

Nov. 28, 1967

W. H. W. STEINBECK

3,354,472

SWIMMING POOL COVERS

Filed Nov. 23, 1966

Fig. 1.

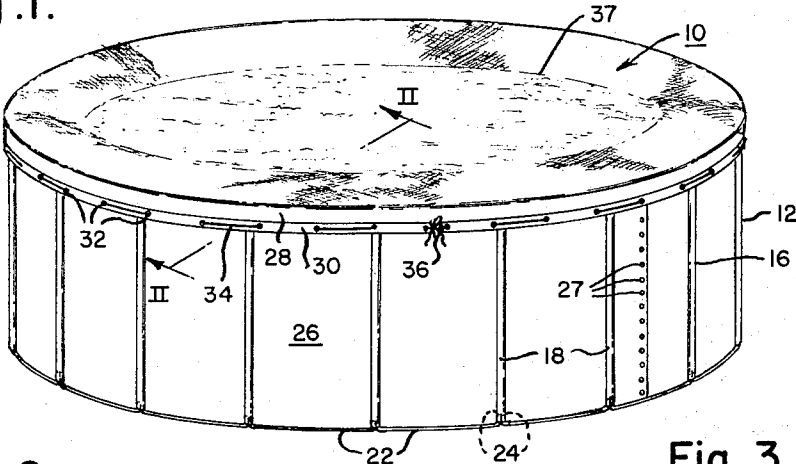


Fig. 2.

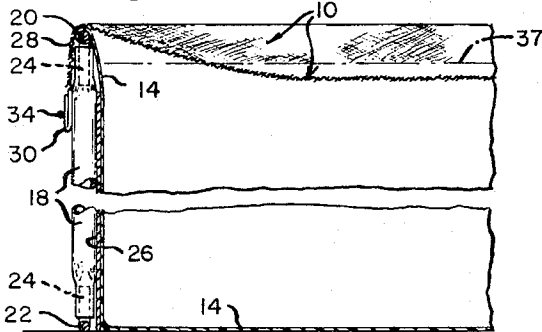


Fig. 3.

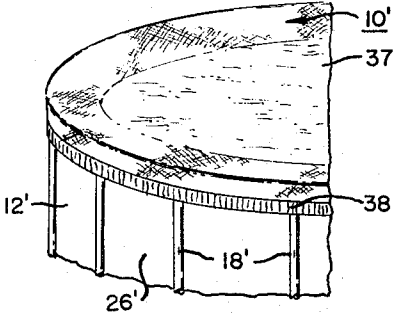


Fig. 4.

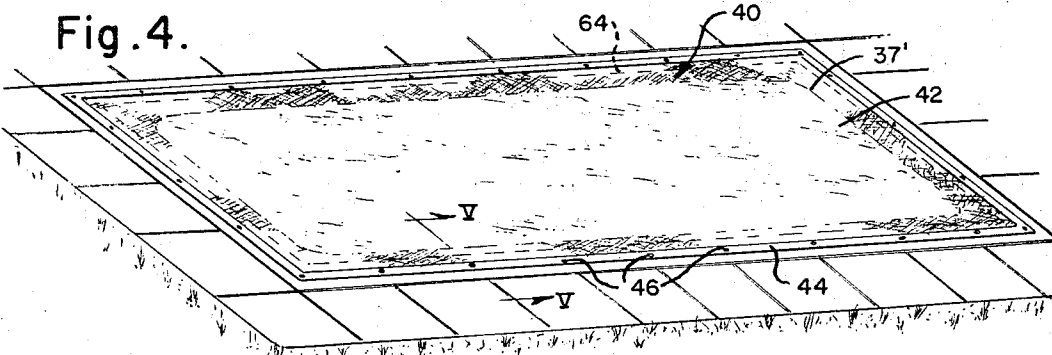


Fig. 5.

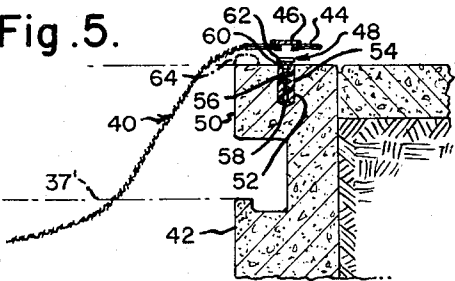
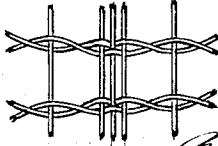


Fig. 6.



