

March 26, 1946.

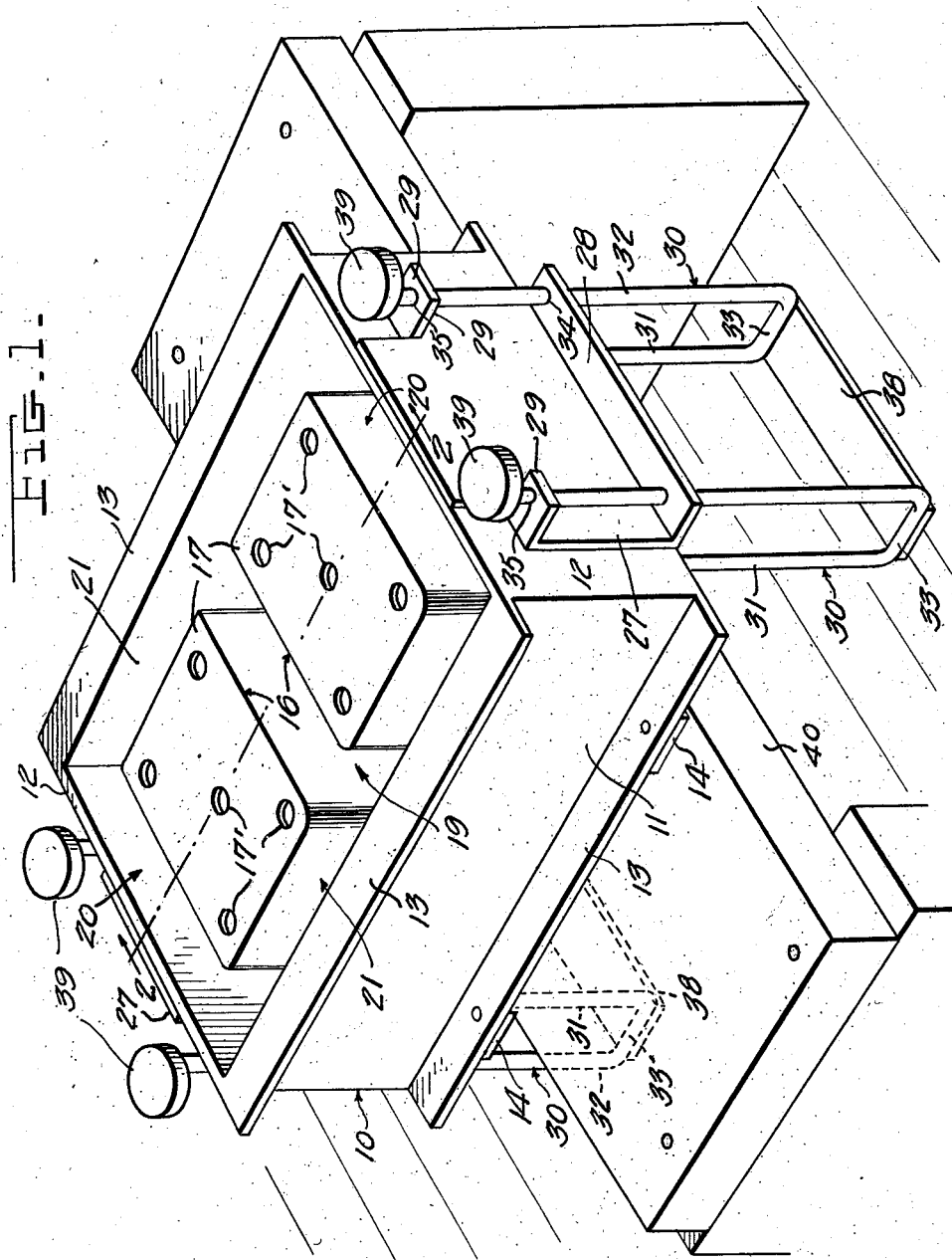
M. VALDASTRI, SR

2,397,223

MOLD FOR FORMING BLOCKS OR TILES

Filed Oct. 19, 1944

4 Sheets-Sheet 1



