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Burkholz et al.

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[54] **OUTDOOR SWIMMING POOL WITH DOME**

[72] Inventors: **Herbert Carl Burkholz,** W-280, N-1841, Hy SS, Pewaukee, Wis. 53072; **Norman K. Burkholz,** N-87, W-15380 Kings Highway, Menomonee Falls, Wis. 53051

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

[58] **Field of Search**...4/172, 172.11, 172.12, 172.14; 52/62, 81, 222, 586; 135/1, 2, 3, 4, 15

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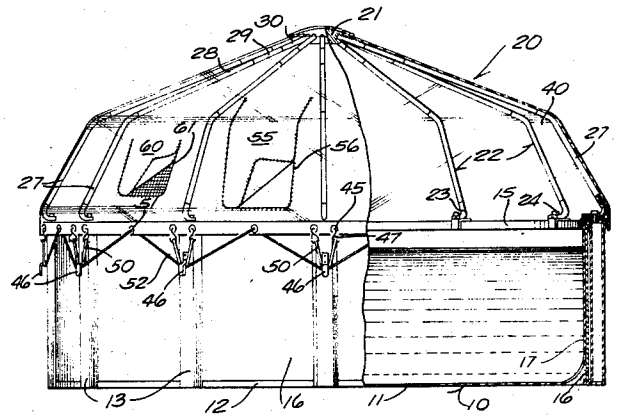
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Primary Examiner—Frederick L. Matteson
Assistant Examiner—Henry K. Artis
Attorney—Cyril M. Hajewski

[57] **ABSTRACT**

A dome formed of flexible sheet material supported by a suitable framework above an outdoor swimming pool to form an enclosure for protecting the swimmers from the weather. The dome is readily installed and removed and provides ample room above the water to enable the swimmers to use the swimming pool in the usual manner. The dome fully encloses the area above the swimming pool so that it not only protects the swimmers from the elements but the sun heats the atmosphere within the dome as well as the water an appreciable amount above the outdoor temperature for the comfort of the swimmers.

8 Claims, 5 Drawing Figures



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Fig. 4

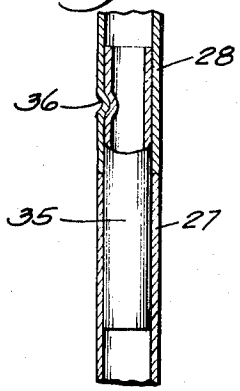
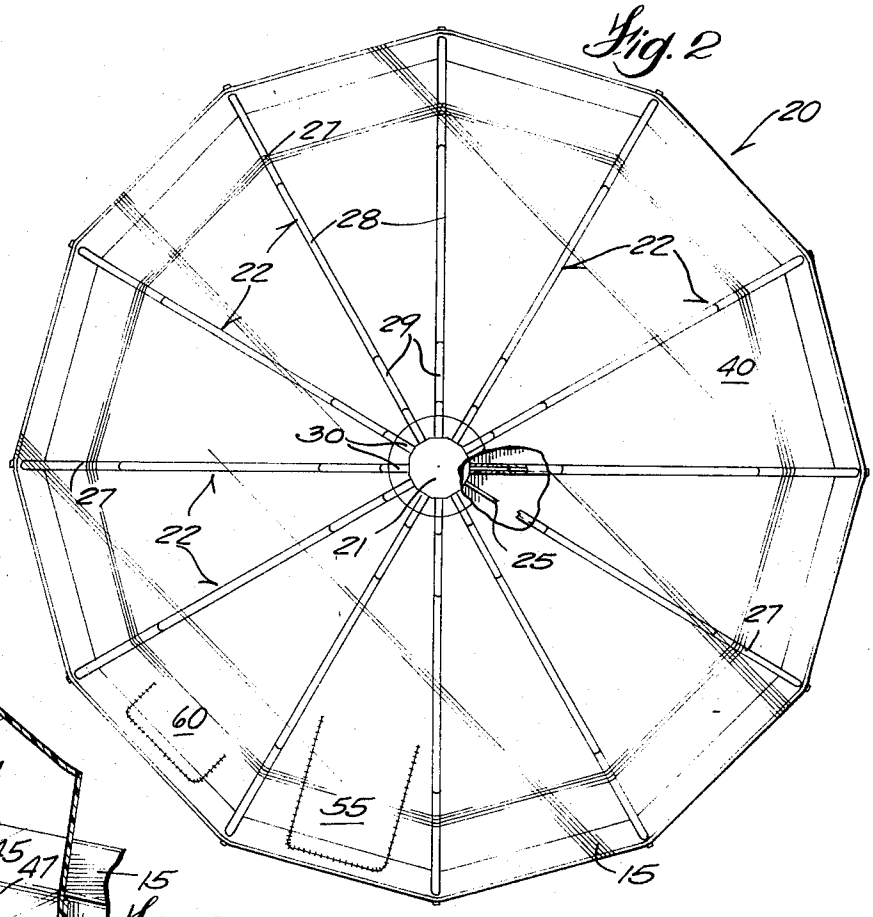


