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3,475,768

WEATHERPROOF COVER FOR SWIMMING POOLS AND THE LIKE

Filed Sept. 20, 1967

3 Sheets-Sheet 1

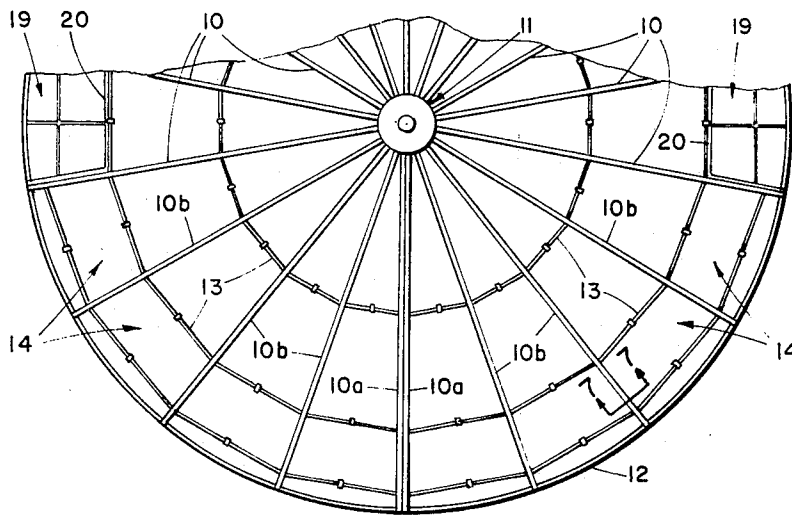


FIG. 2

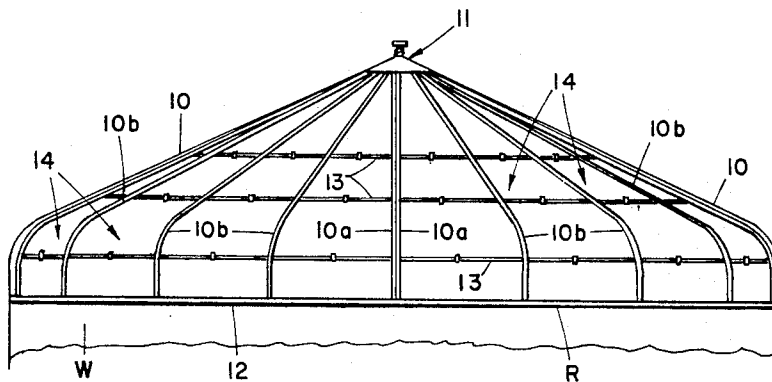


FIG. 1

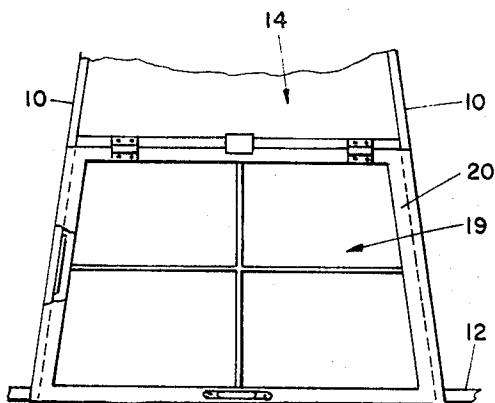


FIG. 8

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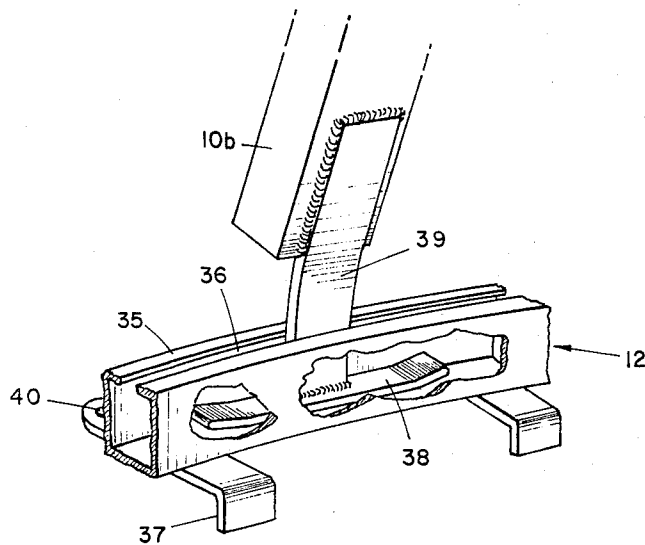


