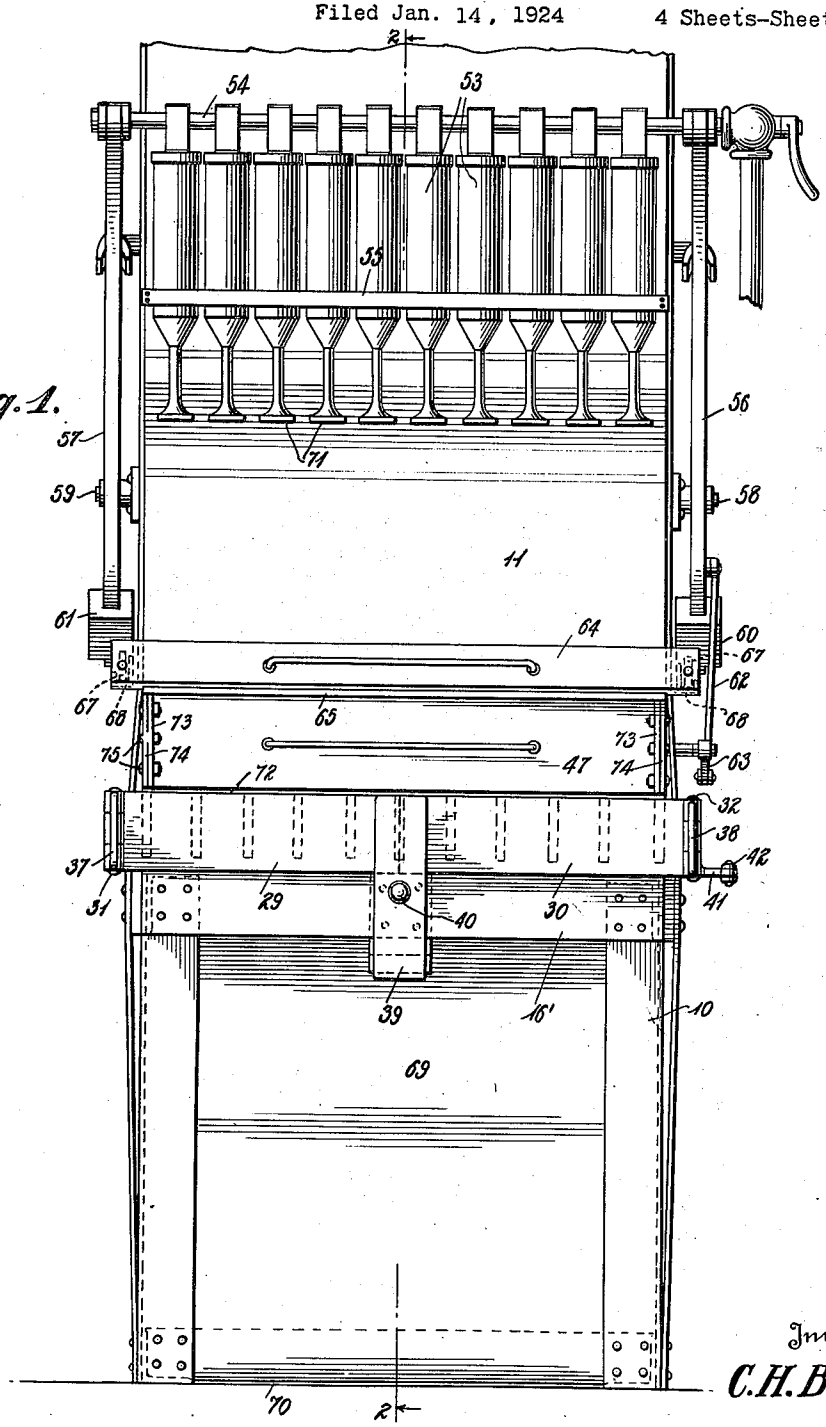
Sept. 9, 1924. 1,508,212

C. H. BLISS

BRICK MACHINE

Filed Jan. 14, 1924 4 Sheets-Sheet 1

Fig. 1.



