Feb. 1, 1949. L. F. KREGER 2,460,697

CONCRETE BLOCK MOLD

Filed Sept. 5, 1946 2 Sheets-Sheet 1

Fig. 1.

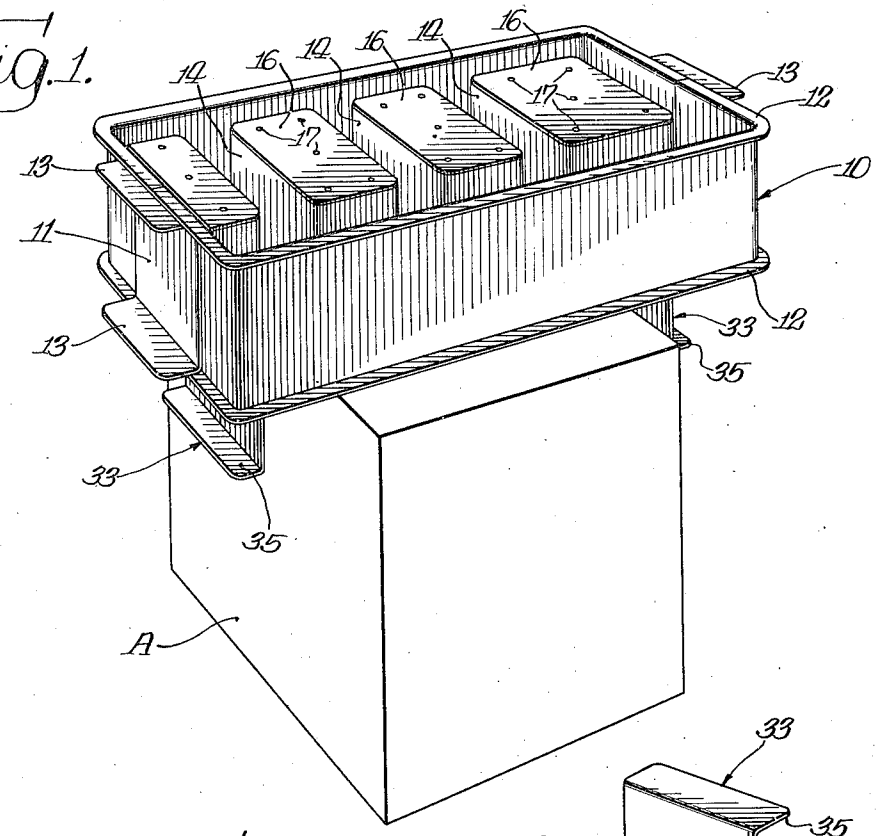
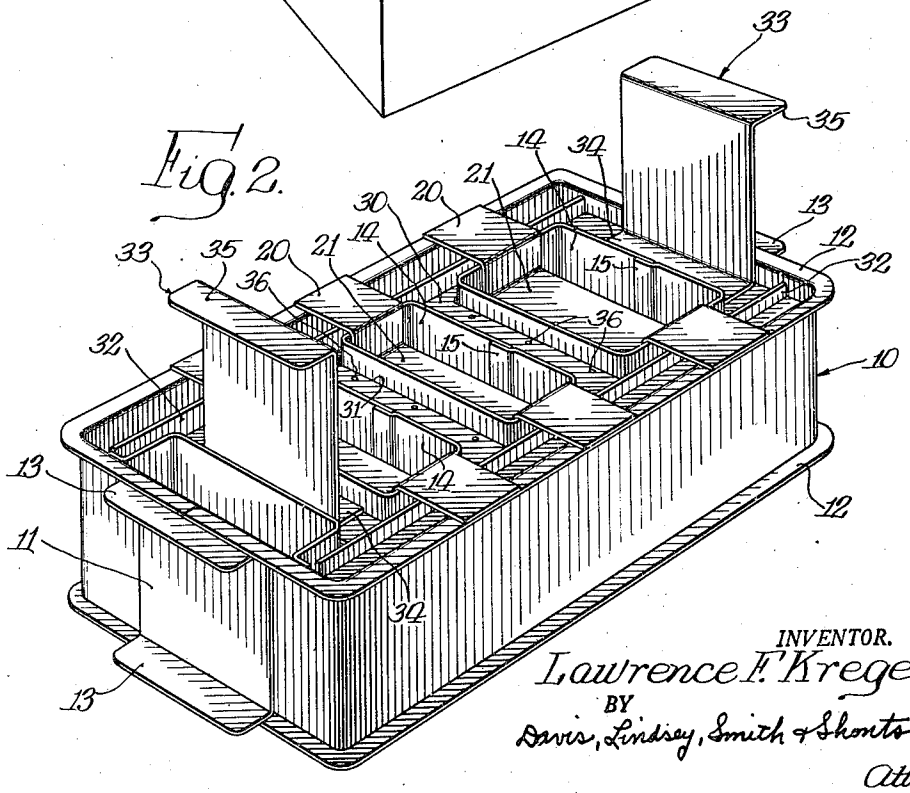


