July 17, 1951 W. V. GODEFROID 2,560,722

CONCRETE BLOCK MOLDING MACHINE

Filed Jan. 28, 1948 3 Sheets-Sheet 1

Fig. 1.

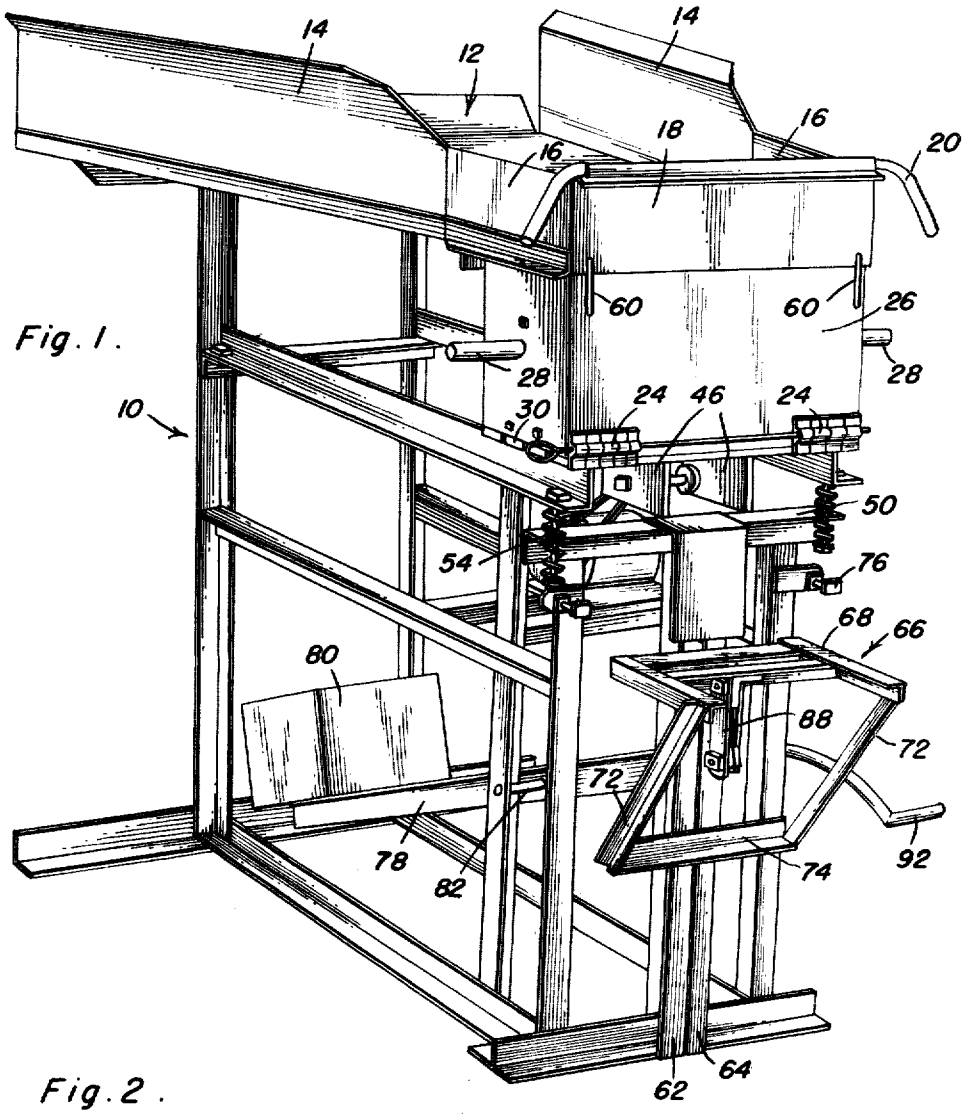
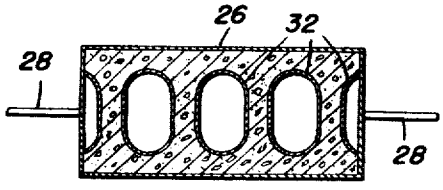


Fig. 2.



