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Bennett et al.

[11] **3,872,522**

[45] **Mar. 25, 1975**

[54] **PROTECTIVE COVER FOR POOLS**

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[52] **U.S. Cl.** **4/172.12**

[51] **Int. Cl.** **E04h 3/16,** E04h 3/18

[58] **Field of Search** 4/172.12; 206/521, 522, 206/DIG. 30

[56] **References Cited**

FOREIGN PATENTS OR APPLICATIONS

13,780 6/1928 Australia 4/172.12

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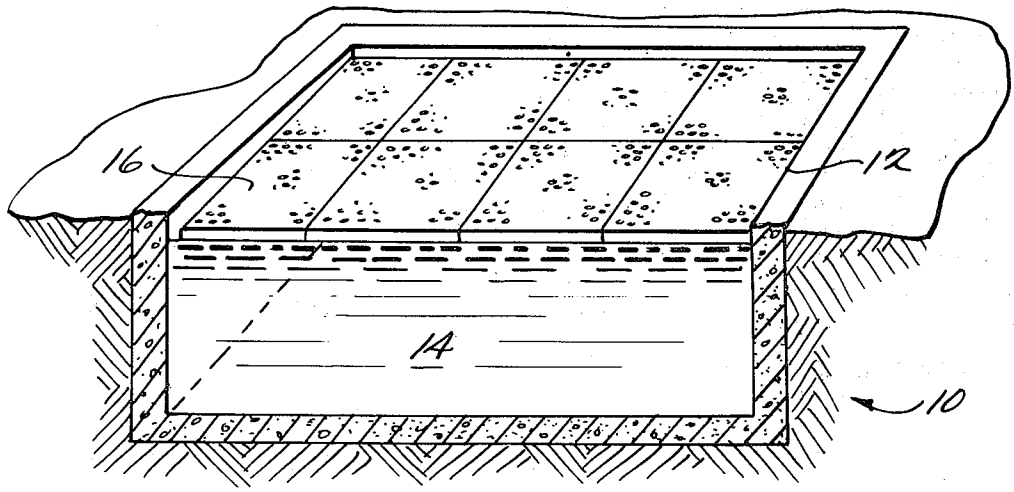
Assistant Examiner—James E. Bryant
Attorney, Agent, or Firm—Cushman, Darby & Cushman

[57] **ABSTRACT**

A protective cover for pools of liquid such as swimming pools consisting of a plurality of separate panels each of a size and material such that the panel will have a predetermined buoyancy factor, at least one face of each panel having a series of indentations formed therein with at least some portion of the indentations being provided with bores opening on the opposite face of the panel; at least a portion of the indentations adjacent the edges of the panels are of a sufficient size to provide hand holds for individuals while these and the remaining indentations serve as receptacles for receiving debris deposited on the surface of the panel, or when in contact with the water serve to reduce water absorption and wind displacement.