Fig. 2.



INVENTOR.
Lawrence F. Kreger,
BY
Davis, Lindsey, Smith & Shontz
Attys.

Feb. 1, 1949. L. F. KREGER 2,460,697

CONCRETE BLOCK MOLD

Filed Sept. 5, 1946 2 Sheets-Sheet 2

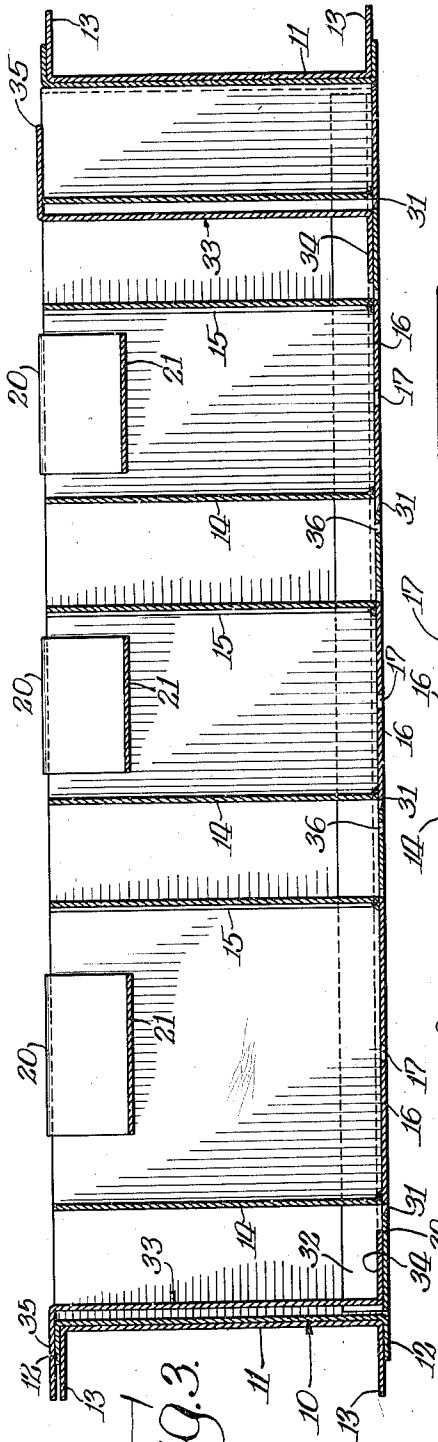


Fig. 3.

