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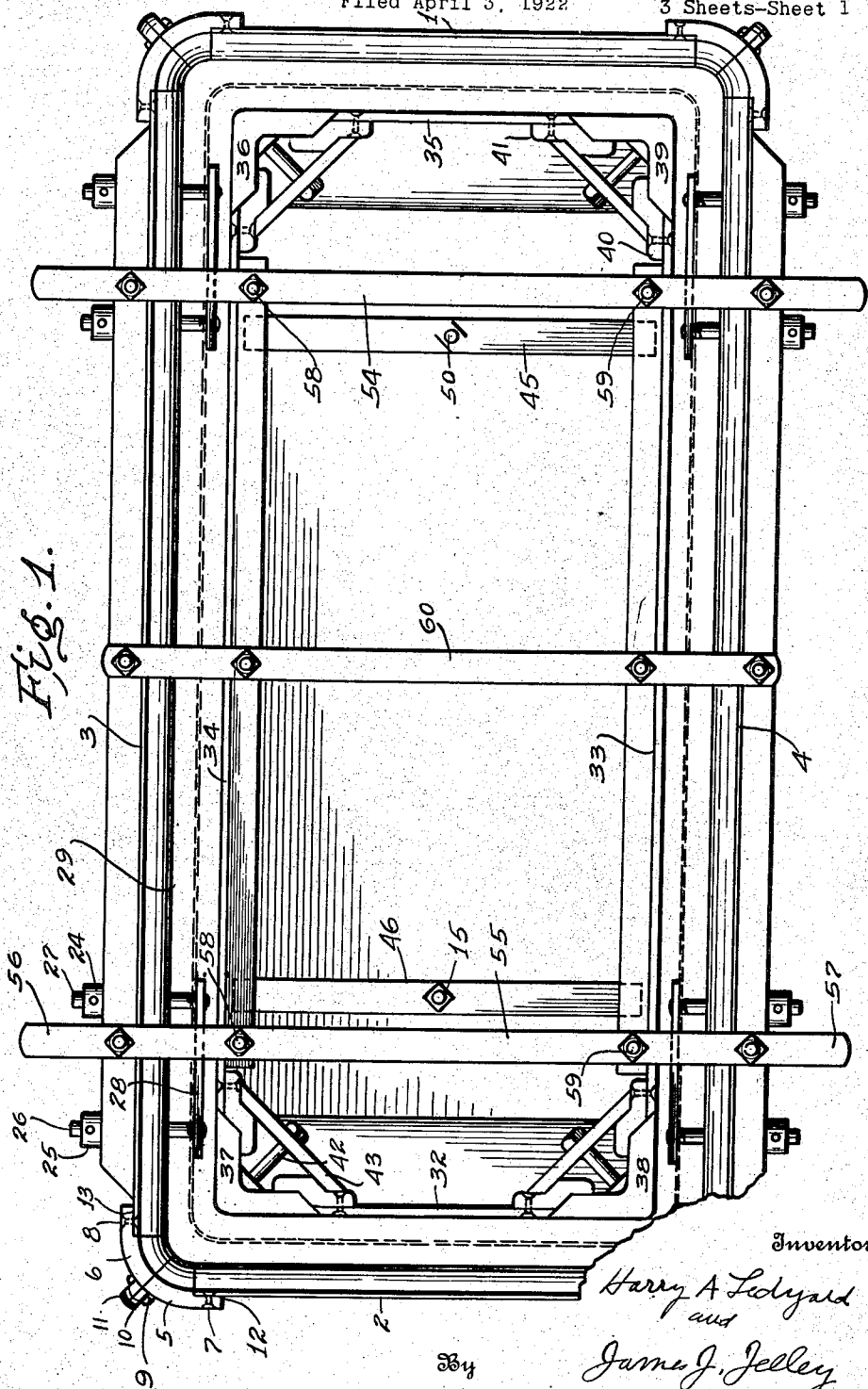
H. A. LEDYARD ET AL