INVENTOR
Wayne H. W. Steinbeck

By
Paul Bloch & Zierenheim
his attorneys

1

3,354,472

SWIMMING POOL COVERS

Wayne H. W. Steinbeck, 303 Sandy Drive,
Glenshaw, Pa. 15116

Filed Nov. 23, 1966, Ser. No. 596,603

9 Claims. (Cl. 4-172)

The present application is a continuation-in-part of my co-pending application entitled, Cover for Outdoor Swimming Pools, filed Aug. 4, 1964, Ser. No. 387,529, now abandoned.

The invention relates to covers for above grade or below grade swimming pools, and more particularly to a lightweight cover which can be easily installed and removed by one person, which can prevent debris, insects and other foreign matter from entering the pool when so covered, and which is not subject to deterioration by the weather or by chlorinated water.

The swimming pool covers which are presently available or otherwise known in the art suffer from many disadvantages. For example, the covers typified by the patents to Newgard Patent No. 3,110,908 and Bartolucci et al. Patent No. 3,148,384 are stretched tightly across the top of the swimming pool so that the material of the covers are taut or maintained under tension. This arrangement requires a number of exceptionally strong and complicated anchoring devices. The tautness of the material frequently results in puncturing or ripping when foreign objects such as tree branches or rocks are inadvertently or otherwise dropped upon the cover. Moreover, the weight and the stretched condition of these covers makes removal thereof difficult if not impossible for one person and particularly presents difficulties in undoing the various anchoring devices. Many of these covers are impervious to water so that the collection of rain water or melted snow thereon frequently causes the covers to rupture. Removal of these covers with collected rain water or in the case of pervious fabrics with quantities of absorbed water adds considerably to the weight and difficulty of removing the cover. In the case of impervious covers it is virtually impossible to avoid spilling rain water and collected debris, insects and the like into the swimming pool.

In other proposed swimming pool covers, as proposed in Murphy Patent No. 2,912,703, a relatively heavy fabric or sheet is permanently stretched and laced to a framework which can be lowered over the pool. However, this arrangement requires leaving the cover exposed to weather during the winter months when the pool is not in use or providing storage for a relatively large and bulky device.

Attempts have been made in the past to mitigate the disadvantages of utilizing a tightly stretched cover for swimming pools as disclosed in Kroeger Patent No. 2,580,555. In this arrangement the pool cover consists of a plastic sheet which floats on the surface of the water in the swimming pool. While this arrangement may permit the use of a lesser number of or simpler anchoring devices, it does not alleviate the problems involved in installing and removing an extremely heavy core. Moreover, this arrangement requires the water level in a swimming pool to be carried very close to the top of the pool to avoid undue sagging of the cover and the application of excessive forces on the cover anchor means. Inasmuch as the cover is impervious to water, the Kroeger arrangement does not mitigate the problem of rain water and debris spillage into the pool when the cover is removed, for example after a rain storm. Permitting the impervious cover to float on the surface of the water will not substantially decrease the likelihood of falling objects puncturing the cover. The inertia of the heavy

2

cover and the fluid friction existing between the cover and the water will endow the floating plastic sheet with substantially the same characteristics as a tightly stretched cover.

Covers which have been proposed for above ground swimming pools suffer from the same disadvantages, and moreover there is no known cover of lightweight but durable material which can be quickly and easily installed and removed relative to an above grade swimming pool.

