Jan. 9, 1940. T. J. BURNS 2,186,097

ADJUSTABLE FORM FOR SECTIONAL CONCRETE BURIAL VAULTS

Filed May 27, 1939 2 Sheets-Sheet 1

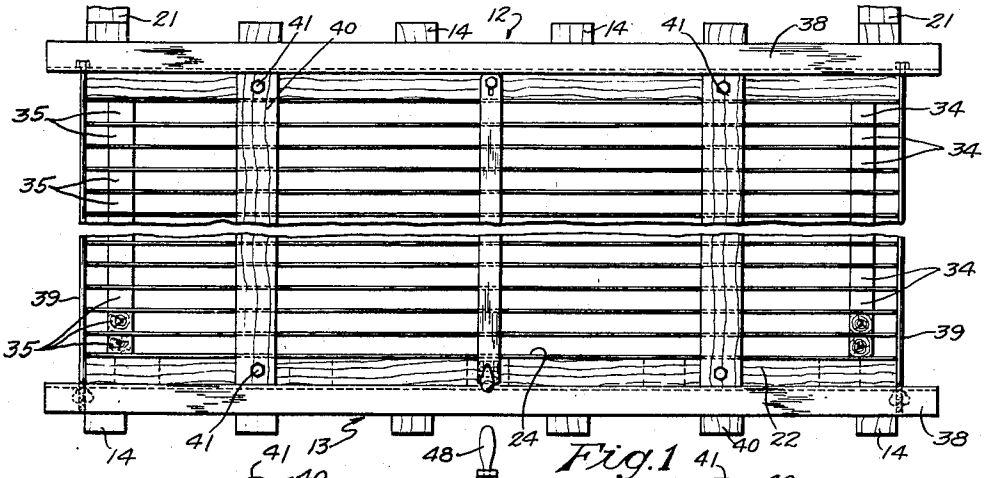


Fig. 1

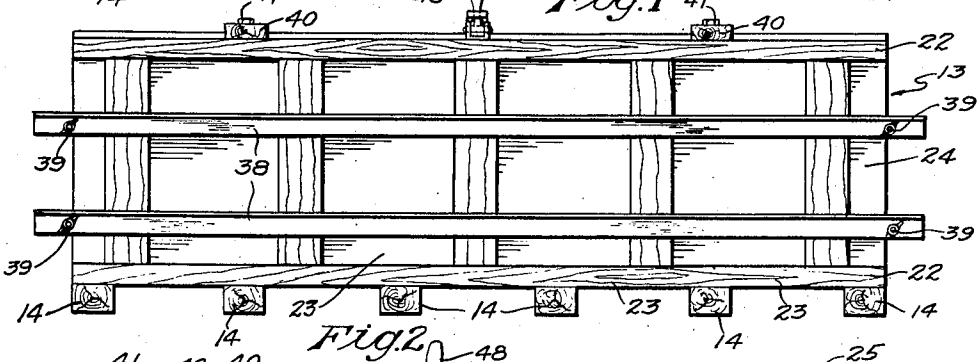


Fig. 2

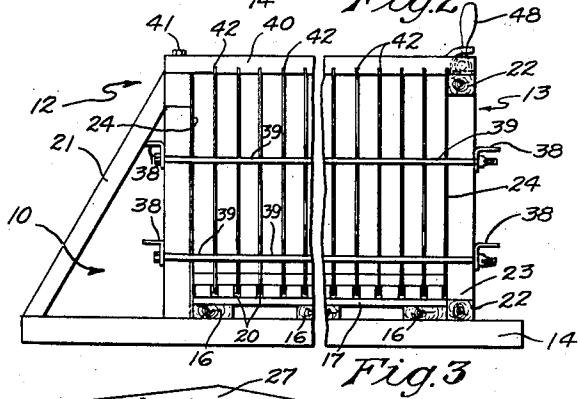


Fig. 3

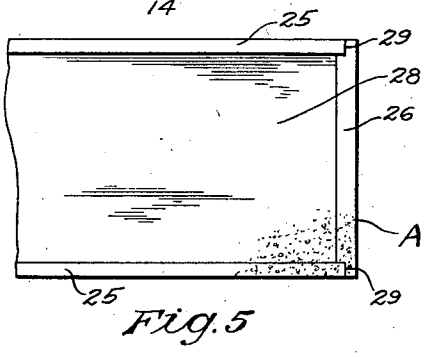


Fig. 5

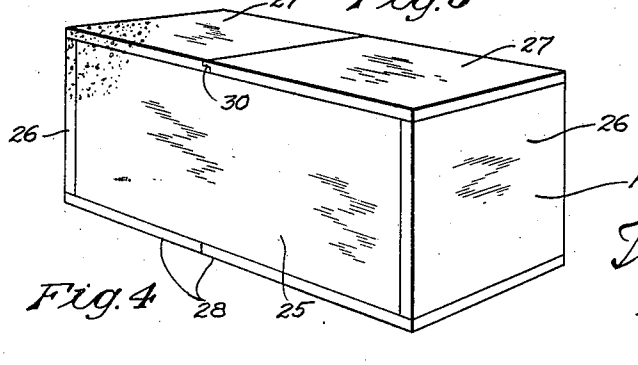


Fig. 4

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ADJUSTABLE FORM FOR SECTIONAL CONCRETE BURIAL VAULTS

Filed May 27, 1939 2 Sheets-Sheet 2

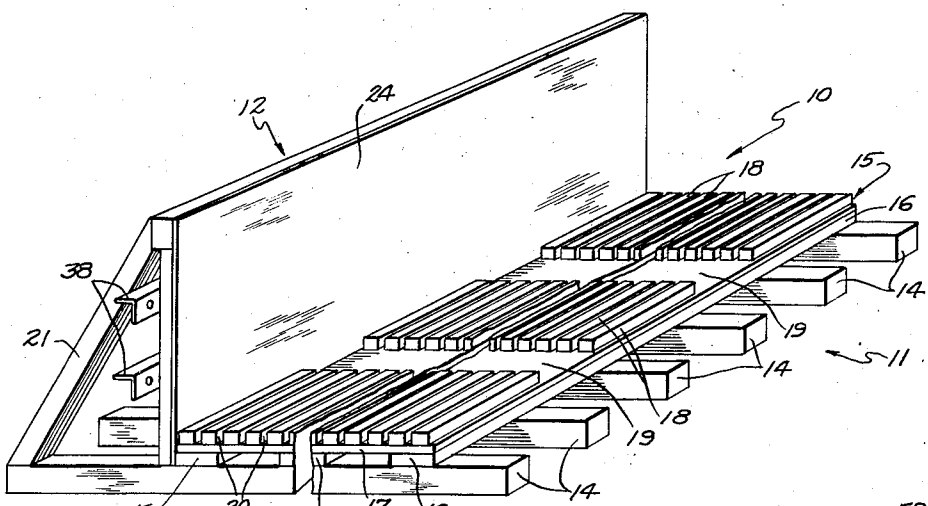


Fig. 6

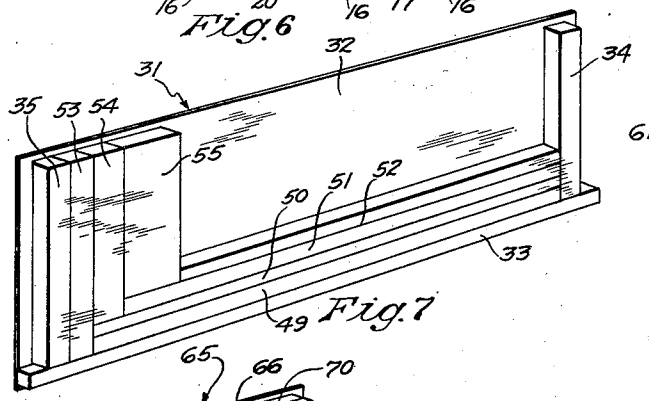


Fig. 7

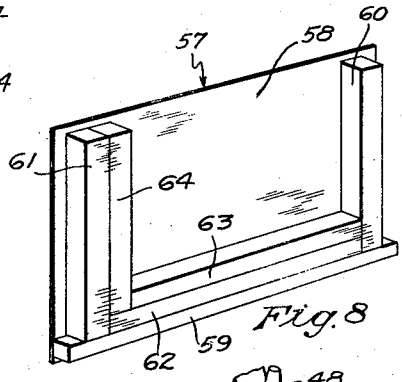


Fig. 8

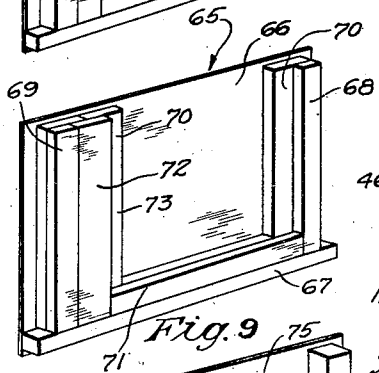


Fig. 9

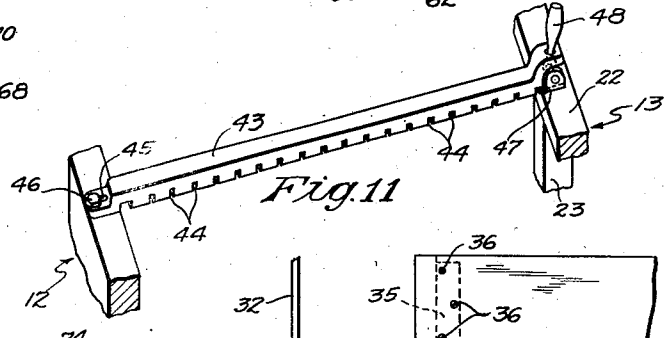


Fig. 11

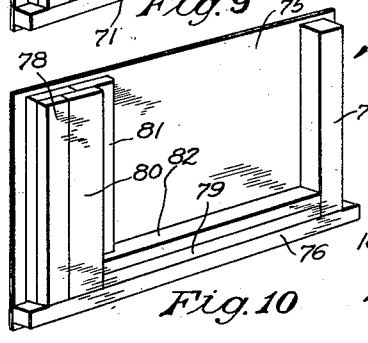


Fig. 10

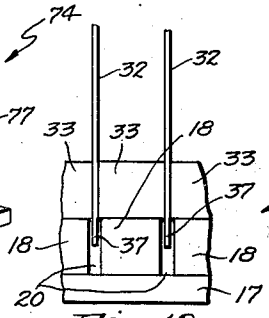


Fig. 12

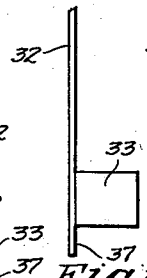


Fig. 13

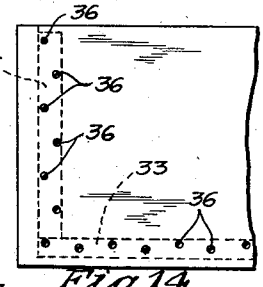


Fig. 14

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UNITED STATES PATENT OFFICE

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ADJUSTABLE FORM FOR SECTIONAL CONCRETE BURIAL VAULTS

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Application May 27, 1939, Serial No. 276,065

