A. O. DUPUY.

MOLD DUMPING MACHINE.

APPLICATION FILED MAR. 23, 1915.

1,227,764.

Patented May 29, 1917.

4 SHEETS—SHEET 1.

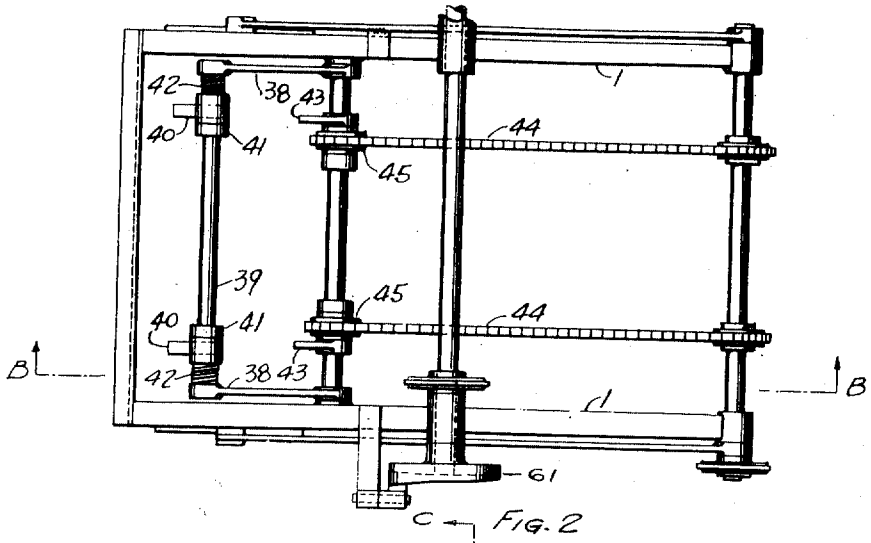


FIG. 2

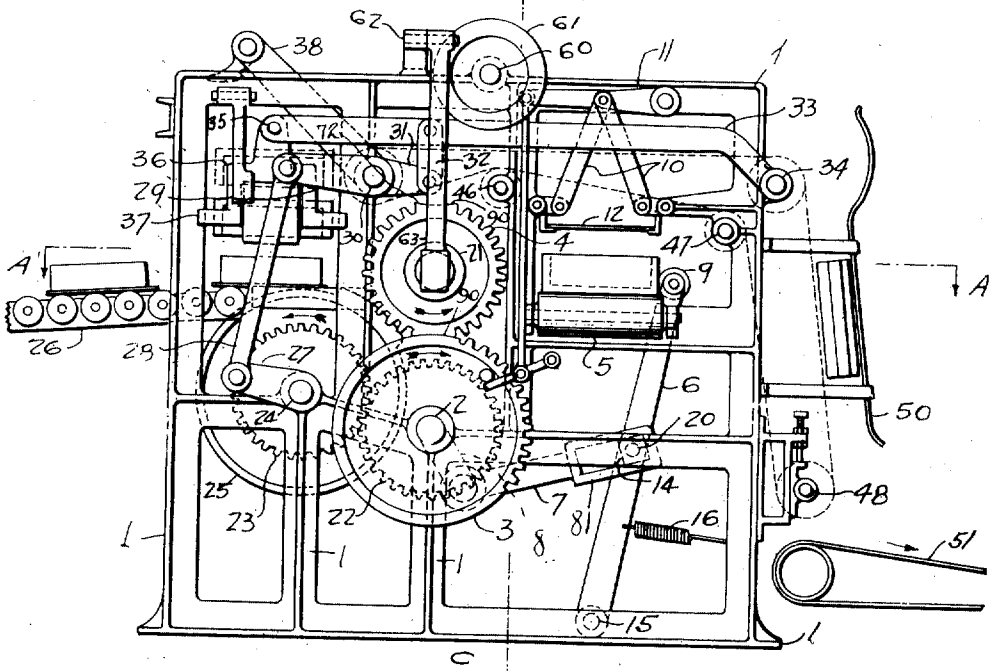


FIG. 1.

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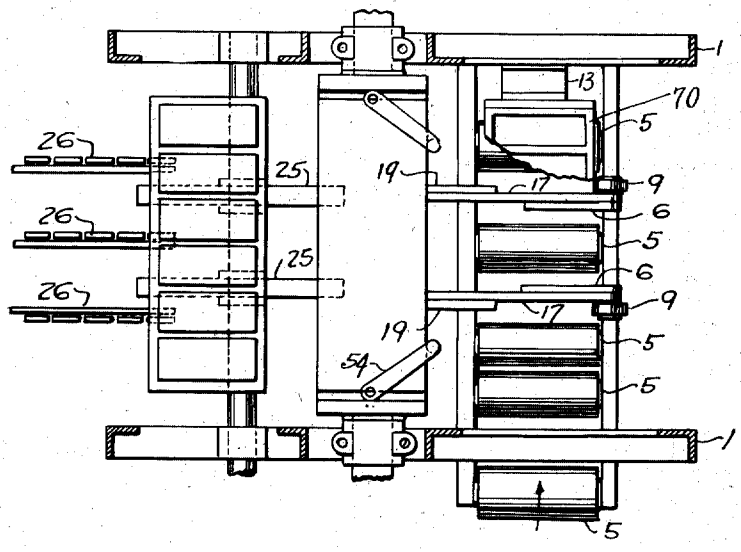


FIG. 3.