Fig. 2



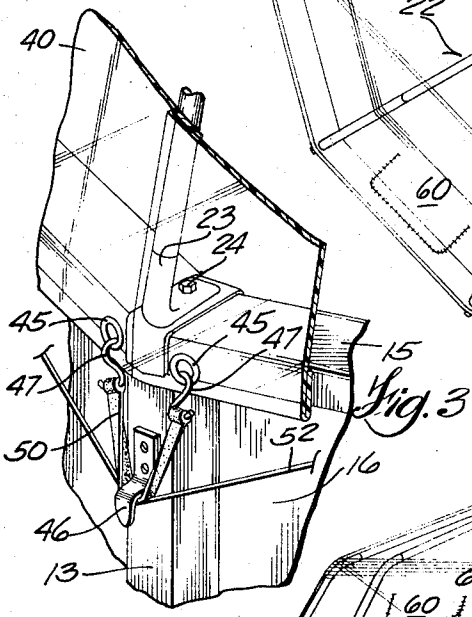
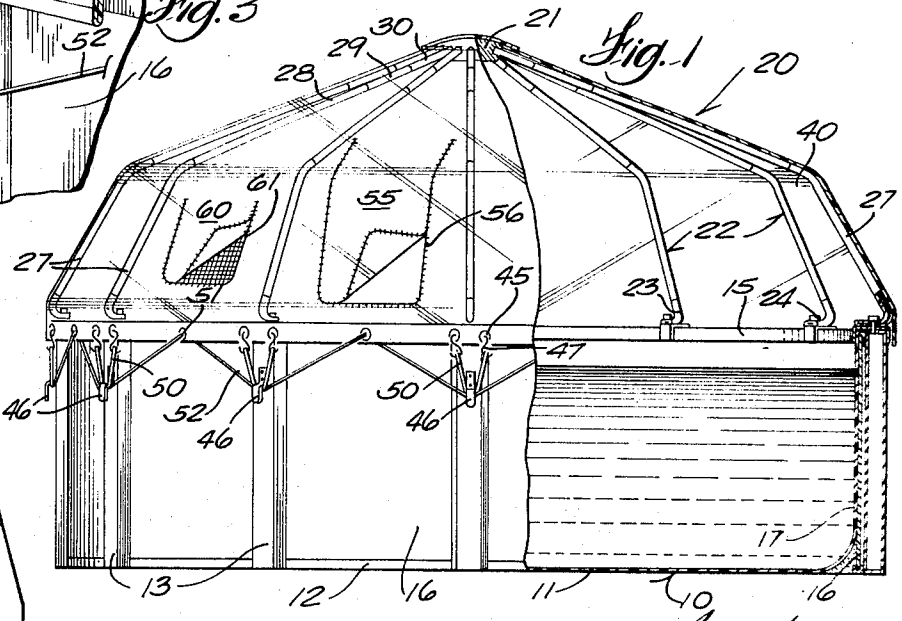


Fig. 3

Fig. 1



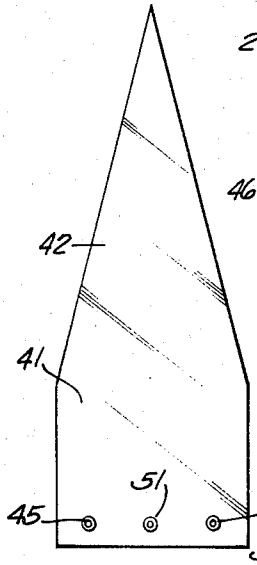


Fig. 5

Inventors
Herbert C. Burkholz
Norman K. Burkholz
By Cyril M. Hajewski
Attorney

OUTDOOR SWIMMING POOL WITH DOME

BACKGROUND OF THE INVENTION

The present invention pertains to removable domes for outdoor swimming pools. The dome is supported to provide sufficient height over the water so as not to interfere with the recreational use of the pool by swimmers. On the other hand, it protects the swimmers from the elements and moreover enables the sun to warm the air as well as the water within the dome to enable the swimming pool to be comfortably utilized even during cool weather so that the dome greatly extends the use of the outdoor swimming pool. It is especially adapted to be readily assembled with a minimum of effort and may also be easily removed when it is desired to use the pool without the dome.

