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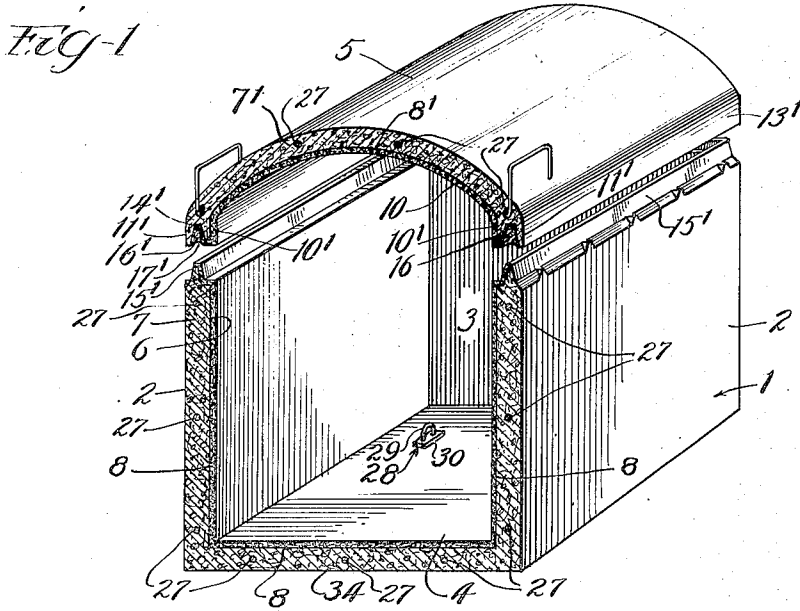
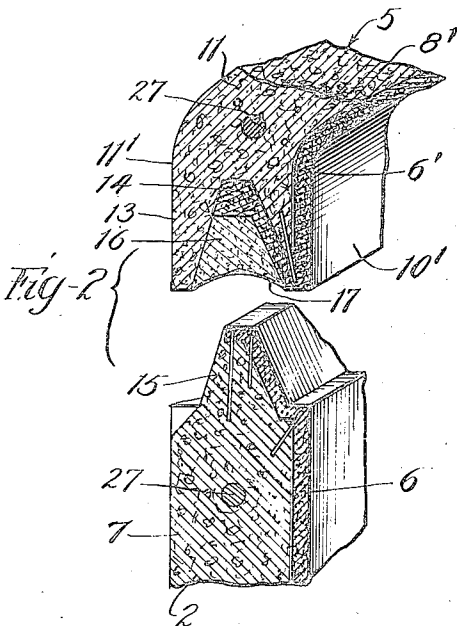
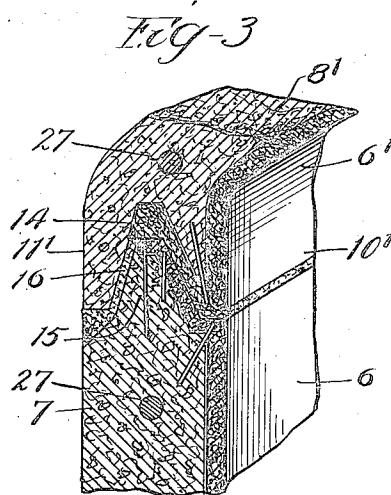
W. W. HAASE

1,839,149

BURIAL VAULT

Filed May 5, 1930

2 Sheets-Sheet 1



Inspector.
 Gilbert M. Mason,
 Henry Irwin Porter
 Stills.

Dec. 29, 1931.