1,515,057

COLLAPSIBLE MOLD

Filed April 3, 1922

3 Sheets-Sheet 1



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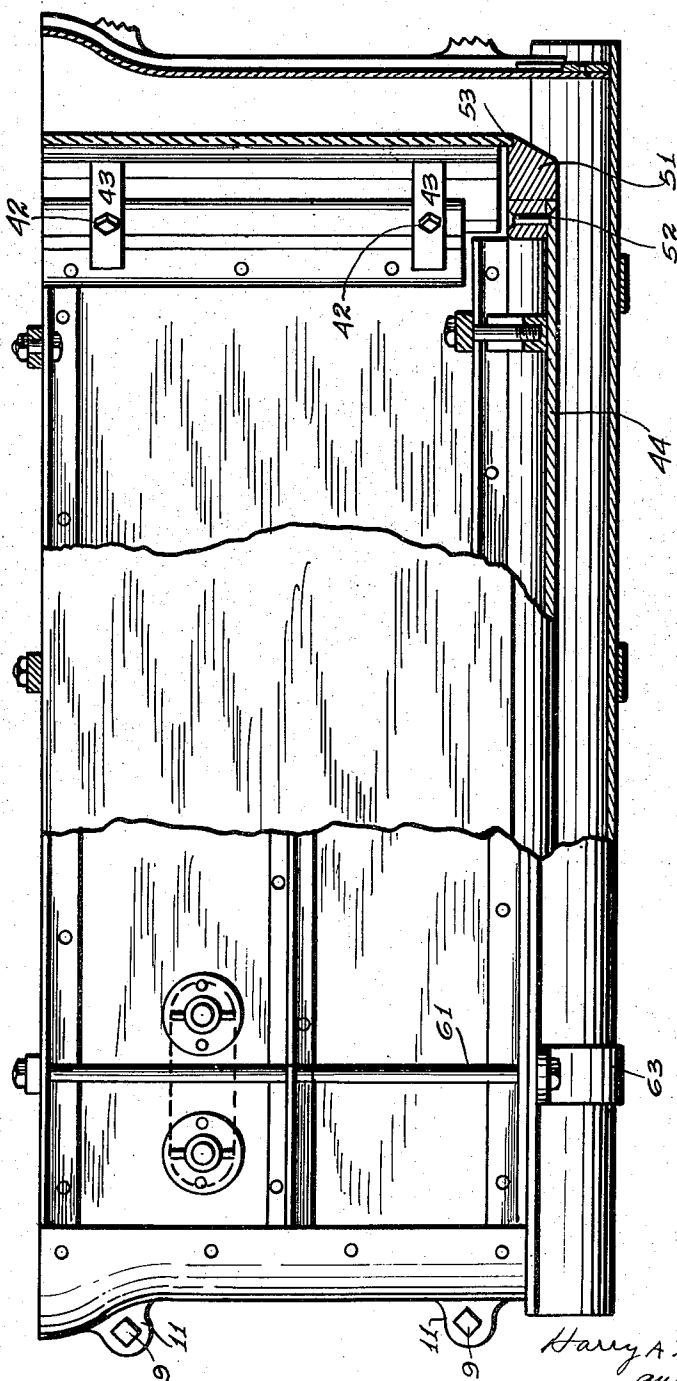
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Fig. 2.



