Dec. 27, 1949 J. B. LAGARDE 2,492,297

MOLD CHARGING DEVICE FOR CONCRETE BLOCK MOLDING PRESSES

Filed Feb. 10, 1947 3 Sheets-Sheet 1

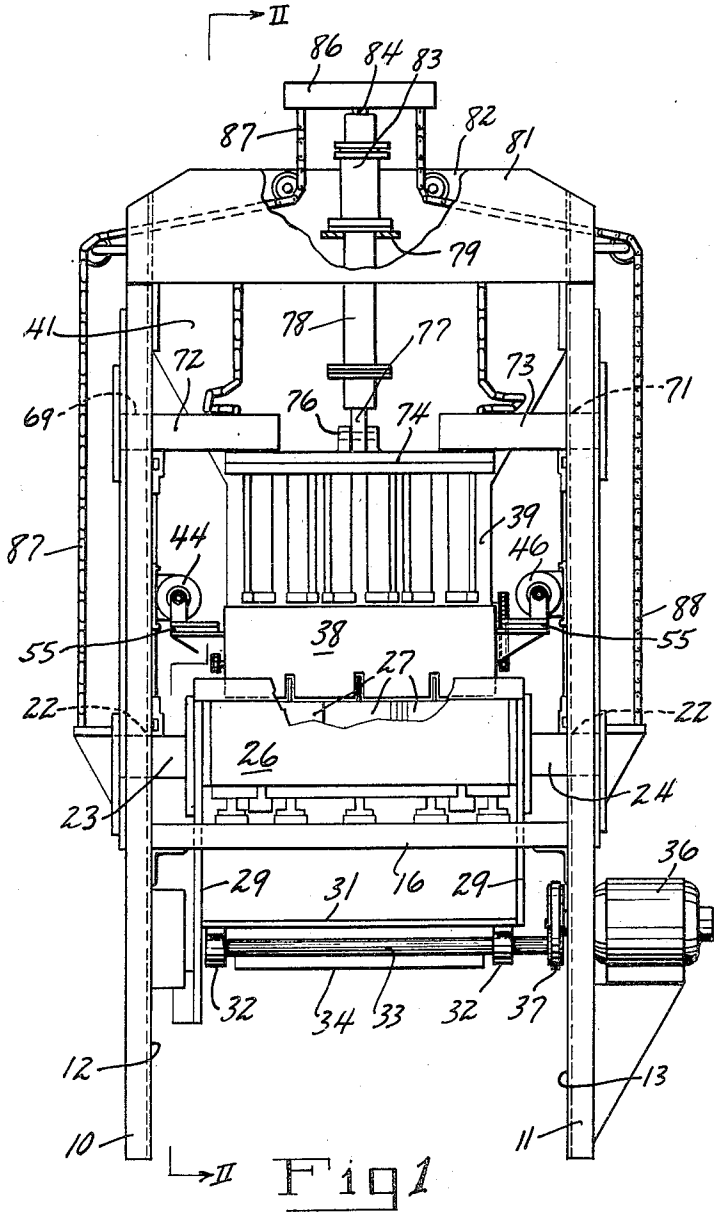


Fig 1

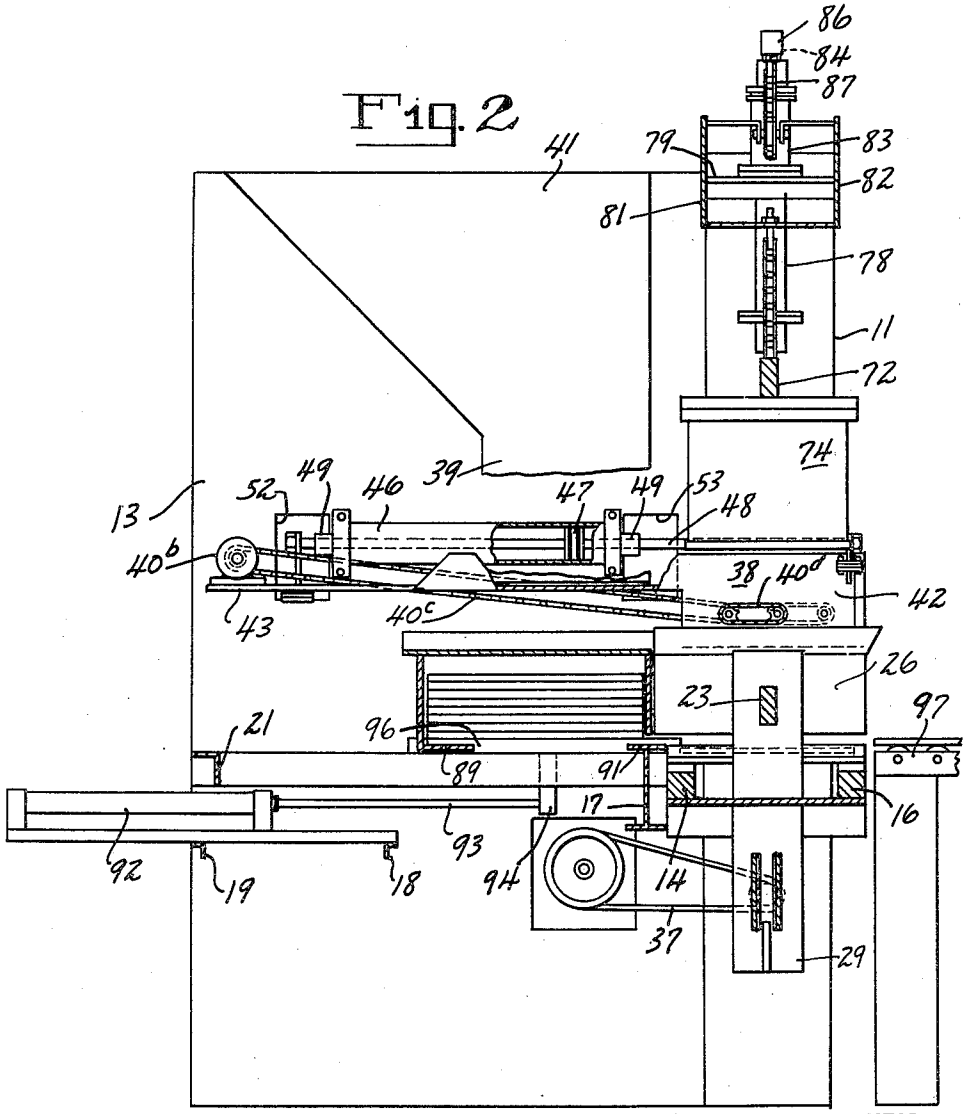
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Fig. 2