I overcome these disadvantages of the prior art by providing a lightweight swimming pool cover which can be readily installed or removed by one person and which requires a minimum of anchoring means. Various forms of my cover are adapted for below grade and above grade swimming pools respectively. My swimming pool cover is made from a flexible material which, because of its light weight, readily conforms to the edges of the swimming pool to prevent the entry of insects and the like into the pool when so covered. My swimming pool cover need not be stretched tightly across the pool and preferably is allowed to sag into the pool. Constructed from an open-weave fabric, the cover readily permits rain water to pass therethrough, and moreover is intended to sag beneath the surface of the water in the pool so that the force of objects falling into the pool will be largely absorbed by an overlying water layer in order to prevent damage to the lightweight material comprising the cover. In another arrangement of my invention, it is contemplated, depending upon the material utilized for the cover, that the filament or thread comprising the open-weave fabric or mesh have about the same specific gravity as that of water so that the fabric will lie on or very close to the surface of the water. In any event, the force of falling objects will still be largely absorbed by the water inasmuch as the lightweight, open-mesh material has very little inertia and is readily displaced below the surface of the water by the falling object. In the event that the specific gravity of the material is the same or less than that of the water, I prefer to provide the material with an attractive color such as blue or green which will enhance the appearance of the swimming pool with the cover thereon. Certain forms of my swimming pool cover are provided with convenient and novel anchoring means for securing the cover to a below grade and to above grade swimming pools respectively.

The open-mesh and water-pervious character of the swimming pool cover permits easy removal from the swimming pool, while the fabric is sufficiently strong to carry with it any of the usual debris which may have fallen into the swimming pool.

Although of an open-mesh fabric to permit the passage of rain water, the swimming pool cover prevents entry of insects therethrough into the swimming pool water. The swimming pool cover can be fabricated, for example, from conventional mosquito netting material or from a known surplus camouflage material described hereinafter in greater detail. The use of an open-mesh material in contradistinction to a solid sheet material or a close or semi-close weave fabric, prevents the wind from raising the cover from the pool to admit debris or insects and perhaps loosening the cover from its anchor means or ripping the material of the cover. The lightweight character and open-mesh weave of my pool cover eliminates storage problems and also permits the cover to be placed into immediate storage without prior drying out, for the cover readily dries to prevent mildew or other deterioration, even when balled or folded.

I accomplish these desirable objects by providing a cover arrangement for a swimming pool comprising a lightweight mesh material shaped to overlie the top open-

ing of said swimming pool, said mesh material having a reinforcing band secured adjacent the peripheral edge thereof, anchor means secured to said reinforcing band for securing said cover to the side walls of said swimming pool, said mesh material being sufficiently open to permit the flow of rain water and melted snow therethrough but to prevent the entry of insects and the like into said pool. For above grade swimming pools desirably said anchor means includes a number of eyelets spaced along the length of said tape and a drawstring threaded therethrough or said reinforcing tape is elastic to serve as anchor means for said cover. For below grade pools desirably said anchor means includes a plurality of said fasteners secured to said tape and spaced along the length thereof and a like number of cooperating snap members secured to the adjacent wall surfaces of said swimming pool to secure said cover to said swimming pool walls.

During the foregoing discussion, various objects, features and advantages of the invention have been set forth. These and other objects, features and advantages of the invention, together with structural details hereof, will be elaborated upon during the forthcoming description of certain presently preferred embodiments of the invention, together with presently preferred methods of practicing the same.

In the accompanying drawings, I have shown certain presently preferred embodiments of the invention and have illustrated certain presently preferred methods of practicing the same wherein:

FIGURE 1 is an isometric view of an above ground swimming pool with my novel cover installed thereon;

FIGURE 2 is an enlarged, partial, cross-sectional view of the swimming pool and cover shown in FIGURE 1 and taken along reference line II—II thereof.

FIGURE 3 is a fragmentary isometric view of a similar swimming pool and cover but illustrating another form of my novel anchoring means;

FIGURE 4 is an isometric view of a below grade swimming pool illustrating still another form of my novel cover and anchoring means;

FIGURE 5 is an enlarged, partial cross-sectional view of the swimming pool and cover shown in FIGURE 4, taken generally along reference line V—V thereof, and showing in detail one form of my novel anchoring means; and

FIGURE 6 is a partial plan view of one form of open-mesh fabric which can be employed in the construction of my novel swimming pool cover.

