J. KALLBERG.

BRICKLAYING MACHINE.

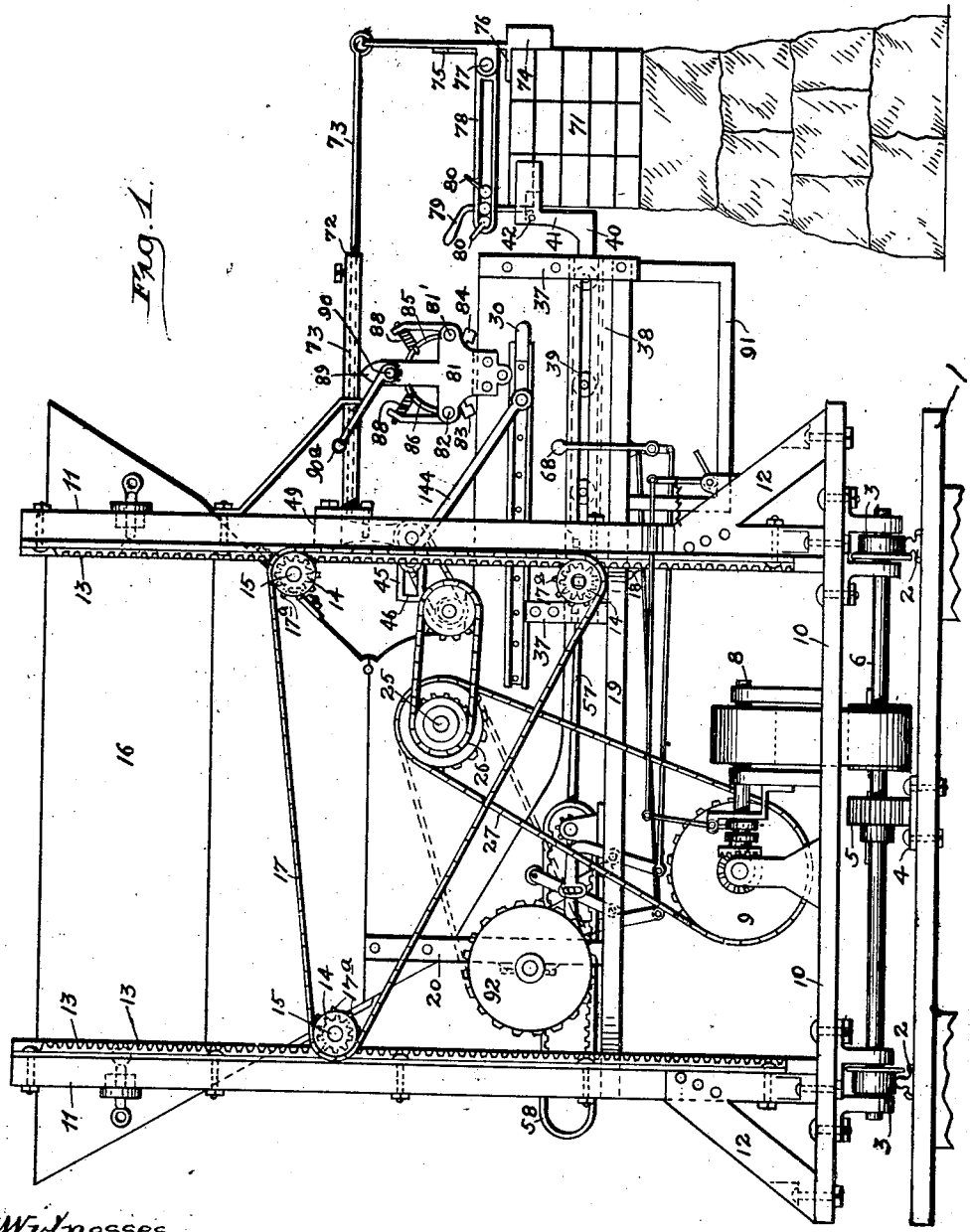
APPLICATION FILED AUG. 16, 1912.

