Jan. 28, 1969 H. D. CROOK 3,423,767

SWIMMING POOL COVER

Filed Jan. 30, 1967

Sheet 1 of 4

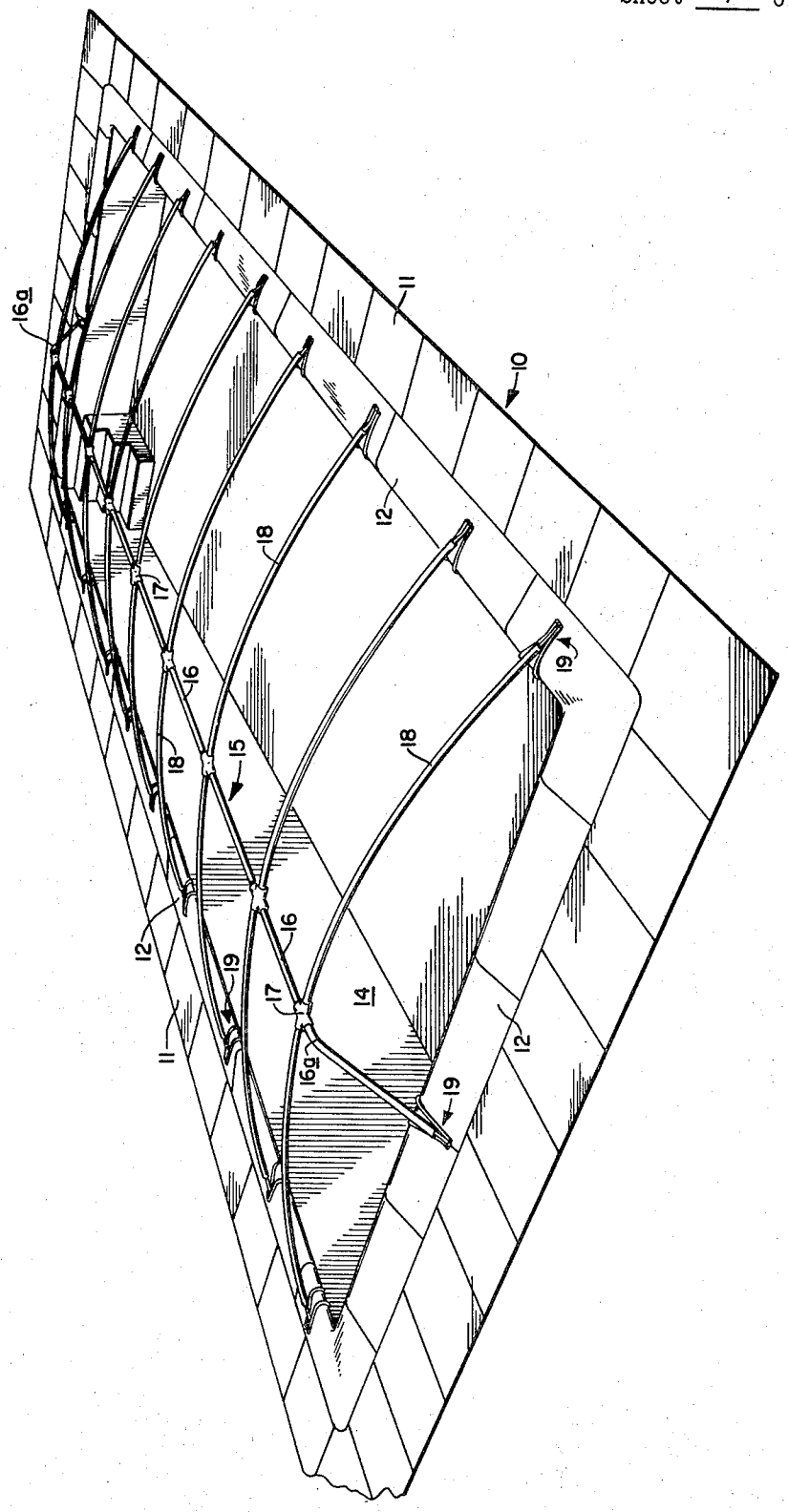


FIG. 1.