10 Claims, 9 Drawing Figures



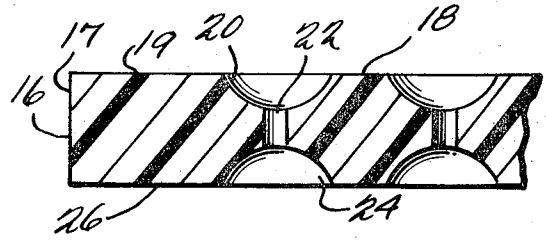


Fig. 1

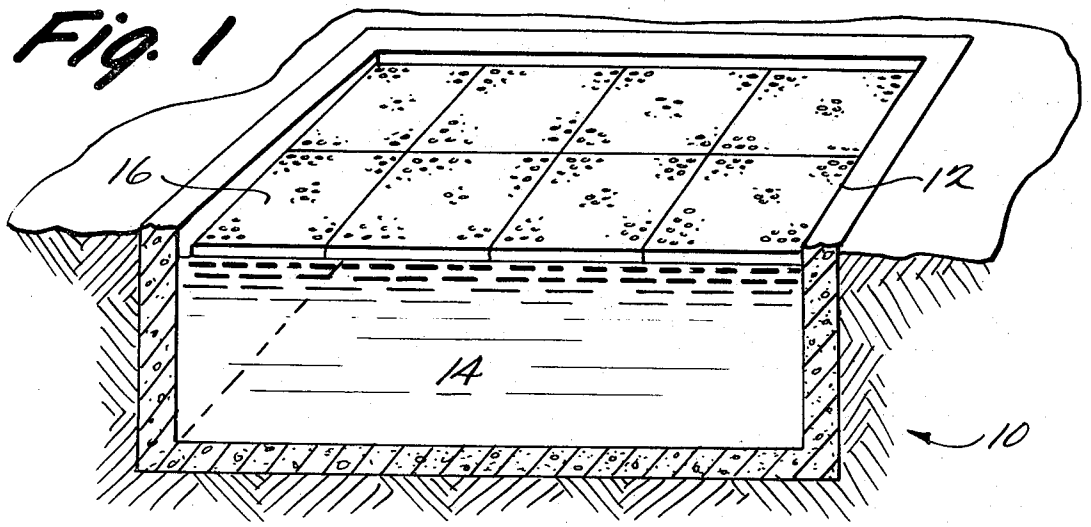
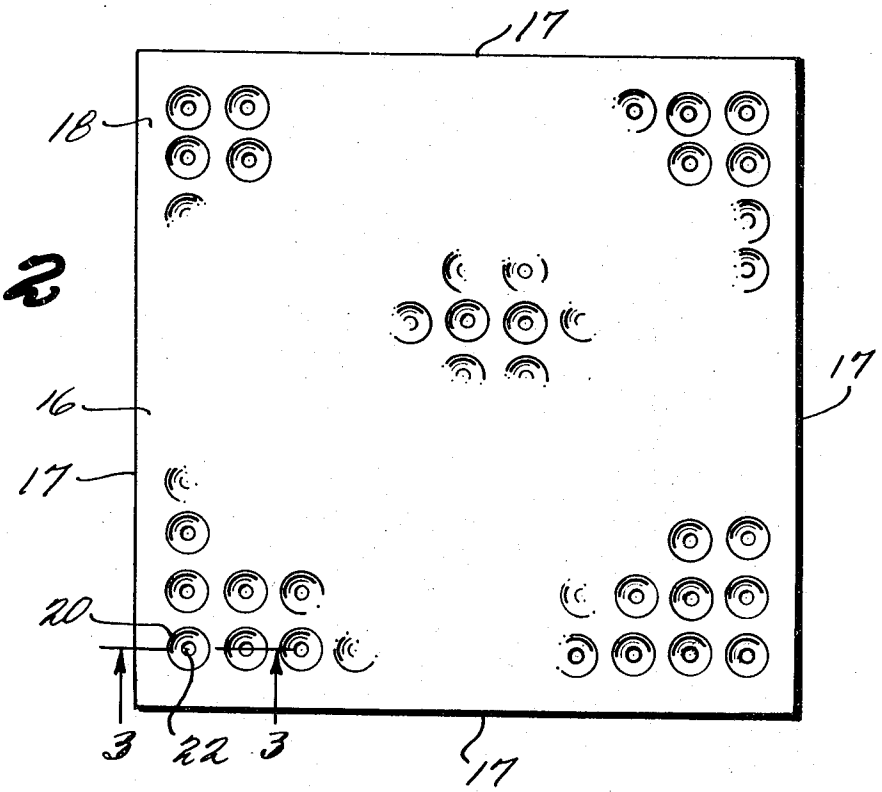


