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METHOD OF MAKING MAUSOLEUM STRUCTURES

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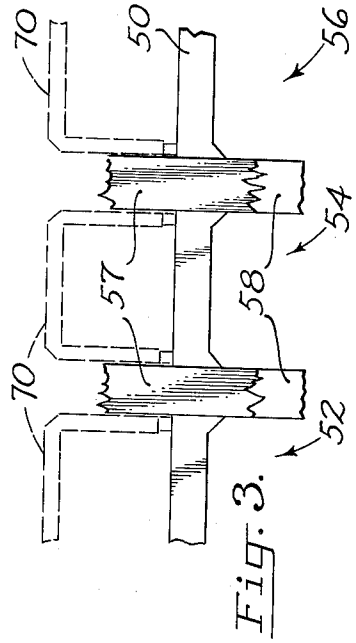


Fig. 3.

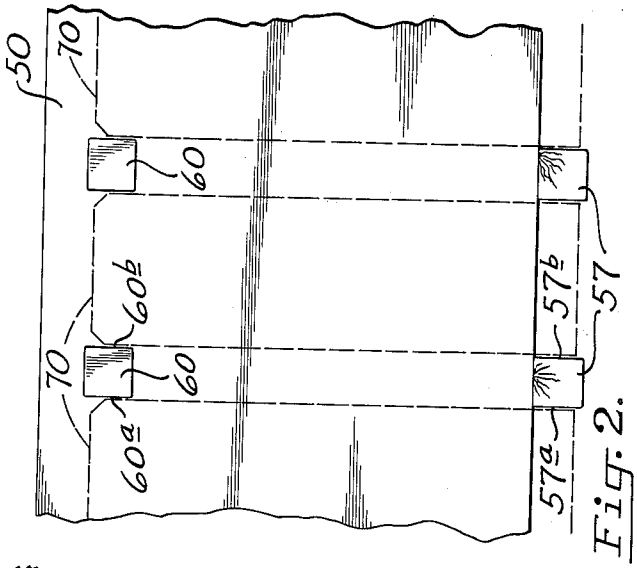


Fig. 2.

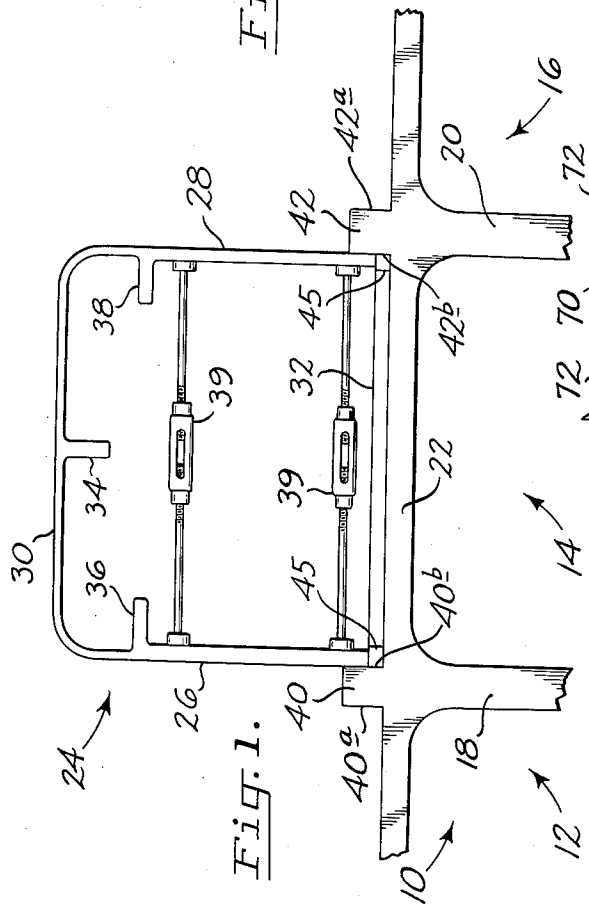


Fig. 1.

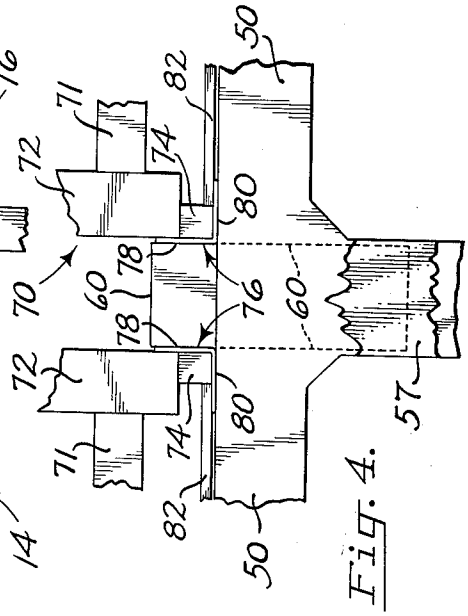


Fig. 4.

