Aug. 25, 1925. 1,551,394

J. T. HUNTER

BUILDING BLOCK MAKING MACHINE

Filed Oct. 18, 1924 5 Sheets-Sheet 1

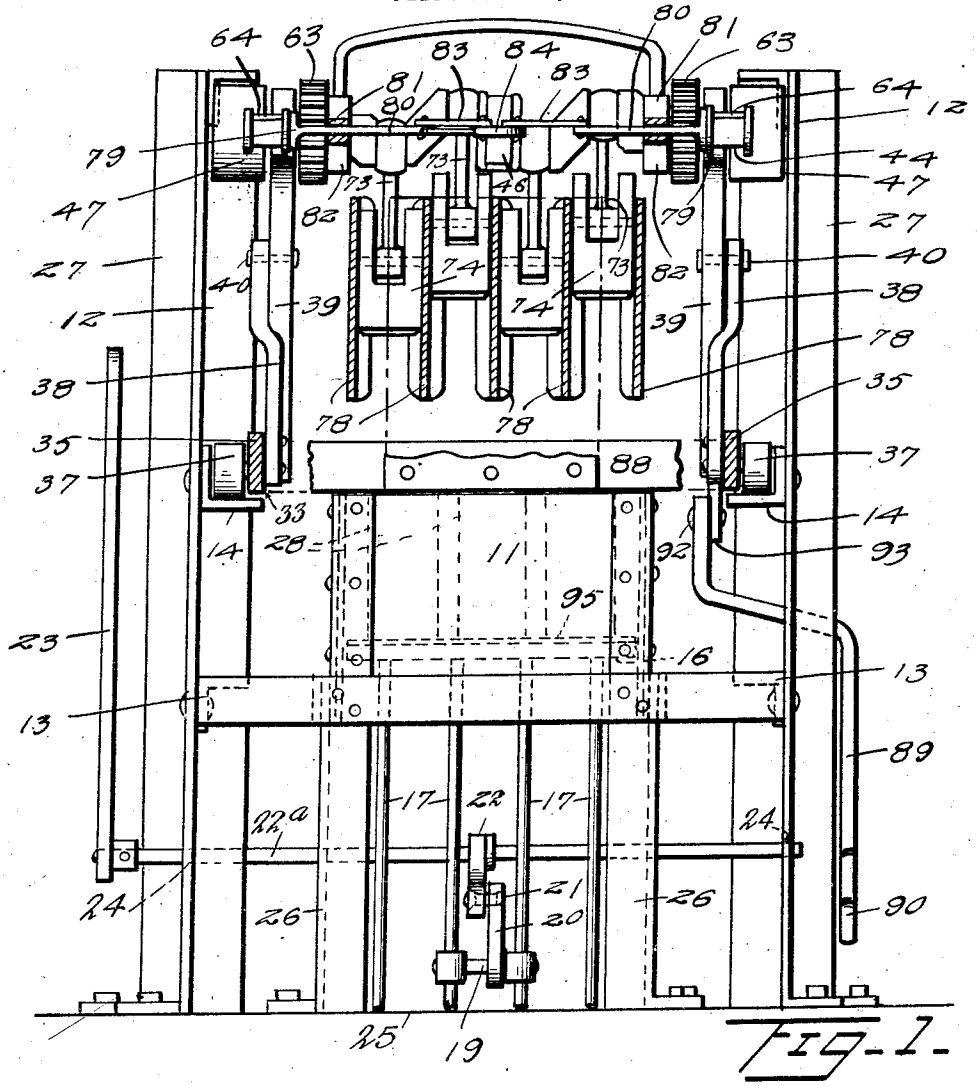


Fig. 1.

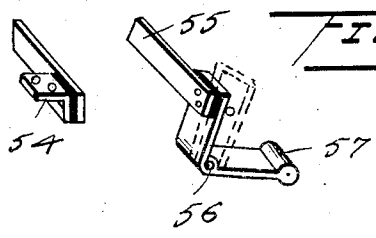


Fig. 10.