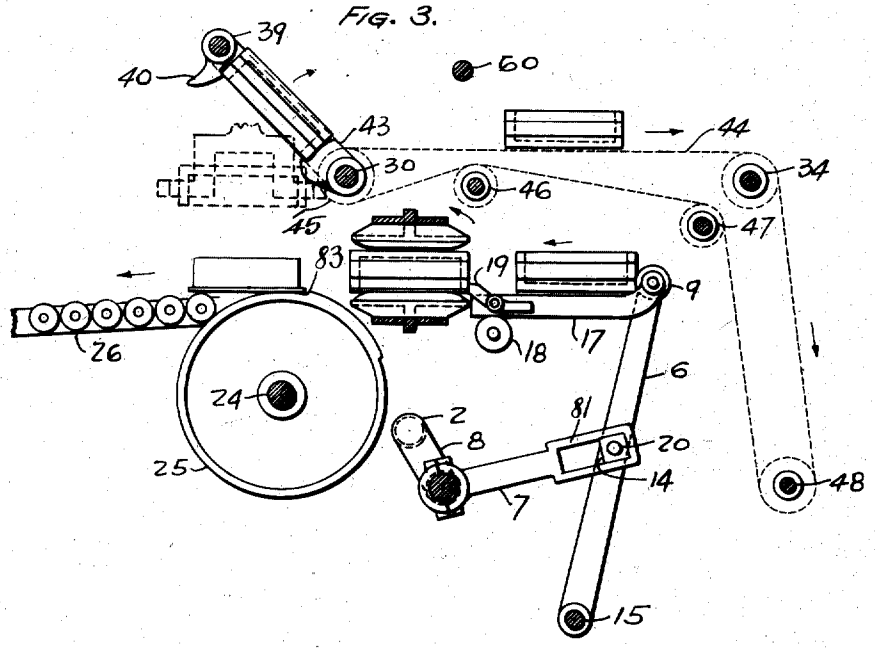


FIG. 4.

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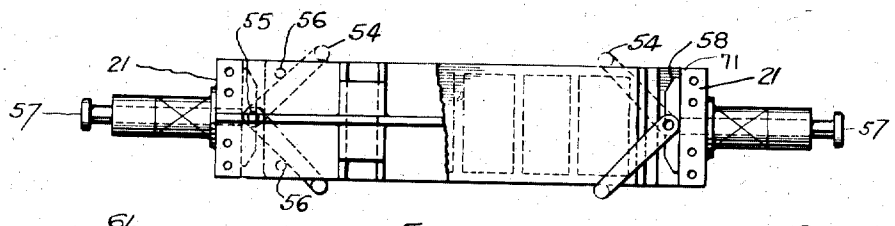


FIG. 5.

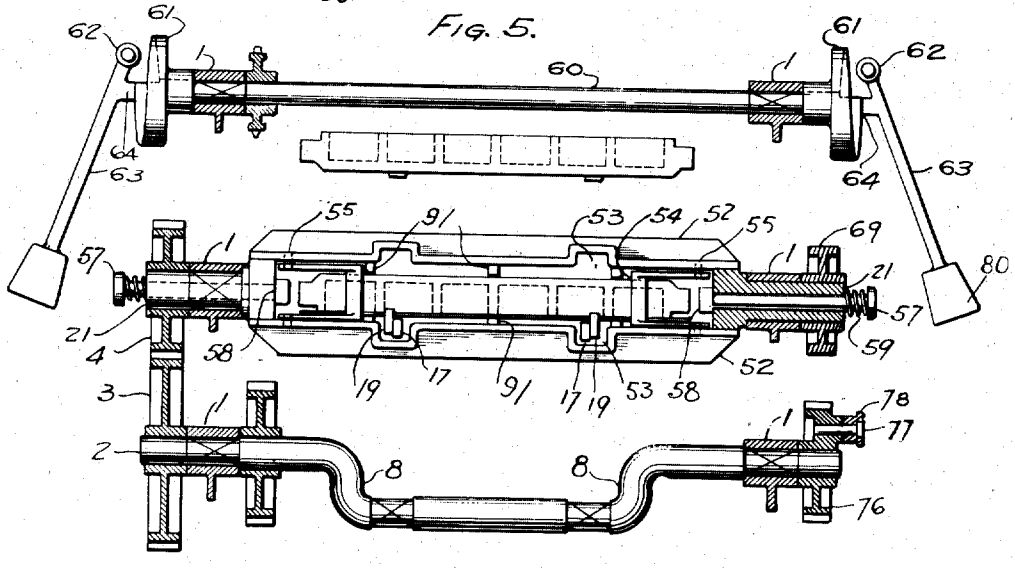


FIG. 6.

