A mold for use in casting concrete blocks wherein the rear and end walls are stationary, a floor or bottom wall is vertically movable, and the front wall is vertically and horizontally movable under the control of links at its ends which define a parallelogram-type mounting, the fixed side being the vertical line between two link pivot points on each end of the mold; the movable front wall may be shaped to emboss grooves or other configurations on the front surface of the block.

1 Claim, 5 Drawing Figures
CONCRETE BLOCK MOLD WITH PARALLEL LINKAGE MEANS

This invention relates to a mold for use in casting concrete blocks, generally with lines or other configurations embossed on the front surface of the block, such that the block could not be released from the mold except by moving at least one mold wall. According to the simplest form of the present invention, the rear and end walls are stationary, the floor or bottom wall is vertically movable and the front wall or gate is vertically and horizontally movable under the guidance and control of parallelogram linkages at each end. These linkages are so designed and proportioned that the front wall or gate, in its highest position, rests firmly against the front edges of the end walls and has its bottom edge in register with the bottom edges of the end and rear walls, the floor or bottom wall being also in its highest position and bearing firmly against the bottom edges of the rear, end and front walls, to form a closed compartment within which the concrete is molded.

When the material in the mold is compacted and ready for release, the floor element is moved downward, permitting the molded block to descend, and the front gate moves away from the front face of the block as block and gate both go down with the lowering floor.

A compactor may be used to ensure proper density of the block, an ejector is provided to aid in releasing the block from the mold, and one or more core plugs may be provided to form cavities in the block.

The background of the invention includes molds having one or more movable walls as shown in the following U.S. Pat. Nos.: Besser, No. 844,234; Hart, No. 856,886; Strong, No. 1,000,207; Palmer, No. 1,123,358; Abram, No. 1,882,682.

A practical embodiment of the invention is shown in the accompanying drawing wherein:

FIG. 1 represents a perspective view of a typical molded concrete block;

FIG. 2 represents a perspective view of the mold in closed position;

FIG. 3 represents a vertical transverse section through the mold and pallet in closed position;

FIG. 4 represents a view similar to FIG. 3 with the mold partially opened, and

FIG. 5 represents a similar view with the mold fully opened and the block and pallet being ready to be conveyed to a curing area and finishing area.

Referring to the drawing, the block 10 is shown as being of conventional shape, partially hollowed by the provision of chambers 11 and having its front face 12 embossed, as represented by the simple straight groove 13.

The fixed mold body 15 includes a rear wall 16 and integral end walls 17, all strongly supported in a conventional manner as indicated schematically at 18. The bottom of the mold is closed by a pallet 19 the upper surface of which forms a floor on which the block is formed, the pallet being raised and lowered by a pallet support indicated schematically at 20, cooperating with a conventional conveyor 21 which delivers, indexes and removes the pallets under control of operating mechanism, not shown. The mold is completed by a front wall or gate 22 in the form of a rectangular plate adapted to bear closely against the front edges of the end walls 17 with its ends 23 in register with the outer surfaces of said end walls and its top and bottom edges in register, respectively, with the corresponding edges of the end walls.

The front wall or gate 22 is mounted on the fixed portion of the mold by means of pairs of parallel links 24 at each end, the links being journaled on the surface of the end walls at two vertically aligned spaced points 25 and being journaled on the ends 23 of the gate at the two vertically aligned points 26, spaced equally with the points 25 but located somewhat higher, when the gate is closed, so that the links lie at an angle of about 30° from the horizontal, as indicated in FIGS. 2 and 3. It can be seen that by accurately determining (or adjusting) the distance between the journal points, the bottom edge alignment and tight closure along the front edges can be ensured. A ridge or bead 27 on the inner surface of the gate 22 is adapted to form the groove 13 in the block; the groove being an example of indicia of any sort which may be embossed on the block when it is not dependent on vertical discharge from the mold box.

In order to form the chambers 11 in the block, core plugs (not shown) of a suitable size and shape may be provided, these being mounted on the stationary mold box elements, in accordance with standard procedure.

The concrete mixture in the mold (supplied in any customary manner) is given its desired homogeneous consistency and density with the aid of a compactor 31, applied to the upper surface of the concrete slurry with any necessary amount of pressure and/or vibration; pressure may be continued until the material has final compaction, the surface of the compactor thus determining the character of the upper surface of the block.

When the material of the block is compacted sufficiently to warrant removal from the mold, the vibrator is shut off, the compactor head continues to bear on the upper surface of the block with the gate lug 33, on the lower front edge of the compactor head, adjusted to be in contact with the top edge of the gate 22 and the pallet support 20 being also mechanically actuated to move downward in synchronism with the compactor, gate and block. The block is thus forced downward through the fixed portion of the mold and the gate 22 immediately starts to move away from the front face of the block in a direction perpendicular to that face and parallel to the surface of the pallet, as the links 24 swing outward and downward around their pivotal points 25. When the links reach a horizontal position, defining maximum separation of the gate from the mold, their motion is arrested by stops 34 projecting from each end wall of the mold. The pallet continues to be lowered to a point where the block is completely clear of the mold, the block being then removed with the pallet in any convenient manner, as on the conveyor 21, and the parts are returned to the mold-closed position for casting of another block, by means of the next pallet on the next stroke of the machine.

The gate's motion has a vertical component corresponding exactly to the lowering of the block and pallet, until the stop position is reached, and a horizontal component in a direction perpendicular to the front face of the block so that all portions of the face are released simultaneously at the same time that other surfaces start moving out of the mold. The parallelogram mounting of the gate is very simple, strong and efficient, the links being in such a position that they can easily be cleaned, adjusted or repaired, if necessary. If it is desired to make a block having embossed indicia
on the back as well as the front a mold could be made with fixed end walls and movable gates, as described above, forming the rear wall as well as the front one, the casting and removing operation being substantially the same.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description are efficiently attained and since certain changes may be made in carrying out the above method and in the construction set forth without departing from the spirit and scope of the invention, it is intended that all matter contained in the foregoing description and shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all the generic and specific features of the invention herein described and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

I claim:

1. A mold for casting concrete blocks comprising, two oppositely disposed fixed end walls, a fixed rear wall, a bottom floor, means for moving vertically said floor, a movable front wall engageable with edges of said fixed end walls, the inner surface of the movable wall being non-planar and constituting means for embossing indicia on the face of a block in the mold, rigid links in a parallel relationship pivotally connected to the ends of said movable wall and to each of said two fixed end walls, said links being disposed at an acute angle to the horizontal when the movable wall is engaged with said edges, the bottom edge of said movable wall resting on said bottom floor when the mold is closed, and said movable wall being movable away from the edges of the fixed walls, under control of said links, when said floor and movable wall are moved downward, said fixed walls having their bottom edges in a common plane, the bottom edge of said movable wall also lying in said common plane, and means for ejecting a block from the mold, said latter means being normally above the mold and having a part projecting over the upper edge of the front wall in a position to engage and move downward the movable front wall in synchronism with downward movement of the floor.

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