A water recreational apparatus has a water basin combination, a cover for covering the water basin combination and a cover removal combination. The cover removal combination includes a cover attachment arm which is rotatably attached to the exterior of the water basin combination. The cover attachment arm is adapted so that the rotation of the cover attachment arm about its attachment axes to the water basin combination alternatively moves the cover between a closed position and an open position. Drive means, such as electric motors, are provided for powering the cover attachment arm about its attachment axes so as to open and close the cover.
WATER RECREATIONAL APPARATUS WITH POWERED COVER

FIELD OF THE INVENTION

[0001] This invention relates generally to water recreational apparatuses, such as portable spas and hot tubs and, more specifically, to such water recreational apparatuses having removable covers.

BACKGROUND OF THE INVENTION

[0002] Water recreational apparatuses, such as portable spas and hot tubs, have become very popular. One problem with the use of such water recreational apparatuses is that they tend to accumulate dust, fallen leaves and other debris when not in use. Another problem with such water recreational apparatuses is that young children can climb into such apparatuses when they are not in use and either be injured or drowned.

[0003] In an attempt to solve these problems, some spas are sold with a removable cover. Unfortunately, the use of such removable covers is not wholly satisfactory. One problem with the use of portable covers is that they are heavy and awkward to install and remove. Another problem with removable covers is that, once removed, they are difficult to store. If stored flat, they take up a great deal of area and are difficult and awkward to lift up again. If stored on end, they are easily blown over by gusts of wind.

[0004] A third problem with such portable covers is that young children can sometimes manage to push the cover away from a water recreational apparatus when it is not in use and become injured or drowned within the water recreational apparatus.

[0005] Accordingly, there is a need for a water recreational apparatus which avoids these problems in the prior art.

SUMMARY OF THE INVENTION

[0006] The invention satisfies this need. The invention is a water recreational apparatus comprising a water basin combination, a cover for covering the water basin combination and a cover removal combination. The cover removal combination comprises (a) a cover attachment arm having a first end and a second end, the first end of the cover attachment arm being attached to the cover and the second end of the cover attachment arm being rotatably attached at a attachment arm axis point to the exterior of the water basin combination, the cover attachment arm being sized and dimensioned so that the rotation of the second end of the cover attachment arm about the attachment arm axis point moves the cover from (1) a closed position wherein the cover covers the top opening of the water basin combination and (2) an open position wherein the cover does not cover the top opening of the water basin combination, and (b) drive means for rotating the cover attachment arm about the attachment arm axis points such that the cover is alternatively moved between its open position and its closed position.

DESCRIPTION OF THE DRAWINGS

[0007] These and other features, aspects and advantages of the present invention will become better understood with reference to the following description, appended claims and accompanying drawings where:

[0008] FIG. 1 is a perspective view of a first embodiment of a water recreational apparatus having features of the invention;

[0009] FIG. 2 is a side view of the water recreational apparatus illustrated in FIG. 1;

[0010] FIG. 3 is a perspective view of the water recreational apparatus illustrated in FIG. 1 shown with the cover partially open;

[0011] FIG. 4 is a side view of the water recreational apparatus illustrated in FIG. 3;

[0012] FIG. 5 is a perspective view of the water recreational apparatus illustrated in FIG. 1 showing the cover fully open;

[0013] FIG. 6 is a side view of the water recreational apparatus illustrated in FIG. 5;

[0014] FIG. 7 is a side view of a second water recreational apparatus having features of the invention;

[0015] FIG. 8 is a side view of the water recreational apparatus illustrated in FIG. 7, shown with the cover partially open;

[0016] FIG. 9 is a side view of the water recreational apparatus illustrated in FIG. 8, shown with the cover fully open;

[0017] FIG. 10 is a front view of the water recreational apparatus illustrated in FIG. 9;

[0018] FIG. 11 is a perspective view of the water recreational apparatus illustrated in FIG. 9;

[0019] FIG. 12 is a side view of a third water recreational apparatus having features of the invention, showing a cover in the closed position;

[0020] FIG. 13 is another side view of the embodiment illustrated in FIG. 12, the cover being shown partially opened;

[0021] FIG. 14 is a perspective view of the water recreational apparatus illustrated in FIG. 13;

[0022] FIG. 15 is another side view of the water recreational apparatus illustrated in FIG. 12, shown with the cover partially removed;

[0023] FIG. 16 is another side view of the water recreational apparatus illustrated in FIG. 12, shown with the cover in the fully opened position; and

[0024] FIG. 17 is a perspective view of the water recreational apparatus illustrated in FIG. 16.

