Publication Classification

Int. Cl. E04H 4/00 (2006.01)

U.S. Cl. 4/502

ABSTRACT

A swimming pool installation, including a swimming pool having an end, a deck surrounding at least a portion of the swimming pool and an auto cover box. The auto cover box is recessed in the deck proximate to the end of the swimming pool. The auto cover box having a formed section with a U-shaped cross-section, including a low portion and a drain in the low portion.
VACUUM FORMED AUTO COVER BOX

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to swimming pools, and, more particularly, to an automatic pool cover box used to house a pool cover.

[0003] 2. Description of the Related Art

[0004] Swimming pools are commonly covered to prevent debris from entering the pool, to preserve chemical treatments in the water and to heat the pool in the case of a solar cover. An automatic pool cover provides convenience for the user by allowing the cover to be easily extended over the pool during periods of non-use, and retracted during periods of use. Typically, a box is placed in the decking surrounding the pool at a location opposite from the walk-in steps (usually at the deep end of a pool). The box extends across the width of the pool and houses an electric motor and reel in which the cover is wound.

[0005] The most common technique for building a pool cover box is to build it onsite using treated wood. This requires skill in carpentry to cut, position and connect the individual pieces of wood. The wood is separately ordered and equipment for cutting the wood must be brought to the worksite and the scraps from the construction must be removed.

[0006] Some cover boxes are constructed of panels of galvanized steel that are assembled in place to form a box for the positioning of a pool cover retraction/extension mechanism therein. A problem with conventional automatic pool cover boxes is that individual panels are utilized for the box thereby requiring extended amounts of labor.

[0007] What is needed in the art is an automatic pool cover box that reduces the assembly required at the point of installation.

SUMMARY OF THE INVENTION

[0008] The present invention provides an automatic pool cover box assembly that is vacuum formed and easily installed beside a swimming pool.

[0009] The invention comprises, in one form thereof, a swimming pool installation including a swimming pool having an end with a deck surrounding at least a portion of the swimming pool. An auto cover box is recessed in the deck proximate to the end of the swimming pool. The auto cover box has a formed section with a U-shaped cross section and a low portion therein. A drain is provided in the low portion of the formed section.

[0010] An advantage of the present invention is that the formed section is vacuum formed having a U-shaped cross section ready for installation along the end of the pool.

[0011] Another advantage is that end sections may be provided thereby allowing for a customized fit of the auto cover box to the swimming pool.

[0012] Yet another advantage of the present invention is that at least one section may be manually cut to length and still interface with an end section for customized installation proximate a pool.

[0013] Still yet another advantage of the present invention is that an upper portion of the formed section includes an inverted J cross section which interfaces with concrete to hold the assembly in position laterally.

[0014] Still yet another advantage of the present invention is that there are angled surfaces in the bottom of a section, which directs moisture collected therein to an opening, which is connected to a drain line for the removal of moisture therefrom.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The above-mentioned and other features and advantages of this invention, and the manner of attaining them, will become more apparent and the invention will be better understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawings, wherein:

[0016] FIG. 1 is top view of a swimming pool with an embodiment of an automatic pool cover box in the present invention positioned at one end thereof;

[0017] FIG. 2 is an exploded view of an automatic pool cover box of the present invention;

[0018] FIG. 3 is a side view of the automatic pool cover box of FIG. 1;

[0019] FIG. 4 is partially sectioned side view of the automatic pool cover box of FIGS. 1-3; and

[0020] FIG. 5 is a top view of the automatic pool cover box of FIG. 2.

[0021] Corresponding reference characters indicate corresponding parts throughout the several views. The exemplifications set out herein illustrates one preferred embodiment of the invention, in one form, and such exemplifications are not to be construed as limiting the scope of the invention in any manner.