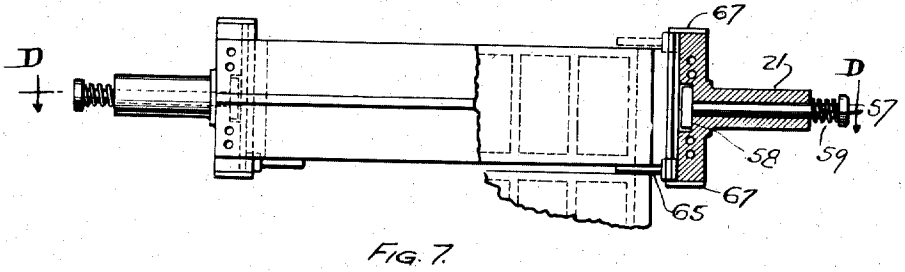


FIG. 7.

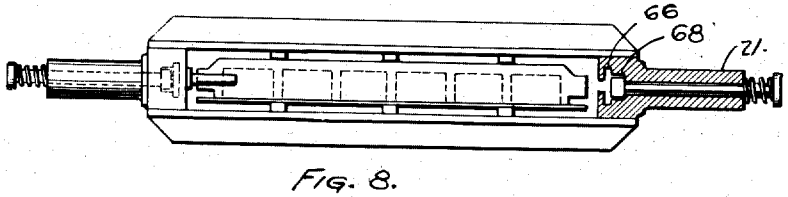


FIG. 8.

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4 SHEETS—SHEET 4.

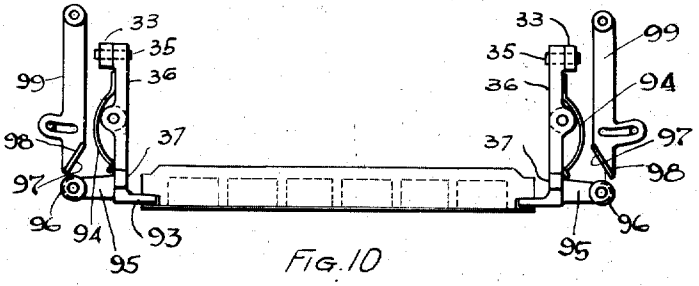


FIG. 10

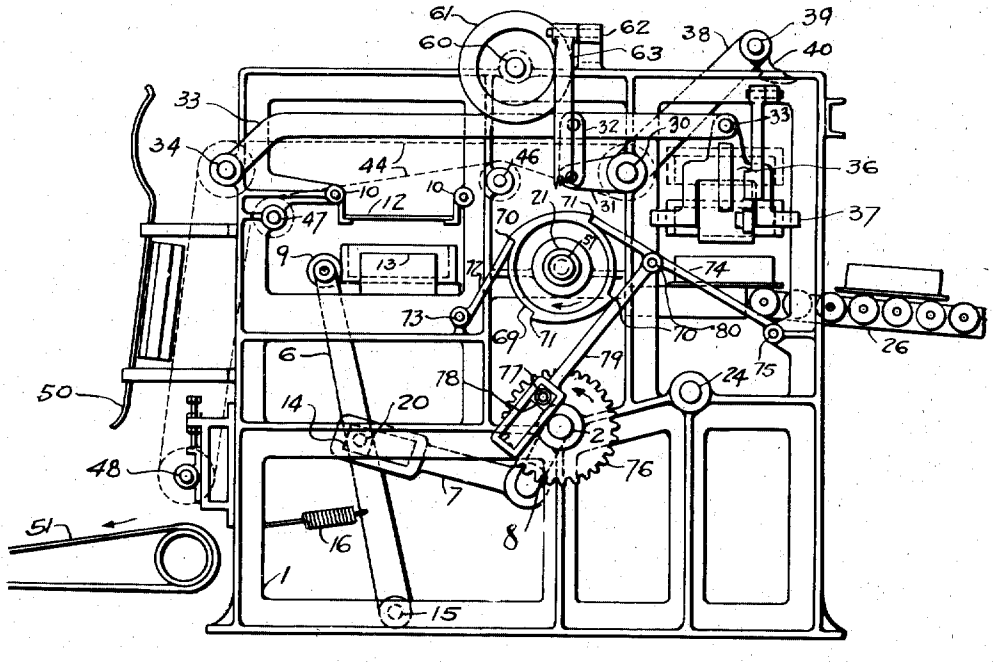


FIG. 9.

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UNITED STATES PATENT OFFICE.

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MOLD-DUMPING MACHINE.

1,227,764. Specification of Letters Patent. Patented May 29, 1917.

Application filed March 23, 1915. Serial No. 16,371.

To all whom it may concern:

Be it known that I, ARTHUR O. DUPUY, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Mold-Dumping Machines, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present improvements relate in general to a machine for handling molds after removal from a brick press, and more particularly to a machine of this character which will be lighter and less complicated than the only ones which have been produced up to this time. It is an extremely difficult matter to construct a machine of this character which will not be highly complicated and expensive on account of the large number of operations which must be performed in receiving the filled mold from the press, placing a pallet upon the same, inverting it, drawing the mold from off the bricks, removing the latter on their pallet, and returning the empty mold to a sander from which it goes again to the brick press.