In the past, swimming pool covers have been provided to protect the water in outdoor swimming pools from dirt that may be blown about in the atmosphere. However, in each and every case, such cover must be removed to render the pool accessible to swimmers. These prior art covers are absolutely contrary to the teachings of the present invention which is intended particularly for the comfort of the swimmers. The dome furnishes the additional benefit of preventing dirt from dropping into the water to retain its cleanliness, but its principal function is to protect the swimmers and thereby extend the use of the swimming pool for swimming during cool days and during inclement weather which would normally idle the pool in the absence of the protective dome.

Prior art covers are disclosed in U.S. Pat. No. 3,158,161 issued to Knodel on Nov. 24, 1964 and U.S. Pat. No. 3,423,767 issued to Crook on Jan. 28, 1969. These patents disclose a frame about the swimming pool and the frame is adapted to receive a plastic sheet for covering the water to prevent foreign material from blowing into the pool. However, the plastic sheet must be removed to render the pool accessible to swimmers so that it is incapable of offering any protection to the swimmers.

On the other hand dome shaped tents have been formed by a lightweight frame adapted to receive a flexible covering such as canvas or plastic sheeting as disclosed in U.S. Pat. No. 3,480,023 issued to McConnell et al on Nov. 25, 1969. However there is no suggestion in the prior art for the use of such an arrangement over an outdoor swimming pool.

SUMMARY

The present invention provides a lightweight metal frame structure extending upwardly from the top rail of the swimming pool to a central connecting member or spider supported sufficiently high above the pool so as not to interfere with the normal use of the pool by swimmers. A flexible sheet is placed over the framework and the configuration of the framework and the sheet is such that the flexible sheet forms a dome over the swimming pool. A zippered door is provided in the sheet for providing ingress to the interior of the dome. It has also been found convenient to provide zippered windows in the flexible sheet so that the temperature within the dome can be controlled to a limited extent.

The framework is formed by brackets mounted at regular intervals about the top rail of the swimming pool. Aluminum tubing extends upwardly from each of the brackets and is coupled to the central connector member above the water of the pool. Each length of tubing from the bracket to the connector member may be made of several sections of tubing that are slidably connected to each other for easy assembly and disassembly. To this end, the bottom section of tubing has a sliding connection with the bracket and the top section has a similar sliding connection with the central connector. After the framework is thus assembled, the flexible sheet is drawn taut about the framework to complete a very rigid and rugged assembly.

DESCRIPTION OF THE DRAWING

FIG. **1** is a view in front elevation showing the dome of the present invention mounted on an above the ground swimming pool;

FIG. **2** is a plan view of the dome and swimming pool shown in FIG. **1**;

FIG. **3** is a fragmentary detail view illustrating one of the brackets mounted on the top rail of the swimming pool and the means for securely fastening the flexible sheet over the frame of the dome;

FIG. **4** is a detail view partly in section and partly in elevation to illustrate the arrangement for coupling two lengths of tubing to each other for convenience in assembly and disassembly; and

FIG. **5** is a plan view of one section of the flexible sheet to illustrate how the dome shaped sheet is formed by assembling a plurality of such sections.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference is now made more particularly to the drawing and specifically to FIG. **1** thereof which illustrates a dome mounted on a swimming pool and constructed in accordance with the teachings of the present invention. The swimming pool is generally identified by the reference numeral **10** and is the above the ground type of swimming pool which has proved to be very popular. However, it should be understood that the dome of the present invention can be likewise applied to the beneath the ground type of swimming pools in which an excavation is made into the ground for the formation of the swimming pool.

