

July 19, 1927.

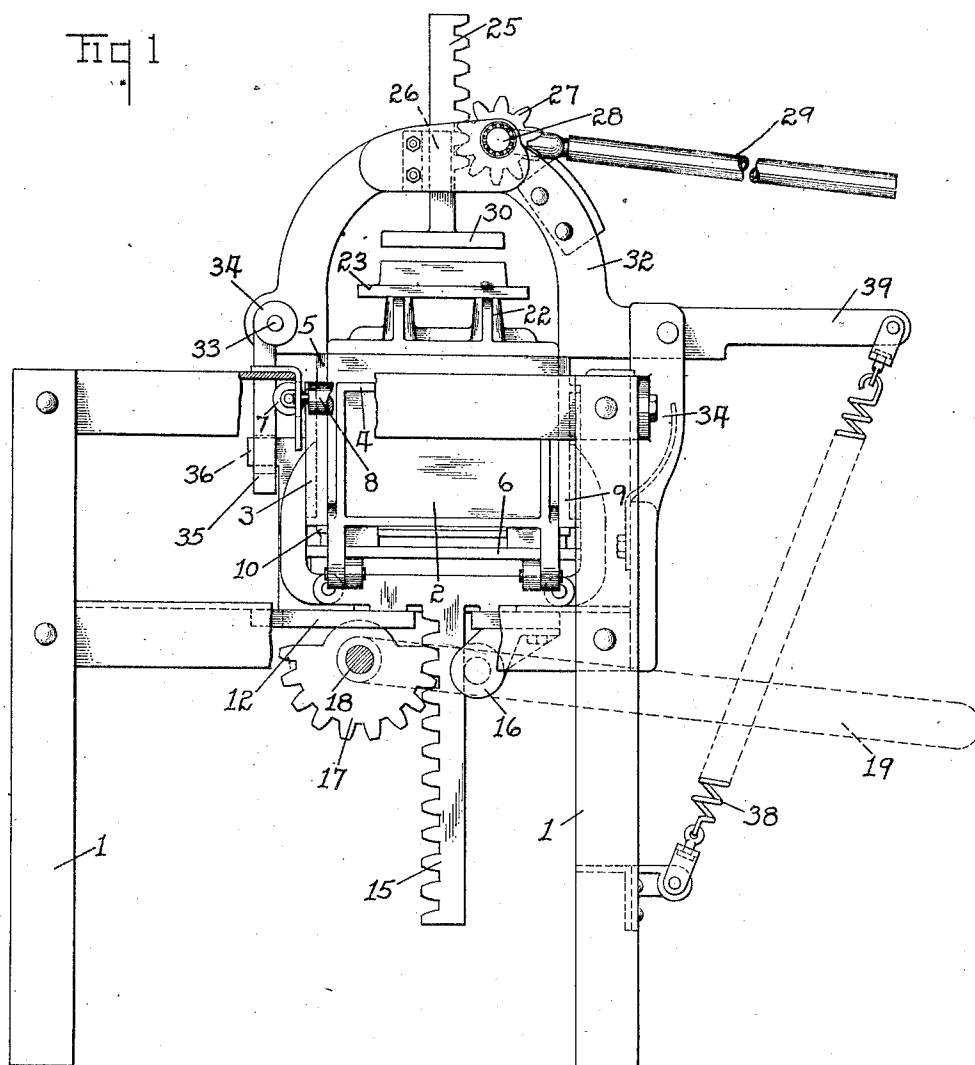
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1,636,102

