No. 761,886. PATENTED JUNE 7, 1904.

F. HELM.

MACHINE FOR MAKING PRESSED BRICK.

APPLICATION FILED MAY 27, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 6.

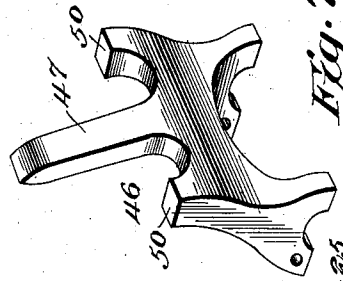


Fig. 7.

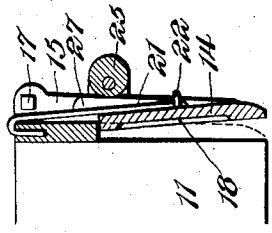


Fig. 2.

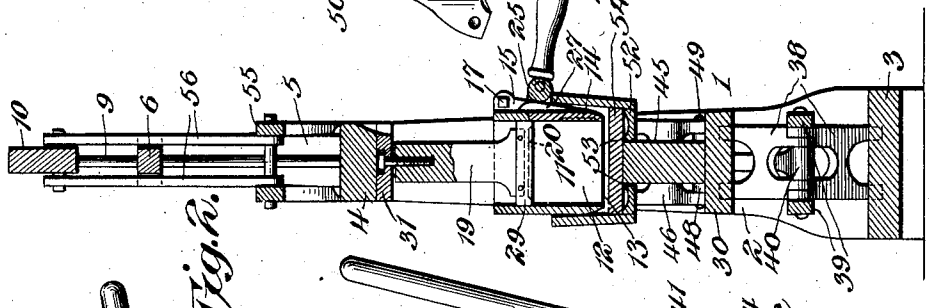


Fig. 1.

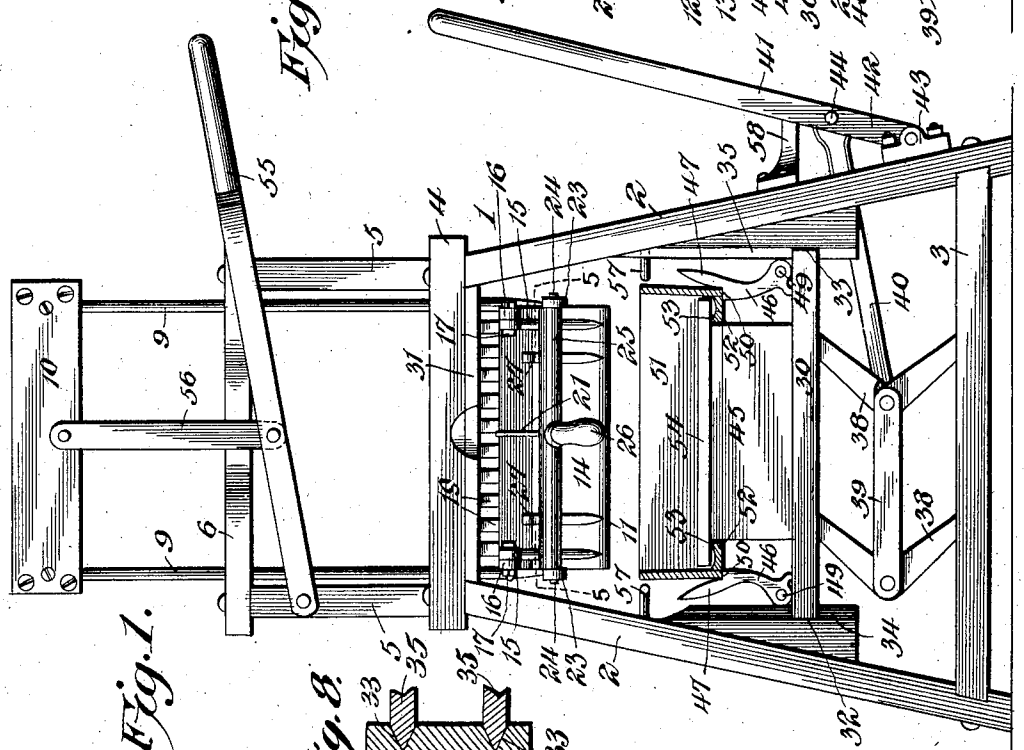
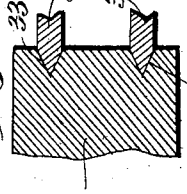


Fig. 8.