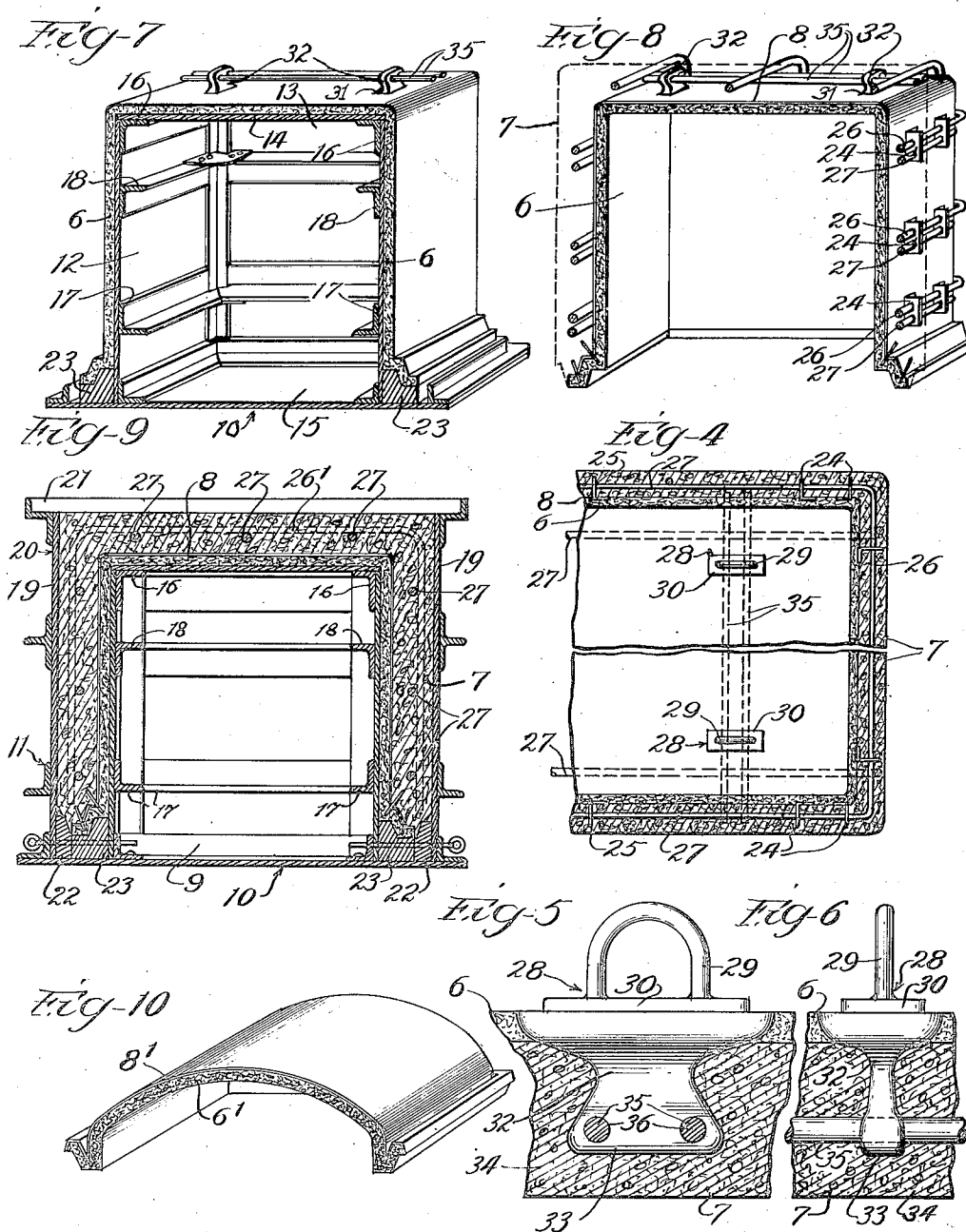
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BURIAL VAULT

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• 2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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BURIAL VAULT

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This invention relates to that class of vaults or receptacles comprising a box body and cover formed of suitable material for resisting the disintegrating effects of moisture, frost and changes in temperature and other conditions to which a vault or receptacle is subjected when in use.

The principal object of the invention is to provide a simple, economical and efficient burial vault or receptacle.

A further object of the invention is to provide an improved burial vault or receptacle formed of united layers or laminations of material suitable for resisting the disintegrating effects of moisture, frost and other conditions to which a burial vault or receptacle is subjected.

A further object of the invention is to provide an improved, simple, economical, durable and efficient burial vault or receptacle comprising a box body and cover formed of united layers or laminations of asphaltum or a composition or mixture containing asphalt and concrete or hydraulic cement, the outer walls of the box body and cover being formed of concrete and the inner walls or laminations being formed of asphalt or a composition containing asphalt which is entirely covered and protected by the concrete, and to provide an improved means for firmly uniting the laminations or inner and outer layers of asphaltum or asphalt-containing composition and concrete.

A further object of the invention is to provide an improved burial vault or receptacle comprising a box body and cover formed of laminated material, such, for example, as an inner lamination or liner of asphalt or a composition containing asphalt and an outer relatively thick protecting covering layer or lamination of concrete or hydraulic cement, said inner and outer laminations being firmly united and held together by a suitable flux or intermediate coating or layer of material to firmly unite and hold said laminations together, and having tongued and grooved margins provided with suitable plastic adhesive material for sealing the margins of said box body and cover together, and for rendering the vault or receptacle as nearly as possible

impervious to the destructive and disintegrating effects of moisture and other conditions to which such a vault or receptacle is subjected when in use.

