

Jan. 19, 1971

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3,555,573

SWIMMING POOL COVER

Filed July 12, 1968

2 Sheets-Sheet 1

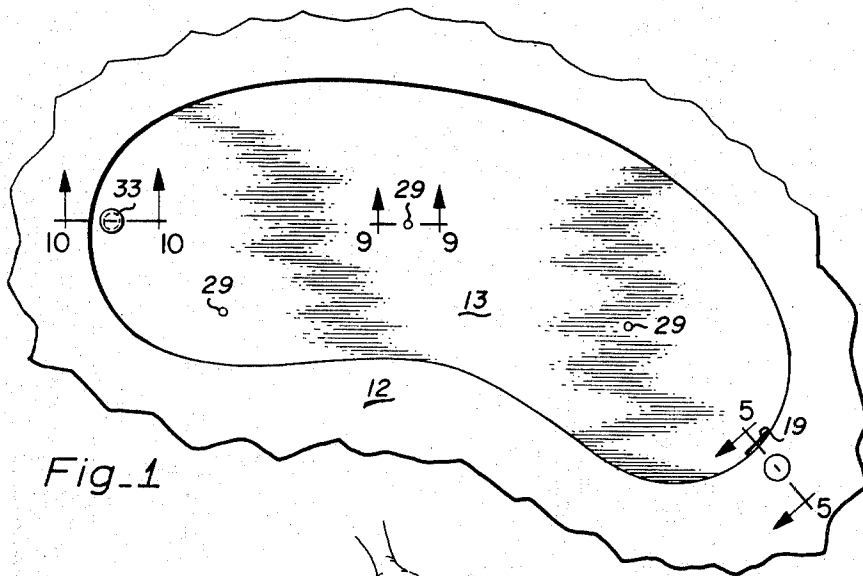


Fig. 1

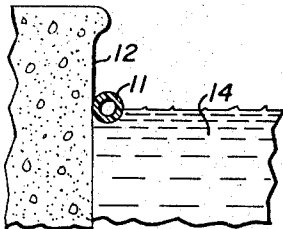


Fig. 2A

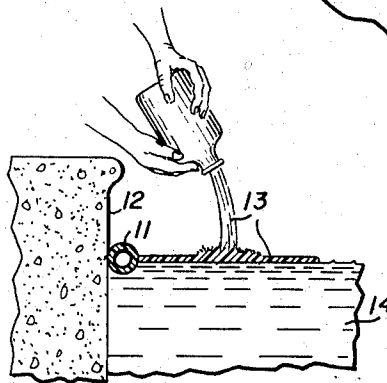


Fig. 2B

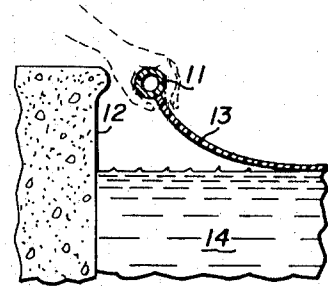


Fig. 2C

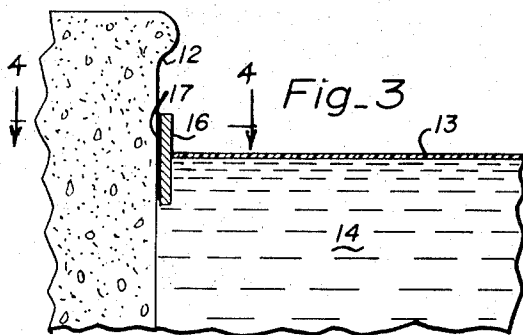


Fig. 3

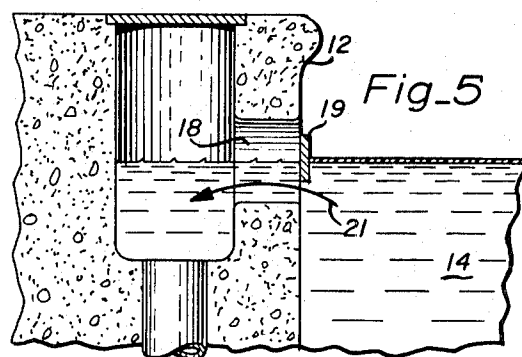


Fig. 5

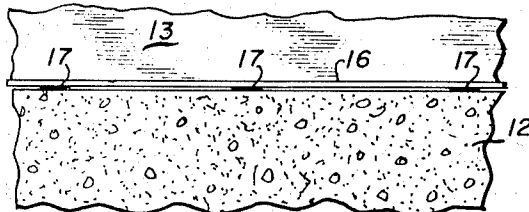


Fig. 4

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2 Sheets-Sheet 2

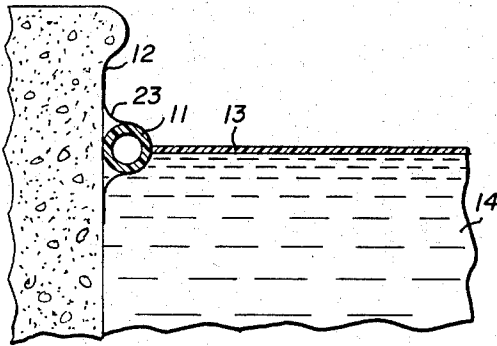


Fig-6

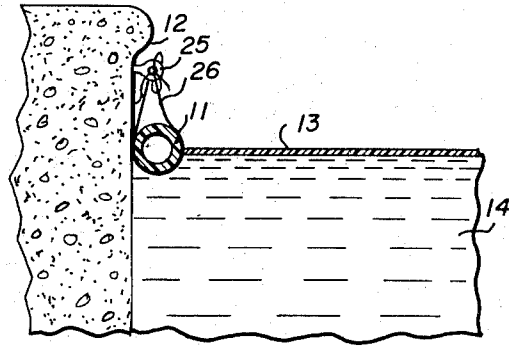


Fig-7

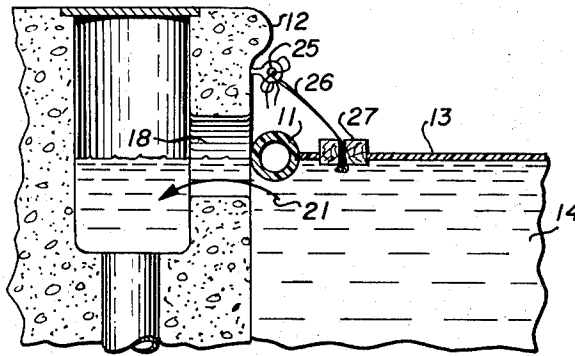


Fig-8

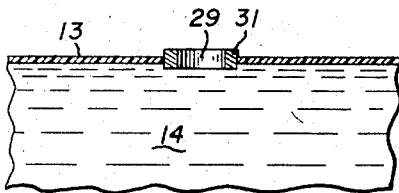


Fig-9

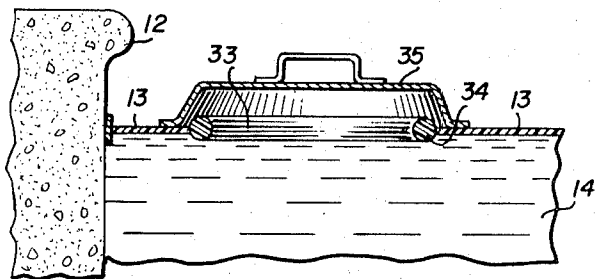


Fig-10

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11 Claims

## ABSTRACT OF THE DISCLOSURE

A swimming pool cover is made by pouring a liquid material such as a solution vinyl onto the surface of the water, and allowing the liquid material to spread out into a thin layer over the entire surface and harden into an impervious pliable membrane. A peripheral edge member is formed to reinforce the edges of the cover, and to prevent the liquid membrane material from bonding to the sides of the pool, by first attaching a strip of vinyl on other compatible material to the sides of the swimming pool at the water line. The liquid membrane material will then bond to the strip rather than to the pool sides. Alternatively a rope or tube of vinyl or other compatible material may be floated upon the surface and positioned along the sides of the pool to provide an edge member. Openings at the water line such as recirculation ports at the sides of the swimming pool may be spanned by special members by the rope or vinyl edge member to prevent the liquid membrane material from spreading into the openings. Ropes or other lines may be attached to the edge member or to a special block which are thereafter bonded to the membrane material to secure the pool cover to the pool sides. Vents or other openings may be provided by floating annular rings on the water prior to the pouring and spreading of the liquid membrane material over the surface. Pool covers of various thicknesses may be made by using various amounts of liquid membrane material.

This invention relates to methods for covering swimming pools; and more particularly to an improved method wherein a liquid material is poured onto the surface of a pool to spread and harden into an impervious pliable membrane thereover.