In the present machine all of the operations named are performed in a single vertical path and by relatively few members, thus permitting the machine to be extremely compact and making it possible to utilize a minimum amount of shafting and connections between the parts performing the various operations. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:—

Figure 1 is a side elevation of the machine; Fig. 2 is a plan view but showing only part of the mechanism; Fig. 3 is a second plan taken on the plane indicated by the line A—A in Fig. 1; Fig. 4 is a sectional elevation on the line B—B in Fig. 2, this figure showing merely the shafting and some of the connections between the same; Fig. 5 is a plan view of the inverter mechanism or spider; Fig. 6 is a section on the line C—C in Fig. 1, the frame being omitted; Fig. 7 is a plan view of a modified type of inverting mechanism; Fig. 8 is a longitudinal view partially in section, the plane of the section being indicated by the line D—D in Fig. 7; Fig. 9 is an elevation of the other side of the machine from that shown in Fig. 1; and Fig. 10 is an end elevation of the hoisting mechanism.

The machine comprises a suitable frame built up of suitable members 1, in which there is rotatably mounted upon a horizontal axis a main driving shaft 2. The molds when brought from the press, enter the machine upon a conveyer consisting of spaced rolls 5 mounted at the right end of the machine as shown in Figs. 1 and 3. The rollers 5 which are within the machine, are not driven, but are merely free to rotate, and the mold box or mold 70 is stopped in the desired position upon these rolls by contacting a flange 13 attached to the frame. The mold is then positioned transversely of the machine and adjacent to the inverting mechanism. The conveyer for transporting the molds from the brick press to the present machine will coöperate with the rolls 5 but is not here shown.

The inverting mechanism comprises a laterally open receptacle 21, adapted to receive longitudinally therein a single mold. This receptacle or spider 21 is rotatably mounted about a horizontal axis, being attached to suitable bearings which are mounted in the frame 1. The spider carries a gear 4 engaged by a gear 3 on the main driving shaft 2. Of these two gears the gear 3 is a mutilated gear having teeth extending but part way around its periphery, and being formed smooth around the rest of its surface to contact one of the two smooth portions 90 on the gear 4. The shaft 2, and hence the gear 3, are continuously driven, and the motion given to the spider will therefore be one half revolution for every complete revolution of the shaft 2, with a certain interval between the half revolutions to permit of the introduction and removal of the mold held therein. The smooth portions of the gears 3 and 4 snugly contact each other, while the receptacle 21 is at rest, and prevent the same

from movement, but in order to make sure that there is no oscillation or movement in any way by the receptacle at this time, locking means are provided. Various types of mechanism for this purpose may be used, the preferred one here illustrated comprising a disk 69, attached to the receptacle concentric with the bearing for the same, this disk being provided with a number of spaced notches or shoulders 70 and 71. When the receptacle is brought to rest in the position illustrated in Figs. 1 and 9, the two upper notches 70 and 71 are engaged respectively by a gravity arm 72 and a power actuated arm 74. The engagement of these arms with the disk effectively prevents the slightest movement by the receptacle. The arm 74 is connected to a second crank or arm 79 having a sliding connection with the block 78 which is attached by the pin 77 to a gear 76 attached to the main driving shaft 2. This mechanism is so timed that the arm 74 will be lifted out of engagement with the notch 71 in the disk 69, just prior to the initial movement of the receptacle. The gravity arm 72 will, of course, ride over the surface of the disk and will again latch when the receptacle is brought to rest behind the second of the two notches 70. By providing a locking mechanism which will automatically and securely engage the receptacle at every stop the latter is restrained from oscillation, which in prior machines has been so destructive to the bricks in the molds.

The receptacle 21 is provided with longitudinally disposed plungers 57 which are normally maintained in the position illustrated in Fig. 6 by means of springs 59. These plungers extend into the chamber formed in the spider, at which point they are provided with bumping heads 58 adapted to contact and bump the ends of the molds 6 held in the receptacle. Above the shaft 2 and the receptacle 21 there is a constantly driven shaft 60 provided at either end with cams 61. Pivotally mounted adjacent to each of such cams is an arm 63, provided at its lower end with a bumping hammer 80, and having adjacent to its axis a contact projection 64 adapted to be engaged by the cam upon rotation of the shaft 60. The rotation of the shaft therefore causes the engagement of the cam 61 and the contact shoulder 64 on the hammer, thus raising each of the arms 63 into the position shown in Fig. 6, when they are spaced a certain distance from the plungers 57. As the highest point in the cam passes the shoulder 64, the weight of the hammer 80 will cause the same to fall, striking a sharp blow on the ends of the plungers 57 and driving the latter sharply against the ends of the mold, thus effectively loosening the bricks therein from the compartments of the mold. This bumping operation is timed to take place immediately following the positioning of the filled mold box within the receptacle, and before the same has been inverted. The bumping takes place during a necessary stop in the progress of the mold through the machine, thus economizing both time and space, as otherwise room would have to be found on some conveyer to momentarily stop the mold for the bumping. Furthermore, the molds are perfectly positioned by mechanism to be presently described, so that the blows received in the bumping are directed to the exact points desired. It will be understood that in ordinary construction it is practically impossible to obtain simultaneous striking by the two hammers, since very slight inaccuracies in the positioning of the cams which always occur are greatly multiplied at the ends of the hammers. It is for this reason that no particular effort is made to time the cams to operate successively, since there is always a sufficient time interval, even though slight, between the operation of the two hammers.