1,096,306.

Patented May 12, 1914.

5 SHEETS—SHEET 1.

Fig. 1.



Witnesses

Chas. E. Gorton

A. L. Walcutt

By

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5 SHEETS—SHEET 2.

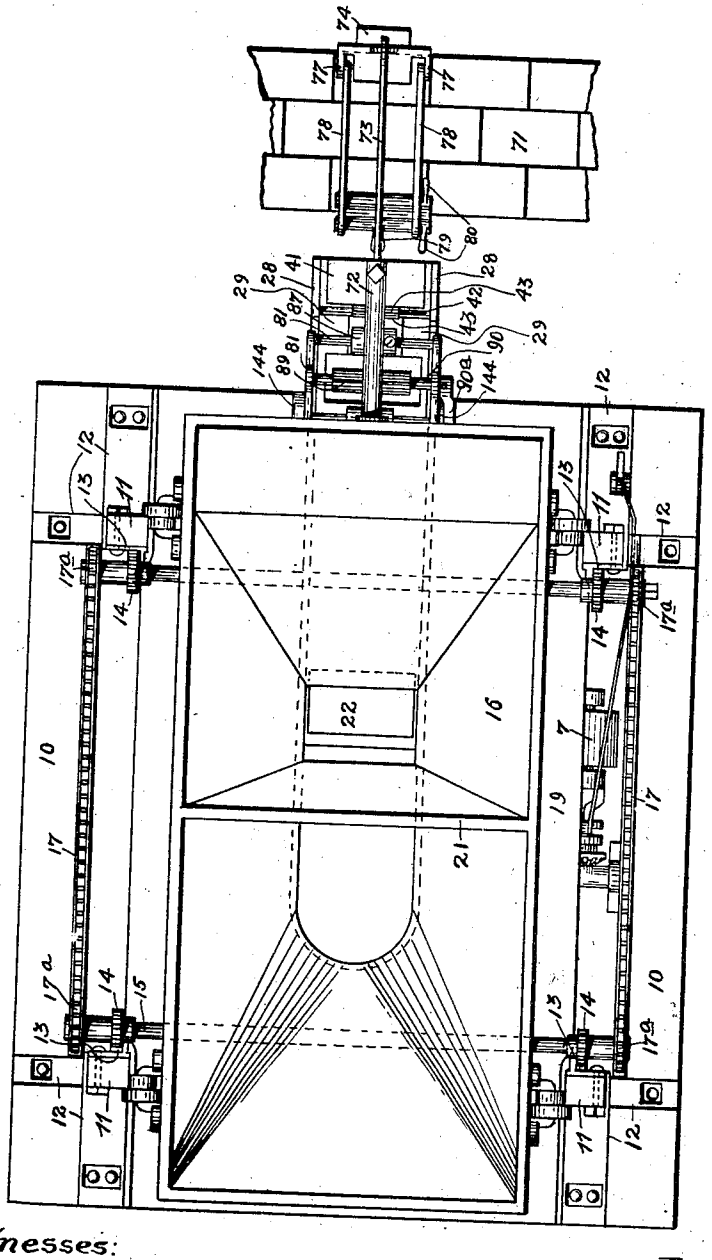


Fig. 2.

Witnesses:

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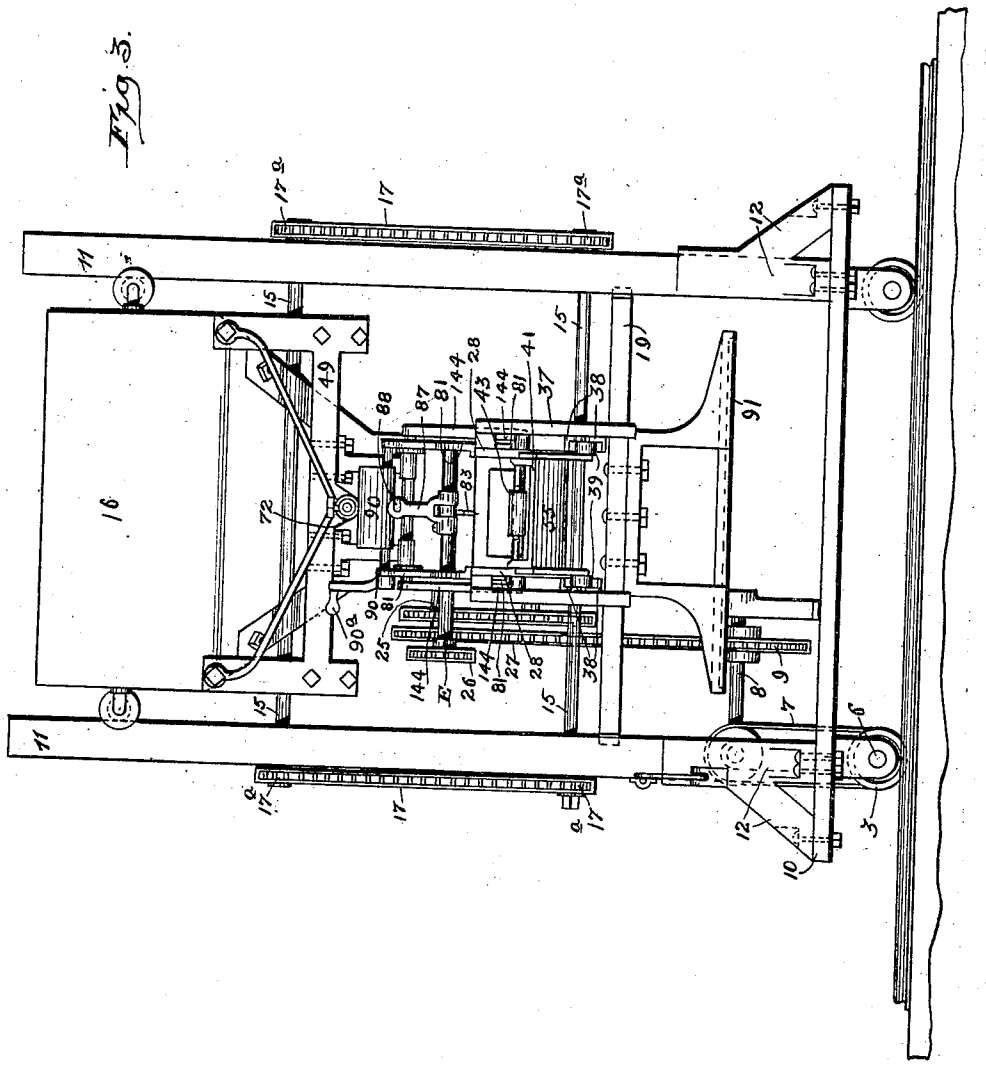
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5 SHEETS—SHEET 3.

Fig. 3.



Witnesses.

Chas. E. Gordon

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5 SHEETS—SHEET 4.

Fig. 4.