Heretofore swimming pool covers have been prefabricated of fabric or sheet plastic materials. A cover of this sort must be manually positioned to span across the pool and at least a portion of a patio or deck area surrounding the pool, and must be tied down or anchored on all sides to secure the cover in place. Prefabricated covers must be made heavy and strong enough to resist tearing or rupturing when the cover is unfolded and dragged to a position over the pool, and to resist similar tearing or rupturing due to winds in a possible storm.

It is an object of this invention to provide an improved swimming pool cover which will fit exactly over the water surface of a pool without extending partially over an adjacent patio or deck area in order to be tied down for normal anchorage and to be secured from the wind.

It is a further object to provide an improved method for making a swimming pool cover wherein liquid material is poured upon the surface of the pool and allowed to spread out in a thin layer and to harden into an impervious pliable membrane cover which will assume the exact shape of the pool surface.

Another object is to provide a method for forming a peripheral edge member around the edges of the swimming pool cover and for preventing the material from hardening against and bonding to the sides of the pool.

Further objects provide methods for preventing the liquid membrane material from spreading into openings in the sides of the pool and for forming openings for venting

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the pool and for inspecting and sampling the water under the cover.

Other objects and advantages of this invention will become apparent throughout the progress of the specification which follows. The accompanying drawings illustrate certain selected features of this invention and the views therein are as follows:

FIG. 1 is a plan view of a swimming pool with a cover thereon installed in accordance with this invention;

FIGS. 2A, 2B and 2C are similar fragmentary vertical sections illustrating the method for making a cover for a swimming pool and for later removing the cover therefrom;

FIG. 3 is an enlarged fragmentary vertical section of a side of a swimming pool illustrating an edge member formed by positioning a strip of vinyl or other material at the water line on the side of the pool;

FIG. 4 is a fragmentary horizontal section looking along the plane 4-4 of FIG. 3 and illustrating a method for attaching the vinyl strip thereto;

FIG. 5 is an enlarged vertical section looking along the plane 5-5 of FIG. 1 illustrating a method for preventing the pool cover material in its liquid state from entering into an opening in the side of the pool;

FIG. 6 is a vertical section of a side of a swimming pool illustrating a method for forming a peripheral edge member using a rope, a plastic tubing, or the like at an edge of the pool cover;

FIG. 7 is a similar vertical section of a side of a swimming pool illustrating a method for firmly securing or anchoring the edge member of the cover to a side of the pool as a safety feature of this invention;

FIG. 8 is a similar vertical section of a side of a swimming pool illustrating a further method for securing or anchoring the swimming pool cover by embedding and bonding a special block of wood or the like therein;

FIG. 9 is an enlarged vertical section looking along the plane 9-9 of FIG. 1 illustrating a vent opening formed in the swimming pool cover; and

FIG. 10 is an enlarged vertical section looking along the plane 10-10 of FIG. 1 illustrating an inspection opening formed in the swimming pool cover with a removable lid or closure thereover.

According to this invention, an edge member of vinyl tubing 11 or other suitable rope-like material is floated upon the surface of a swimming pool and is positioned against the side 12 as shown in FIG. 2A. A liquid material 13 such as a solution vinyl is poured upon the surface of the water 14 as shown in FIG. 2B. This liquid membrane material 13 will not mix with the water 14, but will float and spread out in a thin film over the surface of the swimming pool. In approximately an hour's time, as the solvent evaporates, the liquid material 13 will harden and form a membrane cover over the water surface of the pool as shown in FIGS. 3 through 10. Later when it is desired to remove the cover, it may be lifted from the water as shown in FIG. 2C.

Obviously the thickness of the swimming pool cover is determined by the size of the pool and by the quality of liquid cover material 13 that is used. If a relatively small amount of material 13 is used, a thin cover may be formed which would be suitable for keeping the water free of dust, leaves and light debris for a relatively short period of time. In many cases, this simple function may be all that is desired, and the swimming pool cover may be formed of a minimum amount of plastic material. After one use, the thin sheet of material may be removed and discarded. In other instances, it may be desirable to form a heavy cover for more durable and prolonged use. In this case a much greater quantity of plastic material may be used to form a much thicker swimming pool cover. The thicker cover would be more costly; and therefore when the cover is

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removed, it may be rolled into a compact bundle and stored for re-use in the future.