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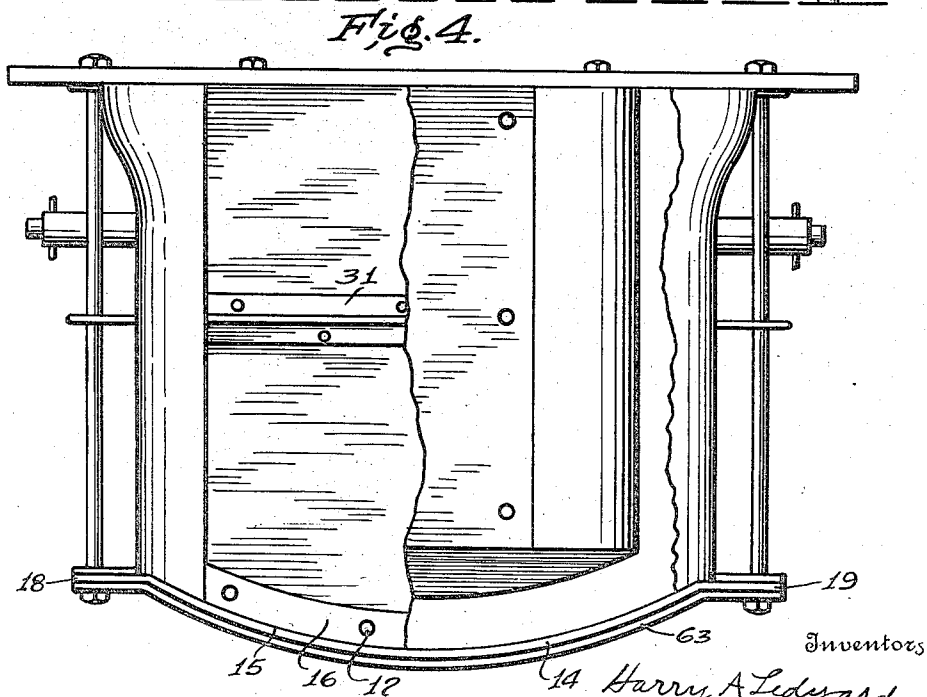
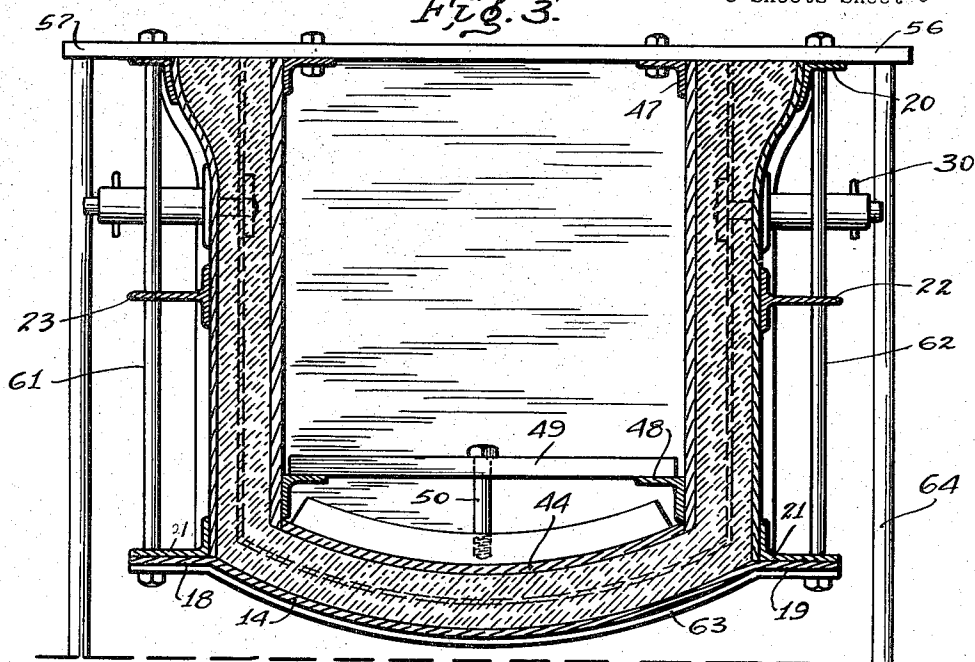
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

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COLLAPSIBLE MOLD.

Application filed April 3, 1922. Serial No. 548,956.