FIG. 6

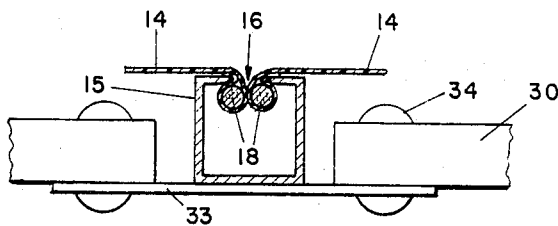


FIG. 7

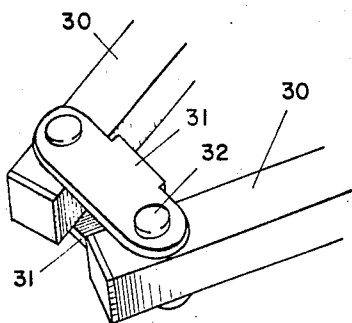


FIG. 3

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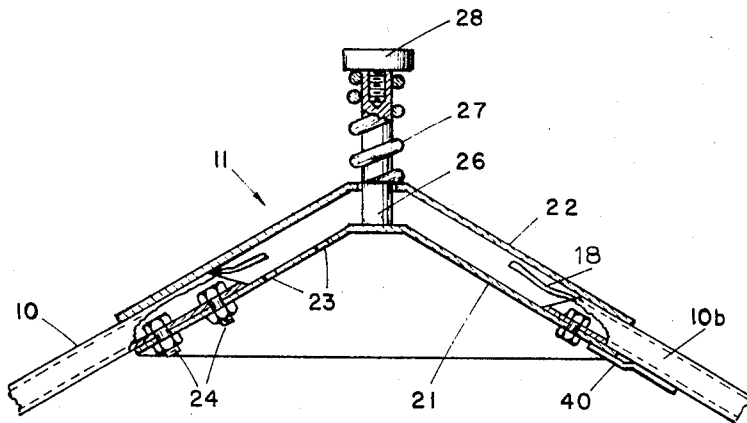


FIG. 4

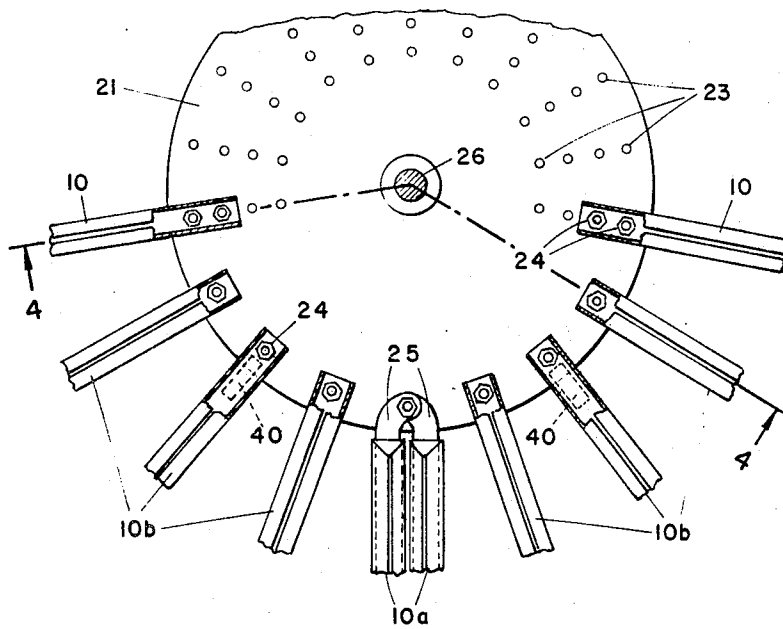


FIG. 5

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WEATHERPROOF COVER FOR SWIMMING POOLS AND THE LIKE

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9 Claims

ABSTRACT OF THE DISCLOSURE

This specification discloses a weather-proof cover for so called "above-ground" swimming pools having an up-standing wall to which the cover may be attached. The cover incorporates doors for entry and exit and may be swung back around an arc of the wall to partially expose the pool to the open air, or may be closed up to permit use of the pool during less favourable weather.

