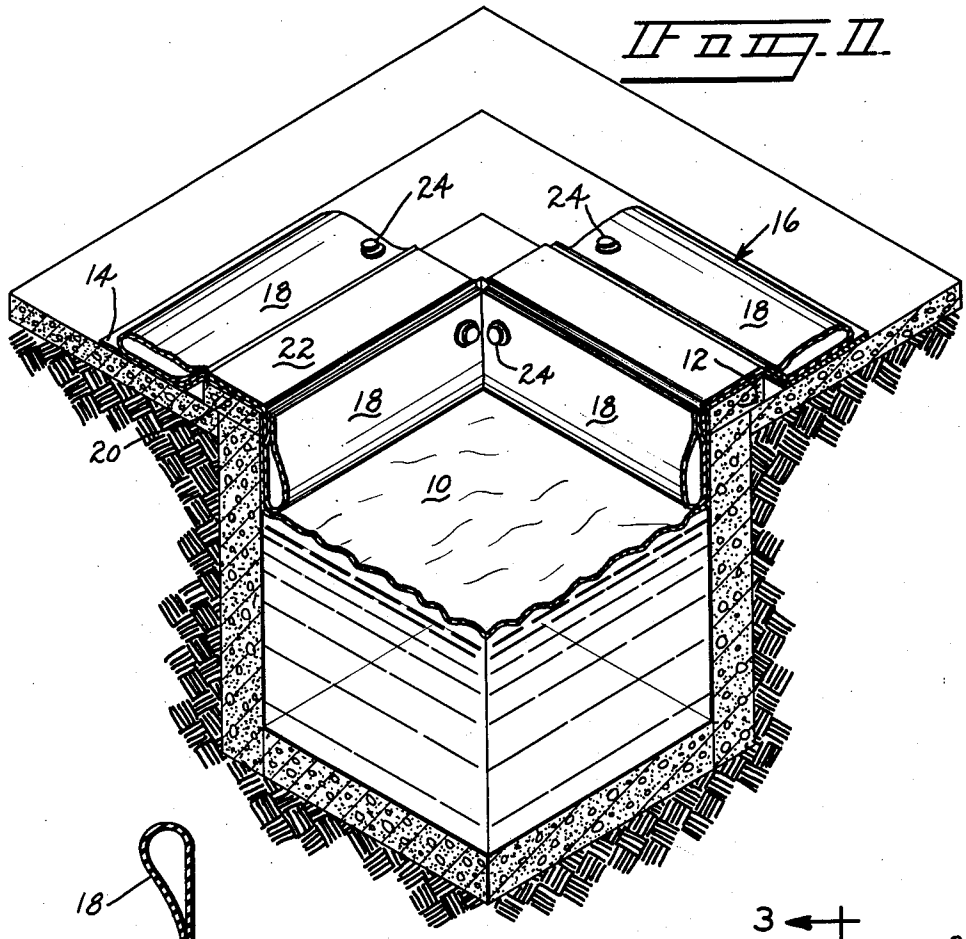
Feb. 19, 1963 E. R. GAZDIK 3,077,610

SWIMMING POOL COVER AND HOLDDOWN STRUCTURE THEREFOR

Filed Aug. 9, 1962

Fig. 1.



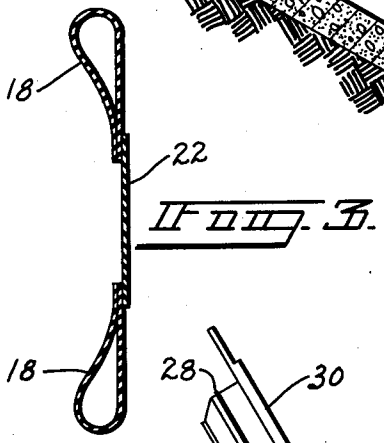


Fig. 3.

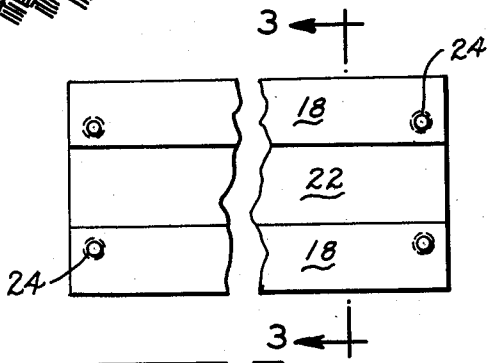


Fig. 2.

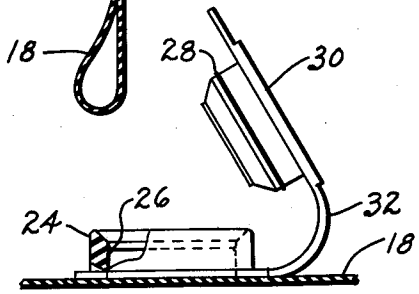


Fig. 4.

