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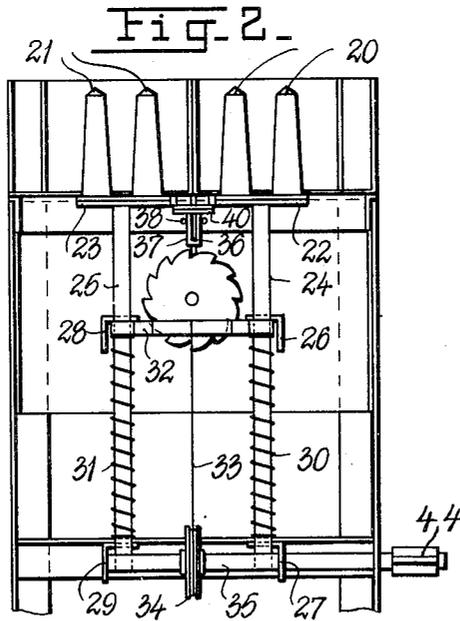
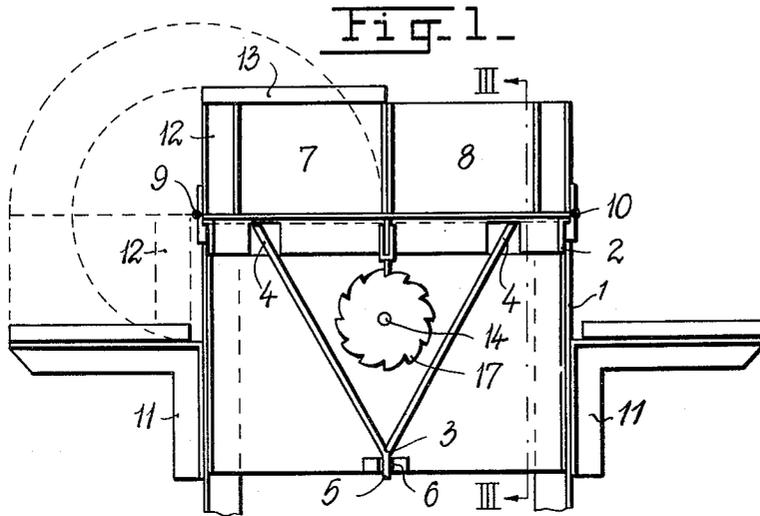
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2,528,084

MACHINE FOR MOLDING HOLLOW BLOCKS

Filed June 23, 1947

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

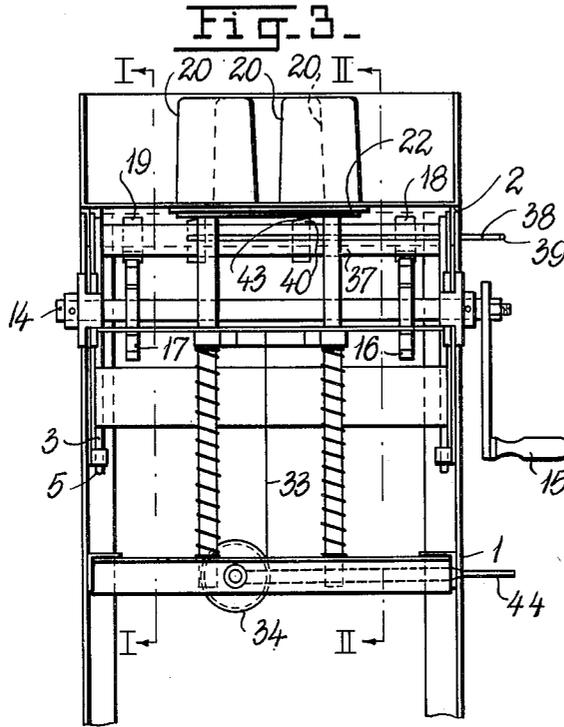
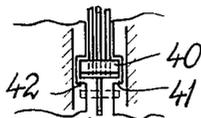


Fig. 4.



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MACHINE FOR MOLDING HOLLOW BLOCKS

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The invention relates to a machine for moulding hollow concrete blocks of such kind which are meant to be used at the building site. Such machines have to be easily transportable and simple in use. Furthermore it is of great importance that that or those labourers who handle the machine are enabled to utilise their time at work in an effective manner. Finally it is of advantage if the machine can be driven manually, so that it does not need any engine or electric power.

The object of the present invention is to procure a machine which comply with all these requirements.