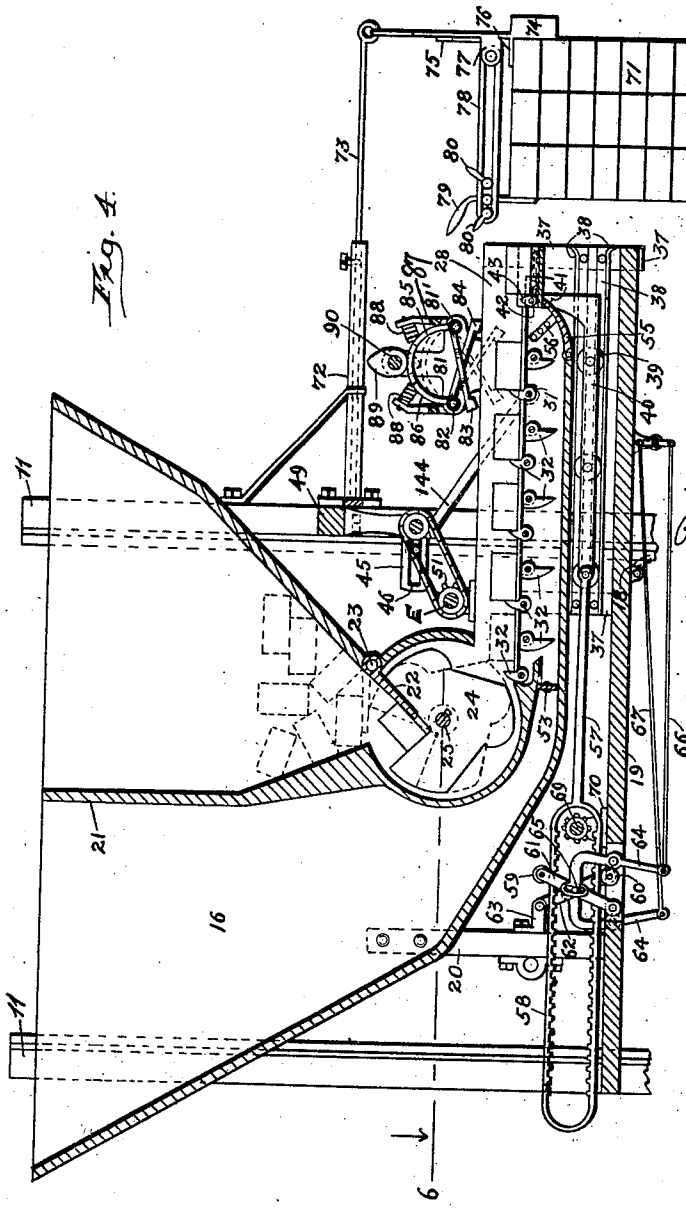
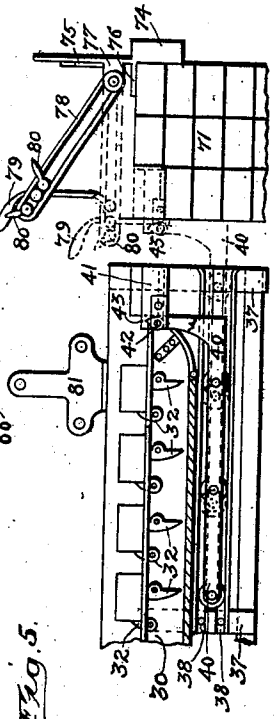


Fig. 5.



Witnesses:

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5 SHEETS—SHEET 5.

Fig. 7.

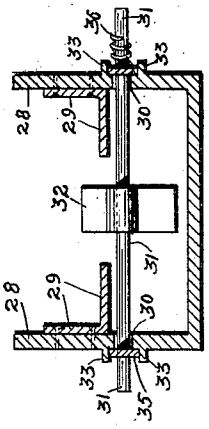


Fig. 9.

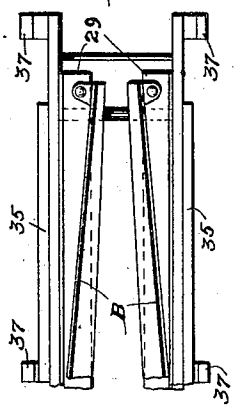


Fig. 6.

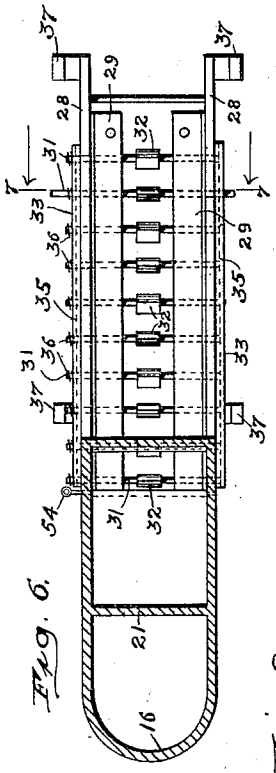


Fig. 8.