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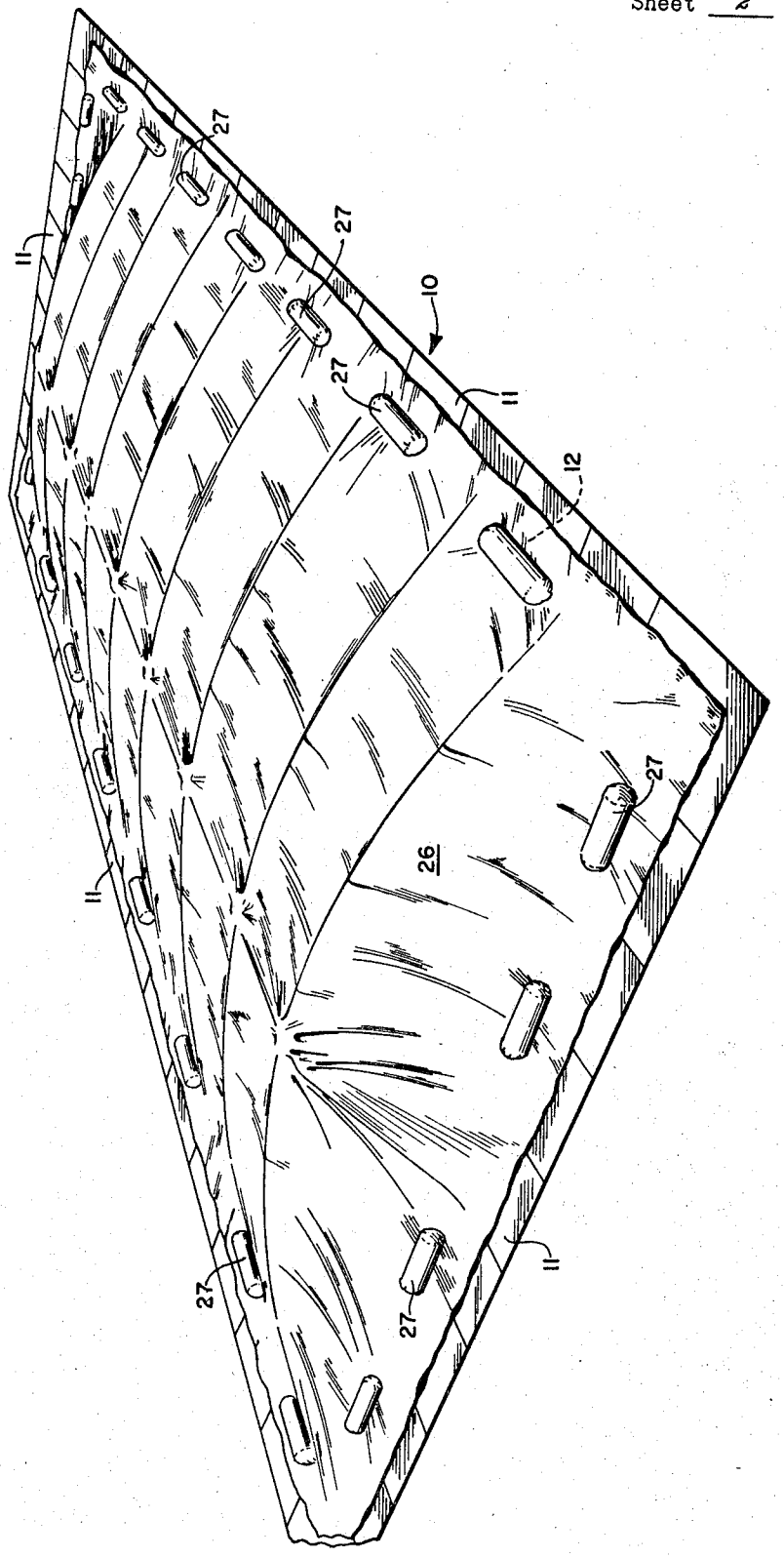


FIG. 2.

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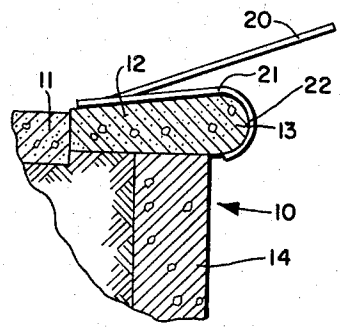


FIG. 3.

