W. D. WISE.

AUTOMATIC CEMENT BLOCK MACHINE.

APPLICATION FILED MAY 28, 1909.

961,664. Patented June 14, 1910.

8 SHEETS—SHEET 1.

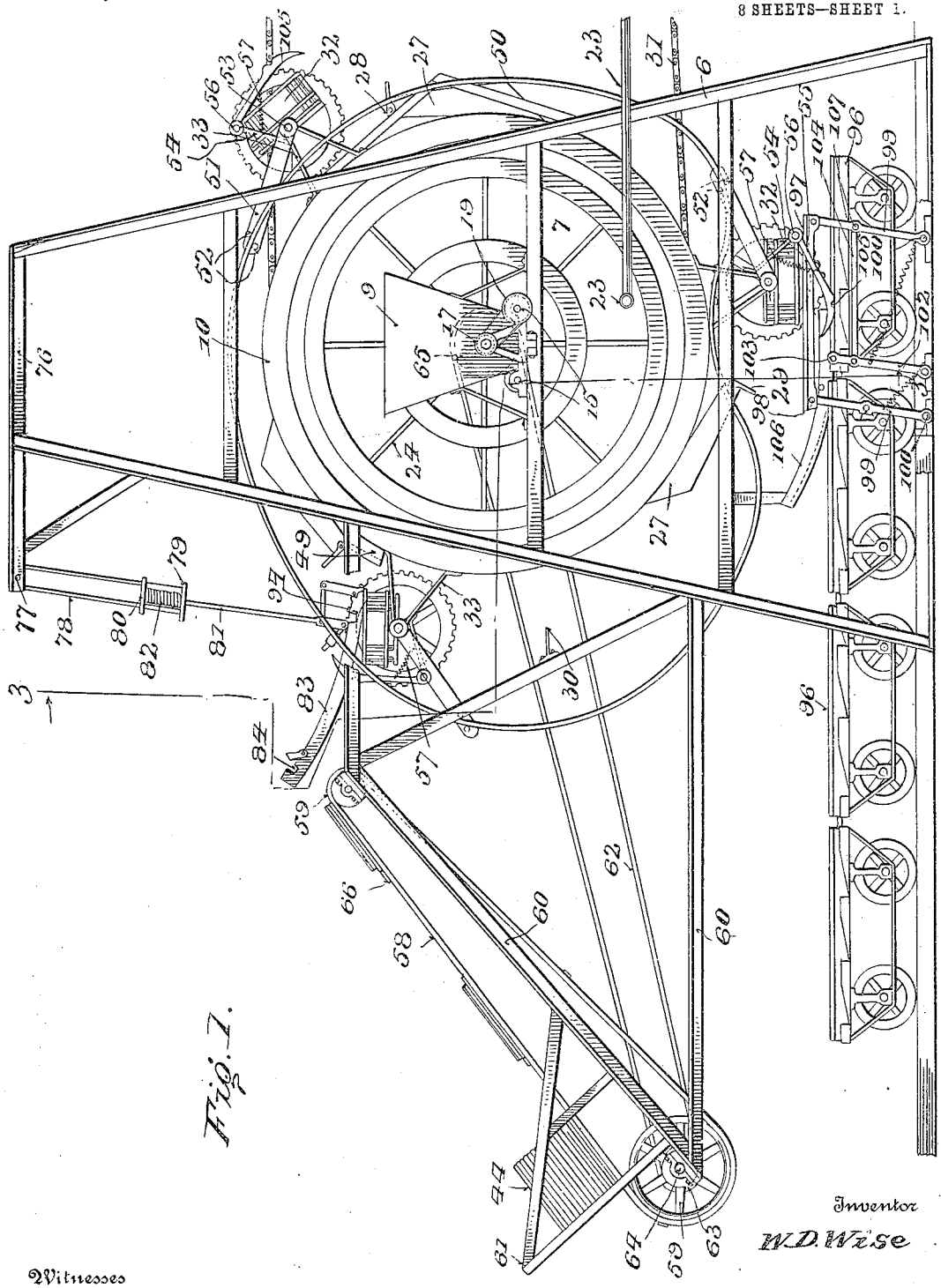

Fig. 1.

Witnesses

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8 SHEETS—SHEET 2.

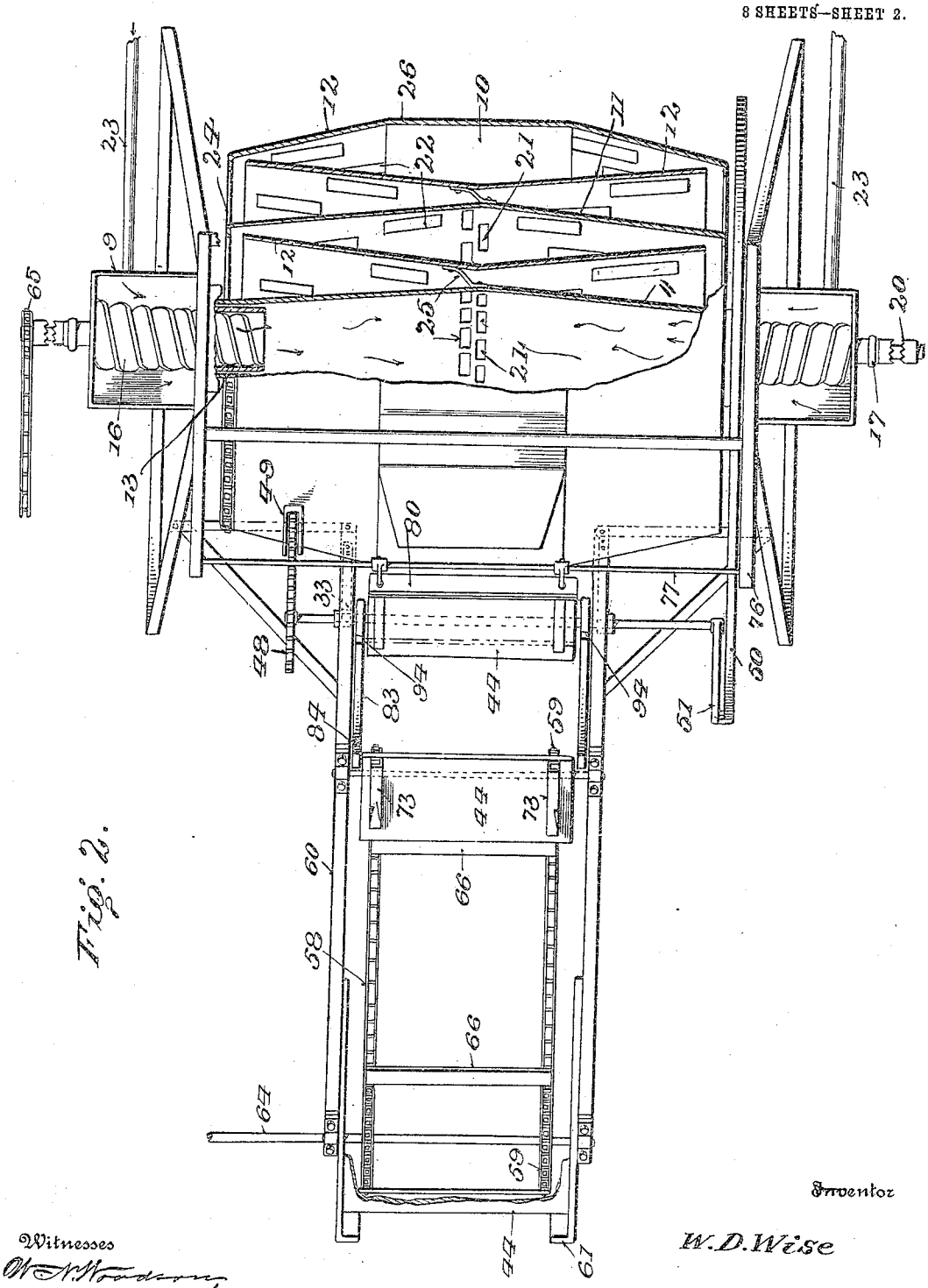


Fig. 2.