Inventor

C. H. Bliss

By Browne & Phelps

Attorneys

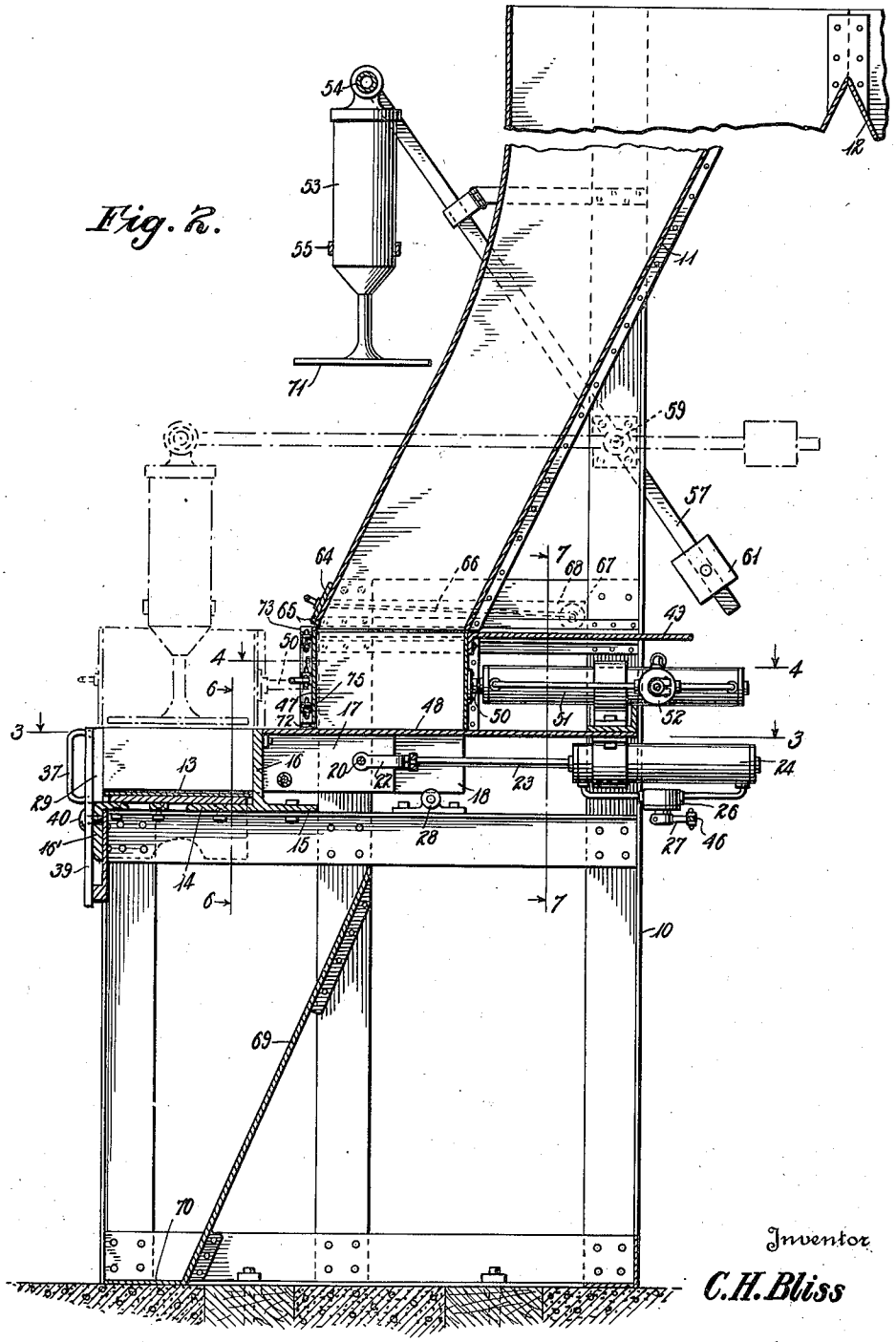
Sept. 9, 1924. 1,508,212

C. H. BLISS

BRICK MACHINE

Filed Jan. 14, 1924 4 Sheets-Sheet 2

Fig. 2.



Inventor

C.H. Bliss

By Brown & Philps

Attorneys

Sept. 9, 1924. 1,508,212

C. H. BLISS

BRICK MACHINE

Filed Jan. 14, 1924 4 Sheets-Sheet 3

Fig. 3.