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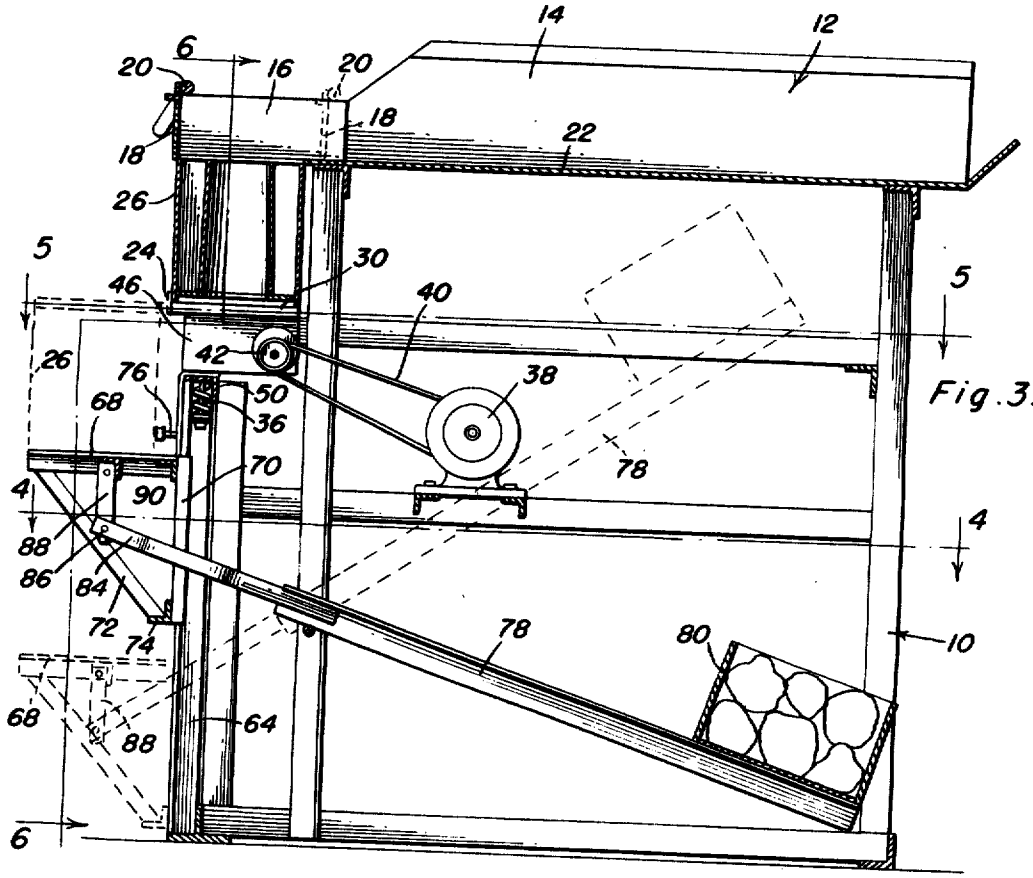


Fig. 3.

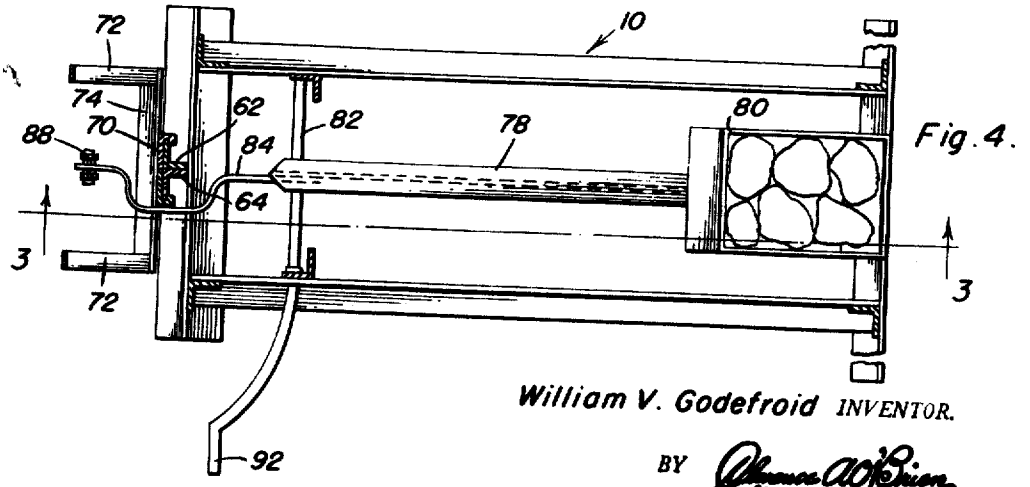


Fig. 4.