Witnesses

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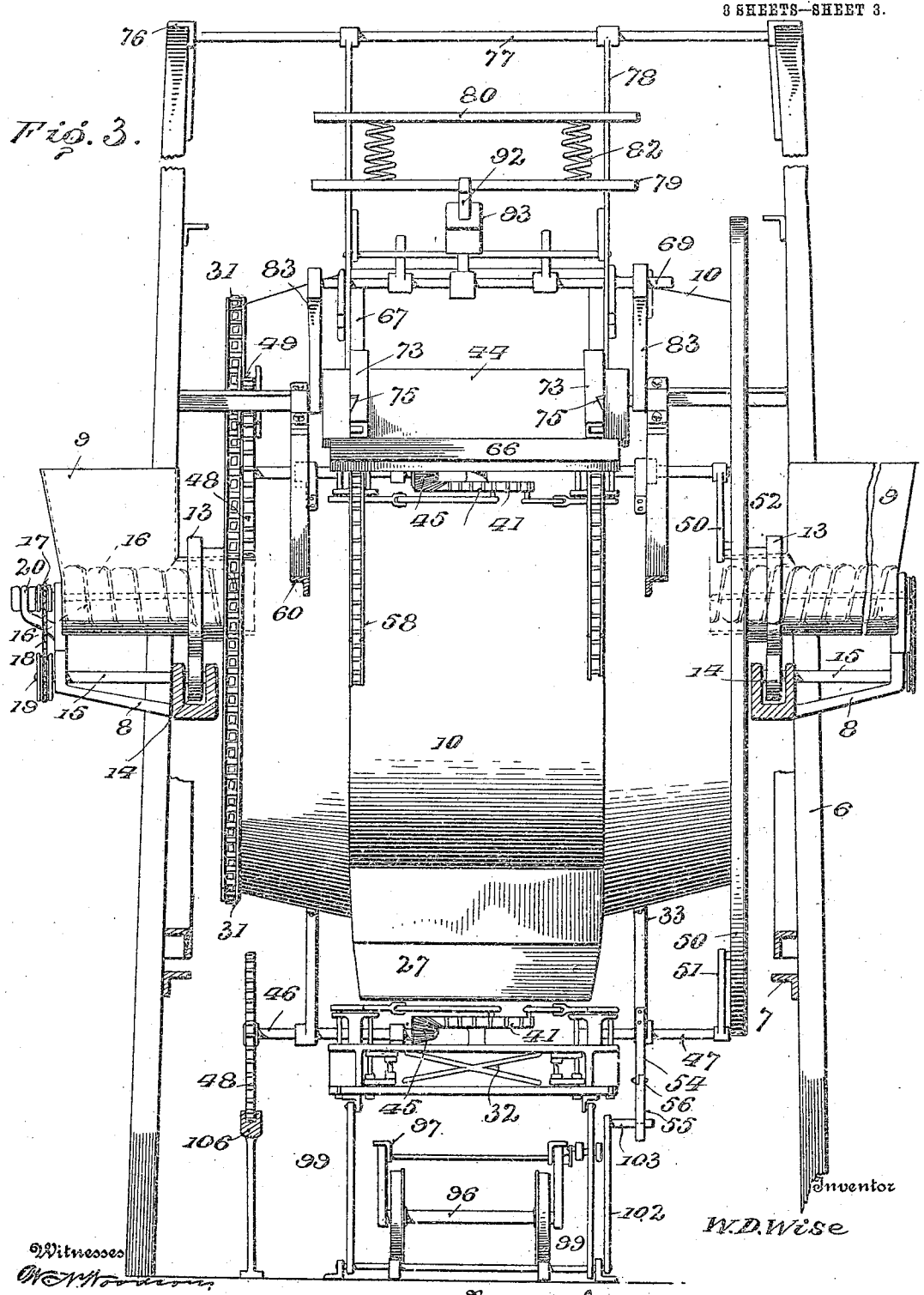
3 SHEETS—SHEET 3.

Fig. 3.

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8 SHEETS—SHEET 4.

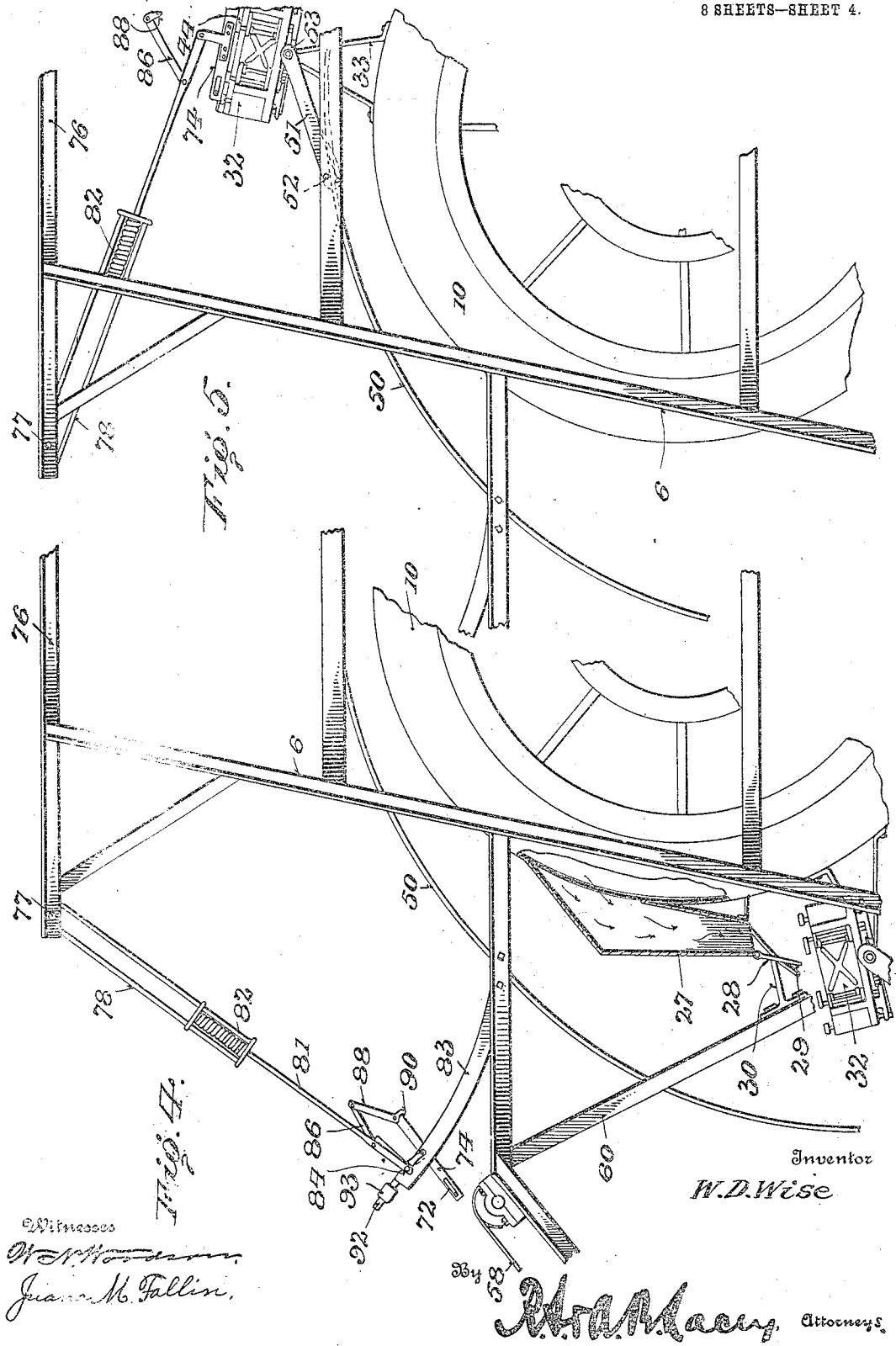


Fig. 4.

Witnesses

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8 SHEETS—SHEET 5.

Fig. 7.