DETAILED DESCRIPTION

[0025] The following discussion describes in detail one embodiment of the invention and several variations of that embodiment. This discussion should not be construed, however, as limiting the invention to those particular embodiments. Practitioners skilled in the art will recognize numerous other embodiments as well.
The invention is a water recreational apparatus 10 comprising (i) a water basin combination 12, (ii) a cover 14, and (iii) a unique cover removal combination 16.

The water recreational apparatus 10 can be a spa, a hot tub, a small above-ground pool or similar apparatus.

The water basin combination 12 has an upper portion 18, a lower portion 20, an exterior 22, an interior 24 and a top opening 26. The water basin combination 12 comprises a water basin 28 of sufficient size and dimension to allow a human being to be partially submerged in water disposed within the water basin 28 when the human being is seated within the water basin 28. The water basin combination 12 can also comprise a spa surround (not shown) which encloses the exterior of the water basin 28. The spa surround is typically constructed of wood or similar construction material.

The cover 14 is sized and dimensioned to close off the top opening 26 in the water basin combination 12 from dirt and other debris when the water basin combination 12 is not in use. In a typical embodiment, the cover 14 is made from a foam plastic material, although other materials can also be used. In one typical embodiment, the cover 14 is made with a core of 1/2 pounds per cubic inch expanded polystyrene foam covered with a marine grade vinyl with a polyester backing. (As used in this application, the term “expanded polystyrene” means an expanded mixture of polystyrene and styrene copolymers.) The marine grade vinyl on the underside of the core can incorporate a heat reflective material to help preserve heat within the water in the basin 28.

The unique cover removal combination 16 comprises a cover attachment arm 30 attached to the cover 14 and drive means 32 for rotating the cover attachment arm 30.

The cover attachment arm 30 has a first end 34, a second end 36 and a central portion 38. The central portion 38 of the cover attachment arm 30 is attached to the cover 14. In a typical embodiment, the central portion 38 of the cover attachment arm 30 is attached to the cover 14 by being disposed through a loop of the vinyl material covering the foamed core of the cover 14. Typically, the central portion 38 of the cover attachment arm 30 runs the complete width of the cover 14. The cover attachment arm 30 is typically made from a metal such as aluminum or steel tubing. Preferably the material of the cover attachment arm 30 is chosen to minimize the overall weight of the cover attachment arm 30 while providing sufficient strength to support the cover 14.

The first end 34 of the cover attachment arm 30 is rotatably attached at a first attachment arm axis point 40 to the exterior 22 of the water basin combination 12. The second end 36 of the cover attachment arm 30 is rotatably attached at a second attachment arm axis point 42 on the exterior 22 of the water basin combination 12, at a location opposite the first attachment arm axis point 40. In a typical embodiment, the second end 36 of the cover attachment arm 30 is the mirror image of the first end 34 of the cover attachment arm 30.

The cover attachment arm 30 is sized and dimensioned so that the rotation of the first and second ends 34 and 36 of the cover attachment arm 30 about their respective attachment arm axis points 40 and 42 moves the cover 14 from (1) a closed position wherein the cover 14 covers the top opening 26 of the water basin combination 12, and (2) an open position wherein the cover 14 does not cover the top opening 26 of the water basin combination 12.