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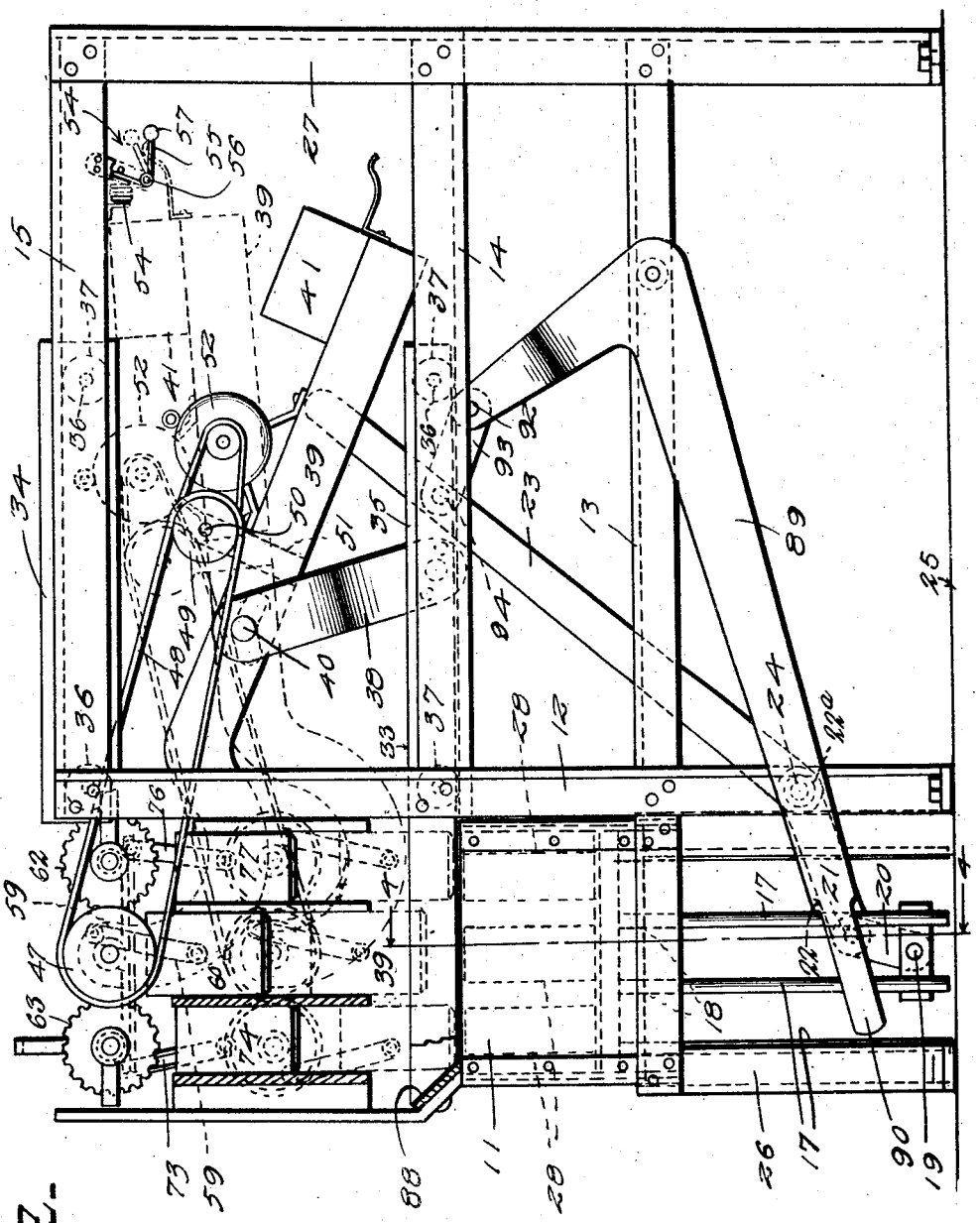


Fig. 2.