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MACHINE FOR MAKING PRESSED BRICK.

APPLICATION FILED MAY 27, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

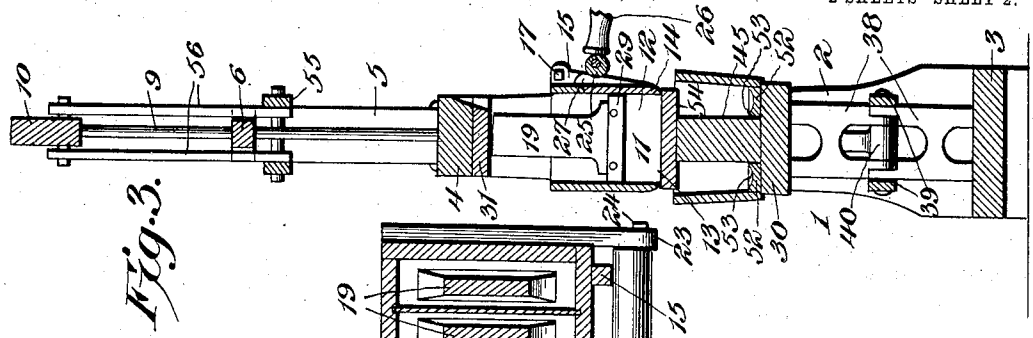


Fig. 5.

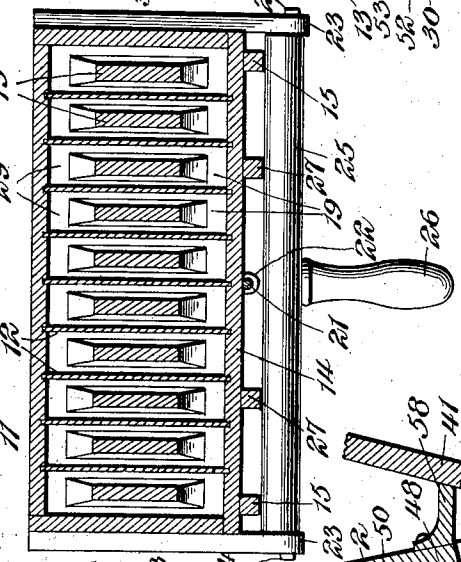
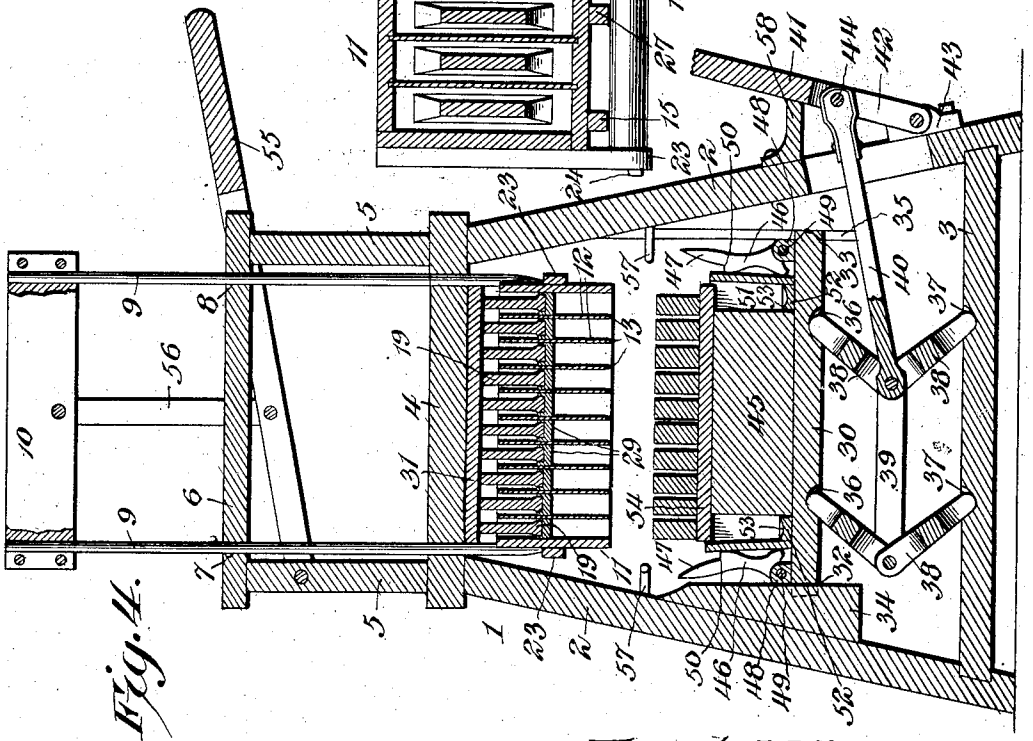