11 Claims. (Cl. 25—121)

This invention relates to new and useful improvements in molding forms, and has particular relation to adjustable forms for molding sectional concrete vaults or tanks.

Sectional concrete burial vaults are at present made up in ten different sizes and each vault includes four different sizes or shapes of slabs. Thus the complete equipment for the making of such vaults includes forty assemblies of forming means. An object of the invention is to provide a set of forms which can be used for the making of all of the various sizes of slabs used in such vaults whereby the cost of equipment used and space required in the manufacture of such slabs is materially reduced.

Another object is to provide equipment of the class indicated wherein the casting plates used may be removed from the mold with the partly set slabs on such plates and thereafter the plates, supporting the slabs, are deposited in another place for full curing or setting of the slabs whereby the mold may be frequently stripped and set up again with other casting plates so that the mold is not held out of production while poured slabs fully season.

Other objects and advantages will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawings wherein a satisfactory embodiment of the invention is shown. However, it is to be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the scope of the invention.

In the drawings:

Fig. 1 is a top plan view of the adjustable form of the invention set up as when in use;

Fig. 2 is a side elevational view thereof;

Fig. 3 is an end elevational view of the same;

Fig. 4 is a perspective view of a vault or tank the slabs comprising which have been made with the form of the invention;

Fig. 5 is a top plan view of one end portion of the vault the cover being omitted;

Fig. 6 is a perspective view of the mold when stripped;

Fig. 7 is a similar view of a side slab casting plate;

Fig. 8 is a perspective view of a bottom slab casting plate;

Fig. 9 is a perspective view of an end slab casting plate;

Fig. 10 is a similar view of a top slab casting plate;

Fig. 11 is a perspective view of a vibrator means employed;

Fig. 12 is a detail end elevational view showing the relation of the lower edges of the plates to the supporting floor of the mold;

Fig. 13 is an edge view of the lower portion of said plate alone and showing the lower slab edge forming member on the plate; and

Fig. 14 is a view in elevation, the view being taken as when looking from the left in Fig. 13.

