Jan. 27, 1959 F. J. SCHIPPERT ET AL 2,870,454

SWIMMING POOL COVER

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FIG. 1.

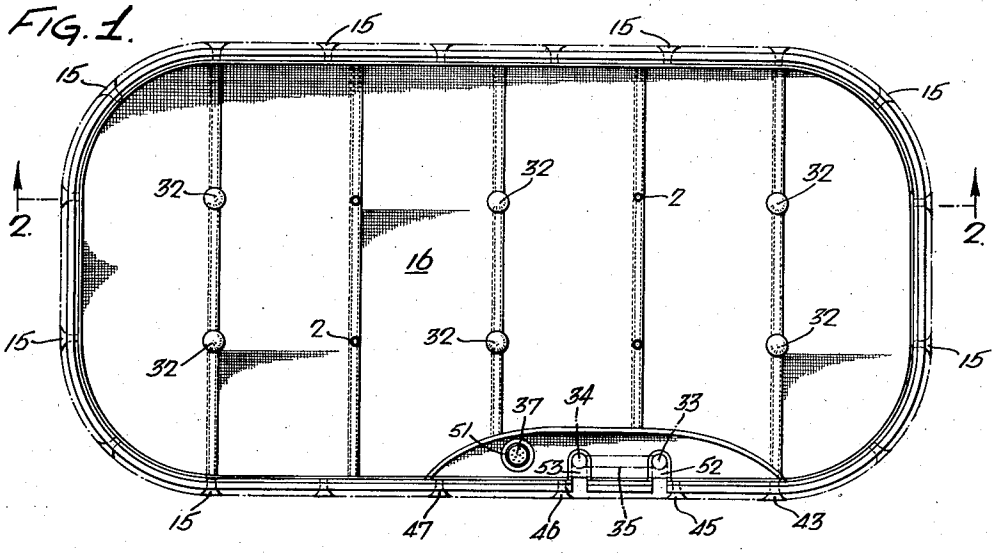
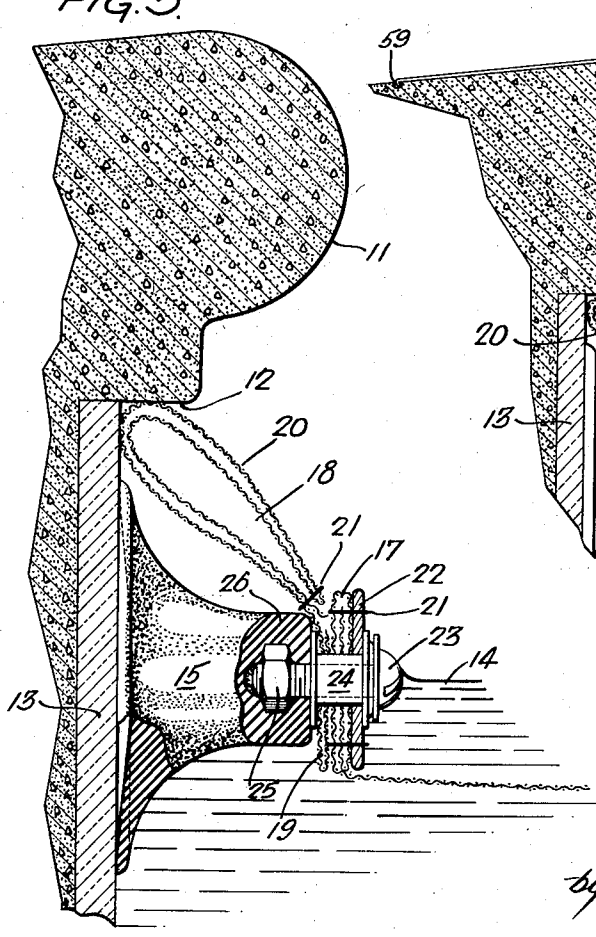


FIG. 3.