Fig. 4.



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No. 761,886. Patented June 7, 1904.

UNITED STATES PATENT OFFICE.

FRANK HELM, OF TRAVERSE CITY, MICHIGAN.

MACHINE FOR MAKING PRESSED BRICK.

SPECIFICATION forming part of Letters Patent No. 761,886, dated June 7, 1904.

Application filed May 27, 1903. Serial No. 159,013. (No model.)

To all whom it may concern:

Be it known that I, FRANK HELM, a citizen of the United States, residing at Traverse City, in the county of Grand Traverse and State of Michigan, have invented a new and useful Machine for Making Pressed Brick, of which the following is a specification.

The invention relates to improvements in machines for making pressed brick.

The object of the present invention is to improve the construction of machines for making pressed brick and to provide a simple and comparatively inexpensive brick-machine of this character capable of molding and compressing clay, cement, or analogous material into the desired form and adapted to produce a number of bricks at each operation of the machine.

A further object of the invention is to provide a brick-making machine to which the cement, clay, or other material may be conveniently delivered and which after the bricks have been molded and compressed will enable the same to be readily removed from it.

Another object of the invention is to provide a brick-machine which will be adapted to ornament the bricks and which will enable the latter to be removed without injuring such ornamentation.

With these and other objects in view the invention consists in the construction and novel combination and arrangement 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 side elevation, partly in section, of a brick-machine constructed in accordance with this invention, the parts being in position to support a box of cement or other material in position for feeding the machine. Fig. 2 is a transverse sectional view of the same, the vertically-movable mold-carrying frame being depressed to carry the mold into the cement box or receptacle to fill the cells or compartments with material. Fig. 3 is a similar view, the table being raised for compressing the material. Fig. 4 is a vertical longitudinal sectional view, both levers being swung upward to raise the mold and to lower the table or platform and the brick being exposed for removal from the machine. Fig. 5 is a horizontal sectional view on the line 5 5 of Fig. 1. Fig. 6 is a detail perspective view of one of the pivoted automatically-operated supports. Fig. 7 is an enlarged detail sectional view of one side of the mold, illustrating the construction of the hinged gate and the means for automatically opening the same and for locking the gate. Fig. 8 is a detail view illustrating the manner of guiding the vertically-movable cross-head which carries the table or platform.