CONCRETE BLOCK MACHINE

Filed Sept. 15, 1924

4 Sheets-Sheet 1



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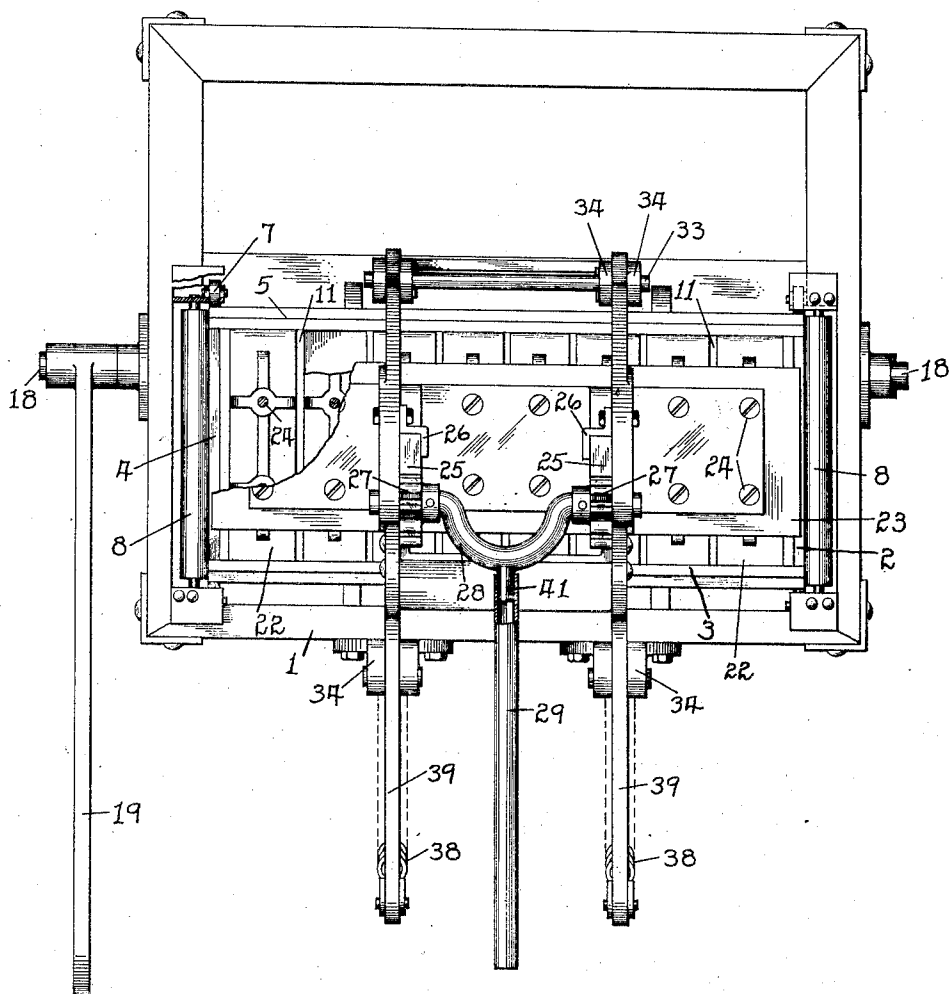
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CONCRETE BLOCK MACHINE