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BUILDING BLOCK MAKING MACHINE

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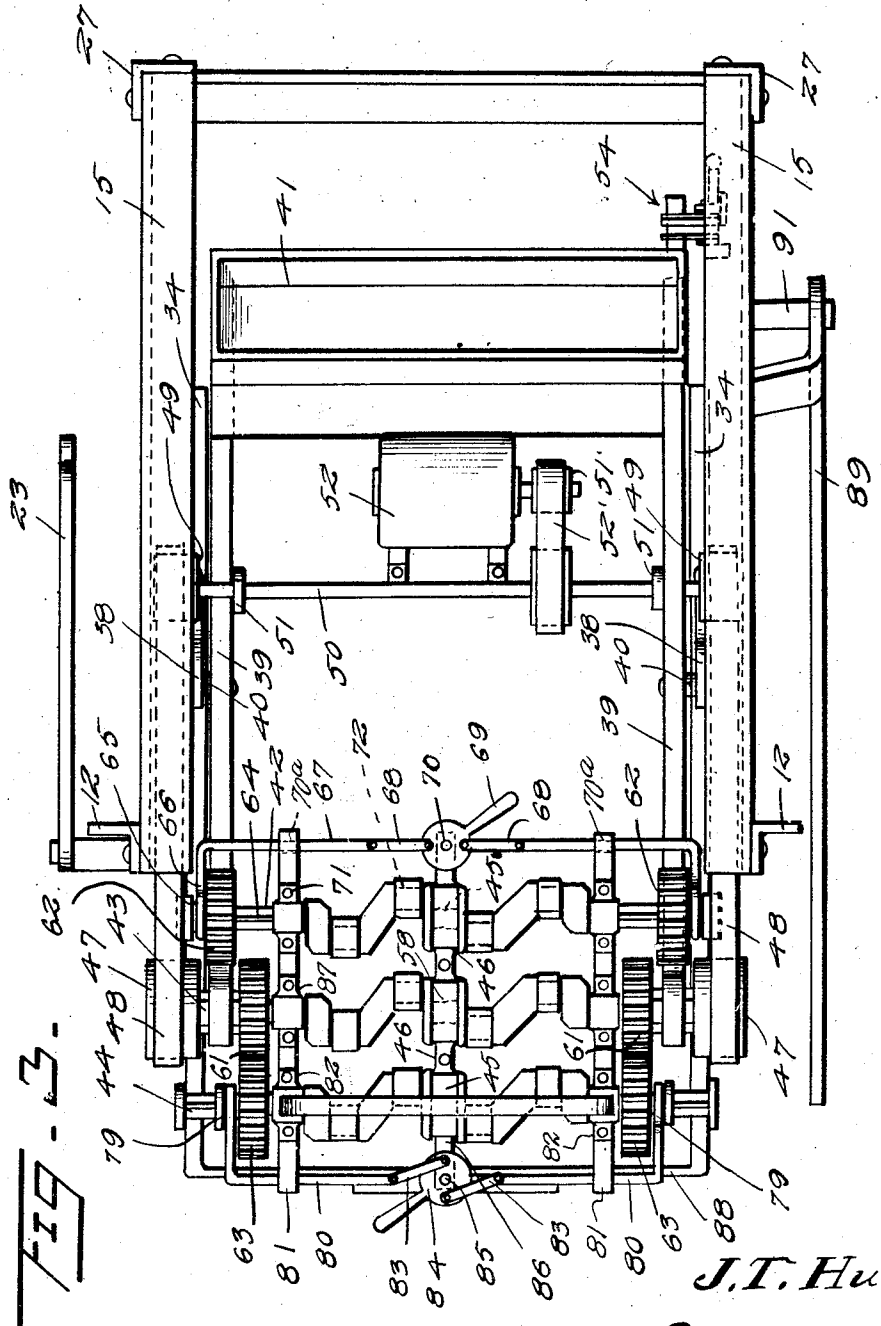


Fig. 3.

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Aug. 25, 1925. 1,551,394

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BUILDING BLOCK MAKING MACHINE

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Fig. 4.