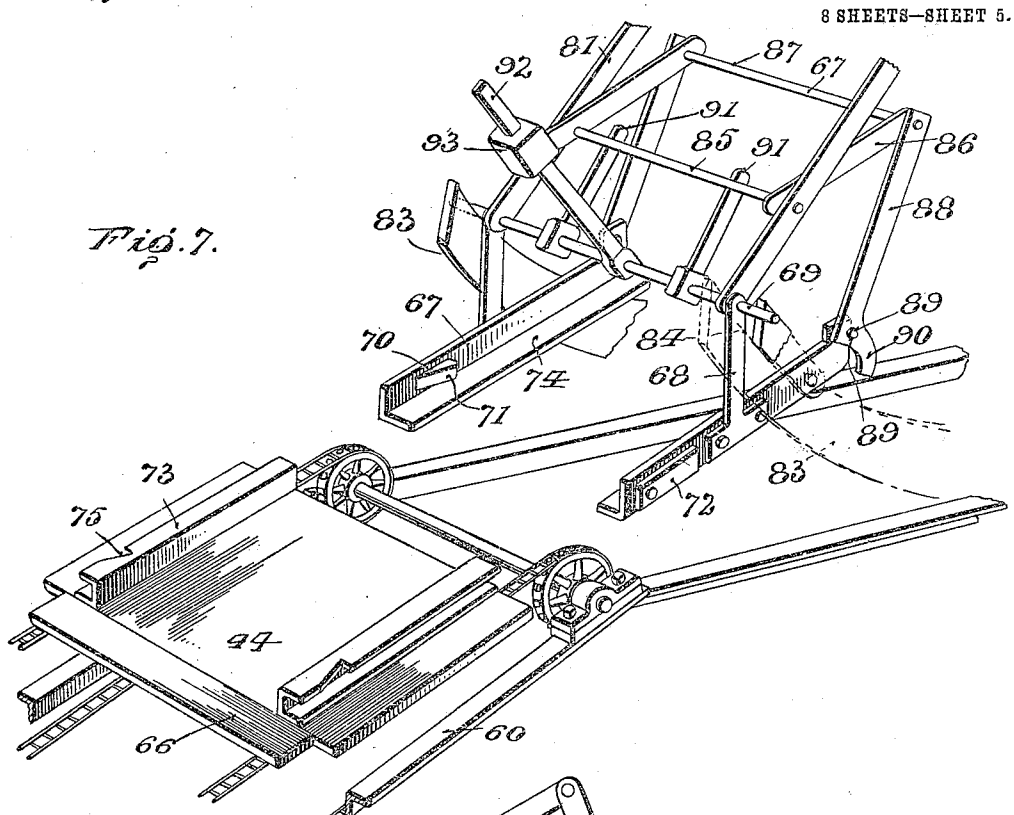
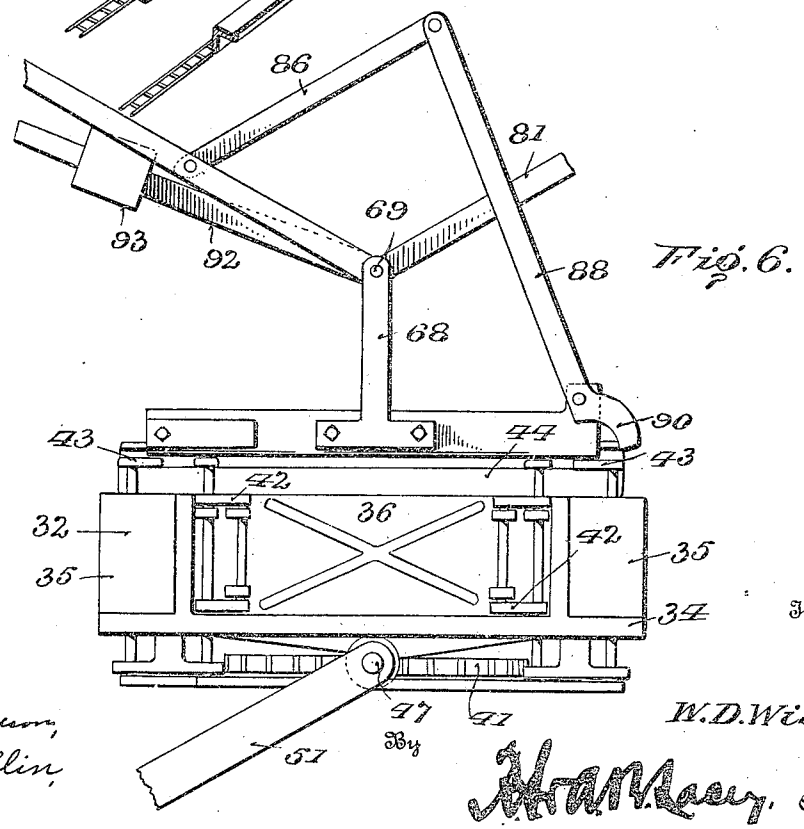



Fig. 6.




Witnesses

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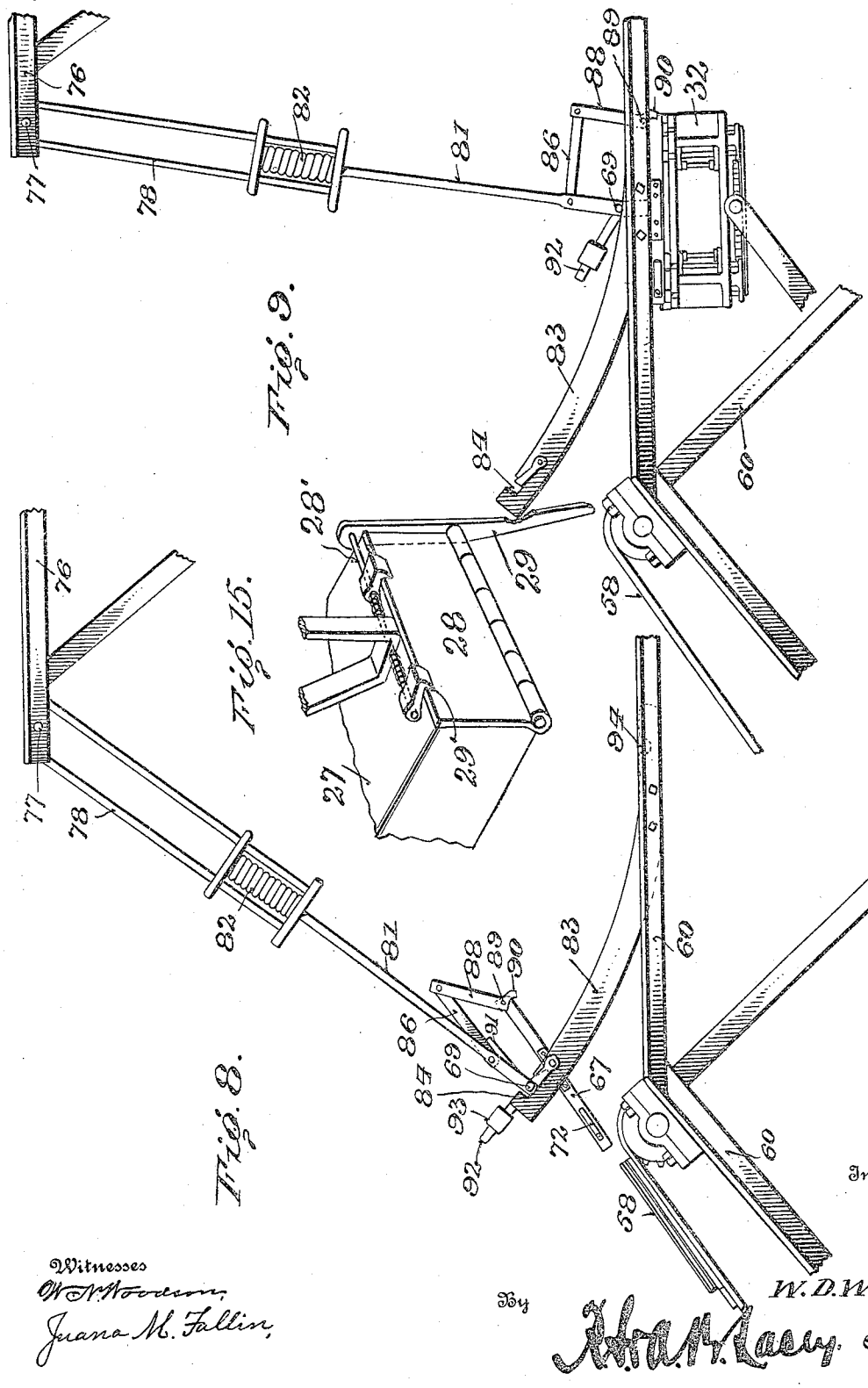
8 SHEETS—SHEET 6.




Witnesses

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APPLICATION FILED MAY 28, 1909.

961,664. Patented June 14, 1910.

8 SHEETS—SHEET 7.

Fig. 10.

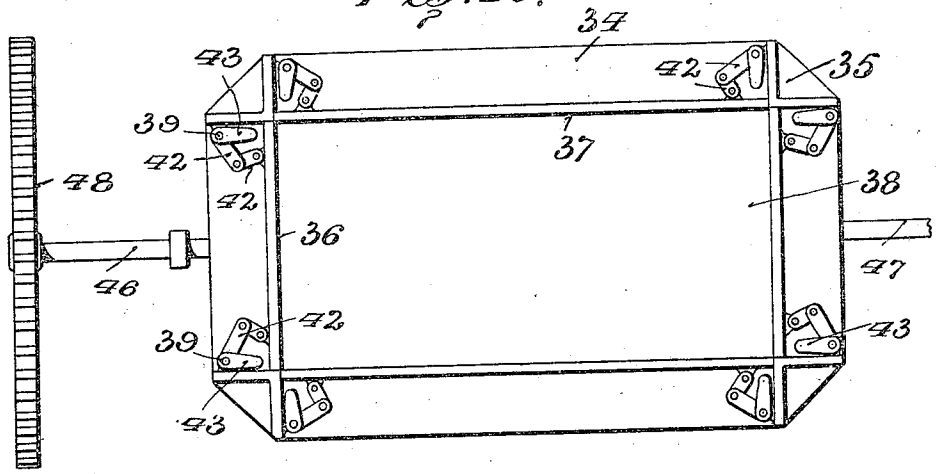



Fig. 11.