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CONCRETE BLOCK MOLDING MACHINE

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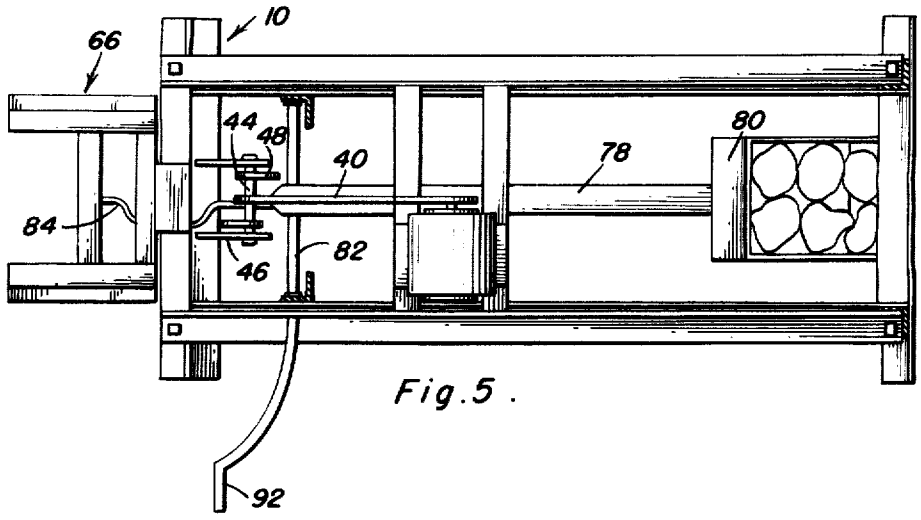


Fig. 5.

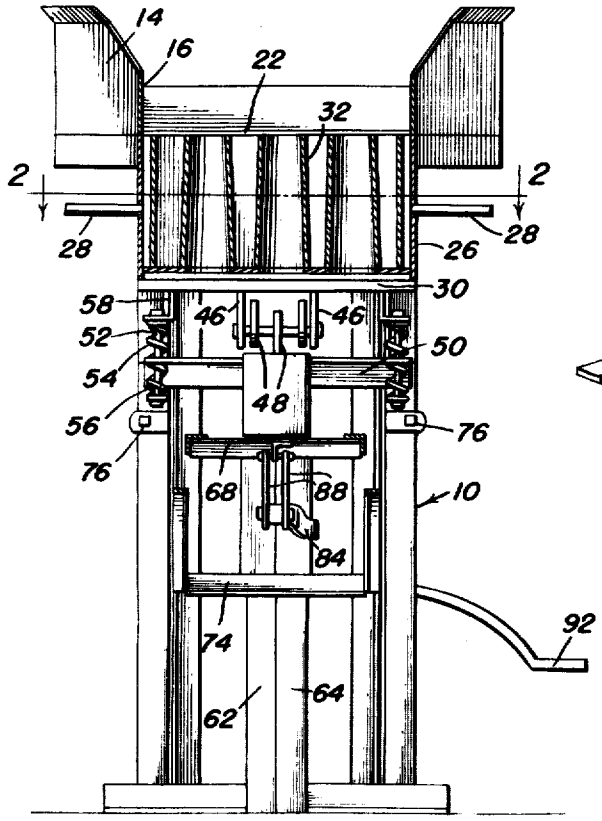


Fig. 6.

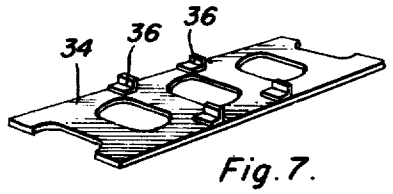


Fig. 7.