Fig. 2



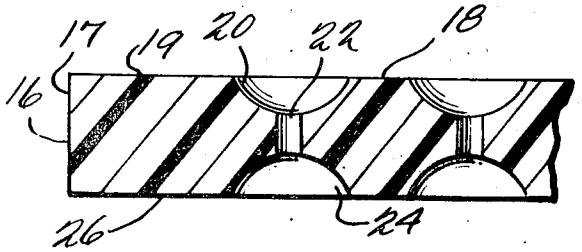


Fig. 3

Fig. 4

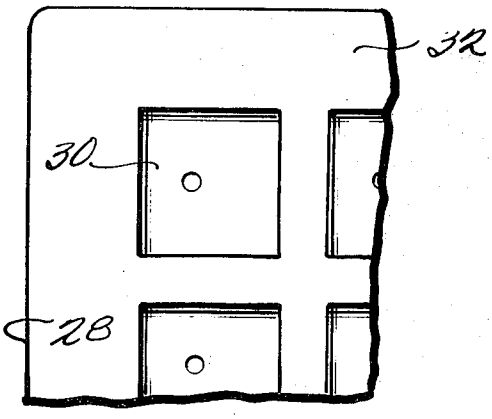


Fig. 6

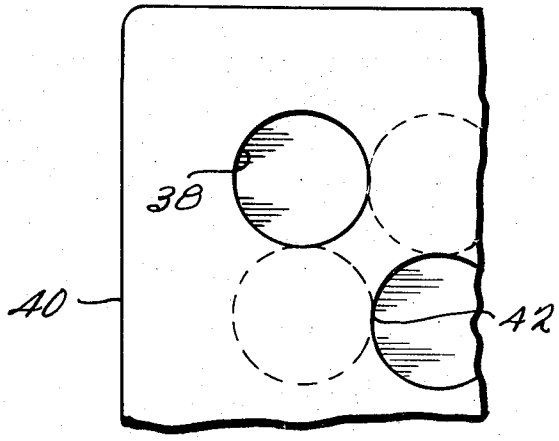


Fig. 5

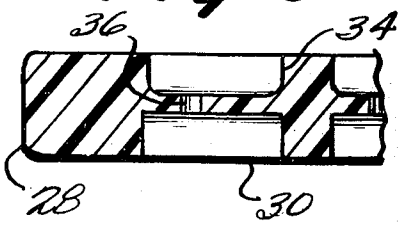


Fig. 7

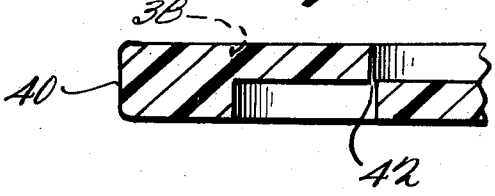


Fig. 8

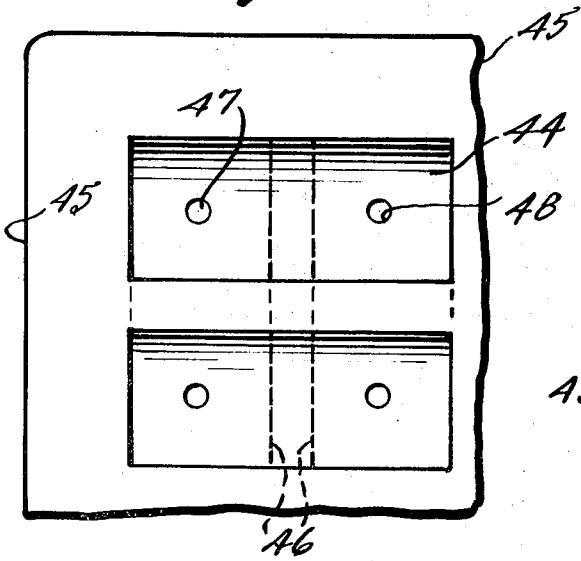
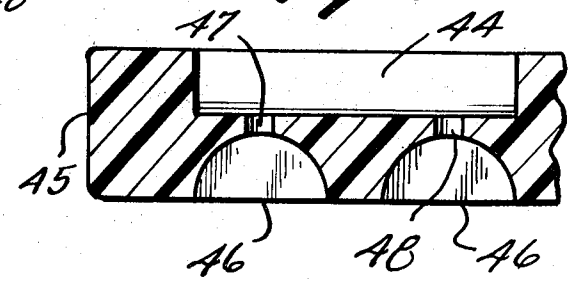


Fig. 9



PROTECTIVE COVER FOR POOLS

BACKGROUND AND BRIEF SUMMARY OF THE INVENTION

This invention relates to protective floating covers for pools, ponds or other bodies of liquids and in particular for swimming pools. The covering consists of a number of shaped, individual panels which provide improved protection for the liquid and functions as a guard against unauthorized use, trespass, accidental entry of persons as well as a barrier against trash and dirt or other debris. In addition, the protective covering of the present invention will function as an insulator to reduce the loss of heat and evaporation of the liquid as well as a barrier to the entrance of light that would aid the growth of algae or the decomposition or escape of chemicals used to purify the liquid in the pool.