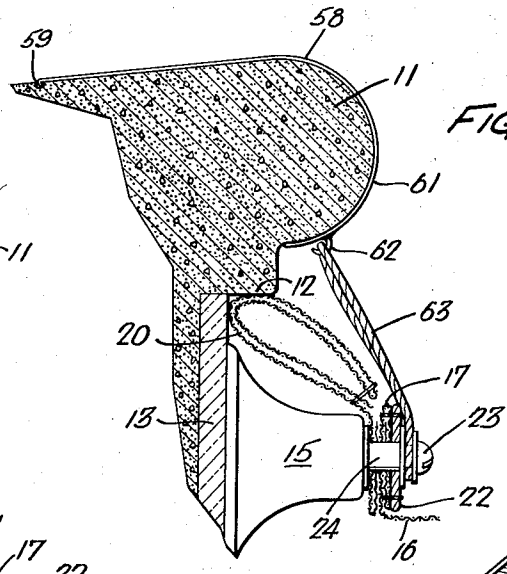
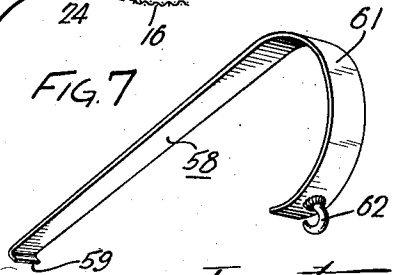


FIG. 6.

FIG. 7



Inventors:
Mary L. Lawser
Florence J. Schippert
by Howson & Howson
Attys.

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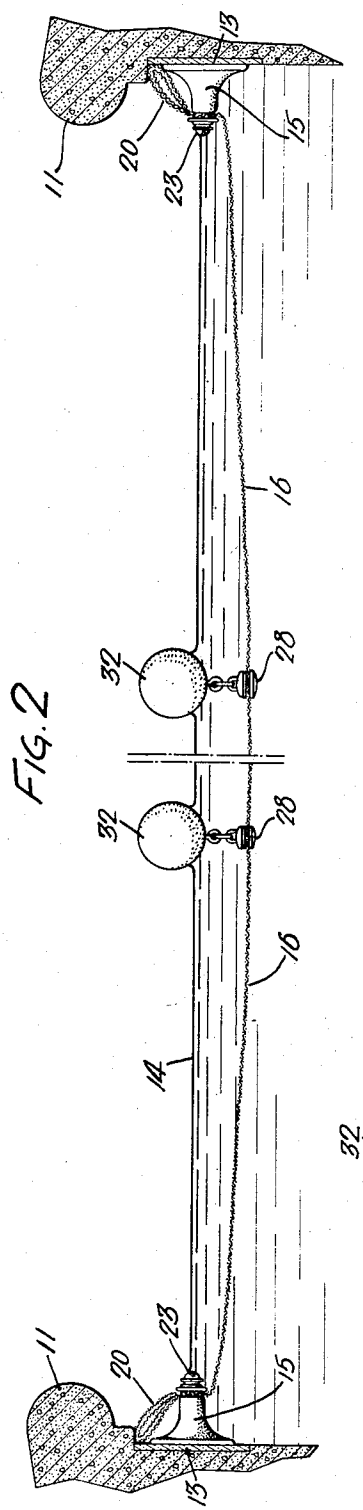