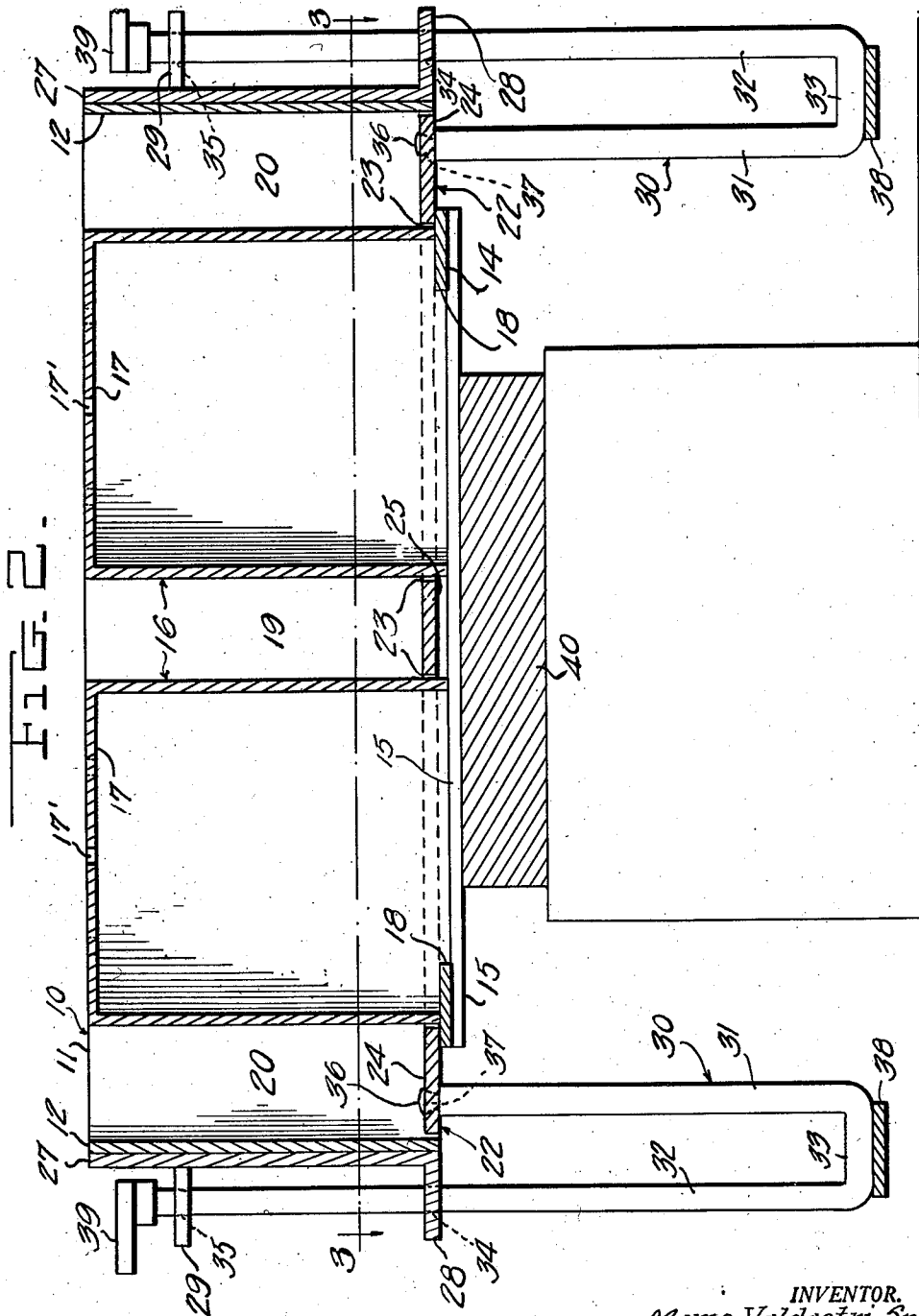
INVENTOR
Mario Valdastrz Sr.

BY *B. J. Williams*

ATTY

2,397,223

4 Sheets-Sheet 2



INVENTOR.
Mario Valdastrì Sr.
BY *B. J. Hinkle*
ATTY

March 26, 1946.