To all whom it may concern:

Be it known that HARRY AUGUSTUS LEDYARD and JAMES JULE JELLEY, citizens of the United States of America, residing at Ashland, in the county of Ashland and State of Ohio, have invented certain new and useful Improvements in Collapsible Molds, of which the following is a specification.

This invention relates to a collapsible or knock-down mold for producing burial vaults or other like articles, through the medium of plastic material such as concrete or the like.

The primary object of the invention is to construct a mold of a plurality of parts and assembling said parts in proper relation to each other to produce the form desired and providing means of holding and maintaining the parts in their proper relation to each other by clamping means, which clamping means can be manipulated to assemble or disassemble the parts, in an efficient, expeditious and rapid manner, thereby conserving the time and labor of the user.

Another object is to construct the body portion of the inner form of the mold of a plurality of members and clamping them together by clamping members and also combining and connecting therewith a bottom member which is also detachably clamped to the body portion through the medium of clamps.

Another object is to construct the body portion of the outer form of a plurality of parts comprising side and end members and securely attaching to said members rounded complementary corner members, securely clamping the corner members together at a point only where the abutting edges of the two converging lines of the corner members meet to allow means for rapid and efficient means of assembling and disassembling the forms.

A further object is to provide a detachable crown-shaped top or bottom, which is adapted to be clamped to the outer form of the mold through the medium of a yoke mechanism, which yoke mechanism is also adapted to provide means of suspending the inner form of the mold within the outer form spaced apart from the assembled outer form at a predetermined distance from the top or bottom of the inner surface.

A further object is to provide means for attaching or detaching a bottom form from

or to the outer collapsible body portion of the form of the mold to permit the parts of the outer portion of the form, to be collapsed and removed from the molded article, leaving the molded article resting upon, or being supported by the separate bottom of the outer form of the mold during the curing process, thereby permitting the further use of the form with another separate or independent top or bottom.

A further object is to construct a molding device capable of being used to produce molded articles such as a burial vault or the like.

A further object consists in providing a yoke mechanism which is adapted to be used with standards to support the assembled mold, or inner form thereof, above and free from the base or the like, upon which the standards are mounted, to facilitate transportation and handling of the assembled mold, or inner form, and to provide adjustable means for supporting and positioning screw threaded metal plates in the center of the matrix of the mold and to permit the plates to be imbedded in the molded article, to provide means for attaching handles to the molded articles.

These and other objects are attained by molding device described in the specification, claimed in the claims submitted herewith and shown in the accompanying drawings in which:—

Fig. 1 is a plan view of the molding device shown in assembled form.

Fig. 2 is a side elevation of the molding device showing part of the outer form of the mold partly in section and part of the inner form of the mold in section and a detail of the means for securing or holding the parts of the mold together.

Fig. 3 is a cross sectional view of the assembled molding device.

Fig. 4 is an end view of the assembled molding device, having a part of the outer form broken away to disclose the relation of the inner form thereto.

The drawings show a molding device constructed and embodying the invention for the purpose of molding burial vaults or the like, having a body portion with a connecting cover member made integral therewith, that may be used for a top or bottom according to the type, kind or character of the article it is desired to mold.

The application or use of the invention for the purpose of molding burial vaults is conventional showing the preferred use and embodying the invention in so far as structural features are concerned.

It will be obvious from the description and drawings that the invention can be used for manufacturing other articles by making immaterial changes or alterations in the construction of the parts without departing from the principle of the invention.

In order to clearly describe the invention and point out what is new in the claims, election has been made to show this invention to a device constructed for molding burial vaults.

The parts and the combinations thereof to accomplish the objects set out herein are preferably constructed as follows:—

The outer form of the mold is preferably made of sheet metal, rectangular in shape, constructed of end members 1 and 2 and side members 3 and 4.

The side and end members of the outer form near the top, are offset or flared outwardly from the body portion of the members to provide a wider space between the inner and outer forms of the mold at the top. From the tops of the offset portions of the side and end members to a predetermined point, the inner surface of the end and side members are formed straight merging with the offset portion and with the straight surface of the side and end members.