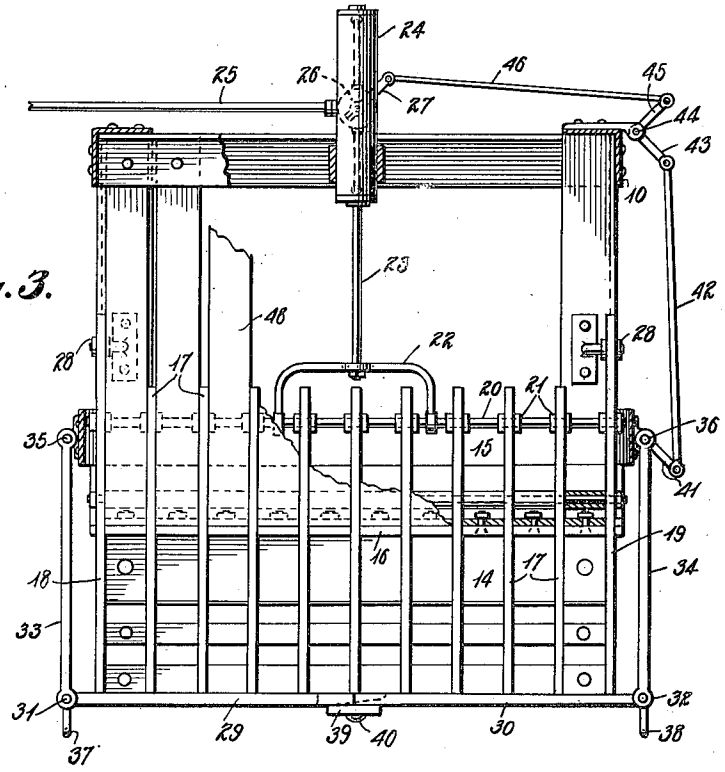
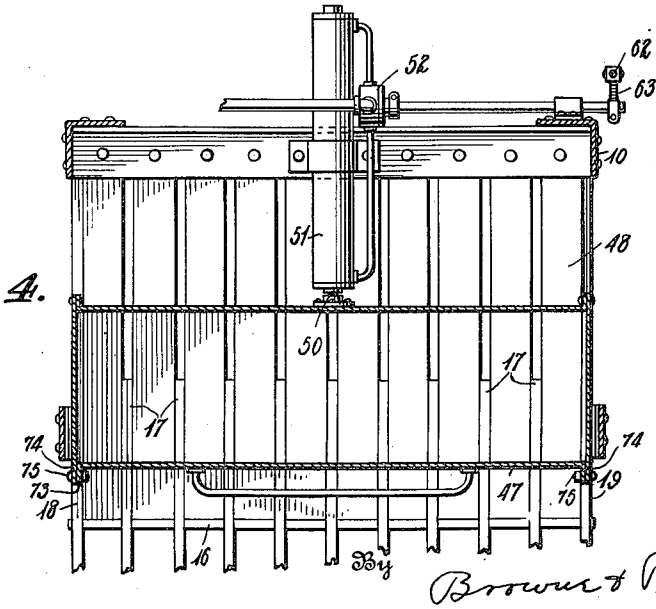


Fig. 4.



Inventor
C. H. Bliss

By
Brown & Phelps
Attorneys

Sept. 9, 1924. 1,508,212

C. H. BLISS

BRICK MACHINE

Filed Jan. 14, 1924 4 Sheets-Sheet 4

Fig. 5.