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SWIMMING POOL COVER AND HOLDDOWN STRUCTURE THEREFOR

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The present invention relates to cover structures for swimming pools and the like; and more particularly to a structure wherein the cover is a flat disposable membrane held in place by an inexpensive reusable side edge holddown structure.

Several constructions have been proposed heretofore for securing the side edges of impervious membranes to the side edges of swimming pools in such manner that the membrane rests upon the water and prevents contamination of the water with foreign objects. All the prior art structures with which I am familiar are quite expensive, inasmuch as holddown structures shaped to correspond to that of the pool being covered are permanently sealed to the side edges of the membrane. Inasmuch as such structures must be generally tailor made, and inasmuch as they are integrally connected to the membrane body, deterioration of the membrane requires that the entire costly structure be discarded. In one prior art structure, for example, the side edges of the cover membrane are looped and sewn around large cords by means of which the edges are gripped and held in place by suitable channels and quick disconnect fasteners which are secured to the concrete surrounding the pool.

In another structure taught by the prior art, the peripheral edge of a membrane body is secured to a continuous large diameter plastic tube which surrounds the periphery of the pool. The continuous plastic tube is filled with water whose weight then holds the side edges of the membrane in place. Here again deterioration of the membrane cover will generally necessitate the scrapping of the entire structure. In addition, the continuous tube structure is quite unwieldy and weighty and makes storage and handling of the cover very difficult.

An object of the present invention is the provision of a new and improved cover for a swimming pool and the like, that utilizes a flat membrane sheet which is separately replaceable, and a separate holddown structure which adequately grips and holds the side edges of the membrance without tearing or damaging the membrane.

A still more particular object of the present invention is the provision of separable holddown means for membrane-type swimming pool covers which adequately grips and holds the edges of the membrane in place and yet is collapsible into a small package which is easily stored.

Further objects and advantages of the present invention will become apparent to those skilled in the art from the following description of the preferred embodiment described with reference to the accompanying drawing forming a part of this specification, and in which:

FIG. 1 is a fragmentary sectional view through a corner of a swimming pool, and the associated cover structure which is made in accordance with the principles of the present invention;

FIG. 2 is a plan view of one of the holddown structures seen in FIG. 1; and

FIG. 3 is an enlarged fragmentary view of one of the filling connections seen in FIGS. 1 and 2.

According to the principles of the present invention, a flat sheet or membrane **10** of either an impervious or woven material is laid across the surface of the water of the swimming pool, or the like, with its side edges extending up and over the raised curbing which usually surrounds a swimming pool. Where the membrane is an impervious membrane it is preferred that the membrane be opaque to retard the growth of algae. In those instances when a curbing is not formed integrally as part of the swimming pool structure, lengths of 2 x 4 or 2 x 6, or other suitable rectangular structures can be suitably fastened in place. Any fastening which is used to hold the 2 x 4 or other structural coping in place should be of such a nature that no sharp edges project therefrom which will tear or rip the side edges of the membrane which is positioned thereagainst. Where the coping is made by 2 x 6's, for example, the sides of the pool are made of concrete, cinch anchors can be embedded into the concrete and suitable counterbored openings provided in the coping, so that the headed end of the cinch anchor bolts which are received in the counterbored openings will not project above the top surface of the coping. The outer edge portions of the membranes lay against the outer vertical surface of the coping or ledge, as the case may be, and then extends laterally a slight distance over the horizontal walkway, or other area which surrounds the pool.

According to further principles of the present invention, the edge portions **14** of the membrane **10** are held in place by holddown structures that are formed in a plurality of sections, as may be convenient to place and handle around the periphery of the pool. Each holddown section **16** generally comprises a pair of spaced apart liquid containing bags **18** which are tied together along their entire length by a strong stretch resistant structure which will provide a substantially uniform holddown force against the top side of the ledge or coping. By stretch resistant, I mean a material which will not continually deform under tension until ruptured as some types of plastic may do.

In the preferred arrangement of holddown structures shown in the drawing, each bag **18** is made from a rectangularly shaped piece of suitable membrane material by folding the material longitudinally to bring its opposite side edges adjacent and parallel to each other with their edges pointing in the same direction. Thereafter, the longitudinal edge is sealed, as are the two end portions of the strip, to form a fluid tight enclosure in which water can be placed to weight down and hold the edges of the membrane cover **10** in place. Any suitable material can be used to make the bag **18**, as for example plastic impregnated fabric, or suitable films of plastic, and in those instances where a thermo plastic film is used, heat can be used to form the seals around the periphery of the bag as is well known in the art.