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METHOD OF MAKING MAUSOLEUM STRUCTURES

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This invention relates to the production of compartmented, monolithic structures, more particularly mausoleums, used in housing burial caskets. Such mausoleums ordinarily have plural compartments or vaults, arranged in tiers, with each tier containing a row of vaults disposed side by side. The invention is a continuation-in-part of an application having Serial No. 706,969, and filed January 3, 1958, now abandoned.

In the construction of mausoleums, it is conventional practice to lay out in a row a series of parallelly arranged vault forms, with the forms resting on a previously prepared concrete floor or base. After proper positioning of the forms, concrete is poured over the series and smoothed out over the top, so as to prepare a floor or base for a superimposed tier of compartments or vaults. When the concrete hardens, the forms are removed to leave finished compartments.

A general object of the invention is to provide a novel method for constructing such compartmented monolithic structures, where a final construction is possible that is substantially free of spreaders or ties extending through the hardened concrete, and that is substantially all concrete, save possibly for the usual strengtheners that may be imbedded within the walls.

Another general object is to provide an improved method that produces regularly formed vaults in the mausoleum or like structure having clean, smooth walls.

A still further general object is to provide a novel method for constructing a monolithic compartmented building that enables the building to be constructed at a substantially lower cost than is possible using previously known methods.

In the preparation of a compartment or vault using a form, difficulties are encountered in (*a*) properly positioning the form and then anchoring it in place so that it will not shift or otherwise become dislodged during the pouring of concrete thereover, and (*b*) providing suitable means for removing the form easily after concrete has hardened thereover. As a corollary of this latter point, the form, while it should be readily removable, should also be sufficiently rigid to provide suitable support for the weight of concrete poured thereover.

According to the method of this invention, a rigid form (that may be one-piece, or made of detachable sections) is supported on a previously prepared floor or base by elongated flexible and extensible supports that have reduced cross sections on extension. These typically may be made of rubber or a synthetic. The supports permit ready removal of a form, since on their extension the form can drop within a compartment to loosen it therein. The supports are shielded in a novel manner from wet concrete during the pouring thereof, so that concrete is applied only over surfaces that are rigid and unyieldable. In one embodiment of the invention, shielding of the elongated supports is through concrete curbs prepared in the floor and adapted to be positioned on either side of a form. The walls of a form are spread apart and against the sides of the curbs, and the supports underneath the form are shielded on their outer sides by the curbs. In another form of the invention, hardened concrete blocks are imbedded in the concrete of the floor while it is wet, and the sides of a vault form are spread against opposed concrete blocks with the elongated supports thereunder shielded by elongated angle pieces abutted against the

blocks. It will be noted that in both embodiments of the invention, shielding is made possible by concrete means that also serves as a means positioning the vault form. The concrete means in a finished building becomes part of the concrete partitions separating compartments. By using such positioning means, through spreaders or ties that become embedded in the walls of the structure are unnecessary.

Thus, a more specific object of the invention is to provide a method for building a monolithic, compartmented structure, wherein a concrete floor or base is prepared, such having curbs disposed thereover positioned to engage the sides of forms spread apart and thereagainst, and such curbs providing shielding protection for elongated extensible supports placed under the forms to enable their removal on extension of the supports.

A further object is to provide a method for building such a structure wherein shielding of elongated extensible supports is made possible through the inclusion in the floor of concrete blocks, placed in the concrete of the floor when the concrete is wet.

Another object is to provide a method for building a compartmented building, where hardened concrete blocks are set into the wet concrete of a floor during the making of the floor, and forms are properly positioned using such blocks.

Other objects and advantages will become apparent as the following description is read in conjunction with the accompanying drawings, wherein:

FIG. 1 is a view of portions of a mausoleum under construction, according to the method of one embodiment of the invention, and showing a base or floor for a tier of compartments, with curbs formed therein;

FIG. 2 is a plan view, somewhat simplified, of a building constructed according to a modification of the invention, looking down at the floor or base of a tier in a mausoleum under construction;

FIG. 3 is a side elevation of the mausoleum under construction shown in FIG. 2; and

FIG. 4 is a view, somewhat enlarged, of portions of a mausoleum under construction, according to the embodiment of the invention shown in FIGS. 2 and 3.