Referring now more particularly to FIGURES 1 and 2 of the drawings, the exemplary form of my swimming pool cover 10 shown therein is adapted for use with an above grade swimming pool 12. The swimming pool 12 is defined by a plastic liner 14, supported upon a suitable framework 16, comprising a number of vertical supports or ribs 18 and generally U-shaped connecting members 20 and 22. Each of the ribs 18 is flattened and otherwise shaped to receive the adjacent ends 24 of the associated connecting members 20 or 22. The upper connecting members 20 are secured to the liner 14 by insertion through sleeves formed in the liner by rolling and stitching the edges of the liner, in the conventional manner. The connecting members 20 and 22 are arcuately shaped in conformance to the finished circumference of the pool. To prevent the swimming pool liner 14 from bulging outwardly between the vertical ribs 18, a continuous metal sheet or band 26 is inserted between the ribs 18 and the liner 14 and comprise, for example, an elongated strip of aluminum having its ends overlapped and bolted at 27.

In this arrangement of the invention, the swimming pool cover 10 is fabricated from the aforementioned mosquito netting or camouflage material or other light-weight mesh material such as nylon or other plastic screening. In the arrangements of FIGURES 1 and 3, the

cover 10 is preferably circular to conform to the shape of the swimming pool as shown, but is made somewhat larger to permit the cover to sag into the water as better shown in FIGURE 2. The cover 10 also is made sufficiently larger so that the edge portions 28 thereof can be turned down over the top portions of the vertical ribs 18 and the upper lateral edge of the reinforcing metal strip 26. The edges of the swimming pool cover 10 are reinforced by a suitable cloth or other reinforcing tape 30. The tape 30 can be provided with a conventional adhesive to permit ironing on the edge of the pool cover or the adhesive can be omitted and the tape stitched on. In the arrangement of the invention as shown in FIGURES 1 and 2, the reinforcing tape 30 is provided with eyelets 32, desirably equally spaced around the periphery of the tape 30 into which a drawstring 34 is alternatively threaded in and out to secure the drawstring to the cover 10. Because of its light weight, the cover 10 can then be secured to the swimming pool 12 merely by tightening the drawstring and tying the ends thereof with a suitable slip knot denoted by reference character 36. As better shown in FIGURE 2 of the drawings, the major proportion of the cover material sags onto or beneath the surface 37 of the water so that very little force is exerted upon the anchoring means for the cover, which means include the reinforcing tape 30 and the drawstring 34. The mesh-weave of the fabric comprising the cover 10 permits rain water to readily pass therethrough so as not to add to the weight of the cover when the latter is removed from the pool. On the other hand, removal of the cover 10 at the same time draws with it the usual debris, insects or any foreign matter which may have inadvertently fallen into the swimming pool. On the other hand, disposition of the cover fabric at or beneath the surface of the pool provides a protective layer of water for absorbing the shock forces of objects falling or thrown into the pool and thereby prevents damage to the cover fabric. Moreover, in the event of unexpected snows, the disposition of the cover fabric at or beneath the surface of the water and the mesh character of the fabric permit the snow to instantly contact the water of the pool to melt the snow and to prevent the application of the weight of the snow to the pool cover.

The cover 10 can be readily removed by one person and the mesh character of the fabric permits the major proportion of the water clinging thereto to be separated by shaking during removal of the cover. Any residual water in the fabric is readily removed by evaporation, even though several layers of the fabric, as when the cover 10 is folded or balled for storage immediately after removal from the pool. It has been found that the cover 10 when fabricated from the aforementioned camouflage material or the like, can withstand several seasons of weathering and contact with chlorinated water in the swimming pool. In one arrangement of the invention, the swimming pool cover 10 is fabricated from a nylon or cotton netting cloth of about 70 denier having a mesh weave exemplified by that shown in FIGURE 6. Obviously other light weight open-mesh weaves can be utilized in place of that shown in FIGURE 6; or alternatively an unwoven plastic screening (not shown) can be used. The threads shown in FIGURE 6 can be either monofilaments or twisted fibres as desired. Desirably the mesh weave of FIGURE 6 or other mesh is sufficiently open to permit water to pass immediately through the mesh when the cover is withdrawn from the pool to avoid tearing of the cover and to minimize the weight thereof.

The weight per square yard of the material is about 1½ ounces. The material is manufactured by Putmann, New York city, under military specification MCL-C-3395C. It is to be understood, of course, that the aforementioned specification is exemplary in nature and that equivalent fabrics can be employed.