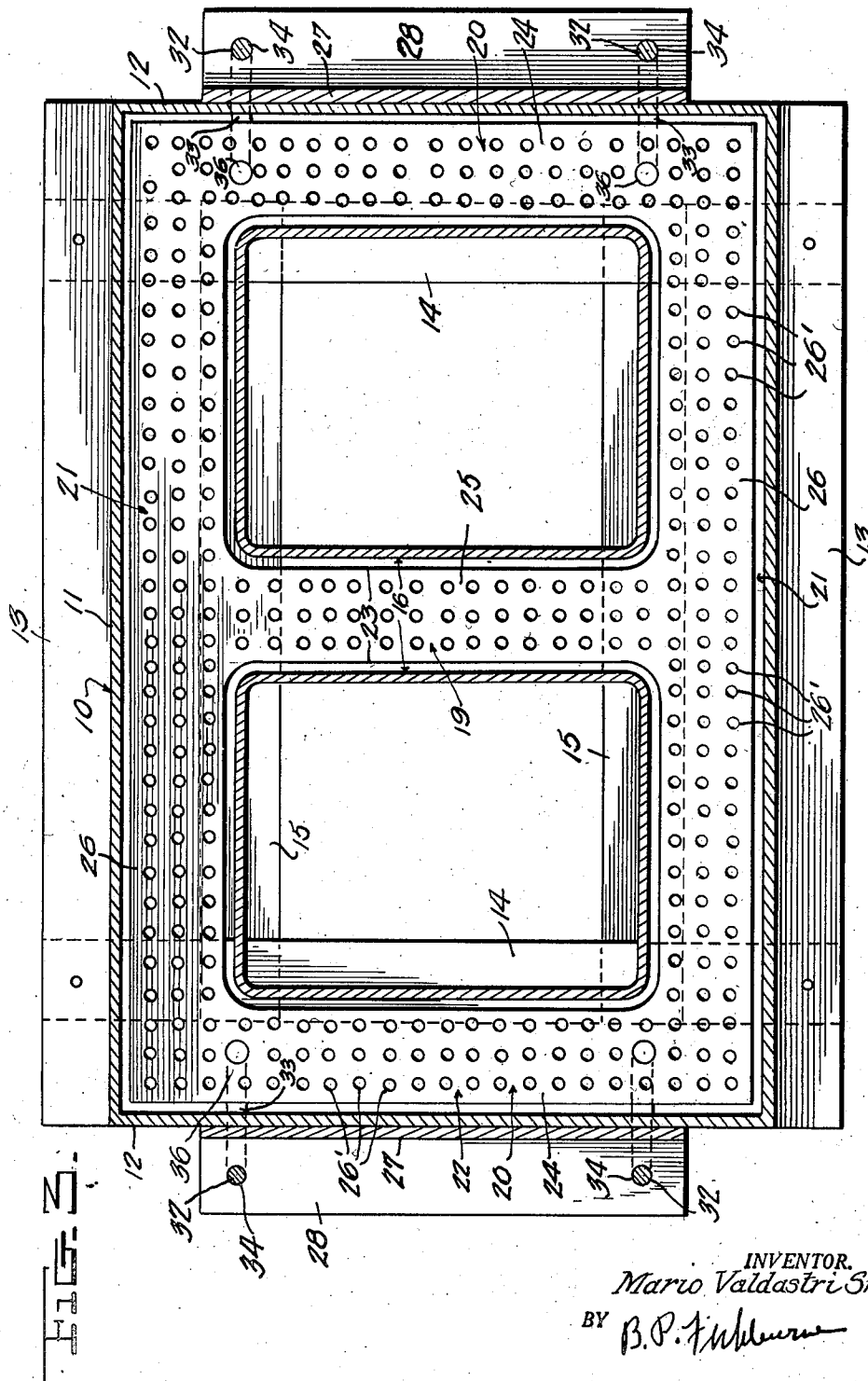
M. VALDASTRI, SR

2,397,223

MOLD FOR FORMING BLOCKS OR TILES

Filed Oct. 19, 1944

4 Sheets-Sheet 3



UNITED STATES PATENT OFFICE

2,397,223

MOLD FOR FORMING BLOCKS OR TILES

Mario Valdastrì, Sr., Kailua, Territory of Hawaii

Application October 19, 1944, Serial No. 559,357

8 Claims. (Cl. 25-119)

My invention relates to molds for forming hollow blocks, tiles or the like.

An important object of the invention is to provide a mold of the above mentioned character which is simple in construction, light, and may be manipulated by a single operator.

A further object of the invention is to provide a mold of the above mentioned character which may be used to produce the hollow tile or block, without the operator having previous experience.

A further object of the invention is to provide a mold of the above mentioned character adapted for use with a wet mix.