FIG. 2

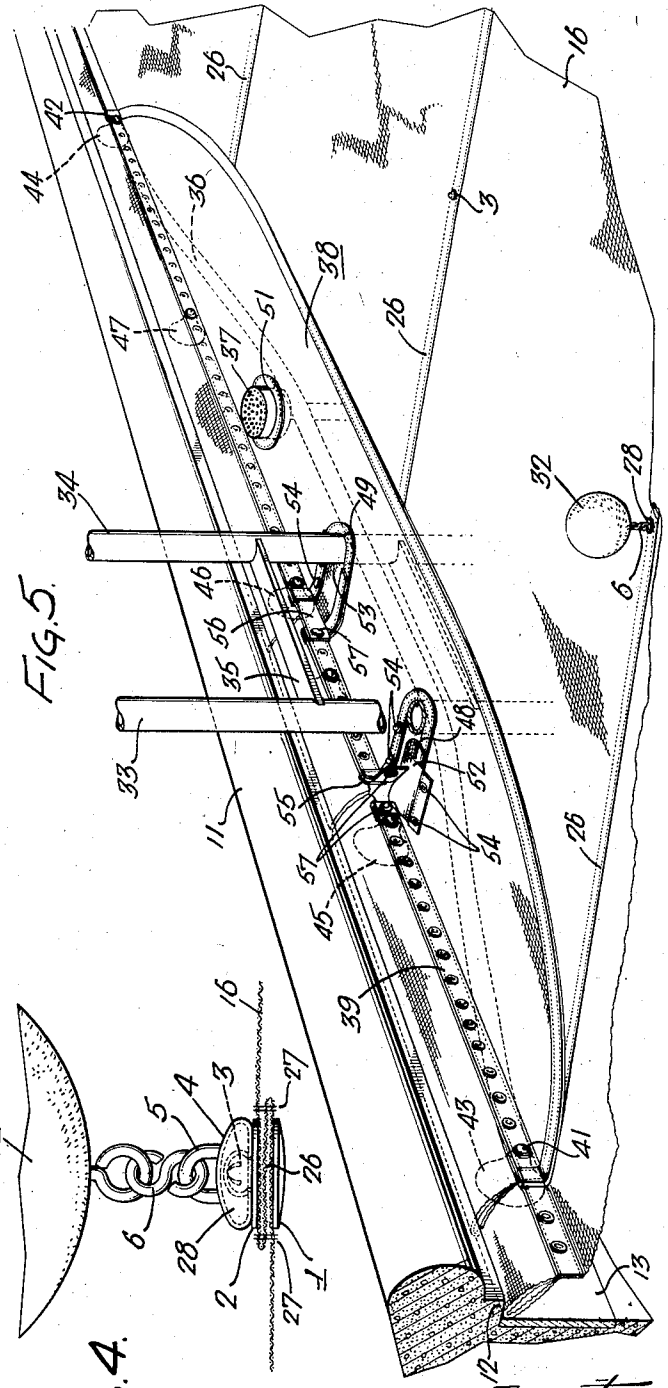


FIG. 5.

FIG. 4.

Inventors:
Mary L. Lawser
Florence J. Schippert
by Howson & Howson
Attys.

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SWIMMING POOL COVER

Florence J. Schippert and Mary L. Lawser,
Philadelphia, Pa.

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9 Claims. (Cl. 4—172)

This invention relates to covers for swimming pools designed to exclude dirt and foreign matter from the pool during periods when the latter is not in use.

A more specific object of the invention is to provide a swimming pool cover which, by reason of its novel structure, its relative lightness of weight, and the efficient and relatively simple means provided for holding it in operative position on the pool, and also by reason of its relative inexpensiveness, will be more practical than the covers of the prior art.

Another object of the invention is to provide a cover which may be readily attached to and removed from the swimming pool, this by reason primarily of the aforesaid novel attaching means.

Still another object of the invention is to provide a cover which is readily adaptable to swimming pools having ladders affording access and egress to and from the pool.

A further object is to provide a cover which, while highly efficient in its primary function of excluding foreign matters from the pool, will not interfere unduly with visual examination of the pool from exterior position.

A still further object is to provide a cover which, by reason of its novel structure and mode of attachment is highly adaptable to pools of any contour or shape.

The invention resides also in certain novel structural details and features hereinafter described and illustrated in the attached drawings wherein:

Fig. 1 is a plan view of a swimming pool equipped with a cover made in accordance with the invention;

Fig. 2 is a sectional view on the line 2—2, Fig. 1;

Figs. 3 and 4 are enlarged fragmentary sectional views illustrating details of the cover structure;

Fig. 5 is an enlarged fragmentary view in sectional perspective of a part of the pool and of the cover;

Fig. 6 is an enlarged fragmentary sectional view showing a modification within the scope of the invention, and

Fig. 7 is a view in perspective of an element of the structure shown in Fig. 6.

With reference to the drawings, the pool therein illustrated is of roughly rectangular shape having rounded corners. In the present instance the sides and bottom of the pool are indicated as made of concrete, and with reference to Figs. 2, 3 and 5 of the drawings it will be noted that at its upper edge the pool is provided with an inwardly projecting rounded coping **11** which terminates at the bottom in an undercut shoulder 12 of less width than the upper rounded portion. Immediately below the shoulder **12** the wall is provided in the present instance with a facing 13 of smooth tile which forms a band extending continuously around the wall of the pool at water level. Normally a portion of this band will lie above the level of the water, which level is indicated in the drawings by the reference numeral **14**. This tile band or its equivalent constitutes a functional element of the means for securing in place the cover which constitutes the subject of the present invention.