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

1 designates a main frame provided with oppositely-inclined sides or standards 2, secured to and rising from the ends of a base 3 and connected at their upper terminals by a horizontal cross-piece 4. Mounted upon the main frame is a supplemental guiding-frame composed of uprights 5 and a connecting top bar 6. The cross-piece 4 and the top bar 6 are provided with registering or alined perforations 7 and 8, which receive parallel rods or bars 9 of a vertically-movable frame. The bars or rods 9, which are preferably rounded, as shown, are connected at their upper ends by a cross-head 10 and at their lower ends by a mold 11, the latter being located at a point below the top piece 4 of the body portion of the frame of the brick-machine.

The mold 11 consists of an oblong box provided with a series of transverse partitions 12, preferably constructed of metal and having their lower edges 13 beveled or sharpened to enable the partitions to readily cut their way through a mass of cement or other material, as hereinafter explained. The mold is of a width equal to the length of a brick, and the cells or compartments formed by the partitions are of a width equal to the thickness of a brick. The mold is provided at one side with a hinged door or section 14, provided at

its upper edge with perforated ears 15, arranged adjacent to corresponding ears 16 of the mold and receiving removable pivots 17, whereby the hinged section or door may be readily removed when desired. The perforated ears of the hinged section or door are preferably formed by cleats or ribs, which project beyond the upper edge of the door or section, as shown. The door or section may be provided, as indicated in the accompanying drawings, with depressions 18 to form projecting panels on the ends of the bricks, and corresponding panels are formed on the upper edges of the bricks by plungers 19, which are provided with recesses or depressions 20. The hinged section or door and the plungers may be provided with projections to form depressed panels in the bricks, or any other desired ornamentation may be provided. The hinged section or door and the plungers may be constructed to form a rock-face on the front ends and upper edges of the bricks, and after the bricks have been compressed, as hereinafter explained, the hinged section or door is released and is automatically swung outward or open by a spring 21, arranged in an upright position at the front of the mold and secured at its upper end to the same and having its lower end engaging an eye 22 of the hinged section or door. The ends of the mold are provided with projecting arms 23, having bearings for the reception of journals 24 of a cam 25. The cam 25, which is provided with a central handle or operating-arm 26, is arranged to engage cleats 27 of the door or section of the mold. When the operating arm or handle 26 is swung downward, the cam is carried into engagement with the hinged door or section, and the latter is held firmly closed while the bricks are being molded. When it is desired to release the bricks, the operating arm or handle is swung upward and the spring automatically throws the hinged door or section outward beyond the ornamented end faces of the bricks, thereby permitting the mold to be raised from the bricks without marring or otherwise injuring the said ornamented end faces.

The plungers 19, which are stationary, are vertical and are secured at their upper ends to the top cross-piece 4 of the main frame of the machine and are provided at their lower ends with suitable heads 29, which correspond in shape and size to the cells or compartments of the mold. These plungers, which are stationary with relation to the mold and to a lower vertically-movable cross-head 30, are preferably secured to the top of the main frame of the brick-machine by means of a detachable plate or board 31, whereby the plungers are adapted to be removed for enabling another set of plungers having a different design to be applied to the brick-machine.

The vertically-movable cross-head 30, which is provided at its ends with V-shaped notches 32 and 33, is engaged by guides 34 and 35 of triangular shape secured to the inner inclined faces of the ends 2 of the main frame and provided with vertical guiding edges, which are oppositely beveled to conform to the configuration of the notches 32 and 33 of the lower vertically-movable cross-head. The lower face of the cross-head 30 and the upper face of the base 3 of the main frame are provided with bearing-recesses 36 and 37, detachably receiving toggle-levers 38, arranged in pairs, as clearly shown in Figs. 1 and 2. The members of each pair are connected by a horizontal pivot, and the latter are connected by a link 39. One of the pivots of the toggle-levers is connected by a link or bar 40 with a lower operating-lever 41, having one end 42 bifurcated and fulcrumed on one end of the main frame of the brick-machine near the bottom thereof between suitable bearings 43. The end or standard upon which the lever 42 is fulcrumed is provided with a slot or opening to receive the connecting bar or link 40, which is pivoted at its outer end by a pin 44 or other suitable fastening device in the bifurcation of the lower operating-lever. The toggle-levers preferably consist of two sides and an intermediate connecting portion, as clearly shown in Fig. 2, and the inner end of the connecting bar or link 40 is enlarged and extends across the space between the sides of the adjacent toggle-levers. When the lower operating-lever 41 is swung downward from the position illustrated in Fig. 1 of the drawings, the toggle-levers will be straightened and the lower vertically-movable cross-head 30 will be elevated, and when the lower lever 41 is swung upward the lower cross-head will be moved downward.