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3 Sheets-Sheet 3

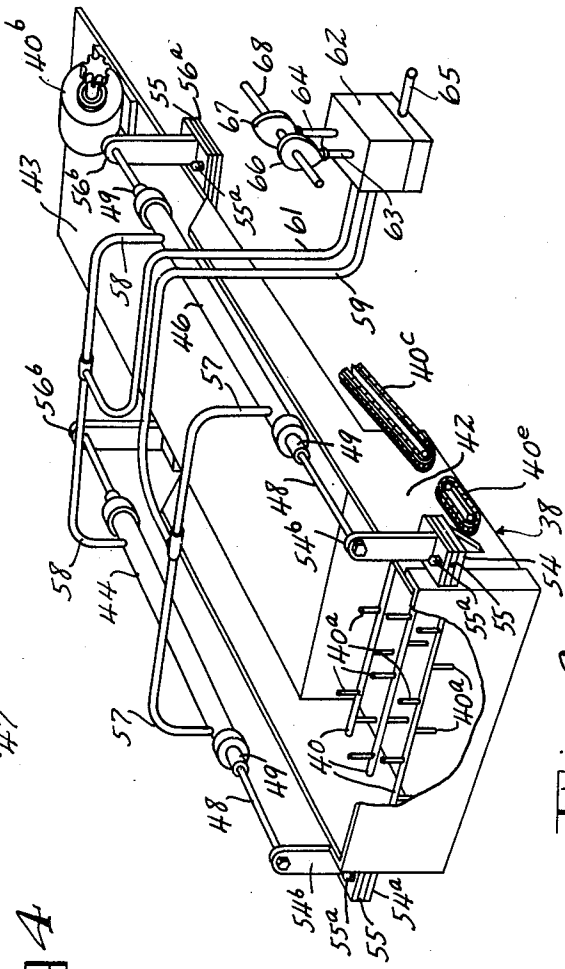


Fig. 3

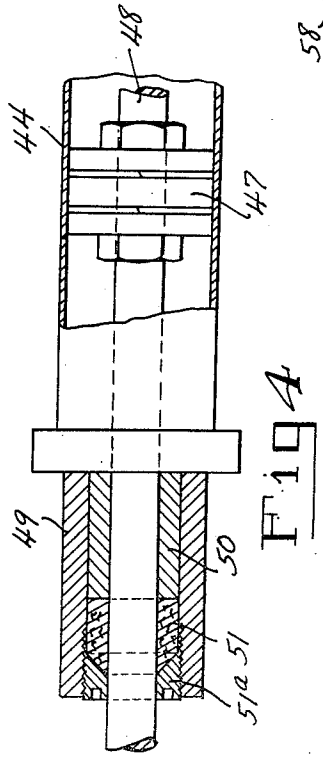


Fig. 4

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MOLD CHARGING DEVICE FOR CONCRETE BLOCK MOLDING PRESSES

John B. Lagarde, Anniston, Ala.

Application February 10, 1947, Serial No. 727,639

9 Claims. (Cl. 25—103)

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My present invention relates to an improvement in concrete block machines, and more particularly to an improvement in block machines of the general type disclosed in my copending application, Serial No. 691,549, filed August 19, 1946.

One object of my invention is to provide a concrete block machine in which the feed drawer therefor is wholly supported for reciprocation on a pair of rods disposed at the sides of the drawer, and more specifically to provide a machine in which the feed drawer is suspended from the piston rods of a pair of fluid cylinders positioned at either side of the drawer.

Another object of my invention is to provide a machine of the character described in which the feed drawer is supported at each end on the ends of the piston rods of a pair of fluid cylinders, whereby the drawer is supported for reciprocation without the aid of the usual tracks and rollers theretofore employed.

A further object of my invention is to provide a concrete block machine of the character described in which the hydraulic cylinders are mounted in such a manner that the packing glands at the ends of the cylinders are easily accessible for adjustment or replacement.

In my copending application above mentioned, I have shown and described a machine for making concrete blocks which embodies a reciprocating feed drawer carrying rollers adapted to run on tracks placed at either side of the drawer. While I have found in actual operation that this machine is a decided improvement over existing machines, my present invention contemplates a machine in which the feed drawer shall be more positive in its reciprocation, in which the feed drawer is always maintained in proper alignment during reciprocation and while discharging into the mould box, and in which the drawer operates more smoothly than a drawer mounted on the roller and track system. Also, with my present arrangement, the fully floating feed drawer eliminates much of the vibration and shock of operation, and consequently the wear and tear, present in the usual machine embodying a reciprocating feed means.

Apparatus embodying features of my invention is illustrated in the accompanying drawings forming a part of this application in which:

Fig. 1 is a view partly broken away and partly in section showing a block machine embodying my improved feed drawer support and reciprocation means;

Fig. 2 is a sectional view partly broken away and taken generally along line II—II of Fig. 1;

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Fig. 3 is a diagrammatic perspective view of the feed drawer and supporting cylinders and piston rods therefor, and the hydraulic lines and control valves for the cylinders; and

Fig. 4 is a fragmentary view, partly in section, of an end of one of the fluid cylinders.