The construction of the form of the top and side members of the outer form, as described, is for the purpose of molding a wider base on the vault surrounding the chamber.

The members of the outer form 1, 2, 3 and 4, are detachably secured together by a plurality of members 5 and 6, which are riveted or otherwise fastened to the end and side members by the rivets 7 and 8 at one side and detachably secured together by a plurality of bolts or the like 9, which pass through the ears 10 and 11, formed upon each corner piece.

It will be noted that the members comprising the outer form of the body portion, are detachably held and maintained together only at a point where the converging lines of the corner members meet.

The corner members are rounded or formed adjacent to the top therein to conform with the shape of the upper portions of the side and end members.

In order to provide for smooth and unobstructed surfaces at the points where the corner members are attached to the side and end members, the corner members are rabbeted as indicated at 12 and 13, to receive the adjacent edges or ends of the side and end members of the outer form.

The side and end members of the outer form are straight from the flared or offset portion to the point of their engagement with a detachable bottom member 14.

The bottom member 14 provides that portion of a mold that forms the top of the vault or the like and is preferably made concavo-convex and the concave portion thereof abuts against the lower surface of the side members.

The bottom member 14 is adapted to engage the rounded lower edges of the end members as indicated at 15.

The end members are preferably reinforced or braced, by crown-shaped braces 16, which are attached thereto by rivets 17 as shown in Fig. 4.

It will be understood that in assembling the outer form and maintaining and holding the parts of the form together, that four sets of corner members are used, and that said sets of corner members are fastened together detachably, by clamping means arranged adjacent to the top and bottom of the corner members by identically the same clamping means at each corner of the form, as described and indicated by reference numerals 5 to 13.

In other words, the means of fastening the side and end members of the outer form together, are identical; hence, only one set of clamping means is described.

The location on the corner members of the fastening means is preferably arranged substantially as shown in Fig. 2.

The detachable bottom member 14 is also provided with longitudinal parallel flanges 18 and 19, the inner edges of which aline with the side members and with the bottom member at the point where it diverges from the flanges 18 and 19 as shown in Fig. 3.

Angle irons 20 and 21 are secured to the outside surface of each of the side members flush with the top and bottom edges thereof to strengthen the outer form and for a further purpose that will hereafter be described.

Brace irons 22 and 23, preferably T-shaped are also secured to the side members of the outer form to brace and strengthen the side members of the form intermediate of their lower and upper edges. (See Fig. 3.)

Tubular members 24 and 25 are secured to the side members at predetermined points, preferably adjacent to the ends thereof, and are adapted to support and aline the screw threaded members 26 and 27, to engage with screw threaded apertures in plates 28 and position same within the space or matrix 29 adjacent to the four corners of the outer form.

In order to position the plates 28 at predetermined horizontal positions within space 29, alined apertures are formed in

the tubular members 24 and 25 and the threaded bolts 26 and 27, to receive cotter pins or the like 30.

When the vault is molded the threaded bolts 26 and 27 are removed, leaving the plates 28 imbedded in each corner of the vault and adapted to be engaged by threaded bolts or screws to secure handles to the vault or the like.

The handles which are conventional are not shown in the drawings and are attached to the vault in any well known manner.

T brace irons 31 are attached for bracing and strengthening purposes to the end members of the outer form, preferably intermediate of the top and bottom edges of the end members as shown in Fig. 4.

The above description describes the construction and assembly of the parts of the outer form of the mold (which is preferably made rectangular in form) except the means for detachably securing the bottom member 14 to the outer form of the mold which will be described hereafter.

The construction and assembly of the inner form is as follows:—

Straight side and end members 32, 33, 34 and 35 are provided with their edges beveled to form miter joints with corner members 36, 37, 38 and 39.

The proportion of the parts described being of such size as to form, when assembled, a rectangular shaped inner form for the mold of less dimensions than the outer mold.