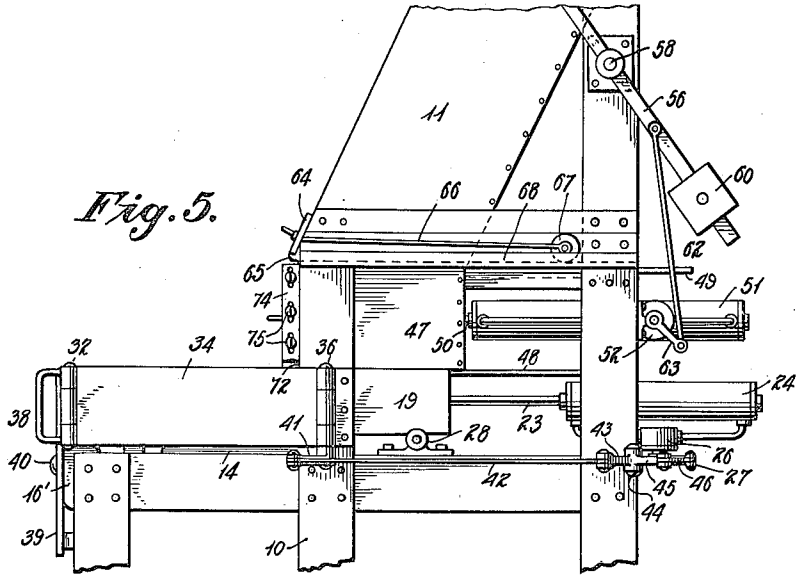


Fig. 6.

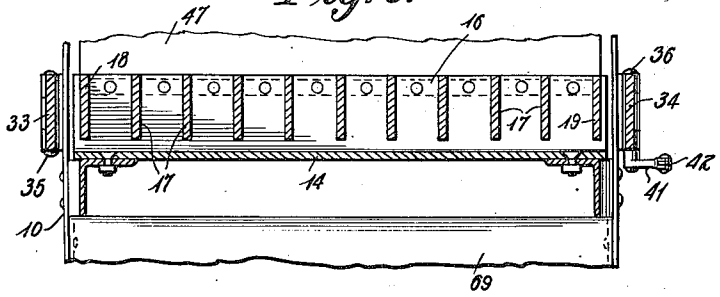
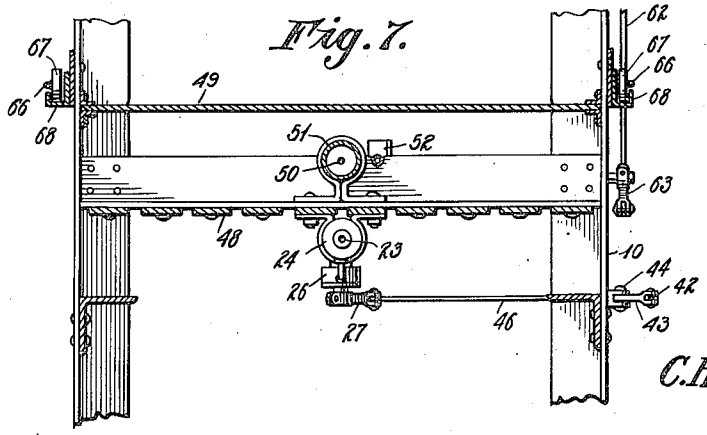


Fig. 7.



Inventor

C.H.Bliss

By Browne & Phelps

Attorneys

Patented Sept. 9, 1924. 1,508,212

UNITED STATES PATENT OFFICE.

CLYDE H. BLISS, OF ATLANTA, GEORGIA.

BRICK MACHINE.

Application filed January 14, 1924. Serial No. 686,018.

To all whom it may concern:

Be it known that I, CLYDE H. BLISS, a citizen of the United States, residing at Atlanta, in the county of Fulton and State of Georgia, have invented certain new and useful Improvements in Brick Machines, of which the following is a specification.

The invention relates to machines for making bricks of material such as Portland cement and sand, and has as an object the provision of a machine for producing a number of bricks at one operation, wherein the partitions between the separate bricks and the box for supplying material to the mold are actuated by power applied when other portions of the machine are actuated.

A further object of the invention is the provision of a machine of the class described wherein the gates forming the end wall of the mold are given a troweling action at the initiation of their withdrawal preparatory to removing the pallet holding the bricks.

A further object of the invention is the provision of a machine having means to leave a surplus of material upon an edge of each brick when desired, which material may be worked upon or struck off by the operator for production of bricks having special faces.

A further object of the invention is the provision of a machine wherein the material of which the bricks are formed is retained in the space above the molds for the separate bricks until the compacting apparatus has completed its action.