The swimming pool **10** comprises generally a floor **11** and a bottom rail **12** about the periphery of the floor **11**. Vertical legs **13** extend upwardly from the bottom rail **12** at regular intervals about the periphery of the floor **11** with a top rail **15** being mounted on top of the vertical legs **13**. The bottom rail **12**, the vertical legs **13** and the top rail **15** are secured together to form a rigid support for a vertical wall **16**. This forms an enclosure for receiving a flexible liner which comprises the floor **11** and a vertical side wall **17** with the side wall **17** being supported against the vertical wall **16**.

The particular swimming pool illustrated in the drawing has its periphery formed of 12 straight sections to illustrate one of the popular models. However, these swimming pools come in all different shapes and sizes and the dome of the present invention can be adapted for application to any of these configurations. In all cases the dome will completely cover the water within the swimming pool **10** and provide enough room above the water to enable the use of the swimming pool in the normal manner.

In FIG. 1 the dome is generally identified by the reference numeral **20** and comprises a central connector member or spider **21** having 12 sides to conform to the number of sides in the swimming pool **10**. A rod **25** extends radially from each side of the spider **21** for receiving the upper end of a tubular support generally identified by the reference numeral **22**. Twelve such supports **22** are provided with the bottom end of each of the supports **22** being slidably received into a bore in a bracket **23** mounted on the top rail **15** and the top end of each support sliding onto one of the rods **25**. Since there are 12 of the supports **22**, there are a corresponding number of brackets **23** with each bracket being mounted directly above a vertical leg **13** as clearly illustrated in FIG. **3**. The brackets **23** are secured to the top rail **15** by bolts **24** so that they actually become a part of the swimming pool **10**.

The supports **22** are formed of several sections of lightweight tubing, such as aluminum, so that the entire unit is light and can be compactly stored when not in use. Any number of sections can be furnished for performing each of the supports **22**, depending of course, on the size of the pool. In the illustrated embodiment, each support **22** is formed of four tubular sections. As best seen in FIG. **2**, a bottom section **27** is received in the bracket **23** and extends upwardly therefrom to receive a long intermediate section **28** which extends upwardly toward the center of the pool as an extension of the bottom section **27**. A short intermediate section **29** extends upwardly and toward the center of the pool from the section **28** as a continuation of the latter with the section **29** being coupled to a top section **30** that extends radially from one of the straight peripheral sections of the spider **21**.

FIG. **4** illustrates the arrangement for coupling the several sections of the supports **22** to each other. Thus, for example, FIG. **4** shows the arrangement for coupling the section **27** to the section **28** although all of these connections are made in the same manner. A coupling tube **35** is inserted into the bore of the section **28** with a substantial portion of the tube **35** extending beyond the end of the section **28**. A crimp **36** is then formed in the wall of the section **28** as well as the adjacent wall of the coupling tube **35** to secure the coupling tube **35** within the tubular section **28**. Accordingly, the coupling tube **35** becomes a part of the section **28** with a portion of the coupling tube **35** extending outwardly from the end of the section **28**. In order to couple the section **28** to the section **27** it is then only necessary to insert the extending end of the coupling tube **35** into the upper end of the section **27**. A sliding fit is provided inasmuch as all of the sections **27**, **28**, **29** and **30** are formed of the same diameter tubing.

To assemble one of these supports **22** it is only necessary to insert the top section **30** onto the cooperating rod **25** extending radially from the spider **21**. The section **29** is then slid onto the extending end of the coupling tube **35** which is extending downwardly from the top section **30**. In like manner, the top of the section **28** is slid over the extending end of the coupling tube **35** that extends from the lower end of the section **29**, and the upper end of the bottom section **27** is slid onto the extending end of the coupling tube **35** that extends from the bottom of the section **28**. The lower end of the bottom section **27** is then inserted into the cooperating hole provided in the bracket **23**.

In this manner, all 12 of the supports **22** are assembled with the bottom end of each support **22** being coupled to a bracket **23** and the top end of each support **22** being coupled to the spider **21** at the top of the dome **20**. It should be noted that the supports **22** can be bent in any desired manner to form the shape of the dome **20**. In the illustrated embodiment, the bottom section **27** extends upwardly from the bracket **23** at a relatively small angle from the vertical and its upper end is bent toward the horizontal so that the sections **28**, **29** and **30** extend at a much greater angle from the vertical to form the shape of the dome **20**.