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4 Sheets-Sheet 2

Fig 2



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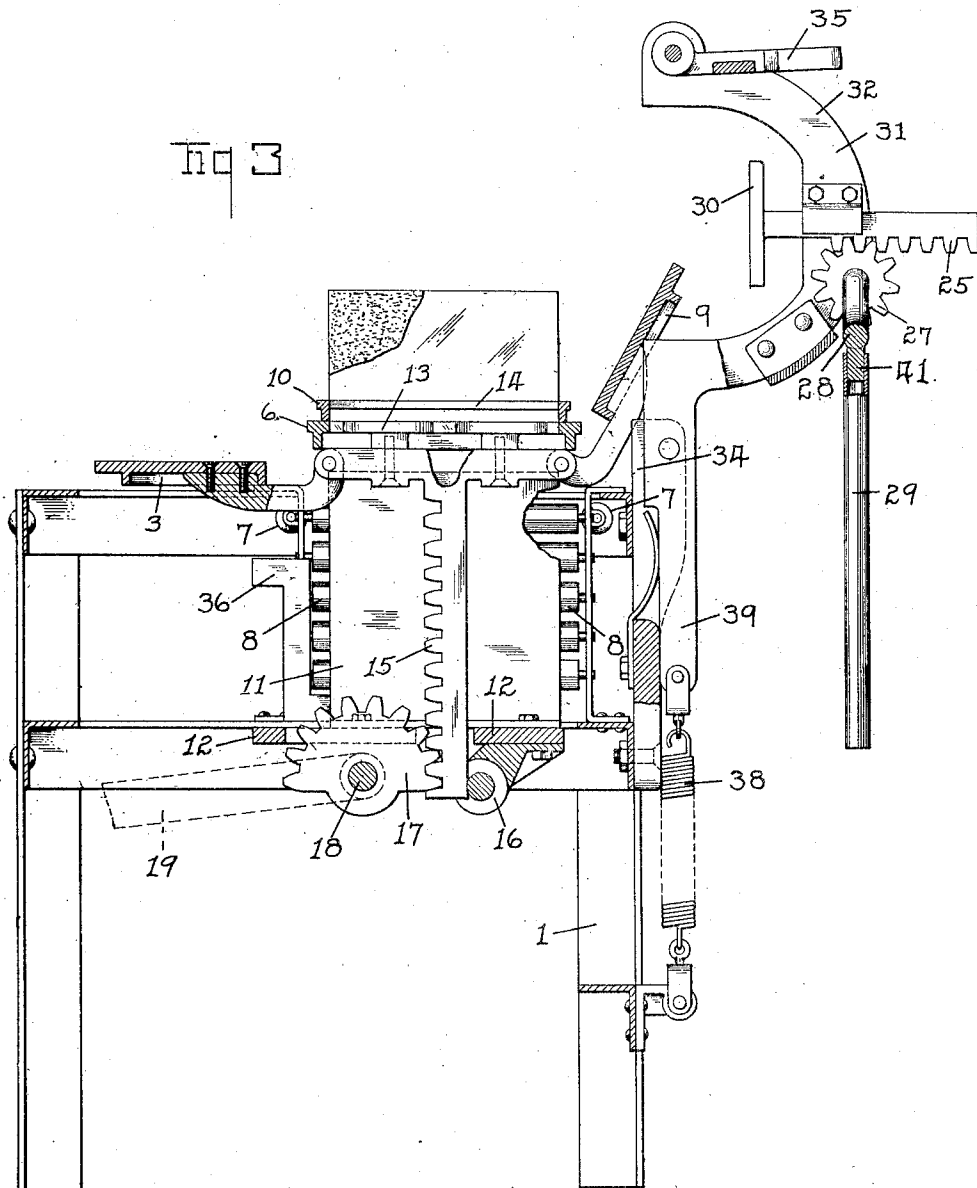
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CONCRETE BLOCK MACHINE