The mold is moved into the receptacle from off the rolls 5 by means of a pusher comprising pivoted arms 6 which are driven from the main shaft 2 by means of cranks 7 and 8, the former having a lost motion connection with the arm 6 by means of a square guide-block 14 attached to the arm 6 by a pin 20 sliding in the open frame 81 of the arm 7. Attached to the upper ends of the arm 6 are longitudinally extending members 17, operating at their other ends over guide rollers 18, and provided with mold engaging plungers 19. These latter are normally maintained in the position shown in Fig. 4, with their mold contacting ends held in position to engage a mold by the weight of the other portion. In this position the members 19 have just been operated to force the mold out of the receptacle. Upon the return of the arm 6 to the outermost position, the upper ends of the arms 19 will contact the mold, but will not engage the same, as they are pivoted to swing beneath the mold on the conveyer upon the return of the pusher to its initial position.

Prior to the introduction of the mold into the receptacle, a pallet is placed upon the top of the open mold box, the pallet placing mechanism comprising pivoted arms 10 operated by means of a bell-crank lever 11. The means for operating this pallet placing mechanism and the means for feeding pallets thereto, need not be further described.

The pallet placing mechanism will be operated as each mold is being conveyed into the inverting receptacle, the operation being so timed that a pallet will be dropped on each mold slightly ahead of the same, that is one side of the pallet extending over that side of the mold box which is adjacent to

the receptacle. As the mold and pallet are moved into the receptacle, the pallet first contacts the pivoted arms 54 and is thereby brought into alinement with the inner side of the mold when the latter is positioned centrally in the receptacle. In this way it is possible to avoid the difficulty which has been so often experienced in similar machines caused by improper placing of the pallets upon the molds.

It is very desirable in all such machines to properly position the mold in the receptacle in order to prevent movement during inverting, and this is particularly necessary in the present device, since the spider is built to receive a single mold and to invert the same about its own axis. As the mold is forced into the receptacle by the pusher, it engages pivoted arms 54, mounted one at either end of the receptacle, and forces these arms through the open space within the receptacle until they contact the stop pins 56 mounted upon the other side of the receptacle. These stops are so placed that when contacted by the arms 54, the latter hold the mold centrally in the receptacle, and in such position that the longitudinal central line passing through the center of gravity of the mold is in line with the axis of the receptacle, thus requiring a minimum amount of power to invert the receptacle and mold, since both are being turned on their own axes. During the inversion of the mold the arms 54 hold the same in position, and when this operation has been completed and the mold has rotated through a half revolution, the receptacle is closed at the entrance side and is open at its opposite side, thus permitting the removal of the mold. For continuous operation no other means for securing this removal would need to be provided, since the incoming mold will engage the arms 54 and will force the latter against the mold that is in the receptacle, thus removing the same and sliding the mold box out onto a suitable conveyer which will presently be described. In order to secure removal of the mold from the inverter under all conditions, even when no succeeding mold is brought up to actuate the arms 54 to remove the mold in the inverter, the plungers 19 are provided for contacting the mold and forcing the same out of the receptacle 21 as already described. It will be noted that there are but one pair of the arms 54 although in Fig. 5 I have shown the same in their two limiting positions. The mold is held quite snugly in the receptacle by means of guides 91 upon the upper and lower surfaces of the chamber, and is thus prevented from movement while in the receptacle, which would tend to injure the formed bricks and possibly crack them.

In Figs. 6 and 7 there is shown a modified type of inverting mechanism in which I use the same laterally open receptacle, the modification being in the use of stops 65, to limit the position of the mold. These stops 65 are slidably mounted in transversely extending ways or guides 66, formed at either end of the receptacle, and serve the same purpose in a slightly different manner, as the arms 54 and stops 56 in my preferred receptacle. In Fig. 6 there is shown at the top of the figure and at the right, and in dotted outline, a second stop 65 which is merely the other limiting position of this stop.

By placing the pallets slightly ahead of the molds, that is with one side overlapping the forward side of the mold, the pallets are brought first into contact with the arms 54 and are thus straightened and alined with the molds, so that when inverted the bricks will lie properly on the pallet.

Mounted parallel to the main driving shaft 2, is a second driving shaft 24, driven from the shaft 2 through gears 22 and 23 mounted respectively on the two shafts. The shaft 24 carries at either end a large cylindrical cam 25, the two cams being provided at corresponding points with shoulders 83 adapted to engage the side of the pallet when the latter has been moved from the receptacle onto the cylindrical surface of the cams. The rotation of these cams therefore causes the removal of the pallets onto a gravity conveyer 26. This conveyer 26 will lead to the drying rooms, or rather to the conveyer which is used to carry the pallets and the bricks to the rooms where they are to be dried, and it is thus necessary to remove the mold box from the bricks and pallet before the latter reach the conveyer 26.