The supports **22** and the brackets **23** along with the central spider **21** form a framework for receiving a flexible sheet **40** which completely encloses the water in the swimming pool **10**. As previously mentioned, of course, the supports **22** are shaped in such a manner as to support the flexible sheet **40** a substantial distance above the water in the swimming pool so that it does not interfere with the normal use of the pool by the swimmers. The flexible sheet **40** can be formed of different types of material but a clear plastic is shown in the drawing as a preferred embodiment.

Because of the large size of the flexible sheet **40** and the shape required, it is made of 12 separate sections and one of these sections is illustrated in FIG. **5**. The 12 sections are provided to correspond in number with the 12 sides of the swimming pool **10**. The section illustrated in FIG. **5** includes a bottom substantially rectangular portion **41** and an upper substantially triangular portion **42** with the peak of the triangular portion **42** meeting the peaks of the other sections of the sheet **40** at the top. These 12 sections shown in FIG. **5** are then welded together to form the dome shaped flexible sheet **40** which fits over the framework that extends upwardly from the top of the swimming pool **10** in the manner described.

In order to secure the bottom portion of the flexible sheet **40** to the swimming pool **10**, a plurality of grommets **45** are placed in the bottom periphery of the flexible sheet **40** at suitable intervals. A grommet **45** is provided at each side of the vertical leg **13** as clearly illustrated in FIG. **1** and **3**. A hook **46** is mounted on the outer vertical surface of each of the vertical legs **13** to cooperate with the two grommets **45** that are located directly above each of the legs **13**. To this end, an S shaped hook **47** has one end inserted into each of the two grommets **45** and the opposite ends of the hooks **47** engage a resiliant strap **50** which extends about the hook **46** as clearly shown in FIGS. **1** and **3**. Tension is placed on the straps **50** so that they resiliantly draw the bottom of the flexible sheet **40** downwardly over the outer surface of the top rail **15**. A strap **50** with its cooperating elements is provided at each of the vertical legs **13** so that in the illustrated embodiment, there are 12 such straps provided about the periphery of the flexible sheet **40**.

To further secure the bottom of the flexible sheet **40** to the upper portion of the swimming pool **10**, a plurality of grommets **51** are provided at the bottom portion of the flexible sheet **40** with each grommet being centrally located between each of every pair of adjacent vertical legs **13**. A continuous line **52** is then threaded alternately under a hook **46** and through a grommet **51** about the entire periphery of the flexible sheet **40** to further secure the sheet to the swimming pool **10**. It is

thus apparent that the resiliant straps **50** and the continuous line **52** firmly secure the bottom of the flexible sheet **40** to the upper portion of the swimming pool **10**.

In order to gain access to the interior of the dome **20** and the water within the swimming pool **10**, a door **55** is cut out of one of the sections of the plastic sheet **40** and a zipper **56** selectively closes the door **55** to the plastic sheet **40**. In like manner, one window **60** is illustrated in the drawings as being formed in the plastic sheet **40**. The window **60** may be selectively closed or opened by the operation of a zipper **61**. Only one window **60** is illustrated in the drawings but any number of such windows may be provided. It may be particularly desirable to provide a corresponding window **60** on the opposite side of the dome **20** to provide ventilation when desired.

The dome **20** completely encloses the area about the water in the swimming pool **10** but extends sufficiently high enough above the water so as not to interfere with the normal use of the pool by the swimmers. The dome **20** provides protection for the swimmers from the weather and at the same time protects the water in the pool from foreign matter that may be carried in the atmosphere. It has been found that the provision of the dome **20** over the swimming pool **10** greatly extends the use of the pool so that it may be comfortably used during weather which would otherwise render the pool useless.

On relatively cool days when the sun is shining it has been found that the radiation of the sun will very easily raise the temperature of the air within the dome **20**, 40° F. above the temperature of the outside air and raises the temperature of the water approximately 10° above the temperature of the outdoor air. In addition, of course, the wind can be excluded from the interior of the dome **20** so that swimmers may comfortably use the pool **20** during weather which would be unsatisfactory for swimming in the absence of the dome **20**. On the other hand, if the temperature rises to too great a degree within the dome **20**, the door **55** and the windows **60** may be opened to provide ventilation and cool the interior of the dome **20**. If it is preferred to use the swimming pool **10** without the dome **20** on very warm days, it is a simple matter to remove the dome **20** from the swimming pool **10** by removing the flexible sheet **40** and disassembling the framework in the manner described.