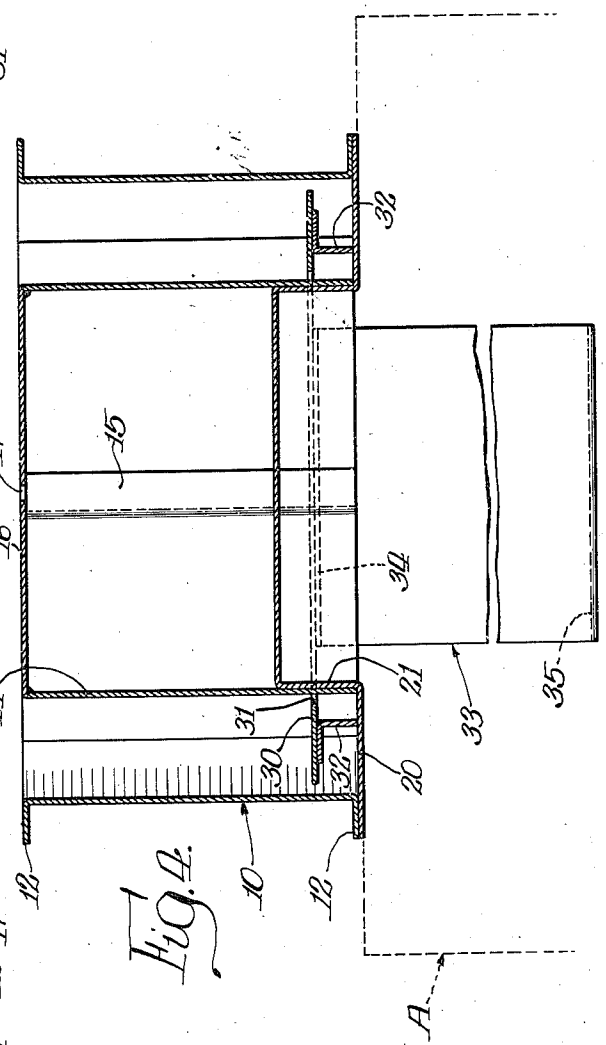


Fig. 4.

INVENTOR.
Lawrence F. Kreger,
BY
Davis, Lindsey, Smith & Shonts
Attys.

Patented Feb. 1, 1949 2,460,697

UNITED STATES PATENT OFFICE

2,460,697

CONCRETE BLOCK MOLD

Lawrence F. Kreger, Chicago, Ill.

Application September 5, 1946, Serial No. 694,870

5 Claims. (Cl. 25—119)

1

The invention relates generally to molds for making concrete blocks or the like, and more particularly to a mold for this purpose adapted to be manipulated by hand.

The general object is to provide a novel mold of the foregoing character, which is easy to handle, and which may be inexpensively manufactured.

Another object is to provide a novel mold of the foregoing character, which may be made entirely of sheet metal, thus rendering it much lighter in weight and easier to handle than molds involving relatively heavy cast parts.

A further object is to provide a novel mold of the foregoing character which, when the block is ejected, has a thickness or depth only slightly greater than that of the block, thus rendering it of minimum size for storing and shipping.

Still another object is to provide a novel mold of the foregoing character, having an ejector constructed in such a manner that accumulations of cement or concrete spilled on the mold during use cannot interfere with complete movement of the ejector, so that the blocks made with the mold will be uniform in thickness or depth.

A still further object is to provide a novel mold of the foregoing character, which may be made entirely of sheet metal parts welded together, thus rendering it inexpensive to manufacture on a quantity basis.

Another object is to provide a novel mold of the foregoing character which, while made of sheet metal, is sufficiently rigid to produce accurately formed blocks and to withstand rough usage.

Other objects and advantages will become apparent from the following description taken in connection with the accompanying drawings, wherein:

Figure 1 is a perspective view of a concrete block mold embodying the features of the invention and showing the mold in position for filling it with concrete.

Fig. 2 is a perspective view of the mold shown in Fig. 1 but with the mold inverted and in position for removal of the concrete block.

Fig. 3 is a longitudinal vertical sectional view, on an enlarged scale, of the mold, with the mold inverted as in Fig. 2.

Fig. 4 is a transverse sectional view of the mold with the mold positioned as in Fig. 1.

Concrete block molds of the character herein contemplated are adapted to be manipulated by hand and are so constructed as to mold one block at a time. The type of block for which the present

2

mold is adapted is of standard form, being hollow to reduce its weight and to provide a heat-insulating dead-air space within a wall constructed of such blocks. While I have shown herein a mold provided with a certain number and type of cores, the invention, of course, is not limited to a mold making this particular form of block, the particular form of mold herein shown being merely a mold suitable for making one of a number of standard types of blocks.