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2,560,722

UNITED STATES PATENT OFFICE

2,560,722

CONCRETE BLOCK MOLDING MACHINE

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Application January 28, 1948, Serial No. 4,871

5 Claims. (Cl. 25—41)

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This invention relates to novel and useful improvements in a concrete block molding machine and more specifically pertains to a simplified and light-weight construction or apparatus for expeditiously forming, molding and discharging concrete blocks which are ready for setting of the concrete.

The principal object of this invention is to provide an improved apparatus for more easily and quickly forming molded concrete blocks and similar articles.

The principal features of this invention reside in the provision of an apparatus which is provided with a sliding tail gate for the hopper of the apparatus which thereby removes excess concrete from the top of the mold; means for hingedly securing the mold to the frame of the machine whereby the mold may be inverted for discharging its contents; and a receiver and pallet upon which the contents of the inverted mold are deposited, which pallet may be vertically lowered with the receiver to withdraw the molded block from the mold; together with an improved counter-balance means for facilitating the operation of the sliding receiver and withdrawing the block from the mold.

Further ancillary features of the invention include a simplified and relatively light weight construction which may be economically fabricated from conventional steel structural forms; which may be readily assembled and knocked down for portability as desired; and which is provided with the customary vibrating means for compacting the cementitious aggregate material in the mold.

A still further auxiliary feature of the invention resides in the provision of a removable bottom block for the mold which is withdrawn from the mold with the concrete block, and which during its withdrawal serves to clean and condition the interior surfaces of the mold for its next use.

These, together with various auxiliary features and objects of the invention which will later become apparent as the following description proceeds, are attained by this device, preferred embodiments of which have been illustrated by way of example only in the accompanying drawings wherein:

Figure 1 is a perspective view of the preferred embodiment of the machine, the mold being shown in operative position with the tail gate of the hopper attached thereto;

Figure 2 is a horizontal sectional detail view taken substantially upon the plane of the section line 2—2 of Figure 6 and illustrating the

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construction of the molding box with the concrete material disposed therein;

Figure 3 is a vertical longitudinal sectional view through the apparatus of Figure 1, being taken substantially upon the vertical plane of the section line 3—3 of Figure 4, alternative positions of the sliding receiver and of the counterweight mechanism being indicated in dotted lines;

Figure 4 is a horizontal sectional view taken substantially upon the plane of the section line 4—4 of Figure 3 and shows particularly the arrangement of the counterweight construction and receiver slide;

Figure 5 is a horizontal sectional view taken substantially upon the plane of the section line 5—5 of Figure 3 illustrating more particularly the arrangement and construction of the vibrating mechanism;

Figure 6 is a vertical transverse sectional view taken substantially upon the plane of the broken section line 6—6 of Figure 3; and,

Figure 7 is a perspective view of the bottom plate which is seatable in and removable from the mold with each block delivered therefrom.

Referring now more specifically to the accompanying drawings, wherein like numerals designate similar parts throughout the various views, attention is directed first chiefly to Figure 1 for a general understanding of the construction of the apparatus. Indicated generally at 10 is the framework of the apparatus consisting chiefly of angle iron girder members which are secured together in any suitable manner, not shown but preferably by nuts and bolts whereby the device may be readily disassembled for transportation or storage as desired. Of course, where a more-or-less permanent installation is intended, the girder members of the frame 10 may be permanently or rigidly secured as by welding or other means.

Secured upon the top of the frame 10, is a hopper 12 of any suitable type, this hopper having side members 14 and which side members 14 terminate in side members 16 of reduced height, which are open at their outer end and between which is slidably received a tail gate 18 having a laterally extending handle member 20 secured to the top thereof. The bottom plate of the hopper 22, see Figure 3, terminates inwardly of the extremities of the reduced side members 16, to provide a discharge opening for the hopper as set forth hereinafter.

Pivotally secured as at 24 to appropriate

members of the frame 10, is a mold box 26 which is thus hinged to the frame and which is provided with transversely extending handles 28 for causing the hinged or swinging movement of the box as set forth hereinafter. The arrangement is such that the box when in the position shown in Figure 1 has its upper open end positioned beneath the discharge opening of the hopper, and rests upon a horizontal base 30 supported by appropriate structural members of the frame 10. As shown in Figures 2, 3 and 6, the mold 26 is provided with the customary appropriately shaped core members 32 which as is customary in molding operations are appropriately tapered for easy withdrawal from the molded object, which core members impart the desired shape and hollows in the molded concrete block.