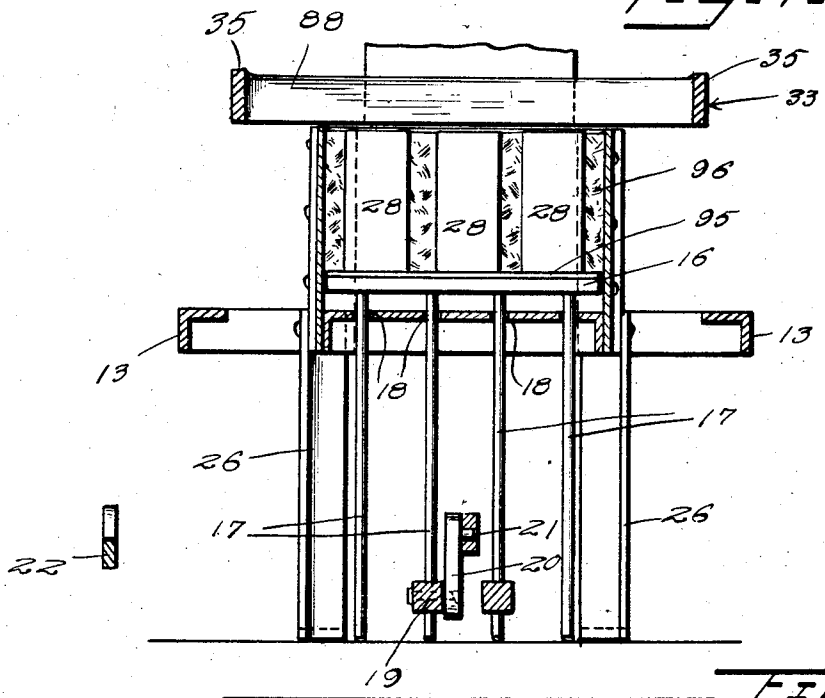


Fig. 7.

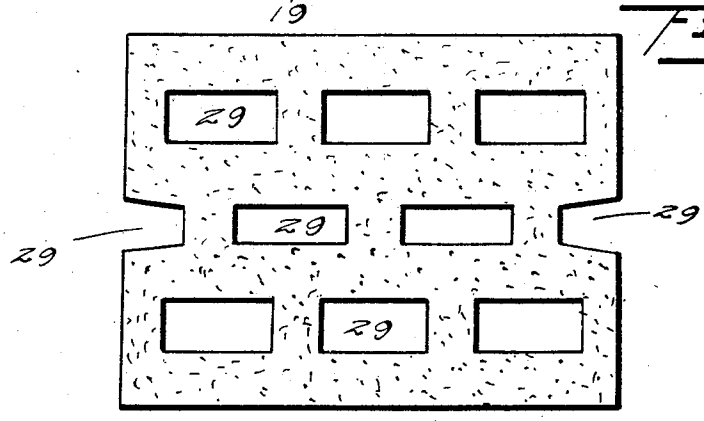
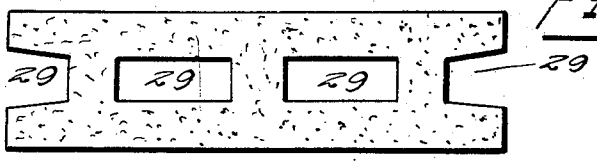


Fig. 9.



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Aug. 25, 1925. 1,551,394

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BUILDING BLOCK MAKING MACHINE

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Fig. 5.

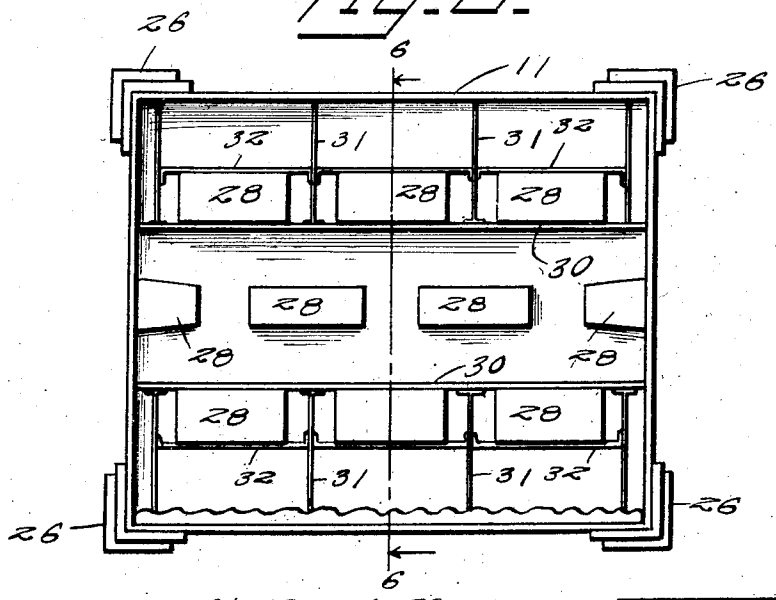


Fig. 6.