It is also intended that the particular weave shown in FIGURE 6 is supplied by way of example, and other mesh

patterns can be employed. For example, it is contemplated that a readily available lightweight nylon screening material can be employed and that other synthetic and natural mesh materials can be utilized. The weight of the cover material can also be varied, depending upon the application of the invention. The important consideration is the construction of the cover so that the material thereof sags onto or beneath the surface of the water to prevent the direct application of the forces of falling objects to the cover material to permit melting of falling snow by instant contact with the pool water, and to permit rain water and melted snow to pass through the cover without adding to the weight of the cover and without spillage of rain water or melted snow, together with unavoidable debris collecting therein, into the pool as when removing an impervious cover.

In FIGURE 3 of the drawings, another form of anchoring means for the cover 10' is shown. In this arrangement of my invention, the cover 10' is provided with an elastic reinforcing tape 38 and the eyelet 32 and drawstring 34 of FIGURE 1 are omitted. When installing or removing the cover 10' from the pool 12' the edge portion of the cover and the reinforcing tape 38 are merely stretched over the upper series of connecting members 20 in the adjacent edge of the pool liner 14.

As better shown in FIGURE 2 the top portions of the liner 14 is stretched between the adjoining ends of the upper cross members 20 with a minimum of sag. The material of the cover 10 or 10' is likewise stretched over the top edges of the liner 14 and sags therewith to provide a continuous circumferential contact between the cover 10 or 10' and the swimming pool liner 14 about their upper peripheral edges to prevent the entry of insects or the like therebetween.

Referring now to FIGURES 4 and 5 of the drawings, another form 40 of my swimming pool cover is adapted in this example for use with a generally rectangular below grade swimming pool 42. The material of the cover 40 is generally the same as that described above in connection with the covers 10 or 10'. The cover 40 is made sufficiently larger than the opening of the swimming pool 42 so as to overlie a portion of the concrete or other wall structure thereof. Preferably, the cover 40 is reinforced with a peripheral reinforcing tape 44, which for example can be similar to the tape 30 of FIGURES 1 and 2. In this arrangement, however, the tape 44, as better shown in FIGURE 5 is provided with a plurality of snap fasteners 46 which are crimped on or otherwise secured at suitable apertures therefor along the length of the tape 44. Inasmuch as the cover material is very light in weight, the snap fasteners 46 can be spaced as much as two feet or more apart, depending upon the size of the swimming pool. It is understood, of course, that the snap fasteners 46 can be placed closer together as desired.

Cooperating with each of the cover fasteners 46 is a snap anchor member 48 which can be embedded in the concrete or other material comprising the walls 50 of the swimming pool 42. In this arrangement of the invention, a suitable hole 52, for each of the snap anchor members 48, is bored a relatively short distance into the wall 50, and a tightly fitting plastic plug 54 is driven into the hole 52. Each anchor member 48 is provided with a threaded or self-tapping screw portion 56 which is then twisted into its plastic plug 54. To facilitate threading the anchor member 48 into the plastic plug 54, the latter can be preliminarily provided with a starting aperture 58 extending longitudinally therethrough. Turning of the anchor member 48 for this purpose is facilitated by a wrench configuration 60 provided in this example beneath the rounded or snap portion 62 of the anchor member. When thus embedded the anchor member cooperates with the juxtaposed one of the snap fasteners 46 mounted on the swimming pool cover 40.

Referring again to FIGURE 4 of the drawings, a peripheral rib member 64 can be provided adjacent the

swimming pool opening and disposed between the opening and the aforescribed snap fasteners 46-48. The rib member 64 causes the material of the swimming pool cover to be draped or lightly stretched thereover to ensure a contingent peripheral contact between the adjacent portions of the cover 40 and the swimming pool walls to provide additional protection against the entry of insects or the like. It is contemplated that the rib 64 can be formed integrally with the walls 50 or otherwise permanently secured to the upper surfaces thereof. Alternatively lengths of furring strips or the like can be laid temporarily in place before covering the swimming pool 42. However, it is to be understood that the use of the ribs 64 is not essential to this application of my novel swimming pool cover 40.