Referring now to the drawings, and first of all FIG. 1, **10** indicates generally portions of the lower, completed tier of a mausoleum under construction, such lower tier including compartments partially indicated at **12**, **14** and **16**. The mausoleum, at the stage of construction shown, is in the process of being provided with an upper tier of compartments, with the compartments of this tier directly over compartments **12**, **14**, **16**. Partitions **18** and **20** dived the compartments of the lower tier, the sides of which define the sides of compartments **12**, **14**, **16**. A layer **22** of concrete extends over compartments **12**, **14**, **16**, and the under surface of this layer defines the ceilings of the compartments. Layer **22** also forms the base or floor of the next above tier of compartments.

A form such as may be employed in the invention is indicated at **24**. Form **24** includes sides **26**, **28** and a rear wall **32**. A top **30** is joined to the sides and rear wall of the form. The form is relatively long (usually may run about eight feet). Making the top rigid and extending longitudinally of the form is a reinforcing ridge or shoulder **34**. Similar ridges **36**, **38** are provided along sides **26**, **28**. A form of the type described may be made as one piece, from fiber glass for instance. Such a form is rigid, but has slight flexibility, enough to enable the sides to be pulled together slightly for the purpose of removing the form. Link mechanisms extending between sides **26**, **28** are adjusted to draw the sides inwardly, or spread the sides outwardly, as the case may be. The link mechanisms are indicated generally

at 39, and include turnbuckles for adjusting their length.

According to the embodiment of the invention illustrated in FIG. 1, when layer 22 of concrete is prepared, complementary curbs, such as curbs 40, 42, are also prepared, with sides (such as sides 40*a*, 40*b* for curb 40 and 42*a*, 42*b* for curb 42) disposed in positions substantially coinciding with the positions of the sides of compartments that are to be provided over layer 22. Considering any pair of complementary curbs, such as curbs 40, 42, these perform the important function of (1) providing a means for properly positioning form 24 on layer 22 with the form squarely in place, and (2) providing a means for shielding and preventing concrete from coming into contact with elongated extensible supports placed under the form which have reduced cross sections on extension and are used in releasing the form from a finished compartment.

It will be seen with reference to FIG. 1 that form 24 is positioned between curbs 40, 42 with the sides of the form spread snugly against sides 40*b*, 42*b* (using link mechanisms 39 as spreader mechanisms). Underneath the bottoms of sides 26, 28 are elongated extensible supports (such as elongated rubber strips) indicated at 45. These, as shown, have substantially rectangular cross sections. The strips support the bottoms of the form sides, and are not as high as the curbs, so that they are shielded by the curbs on their outsides, and the form shields the top of the strips, from wet concrete later poured over the form.

When the form is positioned as shown in FIG. 1 with the supports holding up its sides, concrete may then be poured over the form to prepare another compartment in a tier of compartments similar to the one containing compartments 12, 14, 16. On hardening of the concrete, the extensible strips are tensioned to reduce their cross sections. This permits removal of the strips with dropping of the form within the compartment. If the sides of the form are then pulled together, the entire form is easily removed to leave a completed compartment.

With reference now to FIGS. 2, 3, and 4, wherein another method of practicing the invention is illustrated, 50 indicates a layer of concrete disposed over a tier of compartments, indicated partially at 52, 54, 56. Another tier of compartments is in the process of being prepared on top of layer 50. In this modification of the invention, instead of forming curbs as earlier discussed, elongated vertical beams and hardened concrete blocks are used.

The beams, indicated at 57, are positioned along one side of layer 50. These extend vertically upwardly, and have a width equal substantially to the width of the partitions separating completed compartments, such as partitions 58 separating compartments 52, 54, 56. In a four tiered mausoleum, for instance, these beams are set in place immediately with the preparation of the first tier of compartments and are used for the construction of all tiers. The beams are fixed rigidly in place by any suitable means, the details of which are not important to the understanding of the invention.

As layer 50 is prepared, hardened concrete blocks 60, having the same width as the beams, are placed in the layer while it is still wet and before hardening (see FIGS. 2 and 4). The blocks protrude above the top of layer or floor 50. For each beam 57 there is a block 60 directly behind it. The sides of the block and the beam in front of it are aligned in a direction paralleling partitions 58. Thus, with reference to FIG. 2, each block 60 has sides 60*a*, 60*b* aligned with sides 57*a*, 57*b* of a beam in front of it.

With the blocks in place, and after hardening of the concrete in layer 50, forms 70 (indicated in dashed outline in FIGS. 2 and 3) are placed on top of layer 50 between complementary sets of beams and blocks. As can be seen with reference to the dashed outlines for the forms in FIG. 2, each side of a form extends between and overlaps at its ends a beam and its complementary block. The sides of the forms are then spread apart against the opposed inner sides of the beams and blocks, using spreaders 71 extending between the sides of a form (see FIG. 4). The forms are supported above the top of layer 50 by extensible supports, each of which is coextensive in length with the side of the form it supports, similar to those discussed in connection with FIG. 1, and best illustrated in FIG. 4.