The machine relating to the invention is of the kind which comprises a stand on which is placed a mould box which is arranged to be sideways swingable 180° about a horizontal axis, and furthermore comprises cores which during the moulding project up into the box through holes in the bottom but can be withdrawn from this when the box is to be turned over, and also means for vibration of the moulding material during the moulding.

By construction of such machines a certain difficulty arises as the moulding material is to be vibrated at the same time as the mould box is to be turned over after the cores are withdrawn from the box. If the box is hinged to the stand the box itself cannot be vibrated and one must therefore be content to let the cores vibrate. This is not any satisfactory solution. If the box is not hinged to the stand, having arranged other means for turning it over, one may no doubt let the box vibrate. As the cores must be withdrawable from the box when this is to be turned over the cores must be placed independent of the box and can therefore not take part in the vibration. Neither is this any satisfactory solution.

This difficulty is according to the invention solved by the fact that the means for producing the vibration acts upon a frame which is vertically movable in the stand, in which frame the mould box rests and is hinged to by one of its edges. The cores are fastened on bodies which are vertically movably fitted on the stand. During the moulding the cores are connected rigidly to the mentioned frame.

When moulding hollow blocks of the kind here concerned the use of at least two labourers is in practice always necessary. By the usual machines by which one block only is moulded at a time one of the labourers will in such case be partly inactive. A main purpose of the invention at hand is to utilise the labourers' time in a

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more effective manner. This is attained by moulding two hollow blocks simultaneously on one and the same machine. For such purpose there is in the mentioned horizontal frame arranged two mould boxes which can be turned over on to their respective sides. By the known machines it shall not be possible to arrange two mould boxes next to each other. These machines are namely so constructed that one or more of the necessary handles or handling devices are placed on the opposite sides of the one to which the mould box is turned over. An important feature of the present invention is therefore that all handles, crank handles and other handling devices are placed on those opposite sides of the stand which run parallel to the turnover-motion of the mould boxes.

The invention includes several further features which shall appear from the following description in connection with the drawing which diagrammatically illustrates a form of construction of a machine pertaining to the invention.

On the drawing Fig. 1 shows a vertical section on the line I—I on Fig. 3.

Fig. 2 is a corresponding section on the line II—II on Fig. 3.

Fig. 3 is a section on the line III—III on Fig. 1, while Fig. 4 shows a detail in the plan.

The machine which is shown on the drawing consists of a stand 1. Into this at the top is placed the horizontal, rectangular frame 2. This is constructed with vertical external sides which are fitted to the corresponding sides by the upper end of the stand, so that the frame, being loosely placed in the stand so that it may be moved in vertical direction, here is held steady sideways. In order to prevent the frame from pinching itself tight by askew position further guidance of the vertical movement is provided. This is attained by on two opposite sides of the frame to fix V-formed or fork-formed parts 3 whose upper ends 4 are fastened to the frame and whose lower ends are formed by a vertical, downwards extending pin 5, which is guided in a socket 6 fixed to the stand.

In the frame 2 two mould boxes 7 and 8 are placed. These are by 9 and 10 hinged to two opposite sides of the frame. 11 illustrates a shelf or platform fixed to the outside of the stand and serves as support of the mould box 7 when it is turned over, such as indicated by the dotted lines. Before the turning over a board 13 is placed over the box and is fastened to this by suitable means not shown on the drawing. After the turn-over the board 13 rests against the

platform 11. The one wall 12 of the box is arranged in a manner known per se to be held fixed to the stand in the position shown by the dotted lines, while the rest of the mould box can be swung back on place. The board 13 with the ready moulded block can be moved then and the wall 12 swung up and fastened in position.

A corresponding platform is placed on the opposite side of the stand for use in connection with the box 8, which is made in exactly the same manner as the box 7. The last mentioned platform is not shown on the drawing.

The machine is provided with a manually operated device for vibration of the boxes during the moulding. This arrangement includes a shaft rotatably mounted in the stand, which shaft at one end is provided with a crank handle 15. On the shaft are firmly secured two knock wheels 16 and 17 provided with ratchet shaped teeth. These are destined to work in co-operation with the knock pins 18 and 19 which are rigidly connected to the frame 2. The lower ends of the knock pins do not reach down to the bottom of the tooth grooves, such as it appears from Fig. 1. The knock pins are appropriately made adjustable in vertical direction in order to enable adjustment of the knock height.