A further object of the invention is to provide means to compress the wet mix within the mold, to eliminate voids in the tile, before the tile is ejected from the mold.

A further object of the invention is to provide the mold box with finger engaging portions or flanges arranged adjacent to the bottom of the mold box before the mold box is inverted, so that the mold box will then have a high center of gravity which will facilitate its inversion.

A further object of the invention is to arrange the finger engaging portions or flanges suitably near the bars of the stripping devices so that the hands may span the distance between the same and engage therewith.

A further object of the invention is to provide means for preventing the wet mix from adhering to the ejector.

A further object of the invention is to prevent the formation of a vacuum within the hollow spaces of the formed tile when the cores are removed from the same.

Other objects and advantages of this invention will be apparent during the course of the following description:

The present application is a continuation in part of my co-pending application for molds for forming blocks or tiles, filed September 24, 1943, Serial No. 503,706.

In the drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a perspective view of a mold embodying my invention, showing the mold box in the upright position,

Figure 2 is a central vertical longitudinal section taken on line 2-2 of Figure 1,

Figure 3 is a horizontal section taken on line 3-3 of Figure 2, and

Figure 4 is a perspective view of the mold showing the same inverted, the tile or block being partly ejected.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 designates a mold box, which is preferably rectangular, and may be formed of sheet metal or the like. This mold box includes sides 11 and ends 12. The sides 11 are provided with outwardly projecting reinforcing flanges 13, at their top and bottom. The mold box 10 is preferably of a size to form a single tile or block, and may therefore be manipulated by a single operator. The sides 11 may be 12" long and the ends 12 may be 8" long and the sides and ends 4½" high or wide, while the invention is not restricted to these dimensions.

Rigidly secured to the sides 11 at their bottoms before the mold box is inverted, by any suitable means, are transverse straps or bars 14, having longitudinal straps or bars 15, engaging their outer faces and rigidly secured thereto. The transverse bars 14 are spaced inwardly from the ends 12 and the longitudinal bars 15 are spaced inwardly from the sides 11. Arranged within the mold box 10 are cores 16, which are preferably hollow and are formed of sheet metal, for lightness. The tops of these cores, Figure 2, are covered by ends 17, while their lower ends are preferably open. The ends 17 are provided with apertures 17', so that air may enter the cavities of the tile or block being formed, when the cores are being withdrawn from the cavities, thus preventing the creation of a vacuum within the cavities which might distort the tile or block. The lower ends of the cores 16 rest upon the longitudinal bars 15 and transverse bars 14, and are cut away at 18, to receive the transverse bars. The cores may be welded or otherwise rigidly attached to the bars 14 and 15. The cores 16 are spaced from each other for providing an inner transverse space 19, are spaced from the ends 12 for providing outer transverse spaces 20, and are spaced from the sides 11 for providing longitudinal spaces 21.

Arranged within the bottom of the mold box 10 when the mold box is in the upright position, Figure 2, is an ejector 22, having openings 23, for receiving the cores 16. This ejector comprises transverse webs 24, operating within the spaces 20, a transverse web 25 operating within the space 19, and longitudinal webs 26 operating within the spaces 21. These webs are preferably slightly narrower than the spaces within which they operate and are accordingly spaced from the walls of the spaces, which eliminates the possibility of any binding. The ejector 22 has its several webs provided with apertures 26, which

prevent the wet mix adhering to the ejector, when the ejector is separated from the formed tile or block. These apertures break any vacuum which might tend to form beneath the ejector. The concrete does not enter the apertures to any considerable extent and these apertures produce a rough surface upon the edge of the formed tile or block, which aids in the binding action with the mortar or the like.

Mounted upon the outer faces of the ends 12 are plates 27, preferably formed of sheet metal and which are rigidly attached to these ends by welding or the like. These plates are provided at their bottom edges when the mold box is in the upright position, Figure 2, with outwardly projecting horizontal flanges 28, preferably formed integral therewith by bending the plates 27 upon themselves. At their tops, the plates 27 are vertically slit and their material is bent outwardly to form horizontal ears or projections 29, integral therewith.