Private domestic swimming pools are usually installed in the open air, which tends to restrict their use to warm climates, and therefore restricts the sales of such pools. Various forms of glass or plastic temporary covers have been proposed for swimming pools, which are mainly suitable for the relatively expensive permanent, so called "ground level" pools. Generally speaking, such covers as have been proposed heretofore, have incorporated means for attaching the same to the ground or to the concrete or stone deck surround the pool installation. In addition, they have generally speaking been, of necessity, of a height sufficient to permit the person to walk about erect around the edge of the pool. As a result, such pool covers have been substantial structures involving considerable expense. Many different forms of temporary and semi-permanent swimming pools have been designed for so called "above ground" installations, with great success. Such pools usually involve a rigid circular wall with some form of plastic or waterproof liner the majority of which lays upon the ground within the circular wall, and supports a body of water. In most such pools a narrow rim or deck is added around the upper edge of the wall. The pools of this type are seldom more than three or four feet deep, and persons will normally climb over the edge of the pool, and, they will walk only when they are partially immersed in the water with their feet on the bottom of the pool. As a result, it becomes possible to design a pool cover for such a temporary and semi-permanent "above ground" pool without providing either the interior height above water level to permit walking erect around the edge of the pool, as in the case of a permanent ground level pool, and also without providing the extra width and length, to cover a marginal area of deck around the edge of the pool around which the persons may walk. The pool cover can thus conform almost exactly to the size of the pool itself, and need have an interior height giving about 6' of minimum clearance above ground level, which clearance may be only 2' or 3' above water level. The resultant pool cover can therefore be of very much more economical construction thereby reaching a wider market and giving better prospects for achieving wide distribution and mass production. However, in the design of such a pool cover it is nonetheless necessary to provide means for partially opening the cover in fine weather and means for entering the pool during colder weather. It should also be of such a design as to permit the average home owner to buy the cover as a kit of parts and to erect it himself in his back yard.

It is therefore an objective of the present invention to provide a pool cover for temporary and semi-perma-

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nent "above ground" swimming pools, usually of circular construction, having a series of radial ribs supporting sheet plastic material, and means engaging the rim of the pool to support said ribs and said material, some of said ribs being swingable to permit partial withdrawal of said plastic material and said ribs, and incorporating means for easy assembly on site, and being of lightweight economical construction.

More particularly, it is an objective of the present invention to provide a swimming pool cover having the foregoing advantages in which individual panels of plastic material are supported between adjacent ribs thereby simplifying the problem of replacing panels in the event of breakage.

More particularly, it is an objective of the present invention to provide a swimming pool cover having the foregoing advantages incorporating gravity closed outwardly swingable door members to vent air therefrom above predetermined wind speeds.

More particularly, it is an objective of the present invention to provide a swimming pool cover having the foregoing advantages incorporating means tensioning said ribs apart from one another and maintaining them at a predetermined spaced apart distance whereby to maintain said plastic material at a predetermined tension therebetween.

The foregoing and other advantages will become apparent from the following description of a preferred embodiment of the invention which is here given by way of example only with reference to the following drawings in which like reference devices refer to like parts thereof throughout the various views and diagrams and in which.

FIGURE 1 is a side elevational view of the swimming pool cover according to the invention mounted on the side wall of a circular above-ground swimming pool, the latter being cut away for the sake of clarity;

FIGURE 2 is a partial top plan view of the pool cover shown in FIGURE 1;

FIGURE 3 is an enlarged perspective of an elbow joint of a typical rib portion;

FIGURE 4 is a section along the line 4-4 of FIGURE 2 greatly enlarged to show the detail of the crown of the pool cover;

FIGURE 5 is a plan view of the crown portion of the pool cover shown in FIGURE 4, partially cut to reveal its construction;

FIGURE 6 is a perspective of the rim portion cut away to show the method of attachment of the ribs to the pool, and,

FIGURE 7 is a section along the line 7-7 of FIGURE 2 showing the rib and the junction of the end of the two adjacent struts thereto and,

FIGURE 8 is a front plan view of one of the hinged doors associated with the pool cover.