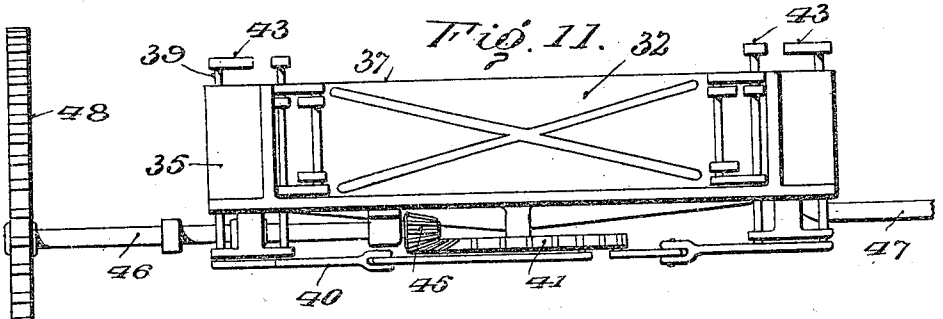
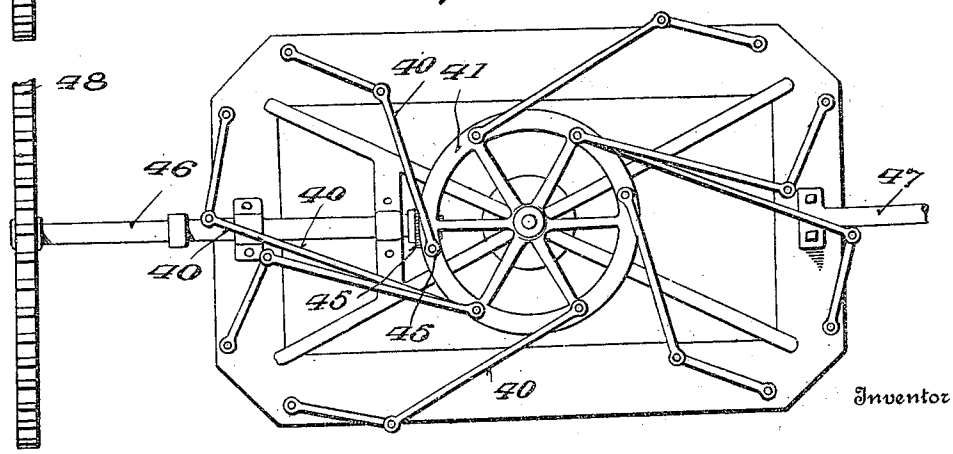



Fig. 12.




Witnesses

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8 SHEETS—SHEET 8.

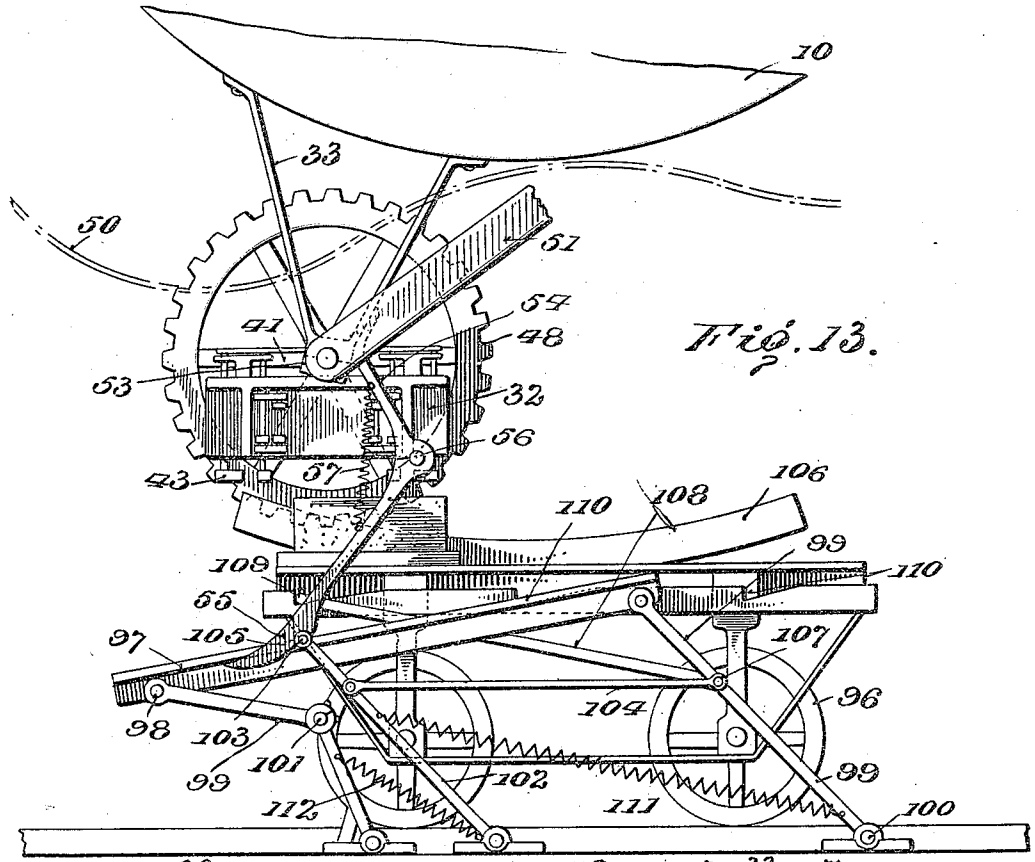


Fig. 13.

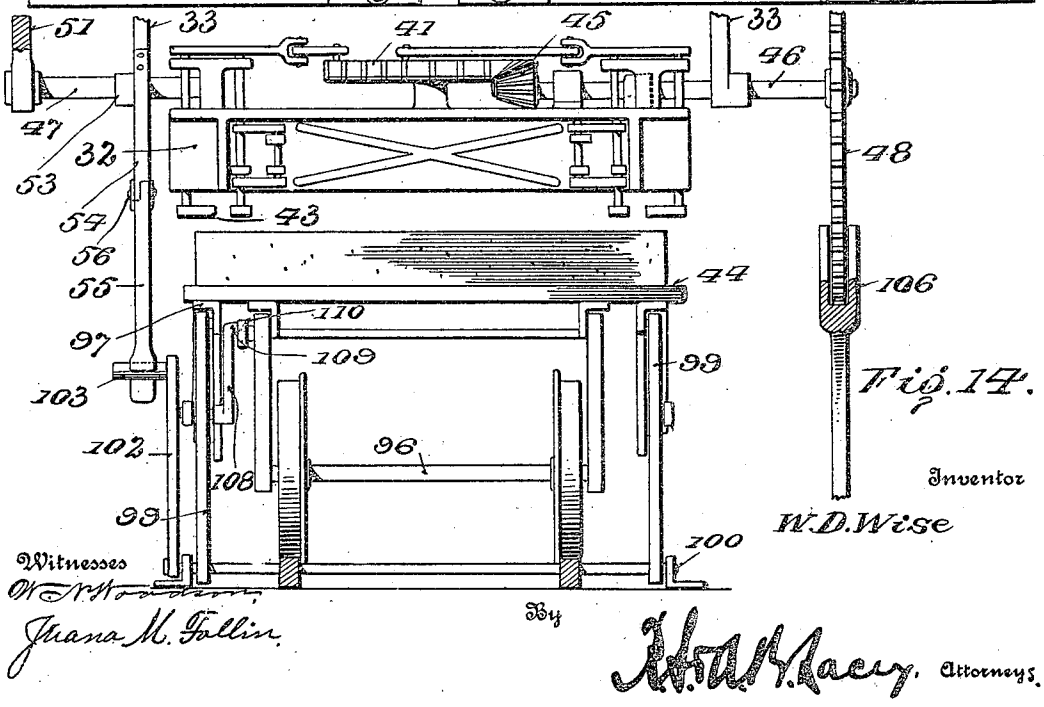


Fig. 14.

Witnesses

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# UNITED STATES PATENT OFFICE.

WILLIAM D. WISE, OF DETROIT, MINNESOTA, ASSIGNOR OF ONE-HALF TO CHARLES R. STONE, OF FARGO, NORTH DAKOTA.

## AUTOMATIC CEMENT-BLOCK MACHINE.

961,664. Specification of Letters Patent. **Patented June 14, 1910.**

Application filed May 28, 1909. Serial No. 498,901.

*To all whom it may concern:*

Be it known that I, WILLIAM D. WISE, citizen of the United States, residing at Detroit, in the county of Becker and State of Minnesota, have invented certain new and useful Improvements in Automatic Cement-Block Machines, of which the following is a specification.

This invention relates to molding machines and more particularly to a machine for making artificial stone, bricks or blocks.

The object of the invention is to provide a molding machine in which the several materials constituting the body of the block, are fed in proper proportions to a mixing drum or container, and while in a state of agitation subjected to the action of a liquid spray, the resultant mass being discharged into suitable molds and pressed into bricks or blocks for delivery to a receiving truck.

A further object of the invention is to provide a rotary mixing device having a plurality of molds secured thereto and provided with spaced tangentially disposed discharge spouts through which the concrete is discharged into the molds at predetermined intervals.

A further object is to provide means for compressing the concrete in the molding compartments, and means for reversing the molds to permit the discharge of the bricks or blocks.

A further object is to provide means for successively delivering the pallets to the molds, and means for clamping the pallets in position on the molds during the compression of the concrete within the receiving compartments.