In the embodiment illustrated in the drawings, in the embodiment illustrated in the drawings, both of the attachment arm axis points 40 and 42 are provided by metal hinges 44 attached to the exterior 22 of the water basin combination 12. In the embodiment illustrated in FIGS. 1-11, the hinges 44 include a stop 46, typically comprising a metallic knob covered with rubber or soft plastic. The stop 46 can be positioned as illustrated in FIGS. 7-11, such that one or both of the ends 34 or 36 of the cover attachment arm 30 contacts the stop 46 when the cover 14 is moved to its open position. In this way, the stop 46 prevents the rotation of the cover 14 beyond its open position. In a typical embodiment employing a stop 46, the hinges 44 on both sides of the exterior 22 of the water basin combination 12 comprise a stop 46 and both ends 34 and 36 of the cover attachment arm 30 are configured to contact one of the stops 46 when the cover 14 is moved to its open position. Instead of using a stops 46 to prevent excessive rotation of the cover 14, appropriately located limit switches can be used.

In the embodiment illustrated in the drawings, the drive means 32 comprises a pair of drive arms 48 disposed on opposite sides of the water basin combination 12. Each drive arm 48 has a first end 50 and a second end 52. The first end 50 of each drive arm 48 is attached to the cover attachment arm 30 and the second end 52 of each drive arm 48 is rotatably attached to the exterior 22 of the water basin combination 12 about a drive arm axis point 54. In the embodiment illustrated in the drawings, the first end 50 and the second end 52 are telescopically slidable with respect to one another.

The drive means 32 further comprises power means 56 for extending and contracting the first ends 50 with respect to their respective second ends 52 such that the cover 14 is alternatively moved between its open position and its closed position. In the embodiment illustrated in the drawings, the each drive arm 48 is substantially linear.

In a typical embodiment, the power means 56 comprises a pair of synchronized electric motors 58, one attached to each of the drive arms 48 and configured to rotate a threaded cylinder disposed within the second end 52. The threaded cylinder within the second end 52 is geared to a threaded cylinder within the first end 50 such that, when the threaded cylinder within the second end 52 is rotated, the threaded cylinder within the first end 50 is rotated, thus causing the first end 50 to either move away from the second end 52 or move towards the second end 52 (depending upon the direction of rotation of the threaded cylinder within the second end 52). Typically, the threaded cylinder within the first end 50 is externally threaded and the threaded cylinder within the second end 52 is internally threaded. The threaded cylinder within the first end 50 is threaded disposed within the threaded cylinder within the second end 52, such that the rotation of the threaded cylinder within the second end 52 causes the threaded cylinder within the first end 50 to either move away from the second end 52 or move towards the second end 52. The movement of the threaded cylinder within the first end 50 acts to extend or contract the first end 50 with respect to the second end 52 to move the cover 14 alternatively between its open position and its closed posi-
tion. An off-the-shelf drive means, such as described immediately above, can be purchased from Fasco Actuators of Easton Rapids, Mich. as C-Band Satellite Linear Actuators.

[0039] Like the cover attachment arm 30, the two drive arms 48 are typically made from a metal. Each drive arm 48 is attached so as to give it sufficient strength to repeatedly move the cover 14 between its open position and its closed position.

[0039] Other drive means 32 can be used in the invention. For example, drive means 32 comprising oppositely disposed hydraulic cylinders can also be used.

[0040] In the embodiment illustrated in FIGS. 1-6, the cover attachment arm 30 is configured such that, when the cover 14 is in its open position, the rear periphery 60 of the cover 14 is proximate to the upper portion 18 of the exterior 22 of the water basin combination 12. In the embodiment illustrated in FIGS. 7-11, on the other hand, the cover attachment arm 30 is configured such that the rear periphery 60 of the cover 14 is proximate to the lower portion 20 of the exterior 22 of the water basin combination 12 when the cover 14 is in its open position.

[0041] FIGS. 12-17 illustrate yet another embodiment of the invention 10. In the embodiment illustrated in FIGS. 11-17, the cover 14 is provided by two cover portions 14a and 14b which are hinged along a transverse hinge 62. The transverse hinge 62 is typically a fabric hinge, most typically provided by the same vinyl covering material as covers the core material of the cover portions 14a and 14b.