From the foregoing detailed description of the illustrative embodiment of the invention set forth herein it will be apparent that there has been provided an improved swimming pool having a removable dome which efficiently protects the swimmers from the weather without interferring with the normal use of the pool. At the same time, the dome protects the water in the swimming pool from foreign matter which may be carried in the outdoor atmosphere. The dome is especially adapted to be readily assembled and disassembled and is formed of parts which may be compactly stored.

Although the illustrative embodiment of the invention has been described in considerable detail for the purpose of disclosing a practical operative structure whereby the invention may be practised advantageously, it is to be understood that the particular domed swimming pool is intended to be illustrative only and that the various novel characteristics of the invention may be incorporated in other structural forms without departing from the spirit and scope of the invention as defined in the subjoined claims.

The principles of the invention having now been fully explained in connection with the foregoing description of the illustrative embodiment, the invention is hereby claimed as follows:

1. In an outdoor swimming pool having a peripheral rim above the water line; a plurality of brackets mounted on the upper periphery of the swimming pool in spaced relationship; a support in sliding engagement with each of said brackets so that the lower end of each support may be slid into and out of engagement with its cooperating bracket, each support extending upwardly from its supporting bracket and toward the center of the pool; a spider centrally located above the water in the swimming pool with the upper end of each of said supports being in sliding engagement with said spider so that said support may be slid into and out of engagement with said spider, the assembly of said supports into said brackets and said spider forming a framework over the water in the swimming pool; and a flexible sheet drawn taut over said framework to form a removable dome completely enclosing the space above the water in the swimming pool, said dome extending high enough above the water so that it does not interfere with the normal use of the water by the swimmers.

2. An outdoor swimming pool according to claim **1** wherein each of said supports is formed of a plurality of sections of tubing in longitudinal sliding engagement with each other to form a single support extending from the bottom of said dome to its top.

3. An outdoor swimming pool according to claim **2** including a length of tubing secured within the bore of one end of said sections with a portion of said tubing extending outwardly of said bore so that the end of the adjacent section of said support can be slid onto the extending end of said length of tubing to couple the sections together to form the support.

4. An outdoor swimming pool according to claim **3** wherein said length of tubing is secured within the bore of its associated section by forming a crimp in the wall of the section and extending into the wall of the length of tubing to prevent the withdrawal of the length of tubing from the bore of the section.

5. An outdoor swimming pool according to claim **1** wherein said swimming pool includes a vertical wall extending above the ground for retaining the water; a plurality of grommets spaced along the bottom edge of said flexible sheet; a plurality of hooks spaced about the vertical wall of the pool; and a continuous line extending through said grommets and about said hooks for securing the bottom of said flexible sheet to the swimming pool so that a single line may be drawn tight to pull said flexible sheet tautly about said framework.

6. An outdoor swimming pool according to claim **1** wherein said swimming pool includes a vertical wall extending above the ground for retaining the water; a plurality of hooks spaced about the vertical wall of the pool; a resilient strap extending about each of said hooks; and means securing the free ends of each of said resilient straps to said flexible sheet for securing the bottom edge of said flexible sheet to the wall of the swimming pool.

7. An outdoor swimming pool according to claim 1 wherein said swimming pool includes a vertical wall extending above the ground for retaining the water; a plurality of grommets spaced about the bottom edge of said flexible sheet; a plurality of hooks spaced about the vertical wall of the pool; a continuous line extending alternately through said grommets and about said hooks; a resilient strap extending about each of said hooks; and means securing the free ends of each of said resilient straps to said flexible sheet so that said continuous line and said resilient straps combine to draw said flexible sheet taut about said framework and secure it to the swimming pool but render it readily releasable for removal from said framework.

8. In an outdoor swimming pool having a vertical wall extending above the ground for retaining the water; a framework extending upwardly from said vertical wall and over the swimming pool; a flexible sheet over said framework to form a dome completely enclosing the space above the water in the swimming pool; a plurality of grommets spaced along the bottom edge of said flexible sheet; a plurality of hooks, spaced about the vertical wall of the pool; a continuous line extending through said grommets and about said hooks for securing the bottom of said flexible sheet to the swimming pool so that a single line may be drawn tight; a resilient strap extending about each of said hooks; and means securing the free ends of each of said resilient straps to said flexible sheet so that said continuous line and said resilient straps combine to draw said flexible sheet taut about said framework and secure it to the swimming pool but render it readily releasable for removal from said framework.

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