A further object is to provide means for locking the pallet carrier in position to receive a pallet from the delivering mechanism, and means for swinging the pallet carrier into the path of movement of the molds and retaining the carrier in said position until the adjacent mold contacts therewith.

A further object is to provide means for transferring the molded product from the mold to a receiving truck or carriage for delivery to the drying racks.

A further object is to provide means operable by suitable trip arms on the molds for effecting the transfer of the bricks or blocks, and means operable simultaneously with the block transferring means for advancing the truck or carriage with a step by step movement.

A still further object of the invention is generally to improve this class of machines so as to increase their utility, durability, and efficiency.

Further objects and advantages will appear in the following description, it being understood that various changes in form, proportions, and minor details of construction may be resorted to within the scope of the appended claims.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a side elevation of an artificial stone block making machine constructed in accordance with my invention, showing one of the molds in position to receive the pallet from the carrier and another mold in position to deliver the molded product to the truck or carriage; Fig. 2 is a top plan view partly in section; Fig. 3 is a vertical sectional view taken on the line 3—3 of Fig. 1 and looking in the direction of the arrow; Fig. 4 is a detail elevation showing one of the molds in position to be filled; Fig. 5 is a similar view showing the position assumed by the pallet carrier when the mold is in position to release the carrier; Fig. 6 is an enlarged detail side elevation showing the stop fingers of the pallet carrier in released position to permit the passage of the mold with the pallet clamped in position thereon; Fig. 7 is a detail perspective view of the upper end of the conveyer and the adjacent end of the pallet carrier, the latter being positioned to receive a pallet from said conveyer; Fig. 8 is a side elevation of the pallet carrier and its associated parts showing the same in position to receive a pallet; Fig. 9 is a similar view showing the carrier thrown rearwardly and in position to deliver a pallet to the adjacent mold; Fig. 10 is a top plan view of one of the molds detached; Fig. 11 is a side elevation of the mold; Fig. 12 is a bottom plan view thereof; Fig. 13 is a side elevation of the block transferring mechanism showing the parts in position to deliver a block from the adjacent mold to the truck or carriage; Fig. 14 is a front elevation partly in section

of the transferring mechanism and truck and its associated parts, the pallet clamping fingers being shown in released position and the pallet carrying the mold in position on the bed of the truck. Fig. 15 is a detail perspective view of the forward end of one of the discharge spouts showing the construction of the pivoted door or closure.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

*Mixing mechanism.*—The improved machine comprises a supporting frame including converging side bars 6 connected by longitudinal bars 7 to which are secured in any suitable manner laterally extending brackets 8 which form supports for suitable hoppers 9. Mounted for rotation between the side members of the supporting frame, is a drum or container 10 in which is mounted the mixing mechanism. The drum or casing 10 is open on its opposite sides and disposed within said casing, are a plurality of concentric double cone shaped shells or drums 11 and one or more double inverted cone shaped drums or shells 12, preferably interposed between the adjacent shells 11 and terminating short of the latter, as shown. The opposite ends of the central shell or drum 11, are extended laterally through the opposite sides of the casing 10 and are provided with terminal wheels or rollers 13 which engage corresponding friction pinions 14 carried by stub shafts 15, the latter being journaled in the adjacent brackets 8 so that when the drum or casing 10 is rotated motion will be transmitted from the drum through the medium of the pinions 14 to said stub shafts.

The hoppers 9 are extended a short distance within the central drum or shell 11, and mounted for rotation within the hoppers are feeding devices 16 preferably in the form of oppositely disposed screws which serve to feed the sand and cement in proper proportions to the mixing drum. Secured to the outer end of each feed screw 16 is a sprocket wheel 17, which latter is connected through the medium of a sprocket chain 18 with a similar sprocket wheel 19 secured to the adjacent stub shaft 15 so that motion may be transmitted from the stub shafts 15 to the feed screw 16 for feeding the material to the mixing mechanism, there being a suitable clutch 20 mounted on the shaft of each feeding device so that the sprocket wheel 17 may be moved to inoperative position when it is desired to check the feed of the material to the mixing mechanism.

Some of the drums or shells 11 and 12 are formed with a plurality of ports 21 through which the sand and cement passes from one shell to the other, there being suitable baffle plates 22 arranged on the inner walls of the shells or drums for the purpose of thoroughly agitating the materials and blending the same before being subjected to the action of the spraying nozzle 23.

The drums or shells 11 are secured to the main casing 10 by radiating spokes 24, while the drums or shells 12 are spaced from and rigidly connected with the shells 11 by one or more inclined braces 25.

Extending tangentially from the flat peripheral portion 26 of the mixing drum or casing 10, are a plurality of discharge spouts 27, preferably three in number as shown, and each having its inner end in communication with the interior of the casing 10 and its outer end normally closed by a pivoted gate 28, said discharge spouts being so arranged that when the latter are revolved to a position beneath the axis of the drum, a portion of the contents of the casing will enter the spout for delivery to the molds. Journaled above the gate 28 of each discharge spout is a transverse rod 28′ provided with a depending finger 29, the latter being arranged in the path of a suitable trip or lug 30, so that when the trip engages the finger 29, the catches 29′ will be released and the gate moved automatically to open position and thus permit the discharge of the contents of the spout into the receiving compartment of the adjacent mold, as best shown in Fig. 4 of the drawings. As each spout ascends, after the discharge of its contents, the gate 28 will close by gravity and in which position it will be held by the catches 29′. If desired, a trip or lug, similar in construction to the trip or lug 30, may be disposed in the path of the discharge spouts for positively closing the gates thereof.

Any suitable means may be employed for rotating the drum or casing 10, as for instance, a circular rack and pinion, but it is preferred to attach a sprocket wheel to the periphery of the drum for connection with a sprocket chain 31 to effect this result, the sprocket chain being connected with an engine or other suitable source of power, as will be readily understood. Thus it will be seen that when sand and cement are placed in the hoppers and the drum or casing 10 revolved, said materials will be fed to the central drum or shell 11 and thence pass through the ports 21 onto the adjacent shells 11 where they will be thoroughly mixed and blended by the baffle plates 22, the materials being subsequently subjected to the action of a liquid spray from the nozzle 23 to form a plastic mass for delivery to the receiving compartments of the molds, indicated at 32.

*Molding mechanism.*—The molds 32 are rigidly secured to and mounted for rotation with the casing 10, said molds being preferably three in number and each journaled in suitable supporting brackets 33 rigidly secured to the exterior wall of the mixing drum or casing, as shown. Each mold com-

prises a bed plate 34 having substantially triangular corner pieces 35 secured thereto and between which are mounted for sliding movement, end walls 36 and side walls 37. The side and end walls of the molds are movable within the molding compartments 38 to effect the compression of the concrete by means of suitable stub shafts 39 having their lower ends extended through the bed plate 34 and connected through the medium of pivotally united links or rods 40 with an actuating wheel 41, the upper ends of the stub shafts 39 being connected to the adjacent walls of the mold by pivotally connected knee braces 42 so that when the actuating member or wheel 41 is partially rotated, the stub shafts 39 will be likewise partially rotated and through the medium of the knee braces 42 force the walls of the mold inwardly to effect the compression of the concrete. The upper end of each stub shaft 39 is formed with a clamping finger 43 adapted to bear against and clamp the adjacent pallet 44 in engagement with the upper edges of the walls 36 and 37 during the compression of the concrete within the molding compartment, the several parts being so arranged that the initial movement of the actuating member or wheel 41 will operate the clamping fingers 43 to engage the pallet 44, and a further movement thereof will actuate the walls 36 and 37 to effect the compression of the concrete, as before stated.

Each actuating member or wheel 41 is preferably in the form of a mutilated gear, the teeth of which engage a pinion 45 carried by an operating shaft 46, the latter being extended longitudinally beyond the bed plate 34 and journaled in the adjacent supporting bracket 33, as best shown in Figs. 1 and 12 of the drawings.

A stub shaft or pin 47 extends laterally from each bed plate 34 at a point diametrically opposite to and in alinement with the operating shaft 46 for engagement with the mating bracket 33 so as to permit free rotary movement of the molds between the brackets 33 and thus allow the molds to be reversed when it is desired to effect the discharge of the molded product.

Secured to the extended end of each operating shaft 46 is a gear wheel 48 adapted to engage the teeth of a segmental rack 49 secured to the main supporting frame 6 so that as the drum or casing carrying the molds revolves, the rack will engage and rotate the gear wheels 48 to effect the compression of the concrete within the molding compartments.

As a means for revolving the molds to effect the reversal thereof and thus permit the discharge of the molded product, there is provided a cam 50 which forms a guide for the laterally extending arms 51 of the operating shaft 46. The arms 51 are rigidly secured to the shaft 46 and are each provided with spaced antifriction rollers 52 which bear against the opposite faces of the metal strip constituting the cam 50, thereby to reduce friction between the parts. The cam 50 is of such a shape that as the mixing drum or casing 10 revolves, the rollers 52 will partially rotate the molds 32 in the bearings 53 so that when the molds reach a position directly beneath the center of said casing, the said molds will assume the position shown in Figs. 1 and 14 of the drawings, that is to say, with the pallet side down.