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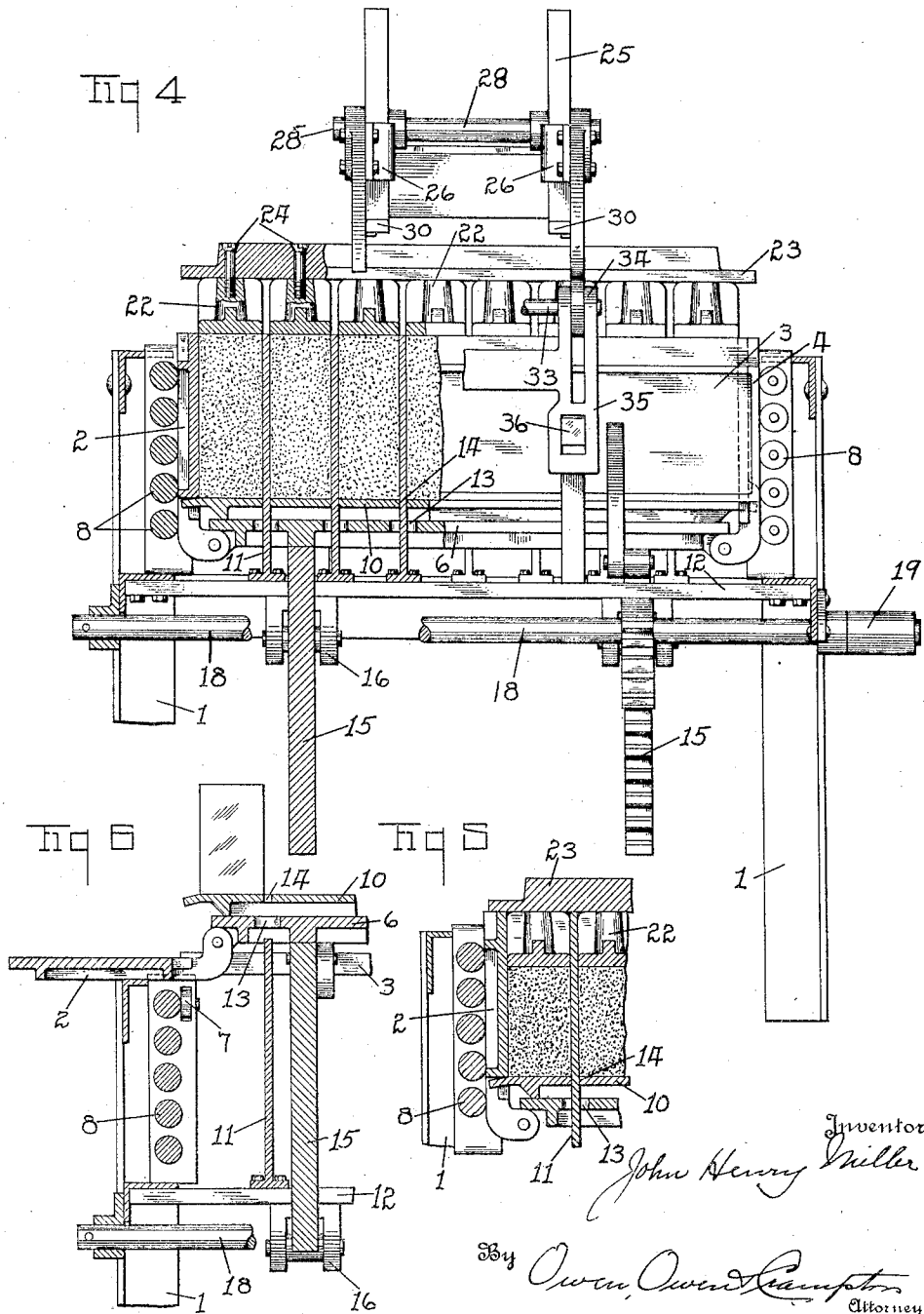
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CONCRETE BLOCK MACHINE

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1,636,102

UNITED STATES PATENT OFFICE.

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CONCRETE-BLOCK MACHINE.

Application filed September 15, 1924. Serial No. 737,685.

My invention has for its object to produce a machine whereby concrete blocks of different forms and sizes, such as building blocks and chimney blocks, may be made rapidly and yet manually. The invention provides a mold and a compressing means for compressing the material of which the blocks are formed, the mold being of such a character that a plurality of blocks may be formed at one and the same time. The invention also provides a mold having separating partitions for the formation of a plurality of blocks and means for compressing the material between the partitions to rapidly form compacted blocks and means for stripping the blocks from the partitioning plates. The invention also provides a mold having sides that fold to the mold form, while at the same time the mold and the partitioning plates are placed in their proper positions relative, one to the other, and after the blocks have been formed in the mold they are separated, one from the other.

The invention may be contained in structures of different forms. To illustrate a practical application of the invention I have selected a structure containing the invention and shall describe it hereinafter. The structure selected is illustrated in the accompanying drawings.

Figure 1 of the drawings illustrates an end view of the machine containing my invention. Figure 2 illustrates a top view of the machine. Figure 3 illustrates a view of a section of the machine. Figure 4 illustrates in part a front view of the machine and in part a view of a section of the machine. Figure 5 illustrates a sectional view of a part of the machine showing the position of parts of the machine when the blocks are completely formed. Figure 6 illustrates a view showing the mold open and the blocks in position to be removed therefrom.

The frame 1 is made in the form of a table, having the parts of the machine supported in the body of the frame. It is provided with a mold having hinged or folding sides 2, 3, 4 and 5, that are hingedly connected to the bottom 6 of the mold. Means is provided for raising the mold so that the sides will be opened. The mold is located between rollers 7 and 8 that engage flanges 9 that ride on the rollers as the mold is raised and lowered. The uppermost rollers are placed in such a position that when the

mold is raised above them, the sides will drop open to render the blocks that are formed accessible for purposes of removal. The rollers 7 and 8 are supported in suitable parts of the frame 1 and so as to hold the sides of the molds in position while the molds are being filled with the material of which the blocks are formed and while they are being subjected to a high compression.