[0042] The invention provides an effective and inexpensive method of covering and uncovering a water recreational apparatus by convenient powered means. Because the opening of the cover is accomplished by powered means, the cover cannot be inadvertently blown off by the wind. Moreover, if the control switches for the invention are maintained within a locked control box, the cover cannot be removed by small children or other trespassing individuals or animals.

EXAMPLE

[0043] In one example of the invention, the water recreational apparatus is a portable spa. The water recreational apparatus comprises a water basin combination which includes a water basin enclosed within a spa surround. The water basin combination is 40 inches in height, 96 inches in length and 96 inches in width. The top opening of the water basin combination is generally 96 inches by 96 inches. The cover is made with a foam core surrounded by a marine vinyl covering and is 5 inches in thickness and weighs about 45 pounds. The water basin holds approximately 500 gallons of water. The spa surround is made of pine and comprises four vertical walls surrounding the water basin.

[0044] The cover attachment arm is hollow and is made from steel and has an outside diameter of 1½ inches and is ½ inch thick.

[0045] The drive means is provided by a pair of synchronized electric motors. Each electric motor is rated at 1/2 horsepower. The drive means also comprises a pair of linear drive arms, each drive arm being hollow and made from steel with an outside diameter of 1 inch and a thickness of ½ inch.

[0046] Having thus described the invention, it should be apparent that numerous structural modifications and adaptations may be resorted to without departing from the scope and fair meaning of the instant invention as set forth hereinabove and as described hereinbelow by the claims.

What is claimed is:

1. A water recreational apparatus comprising (i) a water basin combination having an exterior, an interior and a top opening, (ii) a cover for covering the top opening, and (iii) a cover removal combination, the cover removal combination comprising:

(a) a cover attachment arm having a first end, a second end and a central portion, the central portion of the cover attachment arm being attached to the cover, the first end of the cover attachment arm and the second end of the cover attachment arm being rotatably attached at respective attachment arm axis points to opposite sides of the exterior of the water basin combination, the cover attachment arm being sized and dimensioned so that the rotation of the first and second ends of the cover attachment arm about their respective attachment arm axis points moves the cover from (1) a closed position wherein the cover covers the top opening of the water basin combination and (2) an open position wherein the cover does not cover the top opening of the water basin combination; and

(b) drive means for rotating the cover attachment arm about its attachment arm axis points such that the cover is alternatively moved between its open position and its closed position.

2. The water recreational apparatus of claim 1 wherein the drive means comprises a pair of drive arms each having a first end and a second end, the first end of each drive arm being attached to the cover attachment arm and the second end of each drive arm being rotatably attached to the exterior of the water basin combination about a drive arm axis point, the drive arm axis points for the two drive arms being disposed on opposite sides of the exterior of the water basin combination, the drive means further comprising power means for extending the drive arms such that the cover is alternatively moved between its open position and its closed position.

3. The water recreational apparatus of claim 2 wherein each drive arm is substantially linear.

4. The water recreational apparatus of claim 2 wherein the power means comprises a pair of electric motors.

5. The water recreational apparatus of claim 1 wherein the exterior of the water basin has an upper portion and a lower portion, wherein the cover has a cover periphery and wherein, when the cover is in its open position, the cover periphery is proximal to the upper portion of the exterior of the water basin combination.

6. The water recreational apparatus of claim 1 wherein the exterior of the water basin has an upper portion and a lower portion, wherein the cover has a cover periphery and wherein, when the cover is in its open position, the cover periphery is proximal to the lower portion of the exterior of the water basin combination.

7. The water recreational apparatus of claim 1 further comprising a stop for preventing the rotation of the cover beyond its open position.
8. The water recreational apparatus of claim 1 wherein the cover is provided by a pair of cover portions which are hinged together.