The mold disclosed herein comprises generally a rectilinear frame in which a number of cores are positioned so that the resulting block is hollow. Mounted within the frame is an ejector plate which functions as a bottom for the mold when the concrete is being placed therein. After the concrete has been suitably tamped, settled within the mold, and leveled off, the mold is adapted to be inverted for removing the block therefrom. When the mold is so inverted, the ejector plate is held against movement while the frame is removed upwardly or stripped from the block, thus removing the block from the mold and depositing it in position for hardening.

In order that the mold may be continuously used, the concrete mix adapted to be used with a mold of this type is a so-called "dry-mix," in which the water content is sufficiently low to permit the concrete block to retain its shape after being ejected from the mold before it has had time to set. A simple test for determining whether the proper amount of water has been used in a mix is to take a handful of the mix, squeeze it and then place it in position for setting. If any sagging of the form takes place, then, of course, the mix is too wet. In other words, the water content of the mix should be limited to that which will permit the block to be ejected from the mold immediately after being formed therein.

Molds of this character are particularly useful at isolated locations, such as farms, where the cost of hollow tile, brick or concrete blocks from a central molding plant would be exorbitant. It is also particularly useful for making blocks when only a relatively few blocks are neded for any one job.

The particular embodiment shown herein is adapted to be constructed entirely of sheet metal with the parts thereof secured together as by welding. Thus, the mold may be readily manufactured at a relatively low cost and is light in weight (compared to many prior forms which utilize castings) so that it may be easily manipulated by an individual. It is also so constructed

that the parts thereof may be collapsed into a compact form having a thickness substantially that of the depth of the mold proper, so that it does not occupy any great amount of space when out of use and will require a minimum of packing and shipping space.

The preferred form of the invention shown in the drawings comprises a substantially rectilinear frame, indicated generally at 10. In the preferred form of construction, the frame 10 comprises a pair of similar U-shaped members placed together to form a rectangle and secured together by plates 11 overlapping the ends of each member and spot-welded thereto. To render the frame rigid, it is provided with outwardly turned flanges 12 extending around its entire periphery at both faces thereof, the flanges thus holding the frame in shape so that it cannot bulge outwardly when filled with concrete. The end plates 11 are also provided with outwardly turned flanges 13 preferably extending beyond the flanges 12 and provide convenient means by which the mold may be gripped.

Located within the frame in spaced relation thereto is a plurality of cores 14 for making the block hollow. Each core 14 is of box-like construction and preferably comprises a strip of metal wrapped into rectangular form with the ends thereof overlapped and welded to each other, as indicated at 15. The upper end of each core, when the mold is positioned for being filled with concrete, is provided with an end closure plate 16 so that concrete cannot fall therethrough when being dumped into the mold. The end closure plates 16 are secured to the cores 14 as by welding and preferably are provided with holes 17 to facilitate withdrawal of the block from the mold, should a small layer of concrete be left extending over the tops of the cores.

Each core is rigidly secured in place by a strap 20 having its ends abutting the face of one of the flanges 12 of the frame and an intermediate portion of the strap 20 bent into a U shape, as shown at 21, to be positioned within the core and spot-welded to the inner surfaces thereof. Thus, the cores are rigidly held in place by straps 20, with the straps bridging the space between the frame 10 and the cores.

The mold is adapted to be placed, when it is to be filled with concrete, with the closure plates 16 of the cores upwardly and the straps 20 at the bottom of the mold. The mold preferably is placed on a support, such as a box A, extending only under its intermediate portion. A bottom wall for the mold is provided by an ejector plate 30 of rectangular form and loosely fitting within the frame. The plate 30 is provided with apertures 31 through which the cores 14 extend. The ejector plate 30 thus provides a bottom wall in the entire space between the cores and the frame 10 where the concrete is placed. When the mold is in the position shown in Figs. 1 and 4, the ejector plate is adapted to be supported by the straps 20, and the depth or thickness of the block is thus determined by the distance between the ejector plate 30 and the top of the frame when so positioned.