Adjacent to each end 12 of the mold box is a pair of vertical U-shaped rods 30. Each U-shaped rod includes inner and outer vertical legs 31 and 32 and a transverse end 33, these parts being integral, since the U-shaped rod is formed by bending a previously straight rod. The outer vertical edge 32 of the two U-shaped rods extend through openings 34 in the flange 28 and openings 35 in the ears 29. The legs 32 are adapted to slide freely within these openings 33 and 34 and the openings are preferably slightly larger in diameter than the legs. Each pair of inner legs 31 is rigidly attached to the transverse web 24 of the ejector. For this purpose, each leg 31 has a reduced extension at its end, to enter an opening 37 in the web 24, the end of the extension 36 being subsequently spread. The leg may also be welded to the web 24. At its lower ends, each pair of U-shaped rods 30 is rigidly connected with a horizontal strap or bar 38, secured to the transverse end 33 by welding or the like. Rigidly secured to the top ends of the leg 32 are feet 39. When the ejector 22 is in the lowermost position, Figure 2, it rests upon the transverse straps 14, and the feet 39 are now positioned slightly below or inwardly of the top edge of the mold box.

The operation of the mold is as follows:

The mold box 10 is arranged in the upright position and is placed upon a horizontal beam 40, extending between the pairs of legs 30, and having the longitudinal straps 15 resting upon the beam. With the mold supported at its bottom in the upright position, the ejector 22 is at the bottom of the mold box and is resting upon the transverse straps 14, with which it overlaps. The U-shaped legs 30 are in the lowermost position but are retained spaced from the floor and the feet 39 are at an elevation below the top of the mold box. The wet concrete mix, or other suitable material from which the tiles or blocks may be made, is now fed into the upper end of the upright mold box 10. This wet mix is suitably distributed in the mold box and the mold box may be shaken or vibrated to cause the mix to suitably settle and avoid the formation of air pockets or voids. By using a wet mix it is unnecessary to tamp the mix. The mold box is completely filled with the wet mix and the top is leveled off with a straight edge. Prior to the introduction of the wet mix into the mold box, we contemplate applying strips of light fabric, such as cheese cloth or other fabric such as canvas, upon the upper faces of the webs of the

ejector. The use of this fabric may be dispensed with. As stated, the mold box 10 is in the upright position and is supported by the beam 40 which is arranged at such an elevation that the mold box will be about table high or slightly lower. The operator now places the fingers of the two hands in engagement with the upper faces of the flanges 28 while the thumbs engage the lower faces of these flanges. While thus holding the flanges the mold box 10 is raised and separated from the beam 40. While still holding the flanges 28 in the manner stated the mold box is brought to a position near the floor, while retaining the mold box generally in the upright position. The surface of the floor is sprinkled with sand to prevent the block or tile from sticking. The mold is then turned upon its longitudinal axis to invert the same and bring its top into engagement with the floor. Before the mold box was inverted, the flanges 28 being at the bottom of the mold box, the mold box has a high center of gravity, and can be readily and conveniently tipped over in turning upon its longitudinal axis, for inverting. The inverted mold box is now resting upon the floor, while the feet 39 are slightly spaced above the floor. Before stripping the formed tile or block from the mold, the operator now strikes the bars 38 by a downward movement of the hands, which will cause the ejector 22 to compress the mix, adjust the mix within the mold box, and eliminates voids in the mix. The feet 39 are ordinarily spaced only a slight distance from the floor, such as about a quarter of an inch, and when downward pressure is applied to the bars 38 to compress or adjust the mix, these feet may be brought into engagement with the floor. The fingers now engage beneath the flanges 28 and the thumbs are brought into engagement with the upper faces of the straps 38. By arranging the flanges 28 at the bottom of the mold box before it is inverted, the flanges 28 and straps 38 are arranged sufficiently close so that the space between them may be spanned by the hand. The flanges 28 are now drawn upwardly while the straps 38 and U-shaped legs are held against upward movement. The mold box 10 is accordingly moved upwardly while the ejector is held against upward movement, with the result that the mold box is stripped from the formed block or tile, which remains upon the floor. The cores 16 are also moved upwardly with the mold box and are withdrawn from the formed block or tile. The openings 17 prevent the creation of vacuums within the cavities of the formed tile or block. The fabric strips will now adhere to the top edges of the block or tile and are separated therefrom. The apertures 26 reduce the tendency of the mix adhering to the ejector 22, and this is particularly true when the fabric is not used. The tendency of the mix to adhere to the ejector may also be reduced by washing the ejector. The U-shaped legs 30 and associated elements retain the mold box and cores against undue movement while the same are being moved upwardly from the formed block or tile, and also limit the upward movement of the mold box. All parts of the apparatus are permanently connected. The apparatus is light and may be manipulated by a single operator.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size, and arrangement of parts may be resorted to without

departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, what I claim is:

1. In a mold, a mold box, substantially horizontal hand grips attached to the ends of the mold box substantially at its bottom before the mold box is inverted and having openings formed therein, core means arranged within the mold box and spaced from the same, means attached to the bottom of the mold box and secured to the core means, an ejector mounted within the mold box adjacent to its bottom when the mold box is in an upright position, a pair of U-shaped member disposed adjacent to each end of the mold box and including inner and outer legs, the outer legs extending through the openings in the substantially horizontal hand grip and the inner legs being attached to the adjacent end of the ejector, and a substantially horizontal hand grip rigidly connected with the lower ends of each pair of U-shaped members, the second named substantially horizontal hand grip being arranged above and substantially overlapping the first named substantially horizontal hand grip when the mold box is inverted, the arrangement being such that when the mold box is inverted the thumbs may be placed upon the second named substantially horizontal hand grips and the fingers engaged beneath the first named substantially horizontal hand grips for raising the mold box and core means with relation to the ejector and before the mold box is inverted the fingers and thumbs may engage opposite faces of said first named hand grips for inverting the mold box which has a high center of gravity before being inverted.

2. In a mold, a mold box, substantially horizontal transverse hand grips rigidly attached to the ends of the mold box substantially at its bottom before the mold box is inverted and having openings formed therein, spaced cores arranged within the mold box and spaced from the same, means for holding the cores in place including transverse and longitudinal straps, the transverse straps being attached to the bottom of the mold box and spaced from the ends of the same, an ejector mounted within the mold box adjacent to its bottom before the mold box is inverted, parts of the ejector overlapping with parts of the transverse straps to limit the downward movement of the ejector, a pair of U-shaped members disposed adjacent to each end of the mold box and including inner and outer legs, the outer legs extending through the openings in the substantially horizontal hand grip and the inner legs being attached to the adjacent end of the ejector, and a substantially horizontal transverse hand grip rigidly connected with the lower ends of each pair of U-shaped rods, the second named substantially horizontal transverse hand grip being arranged above and spaced from the first named substantially horizontal hand grip when the mold box is inverted, the arrangement being such that when the mold box is inverted the thumbs may be placed upon the second named substantially horizontal hand grips and the fingers engage beneath the first named substantially horizontal hand grips for raising the mold box and cores with relation to the ejector and before the mold box is inverted the fingers and thumbs may engage opposite faces of the first named hand grips for inverting the mold box which then has a high center of gravity before being inverted.

3. In a mold, a mold box having sides and ends, plates arranged upon the outer faces of the ends and attached thereto and provided at their bottoms with outwardly extending substantially horizontal hand grips having openings and near their tops with outwardly extending ears having openings, hand grips being arranged substantially at the bottom of the mold box before the mold box is inverted, U-shaped members arranged near each end, each U-shaped member comprising inner and outer legs and a transverse end connecting them, the outer legs passing through said openings, feet secured to the upper ends of the outer legs, spaced cores arranged within the mold box and spaced from the ends and sides of the mold box, transverse bars disposed beneath the bottom of the mold box and spaced from the ends of the same and attached to the mold box, longitudinal straps secured to the transverse straps and spaced from the sides of the mold box, the cores resting upon and being secured to the transverse and longitudinal straps, the transverse straps having their outer longitudinal edges extending beyond the adjacent cores, an ejector mounted within the mold box and having openings to receive the cores, the end transverse webs of the ejector overlapping the outer free edges of the transverse straps, the free ends of the inner legs being attached to the outer webs of the ejector, and a transverse hand grip rigidly attached to the transverse lower ends of each pair of U-shaped rods, the last named transverse hand grip being arranged near and above and spaced from the first named substantially horizontal hand grip when the mold box is inverted, the arrangement being such that before the mold box is inverted the fingers and thumbs may engage opposite faces of the first named transverse hand grips for inverting the mold box which has a higher center of gravity before being inverted and when the mold box is inverted the thumbs may engage the transverse second named hand grips and the fingers the first named substantially horizontal hand grips to draw such hand grips toward the second named hand grips which are then above such first named hand grips.