Referring in detail to the drawings the form of the invention comprises a mold generally designated 10 and including a base 11 together with a wall 12 fixed to the base, and a wall 13 movable from the base. It may be of wood or steel construction. Base 11 includes supporting beams 14 on which is disposed a platform 15 comprising longitudinal sill members 16, and a base board or floor 17 on the upper side of which are runners or cleats 18 arranged in three sections whereby to provide spaces or channels 19 for a purpose which will appear. The runners 18 are also spaced apart longitudinally whereby channels 20 are provided extending longitudinally of the floor for a purpose to be described.

It is noted that the beams 14 project at both longitudinal edges of the platform 15 and the fixed wall 12 rests on such projecting portions at one edge of the platform and may be braced as by inclined members 21 secured to the wall and the outer end portions of certain of said beams. The removable wall 13 rests on the projecting beam portions at the other side of the platform and the said walls extend above the platform. Wall 13 comprises a heavy construction of frame work including longitudinal and vertical members 22 and 23 respectively, adapted to clamp the sections of the mold against the fixed wall 12 as will be described. Fixed wall 12 may be of like construction or may be of a one-piece construction as shown, and has a heavy metal plate 24 fastened to its inner side.

The mold thus constructed is adapted to receive a plurality of casting plates which differ somewhat in construction depending on the slab to be cast. A sectional vault to be made from slabs cast with the form of the invention is shown in Figs. 4 and 5 and comprises a pair of like sides 25, a pair of like ends 26, a pair of like top slabs 27 and a pair of like bottom slabs 28. It is noted that the end slabs 26 are rabbeted at their vertical edges at 29, whereby to brace the sides of the vault, and that the top slabs have an overlapping or half together joint 30 where they come together. The side slabs 25 are usually about 1½

inches thick while the end, top and bottom slabs are usually about 2 inches thick.

From the above it will be understood that the assembling of the vault requires the use of four different shapes, sizes or constructions of slabs. The casting plates which will now be described provide for the forming or casting of such different constructions of slabs and for the casting of such slabs in various sizes.

Fig. 7 shows the casting plate to be used in the casting or molding of the side slabs 25 of the vault. Such plate designated 31 comprises a metal plate 32 of heavy gauge, such for example as about $\frac{3}{16}$'' steel and of the proper size. To one face of such plate are secured, as by means of screws 36 or the like, a horizontal spacer member 33 located adjacent the lower edge of the plate and a pair of vertical spacer members 34 and 35 located adjacent the respective ends of the plate. These members may be of wood or metal. The lower ends of the vertical members 34 and 35 abut the upper surface of the horizontal member 33 and thus a U-shaped formation results at the side of the metal plate 32. This U-shaped formation together with the plate 32 provides a pocket open at one side and at its upper end, and will be understood that the thickness of this pocket and therefore the thickness of the slab cast in it is determined by the thickness of the members 33, 34 and 35.

Attention is directed to the fact that the horizontal member 33 is spaced slightly above the lower edge of the plate 32. It is difficult to provide such metal plate with an absolutely straight edge and since the slabs should have such an edge the horizontal member is applied to the metal plate in slightly spaced relation to the lower edge of the latter. This is clearly shown in Figs. 13 and 14 and in the latter figure the screws 36 securing the various members to the metal plate are also shown.

When side slabs 25 are to be cast a series of the casting plates 31 are assembled in the mold 10 in side-by-side relation. Thus the metal plate of one casting plate is disposed against and closes the open side of the pocket of the next adjacent casting plate leaving such pockets open only at their upper ends. That is, the metal plate of one section is up against the outer edges of the members 33, 34 and 35 of the next plate or section. In the mold the lower edges 37 of the metal plates enter into the channels 20 provided by spacing of the runners 18 and the lower or horizontal members 33 of the casting plates rest on such runners, all as best shown in Figs. 3 and 12.