Other and further objects of the invention will appear from the following description and claims and from an inspection of the accompanying drawings which are made a part hereof.

The invention consists in the features, combinations, and details of construction herein described and claimed.

In the accompanying drawings—

Figure 1 is a view in perspective of a vault or receptacle comprising a box body and cover formed of firmly connected layers of asphalt, or a composition containing asphalt and concrete, and provided with tongued and grooved margins adapted to be hermetically sealed in accordance with my invention;

Fig. 2 is an enlarged detail view in transverse vertical section of adjacent portions of a box body and cover of a self-sealing burial vault or receptacle constructed in accordance with my invention, showing adjacent tongued and grooved self-sealing marginal portions of the box body and cover as they would appear before being united in the operation of closing the vault;

Fig. 3 is a similar view in detail in transverse vertical section of the parts shown in Fig. 2 as they would appear with the cover in place and in position to close the box body and with the normally plastic filler material spread between and adapted to hermetically seal the united margins of the box body and cover;

Fig. 4 is a horizontal sectional view of my improved vault or receptacle showing the side and end walls of the box body in section, and showing the bottom of the vault provided with a lewis or combined staple and dovetailed tenon embedded in the concrete bottom near each corner thereof and connected and held in place by rods which are also embedded in the concrete;

Fig. 5 is an enlarged detail view of an improved lewis embedded in the laminated asphalt and concrete bottom of the vault con-

structed in accordance with my invention; and

Fig. 6 is a similar view in elevation of the lewis or combined staple and dove-tailed tenon shown in Fig. 5, as the same would appear when viewed from the right of said figure.

Fig. 7 is a view in perspective in vertical section of an inverted inner asphaltic lamination or liner or of a vault or box body showing the same as it would appear on being cast on a mold or inner mold member;

Fig. 8 is a similar view of the asphaltic lamination or liner shown in Fig. 7, showing the same after having metal inserts embedded therein for reinforcing the outer layer of concrete to be cast on and united to the hardened asphalt with a coating of kerosene applied to the hardened asphaltic material for uniting the inner asphaltic lamination and the outer layer of concrete;

Fig. 9 is a view in vertical section of a vault body as it would appear in a mold after the outer layer of metal reinforced concrete or cement has been poured onto and united with the hardened inner asphaltic lamination or liner and the metallic reinforcing inserts in the mold; and

Fig. 10 is a view in perspective of the inner asphaltic lamination or liner forming part of the laminated vault cover, showing the same coated with kerosene or equivalent flux or binding material, after being cast on a mold and allowed to cool and set or harden and before applying the outer lamination or layer of concrete.

In constructing an improved vault or receptacle in accordance with my invention, I provide a box body or main vault body member 1, comprising side walls 2, end walls 3 and a bottom 4, and a vault cover 5. The vault or box body and cover are both formed, by preference, of laminated material comprising inner and outer laminations or layers which are firmly united together and form a vault which is adapted to afford a maximum of resistance to the destructive or disintegrating effects of moisture, frost, variations in temperature, and other conditions to which a burial vault or receptacle is subjected when in use.

The vault or box body 1, shown in the accompanying drawings, comprises, by preference, an inner asphaltic liner or lamination 6 and an outer lamination or layer 7 of metal-reinforced concrete or hydraulic cement, firmly united together by a suitable binder 8 which, by preference, consists of kerosene or equivalent liquid hydro-carbon applied in the form of a coating to the surface of the inner lamination or liner 6 after the latter has been cast in a heated plastic condition on a heated mold or inner mold member and allowed to cool and set or harden, after which the outer lamination or layer of concrete or hydraulic

cement in a plastic condition is poured onto the asphaltic lamination or liner and metallic inserts and reinforcing metal and firmly united thereto and allowed to set and harden. Any ordinary and well-known form of mold may be employed which is adapted to enable said inner and outer laminations to be cast, and firmly united in adhesive engagement, and with the hydro-carbon binder or covering of kerosene and metallic inserts and reinforcing members embedded in and acting to connect and reinforce and strengthen the connected laminations or layers in accordance with this invention.