Rigidly secured to one of the spaced brackets 33 of each mold, is a stationary arm 54 having a movable arm or trip 55 pivotally connected therewith at 56 and yieldably supported with its free end extended beyond the peripheral edge of the adjacent gear wheel 48 by means of a coil spring 57, said trip arm 55 being adapted to engage and actuate the block delivering mechanism, hereinafter referred to.

Thus it will be seen that as the mixing device or casing 10 revolves, the concrete will be discharged through the spouts 27 into the molding compartment and compressed, the mold being subsequently reversed by means of the cam 50 and arms 51 so as to present the same in proper position to deliver the molded product to the receiving truck.

*Pallet delivering mechanism.*—The means employed for delivering the pallets to the molds, as the latter are rotated, comprises an endless conveyer 58 mounted for rotation on suitable sprocket wheels 59 journaled on an auxiliary supporting frame 60, the latter being substantially triangular in shape and projected longitudinally at the forward end of the machine, as best shown in Fig. 1 of the drawings. Secured in any suitable manner to the auxiliary supporting frame 60, is a rack or magazine 61 adapted to receive the pallets 44, motion being transmitted to the conveyer 58 to elevate said pallets through the medium of a sprocket chain 62 which passes over a sprocket wheel 63 on the conveyer shaft 64 and over a similar sprocket wheel 65 secured to the mixing drum or casing.

The endless belt or conveyer 58 is provided with a plurality of spaced transverse cleats 66 adapted to elevate and present the pallets 44 successively to the carrier, indicated at 67. The carrier 67 comprises spaced L-shaped bars to the intermediate portions of which are secured uprights or brackets 68 in which is journaled a transverse pin or shaft 69, there being suitable recesses 70 formed in the L-shaped walls of the carrier 67 for the reception of spring pressed wedge shaped catches 71, the latter being normally and yieldably held in the path of movement of the pallets 44 by means of leaf springs 72

fastened to the outer faces of the L-shaped bars of the carrier, as best shown in Fig. 7 of the drawings.

Secured to the upper face of each pallet 44, are spaced guiding members 73, the flanges of which are adapted to embrace the inwardly extending flanges 74 of the carrier 67 when the pallet is in position thereon, there being suitable locking recesses 75 formed in the upper flanges of the guiding members 73 and adapted to receive the spring locking members 71, thereby to prevent accidental displacement of the pallet when in position on the carrier.

Secured to the converging ends of the side bars 6, are longitudinally disposed bars 76, the free ends of which overhang the auxiliary frame 60, and in which is journaled a transverse shaft 77. Depending from and pivotally connected with the shaft 77, is a swinging frame including spaced sets of side bars 78 having their lower ends connected by end pieces 79 and between which is slidably mounted for longitudinal movement, a follower 80. Secured to the follower 80, are spaced rods 81, the lower ends of which are pivotally mounted on the transverse shaft 69 of the pallet carrier, there being a spring 82 interposed between the end pieces 79 and follower 80 for the purpose of normally and yieldably exerting a downward pressure on said pallet carrier.

Rigidly secured to the auxiliary frame 60, are spaced upwardly curved bars 83, between which the pallet carrier and its associated parts are slidably mounted, there being a locking notch or recess 84 formed in one of the bars 83 and adapted to receive the transverse pin or shaft 69 of the pallet carrier, thereby to lock the latter in position to receive the pallets 44 from the delivery mechanism 58, as best shown in Figs. 4 and 8 of the drawings.

Extending transversely across and connecting the rods 81 at a point above the shaft or pin 69, is a second transverse shaft or pin 85 to which are connected the adjacent ends of spaced links 86, the opposite ends of the links being pivotally connected at 87 with depending locking levers 88. The lower ends of the levers 88 are pivotally connected at 89 with the L-shaped bars of the pallet carrier so that said bars together with the links 86 and bars or rods 81, are free to swing laterally when the pallet carrier is moved from one position to another, as will be more fully described hereinafter.

The lower ends of the levers 88 are extended longitudinally beyond the adjacent pivots 89 to form locking fingers 90, which latter extend in the path of movement of the pallet 44 when the pallet carrier is in a position at the end of the conveyer 58, thereby to prevent the pallets from being forced outwardly at the rear end of the pallet carrier when said pallets are delivered thereto.

One or more laterally extending fingers 91 are secured to the transverse shaft or pin 69 of the pallet carrier for engagement with the transverse shaft 85, thereby to limit the pivotal movement of the levers 88 and links 86.

An arm 92 projects laterally from that side of the stub shaft or pin 68 opposite the stop arms or fingers 91 and receives a counter-balance or weight 93, which weight serves to assist in retaining the carrier in the position shown in Fig. 8 of the drawings, that is to say, with the extended ends of the stub shaft or pin 69 seated in the locking recesses 84 of the curved guide bars 83.

With the carrier in the position shown in Figs. 7 and 8 of the drawings, a pallet 44 delivered to the carrier 67 by the conveyer 58, will enter said carrier with the flanges of the guiding members 73 embracing the flanges 74 of the pallet carrier in the manner before described, and in which position it will be supported against accidental displacement by means of the spring catches 71 and locking lips or fingers 90.

The initial forward movement imparted to the pallet 44 by the conveyer 58, will cause the forward end of the pallet to bear against the stop lips 90 of the levers 88, and a further movement of said pallet by the conveyer 58 will force the carrier carrying the pallet upwardly thus disengaging the extended ends of the pin or shaft 69 from the locking recesses 84 and permitting the carrier with the pallet in position thereon, to be swung as shown in Fig. 9 of the drawings, that is to say, to a position to be engaged by the adjacent mold 32.

As the swinging frame and pallet carrier are moved rearwardly in the direction of the casing 10, the extended ends of the stub shaft or pin 69, will enter suitable locking recesses 94 in the fixed ends of the curved guides 83, thus holding the pallet in position to close the cement receiving compartment of the adjacent mold when the latter is rotated to a position in contact therewith.

As the mold 32 engages the pallet carrier, it forces the latter upwardly and rearwardly against the tension of the spring 83 to the position shown in Fig. 5 of the drawings, and in doing so, moves the rods or bars 81, links 86 and levers 88 to the position shown in Fig. 6 of the drawings, that is to say, with the locking lips 90 disengaged from the pallet so that a further rotary movement of the mixing drum or casing 10 will withdraw the pallet on the mold from engagement with the carrier 67 and permit the latter to swing laterally to the position shown in Fig. 8 of the drawings with the extended ends of the stub shafts 69 in engagement with the locking recess 84, so as to be in a

position to receive another pallet and present the same to the succeeding mold when the latter is rotated to a position to receive the same.

It will here be noted that after the pallet is positioned on the mold 32 and prior to the return of the pallet carrier to the outer ends of the curved bars 83, the gear wheel 48 of the mold will engage the rack 49 to effect the compression of the concrete in the molding compartment and lock the pallet in position on the mold so that when the carrier is disengaged from the pallet and swung upwardly, the pallet will remain in locked position on the mold.

If desired, a suitable spring may be employed to assist in moving the swinging pallet carrying frame outwardly to a position to receive another pallet after the delivery of a pallet to each mold.

Thus it will be seen that the pallet carrier 57 is first swung to a position into the path of movement of the mold, after which the gear wheel 48 by engagement with the rack 49, rotates the stub shafts 39 to cause the fingers 43 to engage the pallet on said carrier, a further rotary movement of the mold with the casing 10, serving to elevate the pallet carrier so that the mold may pass under the same and allow the swinging frame and pallet carrier to return to the position shown in Fig. 8 of the drawings.

*Transferring mechanism.*—In order to transfer the blocks from the molds 32 to suitable trucks 96 for delivery to the drying racks, there is provided a receiving stand or table including spaced angle bars 97 to which are pivotally connected at 98, the upper ends of the spaced levers 99, the lower ends of the levers 99 being pivotally connected at 100 with a floor or other suitable support so as to permit the receiving stand or table to be swung laterally and downwardly and thus deliver the molded product to the adjacent truck 96. The forward levers 99 are each preferably formed in two sections having their inner ends pivotally connected by a knuckle joint 101 so as to permit the free ends of the bars 97 constituting the receiving table, to be pressed downwardly to a position below the platform of the truck during the transfer of the brick or block from the mold 32 to said truck.

Pivotally mounted on the floor or other suitable support between the forward and rearward sets of levers 99, is an auxiliary lever 102 having its upper or free end provided with a laterally extending pin or roller 103 and its intermediate portion connected through the medium of a link or lever 104 with one of the rear levers 99 so that any forward movement imparted to the auxiliary lever 102 will cause a corresponding forward movement of the rear levers 99. The pin or roller 103 extends into the path of movement of the trip arms 55 of the molds, said trip arms 55 being provided with recesses or sockets 105 adapted to engage the pins 103 and move the auxiliary levers and angle bars 97 from the position shown in Fig. 1 to the position shown in Fig. 13, and in which position the molded product carried by the angle bars 97 of the receiving table, will be deposited on the platform of the adjacent truck.