DETAILED DESCRIPTION OF THE INVENTION

[0022] Referring now to the drawings, and more particularly to FIG. 1, there is shown an embodiment of a swimming pool installation 10 with a swimming pool 12 surrounded by a deck 14. An auto cover box assembly 16 is positioned along one end of swimming pool 12. Auto cover assembly 16 includes mid-sections 18, first endcap 20 and second endcap 22. Auto cover assembly 16 is positioned in deck 14 and is recessed with the top surfaced normally being substantially in the plane of an upper surface of deck 14. However, auto cover assembly 16 may be positioned in an elevated or recessed manner relative to the surface of deck 14. Additionally a cover, not shown, may be positioned over at least a portion of the top open area of auto cover assembly 16.

[0023] Midsections 18, endcap 20 and endcap 22 are formed using a vacuum forming process in which a substantially flat piece of material is vacuum drawn into the shapes illustrated in the drawings. In one embodiment of the present invention the material utilized is a synthetic material which is heated in addition to having a vacuum applied to form the present invention as illustrated.
Now additionally, referring to FIG. 2, midsections 18, which may include one or more sections in an auto cover assembly 16, includes a first side 24, a second side 26 and a bottom 28. Bottom 28 of midsection 18 includes angled surfaces 30, which are provided by way the vacuum forming process, which deep draws the material against portion of a mold and/or a form. Angled surfaces 30 are angled to direct any moisture, which may be collected along bottom 28 towards a low portion 32 which has a drain hole therein.

Now, additionally referring to FIG. 3-5 a drain line 34 is connected to the drain opening in low portion 32, thereby allowing the removal of moisture from auto cover assembly 16. Midsection 18 includes an interface zone 36, which may be in the form of an offset portion 38 or a tongue and groove configuration, not shown. Offset portion 38 interfaces with endcap 20 to orient section 18 and endcap 20 relative to each other and to allow for a bonding therebetween. The bonding between endcap 20 and section 18 may be in the form of mechanical fasteners, adhesive clips, or other fastening techniques. Alternatively, section 18 and endcap 20 may simply be positioned in place with concrete or some other structural member being used to hold endcap 20 and section 18 in place relative to each other. In a like manner endcap 22 is positioned at another end of section 18, with endcap 22 having a similar offset portion as the opposite end of section 18.

Section 18 as well as endcaps 20 and 22 each have a U-shaped cross section with oppositely faced inverted J-shaped portions along the top of sides of the respective sections. Inverted J-shaped upper edges 40 advantageously are utilized to strengthen auto cover assembly 16 and to provide a fastening element to other building structure, not shown.

Endcap 20 includes a first side 42 a second side 44 a third side 46, a bottom 48 and inverted J-shaped portions 50. In a like manner endcap 22 includes a first side 52, a second side 54, a third side 56, a bottom 58, inverted J-shaped portions 60 and additionally includes offset portion 62. Offset portion 62, which is substantially similar to offset portion 38 of section 18, is formed to interface with an end of section 18. Endcap 22 is connected to section 18 in a manner similar to endcap 20, which is coupled to the opposite end of section 18.

Advantageously, section 18 may be cut to length at the end opposite offset portion 38, to customize the overall length of auto cover assembly 16 to accommodate the dimension of swimming pool 12. Additionally, multiple sections 18 may be utilized to further customize the length of auto cover assembly 16. Endcaps 20 and 22 are illustrated as different lengths, but similar lengths may additionally be utilized. In one embodiment of the installation a motor section would be placed in endcap 22 while a support structure for a rotatable cover mechanism would be placed in endcap 20, with a rotating section, to receive a pool cover, being positioned through section 18.

Installation of section 18 includes leveling section 18 to be in alignment with deck 14. The leveling then positions angled surfaces 30 so that moisture collected in section 18 is directed to low portion 32 and from there into the drain.