The mold hoisting mechanism comprises two spaced pivoted arms 36 to which are pivotally attached other arms 37 provided with inwardly extending fingers 93 adapted to be passed beneath the handles of the mold. These arms 37 are normally maintained in alinement with the members 36 by means of spring members 94 operating as illustrated in Fig. 10. Extending outwardly from each of the two arms 37 is a short rod 95 provided on its outer end with a roller 96. As the hoist is raised these rollers contact oblique faces 97 on flanges 98 on pivoted guides 99 mounted one on each side of the hoist and force the guides away from each other and out of the path of movement of the members 96. After the mold has been removed from the hoist and the latter is dropped, the rollers 96 engage on the other sides of the flanges 98 and thus the arms 37 are moved outwardly, enabling them to swing past the ends of the mold which has been passed between the members of the hoist. After the rollers have passed

below the flanges 98, the springs 94 cause them to snap back and engage beneath the handles of the mold as illustrated in Fig. 10. The operation of the hoist is secured through the arms 33 pivoted at 34 and connected to the arms 36 by studs 35. The arms 33 are alternately raised and lowered by reason of their attachment to a link 32 attached to one end of a crank 31 on a shaft 30, this crank being operated by the rod 28 connected to the crank 27 on the driving shaft 24.

After the mold has been raised in this hoist, it is brought into the position indicated in dotted lines in Fig. 1, when it will be engaged by a cam 43 mounted on a transverse shaft 30, and by a cam 40 attached to an arm 38 which is attached to the shaft 30, and is driven thereby. There are two of the cams 43 attached to the shaft 30, and similarly two arms 38 which are connected by means of a shaft or rod 39 upon which the cams 40 are rotatably mounted, but are held from rotation by means of connecting springs 42 which permit a slight give on the part of the cams 40, when first engaging the mold, thus absorbing the shock of this engagement. The cams 40 and 43 thus engage the mold when it has been lifted to the top of the hoist, and swing over the mold, dropping it from between the two cams when the arms 38 pass the vertical. The molds, when thus dropped, fall upon a conveyer 44 operated by sprockets 45 on the shaft 30, and over other sprockets mounted on the shaft 34. This return conveyer is directly above and in the same plane as the inverting mechanism, the hoist, pallet placing mechanism and the conveyer for removing the pallets with the bricks. The path of the mold after entering the machine is thus a roughly circular one, all parts of which lie in the same plane, thus permitting the machine to be made in a very compact manner, and securing great simplicity of driving connections between the various operating shafts. The conveyer 44 passes over the sprockets on the shaft 34 and down to other sprockets mounted upon a lower shaft 48, from which this conveyer will pass back over other sprockets 46 and 47 and the sprockets on the shaft 30.

At the discharge end of the machine there is mounted an inclined guideway 50 with which the conveyer 44 coöperates in the following manner: The mold boxes are brought by the conveyer against the upper curved end of the guideway 50, the molds when brought into this position naturally sliding or falling down this guideway onto the conveyer 51, mounted beneath the same. The conveyer 44 coöperates with the guideway 50, being parallel thereto, to retard and control the descent of these mold boxes, which may be accomplished by so positioning the conveyer 44 with respect to the guideway 50 that the former exerts a certain frictional pressure against the mold, and thus prevents it from falling freely down the guideway.

My improved machine is capable of handling a greater number of molds per day than any machine heretofore made, and secures this increased capacity with a cheaper and less complicated construction than formerly. The simplicity in turn lessens the power required to drive, and makes this present machine a very practical one for the purpose.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. In a mold dumping machine the combination of a mold inverting mechanism, and means adapted to bump a mold when held therein.

2. In a mold dumping machine the combination of intermittently operated mold inverting mechanism; and bumping means adapted to bump a mold when held therein, said bumping means being timed to operate when said inverting mechanism is at rest.

3. In a mold dumping machine the combination of a mold inverting mechanism; and means adapted to bump a mold longitudinally when held therein.

4. In a mold dumping machine the combination of a mold inverting mechanism; and bumping means adapted to bump a mold therein at either end.

5. In a mold dumping machine the combination of a laterally open, rotatable receptacle adapted to receive and invert a mold; and bumping means adapted to bump such mold at either end.

6. In a mold dumping machine the combination of a rotatable receptacle adapted to receive a mold longitudinally therein; and bumping means adapted to bump such mold at either end.

7. In a mold dumping machine the combination of a rotatable receptacle adapted to receive a mold longitudinally therein; plungers in said receptacle; and means adapted to actuate said plungers against the ends of such mold.

8. In a mold dumping machine the combination of a rotatable receptacle adapted to receive a mold; a movable member mounted at either end of said receptacle; and pivoted hammers adapted, when actuated, to force said members against the ends of said mold.

9. In a mold dumping machine the combination of a rotatable receptacle adapted to receive a mold; a movable member mounted at either end of said receptacle; a pivoted

hammer mounted adjacent to each of said members, and cam mechanism adapted to actuate said hammers against said members, thereby forcing the latter against the ends of said mold.

10. In a mold dumping machine, the combination of a rotatable receptacle adapted to receive a mold; a plunger at each end of said receptacle; means normally maintaining said plungers out of contact with the ends of said mold and pivoted hammers adapted, when actuated, to force said plungers against the ends of the mold.

11. In a mold dumping machine, the combination of a rotatable receptacle adapted to receive a mold; a plunger at each end of said receptacle; resilient means normally maintaining said plungers out of contact with the ends of said mold; and pivoted hammers adapted, when actuated, to force said plungers against the ends of the mold.