The lower cross-head is provided with a table or platform 45, and it has mounted upon it pivoted supports 46, located at the ends of the table or platform, which extends longitudinally of the cross-head 30. The pivoted supports are composed of two sides and a connecting portion provided with an upwardly-extending inclined arm 47. The sides are enlarged at their lower ends to form feet and are pivoted at the outer portions thereof to transverse cleats 48 by pins 49 or other suitable fastening devices. The upper ends of the sides form shoulders 50, arranged to support a box 51, which is adapted to contain the cement, clay, or other material from which the bricks are molded. The box, which is open at the bottom, has inwardly-extending bottom flanges 52, provided with concave upper faces forming projecting edges 53, which are adapted to fit against the lower face of a removable bottom board 54, whereby a tight joint is effected. The box with its removable bottom in position in the bottom flanges is filled with cement or other material, which is scraped off level with the upper edges of the box, and the latter is then placed

upon the supports 46 in the position illustrated in Fig. 1 of the accompanying drawings. The opening within the bottom flanges of the box corresponds in size to the table or platform which projects into the opening, as shown. The mold is then moved downward to the position indicated in Fig. 2 of the drawings by means of an upper operating-lever 55, bifurcated to straddle the upper supplemental or guide frame and fulcrumed at its inner end on the same at one side thereof. The other end of the lever 55 is shaped into a handle, and the sides formed by the bifurcation are connected with the top cross head or piece 10 by links 56. Instead, however, of employing operating-levers for actuating the vertically-movable frame and the lower vertically-movable cross-head any other suitable means may be employed, and a suitable motive power may be provided for actuating these parts.

The downward movement of the mold within the box or receptacle supplies the brick cells or compartments with concrete or other material, and the lower cross-head is then raised by swinging the lower operating-lever downward. The upward movement of the lower cross-head carries the material against the stationary plungers, and the bricks are molded and firmly compressed. This upward movement also carries the inclined arms 47 of the pivoted supports into engagement with approximately L-shaped trips 57, fixed to the inner faces of the sides or standards 2 and arranged in the path of the said arms 47. The supports are drawn outward by the trips, and the box is caused to drop to the position illustrated in Fig. 4 of the drawings. The upper lever is then swung upward to raise the mold from the bricks, which are arranged on the removable bottom 54 of the box 51. The removable bottom 54 forms a tray for holding the bricks and is adapted to be readily removed from the table or platform. The lower operating-lever is then swung upward to lower the table or platform to the position illustrated in Fig. 4 of the drawings. The upward movement of the lever 41 is limited by a stop 58, mounted on and extending horizontally from the main frame of the brick-machine at one end of the same.

The hinged section or gate of the mold may be made plain, if desired, and the proportions of the mold and the plungers may be changed as desired to provide building-blocks and the like of the desired shape.

What I claim is—

1. In a machine of the class described, the combination of a movable mold, a stationary plunger operating in the mold, a removable receptacle for the material having a removable bottom forming a tray, a movable table or platform operable through the receptacle, and means for supporting and tripping the receptacle, substantially as described.

2. In a machine of the class described, the combination of a movable mold, a stationary plunger operating in the mold, a removable receptacle for the material, a movable table or platform operable through the receptacle, and means for supporting and tripping the receptacle, substantially as described.

3. In a machine of the class described, the combination of a removable receptacle designed to contain the material and provided with a detachable bottom, a table or platform operable through the receptacle and supporting the detachable bottom thereof, means for supporting and tripping the receptacle, and means for molding the material of the receptacle, substantially as described.