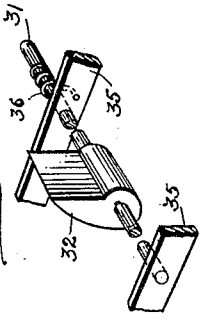


Fig. 13.

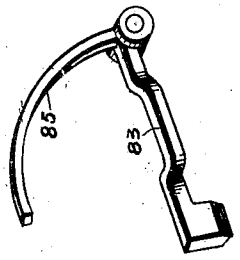


Fig. 11.

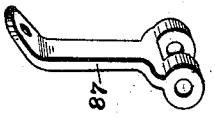


Fig. 12.

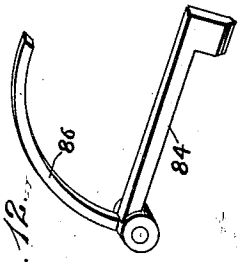
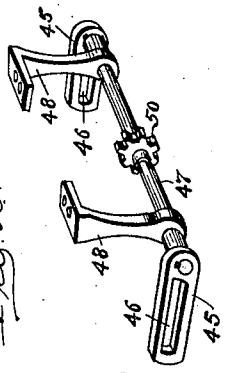


Fig. 10.



Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN KALLBERG, OF CHICAGO, ILLINOIS.

BRICKLAYING-MACHINE.

1,096,306. Specification of Letters Patent. Patented May 12, 1914.

Application filed August 15, 1912. Serial No. 715,270.

To all whom it may concern:

Be it known that I, JOHN KALLBERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bricklaying-Machines, of which the following is a specification.

This invention relates to improvements in brick laying machines.

It contemplates the provision of a hopper for the brick and one for the mortar adjacent thereto. An automatic feed for both the brick and mortar is provided through the medium of which the bricks are taken singly from the hopper, and advanced to a conveyer from which they are deposited in a temporary trough into which the mortar has been advanced and deposited when both brick and mortar are advanced to the building wall and deposited thereupon. Means for raising and lowering the hopper, which is supported in a suitable frame upon vertical racks, and the mechanism with which it works and for moving the same laterally are provided. Means for breaking the brick are also provided.

With the foregoing and other objects in view the invention consists in the combination and arrangement of parts to be hereinafter fully described in the following specification, pointed out in the claims and illustrated in the accompanying drawings which form a part of the specification and in which—

Figure 1 is a side elevation of my complete machine in operation. Fig. 2 is a top plan of the same. Fig. 3 is a front elevation. Fig. 4 is a central longitudinal section. Fig. 5 is a longitudinal section of the delivery platform. Fig. 6 is a section taken on line 6—6 of Fig. 4 with the hopper mechanism removed. Fig. 7 is a section taken on line 7—7 of Fig. 6. Fig. 8 is a detail in perspective of one of the traveling dogs employed. Fig. 9 is a plan of Fig. 6 showing a modification of the brick delivery mechanism. Fig. 10 is a detail in perspective of the crank mechanism for working the delivery platform. Fig. 11 is a bracket employed. Fig. 12 is a perspective of one of the hammer members employed to break the brick. Fig. 13 is a perspective of the hammer section that coöperates with the member shown in Fig. 12.

Like reference characters indicate corresponding parts throughout the several views.