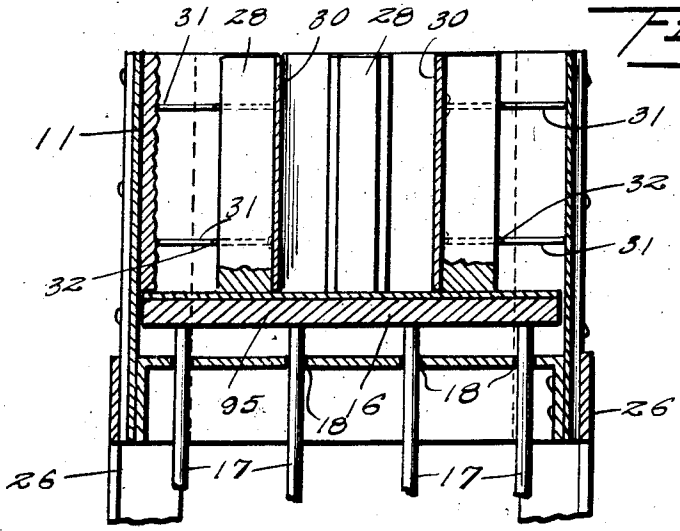
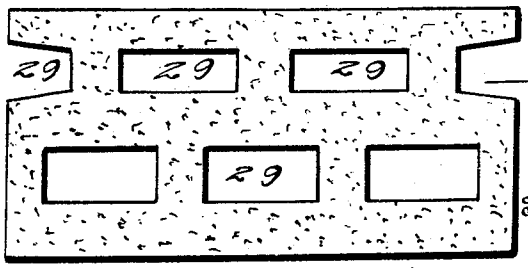


Fig. 8.



Inventor

J. T. Hunter.

By

Attorney

Patented Aug. 25, 1925. 1,551,394

UNITED STATES PATENT OFFICE.

JACOB T. HUNTER, OF COLUMBUS, OHIO.

BUILDING-BLOCK-MAKING MACHINE.

Application filed October 18, 1924. Serial No. 744,379.

To all whom it may concern:

Be it known that I, JACOB T. HUNTER, a subject of the King of England, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Building-Block-Making Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a machine for making building blocks and particularly for molding them from concrete or other plastic material.

It is aimed to provide a novel construction wherein the same apparatus may be used to produce blocks of different sizes according to their use, and so construct the machine that the tamping means used, may selectively be wholly or partly used according to the block or blocks to be produced.

Another object is to provide a machine of this character utilizing a mold box which may be readily subdivided in a novel manner according to the sizes and shape of the blocks to be produced.

Another object is to provide a novel construction wherein the tamping means is carried by a lever whose operating motor is also carried by the lever, which lever has a balanced means to maintain the tamping means normally elevated, together with means whereby the motor will be placed in operation automatically upon lowering of the tamping means.

Still another object is to provide a novel construction utilizing a truck adapted to carry the aforesaid lever and coacting parts, which truck also serves as a scraper to operate over the mold box and which further is under control of a manually operable lever.

Various additional objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

Referring to said drawings:—

Figure 1 is a front elevation of the machine;

Figure 2 is a side elevation of the machine, the tampers being shown elevated and their lowered position being suggested by dotted lines,

Figure 3 is a plan view of the apparatus;

Figure 4 is a transverse sectional view through the apparatus taken on the line 4—4 of Figure 2;

Figure 5 is a plan view of the mold box showing all of the division plates in position;

Figure 6 is a cross sectional view taken on the line 6—6 of Figure 5;

Figure 7 is a plan view of one of the blocks adapted to be cast by the machine;

Figure 8 is a plan view of a second block adapted to be cast by the machine;

Figure 9 is a plan view of a third block adapted to be cast by the machine, and

Figure 10 is a perspective view of the switch used to control the operating motor for the tamping means.