The block supporting plate 10 is located on the bottom 6 of the mold and so that when the mold is lifted to open the sides of the mold, the blocks may be removed from the mold by simply lifting the block supporting plate from the bottom of the mold.

In order to form a plurality of blocks, the mold is provided with a plurality of partitions 11 that are secured to a pair of base plates 12 suitably connected to the frame 1 of the machine. The partitions 11 protrude through the bottom 6 of the mold and through the block supporting plate 10. The openings 13 formed in the bottom 6 of the mold are preferably made considerably larger than the cross sectional area of the partitioning plates in order that material may be discharged from beneath the block supporting plate 10. The openings 14 of the block supporting plate have an area substantially the same as that of the horizontal cross sectional area of the partitioning plates to prevent the material of which the blocks are formed from being discharged from within the mold when the blocks are subjected to high pressure. The plate 10, however, has a width that is greater than the width of the partitioning plates and also a length that is greater than the distance between the ends of the molds. The partitioning plate 10 has edge portions that extend beneath the sides of the mold when the sides are folded into position. When the mold is raised, the blocks that are formed between the partitioning plates are stripped from the partitioning plates, since the bottom 6 and the block supporting plate 10 are moved upward along the partitioning plates 11. When the mold is lowered to close the sides after another block supporting plate has been placed in position on the bottom, the bottom and the block supporting plate move downward along the partitioning plates. The mold is then filled to the top with concrete or other material and the blocks are formed between the partition-

ing plates and then removed from the mold, as described.

The mold is raised and lowered by any suitable means, such as by means of the racks 15 that are connected to the bottom 6 of the mold. The racks 15 move between the rollers 16 and the sector gears 17. They are actuated by the sector gears 17 that are located on the shaft 18 that is oscillated by a lever 19. The sector gears 17 are of a size sufficient to cause the bottom of the mold to be raised and lowered the length of the blocks plus the amount they are compressed in order that the block supporting plate may be lifted clear of the upper ends of the partitioning plates. Thus the levers 19 operate automatically to raise the mold, open the sides and strip the plates.

The material that is inserted between the partitioning plates and between the ends of the mold and the two outer partitioning plates is compressed by means of the compression members 22 that are secured to the compression plate 23 by means of the screws 24. Adjoining compression members 22 are separated from each other by a distance that is equal to substantially the thickness of the partitioning plates 11. When the mold has been filled with the material from which the blocks are to be formed, the compression plate 23 is placed in position and then the compression members and the compression plate are forced downward so as to cause the compression members 22 to pass down between the partitions and compress the material located in the several chambers that are thus formed in the mold. The compression plate 23 is forced down by means of the racks 25 that move between the guides 26 and the pinions 27. They are actuated by means of the pinions 27 with which they mesh. The pinions 27 are secured to the shaft 28 and the shaft 28 is actuated by the oscillating arm 29. The shaft 28 may be supported on the swinging frame in roller bearings. The lower ends of the racks may be provided with foot plates 30 that press against the compression plate 23 to force the compression members down into the compartments of the mold. In order to conveniently place the racks 25 in position such that they may engage the compression plate and yet so support them that they may be swung away from the top of the mold to enable convenient handling of the blocks after they are formed, a frame 31 is pivotally supported on the frame 1 of the machine. The frame 31 comprises a pair of arched members 32 that are pivotally connected to the shaft 33 which extend through ears 34 that project from a part of the frame 1, and also by the yoke 28 to which the pinions 27 are keyed. The arcuate members 32 are provided with latches 35 located at their free ends and in position to engage fingers

36 that are secured to the frame of the machine. The latches 35 are pivotally connected to the arcuate members 32 and so that when the frame 31 is swung down into position the latches 35 may be easily slipped over the ends of the fingers 36, and thus the frame 31 will be held in position notwithstanding the pressure that may be produced by the pinions 27 and the racks 25. This will force the compression members 22 into the chambers of the mold to compress the blocks in each of the said chambers. The arm 29 may be a pipe that may be slipped over a stud 41 on the yoke 28 to which the pinions 27 are connected.