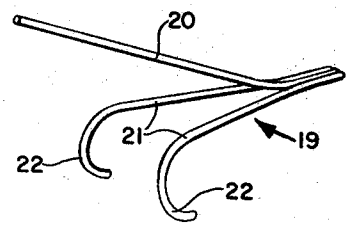


FIG. 4.

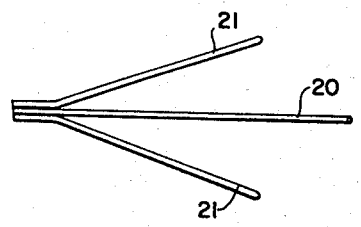


FIG. 5.

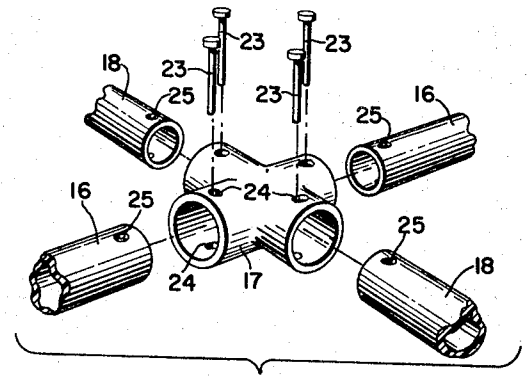


FIG. 6.

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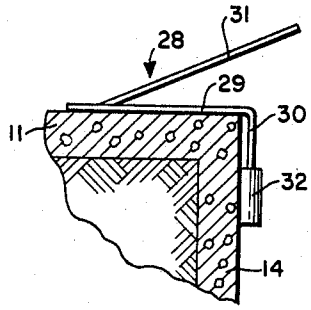


FIG. 7.

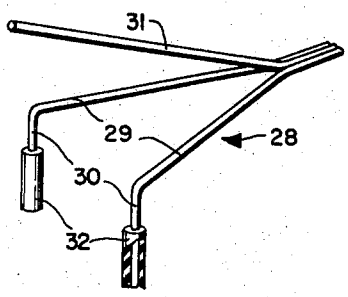


FIG. 7A.

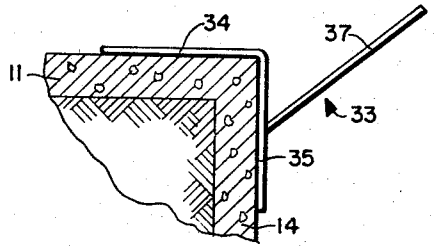


FIG. 8.

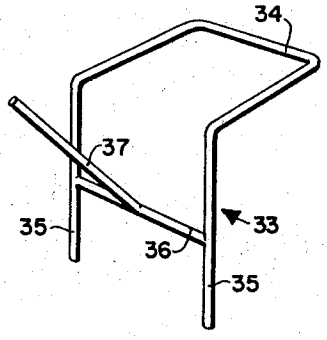


FIG. 8A.

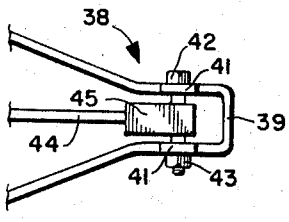


FIG. 9.

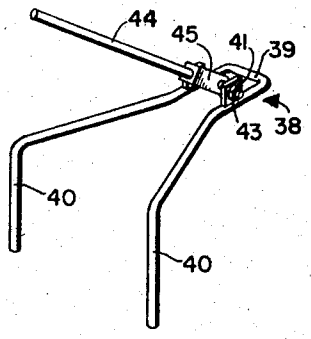


FIG. 9A.

United States Patent Office

3,423,767

Patented Jan. 28, 1969

3,423,767

SWIMMING POOL COVER

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Filed Jan. 30, 1967, Ser. No. 612,661

U.S. Cl. 4—172 8 Claims

Int. Cl. E04h *3/16;* E04f *10/04*

ABSTRACT OF THE DISCLOSURE

The swimming pool cover of the present invention includes a cover support structure having a center support member consisting of short lengths of pipe coupled by means of four-way fittings. Side support members consisting of bowed or arched lengths of flexible pipe are joined to the center support section by means of the four-way fittings. The ends of the side support members are anchored to the pool coping by means of a three-fingered anchoring device having an upturned center finger inserted in the end of the respective side support pipes and having two downturned finger portions engaging the coping on hte edge of the pool. A flexible pool cover is supported by the cover support structure and can be retained in place by means of weights such as sandbags.