Prior to the pouring and spreading of the liquid membrane material, it is desirable to prepare the sides 12 of the pool at the water line, to prevent the material 13 from adhering to and forming a bond with the sides as it hardens into an impervious, pliable membrane. This could be accomplished by coating the pool sides 12 with a grease or other substance to prevent a strong bond from forming. According to the teachings of this invention, an edge member material such as a strip of film or a tubing is positioned against the pool sides at the water line. In FIGS. 3 and 4 a vinyl strip 16 or the like has been positioned against the pool side 12. The strip 16 may be held by a light adhesive, or alternatively, a double sided adhesive tape 17 may be used at intervals to form a removable bond between the strip 16 and the pool sides 12. After the strip 16 has been positioned around the sides of the pool the liquid membrane material is poured upon the surface and allowed to spread and to bond to the strip 16 rather than the structural sides 12 of the pool as it hardens into a pliable membrane sheet.

In the event that the swimming pool contains one or more side openings 18 at the water line, it is desirable to prevent the liquid membrane, material 13 from spreading thereinto. As shown in FIGS. 1 and 5, a short rigid member 19 is positioned to span across the opening at the surface of the pool. This member 19 may be a slat of wood or an inexpensive equivalent structure. The member 19 will block the spreading of the liquid membrane material 13 which will remain at the surface only. However, the normal circulation of water through the opening 18 will continue uninterrupted as indicated by an arrow 21 in FIG. 5. In the event that a semi-rigid vinyl tube 11 or strip 16 or other equivalent edge member is used, the additional separate member 19 would be unnecessary, since the edge member material itself would span across the side opening 18 at the surface level. In this case, the structure is shown in FIG. 8 wherein the vinyl tube 11 spans across the opening 18 and performs the identical function as the member 19.

FIG. 6 illustrates the use of a vinyl or other suitable tubing forming an edge member 11 at the edge of the pool cover 13. The tubing 11 is first floated in the pool and positioned against the pool side 12. As in the case of the strip 16, the tube must be held in position by intermittent adhesive tapes 23. The tapes 23 perform an initial function of holding the tubing 11 in position before the liquid membrane material 13 is poured upon and spread across the surface of the swimming pool; and then the tapes continue to hold the edge bead and the ultimate hardened cover from drifting out of position.

As indicated heretofore, this invention may be used to make a minimum weight pool cover for ultimate disposal, or to make a much thicker cover which may be stored and re-used. In the event that a thick layered, re-usable cover is desired, a more permanent tie-down or anchoring method will likewise be desired. Indeed, it is contemplated to make a swimming pool cover of sufficient thickness to support the weight of a child who may accidentally fall upon the cover. In this case, the outer edge member 11 may be tied to eye bolts 25 or other suitable anchoring devices in or adjacent to the side of the pool. As shown in FIG. 7 the edge member 11 is tied to the eye bolt 23 by a piece of rope, sash cord or other suitable cable 26.

FIG. 8 shows a similar tie-down or anchoring arrangement wherein the rope or cable 26 is first attached to a block of wood 27 or a similar member. The block of wood 27 may have a hole drilled therethrough, such that the rope or cord 26 may be threaded through and knotted below the hole. The block 27 is floated in the pool and secured to an appropriate pool side anchor 25, prior to the pouring and spreading of the liquid membrane material 13 on the surface of the swimming pool. The liquid membrane material 13 spreads about the pool surface

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and about the block 27 such that the block becomes embedded in and bonded to the hardened membrane material to provide a secure anchor point between the rope or cable 26 and the pool cover. Thus the swimming pool cover may be securely anchored to a fixed supporting member.

The prior art swimming pool covers are unfolded and stretched over a pool to form a loose fitting arrangement that is naturally well vented through cracks and openings about the sides. The swimming pool cover of this invention will fit snugly on any size or shape of pool since the cover is formed within the exact pool for which it is used. Indeed, the cover will fit so snug and tight that the water thereunder will not be in contact with the open air. At times air may be otherwise trapped under this pool cover having been introduced into the water by the normal recirculation system; and therefore, intentional vent holes 29 are provided. As shown in FIG. 9, an annular ring 31 may be formed of wood or plastic, and is floated on the surface of the swimming pool before the liquid membrane material 13 flows thereon. When the liquid membrane 13 spreads, the annular ring 31 becomes bonded thereto on the exterior surfaces and only the opening 29 remains free of the liquid membrane material 13 and will remain as a permanent hole for venting and other purposes. As shown in FIG. 1, there may be several vent holes 29 formed by merely tossing a number of annular rings 31 into the pool; and permitting the rings to float at random before the pool is covered with the membrane material 13.

