction is reduced by tapering the blades, which by their rearward movement free themselves from the material.

In the embodiment of the invention illustrated in Figs. 8 and 9, the machine is equipped with division plates 70 of uniform thickness, which result in molding blocks or bricks of cement or other suitable material with square edges or faces to adapt them for building and various other purposes. By varying the number of division plates, the size of the blocks or bricks may be varied.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. A molding machine including a molding chamber provided in one of its walls with a plurality of openings, an oscillatory member movable toward and from the molding chamber and provided with a transverse rod, means for actuating the member, and a plurality of division plates movable through the openings of the walls of the molding chamber to divide the latter into a plurality of compartments, and provided at their rear portions with open-ended slots detachably receiving the transverse rod of the oscillatory member, said slots extending downwardly and opening out at the bottom of the plates.

2. A molding machine including a molding chamber provided in one of its walls with a plurality of openings, an oscillatory member movable toward and from the molding chamber and provided with a transverse rod having grooves arranged at intervals,

means for actuating the oscillatory member, and a plurality of division plates movable through the said openings to divide the molding chamber into a plurality of compartments or molds, and provided at their rear portions with open-ended slots detachably receiving the rod of the oscillatory member, said plate being fitted in the grooves of the rod and maintained in spaced relation by the same.

3. A molding machine including a molding chamber, a table arranged at the bottom of the molding chamber to support the material, a horizontal rock shaft located below the table and provided with a crank bend, an upright plunger provided at its lower end with a bearing recess and detachably straddling the crank bend of the rock shaft, said plunger being arranged to move the table upwardly to compress the material, means mounted on the table for guiding the upper end of the plunger, and a lever connected with the rock shaft for partially rotating the same.

4. A molding machine including a frame having spaced sides, a molding chamber located at the top of the frame, a table arranged at the bottom of the molding chamber to receive the material and movable vertically between the sides of the frame and provided with spaced depending guides slidable between the sides of the frame, a plunger movable between the spaced guides and along the same independently of the table, and means for operating the plunger.

5. A molding machine including a frame having spaced sides, a molding chamber located at the top of the frame, a table arranged at the bottom of the molding chamber to receive the material and movable vertically between the sides of the frame and provided with spaced guides slidable between the sides of the frame, a plunger movable between the spaced guides and along the same having a limited movement independently of the table, spaced adjusting devices extending upward from the plunger and arranged to engage the table to limit the independent movement of the plunger, and means for operating the plunger.

6. A molding machine including a frame having spaced sides provided with opposite grooves, a molding chamber arranged at the top of the frame, a table located at the bottom of the chamber and provided with depending legs slidable in the grooves of the frame and forming spaced guides, a plunger slidable between the legs of the table and having a limited movement independently of the latter and guided by the said legs, and means for operating the plunger to move the table upwardly to compress the material.

7. A molding machine including a frame provided at opposite sides with vertical grooves, a molding chamber located at the top of the frame, a table arranged at the bottom of the molding chamber and provided with depending legs forming guides and provided with upper and lower horizontally projecting lugs slidable in the grooves of the frame, the lower end walls of the grooves limiting the downward movement of the table, and a plunger mounted between and guided by the legs of the table and having a limited movement independent of the table, and means for operating the plunger to move the table upward to compress the material.

8. A molding machine including a molding chamber, a table arranged at the bottom of the molding chamber to receive the material, a plurality of division plates movable onto the table through one of the walls of the molding chamber to divide the said chamber into separate compartments or molds, means for moving the said plates inwardly and outwardly, the connection between the plates and the said means allowing for an independent limited vertical movement of the plates, and means for moving the table upwardly to compress the material, said division plates being movable upwardly with the table.

9. A molding machine including a molding chamber, a table arranged at the bottom of the molding chamber to receive the material, a plurality of division plates movable through one of the walls of the molding chamber onto the table to divide the said chamber into compartments or molds, said division plates being provided at their rear portions with vertical slots, an oscillatory member movable toward and from the molding chamber and provided with a transverse rod extending through the slots of the division plates, said slots permitting an independent vertical movement of the plates, means for actuating the oscillatory member, and means for moving the table upwardly to compress the material, said division plates being carried by the table in the upward movement thereof.

10. A molding machine provided at the top with a plurality of spaces, a table arranged at the bottom of the molding chamber to receive the material, a plurality of division plates movable onto the table through one of the walls of the molding chamber to divide the said chamber into separate compartments or molds, said plates being provided at their rear ends with vertical slots, means for moving the table upwardly to compress the material, said plates being carried by the upward movement of the table into the spaces at the top of the molding chamber, an oscillatory member provided with a transverse rod extending through the slots of the division plates, said slots permitting the division plates to move

upward independently of the oscillatory member, and means for actuating the latter.

11. A molding machine including a molding chamber provided at the top with spaced plates, a table arranged at the bottom of the molding chamber to receive the material, a plurality of division plates movable onto the table through one of the walls of the molding chamber to divide the said chamber into separate compartments or molds, means for moving the division plates, the connection between the division plates and the said means allowing for an independent limited vertical movement of the division plates, and means for moving the table upwardly to compress the material against the top plates, said division plates being movable upwardly with the table into the spaces between the top plates.