When thus installed the major proportion of my swimming pool cover 40 will be at or beneath the surface 37' of the water in the swimming pool, as better shown in FIGURE 5 of the drawings and as explained in detail heretofore with reference to FIGURES 1 and 2. As noted in connection with forms 10 and 10' of my cover, the cover 40 can be readily installed and removed by one person owing to its light weight and to the fact that the cover 40 like covers 10 and 10' need not be tightly stretched. The number of anchor means, such as the snap fasteners 46, 48, can be minimized and can be simple in structure and of light construction.

From the foregoing it will be apparent that novel and efficient forms of swimming pool covers have been disclosed herein. While I have shown and described certain presently preferred embodiments of the invention and have illustrated presently preferred methods of practicing the same, it is to be distinctly understood that the invention is not limited thereto but may be otherwise variously embodied and practiced within the scope of the following claims.

I claim:

1. A cover arrangement for a swimming pool having at least an upper peripheral edge portion projecting above grade, said arrangement comprising a lightweight mesh material shaped to overlie the top opening of said swimming pool and at least part of the outer surface of said upper edge portion, said mesh material having a reinforcing band secured adjacent the peripheral edge thereof, peripheral anchor means secured to said reinforcing band for securing said cover to the side walls of said swimming pool, said mesh material being sufficiently open to permit the flow of rain water and melted snow there-through but to prevent the entry of insects and the like into said pool.

2. The combination according to claim 1 wherein said mesh material is woven from a thread having a diameter of about 3 mils.

3. The combination according to claim 1 wherein said anchor means includes a number of eyelets spaced along the length of said band and a drawstring threaded there-through.

4. The combination according to claim 1 wherein said reinforcing band is elastic to serve as anchor means for said cover.

5. The combination according to claim 1 wherein said anchor means includes a plurality of snap fasteners secured to said band and spaced along the length thereof and a like number of cooperating snap members secured to the adjacent wall surfaces of said swimming pool to secure said cover to said swimming pool walls.

6. The combination according to claim 1 wherein said anchor means are secured to said swimming pool so that the major proportion of said cover lies in the water of said swimming pool adjacent the surface thereof.

7. The combination according to claim 6 wherein said cover material has a larger specific gravity than that of water and said anchor means are disposed to permit the major proportion of said cover material to sink beneath the surface of said water to provide additional protection

7

for said cover material against objects falling into said pool.

8. A cover for a swimming pool comprising a lightweight mesh material shaped to overlie the top opening of said swimming pool and at least part of the outer surface of the upper edge portion, said mesh material having a reinforcing band secured adjacent the peripheral edge thereof, peripheral anchor means secured to said reinforcing band for securing said cover to the side walls of said swimming pool, said mesh material being sufficiently open to permit the flow of rain water and melted snow therethrough but to prevent the entry of insects and the like into said pool, said anchor means being secured to said swimming pool so that the major proportion of said cover lies in the water of said swimming pool adjacent the surface thereof, said swimming pool provided with a peripherally extending barrier over which said cover is lightly stretched to further prevent the entry of insects and the like into the pool.

9. The combination according to claim 8 wherein said

8

swimming pool is an above grade structure having the peripheral edge portion of an impervious liner stretched over said barrier between said cover and said barrier to prevent the entry of insects and the like.

References Cited

UNITED STATES PATENTS

1,090,565	3/1914	Port	150—52
2,434,784	1/1948	Bardin	150—52
2,580,555	1/1952	Kroeger	4—172
2,610,757	9/1952	Irvine	220—9
2,883,676	4/1959	Kwake	4—172
2,952,024	9/1960	Bartolucci	4—172
3,110,908	11/1963	Newgard	4—172
3,148,384	9/1964	Bartolucci	4—172
3,264,656	8/1966	Clay et al.	4—172

SAMUEL ROTHBERG, *Primary Examiner.*

20 H. K. ARTIS, *Assistant Examiner.*

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,354,472

November 28, 1967

Wayne H. W. Steinbeck

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 60, for "core" read -- cover --; column 3, line 22, for "hereof" read -- thereof --; line 57, after "Each" insert -- end --; column 4, line 70, for "city" read -- City --; same line 70, for "MCL-C-3395C" read -- MLC-C3395C --.

Signed and sealed this 7th day of January 1969.

(SEAL)

Attest:

Edward M. Fletcher, Jr.

Attesting Officer

EDWARD J. BRENNER

Commissioner of Patents