Referring to FIG. 4, the bottom of a side of a form is indicated at 72. This bottom of a side rests on the top of an elongated rubber strip or support 74. The cross section of strip 74 reduces in size on extension of the strip.

Elongated angle pieces 76 coextensive in length with the strips and paralleling strips 74 are provided for shielding the strips from concrete. Each has a vertical shoulder 78 that extends above the top of a strip and a horizontal shoulder 80 that lies under a strip 74. The vertical shoulder overlaps the bottom 72 of a form side and thus prevents concrete from contacting the strip. Horizontal shoulder 80 extending under strip 74 functions to keep shoulder 78 in proper vertical position. If additional stability is desired for rubber strip 74, a spreader, such as plywood piece 82, may be included between the strips supporting opposite sides of a form.

According to the method illustrated in FIGS. 2, 3, and 4, concrete is poured over the form and over the blocks placed as described. The side of each beam that faces the block behind it functions as a form for the end of a partition in the forming tier of compartments. The concrete blocks become part of the partitions between compartments as do the curbs in the first embodiment of the invention discussed. On completion of the mausoleum, the beams are removed to leave an all concrete building.

The second embodiment of the invention discussed has an advantage that the first does not have, in that it considerably simplifies the finishing of the top of layer 50. Where curbs are necessary, curb forms must be provided prior to making the curbs and the presence of curbs makes finishing of the concrete between the curbs more difficult. Using hardened concrete blocks, forms need not be used and finishing of a layer, such as layer 50, is substantially easier. The concrete blocks are readily premanufactured.

While embodiments of the invention have been described, modifications are possible without departing therefrom. It is intended to cover all such modifications and variations that would be apparent to one skilled in the art, and that come within the scope of the appended claims.

It is claimed and desired to secure by Letters Patent:

1. A method of making a compartmented monolithic structure containing a row of hollow compartments; the method comprising forming an expansive concrete floor; placing hardened concrete blocks in the concrete of the floor with the blocks protruding above the floor and the concrete at the time of placement having a consistency sufficient to hold the blocks in their protruding position; said blocks having positions substantially coinciding with the positions of the walls dividing adjacent compartments in a completed structure; fitting in the space between adjacent pairs of blocks the side walls of a form for a compartment with adjacent forms on opposite sides of a block having side walls extending up from the block providing means for forming a wall dividing adjacent compartments with such wall being a continuation of the block; spreading the side walls of the forms against the blocks and mounting the side walls above the floor by resting them on elongated supports; pouring concrete over the tops of the compartment forms and the tops of the blocks to form finished compartments; and on hardening of the concrete removing the forms after first loosening the

forms by removing said supports so that the forms may drop within the compartments containing the same.

2. A method of making a concrete structure containing a hollow compartment; said method comprising forming a floor of wet concrete and before hardening of the concrete placing opposed hardened concrete blocks into the concrete with said blocks protruding above the floor and with the sides of opposed blocks defining opposed elongated vertical support planes substantially coinciding with the positions of the sides of the compartment in the completed structure; the concrete of the floor at the time of placement of the blocks having a consistency sufficient to support the blocks in their protruding position; snugly fitting in the space between the support planes of the blocks a form for the compartment; mounting the form above the floor by resting the side walls of the form on elongated supports that are extensible under tension and have reduced cross sections on extension; said supports being shielded from wet concrete subsequently to be poured over the form by elongated angle pieces that have one elongated vertical shoulder disposed along the outside of a support higher than the support and between the support and a concrete block and another elongated shoulder joined to said one shoulder extending under the support; pouring wet concrete over the top of the compartment form and the tops of the blocks to form a finished compartment; and on hardening of the concrete removing the form after first loosening it by tensioning and extending the supports to reduce their cross sections so that the form may drop within the compartment.

3. A method of making a compartmented integrated structure containing plural hollow compartments disposed side by side with adjacent compartments separated by a partition of concrete; the method comprising forming an expansive concrete floor; placing rigid blocks in the concrete of the floor, when the concrete has a consistency sufficient to support the blocks, with the blocks protruding above the floor; said blocks being positioned where said partitions are to be located; placing vertical beams substantially as wide as the blocks in positions where opposed sides of the beams are aligned with opposed sides of the blocks, extending in a direction that parallels the sides of the partitions in a completed structure, and where the beams constitute end forms for the partitions; fitting snugly between pairs of adjacent beams and the blocks with sides aligned therewith the side walls of a form, and mounting the form above the floor by resting its side walls on elongated supports separable from the form placed alongside the blocks and beams; pouring concrete over the tops of the forms and the tops of the blocks and against the beams to form the partitions; removing the forms after first loosening them by removing the separable supports; and removing the vertical beams to leave finished compartments.

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