Further objects of the invention will appear from the following description when read in connection with the accompanying drawings showing an illustrative embodiment of the invention and wherein—

Fig. 1 is a front elevation;

Fig. 2 is a vertical section on line 2, 2 of Fig. 1;

Fig. 3 is a horizontal section on line 3, 3 of Fig. 2;

Fig. 4 is a like section on line 4, 4 of Fig. 2;

Fig. 5 is a detail side elevation;

Figs. 6 and 7 are detail vertical sections on line 6, 6 and 7, 7 of Fig. 2.

As shown the device is supported by a frame 10, preferably made of angle iron and strap iron. To supply the mixed and moistened sand and cement to the machine, there is shown a hopper 11, broken away to reduce its vertical dimensions in Fig. 2, and which hopper is shown to stand at a very steep angle and to very gradually reduce in size as it approaches its lower end to prevent arching of the material therein.

As indicated at 12, Fig. 2, a second machine with its hopper may be placed back to back with the one illustrated, so that a car upon an overhead carrier may dump material into the two hoppers at once.

To support the usual pallet 13 upon which the bricks are molded and removed from the machine, there is shown a horizontal portion of the machine comprising a member 14 of a T iron having a second horizontal portion 15, and a vertical portion 16. Also an angle iron 16′ is shown forming the edge of this portion of the machine.

To form the vertical walls of molds for the blocks, there are shown a plurality of plates 17, two of which, 18, and 19, form the outer walls for the mold for the end blocks of the series. The machine as illustrated is adapted to mold ten bricks at a time, this being the number which a workman can conveniently handle.

To maintain the spacing of the plates 17 and to guide them in movements of reciprocation, the member 16 of the T iron already referred to is shown as slotted, so as to provide an accurate sliding fit for the plates 17.

To connect the plates together so as to enable them to be reciprocated as one, there is shown a rod 20, Fig. 3, and the plates are shown as mounted upon the rod by means of pairs of lock nuts 21. A yoke 22 is shown also mounted upon the rod 18 and connected to a piston rod 23 having a piston reciprocating in a cylinder 24. To cause movements of reciprocation of the plates, fluid under compression, as air may be supplied by means of a supply pipe 25 to a four-way valve 26 controlled by a lever 27, so as to alternately admit air to the ends of the cylinder and exhaust air from the opposite ends at each movement of the valve. The end plates 18 and 19 are shown as being longer than the other of the plates 17, and rollers 28 are provided for these end plates to slide upon.

To close the space at the front between the plates 17, there is shown a pair of gates 29, 30, pivoted at 31, 32, upon plates 33, 34 which in turn are pivotally mounted at 35 upon the frame of the machine 36. Handles are shown at 37, 38 for manipulation of the gates.

There is no strain upon the gates during the compaction of the bricks in the molds, to cause them to move longitudinally of themselves, since the plates 33, 34 are not in contact with the material of which the bricks are being formed. To prevent the gates moving forwardly, away from the end of the bricks, there is shown a clamping bar 39, which may be mounted to revolve about an axis 40, after the style of a button. After the material has been compacted in the mold to the desired extent the handles 37, 38 will be grasped by the operator and the plates will be moved slightly in a longitudinal direction of separation, the radius of movement upon the plates 33, 34 being sufficiently large to permit of this slight movement without binding upon the end of the outer plates 18, 19. This movement will provide a troweling action upon the ends of the brick and enable the adhesion of the gates to be broken, so that when the gates are swung away from the end of the brick they will not carry with them the plastic material which has been compacted against them. This is a very valuable feature of my invention. After this slight movement the button 39 may be swung to free the ends of the gates when they may be swung outwardly, if sufficient sliding motion has not been provided to already free the ends of the gates from the button.

To control the movement of the sliding plates 17, there is shown a crank arm 41 connected by a link 42 to a bell crank 43, pivoted at 44 upon the frame of the machine, and having its other arm 45 connected by means of a link 46 to the lever 27 controlling the valve 26. The valve is to be so connected that the closing of the gates 29, 30 will actuate the valve to admit air to its rear end and exhaust air from its forward end, thereby causing the plate 17 to be projected forwardly into mounted position. After the bricks have been formed the act of opening the gate will reverse this operation and cause the withdrawal of the plates, but only after the gates have been moved longitudinally to trowel the ends of the bricks and have then been separated entirely from the bricks.