The cover is preferably composed of relatively fine mesh material, and preferably this mesh material is composed of plastic strands. Many commercial plastics are suitable for the purpose and mesh of a character suitable for the present purpose is available in commerce. A mesh of this character has material advantages for pool cover purposes, such as relative lightness of weight as compared, for example, with a cover of sheet plastic, or sheeting of organic origin. It has a further advantage over a cover of sheet material in that while affording all necessary protection against the entrance to the pool of undesirable extraneous matter, it still leaves the interior of the pool entirely visible from an external position for inspection purposes. While mesh composed of textile strands of organic origin, such for example as cord, is also suitable for a practice of the invention, the synthetic plastic product is desirable by reason of its impermeability to water and moisture and its substantial absence of absorbency, so that its weight when wet is not materially greater than its dry weight. This is of particular importance in the operation of removing the cover from the pool for obvious reasons. We have found also that a mesh material is much more readily removable from the pool than one of sheet material because of the complete absence of any tendency to cling to the surface of the water, and by reason also of its essential relative lightness of weight. We have found further that plastic mesh material has superior strength characteristics, is more durable, and is relatively resistant to rupture and better able to retain cover-securing elements of the character hereinafter described.

In accordance further with our invention, the cover described above comprises a peripheral series of suction cups **15** of rubber or other suitable material having the required characteristics of flexibility and resiliency and impermeability to air. Rubber is the preferred material by reason of its relative availability and its strength properties which permit the incorporation therein of suitable securing elements by means of which the cups may be secured to the mesh fabric of the cover. As best shown in Fig. 3 of the drawings, the fabric **16** of the cover which, see Fig. 1, is shaped to conform to the contour of the pool, is folded at the peripheral edge to provide a peripheral band consisting of a plurality of layers of the fabric. One form of folded edge is illustrated at **17** in Fig. 3. Secured to what would normally be the underside of this peripheral band **17** is a flap **18** which may suitably be composed of the same mesh material as the body **16** of the cover and may consist of a multi-ply base portion **19**, which lies against the underface of the band **17**, and a freely extending loop **20**, also preferably comprising a plurality of layers of the fabric and porjecting outwardly beyond the edge of the band **17**. This flap **18** may be composed of a strip of the mesh material folded upon itself as indicated in Fig. 3. The flap **18** is securely attached to the band **17** by any suitable means, such for example as stitches **21**, and similar stitches **21** preferably also attach to the upper face of the band **17** a binding tape **22** of sheet material, preferably of synthetic plastic, or formed from textile strands such for example as Orlon. This multiple layer band at the periphery of the body fabric **16** constitutes a strong and firm anchorage in the plastic cover for fastening screws **23**, preferably of brass or other non-corrodible material, by means of which the suction cups **15** are secured to the edge of the cover. Grommets **24**, preferably of brass or other non-ferrous metal, are secured in conventional manner in the multiple-layer composite band described above, and these grommets form sockets for reception of the screws **23** which are threaded into nuts **25** embedded in the solid bases **26** of the suction cups. In the operation of tightening the screw **23**, the suction cup is drawn tightly against the inner end of the grommet which in

process of attachment has been clamped tightly in the composite band.

In the cover structure thus produced the suction cups **15** will depend from what would normally be the underside of the cover. In operative position on the pool, however, the suction cups are applied to the surface of the tile band **13** so that the peripheral edge portion of the cover is deflected upwardly as also is the loop **20**. This loop is designed in relation to the coping structure described above so that when the cover is attached to the tile band **13** as described, the loop will extend outwardly over the tops of the suction cups and into engagement with the shoulder **12**, as illustrated in Figs. 2, 3, and 5, whereby it functions effectively to close or seal the joint between the edge of the cover and the wall of the pool against passage into the pool of extraneous matters. The spacing of the suction cups **15** and their number will be dictated in part by the size and weight of the cover and may vary widely without departure from the invention.

Preferably, the cover will be dimensioned so that when it is attached to the structure of the pool as described above, it will extend without tension across the latter approximately at the water surface and will lie in the mid-areas of the pool upon or in the water. Most plastic mesh will exhibit a tendency to sink in the water and it is desirable if possible that the cover be maintained near or just below the water level. In order to support the mid-portions of the cover, we may attach to the latter suitable floats **32** of cork or other material, the floats functioning as illustrated in Figs. 2 and 5 to maintain the mesh body of the cover over its major area close to the water level. These floats **32** may be attached for example as shown in Fig. 4 wherein the mesh material of the cover is shown folded over on itself to afford an intermediate band composed of a plurality of thicknesses of the material, the fold designated by the reference numeral **26** being retained by means of suitable stitching **27**. In this case, it is preferable to employ snap fasteners **28** which may be of conventional form comprising a two-part base **1—2** clamped together against the opposite faces of the multiple layer band, the upper part **2** having the button **3** which snaps detachably in the third part **4** of the fastener. The part **4** has a bail **5** which is connected by a link **6** to the float body **32**. Where the cover is composed of strips of the mesh material sewed or otherwise attached at their edges, the overlapping or interfolded edge portions of the cover at the seam may be used for reception of the floats **32**. Obviously other ways or means are available for attaching floats to the cover. These floats not only function in the respect noted above to support the cover on the surface of the water but also materially simplify the manipulation of the cover in putting the cover in place and removing it from the pool. This simplification arises in part in the transfer of the dead weight of the cover to the floats and the water so that the manipulation of the edge portions in applying the suction cups is substantially free from strain.