As shown in FIGS. 1 and 10, an enlarged opening 33 may be formed in the swimming pool cover for inspecting and sampling the water, or for adding chemicals to the water. The inspection opening is formed with an enlarged annular ring 34 in a manner similar to the smaller vent holes 29. In this case, the larger ring 34 should be floated on the surface of the swimming pool, but maintained in a convenient location close to a side 12 of the pool for later access thereto. After the membrane material 13 is poured upon and spread over the pool the outer surfaces of the ring 34 will be bonded within the hardened membrane sheet covering the pool, but the inner opening 33 will remain free and open to provide access to the water of the swimming pool. A removable cover or lid 35 may be placed over the opening 33.

Since the swimming pool cover of this invention will fit exactly to the water surface, there will be no loose edges which may be raised by the wind in a storm. The water surface will be completely shielded from the wind, and therefore the wind force tending to ripple the surface will be eliminated. It is anticipated that this swimming pool cover will remain in place even though the edges are held lightly by adhesive tapes as shown in FIGS. 3, 4 and 6. If a heavier anchoring of the pool cover is desired for minimizing the danger to small children or other possible hazards; then the tie-down methods of FIGS. 7 and/or 8 may be employed.

Obviously, a swimming pool cover may be made in accordance with this invention employing various materials that may be poured upon the water surface in liquid form; that will float upon and spread out over the surface without mixing with or dissolving in the water; and that will harden into impervious pliable membranes. The step of hardening or setting of the liquid material into the membrane form may result from a partial evaporation into the air of the plasticizer from the liquid material. A vinyl solution with a methyl ethyl ketone solvent is one example of a liquid material which may be used for this purpose. When poured upon a water surface, vinyl solution will not mix or dissolve in the water, but will float and will spread over the surface in a thin film. Upon contact with the air, most of the methyl ethyl ketone will evaporate, such that an impervious pliable sheet or membrane of vinyl will remain as a residue to cover the water surface.

Changes may be made in the form, construction, and

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arrangement of the steps without departing from the spirit of this invention or sacrificing any of the advantages thereof, and the right is hereby reserved to make all such changes that fall fairly within the scope of the following claims.

The invention is claimed as follows:

1. A method for making a cover for the water surface of a swimming pool, said method comprising the steps of pouring a liquid membrane material onto the surface, and allowing the membrane material to spread over the entire surface to assume the exact shape of the pool surface and to harden thereon.

2. The invention in accordance with claim 1 including a first step of positioning an edge member around the sides of the swimming pool at the surface thereof, and allowing the membrane material to bond to the edge member.

3. The invention in accordance with claim 2 wherein said edge member is a strip of pliable material attached to the sides of the swimming pool at the surface thereof.

4. The invention in accordance with claim 2 wherein said positioning step includes floating plastic tubing on the surface of the swimming pool and attaching the tubing to the sides of the swimming pool at the surface thereof.

5. The invention in accordance with claim 2 including a further step of removing the swimming pool cover by raising the edge member with the hardened membrane adhering thereto.

6. The invention in accordance with claim 1 including a step of positioning a member to span across an opening in the side of the swimming pool at the surface thereof, and thereby preventing the membrane material from entering into the opening as the material spreads over the surface.

7. The invention in accordance with claim 2 wherein the edge member spans across an opening in the side of the swimming pool and thereby prevents the membrane material from entering into the opening as the membrane material spreads over the surface.

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8. The invention in accordance with claim 1 including the step of floating a block with a line attached upon the surface of the swimming pool, allowing the membrane material to bond to the block and securing the line and thereby securing the hardened pliable membrane cover to a fixed supporting structure.

9. The invention in accordance with claim 2 including the step of fastening a line to the edge member at the side of the swimming pool, and securing the line and thereby securing the membrane material bonded thereto to a fixed supporting structure.

10. The invention in accordance with claim 1 including the step of floating an annular ring in the swimming pool, and allowing the membrane material to spread around and bond to the peripheral sides of the ring while maintaining the inner part of the ring free of the membrane material to provide an opening in the swimming pool cover.

11. The invention in accordance with claim 10 including a further step of covering the annular ring with a removable lid to provide a covered access hole to the surface of the swimming pool.

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U.S. Cl. X.R.

29—526; 264—35, 298