9. A water recreational apparatus comprising (i) a water basin combination having an exterior, an interior and a top opening, (ii) a cover for covering the top opening, and (iii) a cover removal combination comprising:

(a) a cover attachment arm having a first end, a second end and a central portion, the central portion of the cover attachment arm being attached to the cover, the first end of the cover attachment arm and the second end of the cover attachment arm being rotatably attached at respective attachment arm axis points to opposite sides of the exterior of the water basin combination, the cover attachment arm being sized and dimensioned so that the rotation of the first and second ends of the cover attachment arm about their respective attachment arm axis points moves the cover from (1) a closed position wherein the cover covers the top opening of the water basin combination and (2) an open position wherein the cover does not cover the top opening of the water basin combination; and

(b) drive means for rotating the cover attachment arm about its attachment arm axis points such that the cover is alternatively moved between its open position and its closed position, the drive means comprising a pair of drive arms each having a first end and a second end, the first end of each drive arm being attached to the cover attachment arm and the second end of each drive arm being rotatably attached to the exterior of the water basin combination about a drive arm axis point, the drive arm axis points for the two drive arms being disposed on opposite sides of the exterior of the water basin combination, the drive means further comprising a pair of electric motors for telescopically extending the drive arms such that the cover can be alternatively moved between its open position and its closed position.

10. The water recreational apparatus of claim 9 wherein the exterior of the water basin has an upper portion and a lower portion, wherein the cover has a cover periphery and wherein, when the cover is in its open position, the cover periphery is proximate to the upper portion of the exterior of the water basin combination.

11. The water recreational apparatus of claim 9 wherein the exterior of the water basin has an upper portion and a lower portion, wherein the cover has a cover periphery and wherein, when the cover is in its open position, the cover periphery is proximate to the lower portion of the exterior of the water basin combination.

12. The water recreational apparatus of claim 9 further comprising a stop for preventing the rotation of the cover beyond its open position.

13. The water recreaional apparatus of claim 9 wherein the cover is provided by a pair of cover portions which are hinged together.

14. A cover removal combination for removing a cover from a water recreational apparatus wherein the water recreaional apparatus comprises (i) a water basin combination having an exterior, an interior and a top opening and (ii) a cover for covering the top opening, the cover removal combination comprising:

(a) a cover attachment arm having a first end, a second end and a central portion, the central portion of the cover attachment arm being attachable to the cover, the first end of the cover attachment arm and the second end of the cover attachment arm being rotatably attachable at respective attachment arm axis points to opposite sides of the exterior of the water basin combination, the cover attachment arm being sized and dimensioned so that, when the ends of the cover attachment arm are attached to the exterior of the water basin combination and the central portion of the cover attachment arm is attached to the cover, the rotation of the first and second ends of the cover attachment arm about their respective attachment arm axis points moves the cover from (1) a closed position wherein the cover covers the top opening of the water basin combination and (2) an open position wherein the cover does not cover the top opening of the water basin combination; and

(b) drive means for rotating the cover attachment arm about its attachment arm axis points such that the cover can be alternatively moved between its open position and its closed position.

15. The cover removal combination of claim 14 wherein the drive means comprises a pair of drive arms each having a first end and a second end, the first end of each drive arm being attachable to the cover attachment arm and the second end of each drive arm being rotatably attachable to the exterior of the water basin combination about a drive arm axis point, the drive means further comprising power means for telescopically extending the drive arms such that the cover can be alternatively moved between its open position and its closed position.

16. The cover removal combination of claim 15 wherein the power means comprises a pair of electric motors.

17. The cover removal combination of claim 14 wherein the exterior of the water basin has an upper portion and a lower portion, wherein the cover has a cover periphery and wherein, when the cover removal combination is attached to a water basin combination and the cover is in its open position, the cover periphery can be proximate to the upper portion of the exterior of the water basin combination.

18. The cover removal combination of claim 14 wherein the exterior of the water basin has an upper portion and a lower portion, wherein the cover has a cover periphery and wherein, when the cover removal combination is attached to a water basin combination and the cover is in its open position, the cover periphery can be proximate to the lower portion of the exterior of the water basin combination.

19. The water recreational apparatus of claim 14 further comprising a stop for preventing the rotation of the cover beyond its open position.

20. The water recreational apparatus of claim 14 wherein the cover is provided by a pair of cover portions which are hinged together.