In constructing an improved burial vault or receptacle in accordance with my improved method and invention, a suitable mold 9 is provided which may be of any desired or suitable form and dimensions, and which, by preference, comprises an inner mold member 10 and an outer mold member 11 which is adapted to surround the inner mold member and the contents of the mold when in operation and to be removed therefrom when the operation of casting or molding the vault body or cover, as the case may be, is completed.

The mold member 10 shown in the accompanying drawings is, by preference, in the form of a rectangular metallic box having side walls 12, end walls 13, a top wall 14 and a bottom wall 15, formed of metallic plates which are rigidly connected and braced by suitable means. For example, upper horizontal angle irons 16 are rigidly secured to the upright side walls 12 in position to extend under and removably support the top wall 14 of the inner mold member, and bottom horizontal angle arms 17, are secured to the inner side of and adapted to rigidly connect the upright side and end walls of the inner mold member near their lower extremities. Intermediate horizontal angle irons 18 are secured to and adapted to rigidly connect said upright inner mold walls between the upper angle iron 16 and lower angle iron 17.

The outer mold member 11 comprises upright side walls 19, upright end walls, a top flange 21 and inwardly projecting bottom wall portions 22 which extend inwardly toward and are adapted to removably engage the outwardly projecting bottom portions 23 of the inner mold member. (See Figs. 7, 8 and 9).

The mold for casting or molding the cover member is, by preference, of substantially the same general construction as the mold 10 above described, but the form and dimensions of the inner and outer mold members are, of course, modified so as to correspond with and form a suitable mold for casting the vault cover. As such molds are well known to those skilled in the art, it is not necessary, therefore, to describe same in detail herein.

In the operation of casting a vault body or

member or cover member, as the case may be, in accordance with my improved method, an inner asphaltic lamination or liner 6 of asphaltic material is first formed by pouring or spreading upon the upright side and end walls and top wall of the metallic inner mold member 10, a suitable quantity of asphalt or bituminous material or composition containing asphalt in a heated plastic or liquid condition.

During the pouring or spreading of the asphaltic material on the inner mold member, the latter is, by preference, heated by means of steam or other suitable heating means.

Before pouring or spreading the asphaltic material in a warm liquid or plastic condition upon the top wall 14 of the inner mold member to form the bottom asphaltic lamination or layer of the vault bottom a set of lewises 28 for lifting and handling the vault or receptacle, are inserted into suitable openings in said mold wall 14 in position to project upward from the bottom of the vault body on the inside of the same when the vault or receptacle is completed. (See Figs. 4, 5 and 6.)

Each of these lewises 28 comprises an upwardly projecting staple or eye 29 having a rectangular base 30 which is adapted to fit into a similarly shaped opening 31 in the mold wall 14; and a tapered tenon 32 having an enlarged inverted wedge-shaped bottom or base 33, is formed, by preference, in one integral piece with the metallic staple or eye portion 29 and rectangular base 30. The tenon 32 is thus adapted to project upward on the inside of the mold from the inner mold member 14, and through the asphaltic bottom lamination into the concrete bottom lamination or layer 34 of the vault body. Transverse anchor rods 35, which are embedded and anchored in the bottom portion 34 of concrete in the finished vault body, are inserted transversely of the vault body bottom through suitable openings 36 in the tenons 32 which thus serve to support said transverse anchor rod 35, which also serve as reinforcing rods for strengthening the concrete, in position to be embedded in the concrete bottom portion of the vault body. (See Figs. 4, 5 and 6.)

While the asphaltic material which forms the inner asphaltic lamination or liner 6 is in a heated plastic condition and gradually cooling, and before said material is allowed to cool or set and harden, suitable metallic inserts for reinforcing and strengthening the concrete outer lamination or layer of the vault or vault body, are mounted upon and adhesively engaged and supported by the asphaltic inner lamination or liner.

For example, a series of angular metallic bracket members 24, each having, by preference, integral perforated web portions dis-

posed at right angles to each other, are embedded at suitable intervals in the heated asphaltic lamination or liner 6 while the latter is in a plastic condition and before it is permitted to cool and set or harden. Similar perforated angle iron members or bracket members 25 are embedded in like manner in the plastic asphaltic material forming said inner liner, between the end bracket members 24; and all of said perforated angle or bracket members 24 and 25 thus partially embedded in the asphaltic material project outward from the inner asphaltic lamination into the space within the mold into which the concrete for forming the outer layer of the vault body or cover member, as the case may be, is to be poured in a plastic condition and allowed to set and harden.