In the field of the present invention, a number of proposals have come into existence for providing protective covers for pools of liquid. Generally, the types of covers available fall into one of three categories. First, there are the flexible film sheets some of which employ inflatable portions to maintain the cover in place. This type of covering suffers from the disadvantage that it is easily torn and cannot be inexpensively repaired. Furthermore, such covers are often difficult to install or to hold in place particularly when adverse weather conditions prevail. Also, such coverings fail obviously to give adequate support to an individual in the event of accidental entrance into the pool area and, particularly in the case of small children or animals, the very flexibility of the pool covering tends to heighten the possibility of serious injury since the covering material will tend to sink into the liquid under the weight of a body resting thereon. Thus, it will be difficult, if not impossible, for the individual to remove himself from the cover. In the event of a rainstorm, such a situation can become particularly dangerous since water would simply accumulate on the surface of the cover unless drainage facilities were provided. A small child or animal could drown in the water-filled indentation caused by its own weight resting on the flexible cover, or by the pool water entering through any drainage facilities.

A second type of pool cover is that consisting of a non-buoyant stiff and often framed roof or false bottom that can be moved to a surface position. Such arrangements invariably require the installation of heavy duty and very expensive manipulating equipment so as to permit the installation and removal of such covers. The high investment, operation and maintenance costs of these types of pool covers are readily apparent disadvantages that inhere in their use.

A third form of cover is the type consisting of demountable frames or slabs that are buoyant and that can be manually or mechanically moved from the sides of the pool to effect covering thereof. This latter type has been generally utilized to provide additional floor space in the activity area and consequently require rather rigid construction materials thus increasing the overall cost of such coverage. In addition, rather elaborate interconnecting means have been employed to permit the installation and removal of such covers. In these latter arrangements, when an individual portion of the cover becomes damaged, it has often been necessary to disengage each other panel portion in order to replace the damaged panel portion. Also, with these types of sectioned buoyant covers, due to the fact that the individual slabs or panels have been interconnected, it has been difficult to manipulate the cover in installing or removing it from the pool and several individuals have been needed to perform the installation and removal operation.

Prior art references illustrating the abovedescribed types of pool covers and representative of the state of the art are:

U.S.	3,052,893	9/1962	McClure
U.S.	3,072,920	1/1963	Yellott
U.S.	3,691,777	6/1963	Pearlson
U.S.	3,118,148	1/1964	Taylor and Barker
U.S.	3,405,410	10/1968	Oldshue
U.S.	3,412,409	11/1968	Putney
U.S.	3,453,666	6/1969	Hedges
U.S.	3,600,721	8/1971	Pusey
Australian	13,780/28	6/1928	Cookson

The pool cover of the present invention avoids the disadvantages discussed above and provides solutions to many of the problems encountered in this field while also providing several advantages that have heretofore been unavailable by use of the pool covers previously proposed.

In a preferred embodiment, a pool cover constructed according to the principles of the present invention will comprise a plurality of shaped floating panels which are made of a buoyant material such as polyurethane foam or expanded polystyrene having a predetermined thickness. Each panel has parallel surfaces, one but preferably both of which are provided with a series of hemispherical or other shaped indentations some or all of which are provided with small bores of predetermined size which extend to and open onto the opposite side of the panel. A number of hemispherical or other shaped indentations, particularly those located along the edges of each panel may be made of a size sufficient to provide a hand hold for an individual. When placing the panels on the surface of the liquid, the surface of each panel having the indentations is placed face down on the liquid so that those indentations which are not provided with small bores will function as air pockets to minimize the submergence of the panels into the liquid. In addition, the hemispherical or other shaped indentations which are provided with the small bores will assist in maintaining the panels in contact with the liquid surface by the Venturi effect which will come into play when wind blows across the surface or beneath the panels.

Where the panels are provided with indentations on both of the planar surfaces thereof, the indentations which are exposed to the atmosphere will function as receptacles for dirt and other debris which may fall or be blown onto the pool cover and the bores will serve to drain water to the pool while preventing passage of debris and dirt.