Prior to the sealing of the bags **18** formed in the manner above described, the folded strips are placed side by side with their longitudinal edges to be sealed facing each other and spaced apart a distance slightly greater than is the width of the ledge or coping normally used in swimming pool construction. A width of eighteen inches, for example, will be sufficiently great, so that the resulting holddown structure can be used with substantially any type of swimming pool, inasmuch as this width considerably exceeds the usual width of ledges or copings. With the folded strips which form the bags **18** spaced apart as above described, another strip of plastic material is laid lengthwise of the space between the two folded strips so that the opposite side edges of the strip **22** overlap the regions where the respective seams of the bags **18** are to be made. The material used for the connecting piece **22** should preferably be of a stretch resistant character, inasmuch as it is placed under considerable load, but it need not be impervious to moisture. A reinforced type of thermal plastic material is generally to be preferred, since it can be simultaneously bonded to each bag structure at the same time that the bag edges are sealed with a single application of a heating iron. A reinforced nylon

scrim laminated between two sheets of vinyl film is the preferred material for the connecting strip 22 inasmuch as it is tough and heat bondable to the bags 18.

The holddown structures are generally completed by the provision of water inlet connections 24 that are provided in each bag 18. The connections 24 are preferably provided at each end of each bag, so that air can be displaced from one end of the bag while water is admitted to the other. Each of the connections 24 will preferably include an internal annular ridge 26 in its internal opening for the retention of a similar ridge 28 on the outside of a plastic plug type closure or cap 30. The caps 30 are shown hinged to their respective connection bodies by means of plastic straps 32.

In order that the connections 24 will be located so as to minimize hydraulic pressure against the caps 30, the units 24 are preferably located approximately from a quarter to one-half of the way across the width of the bag from their point of attachment to the connecting strip 22. When the holddown structures are installed in the position shown in FIG. 1, the water level of the vertical bag will generally be at a height of approximately one-half of the height of the bag, so that the water will stay in place without running out of the connection 24. It is highly desirable that the bags 18 be identically constructed so they can be more cheaply made, and also so that the holddown structures can be installed interchangeable without taking into consideration which bag is to be supported in a vertical position. With the inlet connection 24 at approximately the third to the quarter point of the width of the bag, the water in the bag lying on the horizontal deck surrounding the pool will also be below the upper end of its inlet connection 24, so that particular advantages are obtained from this approximate location, and so that the holddown structures can be installed without regard to which bag is placed horizontally and which bag is placed vertically. It should also be pointed out that particular advantages are obtained by placing the connections 24 on the same face of each bag which go to make up the holddown structure, so that all of the inlet connections 24 will be exposed at all times and will not be positioned against the surfaces of the pool.

All the holddown structures can be filled with water prior to being placed in position over the curbing. The placement of the holddown structure can be more easily accomplished, however, by first placing the holddown structure in position over the curbing and then sequentially filling the upper bag that lays upon the horizontal area surrounding the pool, and then filling the bag 18 which hangs down against the inside surface of the pool.

When it is desired to disassemble the cover, the accumulation of debris and water which lays upon the membrane 10 can be caused to accumulate adjacent one edge of the pool by suitably lowering the membrane at this location. Thereafter the solids can be removed and the water laying on top of the membrane pumped or syphoned out. Thereafter the plugs 30 are removed from the inlet connections, and the center of the bags 30 are pulled upwardly to allow the water to run out of the connections 24 at the ends of the bag. When the weight of the bags has decreased sufficiently, the bags may be slid onto the horizontal deck and inverted to remove any remaining water. The holddown structures then may be hosed off, and dried, and folded into a convenient package for storing. After all of the holddown structures have been moved out of the way, the impervious membrane 10 can be slid off of the surface of the pool and an inspection made to determine whether or not it can be used again. If it can, it can be washed, and dried, and rolled into a neat package for storing. If it is decided that the membrane 10 cannot be used for another year, it can be discarded without incurring any appreciable loss, inasmuch as there is substantially no labor cost involved in the making of the membrane 10 itself.

While the holddown structures have been described as utilizing a different material for the connecting strip 22 than is used for the bags 18, it will also be understood both can be made from a single sheet of material having appropriate width by only lapping over approximately a fifth of its total width adjacent each longitudinal edge. Thereafter the edge portions will be sealed in the same manner above described, and the inlet connections 24 provided. For small pools where large sized bags 18 are not required, the entire structure can be made of a semi-stretching film, as for example a vinyl film; and for larger pools where heavier structures are required the entire structure can be made either of a thicker piece of plastic, or a reinforced plastic material having suitable strength. In addition, it will not in all cases be necessary to provide a coping if the pool does not already have a curbing. It will be seen that the bag, which is laid on the horizontal area surrounding the pool, can be placed a sufficient distance from the edge of the pool, and will in most instances have sufficient weight to preclude it from being pulled into the pool. If any difficulty is encountered in this respect, a smaller amount of water can be used in the vertical bag than is used in the horizontal bag. In this regard, the caps 30 fit sufficiently tight in the connections 24 as to provide a water tight seal so that they can be filled substantially completely if necessary. Further, while the preferred construction places these connections above the water line by locating them from ¼ to ½ of the bags' width away from the connecting structure 22, it will be possible in some instances to locate the fill connections elsewhere since the caps will usually be water tight.