The machine is furthermore provided with cores projecting upwards through holes in the bottom of the mould boxes. As shown on the drawing there are arranged three cores 20 and 21 respectively for each of the two mould boxes. The cores 20 are fixed on a core plate 22, and the cores 21 for the other mould box are correspondingly fixed on a core plate 23. The core plates are appropriately fixed at the upper ends of vertical rods 24 and 25 which are movably mounted in vertical direction in guides 26, 27 respectively 28, 29. 30 and 31 illustrates coil springs whose upper ends press against the rod 32 which is fastened to the rods 24 and 25 and thus aim to hold the cores in the position shown on the drawing. In order to lower the cores a rope, wire or roller chain is fastened to the rod 32, and the lower end of the rope or the like is attached to a wheel 34 which is mounted on the shaft 35. This shaft is turnable by means of a pedal 44, in such manner that the rope is coiled up on the wheel and the cores are lowered when the pedal is depressed.

As previously explained it is of importance that the cores during the moulding are rigidly fastened to the moulding box. This is according to the invention attained in the following manner: To the frame 2 is fastened a rail 36 which runs parallel with the shaft 14. On the rail there is slidably fitted a slider 37 which on two opposite sides are connected with rods 38 which run parallel to the rail. The rods extend at the one end out through openings in the stand and are outside this provided with a handle 39 by means of which they can be moved forth and back in longitudinal direction. The slides 37 are at the top provided with a lock plate 40 which can be pushed in under the edges of the core plates 22 and 23 and thus lock these tight to the frame. The core plates are as shown in Fig. 4 provided with notches 41 and 42 so that the cores can be pulled down when the lock plate 40 is brought in position under the notches. The front edge of the lock plate is suitably sloped at 43 to facilitate the pushing in under the core plates at the same time as a wedge like effect is attained.

When the machine is to be used one must proceed in the following manner:

The mould boxes are swung up in the position as shown on Fig. 1, the cores are let up to the position shown on the drawing and are locked tight to the frame by means of the lock plate 40. A labourer now places himself on one side of the machine and turns the crank handle 15. The teeth on the knock wheels 16 and 17 now lift the frame 2 by contact against the knock pins 18 and 19, after which the frame, the highest point of each tooth having passed, falls down under the influence of the gravity until it with a powerful knock comes to rest against the stand. A very effective vibration is thus attained.

Another labourer now fills moulding material from the other side of the machine. The material is now smoothed off on top by means of a board which is then placed over the mould box and is attached to this by suitable means. The lock plate 40 is now pulled into free position, whereafter the cores are pulled down, for instance by means of a pedal. The two labourers now turn over each one his own mould box on to the platforms 11. When the walls 12 of the mould boxes are attached to the stand and simultaneously detached from the moulding boxes they are swung back on place after which the labourers each takes his own board with the block on it and carries it away to a drying place, and then the block on the other side. Now the walls 12 are turned up in place. Then the cores are let up and locked tight to the frame. The machine is now ready for the moulding of a new set of blocks.

I claim:

1. Apparatus for moulding blocks for building purposes comprising a stand, a frame movably mounted on said stand, means for effecting vibration of said frame, a mould box resting on said frame and hinged thereto in such a manner that said mould box can be turned 180° about a horizontal axis while said frame is resting on said stand, two forked guiding elements for said frame arranged in vertical position with their forked ends secured to two opposite ends of said frame, and to sockets secured to said stand on opposite sides of the same, in which sockets the lower ends of the said elements are slidably guided.

2. Apparatus for moulding blocks for building purposes comprising a stand, a frame movably mounted on said stand, means for effecting vibration of said frame, two mould boxes resting on said frame, the said boxes being hinged to the frame at opposite edges thereof so that they can be turned 180° in opposite directions while said frame is resting on said stand, each said mould box having holes in the bottom thereof, two sets of cores vertically movably mounted in said stand and adapted to project upwards through said holes during the moulding, two forked guiding elements for said frame arranged in vertical position with their forked ends secured to two opposite ends of said frame, and to sockets secured to said stand on opposite sides of the same, in which sockets the lower ends of the said elements are slidably guided.

3. Apparatus for moulding blocks for building purposes comprising a stand, a frame movably mounted on said stand, means for effecting vibration of said frame, two mould boxes resting on said frame, the said boxes being hinged to said frame at opposite edges thereof so that they can be turned 180° in opposite directions while said frame is resting on said stand, each said mould

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box having holes in the bottom thereof, two sets of cores vertically movably mounted in said stand and adapted to project upwards through said holes during the moulding, means for securing the cores to the frame, two forked guiding elements for said frame arranged in vertical position with their forked ends secured to two opposite ends of said frame, and to sockets secured to said stand on opposite sides of the same, in which sockets the lower ends of the said elements 10 are slidably guided.

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