Like reference characters designate like or similar parts in the different views.

Referring specifically to the drawings, a suitable skeleton structure is built up and generally designated 10, so as to support and accommodate the operating parts. This structure or frame work particularly provides a generally rectangular mold box as at 11, which is open at its top and at one side of which upright angle bars in spaced relation are provided as at 12. Spaced pairs of transverse angle bars form part of the frame 10 as at 13, 14, and 15. In the bottom of the mold box 11 is a pallet 16 which is vertically slidable and which has a plurality of guide rods 17 depending from it and guided through openings in a plate as at 18. Connected with one or more of the rods 17 is a rod or the like as at 19 to which a short link 20 is pivoted which has pivoted thereto as at 21, a crank 22 secured to shaft 22^a that is operated by a manually operable lever 23, said shaft being journaled as at 24 to uprights or bars 12. The rods 17 normally rest on the foundation or floor 25 from which the device is supported and the uprights 12 are bolted or otherwise secured to said foundation. In addition, angle bars or uprights 26 are provided at the front corners of the mold box and fastened to said floor 25 and to the mold box and angle bars 13. Still further angle bars 27 connect the rear ends of the bars 13, 14 and 15 and are bolted or fastened to the floor 25.

Within the mold box a suitable core structure is adapted to be provided as particularly shown in Figures 5 and 6 and being removably supported upon the pallet 16.

This mold box may be free of subdivisions in which event the machine will produce a block of the form shown in Figure 7. By the use of the subdivisions, however, a block such as that shown in Figure 8 or Figure 9, may be provided selectively with that of Figure 7.

As shown, the pallet 16 may have suitable core pieces 28 removably or rigidly applied thereto so as to produce the voids or hollows 29 in the blocks. The partitions may consist of two longitudinal boards or plates as at 30 having resilient wire elements 31 extending laterally therefrom and some of them being joined by longitudinal resilient wire elements 32. As a result of this construction, the elements 31 and 32 will surround the core elements 28 and thus hold the partitions 30 removably in place. The elements 31 and 32 will not deform the block or mar its appearance or interfere with the tamping of the material into the mold. But one of these partitions 30 may be used at a time, or both of them may be omitted as well as jointly used.

A suitable truck or carriage is provided having a suitable frame-work 33 particularly including upper and lower side members 34 and 35. Journaled on suitable axles 36 carried by the side members 34 and 35 are rollers 37 which travel along the bars 14 and 15 as their tracks. Said truck also carries upstanding, slightly inclined standards 38 rigidly fastened thereto. A comparatively large lever 39 is pivoted at 40 to the standards 38 and at its forward end carries the tamping mechanism generally designated A and at its rear end carries suitable weight or ballast as at 41 which normally maintains the tamping mechanism raised as shown in full lines in Figure 2. The weight or ballast, however, is so proportioned as to constitute a balance to the end that the forward end of the lever may be pulled down and will remain in that position, with the ballast box 41 uppermost.

Said tamping mechanism may comprise three shafts 42, 43, and 44. Central portions of these shafts constitute journals as at 45 and the same are mounted in bearings 46 carried by the lever 39. The shaft 43 has pulleys 47 thereon over which belts 48 traverse and which in turn pass over pulleys 49 on a shaft 50 journaled in brackets 51 fastened to the lever 39. Shaft 49 is driven as by a belt and pulley 50 and 51 from a motor 52 mounted on the lever 39. Motor 52 is preferably an electric motor and may receive its current from any suitable source under control of a switch 53 carried by the said lever 39. This switch has two contacts 54 and 55. Contact 55 is pivoted as at 56 and has a weighted end 57 so that when the tamping mechanism 39 is in lowered position, the switch 55 engages the switch 54 and so that when the tamping mechanism is elevated as in Figure 2, the weight 57 will move the contact 55 away from contact 54, thus automatically opening and closing the circuit according to the position of lever 39.