Thus since the members 33 have been carefully applied to the metal plates to give a straight horizontal bottom edge to the slab the casting plates set properly in the mold and will not have a tendency to rock or wobble and their upper edges will all be even with one another so that when the concrete is later poured into the mentioned pockets it will be brought to the same height in each pocket and the operator will know that he will have the same size of slab from each pocket. After the casting plates are arranged in the mold the removable side wall 13 of the latter is applied. If the casting plates or sections are assembled with the open sides of the pockets or cavities toward the wall 13a metal plate like plate 24 may be secured to frame 13 to close the open side of the pocket of the last casting plate, or if desired the wall 12 and plate 24 may be used to close the open side of the pocket of the first casting plate and then the others assembled in order.

Now angle irons 38 carried by the two walls 12 and 13 are bolted together by the relative long bolts or tie rods 39 and the latter drawn tight to securely clamp the casting plates against one another. Spacer bars 40 are secured to the upper edges of the walls 12 and 13 as by bolts 41 and such bars in their inner or under sides have notches or slots 42 spaced as should be the upper edges of the metal plates 32. Such notches (see Fig. 3) receive the upper edge portions of such metal plates and maintain such portions of the plate in the proper spaced relation to one another and prevent their being forced laterally out of position by the pressure of the concrete mixture in pouring.

A vibrator means or a means for shaking down or placing the concrete in the pockets of the casting plates is provided. Such means includes a bar 43 provided in its under side with notches 44 spaced to receive the upper edge portions of the metal plates of the series of casting plates when the latter are in the mold. Bar 43 is arranged in position spanning the upper side of the mold and has a slot 45 in one end portion through which is passed a bolt 46 securing such end portion to the mold wall 12, but providing for limited reciprocating movement of the bar relative to such wall. To the upper longitudinal member 22 of the wall 13 is secured a bracket 47 pivotally mounting a hand lever 48 passing through the adjacent end of the bar 43. On rocking of the lever 48 the bar 43 will be reciprocated and will impart a jar or certain vibratory movement to the upper portions of the metal plates 32 to help pack or place concrete poured into the pockets of such plates.

After the parts have all been assembled as above it will be clear that each pocket at the side of its metal plate will be open only at its upper end. The side of the pocket of one casting plate is completely closed by the metal plate of the next casting plate. The screws 36 have their heads countersunk although it should be borne in mind that the U-shaped formations need not be of wood but may be of metal and may in fact be formed with or permanently attached to the metal plates. The concrete mixture is now poured into the pockets through their open upper ends. After the concrete has set sufficiently to hold its shape but before it is completely cured the casting plates with the concrete slabs in their pockets may be lifted from the mold and stored until the slabs are fully cured. Thus it is not necessary to tie the mold up with one set of casting plates while the slabs recently poured are curing. The channels 18 between the sections of the runners 18 are provided in order that lifting hooks or the like may be inserted under the casting plates to lift them from the mold.

The longitudinal member 33 together with the vertical members 34 and 35 define a pocket of a size for the casting of side slabs 25 of the largest size desired. When smaller slabs are to be cast inserts are used. Such inserts are provided in pairs or singly as is required, and in Fig. 7 it will be noted that the ends of the horizontal inserts 49, 50, 51 and 52 of each pair abut the vertical edges of the vertical inserts 53, 54 and 55 of the respective pairs. The horizontal inserts rest on the upper edges of one another and abutting the vertical inserts maintain the latter in their proper positions. As each pair of inserts is placed the pocket is smaller and thus provides for the casting of a smaller slab. Thus by using one or more

inserts of the proper width any size of slab desired may be cast.

Fig. 8 shows the casting plate for the casting of the bottom slabs of the vault. Casting plate 57 of Fig. 8 includes a metal plate 58 of heavy gauge to one side of which are secured the spacer members 59, 60 and 61 defining a pocket for the casting of the large size of bottom slabs. These members are arranged as described for the members of Fig. 7 and function in the same manner. When bottom slabs of smaller size are to be cast a single bottom insert 62 may be used or thereafter a bottom insert 63 and a vertical insert 64, it being understood that the number of inserts is limited only by the sizes of slabs desired.

Fig. 9 shows the casting plate 65 to be used for the forming of the end slabs 26 of a vault. Plate 65 includes a heavy gauge metal plate 66, a bottom pocket forming member 67, and the side or vertical members 68 and 69. Each of the latter members is shown as of two part construction whereby to provide offsets 70 so that the end slabs will be formed or cast with the rabbets 29 above described. When smaller sizes of end slabs are to be cast bottom inserts 71 and vertical inserts 72 may be used, it being noted that the latter insert is provided with an offset 73 whereby the desired rabbet will be formed in the slab edge cast against it. In this case a rabbet is formed at each end of the slab. It will be understood that the number of inserts provided is limited only by the number of sizes of end slabs to be cast.