From FIGURES 1 and 2 it will be seen that this preferred embodiment of the invention provides a circular substantially dome-shaped structure attached to the upper rim of the outer side wall W of a typical circular swimming pool which is cut away for the sake of clarity. It will be understood however that such a pool is of conventional "above ground" pool construction in which the side wall W is usually of sheet metal supported by any suitable framework not shown and having an interior dependent plastic pool liner (not shown) the major portion of which lays upon the surface of the ground. In this way, a substantial body of water can be stored in such a pool without the need for a rugged supporting structure. In some cases, filters and even heating devices are provided, but the pool and any such accessories form no part of this invention.

In the majority of cases, the side wall W of such a pool is provided with an upper edge or rim indicated as R to which the instant pool cover may be attached.

The pool cover will be seen to comprise a framework having a plurality of ribs 10 having upper ends meeting at a common central point and secured by the crown member 11 to be described in detail below. The lower ends of ribs 10, in this preferred embodiment, are supported around the circumference of a circle by rail 12. Strut members 13 are provided between ribs 10 at intervals therealong, two such strut members being shown in the present case, although in the case of larger structures, it may be necessary to go to three or more such strut members, such strut members being collapsible in a manner to be described below. Transparent plastic panels 14 of elongated triangular shape are attached to ribs 10 and are tensioned therebetween by the extension of strut members 13.

Each of ribs 10 is comprised according to this preferred embodiment, of a square tubular section member 15 having a longitudinal slot 16 formed along the entire length thereof. Plastic panels 14 are provided along each of their side edges with a welt 17 containing a rope 18. In this way, panel 14 can be attached to ribs 10 by merely sliding ropes 18 up inside the tubular section 15 with the panel 14 extending through slot 16.

In order to provide for the opening of a portion of the pool cover, during fine weather, two identical rib members indicated as 10a are provided at one point, and are movably attached to the crown member 11 to be described below to permit the same to be opened apart and swung around the rail 12. To provide for a greater opening, the two adjacent ribs 10b on either side of ribs 10a may also be swingably attached to the crown member 11 thereby permitting an opening to be exposed equal to about one third of the circumference of the pool and pool cover.

In order to permit entry and exit during less favourable weather conditions, two door members 19 are provided preferably on directly opposite sides of the pool cover which are hinged along their upper edges as at 20, and may be swung upwardly and outwardly. In this way, in addition to providing doorways for entry and exit to the pool, means are provided for venting excessive wind pressure in the event of a storm, thereby relieving excessive stresses on the structure which would otherwise tend to burst outwardly.

Referring now to FIGURES 4 and 5, the crown member 11 will be seen to comprise two substantially similar saucer-shaped plate members, the lower plate being No. 21 and the upper plate being No. 22. Lower plate 21 is provided with 4 holes in line of holes 23 aligned with the ultimate positions of ribs 10, which ribs 10 will adopt when in their spaced apart, stressed position. If necessary, to facilitate assembly, the upper of the two holes in each pair may be slotted for purposes to be described below. Complementary bolt holes are provided in the upper ends of ribs 10 for receiving bolts 24 therethrough. In the case of ribs 10a and 10b, the same bolt holes may be used, but since these ribs are intended to swing as described below, only one bolt 24 will be used. As shown in FIGURE 5, the upper ends of 10a are preferably provided with an L-shaped crank portion 25 to permit the same to be attached through the same bolt hole 23 and lay alongside one another when in their closed position.