Referring now to the drawings for a better understanding of my invention, my improved machine comprises a framework embodying a pair of vertically extending channels 10 and 11 with the flanges thereof outturned. The sides of the machine are formed of plates 12 and 13 welded or otherwise secured to the side flanges of the channels 10 and 11. Cross members 14 and 16 are provided adjacent the front of the machine for adding rigidity to the framework, and other cross members 17, 18, 19, and 21 serve both to strengthen the framework and support certain parts of the machine as will be more fully explained.

The channels 10 and 11 are slotted as indicated at 22, and slidably passing therethrough are guide blocks 23 and 24, the latter being secured at their inner ends to the sides of a mould box 26. The mould box may be of the usual type compartmented for the simultaneous production of three concrete blocks and containing cores 27 for forming cored blocks.

In order to more fully pack the concrete material therein, the box is vibrated. Depending from each side of the mould box 26 are members 29 cross connected at their lower ends by a member 31. Mounted on the member 31 are heavy duty bearings 32 through which pass a shaft 33 having a weight 34 eccentrically disposed on one side thereof. The shaft is driven by an electric motor 36 through a belt 37. Upon rotation of the shaft 33 the entire assembly including the members 29 and the mould box 26 is vibrated.

Mounted for horizontal reciprocation over the top of the mould box 26, in a manner presently to be described, is a feed drawer 38 adapted to supply the mould box intermittently with plastic concrete material from a discharge chute 39 forming the bottom of a supply hopper 41. The feed drawer comprises the forward material holding portion 42, open at its bottom, and the rearward cutoff plate 43, movable with the drawer. The cutoff plate 43 is adapted upon forward reciprocation of the feed drawer to close the chute 39 thereby to prevent material from flowing out of the hopper 41.

Mounted for rotation within the feed drawer 42 are shafts 40, each of which is provided with a plurality of short rods or fingers 40a. The rear-

most shaft of the group is driven by an electric motor 40*b*, mounted on the cutoff plate 43, through a chain 40*c*. The opposite end of the rearmost shaft 40 is connected to the intermediate shaft by a chain 40*d*, and the latter is connected at its opposite end to the forwardmost shaft by a chain 40*e*. Electric switches and circuits, not shown, are provided to energize the motor 40*b* during the time when the feed drawer is discharged into the mould box, thereby to rotate the agitating fingers 40*a*, to aid the downward flow of material into the mould box.

Mounted on the plates 12 and 13 and positioned slightly above the feed drawer 38 are a pair of air cylinders 44 and 46. The cylinders each contain double acting pistons 47 and a piston rod 48 which extends entirely through the two heads of the cylinders. As shown more clearly in Fig. 4, each cylinder head is provided with an extended sleeve 49. Fitting within the sleeve is an elongated bushing 50, bored to receive the piston rod 48. A packing 51 is held in sealed contact with the piston rod by means of a nut 51*a*, threaded into the end of the sleeve 49. Each of the plates 12 and 13 is provided with openings 52 and 53 adjacent the ends of the cylinders whereby the packing glands and bushings are readily accessible for adjustment or replacement.

The sides of the forward end of the feed drawer are secured to the piston rods 48 by means of brackets 54 and the rear end of the cutoff plate 43 is secured at each side to the rear end of the piston rods by means of brackets. The brackets comprise the portions 54*a* and 56*a* secured to the mould box proper and cutoff plate 43, respectively, and the portions 54*b* and 56*b* carried by the ends of the piston rods. Interposed between these parts is a flat sheet of flexible material 55, such as a piece of belting. Bolts 55*a* pass through the portions 54*a*—54*b* and 56*a*—56*b*, and clamp the resilient sheets therebetween, thereby resiliently supporting the mould box from the piston rods.