Fig. 10 shows the casting plate 74 to be used for the forming or casting of the top slabs 27 of the vault. Casting plate 74 includes a metal plate 75 of heavy gauge to one side of which are secured bottom horizontal spacing members 76 and vertical end members 77 and 78 of which the latter has an offset whereby the edge of the slab cast against it will be provided with the tongue-like portion required for the half together or rabbeted joint shown at 30 in Fig. 4. Through the use of bottom or horizontal insert 79 and vertical insert 80 the size of the slab cast will be reduced. It is noted that the vertical insert 80 is provided with an offset 81 to provide for the formation of the above mentioned tongue-like portion or rabbet on the edge of any slab cast against said insert. Any desired number of inserts may be provided as for example the additional horizontal or bottom insert 82. When the plates or sections are clamped together in the frame between the walls 12 and 13 the various metal separating plates will be clamped against the inserts 50 to 55, 62 to 64, 71 to 73 and 79 to 82 to retain them in their proper positions in the mold.

From the foregoing description taken in connection with the accompanying drawings it will be clear that the invention provides means whereby with a mold and a single set of casting plates together with inserts, slabs for all desired sizes or sectional vaults and tanks may be cast. Since there are four different shapes of slabs necessary in the assembling of a vault or tank it will be apparent that with the four plates and the inserts I am able to make all ten sizes of vaults.

In addition after a set of slabs have been poured and have partly set the casting plates may be removed from the mold by first removing the mold wall 13 and thereafter passing an attaching means under the casting plates through the channels 19 and lifting the casting plates out of the mold. The plates with the partly cured or set slabs in their pockets may be stored in any convenient location until the slabs are fully cured. In the meantime the mold may be in use with other casting plates. It is due to the formation of the U-shaped pockets with the metal plates that the partly set or cured slabs may be removed from the mold and then left in the pockets until fully cured.

Having thus set forth the nature of my invention, what I claim is:

1. In a form of the class described, a mold including a base, a wall at each edge of and extending above the base and of which at least one such wall is movable from the base, a series of casting plates each including a plate and a horizontal member and end vertical members secured against one side of said plate in U formation and forming with the plate a pocket having an open side and an open upper end, said casting plates arranged on the base of said mold between said walls with the plate of one casting plate against the open side of the pocket of the next adjacent casting plate to close said side and thus form a pocket open only at its upper end for the reception of concrete, and a series of inserts adapted to be disposed against the inner edges of said vertical members and the upper edge of said horizontal members for reducing the size of said pockets.

2. In a form of the class described, a mold including a base, a wall at each edge of and extending above the base and of which at least one such wall is removable from the base, a series of casting plates each including a metal plate and a U formation against one side thereof and forming therewith a pocket having an open side and an upper open end, said casting plates arranged on said base in side-by-side relation with the metal plate of one casting plate against and closing the open side of the pocket of the next adjacent casting whereby said pockets are open only at their upper ends for the reception of concrete and whereby as the concrete becomes set in said pockets the casting plates may be removed from the mold and stored with the concrete in said pockets for curing and the mold thus released for the reception of other casting plates.

3. In a form of the class described, a mold including a base, a wall at each edge of and extending above the base and of which at least one such wall is removable from the base, a series of casting plates each including a metal plate and a U formation against one side thereof and forming therewith a pocket open at its upper end and at one side, each of said U formations having its lower connecting portion spaced above the lower edge of its metal plate, said connecting portions disposed on said base to support said casting plates, said base having slots or channels therein receiving the projecting lower edges of said metal plates, said casting plates arranged on said base in side-by-side relation with the metal plate of one against and closing the open side of the pocket of the next adjacent casting plate whereby said pockets are open only at their upper ends for the reception of concrete and whereby as the concrete becomes set in said pockets the casting plates may be removed from the mold and stored with the concrete in said pockets for curing and the mold thus released for the reception of other casting plates.