12. In a mold dumping machine the combination of an intermittently operated rotatable receptacle adapted when at rest to receive a mold therein; and bumping means adapted to bump such mold and timed to operate when said receptacle is at rest.

13. In a mold dumping machine the combination of a rotatable receptacle adapted to receive a mold longitudinally therein; guides adapted to fix the position of such mold when moved into said receptacle; and means adapted to bump either end of said mold centrally thereof.

14. In a mold dumping machine the combination of a rotatable receptacle adapted to receive a mold longitudinally therein; guides adapted to fix the position of such mold when moved into said receptacle; plungers reciprocably mounted in said receptacle in longitudinal alinement with the center of such mold; and means adapted to actuate said plungers forcibly against such mold.

15. In a mold dumping machine, the combination of a pivotally mounted receptacle having a single laterally open compartment adapted to receive a mold centrally therein; and means adapted to rotate said receptacle.

16. In a mold dumping machine the combination of a laterally open receptacle adapted to receive a single mold longitudinally therein; a stop adapted to position such mold centrally in said receptacle; and means adapted to rotate said receptacle about a horizontal axis.

17. In a mold dumping machine the combination of a laterally open receptacle adapted to receive a single mold, said receptacle being pivoted about a longitudinally disposed, horizontal axis; and a stop adapted to position such mold centrally in said receptacle.

18. In a mold dumping machine the combination of a laterally open receptacle adapted to receive a single mold, said receptacle being pivoted about a longitudinally disposed, horizontal axis; pivoted arms mounted in said receptacle in the path of movement of an incoming mold; and stops adapted to limit the movement of said arms in a way to position such mold centrally in said receptacle.

19. In a mold dumping machine the combination of a laterally open receptacle adapted to receive a single mold, said receptacle being pivoted about a longitudinally disposed horizontal axis; and means adapted to stop an incoming mold in such a position that the axis of said receptacle passes longitudinally through the center of gravity of such mold.

20. In a mold dumping machine the combination of a pivotally mounted, intermittently rotated receptacle having a mold receiving chamber therein open at either side; means adapted to move a mold into such chamber from one side while said receptacle is at rest; and means adapted to engage such mold and retain the same in said receptacle during rotation.

21. In a mold dumping machine the combination of a pivotally mounted, intermittently rotated receptacle having a mold receiving chamber therein open at either side; means adapted to move a mold into such chamber from one side while said receptacle is at rest; and pivoted arms adapted to engage such mold and retain the same in said receptacle during rotation.

22. In a mold dumping machine the combination of a pivotally mounted, intermittently rotated receptacle having a mold receiving chamber therein open at either side; means adapted to move a mold into such chamber from one side while said receptacle is at rest; and means adapted to positively lock said receptacle against oscillation when at rest.

23. In a mold dumping machine the combination of a pivotally mounted intermittently rotated receptacle having a mold receiving chamber therein open at either side; means adapted to move a mold into such chamber from one side while said receptacle is at rest; and pivoted locking arms adapted to engage said receptacle and prevent oscillation of the same when at rest.

24. In a mold dumping machine the combination of a pivotally mounted intermittently rotated receptacle having a mold receiving chamber therein open at either side; means adapted to move a mold into such chamber from one side while said receptacle is at rest; a disk attached to said receptacle and provided with notches therein; and pivoted locking arms adapted to engage in such notches and prevent oscillation of said receptacle when at rest.

25. In a mold dumping machine the combination of a pivotally mounted receptacle

adapted to receive a mold therein; driving means for intermittently rotating said receptacle; locking means adapted to prevent oscillation of said receptacle when at rest; and connections between said driving means and said locking means for rendering the latter inoperative upon rotatable movement of said receptacle.

26. In a mold dumping machine the combination of a pivotally mounted receptacle adapted to receive a mold therein; driving means for intermittently rotating said receptacle; a disk concentrically attached to said receptacle and provided with notches; pivoted arms adapted to engage in said notches and prevent movement of said receptacle; and connections between said driving means and said arms adapted to disengage the latter from said disk to permit rotation of said receptacle.

27. In a mold dumping machine the combination of a pivotally mounted receptacle adapted to receive a mold therein; driving means for intermittently rotating said receptacle; a disk concentrically attached to said receptacle and provided with notches; pivoted arms adapted to engage in said notches and prevent movement of said receptacle; and lost motion connections between said driving means and said arms adapted to disengage the latter from said disk to permit rotation of said receptacle.

28. In a mold dumping machine, the combination of mold inverting mechanism; bumping means adapted to bump the molds when in said inverting mechanism; hoisting mechanism for raising the mold after inverting; and a conveyer adapted to carry said mold over said inverting mechanism and in the same vertical plane therewith.

29. In a mold dumping machine, the combination of mold inverting mechanism; a conveyer for feeding filled molds to one side of said mechanism; hoisting mechanism adapted to lift the mold from off the bricks therein after inverting; and a second conveyer mounted above said inverting mechanism and adapted to return such lifted molds through the machine in the same vertical plane as said inverting and hoisting mechanism.

30. In a mold dumping machine, the combination of mold inverting mechanism; disposed centrally in said machine; a conveyer mounted at one end of said machine for feeding filled molds to said mechanism; a hoist for lifting the molds from off the bricks after inverting; a return conveyer mounted above said inverting mechanism and in the same vertical plane therewith, said return conveyer being adapted to transport such hoisted molds to one end of said machine.