Shaft 43 has any suitable number of cranks, preferably four as at 58 on which pitmen 59 are journaled and which suspend tamping blocks or elements 60. Said tamping blocks 60 all operate to tamp material only within the space between the partition plates 30. Shaft 43 has gear wheels 61 keyed thereto adapted to mesh with gear wheels 62 and 63 carried by the shaft 42. Said gear wheels 62 and 63 are longitudinally slidable on their respective shafts and held in turning relation thereto by means of splines 64. Wheels 62 have collars 65 engaged by yokes 66 of shifting arms 67. Pivoted to shifting arms 67 are links 68 which in turn are pivoted to a shifting lever 69 pivoted at 70 as to an extension of the bearings 46. Arms 67 may slide through guides 70^a forming extensions of bearings 71 for the shaft 42. It will be seen that through manipulation of lever 69, the gear wheels 62 may be thrown into and out of mesh with the gear wheels 61. Shaft 42 is provided with an equivalent number of cranks to the shaft 43 as at 72 and journaled thereon are pitmen or hangers 73 which are pivotally connected to and suspend tamping elements or blocks 74 similar to those at 60. The tamping blocks 74 are designed to tamp material merely between one of the partitions 30 and adjacent side wall or front of the mold box. Thus it will be seen that when the block is not of such size as to require tamping in such space, the tampers 70 may be rendered inactive by throwing the gear wheels 62 out of mesh with the gear wheels 61.

Shaft 44 has cranks as at 75 which have pitmen 76 journaled thereon which in turn are pivoted to tamping elements or blocks 77 adapted to tamp material into the other space between the remaining partition 30 and side wall of the mold, according to the size of the block. Between the tamping blocks 60, 74 and 77, guides 78 may be suitably provided, being operatively suspended from the lever 39. Gear wheels 63 are adapted to mesh or demesh with respect to the gear wheels 61 according to whether or not the tampers 77 are to be operated. Said gear wheels 63 have collars or extensions 79 engaged by yokes of shifting arms 80 which are slidable through guides 81 constituting extensions of bearings 82 for the shaft 44. Arms 80 are pivoted to pitmen 83 which in turn are pivoted to a shifting lever 84 pivoted as at 85 to an extension 86 of the bearing 46. Shaft 43 may have bearings 87 in line with the bearings 71 and 82.

Disposed transversely of side pieces 35,

and preferably inclined, is a scraper 88, which is adapted to move from front to rear across the top of the mold box in order to remove surplus concrete or plastic material incidental to shifting of the carriage 33.

Said carriage may be operated in any approved manner but preferably through manipulation of a hand lever 89 whose grip is located at 90. This lever is pivoted as at 91 to one of the angle bars 13 and at 92 to a link 93 pivoted at 94 to one of the side bars 35 of the carriage 33.

In operation, say the parts are in the full line position of Figure 1. The concrete or other plastic material from which the block is to be cast or manufactured, is fed in any suitable way into the mold box 11. With the tamping elements 60, 74, and 77 in line with the mold box, the lever 39 is pulled downwardly at the forward end or tamping end which automatically closes the switch 35 and causes the motor 52 to drive the shaft 50, pulleys 49, belts 48, pulley 47, shaft 43, pitmen 59 and tampers 60. If a block of the capacity of the mold box is to be formed, that is, one of the form of Figure 7, the gear wheels 62 and 63 are thrown into mesh with the gear wheels 61 through manipulation of their levers 69 and 84, whereby the shafts 42 and 44 will be rotated and will operate the pitmen 73 and 76 and the tamping blocks or elements 74 and 77. In the event a block like that of Figure 9 is to be formed, the gear wheels 62 and 63 are demeshed with respect to the gear wheels 61 so that the tampers 60 alone will operate. On the other hand if a block like shown in Figure 8 is desired, the proper gear wheels 62 or 63 as the case may be are demeshed from the gear wheels 61 so that the tampers 60 and either the tampers 74 or 77 as desired will operate, the mold box in the meantime having the partition plate 30 or one of them properly positioned according to the method heretofore described. After the cement or plastic material has been tamped into the mold box to the desired extent, the forward or tamping end of the lever 39 is elevated which because of the weight 57 causes the switch 55 to automatically open. Thereafter, lever 89 is elevated which through the medium of the link 93 imparts a rearward sliding movement to carriage 33, carrying the scraper 88 across the top of the mold box and removing surplus concrete or cement. Thereafter the lever 23 is operated so as to elevate the pallet 16, to a level with the top of the mold box, whereupon the block may be moved off of the pallet. In view of this removal, the parts 28 are carried by a section of the pallet as at 95 which is bodily removable from and merely rests on the remainder of the pallet.