In use, concrete is apt to be spilled on the straps 20, and such concrete would prevent the plate 30 from being properly positioned at the bottom of the mold, if the plate 30 were to lie flat against the straps 20. Such a condition would, therefore, result in blocks of varying thicknesses. To prevent this from occurring, the ejector plate 30, instead of resting directly on the straps 20, is provided with means providing a relatively small area of engagement with the straps 20 so that concrete spilled on such straps will not interfere with full movement of the plate. In the present instance, the ejector plate 30 is provided with longitudinally extending angles 32 with one leg of each angle lying flat against the underside of the ejector plate 30 and welded thereto, and the other leg of each angle projecting therefrom to engage the straps 20 edgewise. The edges of the angles have a blade-like action on any concrete spilled on the straps and tend to cut through such concrete or to crack it away so that the ejector plate is permitted to move fully to its lowest point within the frame. Thus, even though concrete is spilled on the straps 20 during the use of the device, the angles 32 will cut through any such spilled material and fully engage the straps 20 to permit the ejector plate to be properly positioned within the mold.

After the mold has been filled with concrete and the concrete properly settled and tamped therein, the mold is inverted from the position shown in Fig. 1 to that shown in Fig. 2 so that the ejector plate then lies on top of the block within the mold. The ejector plate is then held against upward movement while the mold is drawn upwardly to strip it from the block. To facilitate such movement of the mold, the ejector plate, at its ends, is provided with a pair of hand grips, indicated at 33, so that the ejector plate may be held against movement while the mold is drawn upwardly. Each hand grip preferably is in the form of a sheet metal plate having a flange portion 34 at one end bent to lie flat against the ejector plate and welded thereto. Each hand grip 33 is also provided, at its opposite end, with a flange portion 35 extending outwardly adjacent the flange 13 provided on the adjacent end plate 11. When the mold is in the position shown in Fig. 2, the fingers of each hand may be placed under the flange 13 on the end plate 11 while the thumb is placed on the flange 35 of the hand grip of the ejector plate. By forcing the flange 13 toward the flange 35, the ejector plate is held against the top of the block within the mold while the mold is moved upwardly to strip it from the block. The ejector plate is preferably provided with apertures 36 to prevent air pockets forming under the concrete when the mold is being filled. The apertures 36 also prevent any vacuum forming when the ejector plate is stripped from the block. The length of the hand grips 33 between the flanges 34 and 35 thereof is substantially equal to the depth of the frame 10, as is apparent in Fig. 3 of the drawings, so that when the mold is not in use or is packed for shipment, it has a thickness or depth substantially equal to the depth of the frame 10 alone without any parts projecting beyond such dimension.

In use, the mold is placed on the support A with the closed end 16 of the cores 14 upwardly, in which position the straps 20 supporting the cores are at the lower end of the mold. When in this position, the ejector plate will fall to the bottom of the frame 10 with the hand grips 33 projecting below the frame, as shown in Fig. 1. Should there be any concrete collected on the upper face of the straps 20 from previous use of the device, the edgewise engagement of the angles 32 will tend to cut through such spilled material or to crack it away so that the ejector plate will be permitted to fall to its fully lowered position, as shown in Fig. 4.

When the mold is thus placed, it is ready for filling with concrete. The concrete is poured or shoveled into the mold, tamped to cause it to completely fill the mold, and then settled by jarring the mold on the support A. The flanges 13 on the end plates 11 provide convenient means for grasping the mold to effect such jarring. The concrete is then leveled off flush with the upper flange 12 of the frame 10, when so positioned.

The block then is ready for ejectment from the mold and, for this purpose, the mold is removed from the support A and is inverted. This places the mold in the position shown in Fig. 2 and the flanges 13 on the plates 11 together with the flanges 35 on the hand grips 33 of the ejector plate may be grasped to hold the ejector plate against upward movement while the frame 10 is drawn upwardly from the block. The mold is thus stripped from the block and the block is left to harden. The mold, however, may be immediately used for forming another block.