12. A molding machine including a molding chamber, a table arranged at the bottom of the molding chamber to receive the material, a plurality of division plates movable through one of the walls of the molding chamber onto the table to divide the said chamber into a plurality of molds or compartments, means for moving the said plates, the connection between the plates and the said means allowing an independent limited vertical movement of the division plates, plates arranged at the top of the chamber and corresponding with the molds or compartments, and means for moving the table upwardly to compress the material against the top plates, said division plates being movable upwardly with the table.

13. A molding machine including a molding chamber provided in one of its walls with vertical openings and having a plurality of top plates spaced apart to form intervening grooves, a table arranged at the bottom of the molding chamber to receive the material, a plurality of division plates movable through the openings of the wall of the molding chamber for dividing the latter into separate compartments or molds, and means for moving the table upwardly to compress the material against the top plates, said division plates being carried upward with the table and extending into the grooves between the top plates.

14. A molding machine including a hinged front gate, a hinged rear wall having openings, a hinged cap provided with depending portions arranged to engage the upper edges of the front gate and the rear wall and hold them against outward movement, a table movable vertically between the front gate and the rear wall, and division plates movable inwardly and outwardly through the openings of the rear wall.

15. A molding machine including a hinged front gate, a hinged rear wall, a hinged cap provided with projecting portions for engaging the upper edges of the front gate and the rear wall, spaced top plates arranged between the projecting portions of the cap, a table movable vertically between the front gate and the rear wall, and division plates movable through the rear wall for forming a plurality of compartments or molds, said division plates being movable upwardly into the space between the top plates.

16. A molding machine including a frame, a front gate hinged to the frame, a rear wall also hinged to the frame, a hinged cap provided with means for engaging the upper edges of the front gate and the rear wall, means for locking the cap in such engagement, and a table movable vertically between the front gate and the rear wall to compress the material.

17. A molding machine including a frame, a front gate hinged to the frame, a rear wall also hinged to the frame, a cap hinged at the back and provided with portions for engaging the upper edges of the front gate and the rear wall, locking means arranged at the front of the cap for securing the same in such engagement, and a table movable vertically between the front gate and the rear wall to compress the material.

18. A molding machine including a frame, a front gate hinged to the frame, a rear wall also hinged to the frame, a cap hinged at the back to the frame and having portions for engaging the upper edges of the front gate and the rear wall, locking arms connected with the front of the cap and arranged to engage the frame for holding the cap in engagement with the front gate and the rear wall, and a table arranged between the front gate and the rear wall.

19. A molding machine including a frame, a front gate hinged to the frame, a gravity latch located beneath the front gate and having a weighted inner portion and provided at the outer portion with means for holding the front gate in its closed position, a rear wall, a cap engaging the front gate and the rear wall, and a table arranged between the front gate and rear wall to receive the material.

20. A molding machine including a frame, a front gate provided with ears pivoted to the frame, one of the ears having a shoulder, and a gravity latch located beneath the front gate and pivoted at an intermediate point, said gravity latch being provided in rear of the pivot with a weight and having a shoulder in advance of the pivot to engage the shoulder of the ear of the front gate.

21. A molding machine including a frame, a front gate provided with ears pivoted to the frame, one of the ears having a shoulder, and a gravity latch located beneath the front gate and pivoted at an intermediate point, said gravity latch being provided in rear of the pivot with a weight and having a

shoulder in advance of the pivot to engage the shoulder of the ear of the front gate, and the said latch being extended outwardly to provide an operating handle.

22. A molding machine including a frame provided with shoulders, a hinged front gate located above the shoulders, a rear wall, a hinged cap engaging the upper edges of the front gate and the rear wall, gravity acting locking arms pivoted to the cap and arranged to engage the shoulders of the frame, a rod connecting the arms and forming a handle, and a table movable vertically between the front gate and the rear wall.

23. A molding machine including a frame provided at the back with rigid upwardly extending supporting arms, a rear wall pivotally mounted between the arms, a front gate hinged to the frame, a cap hinged to the supporting arms of the frame and provided with projecting portions for engaging the upper edges of the front gate and the rear wall, means for locking the cap in such engagement, and a table movable vertically between the front gate and the rear wall to compress the material.

24. A molding machine including a molding chamber having vertical grooves in its front wall and provided in its rear wall with openings arranged in alinement with the vertical grooves, said molding chamber being also provided in its top with grooves corresponding with the said grooves and openings, a table arranged at the bottom of the molding chamber to support the material, a plurality of division plates extending through the openings of the rear wall and fitting in the grooves of the front wall of the molding chamber, and means for moving the table vertically to compress the material, such movement operating to carry the division plates into the grooves of the top of the chamber.

In testimony, that we claim the foregoing as the invention of CHARLES J. HELM and FRANKLYN HELM, we have hereto affixed our signatures in the presence of two witnesses.

CHARLES J. HELM.
EMMA HELM,
Administratrix of the estate of Franklyn Helm, deceased.

Witnesses:
AMIL F. NERLINGER,
NELLIE MORK.