4. In a form of the class described, a mold including a base, a wall at each edge of and extending above the base and of which one such wall is removable from the base, a series of cast-

ing plates each including a plate and a U-shaped formation against one side thereof and forming therewith a pocket having an open side and an open upper end, said casting plates arranged on said base in side-by-side relation with the plate of each against and closing the open side of the pocket of the next adjacent casting plate or section whereby said pockets are open only at their upper ends for the reception of concrete and whereby as the concrete becomes set in said pockets the casting plates may be removed from the mold and stored with the concrete in the pockets for curing and the mold thus released for the reception of other casting plates, and said base having channels in its upper face for the introduction of attaching portions of lifting means under the casting plates when the latter are to be removed from the mold.

5. In a form of the class described, a mold including a base, a wall at each edge of and extending above the base and of which one such wall is removable from the base, a series of casting plates each including a metal plate and a U-shaped formation against one side thereof and forming therewith a pocket having an open side and an open upper end, said casting plates arranged on said base in side-by-side relation with the metal plate of each against and closing the open side of the pocket of the next adjacent casting plate whereby said pockets are open only at their upper ends for the reception of concrete and whereby as the concrete becomes set in said pockets the casting plates may be removed from the mold and stored with the concrete in the pockets for curing and the mold thus released for the reception of other casting plates, and clamping means encircling said mold for drawing and maintaining said walls in positions holding the casting plates in said side-by-side relation.

6. In a form of the class described, a mold including a base, a wall at each edge of and extending above the base and of which at least one such wall is removable from the base, a series of casting plates each including a metal plate and a U-shaped formation against one side thereof and forming therewith a pocket having an open side and an open upper end, said casting plates arranged on said base in side-by-side relation with the metal plates of each against and closing the open side of the pocket of the next adjacent casting plate whereby said pockets are open only at their upper ends for the reception of concrete and whereby as the concrete becomes set in said pockets the casting plates may be removed from the mold and stored with the concrete in the pockets for curing and the mold thus released for use with other casting plates, and spacing means secured to the upper edges of said walls and spanning the mold and engaging the upper edge portions of the metal plates to maintain their upper portions in the proper spaced relation to one another.

7. In a form of the class described, a mold including a base, a wall at each edge of said base and extending above the same, a series of casting plates each including a metal plate and a U-shaped formation against one side thereof and forming therewith a pocket having an open side and an open upper end, said casting plates arranged on said base in side-by-side relation with the metal plate of each against and closing the open side of the pocket of the next adjacent casting plate whereby said pockets are open only at their upper ends for the reception of concrete and whereby as the concrete becomes set in said pockets the casting plates may be removed from the mold and stored with the concrete in the pockets for curing and the mold thus released for use with other casting plates, means mounted on the upper edges of said walls and spanning said mold and engaging the upper edge portions of said metal plates and maintaining such upper edges in fixed spaced relation, and means for reciprocating said spanning means to have it function as a vibrator for the purpose of packing down or placing the concrete in said pockets.

8. A casting plate of the class described comprising a plate, a horizontal member secured against one side of said plate toward the lower edge thereof, vertical members secured to said side of the plate toward the ends thereof and abutting said horizontal member whereby to provide a pocket open at its upper end and one side and of the size of a slab to be molded, and inserts adapted to be disposed against the same side of said plate and the inner edges of said members for varying the size of said pocket and thus of the slab that may be molded therein.

9. A casting plate of the class described comprising a plate, a horizontal member secured against one side of said plate toward the lower edge thereof, vertical members secured against said side of the plate toward the ends thereof and abutting said horizontal member whereby to provide a pocket open at its upper end and one side and of the size of a slab to be molded, a pair of inserts, one of said inserts adapted to be disposed on the upper edge of said horizontal member to extend from abutting relation with one of said vertical members toward the other thereof, and the other of said inserts adapted to be disposed against the other of said vertical members and of a width to fill the space between said other vertical member and the adjacent end of the first mentioned insert.

10. A casting plate of the class described comprising a metal plate, a U-shaped formation on and fixed with respect to one side of said metal plate and forming therewith a pocket open at one side and at its upper end and of the size of a slab to be molded, and means adapted to be disposed within said pocket and against an edge thereof for reducing the effective size thereof.

11. A casting plate of the class described comprising a metal plate, a U-shaped formation on and fixed with respect to one side of said metal plate and forming therewith a pocket open at one side and at its upper end and of the size of a slab to be molded, a narrow extension associated with one portion of said U-shaped formation and projecting inwardly of said pocket whereby a slab cast in the pocket will be rabbeted, and an offset insert adapted to be disposed against said portion of the U-shaped formation to reduce the effective size of said pocket but yet provide for rabbeting in a slab cast in such pocket.

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