Suitably removably supported at one side of the mold box and on the pallet is a facing plate as at 96, which may have a smooth face to impart a corresponding finish to the adjacent surface of the block or it may have a rock or roughened face to impart a corresponding surface to the block, if desired.

It will be observed that the block that is produced by this machine is provided with a plurality of rows of ventilating openings, the openings in adjacent rows being in staggered relation with each other so as to make the block as nearly as possible impermeable to the passage of moisture therethrough by capillarity. Furthermore, the partitions between the rows of ventilating openings being in alinement provide surfaces for the reception of mortar or other plastic binder in laying the blocks in the wall.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

What is claimed is:—

1. A machine of the class described having a mold box, partition means for the mold box, and tamping means coacting with the mold box having selectively operable tampers according to the partitioned portion of the box to be filled and tamped.

2. A mold box having a pallet, core elements carried thereby, and partition means for the box having means to coact with said elements to removably secure the partition means in place and according to the size of the element to be produced.

3. A mold box having a pallet, core elements carried thereby, and partition means for the box having means to coact with said elements to removably secure the partition means in place and according to the size of the element to be produced, said means comprising resilient wires adapted to surround selected elements.

4. A machine of the class described having shafts, means to drive one of said shafts, means to throw the other of said shafts into and out of driving relation therewith, and tamping means controlled by each of said shafts.

5. A machine of the class described having a mold box, a carriage movable relatively to the mold box, tamping means carried by said carriage, and scraper means carried by said carriage to engage the molded material after operation of the tamping means.

6. A machine of the class described having a balance lever whereby it will remain in position with either of its ends uppermost, and tamping means carried by one end of said lever.

7. A machine of the class described having a balance lever whereby it will remain in position with either of its ends uppermost, tamping means carried by one end of said lever, and means to operate said tamp-

ing means automatically operable as the lever moves to lowermost position at the tamping end.

8. A machine of the class described having a balance lever whereby it will remain in position with either of its ends uppermost, tamping means carried by one end of said lever, and means to operate said tamping means automatically operable as the lever moves to lowermost position at the tamping end, said means consisting of an electric motor, and a switch for said motor automatically movable into and out of closed position according to the position of the lever.

9. A machine of the class described having a balance lever whereby it will remain in position with either of its ends uppermost, tamping means carried by one end of said lever, means to operate said tamping means automatically operable as the lever moves to lowermost position at the tamping end, a truck carrying said lever, scraper means for the tamped material carried by the truck and means to move the truck.

10. A machine of the class described having a frame provided with a mold box and with tracks, a carriage movable along said tracks, a lever pivoted to said carriage having a ballast means at one end and tamping means at the other end, a motor on said shaft in driving relation to said tamping means, said tamping means being adapted to be lowered through tilting of the lever, means to automatically actuate said motor through said tilting, and lever means to control the movement of the carriage, a mold box with respect to which the carriage moves, and a scraper movable over the mold box and the tamped material through movement of the carriage.

11. A machine of the class described having a mold box, a track extending from the mold box, a carriage slidable on said track, a lever to actuate said carriage, a scraper carried by the carriage to engage the tamped material within the mold box, a relatively large lever pivoted to the carriage, shafts journaled on said lever, means to selectively throw said shafts into and out of gear with each other, pitmen depending from the shafts, cranks on the shafts on which the pitmen are journaled, tamping elements suspended by the pitmen, a motor on said lever, means to drive one of said shafts from said motor, a switch for said motor adapted to automatically open and close according to the movement of the lever, and ballast means on said lever on the side of its fulcrum opposite to said shafts.

In testimony whereof I affix my signature.

JACOB T. HUNTER.