The function of the tiles **13** in this device is an important one. Suction cups of the type used are relatively ineffective and subject to premature separation from rough or unsmooth surfaces. The tile affords the flat, hard and impervious surface to which the suction cup may be applied with assurance that there will be no gradual leakage of air or water into the suction chamber of the cup. The cup, therefore, when once properly applied will remain in place indefinitely and will resist heavy strains tending to separate it from the tile surface. It should be noted that other means than tile may be used to afford a surface suitable for reception of the suction cups. Glass might be used for example; and in some instances where the character of the wall surface permits, a superficial coating of enamel or other material affording the required hard smooth surface may be used.

It will be noted that the strains imposed upon the cups by the cover are in a plane substantially normal to the surface of the tile to which the cup adheres and have no material tendency to displace the cup in the plane of the tile surface. It will be noted also that this method of attaching the cover is particularly well suited to covers and pools of irregular or curved contours in that the strain of supporting the cover at any point on its periphery is in the normal direction referred to above so that the cups will operate at maximum efficiency about the entire periphery. It will be apparent that the device confines the cover entirely within the limits of the side walls of the pool thereby effecting a maximum conservation of cover material and also precluding passage of insects and dirt under the edges of the cover and into the pool. In this respect, the loops **20** previously described afford a highly effective sealing of the joint between the peripheral edge of the cover and the side surfaces of the pool structure.

The cover readily accommodates itself to accessory devices in the pool, such as the ladder structure illustrated in Figs. 1 and 5. When, as is customary, the uprights **33** and **34** of the ladder between which the treads **35** extend and upon which the said treads are supported, are only slightly removed from the wall surface, the edge of the cover, indicated in Fig. 5 by the broken lines **36**, will pass readily around the uprights as illustrated. Fig. 5 also shows the edge **36** of the cover passing around the skimmer inlet pipe **37** which in the present instance is located in proximity to the ladder. The open space between the wall and the edge of the cover left by this deflection of the cover's edge **36**, is effectively closed in the present instance by a flap **38**, the wall-bordering edge **39** of which may have the same structural form as the edge of the main cover described above. This flap which is secured at its ends to the edge of the primary cover at the opposite ends respectively of the deflected portion **36** of the latter, by means for example of the retaining screws **41** and **42** of the suction cups **43** and **44** respectively, and which also has attached to its edge **39** additional suction cups **45**, **46** and **47** by means of which the edge of the flap may be attached to the wall of the swimming pool as described above, has recesses **48** and **49** extending outwardly from and through the edge portion **39** in positions to embrace the uprights **33** and **34** of the ladder, as well as an aperture **51** for reception of the head of the skimmer **37** as illustrated. The edges of the recesses **48**, **49** and of the aperture **51** are bound in the same manner as the wall-adjoining edge **39** of the flap, and each of the recesses **48** and **49** is also provided with an individual small flap or tab, **52** and **53** respectively, secured to one side edge of the recess and adapted to extend across the latter between the uprights **33** and **34** and the proximate wall surface so as to effectively close the recess. The opposite edges of the recesses and the free ends of the tabs are provided with snap fasteners indicated by the reference numerals **54** by means of which the tabs may be secured in recess-closing position. Flaps **55** and **56** are also provided at the outer ends of the recesses **48** and **49** and on the edge portion **39** of the main flap **38** so as to close the gaps formed by recesses **48**, **49** in the said edge portion, and these flaps may be detachably secured in operative position also by means of suitable snap fasteners **57**.

The flap structure **38** is of primary use during the seasons of the year when the swimming pool is in use and during which period the ladder and the skimmer devices are installed in the pool. During the other periods of the year when the pool is not in use the ladder and skimmer are customarily removed, and at that time also the flap structure **38** may be removed from the

cover and the edge of the latter then secured to the wall surface over the entire periphery of the cover.