It will be apparent that the objects heretofore enumerated have been accomplished, and that there has been provided not only an inexpensive throw-away type of cover for swimming pools and the like which does not have an integral holddown portion attached thereto, but a separable, inexpensive and conveniently stored holddown structure for the simple membrane which holddown structure does not require special attachments or projections to be made to the pool structure around its side surfaces.

While the invention has been described in considerable detail, I do not wish to be limited to the particular embodiments shown and described, and it is my intention to cover hereby all novel adaptations, modifications and arrangements thereof which come within the practice of those skilled in the art to which the invention relates.

What I claim is:

1. In combination with a swimming pool and the like having generally vertical side surfaces the upper portions of which terminate at a generally horizontal ledge that extends around at least part of the periphery of the pool: a membrane laid over the surface of the pool with the side edge portions of the membrane extending over said ledge, and at least one section of a holddown device positioned on top of a side edge portion of said membrane and straddling the intersection of said ledge and vertical side surface of said pool, said holddown device comprising two spaced apart and longitudinally extending bag portions adapted to be filled with liquid, a flexible connecting structure, said connecting structure being secured to both of said bags to space said bags apart by a distance which allows one of said bag portions to lie horizontally on said ledge and the other of said bag portions to lie generally vertically along said vertical side surface of said pool, and each of said bag portions having inlet connections for filling said bags.

2. In combination with a swimming pool and the like having a curb of generally predetermined width around its periphery: a membrane laid over the surface of the pool with the side edge portions of the membrane extending over said curb, and at least one section of a holddown device positioned on top of a side edge portion of said membrane and straddling said curb, said holddown device comprising two spaced apart and longitudinally

extending bag portions adapted to be filled with liquid, a flexible connecting structure, said connecting structure being secured to both of said bags to space said bags apart by a distance which generally corresponds to a distance which at least equals said predetermined width, each of said bag portions having inlet connections spaced adjacent its opposite ends on the top side of each bag and located approximately one-third of the width of the bag from said connecting structure.

3. In combination with a swimming pool and the like having a curb of generally predetermined width around its periphery: a membrane laid over the surface of the pool with the side edge portions of the membrane extending over said curb, and at least one section of a holddown device positioned on top of a side edge portion of said membrane and straddling said curb, said holddown device comprising two spaced apart and longitudinally extending bag portions adapted to be filled with liquid, a flexible connecting membrane, said connecting structure being secured to both of said bags to space said bags apart by a distance which generally corresponds to a distance which at least equals said predetermined width, each of said bag portions having inlet connections spaced adjacent its opposite ends and located approximately one-third of the width of the bag from said connecting membrane.

4. A holddown device for the membrane cover of swimming pools and the like, comprising: a pair of spaced apart longitudinally extending bags adapted to be filled with liquid, a flexible connecting structure, said bags being held together by said flexible connecting structure, and each of said bag portions having inlet connections spaced adjacent its opposite ends.

5. A holddown device for securing the membrane covers of swimming pools and the like over a curbing of predetermined width, said device comprising: a pair of longitudinally extending pieces of sheet material each being

folded over longitudinally to bring opposite edge portions of the same surface into engagement with each other, said abutting surfaces being sealed together adjacent their sides and ends to form longitudinally extending fluid tight bags, said bags being spaced apart with their longitudinal sealed edges facing each other, flexible tying means connecting said longitudinally sealed edges of said pair of fluid tight bags, said tying means spacing said bags a distance approximately equal to said predetermined width, and a pair of inlet connections on the side surfaces of each fluid tight bag, and respective members of each pair of inlet connections being positioned adjacent respective ends of their bag.

6. A holddown device for securing the membrane covers of swimming pools and the like over a curbing of predetermined width, said device comprising: a pair of longitudinally extending pieces of sheet material each being folded over longitudinally to bring opposite edge portions of the same surface into engagement with each other, said abutting surfaces being sealed together adjacent their sides and ends to form longitudinally extending fluid tight bags, said bags being spaced apart with their longitudinal sealed edges facing each other, a membrance strong in tension opposite side portions of which are bonded to said longitudinally sealed edges of said pair of fluid tight bags, said membrane spacing said bags a distance approximately equal to said predetermined width, and a pair of inlet connections on the side surfaces of each fluid tight bag, respective members of each pair of inlet connections being positioned adjacent respective ends of their bag, each being located approximately one-third of the width of the bag away from its longitudinally sealed edges.

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