To supply material for the bricks from the hopper 11, there is shown a box 47, the horizontal dimensions of which are substantially the same as the lower end of the hopper 11. The box is shown mounted for reciprocation over a plate 48, terminating at the upper end of the flange 16, through which the plates 17 slide.

Attached to and sliding with the box, there is shown a plate 49 which progressively closes the end of the hopper 11 as the box 47 is forced forward. The forward path of the box is such as to bring the same in registry with the space enclosed by the plates 17 and the gates 29, 30 and closed at the rear by the slotted member 16.

To reciprocate the gate, the same is shown as attached to a piston rod 50, carrying a piston, not shown, reciprocating in a cylinder 51. The admission of a fluid, as air under pressure, to the cylinder 51 is also controlled by a four-way valve 52 similar to the valve 26.

To compact the material in the mold supplied thereto by means of the box 47, there is shown a series of tamping devices 53, which may be mounted upon a pipe 54, to which air under pressure may be supplied by a pipe, not shown. The tampers are shown as yoked together by means of a yoke device 55, and supplied with tamping plates 71 substantially equal in area to the edge of a brick, the plates being spaced apart substantially equal to the thickness of the plates 17, and the assembly carried by a pair of levers 56, 57, pivoted at 58, 59, upon the frame of the device, counter weights 60, 61 being preferably provided to balance the tampers.

To cause automatic movement of the box 47 without attention from the operator, the valve 52 is shown as adapted to be controlled by a link 62 pivoted to the lever 56, and connected to the lever 63 by which the latter lever is operated. When so connected the initial movement of the tamping devices will cause air to be admitted to the rear of the cylinder 51 and exhausted from the front thereof, when the box 47 will be suddenly projected to the position shown in dotted lines in Fig. 2, when the material will fall into the molds by gravity. The depth of the box is so chosen that after the material supplied thereby has been compacted to its maximum extent, the mold will be slightly more than full, and will be "struck off" by the edge of the box upon its return to the rear position. The box being projected during the initial movement of the tampers, they will be brought down and will be guided during the last portion of the downward movement by the sides of the box and will act within the same while compacting material in the molds. After completion of the compacting process the tamping devices will be swung upwardly and the latter portion of this movement will admit air to the forward end of the cylinder 51 and exhaust air from the rear thereof, thereby causing the box to be automatically retracted when it will again become filled with material from the hopper 11.

In the formation of ordinary bricks the motion of the box 47 should strike off the material flush with the edges of the plates 17. It is often desirable to produce bricks having the edges to be exposed in the wall of special character to which end the bricks in the molds must be worked upon as by

troweling, working in waterproofing material, or coloring matter, or by striking them off with a wooden float to provide a roughened surface. To provide a slight excess of material for these purposes the front of the box may be made vertically adjustable. To this end the ends of the front of the box are shown as provided with flanges 73 passing between the edges of the ends of the box at 74 and bolts 75 are provided to secure the box front in adjusted position. The bolt openings in the flanges 73 are in the forms of slots to permit of the adjustment. In the drawings the box front is shown as raised at 72 to leave the excess of material desired.

It is sometimes desirable to work upon the end of the bricks after the gates have been removed, and in which case the upper corners of the brick are likely to be damaged. When such operation is desirable, the gate plates 33, 34 will not be swung laterally sufficient to cause retraction of the plate until after the work has been done, but the gates 29, 30 will be swung upon the pivots 31, 33, into a position in alignment with the gates 33, 34. To protect the upper edge of the bricks during such work, there is shown a plate 64, preferably seated upon a ledge 65 at the base of the hopper 11 where it will be out of the way when not needed. Plate 64 is shown as carried by the end of rods 66, which rods carry at their opposite ends rollers 67 adapted to travel in channels 68 (see Fig. 7). When desired for use, the plate 64 may be drawn forwardly to occupy the position of the forward edge of the box 47 shown in dotted lines in Fig. 2, when the desired operation may be carried out upon the ends of the brick without danger of damaging the plastic upper corners thereof.

It will be seen that there are therefore but two portions of the apparatus to be operated by the operator to complete the formation of common bricks. First, the gates and, second, the tamping apparatus, and therefore many more bricks can be produced in a given time than with the devices of the prior art, wherein each of the elements of the machine had to be operated separately by the attendant.