The provision of hemispherical indentations or other shaped cavities in the surfaces of the panels in contact with the liquid will substantially decrease the rate of water absorption by the panels, partly, by virtue of the fact that substantially less surface area of each panel is in contact with the liquid being covered. Thus, the necessity of employing expensive protective coatings for the panels is obviated.

Further objects and attendant advantages flowing from the use of the panels of the present invention will become apparent as consideration is given to the following detailed description of a preferred embodiment

as illustrated in the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view, partly in section, of a swimming pool having the pool cover of the present invention in place;

FIG. 2 is a top plan view of a single panel constructed according to the principles of the present invention;

FIG. 3 is a view taken along lines 3—3 of FIG. 2,

FIGS. 4 through 9 inclusive are alternately top and side views of a portion of a panel and illustrating a variety of configurations that may be employed in forming the indentations on the surface of the panels of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings, there is illustrated in FIG. 1 a perspective view, partly in section, of a swimming pool generally designated at **10** having a rectangular perimeter **12.** The pool **10** is filled with a body of water **14** up to a point adjacent to the perimeter **12.**

The surface of the body of water **14** is illustrated as being covered by a plurality of panels one of which is indicated at **16** and which is a square when viewed in plan. It should be understood, of course, that the panels can be of any size or shape and can be custom-made to fit any pool perimeter configuration. Additionally, to facilitate mass production of the pool cover of the present invention, it is desirable to employ standardized shapes for covering a major portion of a pool surface while individualized segments of specific shape and surface area may be employed for placement between the perimeter of a particular pool and the standard sized panels.

With reference now to FIG. 2 of the drawings, there is illustrated a plan view of one surface **18** of a panel **16.** Surface **18** is provided with an evenly spaced number of hemispherical indentations, one of which is indicated at **20** and which is provided with a small centrally positioned bore **22.**

As illustrated in FIG. 3, bore **22** communicates with another indentation **24** formed in surface **26** which surface extends substantially parallel to surface **18** of panel **16.**

The indentations are spaced inwardly from the edges **17** of each panel so that an unperforated boarder **19** will be provided extending around the perimeter of each panel to enhance the rigidity thereof.

The panels of the present invention with their indentations can be made by expanding polystyrene into a suitably shaped mold or by simply forming flat surfaced panels and resorting to a hot wire cutter or other cutting device to form the indentations.

As previously noted, it is preferable that the indentations be formed on both surfaces of the panels of the present invention and it has been found particularly useful to resort to the use of bores such as at **22** which extend from one indentation at least to the other surface of the panel which are small enough to take advantage of the Venturi effect in high winds which will reduce the pressure in the indentations in contact with the liquid and thus result in a net force from atmospheric pressure on the exposed surface of each panel to retain the panel in contact with the liquid surface. Additionally, where indentations are employed on both surfaces of a panel, the small bores **22** will function as trash-separating drains for any liquid that accumulates in the indentations exposed to the atmosphere. Thus, it can be appreciated that forming the indentations in a hemispherical or other cavity shape, at least on the surface that is exposed to the atmosphere, is particularly desirable to facilitate such draining of the indentations.

It will also be appreciated that as the number and size of the indentations increases, the surface area of the panel in contact with the liquid will correspondingly diminish thus minimizing the absorption of liquid by the panel material. However, care should be taken so as not to adversely affect the structural rigidity of the panel by forming too many indentations or by forming the indentations at too great a depth into the surface of each panel. The dimensions of each panel, while a matter of choice, obviously are limited by the facility with which each panel can be handled by an individual. As a practical matter, it has been found that by constructing the panels from closed cell foams such as from polyurethane or polystyrene, the panels can usefully take on the dimensions of approximately 4 feet by 4 feet in length and width and with a thickness of approximately 2 inches. A thickness of less than 2 inches, for the panels is not useful since the tendency of the panels to break is increased. With the foregoing dimensions, the hemispherical indentations preferably are approximately a half-inch deep and 3 inches in diameter. The drain bores **22** may be from one-eighth inch to three-eighths inch in diameter whereby most debris and dirt encountered in the pool's environment will be prevented from passing through the bores into the pool.