A plurality of shouldered cleats, 40 and 41 are riveted to the ends of the side and end members of the inner form and the free portions are adapted to overlap and engage the beveled shoulders of the corner plates at each corner of the form as shown in Fig. 1.

The corner plates are provided with screw threaded apertures preferably adjacent to the top and bottom thereof as shown in Fig. 2, to engage the threaded ends of bolts 42.

Clamping bars 43, having beveled edges are fitted to contact with the shouldered portions of the cleats and are adapted to be supported upon the bolts 42, which bolts when tightened, or drawn up, thoroughly clamp the corner members, cleats and side and end members together for the purpose intended and as shown in Fig. 1 of the drawings.

It will be observed that the construction described of the body portion of the inner form of the mold presents a straight and unobstructed outer surface.

Attention is further called to the fact in disassembling the inner form it is only necessary to loosen up the bolts 42 a few threads and then position the clamping bars 43, parallel with the corner members to

afford means for withdrawing the corner members and clamping bars and screws from the side and end members to collapse the inner form when desired. This operation can also be performed when it is desired to assemble the inner form preparatory to producing another molded article.

In other words, it is not necessary to unscrew the bolts entirely from their engagement with the threaded apertures provided in the corner plates to assemble the inner form, thereby saving the time and labor of the user.

The bottom 44 of the inner mold is detachably secured to the side and end members and is preferably made crown or concavo-convex shape as shown in Fig. 3.

It is also provided with crown-shaped bars 45 and 46 and provided with screw threaded apertures intermediate of the ends thereof.

Angle irons 47 are secured to the side members of the inner form of the mold with one of the angle iron leaves flush with the top edges of the side and end members.

Angle irons 48, are secured in spaced relation from the lower edges of the side members of the inner form to provide shoulders to engage the edges of the bottom member 44 as shown in Fig. 3.

Clamping bars 49 which are provided with apertures intermediate of the center thereof are supported upon the angle irons 48.

The clamping bars 49 are provided with apertures which are alined with screw threaded apertures in the crown-shaped bars 45 and 46, to receive threaded bolts 50, which are adapted when tightened to securely, but detachably clamp the bottom member 44 to the side members of the inner form through the medium of shoulders formed by the inner surface of the end members in association with the angle irons 48.

The bottom member 44 of the inner form is made shorter in length than the side members and the intervening space between the end members and the ends of the bottom member 44 is taken up by the insertion of blocks 51 which are provided with shouldered portions to overlap the inner surfaces of the bottom members 44. The blocks 51 are attached to the bottom member 44 by rivets 52 or the like as shown in Fig. 2.

It will also be observed that the ends of the blocks are provided at 53 with shouldered portions to receive the bottom edges of the end members as shown in Fig. 2.

The end blocks 51 are used for the purpose of strengthening the ends of the bottom member 44 and to provide shouldered means of connecting the end and side members securely, leaving the outer surface of the inner form smooth and unobstructed,

and also to provide means of increasing the rounded outside surface of the form at the lower end of the inner form thereby producing amplified rounded corners within the molded article at the meeting points of the top side and the members thereof and permitting more efficient drawing of the form from the molded article.

The construction described of the inner form of a mold provides means of conveniently and rapidly collapsing the body portion of an inner form and separating the bottom therefrom expeditiously and saving time and labor.

The inner form is suspended in a predetermined position with respect to the side and end members of the outer form, and spaced apart from the inner surface of the bottom member 14.

The yoke mechanism of the mold comprises yoke bars 54 and 55 which are provided with projecting ends 56 and 57.

The inner form is attached to and suspended in a predetermined position within the outer form by a plurality of bolts 58 and 59 which pass through or threadably engage suitable apertures formed in the yoke bars and angle irons 33 and 34 as shown in Fig. 1.

Additional yoke bars as indicated at 60 can be used to assist in suspending the inner form of the mold within the outer form of the mold if desired, but is not essential to the manipulation or use of the assembled mold.