In operation my machine is adapted to be supported upon a suitable trestle or scaffold 1 which may consist of any light structure readily assembled and demolished and upon which temporary rails 2 are secured upon which the traction wheels 3 of my machine travel. Midway between the rails 2 a cog track 4 is secured upon which the cog 5 mounted upon the axle 6 of the traction wheels travels to propel the machine from place to place. The axle 6 is rotated by a pulley mounted thereupon that is belt-connected as at 7 to a suitable transmission mounted upon a shaft 8 that is gear-connected to and operable by the main motor 9 that is disposed upon the base or floor 10 of the machine. Upon the floor 10 are corner posts 11, four in number, additionally supported by braces 12 that join them with the base, and the said corner posts in connection with the base form the skeleton or real frame of my machine. To each corner post 11 a rack 13 is secured upon which wheels 14 travel that support the parts of my machine that are independent of the main frame just described. The shafts 15 of these wheels which extend from side to side of the complete machine are secured to the hopper 16 and support the same and the three wheels 14 on either side of the machine are operated by a chain 17 engaging ratchets 17^a keyed to shafts 15 so that power may be transmitted from one of the shafts 15 which at its termination is formed square in cross section as shown in Fig. 1 to permit engagement therewith by a crank by which it is rotated to cause the wheels 14 to travel vertically over the racks 13 thus raising or lowering the hopper and the mechanism connected thereto; the traveling portion just described may be locked in any desired position through the medium of a pawl 18 secured to a traveling floor 19 that is secured by supports 20 to the hopper 16. Within the hopper 16 is a partition 21 that divides the same into two compartments, the forward compartment being used for brick and the rear compartment for mortar. Near the lower end of the front wall of the forward or brick compartment of the hopper a trap door 22 is pivotally carried as at 23 which when in closed position serves as a floor for the same to keep the bricks within the hopper and when open serves as an outlet for the said bricks one at a time. The movements of the trap door are regulated by a

cam 24 which is formed with a V-shaped peripheral indenture and with a plurality of irregular shoulders over the balance of its periphery. The irregular periphery of the cam, which cam is constantly in contact with the trap door, is to oscillate the said door and so keep the bricks within the hopper in a state of agitation which will tend to position them so that when the V-shaped indentation permits the downward thrust of the door but one brick may find an outlet from the hopper and ride around with the cam, which is disposed upon a shaft 25 journaled in the hopper and receiving power from a wheel 26 connected with a transmission chain 27 to the drive wheel of the motor, to the lower termination of the partition 21 in the hopper.

28 is a trough secured to the front wall of the hopper and provided with a pair of lateral L-shaped runways 29 extending longitudinally almost from one end to the other. The side walls of the said trough are slotted as at 30 to receive transverse shafts 31 that are movable longitudinally of the said trough and that are each provided with a dog 32. The said dogs extend alternately in an up and a down direction from their shafts and are made fast thereupon. The lateral walls of the said trough are further provided with longitudinally extending exterior guides 33 between which movable slides 35 are arranged which carry the shafts 31 and in which one end of a coil spring 36 is secured the body of which is wound upon the said shafts 31, to permit oscillation of the said shafts in one direction but to prevent it in the opposite direction. To the front and rear ends of the trough 28 depending supports 37 are secured that carry a track 38 in which the wheels 39 of a truck 40 travel; the forward end of the truck 40 terminates in a head 41 which is projected upward almost into alinement with the runways 29 that carry the brick and the head 41 is provided with a transverse shaft 42 that carries a dog 43. It will be noticed that the dogs 32 are spaced apart a distance slightly in excess of the length of a brick. The bricks are loaded upon the runways 29 by the cam 24 as previously described, each succeeding brick forcing its predecessor forward one brick-length as the cam rotates until the runways are full. At this point crank arms 144 are connected to one of the shafts 31 and to cranks 45 in their slotted portions 46 which cranks are terminally secured to a crank shaft 47 that is retained by brackets 48 secured to a support 49 that is connected to the hopper. Upon the shaft 47 is a cog 50 that is chain-connected to a cog 51 mounted upon a shaft E, which shaft receives power from the motor. When the runways 29 are filled with bricks the power is applied and the shaft 47 given one complete revolution which operation advances the dogs 32 and their connections forward approximately one brick length and causes the remote terminal dog to thrust one brick over the dog 43 into the angular head 41 of the truck 40, this arrangement forming practically a conveyer. In the modification Fig. 9 converging ridges B disposed upon the runways 29 cause the bricks to turn upon their sides as they advance and to be so deposited upon the wall when desired. In the meantime mortar has been passing from the mortar hopper through a gate 53 that may be opened or closed by a hand lever 54 and that is advanced intermittently by the lower depending dogs 32 as the same are occasionally advanced in the manner just described. At the end of the rear wall of the hopper an inclined pivoted gate 55 is secured and the same is adjustable through pin-connection with a rod 56 and the mortar passing over this gate is forced into the angular head 41 where it is ready for the bricks as they are singly deposited. With the mortared brick in the angular head the truck 40 is now advanced to the wall by means of a pitman 57 secured to the said truck and to a rack 58. This rack is supported between two wheels 59 and 60 which are carried, respectively, terminally by arms 61 and 62; the opposite end of the arm 62 being pivoted to a bracket 63 secured to the support 20 and the opposite end of the arm 61 is pivoted to the traveling floor 19. Bell crank levers 64 are pivoted between their extremities to the floor 19 and one termination of each of which is slotted and is pin-connected as at 65 to the cross-arms 61, 62. Rods 66, 67 connect the bell crank levers 64 with a lever 68 which is used to depress the forward end of the rack 58 into mesh with a rotary cog 69 carried by a standard 70 disposed upon the traveling floor 19; or the said lever when moved in the opposite direction will raise the front end of the said rack throwing its lower serrated surface into contact with the cog 69 and reversing the movement of the said rack and its connections thus actuating the truck 40 with the said rack. When the mechanism is used to advance the truck 40 to the wall 71 the brick carried by the head 41 is placed in position upon the said wall as shown in Fig. 1.