To catch material spilled from the machine, or troweled off from the upper edge of the bricks after their compaction, there is shown a plate 69 upon the interior of the lower portion of the frame 10. Terminating at its lower end in a horizontal portion 70, the spilled material may be shoveled up from the plate 70 and placed in the box 47, or preferably returned to the mixer to be mixed with fresh material to be supplied to the hopper 11.

The operation of the device will be clear from the above description. Minor changes may be made in the physical embodiment of the invention without departing from its spirit.

I claim:

1. A brick machine comprising, in combination, a brick mold, means to supply material thereto, tamping means held normally in inoperative position and manually movable to position to compact material in said mold, and means set into operation by initial movement of said compacting means toward operative position to cause delivery of brick material to said mold.

2. A brick machine comprising, in combination, a brick mold, means movable to a position over the mold to deliver material thereto and to a position removed from the mold to receive a supply of material, tamping means held normally in inoperative position and manually movable to position to compact material in said mold, means set into operation by initial movement of said compacting means toward operative position to move said delivery means to delivering position, and means set into operation by return of said compacting means to normal position to return said delivery means to material receiving position.

3. A brick machine comprising, in combination, a brick mold, power operated means to supply material thereto, tamping means normally held in inoperative position and movable to position to compact material in said mold, connections between the support of said tamping means and the controlling element of said power means to cause the actuation of said supply means upon movement of said tamping means to operative position, whereby it will cause delivery of brick material to said mold.

4. A brick machine comprising, in combination, a brick mold, fluid pressure operated means to supply material thereto, fluid pressure operated tamping means normally held in inoperative position and movable to position to compact material in said mold, connections between the support of said tamping means and the control valve for said material supply means whereby movement of said tamping means to operative position may cause actuation of the supply means to cause delivery of material to said mold.

5. A brick machine comprising, in combination, a mold for a plurality of bricks comprising partition plates to separate the spaces for the individual bricks, and end plates for enclosing the outer of said bricks, a gate for closing the ends of spaces between said plates, and means whereby the gate may be moved in its plane in contact with the compacted material in the mold and subsequently may be swung away from the mold whereby to provide a troweling

action to break adhesion between the gate and the newly formed bricks.

6. A brick machine comprising, in combination, a mold for a plurality of bricks comprising partition and end plates for enclosing the spaces for the individual bricks, means to project said plates to enclose said spaces and to withdraw said plates from between the bricks after the formation of the latter within the mold, a manually operated end gate for closing the spaces between said plates, means whereby said end gate may be swung away from said spaces after the formation of bricks therein, and means operable by said last named means to cause retraction of said plates from between the bricks formed in said spaces.

7. A brick machine comprising, in combination, a plurality of spaced parallel plates adapted to be projected into mold forming position to partially enclose mold spaces for a plurality of individual bricks, a manually operated end gate mounted to move to a position to close the ends of said spaces and to be withdrawn from said position, means to reciprocate said plates, means set into operation by moving said gates to mold closing position to move said plates to operative position, and means set into operation by withdrawal of said gates to withdraw said plates.

8. A brick machine comprising, in combination, a brick mold, a reciprocating box to supply material to the mold and to strike off the compacted material therefrom, means acting within the box to compact material in the mold, adjustable means carried by the "striking off" edge of the box to determine the relation, to the edge of the mold, of the surface produced by the striking off of the material.

9. A brick machine comprising, in combination, a brick mold, a reciprocating box to supply material to the mold and to strike off the compacted material therefrom, means acting within the box to compact material in the mold, the edge of said box which strikes off the material being vertically adjustable to determine the relation, to the edge of the mold, of the surface produced by the act of striking off the material.

10. A brick machine comprising, in combination, a mold for a plurality of bricks comprising partition and end plates for enclosing the spaces for the individual bricks, power operated means to project said plates to enclose said spaces and to withdraw said plates from between the bricks after the formation of the latter within the mold, an end gate for closing the spaces between said plates, hinge means whereby said end gate may be swung away from said spaces after the formation of bricks therein, and a connection between the hinge means and the control of said power operated device to cause retraction of the plates from between the bricks upon movement of said hinge means.

CLYDE H. BLISS.