Shown in Figure 7 is a detachable or removable bottom plate 34 appropriately shaped to fit within the lower end of the mold box and insertible in and withdrawable from the upper end of the box over the core 32. Preferably, this bottom plate 34 is provided with a plurality of upstanding lugs 36 by means of which the bottom plate becomes embedded and attached to the lower surface of the mold block. Thus, when the block is withdrawn from the mold, the bottom plate 34 moves therewith, and its edges clean and scrape the adjacent surfaces of the mold and the core therein, thus withdrawing and removing any concrete or cementitious incrustations from the mold thereby rendering the mold ready for immediate repeat use as soon as the bottom plate is reinserted in the mold. Further detailed construction of the mold and of the base block is deemed to be unnecessary, since these elements are in themselves quite well known in the art and their particular construction forms no part of the instant invention.

As shown best in Figure 3, an electric motor 38 is suitably mounted upon the frame 10 and is connected by a driving means such as the belt 40 with a pulley 42 carried by the vibrator shaft 44, see Figures 5 and 6, this shaft being journalled in supporting plate 46 depending from the mold receiving base 30. Fixed to the shaft 44 of the vibrator, are a plurality of sets of eccentric weights 48 which are rotatable therewith, and which during their rotation produce an unbalanced thrust of high frequency thus vibrating the entire mold supporting base. This vibrator unit is in itself of conventional and known construction. The rapid vibration of the vibrating member which is supported from the base 30, causes a rapid vibration of the latter, thus serving to shake and agitate the concrete mixture which has been previously drawn from the hopper 12 by a hoe or other suitable means into a mold 26. This agitation serves to squeeze out excess moisture in the cementitious aggregate or concrete mixture, as well as to compact and densify the material into the mold.

After a few seconds of this vibration, the tail gate 18 which serves as a stop means to assure the retaining of a sufficient amount of cement over the mold to completely fill the same, is then raised slightly from its position resting upon the end of the mold in order to disengage the same from the positioning and retaining lugs 60 of the mold. The tail gate 18 is then slid between the side wall 16 of the hopper, thereby wiping off and forcing back the excess material from the top of the mold back into the hopper.

This alternative position for filling and wiping the excess concrete mixture from the mold is indicated in full and dotted lines respectively in Figure 3.

Referring now more specifically to Figures 1, 3 and 4, it will be seen that the frame 10 is provided with a pair of T-shaped vertically disposed members 62 and 64 which provide a vertical track or guide for guiding with supporting for vertical movement thereon a receiver indicated generally by the numeral 66. This receiver 66 includes a horizontal supporting frame 68 secured to the upper end of a channel-shaped slide 70 which is supported by, partially embraces and is slidable upon the T-shaped track members 62 and 64, this horizontal portion being braced as by members 72 and a cross member 74 which latter is carried by the lower end of the slide and guide plate 70. The track members 62 and 64, and the receiver 66 slidable thereon are appropriately positioned to receive and support as by means of a wooden pallet resting upon the horizontal framework 68, the upper surface of the mold box 26 when the latter is swung about its hinge members 24 and inverted upon the receiver as shown in dotted lines in Figure 3. It should be here noted that appropriate adjustable stops in the form of bolts or the like 76 extend from the frame 10 and are adjustable into proper position to engage the side wall of the mold 26 when the latter is swung down into its inverted position, to thereby limit or stop further swinging movement of the mold, and in some instances also to constitute a jarring means which stops the swinging movement of the mold, to thereby shake or agitate the mold to thereby loosen the engagement of the concrete block and prepare the same for withdrawal therefrom as set forth hereinafter.

A counter-balance lever 78 having a counterweight 80 at one end thereof of any suitable character or construction, is journalled as at 82 to portions of the frame 10, and has its outer extremity 84 pivotally connected as at 86 to the lower end of a link 88 whose upper end is pivoted as at 90 to the horizontal frame 68 of the receiver. Preferably, the counter-weight is of sufficient size to balance the weight of the receiver and of the concrete block resting thereon when the mold is inserted thereupon.