To one of the corner posts 11 of the main frame a socket 72 is secured which retains a sliding rod 73 that terminally supports a plumb 75 to keep the building wall in proper alinement. To the shaft of the said plumb an upright spirit level 75 and a horizontal spirit level 76 are secured for use upon the wall.

77 is a lug secured to the shaft of the plumb that carries a pivoted guide arm 78 in which is carried an arm 79 between two

set screws 80. This arm is adapted to enter between the brick on the head 41 and the dog 43 to hold the brick in its position upon the wall when the truck 40 is drawn back to its normal position.

81 is a bracket secured to one wall of the trough 28 and provided with two shafts 81′, 82 upon which hammers 83, 84 made integral, respectively, with curved arms 85, 86 are disposed. One hammer 83 is formed with an offset to permit passage of the other hammer when in operation as shown in Fig. 13. A bracket 87 is fitted over the juncture of the hammer 83 with its arm 85 and a similar bracket over the juncture of the hammer 84 with its arm 86 and both are disposed upon the shafts 81′ or 82, while springs 88, 88 connect the upper end of either bracket 87 with the arm 85 or the arm 86.

89 is a cam mounted upon a shaft 90 carried by the bracket 81 and when this shaft is rotated by handle 90ª the said cam intermittently engages the adjacent free ends of the arms 85, 86 depressing them and so depressing the hammers and causing them to strike sharp blows upon the brick directly beneath them.

91 is the operator's platform secured to the traveling floor 19.

92 is an auxiliary motor disposed upon the floor 19 and designed to supply power for the traveling mechanism when it is desired to vary the position of the traveling parts.

What is claimed is:—

1. In a brick laying machine the combination with a suitable supporting frame provided with vertical racks, of a partitioned brick and mortar hopper movably supported in said racks, single delivery mechanism disposed in the bottom of the brick hopper section, a manually operable gate for the mortar hopper section, a trough in alinement with the said gate and with the said single delivery mechanism, terminal supports carried by the said trough, a track secured between said supports, a truck formed with an angular head disposed upon said track, a conveyer disposed within said trough between the said single delivery mechanism and the said angular head, mechanism for actuating the said conveyer, mechanism for actuating the said truck and means secured to the said hopper for engagement with the said angular head of the truck when the latter is in its extended position for removing the contents of the said head.