When the compression members 22 have been forced down so that the compression plate 23 strikes the upper edge of the mold, the frame 31 may be easily released from the frame 1 by pulling the latches 35 from the ends of the fingers 36 and throwing back the frame 31. This may be done automatically as by a weight or a spring. In the form of construction shown, springs 38 may be connected to arms 39 that are formed integral with the arcuate members 32 and thus constitute a part of the frame 31. When the frame 31 is pulled over the mold preparatory to compressing the material, the springs 38 yieldingly resist such movement and then when the latches 35 are released, the springs 38 operate to return the frame 31 to a position that it will be removed from the blocks when the mold has been raised. Also when the mold is raised the sides of the mold drop down and the blocks are stripped from the partitioning plates. It will thus be seen that when the blocks are raised, they stand on the block supporting plate free from all encumbrances with the other parts of the machine, and so that the blocks may be picked up or slid off the top of the machine and placed upon a conveyor or any other suitable means and allowed to become hardened.

I claim:—

1. In a concrete block machine, a mold, a plurality of partitioning plates, a plurality of compression members for compressing the concrete between the partitioning plates to form the blocks and having a pressure surface substantially equal to the area between the partition plates, said mold having sides pivoted to the remainder of the mold at their bottom edges, rollers revolving on fixed axes and engaging the sides in lowered position of the mold, said sides being disengaged from said rollers in raised position of the mold, and means to raise and lower the mold.

2. In a concrete block machine, a mold, a plurality of partitioning plates, a plurality of compression members for compressing the concrete between the partitioning plates to form the blocks and having a pressure sur-

face substantially equal to the area between the partition plates, means for raising the blocks from between the partitioning plates said mold having sides pivoted to the remainder of the mold at their bottom edges, rollers revolving on fixed axes and engaging the sides in lowered position of the mold, said sides being disengaged from said rollers in raised position of the mold, and means to raise and lower the mold.

3. In a concrete block machine, a mold, a plurality of partitioning plates, a plurality of compression members for compressing the concrete between the partitioning plates to form the blocks and having a pressure surface substantially equal to the area between the partition plates, a block supporting plate, means for raising the blocks and the block supporting plates from the partitioning plates to permit removal of the blocks and the block supporting plates said mold having sides pivoted to the remainder of the mold at their bottom edges, rollers revolving on fixed axes and engaging the sides in lowered position of the mold, said sides being disengaged from said rollers in raised position of the mold, and means to raise and lower the mold.

4. In a concrete block machine, a mold, the sides of the mold pivotally connected to the bottom of the mold, a block supporting plate located on the bottom of the mold, a base plate supported beneath the mold partitioning plates extending to the sides and secured to the base plate and means for raising the mold and the block supporting plate from the partitioning plates and opening the mold sides to permit removal of the blocks and the block supporting plate.

5. In a concrete block machine, a mold, a base plate, means for raising and lowering the mold, sides of the mold pivotally con-

nected with the bottom of the mold, partitioning plates extending to the sides and connected to the base plate, compression members having a pressure surface substantially equal to the area between the partition plates and for compressing the concrete between the partitioning plates and means for raising the mold and the blocks from the partitioning plates.

6. In a concrete block machine, a mold, partitioning plates located in the mold, a pressure plate having pressure members, a means for forcing the pressure plate towards the mold and forcing the pressure members between the partitioning plates, a removable block supporting plate extending across the bottom of the mold, means for raising the mold from the partitioning plates to remove the block supporting plates and the blocks said mold having sides pivoted to the remainder of the mold at their bottom edges, rollers revolving on fixed axes and engaging the sides in lowered position of the mold, said sides being disengaged from said rollers in raised position of the mold, and means to raise and lower the mold.

7. In a concrete block machine, a mold, the sides of the mold pivotally connected to the bottom of the mold, a base plate, partitioning plates extending through the bottom of the mold and connected to the base plates and extending to opposite sides, rollers for engaging the sides of the mold, means for raising the mold to open the sides and to strip the blocks from the partitioning plates and for lowering the mold to close the sides.

In testimony whereof I have hereunto signed my name to this specification.

JOHN HENRY MILLER.