The mold is relatively light in weight since it is made entirely of sheet metal. It is rigid in character and capable of withstanding rough usage without becoming bent out of shape since all of its parts are sufficiently reinforced or formed in such a manner as to avoid being readily bent. When the mold is not in use, it occupies a minimum of space since the hand grips 33 of the ejector plate lie within the frame 10 and do not protrude materially beyond the frame. The edgewise engagement of the angles 32 with the straps 20 provides adequate support for the ejector plate when serving as a bottom wall for the mold and will properly position the ejector plate so that blocks of uniform thickness are produced thereby.

I claim:

1. A concrete block mold comprising a rectilinear mold frame, a plurality of cores located within said frame in spaced relation thereto, straps for holding said cores in place and bridging the space between the cores and the frame, an ejector plate movable in said space and limited for movement in one direction by said straps, and means on said ejector plate for engaging said straps to effect such limitation of movement of the plate and having a relatively small area of engagement with the straps to prevent concrete spilled on said straps from interfering with movement of the plate.

2. A concrete block mold comprising a rectilinear mold frame open at opposite faces, a plurality of box-like cores located within said frame in spaced relation thereto, straps secured at their intermediate portions to said cores and at their ends to one face of said frame thereby bridging the space between the cores and the frame, and an ejector plate fitting within said frame and about said cores and movable from one face of the frame toward the other, said plate having reinforcing means adapted to engage the inner face of said straps edgewise to limit movement of said plate in one direction, the edgewise engagement of said means with said straps preventing concrete spilled on said straps from interfering with full movement of said plate toward said straps.

3. A concrete block mold comprising a rectilinear mold frame open at opposite faces, a plurality of box-like cores located within said frame

in spaced relation thereto, straps secured at their intermediate portions to said cores and at their ends to one face of said frame thereby bridging the space between the cores and the frame, and an ejector plate fitting within said frame and about said cores and movable from one face of the frame toward the other, said plates having reinforcing angles secured thereto with one leg of each angle flat against the plate and the other leg projecting therefrom to engage said straps edgewise to limit movement of the plate, the edges of the angles providing a blade action on any concrete spilled on said straps to provide for full movement of said plate toward said straps.

4. A concrete block mold comprising a rectilinear sheet metal mold frame having outwardly extending flanges at both of its faces, a plurality of box-like cores located within and spaced from the sides of the frame, a plurality of straps for holding the cores in place, each strap being secured at its ends to the flange on one face of the frame at opposite sides thereof, the intermediate portion of each strap being U-shaped and extending into the core a substantial distance and secured thereto to rigidly hold the core within the frame, an ejector plate movable within the frame and having apertures through which the cores extend, said straps limiting movement of the plate in one direction, and hand grips rigidly secured to said plate and engageable with said frame to limit movement of the plate in the opposite direction.

5. A concrete block mold comprising a rectilinear sheet metal mold frame having outwardly extending flanges at both of its faces, a plurality of box-like cores located within said frame in spaced relation to the sides thereof, a plurality of straps secured intermediate their ends to said cores and extending outwardly with their ends secured to one of the flanges of the frame for rigidly holding the cores in place, an ejector plate movably positioned within the frame and having apertures through which the cores extend, and hand grips for moving said plate to eject the block from the frame, each hand grip comprising a sheet metal plate having a flange portion at one end bent to lie flat against the ejector plate and secured thereto and a flange portion at the other end bent outwardly to be gripped with the adjacent flange on the frame for moving the ejector plate in ejecting the block, said hand grips having a length substantially equal to the depth of the frame whereby the mold when not in use may be limited to a dimension substantially equal to the depth of the frame.

LAWRENCE F. KREGER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,508,336	Jamison	Sept. 9, 1924
1,534,354	Besser et al.	Apr. 21, 1925
1,717,676	Garvin et al.	June 18, 1929
2,290,340	Leach	July 21, 1942
2,397,223	Valdastri, Sr.	Mar. 26, 1946