2. In a brick laying machine the combination with a suitable supporting frame provided with vertical racks, of a partitioned brick and mortar hopper movably supported in said racks, a trap door terminally carried by the brick hopper section, a rotary cam disposed beneath said brick hopper section in engagement with the said trap door, a manually operable gate for the mortar hopper section, a trough in alinement with the said gate and with the said rotary cam, terminal supports carried by said trough, a track secured between said supports, a truck formed with an angular head disposed upon said track, a conveyer disposed within said trough between the said rotary cam and the said angular head, mechanism for actuating the said conveyer, mechanism for actuating the said truck and means secured to the said hopper for engagement with the said angular head of the truck when the latter is in its extended position for removing the contents of the said head.

3. In a brick laying machine the combination with a suitable supporting frame provided with vertical racks, of a partitioned brick and mortar hopper movably supported in said racks, single delivery mechanism disposed in the bottom of the brick hopper section, a manually operable gate for the mortar hopper section, a slotted trough in alinement with the said gate and with the said single delivery mechanism, terminal supports carried by said trough, a track secured between said supports, a truck formed with an angular head disposed upon said track, a runway disposed within said trough, slides secured to the slotted portions of said trough, transverse spring-controlled shafts carried by said slides, dogs carried by said shafts, mechanism for actuating the said shafts, mechanism for actuating the said truck and means secured to the said hopper for engagement with the said angular head of the truck when the latter is in its extended position for removing the contents of the said head.

4. In a brick laying machine the combination with a suitable supporting frame provided with vertical racks, of a partitioned brick and mortar hopper movably supported in said racks, single delivery mechanism disposed in the bottom of the brick hopper section, a manually operable gate for the mortar hopper section, a trough in alinement with the said gate and with the said single delivery mechanism, terminal supports carried by said trough, a track secured between said supports, a truck formed with an angular head disposed upon said track, a conveyer disposed within said trough between the said single delivery mechanism and the said angular head, mechanism for actuating the said conveyer, cross arms pivoted together pivotally secured to the framework, a reciprocating rack supported by said cross arms, means engaging the said cross arms for changing their relative positions, a pitman connecting the said rack and the aforesaid truck and means secured to the said hopper for engagement with the said angular head of the truck when the latter is in an

extended position for removing the contents of the said head.

5. In a brick laying machine the combination with a suitable supporting frame, of a movable brick hopper, a movable mortar hopper associated therewith, single delivery mechanism disposed in said brick hopper, manually operable outlet means for said mortar hopper, conveyer mechanism operatively associated with said hoppers and single delivery mechanism, power controlled load-conveying means connecting said conveyer and the wall under construction and unloading means carried by said brick hopper operatively associated with said load-conveying means.

6. In a brick laying machine the combination with a suitable supporting frame provided with vertical racks, of a partitioned brick and mortar hopper movably supported in said racks, single delivery mechanism disposed in the bottom of the brick hopper section, a manually operable gate for the mortar hopper section, a trough in alinement with the said gate and with the said single delivery mechanism, a power operated conveyer disposed in said trough in alinement with the said single delivery mechanism, a bracket secured to one wall of the said trough, a cam carried by said bracket, parallel shafts carried by said bracket, oppositely disposed spring-controlled hammers mounted upon said shafts in the path of the said cam and oppositely disposed brackets mounted upon the said shafts terminally engaging the springs of the said spring-controlled hammers.

7. In a brick laying machine the combination with a suitable supporting frame, of a movable brick hopper, a movable mortar hopper associated therewith, single delivery mechanism disposed in said brick hopper, outlet means for said mortar hopper, conveyer mechanism operatively associated with said hoppers and single delivery mechanism, power controlled load-conveying means connecting said conveyer and the wall under construction, a rod and socket arrangement carried by said brick hopper, a guide arm supported by said rod and socket arrangement and means movably disposed in said guide arm for coöperation with said load-conveying means whereby the same may be unloaded.

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

JOHN KALLBERG.

Witnesses:
GUST ENGSTROM,
GUSTAF C. HAMMERQUIST.