BACKGROUND OF THE INVENTION

Field of the invention

This invention relates to swimming pool covers, in particular to swimming pool covers utilizing an arched support structure made from lengths of flexible pipe detachably coupled together.

Description of the Prior Art

It has been found desirable to provide covers for swimming pools in order to avoid a number of problems which occur when pools are left open and exposed to the elements in the winter season. It is common practice to keep pools filled with water in the winter season in order to avoid cracking of the pool walls and additionally to avoid upward thrust on the empty pool by a high water table which can exist in certain localities. Conventional pool covers consist of heavy tarpaulins or heavy gauge plastic sheeting which is stretched taunt over the surface of the pool and anchored to the coping by means of eye hooks or other devices. The cover conventionally has no support means and sags down and often times rests on the surface of the water. The pool cover provides a sink for the collection of rainwater, leaves, trash and other debris which creates an undesirable situation. It is necessary to pump out excess water and to periodically remove the debris therefrom in order to prevent damage to the pool cover. Thus it is seen that there is a need for a swimming pool cover that may be readily assembled and disassembled which will prevent the collection of debris and rainwater in the pool cover, and which will permit limited use of the pool without complete disassembly of the cover.

SUMMARY OF THE INVENTION

Therefore, it is an object of the present invention to provide a swimming pool cover which prevents the collection of rainwater and debris therein.

It is a further object of the present invention to provide a swimming pool cover made from readily available components and can be readily assembled and disassembled.

It is a still further object of the present invention to provide a swimming pool cover that permits the removal of the flexible cover to provide limited use of the pool during the off season.

It is still another object of the present invention to provide a swimming pool cover assembly having components which can be readily purchased and assembled by the pool owner and which may be conveniently assembled and disassembled by one person.

It is also another object of the present invention to provide a swimming pool cover assembly which has no components requiring a fixed attachment to any portion of the pool structure itself.

The foregoing objects and other advantages of the invention are realized in a swimming pool cover assembly which includes a cover support structure having a longitudinally extending center support member and a plurality of spaced apart transversely extending side support members on each side of the center support member. Each side support member has one end attached to the center support member and the other end anchored to a structural portion of the pool adjacent its upper edge. Anchoring means for attaching the other end of each of the side support members to the structural portion of the pool is provided. A flexible cover means extends over and is supported by the support structure. Retaining means to hold the flexible cover means in position on the support structure is provided.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing, and other objects, features and advantages of the present invention will be apparent from consideration of the following specification taken in conjunction with the accompanying drawings in which reference characters designate the same or similar parts throughout the several views.

In the drawings:

FIGURE 1 is a perspective view of a swimming pool having attached thereto a cover support structure constructed in accordance with the present invention;

FIGURE 2 is a perspective view of the swimming pool FIGURE 1 with the support structure having a flexible cover placed thereon;

FIGURE 3 is a broken section of a portion of the pool of FIGURE 1 showing one embodiment of an anchoring device which can be utilized in the present invention to hold the pool support structure in place;

FIGURE 4 is a perspective view of the anchor device shown in FIGURE 3;

FIGURE 5 is a plan view of the anchor device shown in FIGURE 4;

FIGURE 6 is an exploded enlarged view of the four-

way fitting utilized to join the support structure elements together;

FIGURE 7 is a broken section of a portion of a swimming pool without a coping where the pool walk area and the sidewall of the pool join at a substantially right angle wherein a different embodiment of the anchoring device is utilized to hold the pool cover support structure in place;

FIGURE 7A is a perspective view of the anchor device shown in FIGURE 7;

FIGURE 8 is a broken section of a pool similar to that shown in FIGURE 7 wherein still another embodiment of an anchoring device is utilized to hold the pool cover support structure in place;

FIGURE 8A is a perspective view of the anchor device shown in FIGURE 8;