However, as shown best in Figures 1, 4 and 5, the counter-weight fulcrum 92 to which the counter-weight lever 78 is fixedly secured, is provided with a foot pedal portion 92, which may be engaged by the foot of the operator, causing rotation of the fulcrum 82, lifting of the counter-weight lever 78, and by means of the weight upon the receiver 66, causes or permits downward sliding movement of the latter upon its guide and slide plate 70, thus permitting the withdrawal or removal of the concrete block from the interior of the inverted mold. As above set forth, the mold base plate 34 is removed therewith, and when the receiver and block are at their lowermost position as shown in dotted lines in Figure 3, the bottom plate may be removed therefrom and returned to the mold for subsequent use of the next operation. In the meantime, the concrete block may then be removed from the wooden pallet resting upon the receiver in the lower position of the same and given such further treatment as is required.

From the foregoing, it is thought that the manner of constructing and employing the apparatus will be readily understood and accordingly further explanation is believed to be unnecessary. However, since numerous modifications and equivalents will readily occur to those skilled in

the art after a consideration of the foregoing description and accompanying drawings, it is not intended to limit the invention to the exact arrangement shown and described, but all suitable modifications and equivalents may be resorted to falling within the scope of the appended claims.

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

1. In a concrete block molding machine comprising a frame, a mold normally resting upon the frame in a material receiving position, a hopper including spaced side walls and a bottom wall carried by the frame, said bottom wall having an edge extending along an upper side edge of the mold and said side walls of the hopper projecting in spaced relation beyond said edge of the bottom wall and along the opposite ends of the mold, an end gate disposed between the side walls and slidably supported on the upper edges thereof, said end gate having a lower edge closely spaced to the top of the mold, and means pivotally securing the mold to the frame for swinging movement of the mold away from the hopper to an inverted material discharging position.

2. In a concrete block molding machine comprising a frame, a mold normally resting upon the frame in a material receiving position, a hopper including spaced side walls and a bottom wall carried by the frame, said bottom wall having an edge extending along an upper side edge of the mold and said side walls of the hopper projecting in spaced relation beyond said edge of the bottom wall and along the opposite ends of the mold, an end gate disposed between the side walls and slidably supported on the upper edges thereof, said end gate having a lower edge closely spaced to the top of the mold, means for limiting sliding movement of the end gate, and means hingedly connecting the lower side edge of the mold most remote from the bottom wall of the hopper to the frame, whereby the mold may be swung upwardly between the side walls towards an inverted material discharging position.

3. The combination of claim 2, wherein said limiting means includes lugs on the side of the mold opposite the bottom wall of the hopper.

4. In a concrete block molding machine, a main frame and a mold supporting frame carried thereby, resilient means yieldingly connecting the frames, means for vibrating the mold supporting frame, a mold resting upon the supporting frame in a material receiving position, a hopper including spaced upstanding side walls and a bottom wall mounted on the main frame, said bottom wall having an edge extending along an upper side edge of the mold and the side walls projecting in spaced relation beyond said edge of the bottom wall along the opposite ends of the

mold, the upper edges of the side walls being spaced above the top of the mold, an end gate disposed between the side walls and slidably supported on the upper edges thereof, said end gate having a lower edge closely spaced to the top of the mold for striking off the same, and means pivotally securing the mold to the supporting frame for swinging movement of the mold away from the hopper to an inverted material discharging position.

5. In a concrete block molding machine, a main frame and a mold supporting frame carried thereby, resilient means yieldingly connecting the frames, means for vibrating the mold supporting frame, a mold resting upon the supporting frame in a material receiving position, a hopper including spaced upstanding side walls and a bottom wall mounted on the main frame, said bottom wall having an edge extending along an upper side edge of the mold and the side walls projecting in spaced relation beyond said edge of the bottom wall along the opposite ends of the mold, the upper edges of the side walls being spaced above the top of the mold, an end gate disposed between the side walls and slidably supported on the upper edges thereof, said end gate having a lower edge closely spaced to the top of the mold for striking off the same, and means pivotally securing the mold to the supporting frame for swinging movement of the mold away from the hopper to an inverted material discharging position, and means mounted for vertical sliding movement on the main frame for receiving the contents of the mold when the latter is in discharging position.

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