Once installed, the pool cover of the present invention, in addition to the advantages enumerated above, will provide insulation for the liquid as well as retard the evaporation of the chemicals used for purifying water in a swimming pool. Furthermore, where the indentations are employed on both sides of the panels, the appearance of these indentations will immediately alert individuals to the fact that the surface is not intended for travel or as a walking area. However, by a suitable choice of the buoyant material employed as noted above, each panel can be designed to be sufficiently buoyant as to support a normal sized adult without appreciably increasing the weight of an individual panel. Thus, installation of the entire cover can be affected by one person since access to the central portions of the pool is afforded by "pontooning" over those panels installed at the pool's edge.

Where the liquid in the pool is not water but consists of a liquid substance that is not compatible with the buoyant material of the covering, a layer of protective film may be required for each panel as will be obvious to those familiar with the art of storing corrosive chemicals and the like.

Referring now to FIGS. 4 – 9, there is shown a variety of configurations of the indentations formed in the panels of the present invention. In FIGS. 4 and 5, panel **28** is provided with generally rectangular or square indentation **30** but with the indentation on one side **32** of panel **28** formed with a dished cavity **34** (FIG. 5) to facilitate drainage through the bore **36** which communicates with the blocked out cavity on the opposite side of the panel **28.**

In FIGS. 6 and 7, the indentations **38** are generally cylindrical in form with the indentations on one side of panel **40** being offset from the indentations formed on the opposite face of the panel. With such an arrange-

ment, the drain bore **42** (FIG. 7) may be formed at a point where the indentations are tangent.

In FIGS. **8** and **9**, the indentations **44** on one side of the panel **45** are elongated rectangles. On the opposite side, the indentations **46** are of the cylindrical shape similar to those illustrated in FIGS. **2** and **3** but with a pair of such indentations communicating with one of the indentations **44** on the opposite side by separate drain bores **47** and **48.**

With the foregoing configurations of indentations, a secure hand-hold will be provided for an individual attempting to use the panels as a buoyant support while in the pool.

It should be understood that the shapes of the individual panels as well as the indentations formed in their surfaces, may be so selected as to give a decorative appearance to the individual panels by suitable choice of the geometric shape of the individual panels as well as the pattern of the indentations formed in the surfaces thereof.

Having described the invention, what is claimed is:

1. A protective covering for a pool of liquid comprising a plurality of panels each having at least two substantially parallel surfaces and a predetermined thickness, at least one of said surfaces having formed therein a plurality of indentations, said indentations having a depth that is less than said predetermined thickness, said panels being constructed from a material having a density that is less than that of the liquid of the pool so that each of said panels will be buoyant when placed on the liquid.

2. The protective covering as claimed in claim **1** wherein at least some of said indentations formed in said one surface have openings extending through said panel to the other surface.

3. The protective covering as claimed in claim **1** wherein the depth of each of said indentations is less than half of said predetermined thickness.

4. The protective covering as claimed in claim **3** wherein the other of said surfaces of each of said panels is also provided with a plurality of indentations of substantially the same depth as the said indentations formed in said one surface.

5. The protective covering as claimed in claim **4** wherein the said indentations on said one surface of each panel are each spaced a distance from the said indentations of said other surface and at least some of said indentations of said one and said other surface are connected by small openings extending through said panel.

6. The protective covering as claimed in claim **1** wherein said indentations have curved surfaces.

7. The protective covering as claimed in claim **5** wherein said indentations are hemispherical in shape, and said openings connect said indentations of said one and said other surface of each panel at each of said indentations' point of greatest depth relative to said respective surfaces.

8. The protective covering as claimed in claim **1** wherein the liquid is water and said material is polyurethane foam.

9. The protective covering as claimed in claim **1** wherein said material is polystyrene foam.

10. A protective covering for a pool of liquid comprising a plurality of panels each having at least two substantially parallel surfaces and a predetermined thickness, each of said surfaces of each of said panels having formed therein a plurality of indentations, at least some of said indentations on one of said surfaces having bores formed therein communicating with at least some of the indentations formed in the other of said surfaces, said panels being constructed from a material having a density that is less than that of the liquid of the pool so that each of said panels will be buoyant when placed on the liquid.

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