FIGURE 9 is a broken plan view of a portion of still another embodiment of an anchor device suitable for use in the present invention; and

FIGURE 9A is a full perspective view of the anchor device shown in FIGURE 9.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to FIGURES 1, 2, and 3 the swimming pool structure, designed generally by the numeral **10**, includes a paved or other hard surface walk area **11** around the perimeter of the pool. The upper edge of the pool may be provided with a coping **12** adjacent the walk area **11** which may be integrally formed therewith or made separate as shown in FIGURES 1 and 3. Coping **12** slopes slightly to the rear in order to drain water rearwardly and additionally has a forward end portion **13** which is rounded and projects out over the pool proper, as may be more clearly seen in FIGURE 3. The coping **12** rests on, or may be in an integral part of, the sidewall of the pool **14**. However, it is quite common for swimming pools to be constructed which do not utilize a coping that projects out over the surface of the pool. As seen in FIGURE 7 and 8 it is common to construct swimming pools by making the walk area **11** join at a substantially right angle to the sidewall of the pool **14**. The walk area **11** may be integrally formed with the sidewall **14** or it may be formed separately and rest on top of the sidewall **14**. The support structure for the swimming pool cover of the present invention is readily adaptable to pools which have either a coping or which have a substantially right angle merger of the sidewall with the pool walk.

The cover support structure, designated generally by the numeral **15**, is fabricated from a plurality of separate pipe sections. The support structure includes a center support member which is made up of a plurality of short lengths of pipe **16**. These center support pipe sections are joined together by means of a four-way coupling **17**. The center support pipe sections **16** are supported by a plurality of individual side support pipe sections **18**.

When the pool to be covered is provided with a coping at its upper edge, the side support pipe sections **18** are removably attached to the pool by means of the embodiment of an anchor assembly designated generally by the numeral **19**. As seen in FIGURES 3, 4 and 5 this embodiment of the anchor assembly is constructed from three pieces of elongated rigid material, preferably metal rods welded together at one end thereof. This anchor assembly includes a center upturned finger **20** and two spaced apart downturned fingers **21—21** attached to either side of the upturned finger at one end of the assembly. This anchor assembly can be conveniently made by welding together at one end three cylindrical sections of concrete reinforcing rod or other cylindrical stock which is malleable in order to form the upturned finger **20** and the downturned ends **22** of fingers **21—21** which grip the coping on the pool as may be seen in FIGURE 3. As seen in FIGURE 1 this anchor assembly **19** is placed on the coping of the pool and the side support pipe sections **18** are inserted thereover and then the upper end is inserted in the four-way coupling **17**.

When the sidewall of the pool **14** and the walk area **11** are joined at the upper end of the sidewall to form a pool with a right angle edge, as seen in FIGURES 7 and 8, one can utilize a second embodiment of the anchor assembly, designated generally **28**. As seen in FIGURES 7 and 7A, the second embodiment of the anchor assembly is constructed in a manner similar to that utilized for the anchor assembly **19** in that it may be made from round metal stock and is provided with diverging fingers **29—29** which are provided with straight downturned ends **30—30**. The straight downturned ends of the fingers should make about a ninety degree, or slightly smaller, angle with the straight portion of the fingers **29—29** in order to conform closely to the shape of the pool's upper edge. An upturned finger **31** is attached to the rear portion of the diverging fingers **29—29** in a manner similar to that utilized in the embodiment of anchor assembly **19**, i.e., by welding, bolting, or other suitable means. Each downturned end **30—30** is provided with a boot **32** which may be made from rubber or other plastic type material and bonded by an adhesive, or by other means. to the ends of the fingers. The boot **32** prevents the downturned ends **30—30** from slipping on the sidewall of the pool in case a lifting action is exerted upon middle upturned finger **31** by the arched side support pipe sections **18**. If desired the boot assembly **32** can be replaced by an abrasive coating applied to the rear surface of downturned ends **30—30**. Any other suitable means which will provide a friction surface that will grip the pool sidewall **14** to prevent slippage of the anchor assembly **28** may be used.