Another advantage of the present invention is that formed U-shaped section 18 provides for the drainage of moisture from section 18 along angled surfaces 30 toward low portion/drain opening 32, which provides drainage by way of drain line 34 to the entire auto cover assembly 16. In any installations in which a waterproof interface between endcaps 20 and 22 with section 18 is not required, endcaps 20 and 22 may be simply positioned so that offset portions 38 and 62 appropriately interface with non-offset portions of endcap 20 and section 18, as illustrated in FIG. 2. However, if a water tight interface between endcaps 20 and 22 with section 18 is desired appropriate sealing elements and/or adhesives may be utilized along a surface of offset portion 38 and 62 to allow the forming of the water tight interface.

Although auto cover assembly 16 has been illustrated as existing with multiple sections a complete integral unit composed of a single monolithic structure is likewise included as an embodiment of the present invention. Sections 18 and endcaps 20 and 22 are of a monolithic construct having no assembly mechanisms utilized to form the individual shapes described herein. This advantageously allows the delivery to a pool installation site completely dimensionally formed sections that can be easily positioned without the need of assembly of panels and hardware, thereby eliminating necessary joints.

While this invention has been described as having a preferred design, the present invention can be further modified within the spirit and scope of this disclosure. This application is therefore intended to cover any variations, uses, or adaptations of the invention using its general principles. Further, this application is intended to cover such departures from the present disclosure as come within known or customary practice in the art to which this invention pertains and which fall within the limits of the appended claims.

What is claimed is:

1. A swimming pool installation, comprising:
   a swimming pool having an end;
   a deck surrounding at least a portion of said swimming pool; and
   an auto cover box recessed in said deck proximate to said end of said swimming pool, said auto cover box having:
   a formed section with a U-shaped cross-section, said formed section including a low portion; and
   a drain in said low portion.

2. The installation of claim 1, wherein said formed section includes a bottom portion having angled surfaces directed toward said low portion.

3. The installation of claim 1, wherein said formed section includes an interface zone having one of an offset portion and a tongue and groove portion.

4. The installation of claim 3, wherein said auto cover box further includes at least one end section that interacts with said interface zone to align and couple said formed section with said at least one end section.

5. The installation of claim 4, wherein said formed section and said end section each have at least one inverted J-shaped cross sectional portion.

6. The installation of claim 1, wherein said formed section is of a monolithic construct.
7. The installation of claim 1, further comprising an other formed section having an end connected to said formed section thereby lengthening said auto cover box.

8. The installation of claim 1, further comprising a pipe connected to said drain.

9. An auto cover box, comprising:
   a formed section with a U-shaped cross-section, said section including a low portion; and
   a drain in said low portion.

10. The auto cover box of claim 9, wherein said formed section includes a bottom portion having angled surfaces directed toward said low portion.

11. The auto cover box of claim 9, wherein said formed section includes an interface zone having one of an offset portion and a tongue and groove portion.

12. The auto cover box of claim 11, wherein said auto cover box further includes at least one end section that interacts with said interface zone to align and couple said formed section with said at least one end section.

13. The auto cover box of claim 12, wherein said formed section and said end section each have at least one inverted J-shaped cross sectional portion.

14. The auto cover box of claim 9, wherein said formed section is of a monolithic construct.

15. The auto cover box of claim 9, further comprising an other formed section having an end connected to said formed section thereby lengthening said auto cover box.

16. A method of assembling an auto cover box, comprising the steps of:
   placing a formed auto cover section having a U-shaped cross section proximate to a swimming pool; and
   positioning said auto cover section so that moisture in said auto cover section is directed to a drain in a low portion of said auto cover section.

17. The method of claim 16, further comprising the step of connecting a drain line to said drain.

18. The method of claim 16, further comprising the step of coupling at least one end section to said auto cover section.

19. The method of claim 18, further comprising coupling an end of an other integrally formed auto cover section having a U-shaped cross section to an end of said integrally formed auto cover section.

20. The method of claim 16, wherein said bottom portion includes angled surfaces directed toward said drain line.

21. The method of claim 16, further comprising the step of cutting said formed auto cover section to a shorter length.

* * * * *