Yoke bolts 61 and 62 may pass through suitable apertures, in all of the yoke bars 54, 55 and 60, the angle irons 20, thence through the T brace bars 22 and 23, thence through the angle irons 21, thence through the flanges 18 and 19 of the bottom member 14, thence through the strap hangers or supports 63.

When the yoke bolts 61 and 62 are tightened they securely draw the bottom member of the outer form of the mold in close contact with the side and end members of the body portion thereof as shown more clearly in Fig. 3.

The ends 56 and 57 of the yoke bars provide means of supporting the entire mold or the inner form when disassembled from the outer form of the support, through the medium of ordinary standards 64 or the like.

In the process of molding a vault or the like, the molding device is preferably assembled and mounted on a base, so as to mold the top of the vault or the like at the bottom of the mold or in other words upside down.

In assembling the mold for use the outer and inner forms of the mold are assembled as described to provide two rectangular hollow forms, one of which is made of smaller dimensions than the other so as to

be inserted within the larger form to leave a predetermined space between the outer surfaces of the enclosed inner form and the inner surfaces of the outer form, and also leave a space between the bottom surface of the inner form and the top surface of the inner form.

The space or matrix 29 between the outer and inner forms are then filled with cement or other plastic material to completely fill the spaces to insure the production of a complete molded article without defects in structure. It is preferable in molding the article to fill the plastic material into the spaces between the outer and inner form of the mold so as to leave a surplus of the material extending over the top of the mold to be trimmed or leveled off flush with the top or cover portion of the members comprising the assembled mold.

In a molding device adapted to mold the top, bottom or closing member of the article it is desired to produce at the bottom of the mold, the weight of the material tends to gravitate downwardly forcing the water in the material to the top of the mold where it is drained or permitted to drain off from the exposed portions of the molded article, thereby keeping the molded article free from defects due to the shrinkage of the material that occurs in molding the top or bottom of the article at the top of the mold, as in the use of an ordinary mold.

It will be observed that in molding the article as herein described that the necessity of sweeping or levelling the molded article in order to trim or smooth the inner or outer surface thereof, is obviated.

When the molded article is cured, or partially cured, the body portion of the inner form and the bottom member is collapsed or disassembled first by loosening the screws, turning the clamping bars to a position parallel with the corner members and detaching the members from the yoke bars. The corner members and clamping means can then be removed or separated from their association with the side and end members, permitting all the parts, including the bottom member 44, of the inner form to be removed from the interior of the molded article.

The side and end members of the outer form of the mold are then disconnected at each of its corners by separating the complementary corner members and the parts thereof are disassembled and removed from contact with the exterior of the molded article.

After the body portion of the outer form of the mold is removed from contact with the molded article, it is left to cure resting upon or being supported upon the bottom member 14 of the outer form for complete curing. This construction permits the body

portion of the outer form to be used again for producing another molded article without waiting for the time to expire that is usually allowed for the molded article to thoroughly cure.

In using the molding device for producing burial vaults the closed portion is molded with the body portion of the vault and can be used for a top or bottom for the body portion as desired. It is preferably supported on a foundation especially constructed to support same, or it can be supported upon any conventional type foundation.

15 We claim:—

1. In a mold, an outer collapsible form detachably connected at the diverging lines of the corners, a detachable bottom member provided with parallel longitudinal flanges, an inner collapsible form positioned within the outer form in spaced apart relation to the outer form, a bottom member for the inner form, means to detachably connect the bottom member to the inner form and a yoke mechanism adapted to suspend the inner form within the outer form and detachably connect the bottom of the outer form.

2. In a mold, collapsible forms arranged within and in spaced relation to each other, bottom members adapted to be detachably connected to said forms, means to detachably connect said bottom members to said form, standards, a yoke mechanism secured to the outer form, said yoke mechanism being provided with means for supporting the complete mold or the inner mold in association with the standards.