A third embodiment for the anchor assembly that may be utilized in the present invention is shown in FIGURES 8 and 8A and is designated generally by the numeral **34**. This assembly is adapted to fit on the edge of a pool which has a sharp ninety degree merger of the pool walk **11** and sidewall **14** as seen in FIGURES 8 and 8A. This embodiment of the anchor assembly may conveniently be constructed by bending a rod into a U-shape and then bending down the ends of the U. The base portion **34** of the U rests on the walk **11** and the two downturned ends **35—35** rest against the sidewall **14** of the pool. A crosspiece **36** is attached between the arms **35—35** by welding or any other suitable means. An upwardly projecting arm **37** is fixed to crosspiece **36** by means of a weld or other suitable attachment. The upwardly projecting arm **37** receives the lower end of a side support pipe section **18**. When the form of anchor assembly designated generally **34** is employed the pressure of the flexing pipe side support sections **18** tend to push the anchor assembly against the sidewall and prevent lifting of the anchor assembly **34** from the edge of the pool.

The fourth version of the anchor assembly is designated generally **38** and is shown in FIGURES 9 and 9A. This version of the anchor assembly is made by bending a piece of round metal stock to provide a generally V-shaped figure with a base portion **39** and two downturned ends **40—40**. An upstanding lug **41** is welded to opposite sides of the base portion. Holes provided in the lugs receive bolt **42** that is retained therein by nut **43**. The bolt pivotably supports arm **44** which is mounted thereon by an enlarged opening provided in its base portion **45** adapted to receive the bolt. By pivoting the arm **44** is self-adjusting when the lower end of the side support pipe sections **18** are slipped thereover. Since the arm **44** can adjust to any particular angle this version of the anchor assembly will not exert any lifting action on the downturned fingers **40—40** to disengage them from the sidewall **14** of the pool.

The center support pipe sections **16** and the side support pipe sections **18** are joined in four-way coupling **17**, an example of which is shown in FIGURE 6. The couplings are removably attached to each of the respective pipe sections **16** and **18** by means of pins **23** inserted in aligned openings **24** provided on opposite sides of each

pipe section of the four-way coupling **17**. Matching openings **25** are provided in the ends of each pipe section **16** and **18**. As seen in FIGURE 1, the endmost side support pipe section **16***a* may be provided with a permanent bend therein in order to facilitate insertion in the endmost four-way coupling and convenient attachment to an anchor assembly **19** at each end of the pool. This is desirably because the short spacing between the endmost four-way coupling **17** and the adjacent edge of the end of the pool prevents arching of the end member **16***a* as is utilized in the side support members **18**.

In assembly of the device of the present invention the cover support structure is fabricated from lengths of flexible conduit, preferably cylindrical pipe of a wall thickness which will permit convenient flexing to provide an arched structure as illustrated in FIGURE 1. While the center support pipe sections **16** and the side support pipe sections **18** may be made from thin wall metal pipe such as iron, steel or aluminum, a preferred material for their construction is plastic pipe. A preferred plastic pipe is one made from polyvinyl chloride plastic compound. However, other plastic materials are suitable such as ABS, polyethylene, or polypropylene pipe. The side support sections **18** are cut so that the total length of adjoining sections exceeds the width of the pool in order to provide the arched structure exemplified in FIGURE 1. The height of the arched pool support structure **15** may be altered by shortening or lengthening the lengths of the side support pipe sections **18**. The center support pipe sections **16** should be cut to a length which will provide sufficient rigidity and support for the integrated cover support structure **15**. Preferably the length of each center section should not exceed about three feet in order to provide a rigid structure. However, longer section lengths can be used if desired.

To assemble the pool support structure **15** a number of the anchor assemblies selected for use (depending on whether or not the pool has a coping) are placed at evenly spaced intervals on either side of the pool opposite each other. If desired two vertical support pipes (not shown) extending from the bottom of the pool to the endmost four-way coupling at each end of the pool may be provided. The endmost section of the pool structure is constructed by joining together the two side support pipe sections **18**—**18** and the end support pipe section **16***a* by means of a four-way coupling. A center support pipe section **16** is inserted in the first four-way coupling and then additional four-way couplings, center support pipe sections **16**, and side support pipe sections **18** are joined and connected to the individual anchor assemblies until the pool cover structure extends from one end of the pool to the other.