Supported in any suitable manner on the main frame 6 and preferably disposed to one side of the receiving stand or table, is a segmental rack 106 which engages the teeth on the gear wheel 48 when the latter register with the rack and serve to rotate the actuating wheel 41 of said mold in the opposite direction, thereby to release the clamping fingers 43 from engagement with the pallet and permit the pallet carrying the molded product to rest on the angle bars 97 of the receiving table or stand.

Pivotally connected at 107 with one of the rear levers 99, is a lever 108 having its free end provided with an inwardly extending arm 109, which latter constitutes a pawl and is adapted to engage ratchet teeth 110 formed in the adjacent walls of the truck 96 thus to move the truck in a forward direction with a step by step movement as the molded bricks or blocks are successively deposited on said truck.

If desired, a train of said trucks may be connected in any suitable manner so that after one truck has been filled another truck will be automatically moved to a position beneath the casing 10 to receive its load in a similar manner.

The operation of this portion of the mechanism is as follows: After the molds have been filled by the chutes 27 and the pallets positioned thereon, the side walls of the molds are actuated to effect the compression of the concrete in the molds in the manner before stated, after which the molds are revolved by the action of the arms 51 and rollers 52 so that when the mold has reached a position beneath the bottom of the casing 10, the molds will assume the reversed position shown in Fig. 1 of the drawings, that is to say, with the pallet side of the mold facing the truck. As each mold approaches the bottom of the casing 10, the gear wheel 48 engages the teeth on the segmental rack 49 and rotates the gear wheel to release the clamping fingers 34 and thus permit the molded block together with the pallet to be deposited on the receiving stand or table, a further rotary movement of the casing 10 causing the recess or pocket 105 to engage the roller 103 and move the auxiliary lever in a forward and downwardly direction, and in doing so, causes the rod 104 to exert a forward pull on the rear levers 99 and thus break the knuckle joint 101 so that the free

ends of the bars 97 of the receiving stand or table will be swung downwardly on opposite sides of the adjacent trucks 96 to the position shown in Fig. 13 of the drawings, carrying with them the pallet and molded product, the truck 96 being moved forward the distance of a single block during the depression of the receiving stand or table so that the gear wheel 48 of the next succeeding mold, by engagement with the rack 106, will deposit the brick or block in said mold on the truck 96 at the rear of the block already deposited thereon, this operation being continued as long as the casing 10 is in motion.

A suitable coil spring 111 is operatively connected with the auxiliary lever 102 and one of the adjacent rear levers 99 for the purpose of automatically returning the receiving stand or table to normal position after each block has been deposited on the adjacent truck. A similar spring 112 also forms a connection between the auxiliary lever 102 and one of the sections of the forward lever 99 in order to cause said sections to assume an upright position after each depression of the receiving table.

From the foregoing description, it will be seen that there is provided a strong, durable and thoroughly efficient machine, in which the several materials are thoroughly mixed and deposited in predetermined quantities in suitable molds designed to receive the mixture, the mixture being subsequently compressed into block form and said blocks automatically deposited on a receiving truck for delivery to the drying racks at one operation of the machine.

Having thus described the invention, what is claimed as new is:

1. In a molding machine, a container, a mold carried by and movable with the container, means for charging the mold, means for delivering a pallet to the mold after the latter is charged, and means for releasing the pallet to permit the discharge of the molded product.

2. In a molding machine, a rotary container, a mold carried by and mounted for rotation with the container, means for automatically charging the mold at predetermined intervals, means for automatically delivering a pallet to the mold, and means for releasing the pallet to permit the discharge of the molded product.

3. In a molding machine, a rotary container, a mold carried by and movable with the container, means for charging the mold at predetermined intervals, means for delivering a pallet to the mold, means for clamping the pallet on the mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

4. In a molding machine, a rotary container, a mold carried by and movable with the container, means for charging the mold at predetermined intervals, means for compressing the material within the mold, means for delivering a pallet to the mold, means for clamping the pallet in position on said mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

5. In a molding machine, a rotary container, a mold carried by and movable with the container, means for charging the mold, means for delivering a pallet to the mold, means for reversing the mold, and means for releasing the pallet to permit the discharge of the molded product.

6. In a molding machine, a rotary container, a mold carried by and movable with the container, means for charging the mold at predetermined intervals, means for delivering a pallet to the mold, means for clamping the pallet in position on the mold, means for compressing the material within the mold, means for reversing the position of the mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

7. In a molding machine, a rotary container, a mold carried by and movable with the container, means for automatically charging the mold at predetermined intervals, means for delivering a pallet to the mold, means for reversing the mold, means for releasing the pallet, and means for transferring the molded product from the mold to a receiving truck.

8. In a molding machine, a container, a mold carried by and movable with the container, means for discharging a portion of the contents of the container into the mold at predetermined intervals, means for delivering a pallet to the mold, means for clamping the pallet in position on the mold, means for reversing the mold, and means for transferring the molded product from the mold to a receiving truck when the clamping means is released.

9. In a molding machine, a container, a mold movable with the container, a pallet carrier, means for delivering a pallet to said carrier, means for operating the carrier to deliver a pallet to the mold and means for locking the pallet in position on the mold.

10. In a molding machine, a container, a mold carried by and movable with the container, means for discharging a portion of the contents of the container into the mold, a pallet carrier, means for delivering a pallet to said carrier, means for locking the pallet on the mold, means for compressing the material in the mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

11. The combination with a rotary mixer, of a mold carried by and movable with the mixer, and means for transferring the material from the mixer to the mold.

12. The combination with a rotary mixer, of a mold movable with the mixer, means for transferring material from the mixer to the mold, a pallet carrier, means for operating the carrier to deliver a pallet to the mold, means for delivering a pallet to the carrier, means for clamping said pallet in position on the mold, means for compressing the material within the mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

13. The combination with a rotary mixer, of a plurality of molds carried by and movable with the mixer, means for transferring the material from the mixer to the molds, means for successively delivering a pallet to each mold, means for clamping the pallets in position on the molds, means for releasing the pallet clamping means to permit the discharge of the molded product.

14. The combination with a rotary mixer, of a mold secured to and movable with the mixer and capable of independent rotary movement, and means for transferring the material from the mixer to the mold.

15. The combination with a rotary mixer, of a plurality of molds mounted for rotation with the mixer and each having an independent rotary movement, means for transferring the material from the mixer to the molds, means for successively delivering a pallet to the molds, means for locking the pallets in position on the molds, means for compressing the material within the molds, and means for reversing the molds to permit the discharge of the molded product.

16. The combination with a mixer, having a discharge spout, of a mold mounted for rotation with the mixer and having an independent rotary movement, means for automatically discharging the material through the spout into the mold, means for delivering a pallet to the mold, means for clamping the pallet in position on said mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

17. The combination with a mixer having a discharge spout provided with a pivoted closure, of a mold mounted for rotation with the mixer and having an independent rotary movement, means for automatically moving the pivoted closure of the spout to open position to permit the discharge of the contents of the spout into the mold, means for positioning a pallet over the mold, means for clamping the pallet in position on the mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

18. The combination with a rotary mixer having a plurality of tangentially disposed discharge spouts, of a plurality of molds mounted for rotation with the mixer and each having an independent rotary movement, means for discharging a portion of the contents of the mixer through said spouts into the molds, means for successively delivering a pallet to the mold, means for clamping the pallets in position in the molds, and means for releasing the pallet clamping means to permit the discharge of the molded product.

19. The combination with a rotary mixer having a tangentially disposed discharge spout provided with a pivoted closure, a mold mounted for rotation with the mixer and having an independent rotary movement, means disposed in the path of movement of the pivoted closures for automatically opening the same to permit the discharge of the material through the spout into the mold, means for delivering a pallet to the mold, means for clamping the pallet in position on said mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

20. The combination with a rotary mixer having a discharge spout, a mold carried by the mixer and having an independent rotary movement, a cam, means for discharging the material from the mixer to the mold, means for delivering a pallet to the mold, means for clamping the pallet in position on the mold, means carried by the mold and engaging the cam for rotating the mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

21. The combination with a rotary mixer having a discharge spout, of a mold carried by the mixer and having an independent rotary movement, a cam, means for delivering a pallet to the mold, means for locking the pallet in position on said mold, an arm carried by the mold and engaging the cam for reversing the mold, and means for releasing the pallet clamping means when the mold is in reversed position to permit the discharge of the molded product.

22. The combination with a rotary mixer having a discharge spout provided with a pivoted closure, a trip finger carried by the spout and extending across the closure, a mold carried by the mixer and having an independent rotary movement, means disposed in the path of movement of the trip finger for moving the pivoted closure to open position thereby to permit the discharge of the material from the mixer to the mold, means for delivering a pallet to the mold, means for clamping the pallet in position on said mold, means for compressing the material in the mold, means for reversing the position of the mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

23. The combination with a rotary mixer having a discharge spout, a mold carried by the mixer and having an independent rotary

movement, a swinging pallet carrier for delivering a pallet to the mold, means for clamping the pallet in position on the mold, and means for feeding the pallets to the carrier.