In order to prevent rainwater and snow and dirt from entering the upper ends of ribs 10, the upper plate portion 22 is provided in overlying relation thereto, dimensioned to overlap and cover the upper ends of ribs 10. A central box 26 is preferably fastened or welded to lower plate 21 and passes through a hole provided in upper plate 22 and is adapted to carry spring 27 thereon which may be held under compression by any suitable means such as knurled nut 28 threadedly engaging the upper ends of boss 26. In this way, spring 27 tends to

press upper plate 22 downwardly onto the upper surfaces of ribs 10. If desired, a rubber sealing member (not shown) may be provided around boss 26 where the same passes through upper plate 22 obviously, if excessive quantities of water leak through the central hole in upper plate 22, the arrangement of the boss 26 and spring 27 can be reversed, boss 26 being butt welded to the underside of upper plate 22 and passing through a suitable hole in lower plate 21, spring 27 being provided below lower plate 21.

In order to stress ribs 10 a predetermined distance apart, strut members 13 already referred to are provided therebetween. The details of strut member 13 are shown in FIGURES 6 and 7. Each of strut members 13 consists of two half strut portions 30 linked together by an elbow joint comprising U-shaped channel portion 31 overlapping adjacent ends of strut portion 30 and bolts 32 passing therethrough. In this way, strut members 30 are free to be folded together in one direction, but folding apart of strut portions 30 will bring the same into alignment with one another and with channel member 31 at which point, channel member 31 locks strut portions 30 in position against further movement. By suitably arranging the location of bolts 32, the locked positions can be arranged to occur when strut portion 30 has moved just past their precisely aligned position, thereby preventing strut portions 30 from accidentally folding together once more.

The free ends of strut portions 30 are attached to ribs 10 by means of bearing flanges 33 welded to the underside of ribs 10 and extending on either side thereof, bolts 34 passing through strut portions 30 and bearing flanges 33 as shown.

The construction of the rail 12 is shown in FIGURE 8. Rail 12 will be seen to comprise a section similar to that of rib 10, i.e. a generally rectangular tubular member indicated as 35 having a continuous longitudinal slot 36 formed in its upper edge. Rail 35 is provided with a series of attachment flanges 37 having holes 38 formed therein for attachment to the upper edge of the rim of a pool (not shown).

The lower ends of ribs 10 are provided with means for slidably engaging rail 12 comprising the skid member 38 and upstanding leg portion 39 welded to rib 10, leg portion 39 being dimensioned to fit within slot 36, thereby permitting skid 38 and leg 39 to slide around rail 12.

In operation, the rail 12 is first attached to the upper edge of the rim of the pool by means of flange 37, and ribs 10 are attached by a single bolt 23 to the lower plate 21 of crown member 11, these operations are being done sequentially for each rib 10. At the same time, strut members 13 are attached to ribs 10 in their collapsed or folded position, and plastic panels 14 are attached to adjacent ribs 10 as described. The skid 38 and leg portion 39 are introduced into one end of rail 12, which is left unattached from the rim of the pool for the purpose, and slid around the pool to make room for the attachment of the next rib 10 and panel 14. These operations are repeated in sequence until all ribs 10 and panels 14 are attached and then one by one, strut members 13 are moved into their extended positions thereby tensioning and stressing ribs 10 apart from one another and tensioning panels 14 therebetween. This operation has the effect of causing the lower ends of ribs 10 to move slidably around rail 12 as the strut members 13 are extended. As each of ribs 10 is moved into its stressed position, the second of bolts 24 may be introduced and fastened thereby securing the same in position, with the exception of course of ribs 10a and 10b.

When required to be closed, ribs 10a may be attached to one another by a bolt or any other suitable means which may be readily released to permit ribs 10a to be swung apart. As stated, in fine weather, ribs 10a to be swung apart by collapsing strut members 13 on either side thereof, and ribs 10b may similarly be swung apart