The cover support structure **15** is covered by a flexible pool cover **26** as may be seen in FIGURE 2. The flexible pool cover may be constructed from any suitable waterproof and weatherproof material such as treated canvas or heavy gauge flexible plastic material. The pool cover is preferably made from heavy gauge polyethylene sheeting. Such a cover is light, strong, attractive and can be used repeatedly. The flexible pool cover **26** is spread over the cover support structure **15** and is of a size somewhat larger than the pool to provide a portion adjacent its periphery that extends out over the walk area **11** of the pool. The flexible pool cover is preferably held in place by means of weighted bags **27** placed on top of the portion of the flexible pool cover **26** that rests on the walk area **11**. However, if desired the edges of the flexible pool cover may be provided with eyes and the pool cover tied to ground anchors positioned adjacent the edge of the pool walk **11**. Alternatively the pool cover may be anchored into recessed eye rings provided in the pool walk area.

From the foregoing it can be seen that the present invention provides a swimming pool cover which can be easily assembled from cheap readily available material by one person. The pool cover also provides the advantage that it may be stored in a simple compact package for easy reassembly at the end of the swimming season. The flexible pool cover **26** may be conveniently removed from the support structure **15** to permit the pool to be used for swimming while the support structure **15** remains in place. Thus on warm days of late fall and early spring the present invention permits use of the pool where otherwise it would be too difficult to remove and replace a conventional pool cover. The arched support structure provided in the pool support cover structure **15** of the present invention provides an advantage in that no pools of water collect in the flexible cover to breed mosquitoes, collect leaves or other debris as is the case when conventional horizontally mounted pool covers are utilized. The construction used in present swimming pool cover insures that no rainwater or foreign material will enter the pool and thus reduces the necessity to treat the pool with chlorine treating compounds during the off season when the pool is static. Ordinarily contamination of the pool requires that the water be chlorinated at frequent intervals in the off season in order to prevent the formation of algae and other bacteria. With the present pool cover the sanitation of the pool is insured and chlorination may be essentially minimized for the winter season. Additionally when utilizing the pool cover of the present invention it has been found that it is not necessary to circulate the water in the pool through the filter bed thus realizing savings in electricity for operating the pump. It has been estimated that the savings realized in electricity and in chlorine materials in one year is sufficient to pay for the cost of a swimming pool cover constructed according to the present invention.

While there has been described what is at present a preferred embodiment of the present invention, it will be apparent to those skilled in the art that various modifications and changes may be made without departing from the essence of the present invention. It is intended to cover herein all such modifications and changes as come within the true scope and spirit of the claims.

What is claimed is:

1. A swimming pool cover assembly comprising:

(a) a cover support structure including,

(i) a longitudinally extending center support member,

(ii) a plurality of spaced apart transversely extending side support members on each side of said center support member, each side support member having one end attached to said center support member and the other end anchored to a structural portion of said pool adjacent its upper edge,

(iii) anchoring means for attaching said end of each of said side support members to said structural portion of said pool, an anchor device having one upturned finger received in said other end of each of said side support members and at least one down-turned finger contacting a portion of said pool adjacent its upper edge;

(b) flexible cover means extending over and supported by said support structure; and

(c) retaining means to hold said flexible cover means in position on said support structure.

2. The swimming pool cover of claim **1** wherein said center support member and said side support members are constructed from lengths of flexible pipe.

3. The swimming pool cover of claim **1** wherein said retaining means comprises a plurality of weight members resting on the periphery of said flexible cover means.

4. The swimming pool cover of claim **2** wherein said anchoring means includes an anchor device having one upturned finger received in said other end of each of said side support members and a plurality of downturned fingers contacting a portion of said pool adjacent its upper edge.

5. The swimming pool cover of claim 2 wherein said lengths of flexible pipe constituting said center support member are joined together by means of four-way couplings which couplings also receive said one end of oppositely disposed lengths of flexible pipe which constitute said side support members.

6. The swimming pool cover of claim 2 wherein said lengths of flexible pipe are made from a plastic material.

7. The swimming pool cover of claim 5 wherein the ends of said lengths of flexible pipe are fastened to said four-way couplings.

8. The swimming pool covers of claim 6 wherein the plastic material is a polyvinyl chloride plastic compound.

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U.S. Cl. X.R.

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