4. In a machine of the class described, the combination of a removable receptacle for the material, a table or platform movable through the receptacle, and means for supporting and for tripping the receptacle while the pressure is being applied, substantially as described.

5. In a machine of the class described, the combination of a removable receptacle for the material, a table or platform movable vertically through the receptacle, and means for supporting the receptacle and for tripping the same to cause the said receptacle to drop below the table or platform while the pressure is being applied to the material, substantially as described.

6. In a machine of the class described, the combination of a removable receptacle for the material provided with a detachable bottom or tray, a table or platform movable through the receptacle and forming a support for the detachable bottom or tray, and means for supporting and for tripping the receptacle to drop the latter below the tray or bottom while the pressure is being applied to the material, substantially as described.

7. In a machine of the class described, the combination of a removable receptacle for the material, a table or platform movable through the receptacle, a movable support for the receptacle, and means for tripping the support, for dropping the receptacle while the pressure is being applied to the material, substantially as described.

8. In a machine of the class described, the combination of a receptacle for the material, a table or platform movable through the receptacle, a pivotally-mounted support receiving the receptacle and movable with the table or platform, and means located in the path of the support for tripping the same, substantially as described.

9. In a machine of the class described, the combination of a receptacle for the material, a table or platform movable through the receptacle, a pivotally-mounted support receiving the receptacle and provided with an arm, and a trip arranged in the path of the arm for moving the support from beneath the receptacle, substantially as described.

10. In a machine of the class described, the combination of a vertically-movable table or platform, a removable receptacle for the material, a support receiving the receptacle, and means for tripping the support for dropping the receptacle while the pressure is being applied to the material, substantially as described.

11. In a machine of the class described, the combination of a receptacle for the material, a vertically-movable table or platform, a vertically-movable support receiving the receptacle and having an inclined face, and a stationary trip arranged in the path of the support and adapted to throw the same from beneath the receptacle to drop the latter, substantially as described.

12. In a machine of the class described, the combination of a receptacle having a removable bottom or tray, a table or platform movable through the receptacle and adapted to support the tray, movable supports receiving the receptacle, and means for tripping the supports while the pressure is being applied for causing the receptacle to drop below the tray, substantially as described.

13. In a machine of the class described, a removable receptacle for holding the material provided with inwardly-extending bottom flanges, and having a removable bottom or tray arranged on the said flanges and forming a support for the molded article, substantially as described.

14. In a machine of the class described, the combination of a receptacle having inwardly-extending bottom flanges and provided with a removable bottom arranged on the flanges and forming a tray, a table or platform movable through the receptacle and adapted to support the removable bottom, and means for supporting and tripping the receptacle to drop the same below the tray, substantially as described.

15. In a machine of the class described, a removable receptacle having inwardly-extending bottom flanges provided with concave upper faces forming projecting edges, and a removable bottom arranged upon the projecting edges and forming a support for the molded article, substantially as described.

16. In a machine of the class described, the combination with a series of depending stationary plungers, a vertically-movable mold provided with a series of cells or compartments receiving the plungers, a removable receptacle for the material, means movable through the receptacle and coöperating with the plungers for compressing the material and means for dropping the receptacle while the pressure is being applied, substantially as described.

17. In a machine of the class described, the combination with a series of stationary plungers, a movable mold provided with a series of cells or compartments receiving the plungers, a vertically-movable receptacle for the material, and means movable through the receptacle and coöperating with the plungers to compress the material, substantially as described.

18. In a machine of the class described, the combination of a series of depending stationary plungers, a vertically-movable mold having a plurality of receptacles receiving the plungers, a vertically-movable receptacle having a removable bottom, a vertically-movable platform or table arranged to support the bottom and coöperating with the plungers to compress the material, and means for supporting the receptacle and for tripping the same to drop the receptacle below the bottom while the pressure is being applied, substantially as described.