At each end of the vault body a series of angular or U-shaped metallic reinforcing rods 26 is provided, the angular ends of the rods are inserted through similar openings in the perforated projecting webs of the angular bracket members or angle irons 24, which thus serve to support said reinforcing metallic rods in proper position for receiving the cementitious material or concrete to be poured into the mold and cast in firmly united engagement with said inner asphaltic lamination or liner. Similar reinforcing side rods 27 are inserted through perforations in the projecting web portions of the angle arms or angular bracket members 24 and 25 after the latter have been partially embedded in the plastic asphaltic lamination 6 and after the asphaltic material has been allowed to cool and set and harden.

Similar metallic reinforcing rods—not shown—are, by preference, mounted in a similar manner upon the inner asphaltic lamination 10 of the vault cover.

From the foregoing it will be readily understood that the metallic inserts above described are mounted upon and supported by the cooled or partially cooled and hardened asphaltic material during the operation of pouring into the mold the concrete in a plastic condition for forming the outer lamination or layer, and during the setting and hardening of the concrete in the mold and in firmly united engagement with the asphaltic inner lamination or liner.

After the inner lamination or asphaltic liner 6 has been allowed to cool and set or harden, and either before or immediately after the placing of the metallic inserts for reinforcing the concrete in position in the mold or on the inner mold member, a coating 8 of kerosene or liquid hydro-carbon is applied to the surface of the asphaltic lamination or liner member 6 to form a binder which is adapted to slightly soften the asphaltic material and to penetrate both the asphaltic material and the concrete to some extent and

firmly unite said asphaltic and concrete laminations or layers.

A sufficient quantity of concrete, which may consist of sand, gravel, and hydraulic cement intermixed in suitable proportions, is then poured upon or cast and firmly united to the hydro-carbon-coated inner asphaltic lamination 6 and allowed to set and harden. (See Fig. 9, also Figs. 1, 2, 3 and 4.)

10 A laminated cover 5, which comprises an inner molded or cast asphaltic lamination or liner member 6', and an outer layer of concrete 7' united thereto by means of a binder 8', which comprises, by preference, a coating 15 of kerosene or equivalent liquid hydro-carbon, is made in accordance with the method above described in connection with the making of the vault or box body, and therefore need not be further described in detail herein.

In Fig. 10 the asphaltic inner lamination or cover liner member 6' is shown as it would appear after being cast on the mold or inner mold member in a heated plastic liquid condition and allowed to cool and set or harden and then coated with a layer or coating 8' of kerosene which is adapted to slightly penetrate and soften the same and to penetrate to some extent the layer of concrete and firmly unite said inner and outer laminations or layers, as above described, after which the outer layer or lamination of concrete or hydraulic cement is poured thereon in the mold and united to the asphaltic lamination 6' by means of said liquid hydro-carbon binder 8' and allowed to set and harden to form the complete laminated vault cover illustrated in Fig. 1. The complete cover 5 is then removed from the mold and allowed to further set and harden. The cover member 5 has bottom side marginal portions 13' which extend entirely around and form a bottom rim to the cover. The parallel upright side and end walls of the cover are adapted to be secured and hermetically sealed in abutting engagement with the top margins of the adjacent side and end walls of the vault.

The cover member 5 is provided with a bottom marginal groove 14', which is, by preference, substantially in the form of an inverted V, in cross-section and extends entirely around the bottom margin or rim of the cover, or, in other words, along the bottom edge of the upright side and end walls or bottom marginal portions 13' of the cover, so as to form a continuous marginal bottom groove which opens downward throughout its entire length and throughout the entire bottom margin of the rim of the cover.

60 The box body 1 is provided with a continuous upwardly projecting top marginal tongue 15' which extends along and throughout the entire top marginal portions of the upright side walls 2 and end walls 3 of the box body, and is adapted to extend into and

in interlapping engagement with the bottom groove 14' in the bottom margin of the cover.

The bottom marginal groove 14' in the cover is, by preference, tapered or approximately V-shaped in cross-section, as already suggested, and is located between inner and outer marginal wall portions 10' and 11'; and the endless upwardly projecting marginal tongue 15' on the upper margin or rim of the box body member is also, by preference, similarly tapered, and somewhat wider at its base than at its upper edge, and adapted to fit within the groove snugly, and sufficiently close to the walls of the groove to hold the cover accurately in properly fitting engagement with the box body, but with sufficient space between the tongue and the adjacent walls of the groove to admit and permit the proper spreading of the filler and sealing material between the tongue and groove.