4. In a mold, a mold box, substantially horizontal hand grips attached to the ends of the mold box substantially at its bottom before the mold box is inverted and having openings formed therein, hollow core means having apertured ends arranged within the mold box and spaced from the same, means attached to the bottom of the mold box and secured to the core means, an ejector mounted within the mold box adjacent to its bottom when the mold box is in the upright position, a pair of U-shaped members disposed adjacent to each end of the mold box and including inner and outer legs, the outer legs extending thru said openings and the inner legs being attached to the adjacent end of the ejector, and a substantially horizontal hand grip rigidly connected with the lower ends of each pair of U-shaped members, the second named substantially horizontal hand grips being arranged above and overlapping the first named substantially horizontal hand grips when the mold box is inverted, the arrangement being such that when the mold box is inverted the thumbs may be placed upon the second named substantially horizontal hand grips and the fingers engaged beneath the first named substantially horizontal hand grips for raising the mold box and core means with relation to the ejector and before the

mold box is inverted the fingers and thumbs may engage opposite faces of said first named hand grips for inverting the mold box which has a high center of gravity before being inverted.

5. In a mold, a mold box, substantially horizontal hand grips attached to the ends of the mold box substantially at its bottom before the mold box is inverted and having openings formed therein, core means arranged within the mold box and spaced from the same, attaching means secured to the bottom of the mold box and secured to the core means to hold the core means in place, an ejector mounted within the mold box adjacent to its bottom when the mold box is in the upright position and engaging the attaching means, a pair of U-shaped members disposed adjacent to each end of the mold box and including inner and outer legs, the outer legs extending thru said openings and the inner legs being attached to the adjacent end of the ejector, the free ends of the outer legs terminating short of the corresponding end of the mold box when the mold box is inverted and the ejector engages the attaching means, and a substantially horizontal hand grip connected with the lower ends of each pair of U-shaped members, the second named substantially horizontal hand grip being arranged above and overlapping the first named substantially horizontal hand grip when the mold box is inverted, the arrangement being such that when the mold box is inverted the thumbs may be placed upon the second named substantially horizontal hand grips and the fingers engaged beneath the first named substantially horizontal hand grips for raising the mold box and core means with relation to the ejector and before the mold box is inverted the fingers and thumbs may engage opposite faces of said first named hand grips for inverting the mold box which has a high center of gravity before being inverted.

6. In a mold, a mold box, first hand grips attached to the ends of the mold box substantially at its bottom before the mold box is inverted, an ejector mounted within the mold box adjacent to the bottom of the mold box before it is inverted, a pair of U-shaped members disposed adjacent to each end of the mold box and including inner

and outer legs, the inner legs being attached to the ejector, second hand grips attached to the ends of the U-shaped members remote from the ejector, the arrangement being such that before the mold box is inverted, the fingers and thumbs may engage the first hand grips for inverting the mold box which has a high center of gravity before being inverted and after the mold box is inverted, the hands may span the space between the first and second hand grips to engage therewith.

7. In a mold, a mold box, first hand grips attached to the ends of the mold box substantially at its bottom before the mold box is inverted, an ejector mounted within the mold box adjacent to the bottom of the mold box before it is inverted, a pair of U-shaped members disposed adjacent to each end of the mold box and including inner and outer legs, the inner legs being attached to the ejector, guide means for the members, a second hand grip attached to the ends of each pair of U-shaped members remote from the ejector, the arrangement being such that before the mold box is inverted, the fingers and thumbs may engage the first hand grips for inverting the mold box which has a high center of gravity before being inverted and after the mold box is inverted, the hands may span the space between the first and second hand grips to engage therewith.

8. In a mold, a mold box, first hand grips attached to the ends of the mold box substantially at its bottom before the mold box is inverted, an ejector mounted within the mold box adjacent to its bottom before the mold box is inverted, U-shaped members disposed adjacent to the ends of the mold box and including inner and outer legs, the inner legs being attached to the ejector, and second hand grips attached to the ends of the U-shaped members remote from the ejector, the arrangement being such that before the mold box is inverted, the fingers and thumbs may engage the first hand grips for inverting the mold box which has a high center of gravity before being inverted and after the mold box is inverted, the hands may span the space between the first and second hand grips to engage therewith.

MARIO VALDASTRI, SR.