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thereby still further separating ribs 10a and providing accordion pleats of plastic panel 14 therebetween. It will be noted that due to the geometry of the pool cover, the rotation of ribs 10a and 10b around the rim of the pool does not take place about the exact center of the pool cover. As a result, there is some displacement which takes place due to the fact that ribs 10a and 10b must, in their opened apart position, extend between one and two inches. Since ribs 10 are all constructed with a bend at their lower ends around a substantial arc, such extension of ribs 10a and 10b merely causes a slight straightening of the curve at this point. The resulting additional stress on ribs 10a and 10b is not harmful to them and in fact has beneficial results of causing them to bind in rail 12 thereby preventing them from accidentally springing back and closing up the opening. However, such tensioning of ribs 10a and 10b may in some cases cause a certain degree of downward deflection of the upper ends of ribs 10a and 10b which are attached to lower plate 21 of crown member 11 by only one bolt 24. Such downward deflection of ribs 10a and 10b is therefore to some degree overcome and resisted by means of the underslung bearing lips 40 welded to the undersides of the upper ends of ribs 10a and 10b and offset therefrom sufficient to lie along the underside of plate 21 in a plane parallel thereto but spaced therefrom and for the purpose of assisting the single bolt 24 in overcoming such downward deflection stress.

What I claim is:

1. A weatherproof cover for swimming pools of the above-ground type having sufficient interior height to permit water activities to take place in the covered pool and having a peripheral upstanding wall defining the rim of the pool, said cover comprising;

a support rail attachable to said rim of said pool wall; spaced apart rib members extending upwardly from said support rail and converging towards one another;

means at the lower ends of said ribs releasably attaching the same to said support rail,

a crown member attached to the upper ends of said ribs for securing the same;

a plurality of separate generally wedge-shaped sheets of transparent plastic material dimensioned to cover the space between any two adjacent ribs;

attachment means located along at least two edges of said sheets for fastening to said adjacent ribs, and, a swingable door member between a pair of said ribs towards the lower ends thereof.

2. A weatherproof cover as claimed in claim 1 wherein said ribs are formed of hollow tubular material, said tube having a longitudinal opening along one side thereof, and including rope means along said wedge-shaped sides of said plastic sheets, adapted to sit within said hollow tubular rib members and retain said edges of said plastic sheets therein.

3. A weatherproof cover as claimed in claim 1 wherein said support rail comprises a continuous hollow tubular member having a longitudinal slit along one side thereof,

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and a series of attachment lugs fastened to the underside of said rail member opposite to said longitudinal slit therein, spaced apart for attachment to said rim of said pool at spaced intervals therearound.

4. A weatherproof cover as claimed in claim 3 including a skid member attached to the lower end of each said rib member and dimensioned to fit within said hollow tubular rail, and a leg portion extending between said skid member and said rib member and adapted to pass through said longitudinal slit in said rail.

5. A weatherproof cover as claimed in claim 1 wherein said support rail is generally circular in configuration, and wherein said ribs are arranged in substantially radial form, some of said ribs being fastened in position, and other of said ribs being swingable towards and away from one another so as to define an opening around a predetermined arc of said rail.

6. A weatherproof cover as claimed in claim 1 wherein some of said ribs are rigidly fastened to said crown member, and other of said ribs are swingably fastened thereto, and including a cover plate overlying the upper ends of said ribs.

7. A weatherproof cover as claimed in claim 1 including a series of articulated supports struts arranged between adjacent said rib members, said struts including joint permitting the same to be extended outwardly to stress said ribs apart from one another, thereby stressing said plastic sheets therebetween.

8. A weatherproof cover as claimed in claim 1 wherein said crown member includes a plate portion of generally inverted saucer-shaped configuration angled to permit alignment with said members, and adjustable attachment means on said plate portion for attachment of said rib members thereto in variable locations.

9. A weatherproof cover as claimed in claim 1 including a plurality of movable rib members arranged in left and right hand groups, the rib members at the junction of the two groups being provided with cranked hinge means at their upper ends for attachment at a common point on said crown member, thereby adapting said rib members to lie side by side in contact with one another throughout their length.

References Cited

UNITED STATES PATENTS

2,692,566	10/1954	Mitchell.	
2,964,759	12/1960	Riggs.	
3,008,148	11/1961	Vierling.	
3,094,708	6/1963	Caldwell.	
3,118,186	1/1964	Moss	52—63 XR
3,333,373	8/1967	Taylor et al.	52—82 XR
3,424,179	1/1969	Minot	52—63 XR

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