24. The combination with a rotary mixer having a discharge spout, a mold secured to the mixer in advance of the spout and having an independent rotary movement, means for delivering a pallet to the mold, means for clamping the pallet in position on said mold, means for compressing the material in the mold, means for rotating the mold to reversed position, a rack, and a gear wheel operatively connected with the pallet clamping means and adapted to engage the rack for moving said pallet clamping means to released position to permit the discharge of the molded product.

25. The combination with a rotary mixer having a discharge spout, of a mold carried by the mixer and capable of independent rotary movement, means for delivering a pallet to the mold, means for clamping the pallet in position on the mold, means for rotating the mold, a receiving table, and means for releasing the pallet clamping means to permit the transfer of the molded product to the receiving table.

26. The combination of a rotary mixer having a discharge spout, brackets secured to the mixer, a mold journaled in the brackets, a cam, means for delivering a pallet to the mold, means for clamping the pallet in position on the mold, a gear wheel operatively connected with the pallet clamping means, an arm extending laterally from the mold and engaging the cam for rotating the mold, a receiving table, and a rack arranged adjacent the receiving table and adapted to engage the gear wheel for actuating the latter to release the pallet clamping means, thereby to permit the transfer of the molded product to the receiving table.

27. The combination with a rotary mixer having a discharge spout, a mold carried by the mixer and having an independent rotary movement, means for delivering a pallet to the mold, means for clamping the pallet in position on the mold, a receiving table, means for rotating the mold to reversed position, means for releasing the pallet clamping means to permit the transfer of the molded product to the receiving table, and means carried by the mold for depressing the table, thereby to transfer the molded product from said table to a receiving truck.

28. The combination with a rotary mixer having a discharge spout, a mold mounted for rotation with the mixer and capable of independent rotation, a carrier for delivering a pallet to the mold, an endless conveyer for delivering the pallets to the pallet carrier, means for locking the pallet in position on the mold, means for compressing the material in the mold, means for reversing the mold, and means for releasing the pallet clamping means to permit the discharge of the molded product.

29. The combination with a rotary mixer, having a discharge spout, a bracket secured to the mixer, a mold mounted for rotation in the brackets and provided with movable walls, a rack, a gear wheel operatively connected with the walls of the mold and adapted to engage the rack for actuating the walls to compress the material in the mold, means for delivering a pallet to the mold, a receiving table, a cam, means carried by the mold and engaging the cam for reversing the position of the mold, and a rack arranged near the receiving table and adapted to engage the gear wheel for releasing the pallet to permit the discharge of the molded product on the receiving table.

30. The combination with a rotary mixer having a plurality of discharge spouts each provided with a pivoted closure, trip fingers carried by the discharge spouts and extending across the pivoted closures, a plurality of molds secured to the mixer and having an independent rotary movement, means disposed in the path of movement of the trip fingers for releasing the pivoted closures of the spouts to permit filling of the molds, a pallet carrier adapted to deliver a pallet successively to the several molds, means for clamping the pallets in position on the mold, a receiving table, means for rotating the molds to reverse the position thereof, means for successively releasing the pallet clamping means to permit the discharge of the molded product on the receiving table, and means for delivering the pallets to the pallet carrier.

31. The combination with a mold, of a pallet carrier mounted for oscillatory movement above the mold, means for delivering a pallet to the carrier, and means for locking the carrier in position to receive the pallet from the delivering means, said pallet carrier being movable to a position above the mold when the locking means is released.

32. The combination with a supporting frame, of a mold secured thereto, guide arms secured to the frame, an endless pallet conveyer, a pallet carrier mounted for oscillatory movement above the mold, and movable to a position to receive the pallet from the conveyer, and means for locking the pallet carrier in engagement with the guides during the transfer of the pallet from the conveyer to the carrier, said carrier being movable automatically to a position above the mold when released from the guides.

33. The combination with a supporting frame, of a mold secured to said frame, a pallet conveyer mounted for rotation on the frame, a yieldable supporting pallet carrier mounted for oscillation above the mold, and

means for locking the carrier in position to receive the pallet from the conveyer, said carrier being movable automatically to a position above the mold when the locking means is released.

34. The combination with a supporting frame, of a mold secured to the frame, a pallet carrier mounted for swinging movement above the mold and provided with spaced bars, catches secured to the bars, an endless conveyer, a pallet carried by the conveyer and provided with guide flanges having recesses formed therein for the reception of the spring catches of the carrier, and means for supporting the pallet carrier in position to receive the pallet from the conveyer, said carrier being movable automatically to a position above the mold after a pallet is deposited thereon.

35. The combination with a supporting frame, of a mold secured to the frame, guides disposed on opposite sides of the mold, one of said guides being provided at its opposite ends with locking recesses, a pallet conveyer, and a pallet carrier mounted for oscillation above the mold and provided with a transverse shaft adapted to enter one of the recesses in said guide for supporting the carrier in position to receive the pallet from the conveyer, said shaft being adapted to engage the other recess in the guide for locking the pallet carrier in position above the mold.

36. The combination with a supporting frame, of a mold secured thereto, a pallet conveyer, a swinging frame mounted for oscillation on the supporting frame, a pallet carrier forming a part of the swinging frame, means for normally exerting a yieldable downward pressure on the pallet conveyer, and means for locking the pallet carrier in position to receive a pallet from the conveyer, said pallet being movable automatically to deliver a pallet from the conveyer to the mold.

37. The combination with a supporting frame, of a mold secured thereto, a pallet conveyer, and a pallet carrier mounted for oscillation above the mold and provided with means for supporting the pallet in position on the carrier.

38. The combination with a supporting frame, of a mold secured to the frame, a pallet carrier yieldably supported for oscillatory movement above the mold, and comprising spaced bars adapted to receive a pallet between the same, levers pivotally mounted on the bars and provided with stop fingers for engagement with a pallet, guides secured to the supporting frame and provided with a terminal notch for locking the pallet carrier in position to receive a pallet from the conveyer, said carrier being movable automatically to a position above the mold when released from the locking recess.

39. The combination with a supporting frame, of a mixer mounted for rotation on said frame, a mold carried by the mixer, a pallet carrier yieldably supported for oscillatory movement above the mold, means for delivering a pallet to the carrier, and means for locking the carrier in position above the mold, said carrier being movable upwardly by engagement with the mold, thereby to disengage the locking means and permit the carrier to be swung to a position above the pallet delivering means.

40. The combination with a rotary mixer, of a mold carried thereby and mounted for independent rotation, means for delivering a pallet to the mold, means for clamping the pallet in position on the mold, means for rotating the mold to reverse the position thereof, a yieldable supported receiving table, and means for simultaneously releasing the pallet clamping means and depressing the receiving table to permit the transfer of the molded product from a mold to a receiving truck.

41. The combination with a rotary mixer, of a mold movable with the mixer and having an independent rotary movement, means for clamping a pallet in position on the mold, means for rotating the mold to reverse the position thereof, a depressible receiving table disposed beneath the mixer and provided with a laterally extending pin, means for releasing the pallet clamping means, and a yieldable supporting arm carried by the mold and adapted to engage the lug of the receiving table, thereby to depress the latter and deliver the molded product from the table to a receiving truck.

42. The combination with a rotary mixer, of a mold carried by the mixer and mounted for independent rotation, means for delivering a pallet to the mold, means for clamping the pallet in position on said mold, means for compressing the material in the mold, means for rotating the mold to effect the reversal thereof, a receiving table, means for releasing the clamping means to permit the deposit of the molded product on the receiving table, and means carried by the mold and adapted to engage the receiving table for depressing the latter to permit the transfer of the molded product from the table to a receiving truck.

43. The combination with a rotary mixer, of a mold mounted for rotation with the mixer and having an independent rotary movement, means for delivering a pallet to the mold, means for clamping the pallet in position on the mold, means for rotating the mold to effect the reversal thereof, a receiving table for transferring the molded product to a receiving truck, means for releasing

the pallet clamping means when the mold is in reversed position, and means carried by the mold for simultaneously depressing the receiving table and moving the truck forward with a step by step movement.

44. The combination with a rotary mixer, of a mold movable with the mixer and mounted for independent rotary movement, means for delivering a pallet to the mold, means for clamping the pallet in position on said mold, means for rotating the mold to effect the reversal thereof, a depressible table disposed beneath the mixer for delivering a block to a receiving truck, means for releasing the pallet clamping means to permit the transfer of the molded product to the receiving table, means carried by the mold for depressing the receiving table, and simultaneously moving the truck forward with a step by step movement, and means for automatically returning the table to normal position.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM D. WISE. [L. S.]

Witnesses:

A. W. FOWLER,

C. R. STONE.