A quantity of suitable filler and sealing material 16' which, by preference, consists of or comprises asphaltum, or a suitable composition containing asphaltum or equivalent waterproof sealing material, is introduced into the marginal groove 14' in the cover, while said filler or sealing material is in a plastic adhesive condition, and adapted to adhere tightly to the concrete which forms the walls of the groove and to the hard asphaltic liner 6', as well as the tongue 15' on the top margin of the box body, when said tongue is introduced into the groove, so as to form a strong waterproof sealed connection between the grooved marginal portion or rim of the cover and the tongue and top margin or rim of the box body, when the cover is placed upon and in position to close the latter.

For this purpose, I prefer to employ asphalt, or a bituminous compound or composition containing asphalt, which is introduced into the open bottom marginal groove or slot 14' in the bottom rim or margin of the cover, in a plastic condition, and while sufficiently soft to tightly adhere to the concrete walls of the slot or groove. A sufficient quantity of this bituminous filler and sealing material is thus introduced into the groove 14' while the cover 5 is inverted, to partially, and, by preference, almost entirely fill the groove. The filler and sealing material 16' is then allowed to dry and harden at its outer surface, but without materially drying or hardening the main body of said material or that part of the material which is covered by the outer relatively dry and somewhat harder thin skin or covering 17', which is thus caused to form on the exposed surface of the filler material and forms a film or covering for the latter which is sufficiently strong to hold the filler material in place in the groove even when the cover 5 is in upright position and the groove is open downward and exposed in position to receive the

tongue 15' of the box body or vault body 1. But the relatively dry and strong or hard skin, coating or covering 17' thus formed over or on the otherwise exposed bottom surface of the filler material 16' is, by preference, sufficiently thin, fragile and easily broken, so that the introduction of the top marginal tongue or flange 15' of the box body will break the coating, skin or covering 17', release and permit the spreading of the adhesive bituminous filler and sealing material between and in adhesive contact with the grooved bottom margin of the cover and the tongue and top margin of the box body. The joint or connection between the cover and the upper rim of the box body is thus adapted to be hermetically sealed automatically when the cover is placed upon and in position to close the latter.

No claim is made herein to the construction of the combined lewis and tenon, nor to the manner of fitting it to the burial vault since such invention forms the subject matter of a separately filed application.

I claim:

1. In a vault of the class described, a vault body comprising an inner lamination formed of asphaltic material provided with a coating of liquid petroleum, and an outer lamination formed of concrete in adhesive engagement with said coated inner lamination.

2. In a vault of the class described, a vault body member and a cover member each comprising an inner lamination formed of asphaltic material, a coating of kerosene on said inner lamination, and an outer lamination formed of concrete united in adhesive engagement with said coated inner lamination of asphaltic material.

3. In a vault of the class described, a vault body member and a cover member each comprising an inner lamination formed of hard asphaltic material, an outer lamination formed of concrete in adhesive engagement with said inner lamination of hard asphaltic material, and sealing means for uniting the margins of said vault body member and cover member in hermetically sealed engagement with each other.

4. In a vault of the class described, a vault body comprising an inner lamination formed of plastic asphaltic material, reinforcing means comprising a set of perforated angular metallic members partially embedded in and supported by said asphaltic material, a series of metallic reinforcing members mounted on said perforated metallic members, and an outer layer of cementitious material containing concrete in adhesive engagement with said inner lamination of asphaltic material and with said metallic reinforcing members.

5. In a vault of the class described, a vault body member and a cover member each comprising an inner lamination formed of asphaltic material and provided with a coat-

ing of kerosene, reinforcing means comprising a set of perforated angular metallic members partially embedded in and supported by said asphaltic material, a series of metallic reinforcing members mounted on said perforated metallic members, and an outer lamination formed of concrete in adhesive engagement with said coated inner lamination of hardened asphaltic material and with said metallic reinforcing members.

6. In a vault body of the class described, a vault body member and a cover member having tongued and grooved margins, each of said members comprising an inner lamination formed of asphaltic material, reinforcing means comprising a set of perforated angular metallic members partially embedded in and supported by said asphaltic material, a series of metallic reinforcing members mounted on said perforated metallic members, an outer lamination formed of concrete in adhesive engagement with said inner lamination of asphaltic material, and sealing means comprising adhesive material interposed between said tongued and grooved margins of said vault body member and cover member for hermetically sealing the same in engagement with each other.

Signed at Chicago, in the county of Cook and State of Illinois, this 30th day of April, 1930.

WILBERT W. HAASE.