31. In a mold dumping machine, the combination of mold inverting mechanism disposed centrally in said machine; a conveyer mounted at one end of said machine for feeding filled molds to said mechanism; and provided with a vertical chute having its upper end terminating above the level of said inverting mechanism; a hoist for lifting the molds from off the bricks after inverting to the same level as the top of such chute; and a return conveyer for transporting such hoisted molds to the same end of said machine as said conveyer.

32. In a mold dumping machine, the combination of mold inverting mechanism disposed centrally in said machine; a conveyer mounted at one end of said machine for feeding filled molds to said mechanism; a return conveyer mounted vertically above said inverting mechanism and leading to said sander; and a hoist adapted to lift the inverted molds from off the bricks after inverting and place the same on said return conveyer, the mechanisms being so placed that the path of the molds is in a vertical plane through the machine.

33. In a mold dumping machine, the combination of a rotatable receptacle adapted to receive a mold therein; and feeding mechanism adapted to supply molds thereto; said mechanism including a swinging arm and mold engaging means attached thereto.

34. In a mold dumping machine, the combination of a rotatable receptacle adapted to receive a mold therein; a swinging arm, having its free end substantially alined with said receptacle; and mold pushers attached to said arm and adapted to actuate a mold into said receptacle upon the swinging of said arm.

35. In a mold dumping machine, the combination of a rotatable receptacle adapted to receive a mold therein; a mold conveyer passing adjacent to said receptacle; a swinging arm mounted beneath said conveyer; and mold pushers attached to said arm and adapted to actuate a mold on said conveyer into said receptacle.

36. In a mold dumping machine, the combination of a rotatable receptacle adapted to receive a mold therein; a mold conveyer passing adjacent to said receptacle and being provided with spaced rollers opposite the same; and means between such spaced rollers and adapted to engage a mold thereon and move the same into said receptacle.

37. In a mold dumping machine, the combination of a rotatable receptacle adapted to receive a mold therein; a mold conveyer passing adjacent to said receptacle and being provided with spaced rollers opposite the same; arms reciprocably mounted between said rollers in line with said receptacle; and pivoted pushers attached to said arms and adapted to engage a mold only upon movement toward said receptacle.

38. In a mold dumping machine, the combination of a rotatable receptacle adapted to receive a mold therein; a mold conveyer passing adjacent to said receptacle and being provided with spaced rollers opposite the same; arms reciprocably mounted between said rollers in line with said receptacle; mold engaging pushers pivotally attached to said arms and adapted to normally be held by gravity in their mold engaging position but being also adapted to swing beneath a mold upon movement of said arms away from said receptacle.

39. In a mold dumping machine, the combination of a hoist for lifting molds; a conveyer passing adjacent to and substantially on a level with the top of said hoist; and means for transferring a mold from said hoist to said conveyer and simultaneously inverting the same.

40. In a mold dumping machine, the combination of a hoist for lifting molds; a conveyer passing adjacent to and substantially on a level with the top of said hoist; and means for transferring a mold from said hoist to said conveyer and simultaneously inverting the same, said means comprising a swinging arm adapted to engage the outer side of the mold, and coöperative means adapted to simultaneously engage the inner side of the mold and invert the same.

41. In a mold dumping machine, the combination of a hoist for lifting molds; a conveyer passing adjacent to and substantially on a level with the top of said hoist; and means for transferring a mold from said hoist to said conveyer and simultaneously inverting the same, said means including a rotatable cam adapted to engage beneath the inner side of the mold and an arm pivoted about the axis of said cam and adapted to simultaneously engage the outer side of said mold.

42. In a mold dumping machine, the combination of a conveyer bearing empty molds, a chute positioned to receive such molds from said conveyer; and retarding means controlling the speed of descent of such molds through such chute.

43. In a mold dumping machine, the combination of a conveyer bearing empty molds, a chute positioned to receive such molds from said conveyer; and friction retarding means controlling the speed of descent of such molds through such chute.

44. In a mold dumping machine, the combination of a conveyer bearing empty molds, an inclined guideway positioned to receive such molds from said conveyer; and a belt moving parallel to said guideway and cooperating therewith to frictionally contact, and retard the descent of, such molds.

45. In a mold dumping machine, the combination of an inclined guideway, and a conveyer bearing empty molds to the top thereof, said conveyer also extending parallel to said guideway and coöperating therewith to retard the descent of such molds.

46. In a mold dumping machine, the combination of a rotatable receptacle adapted to receive a mold; and means adapted to hold such mold therein during partial rotation of said receptacle.

47. In a mold dumping machine, the combination of a receptacle rotatably mounted about a horizontal axis adapted to receive a mold therein; and stop means adapted to position such mold centrally in said receptacle to balance the same.

48. In a mold dumping machine, the combination of a pivotally mounted, intermittently rotated receptacle having a mold receiving chamber therein open at either side; means adapted to move a mold into such chamber from one side while said receptacle is at rest; and members adapted to engage such mold and retain the same in said receptacle during rotation.

Signed by me, this 19th day of March, 1915.

ARTHUR O. DUPUY.

Attested by—
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."