The cylinders are provided at each end with conduits 57 and 58, connected to common lines 59 and 61. The common lines lead to a valve 62 which may be of the usual type having actuating stems 63 and 64 projecting therefrom, and a pipe 65 leading thereto through which air under pressure is supplied to the valve. The valve stems may be actuated by means of cams 66 and 67, mounted on a common shaft 68, and actuated by means of a small electric motor, not shown, forming a part of the automatic mechanism shown in my above mentioned copending application.

The channels 10 and 11 are provided with additional slots 69 and 71 to slidably receive a pair of guides 72 and 73 which carry at their inner ends a presser head 74. The presser head is connected at 76 to the projecting end of a piston rod 77 mounted within a hydraulic cylinder 78. The cylinder 78 is supported on suitable cross members 79, connected between other cross members 81 and 82, joined to the upper ends of the channels 10 and 11.

Mounted in vertical alignment with the cylinder 78 in the manner described in my copending application aforesaid, is a second hydraulic cylinder 83, the piston rod 84 of which projects out of the upper end of the cylinder. The piston rod 84 carries a cross head 86 and is operatively connected to the guides 23 and 24 by means of a pair of roller chains 87 and 88. Flat pallets are supplied to the machine through a slide opening in the plate 13 and the pallets rest on suitable guide members 89 and 91. The pallet feed may be of the type shown in my copending application, and comprises a fluid cylinder 92 embodying a piston rod 93 secured at its forward end to a bracket 94 connected at its upper end to a pallet feed bar 96. Suitable means, not shown, are provided for admitting air alternately to opposite ends of the cylinder 92 whereby the pallet feed bar 96 reciprocates, thereby to remove pallets from beneath the stack and place them beneath the mould box in position to receive the material delivered by the feed drawer. At each forward reciprocation of the pallet feed a loaded pallet is pushed out of the machine onto the rollers 97 and an empty pallet is simultaneously placed beneath the mould box. Likewise, means not shown are provided for effecting reciprocation of the piston rods 77 and 84, the timing and sequence of operation of all of these elements being determined and coordinated by valves actuated responsive to rotation of shaft 68, in the manner shown in my before mentioned copending application.

From the foregoing, the operation of my improved block machine will be readily understood. Concrete material in plastic form is placed in the hopper 41 and the same flows by gravity into the chute 39. As air is admitted through the pipes 59 and 61 to alternate ends of the cylinders 44 and 46, the feed drawer reciprocates from beneath the chute 39 to a position over the mould box 26. Material thus is conveyed from the hopper 41 to the mould box 26 and is aided in its downward flow by the agitating fingers 40*a*, and the mould box is simultaneously vibrated responsive to rotation of shaft 33. The feed box now moves rearwardly and the presser head 74 moves downwardly responsive to admission of fluid under pressure to the upper end of cylinder 78. The plastic material is thus compressed and the blocks formed, whereupon the mould box 26 is raised upwardly responsive to admission of fluid under pressure into the lower end of cylinder 83, the presser head being held down. The blocks are thus stripped from the mould box and deposited on a pallet which has heretofore been placed beneath the open mould box 26. At the same time, the loaded pallet is ejected from the machine by means of the pallet feed mechanism and another empty pallet is placed beneath the mould box, thus completing a cycle of operation.

I have found that suspending the feed drawer from the ends of the piston rods 48 affords a most efficient and smooth operating arrangement. By eliminating the roller and track system heretofore employed to support the feed drawer, the roughness of operation occasioned when the rollers pass over concrete material spilled on the tracks is eliminated. My improved mechanism permits the feed drawer to accurately center itself over the mould box due to cross connecting the fluid supply lines of its cylinders. The slight amount of flexibility between the piston rods and the feed drawer afforded by the strips of belting 55 also aids in making the drawer self centering when in forward position over the mould box. By mounting the cylinders 44 and 46 slightly above the feed drawer, no concrete material spilled during the operation comes in contact with the reciprocating piston rods and the piston rods, being self lubricating, are thus subjected to no abnormal wear.