19. In a machine of the class described, the combination of a plurality of plungers depending from a stationary support, a vertically-movable mold having a plurality of cells or compartments, a receptacle having a removable bottom, a cross-head having a platform or table for engaging the removable bottom, supports mounted on the cross-head and receiving the receptacle, and means for tripping the supports to drop the receptacle below the removable bottom, substantially as described.

20. In a machine of the class described, the combination of a frame, a series of depending plungers mounted on the frame, a vertically-movable mold having a plurality of cells or compartments receiving the plungers, a vertically-movable cross-head located beneath the mold and having a projecting table or platform, a receptacle having a removable bottom arranged to be engaged by the table or platform, supports mounted on the platform and receiving the receptacle, trips arranged in the path of the supports for engaging the same to drop the receptacle below the removable bottom, and means located beneath the cross-head for raising and lowering the same, substantially as described.

21. In a machine of the class described, the combination of a frame provided at opposite sides with vertical guides, stationary plungers, a vertically-movable mold having a plurality of cells or compartments receiving the plungers, a vertically-movable receptacle for holding the material, a vertically-movable cross-head engaging the said guides, and means for raising and lowering the cross-head, substantially as described.

22. In a machine of the class described, the combination of a frame, a series of plungers depending from a fixed portion of the frame, a vertically-movable frame guided on the said frame, a mold connected with the vertically-movable frame and having cells or compartments receiving the plungers, a vertically-movable cross-head having a table or platform, a receptacle carried by the cross-head,

and means for operating the cross-head and the vertically-movable frame, substantially as described.

23. In a machine of the class described, the combination of a main frame having a supplemental guide-frame extending upward from it, plungers depending from the main frame, a vertically-movable frame slidable on the main frame and on the guide-frame, a mold carried by the vertically-movable frame and provided with cells or compartments receiving the plungers, a receptacle, a platform or table coöperating with the plungers, and means for operating the vertically-movable frame and the platform or table, substantially as described.

24. In a machine of the class described, the combination with a plunger provided with an ornamented face, of a mold having a hinged gate or section also provided with an ornamented face, and means for coöperating with the plunger to compress the material, substantially as described.

25. In a machine of the class described, the combination of a plunger, a mold receiving the plunger and provided with a hinged gate, and a cam mounted on the mold and engaging the gate for holding the same in its closed position, substantially as described.

26. In a machine of the class described, the combination of a plurality of plungers, a vertically-movable mold provided with a series of partitions forming cells or compartments for the plungers and provided with cutting edges, a vertically-movable receptacle for the material to be molded, and means coöperating with the plungers for compressing the material, substantially as described.

27. In a machine of the class described, the combination of a plunger, a mold having an automatically-opening hinged gate, and a cam mounted on the mold and engaging the gate, substantially as described.

28. In a machine of the class described, the combination of a plunger, a mold having a gate hinged to it, a spring for automatically opening the gate, and means for locking the gate in its closed position, substantially as described.

29. In a machine of the class described, the combination of a plurality of plungers, a mold having a series of cells or compartments for the plungers and provided with a gate hinged at the top, a spring for automatically opening the gate, and a cam mounted on the mold at the exterior of the gate and engaging the same, substantially as described.

30. In a machine of the class described, the combination of a stationary plunger, a vertically-movable mold receiving the plunger, a vertically-movable receptacle for the material to be molded, said receptacle being arranged to receive the mold, means movable through the receptacle for compressing the material, and means for dropping the receptacle while the pressure is being applied to the material, substantially as described.

31. In a machine of the class described, the combination of a stationary plunger, a vertically-movable mold receiving the plunger, a vertically-movable receptacle having a detachable bottom or tray and designed to contain the material, means movable through the receptacle for supporting the bottom or tray and for compressing the material, and means for dropping the receptacle while the pressure is being applied to the material, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

FRANK HELM.

Witnesses:
E. S. WILLIAMS,
P. KYSELKA.