3. In a mold, an outer form comprising side and end members, a bottom detachably secured thereto, flange members arranged on the outside at the bottom and top of the outer form, means associated with the flange members to clamp the bottom member in close contact with the side and end members of the outer form, an inner collapsible form, said clamping means also being adapted to suspend the inner collapsible form within the outer form, inner flange members secured within the inner form adjacent to the bottom thereof, supporting bars adapted to be supported on said inner flange members, means to support the detachable bottom member from the supporting bars and adapted to clamp the detachable bottom member of the inner collapsible form in close contact with the side and end members thereof, corner members adapted to fit the side and end members of the inner form and clamping means adapted to be connected to the said corner members to detachably clamp the corner members to the sides and ends of inner form.

4. In a mold, an outer form comprising side and end members, a bottom provided with flanges detachably secured thereto,

flange members arranged on the outside of and at the bottom and top of the side of the outer form, means associated with the flange members to hold the bottom member in close contact with the side and end members of the outer form, an inner collapsible form, said means also being adapted to suspend the inner collapsible form within the outer form, flange members secured within the inner form adjacent to the bottom thereof, a detachable bottom for the inner collapsible form, clamping bars supported on said last mentioned flange members and means to connect the bottom member to the clamping bars to maintain the detachable bottom of the inner collapsible form in close contact with the side and end members of the inner form, corner members adapted to fit the side and end members of the inner form, clamping means comprising bars which are adapted to be connected to the said corner members, corner members made in two parts secured to the corners of the outer form and having ears formed thereon which are adapted to receive means for holding the sides and end members in assembled form.

5. In a mold, comprising an outer mold having end and side members held together by two complementary corner members which are fastened to the side and end members and clamped together a collapsible form positioned within said outer form, corner members secured to the end and side members of the inner collapsible form through the medium of a clamping mechanism, angle irons secured to the outer side of the outer form, angle irons secured to the inner surface and adjacent to the top of the side members of the inner collapsible form, supporting bars associated with said angle irons, a detachable bottom for the inner collapsible form, a clamping mechanism for securing said bottom to the inner collapsible form and means of adjustably holding reinforcement plates between the inner and outer mold forms.

6. In a collapsible mold, an outer form comprising end and side plates, means to detachably hold said side and end plates together, a detachable bottom provided with flanges adapted to be secured to said outer form, an inner form adapted to be supported within and in spaced relation to the outer form, means supported on the top of the outer form which also clamps the bottom of the outer form to the side and end plates, a detachable bottom for the inner form, a clamping mechanism secured within the inner form and adapted to secure the detachable bottom to the inner form and means to adjustably hold plates between the sides of the inner and outer forms.

7. In a mold, an outer collapsible form comprising side and end members, a bottom

member provided with longitudinal flanges detachably secured to the outer collapsible form, flange members arranged on the outside of and adjacent to the bottom and top 5 of the outer form, clamping means associated with the flange members to clamp the bottom members of the outer form in close contact with the side and end members, said clamping means also being adapted to sus- 10 pend an inner collapsible form within and in spaced relation to the outer form, an integral bottom detachably secured to the inner collapsible form, angle bars carried by the side members and serving to limit the upward 15 movement of the bottom, and a bar cooperating with said angle bars and having a clamping connection with the bottom to secure the bottom in place.

8. In a mold, comprising an outer mold 20 having end and side members held together by complementary members which are fast-

ened to the side and end members, means to hold said members together, an inner collapsible form positioned within the outer form in spaced relation thereto, corner 25 members secured to the end and side members through the medium of a clamping mechanism which holds the end and side members assembled, angle irons secured to the outside of the outer form, angle irons 30 secured on the inside adjacent to the top of the side members of the inner form, bars associated with said angle iron members, and an integral detachable bottom having 35 bars secured to the interior thereof for association with a vertically arranged clamping mechanism.

In testimony whereof we affix our signatures.

HARRY AUGUSTUS LEDYARD.
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