It may under some circumstances and more particularly during the winter months be desirable to supplement or replace the suction cups described above by other means for anchoring the edge of the cover in place at the edge of the pool. A device of this character is illustrated in Figs. 6 and 7 of the drawings. In this instance straps **58** of resilient metal are provided which are designed to closely and tightly embrace the rounded upper edge of the coping **11**. The outer end of the strap **58** is provided with a terminal hook **59** which is engaged in a suitably formed groove in the upper surface of the pool edge as illustrated in Fig. 6. The other, rounded end **61** of the strap closely and resiliently embraces the surface of the coping as illustrated and is provided near its extremity and at the underside of the coping with a hook **62**. This hook forms an anchor for a loop **63** extending upwardly from the peripheral edge of the cover, and in the present instance this loop is shown as secured to the edge of the cover by the same screw **23** which secures the suction cup to the cover edge as described above. One of these loops may be provided at each suction cup position or at intermediate positions if desired and in said intermediate positions may be secured by suitable screws in the grommets provided at the edge of the cover as also described above. If desired, the suction cups may be detached and the entire cover supporting function be imposed upon the straps **58** and loops **63**.

The cover described above is subject to modification without departure from the principle of the invention. The cover, for example, may consist only in part of the mesh fabric, the remainder being of solid sheet material and the mesh portions being located, for example, in positions to expose for inspection certain portions of the interior of the pool. The mesh fabric may be composed also of metallic, organic or other base strands coated with or embraced by a protective envelope of synthetic plastic composition.

We claim:

1. A swimming pool cover conforming in size and shape to the area at the top of the pool, means at the peripheral edge of said cover for attaching said edge to an inner surface of the side wall of the pool, said attaching means comprising a peripheral series of resilient suction cups attached to the edge of the cover, and a peripheral flap on said cover projecting beyond the points of attachment of said suction cups to the cover and exceeding in width the axial dimension of said cups.

2. A swimming pool cover according to claim 1 wherein the cover material consists of mesh fabric.

3. A swimming pool cover according to claim 2 wherein the component strands of the mesh fabric are of synthetic plastic composition.

4. A swimming pool cover according to claim 3 wherein the peripheral edge portion of the cover is provided with grommets and wherein further the suction cups are secured to the cover by means of anchoring screws extending through said grommets.

5. In combination a swimming pool having side walls, a ladder having uprights extending into the pool adjacent a side wall of the latter, a cover adapted to overlie the area of the pool between the walls of the latter, means

for securing the edge of the cover to said walls with the said edge deflected inwardly and around the ladder, and a primary flap detachably secured to the cover and closing the space between the deflected part of the cover edge and the proximate wall surface, said primary flap having recesses extending from an edge thereof for reception of the ladder uprights, supplemental flaps for closing the recesses after admission of the uprights, and means for securing the edge of the primary flap to the wall of the pool.

6. In combination, a swimming pool having upright walls with a band forming a part thereof, said band being made of a smooth hard impervious material adjacent the top of the pool and extending around the periphery of the pool; a flexible cover for the pool dimensioned and shaped to conform to the area and contour of the pool to lie entirely within the confines of said walls; suction cups whose bases are secured to the peripheral edge portions of said cover and projecting beyond said edge portions and adapted to be secured by vacuum suction to said band thereby to support the cover stretched over the pool; and a peripheral flexible flap continuously attached to the edges of the cover and overlying the suction cups and arranged for contact with the walls of the pool above the suction cups and having sufficient area to close the space between the edges of the cover and the upright walls of the pool.

7. A swimming pool and cover combination according to claim 6 wherein the swimming pool has a shoulder extending substantially horizontally inwardly above said band and arranged to overlie the outer edge of said flap.

8. In combination, a swimming pool having top edges and side walls; a flexible cover adapted to overlie the pool between said walls and to lie entirely within the confines of the pool; and means for securing said cover in operative position comprising resilient straps embracing the top edges of the pool and detachably secured thereto at spaced points to provide load-carrying supports, and flexible strap-engaging elements secured to the edges of said cover, said straps having complementary means for engagement by said elements.

9. In combination, a swimming pool having side walls; a flexible cover adapted to lie over the pool entirely within the confines thereof; means secured to the cover and attachable to said side walls for maintaining the cover stretched in pool-protecting position between said walls, said means projecting beyond the edges of the cover, so that there is a space between said edges and said walls; and interengaging complementary means respectively on said walls above the water level of the pool and projecting from the peripheral edges of said cover for substantially sealing the spaces between said walls and said edges.

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