While I have not shown a complete control

and timing mechanism for the several cylinders and electric motors disclosed herein, it will be understood that such control and timing may be obtained by the use of the mechanism fully shown and described in my aforesaid copending application.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications, without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. In a concrete block machine embodying a supply hopper for plastic material and a mould box, a feed drawer adapted to reciprocate from beneath the supply hopper to a position over the mould box to supply the latter with plastic material, fluid cylinders embodying pistons and piston rods, means to support the feed drawer from the piston rods, and means to supply fluid under pressure alternately to opposed ends of the cylinders to reciprocate the feed drawer.

2. In a concrete block machine embodying a supply hopper for plastic material and a mould box, a feed drawer reciprocable from beneath the supply hopper to a position over the mould box to supply the mould box with plastic material, fluid cylinders embodying pistons and piston rods positioned at each side of the feed drawer, means to support the feed drawer from the piston rods, and means to admit fluid under pressure alternately to the ends of the cylinders to reciprocate the feed drawer.

3. In a concrete block machine embodying a supply hopper for plastic concrete material and a mould box, a feed drawer reciprocable from beneath the supply hopper to a position over the mould box to supply the mould box with plastic material from the supply hopper, fluid cylinders embodying double acting pistons and through piston rods positioned at each side of the feed drawer, means for supporting the ends of the feed drawer from the piston rods, and means to admit fluid under pressure alternately to the ends of the cylinders to reciprocate the feed drawer.

4. In a concrete block machine embodying a supply hopper for concrete material and a mould box within which the blocks are formed, a feed drawer reciprocable from beneath the supply hopper to a position over the mould box to supply the mould box with plastic concrete material from the supply hopper, and means associated with the feed drawer for both supporting and reciprocating the same.

5. In a concrete block machine embodying a supply hopper for concrete material and a mould box within which the blocks are formed, a feed drawer reciprocable from beneath the supply hopper to a position over the mould box for supplying the mould box with plastic concrete material from the supply hopper, and fluid actuated means associated with the feed drawer for both supporting and reciprocating the same between the supply hopper and the mould box.

6. In a concrete block machine embodying a supply hopper for concrete material and a mould box within which the blocks are formed, a feed drawer reciprocable from beneath the supply hopper to a position over the mould box for supplying the mould box with plastic concrete material from the supply hopper, and fluid actuated means disposed at each side of the feed drawer for reciprocably supporting the same.

7. In a concrete block machine embodying a supply hopper for concrete material and a mould box within which the blocks are formed, a feed drawer for supplying the mould box with plastic concrete material from the supply hopper, reciprocating rods disposed at the sides of the feed drawer, and means connecting the feed drawer to the rods whereby the drawer is entirely supported for reciprocation by said rods from a position beneath the supply hopper to a position over the mould box.

8. In a concrete block machine embodying a supply hopper for concrete material and a mould box within which the blocks are formed, a feed drawer reciprocable from beneath the supply hopper to a position over the mould box for supplying the mould box with plastic material from the supply hopper, fluid cylinders embodying double acting pistons and through piston rods disposed at the sides of the feed drawer and above the same, means to suspend the feed drawer from the projecting ends of the piston rods, and means to reciprocate the piston rods.

9. In a concrete block machine embodying a supply hopper for concrete material and a mould box within which the blocks are formed, a feed drawer reciprocable from beneath the hopper to a position over the mould box for supplying the mould box with concrete material from the supply hopper, a fluid cylinder embodying a double acting piston and a through piston rod mounted at each side of the feed drawer, resilient connectors for supporting the feed drawer from the projecting ends of said through piston rods, and means to admit fluid under pressure alternately to opposite ends of the cylinder to reciprocate the piston rods and feed drawer.

JOHN B. LAGARDE.

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