MULTI-PURPOSE BEADING FOR SWIMMING POOL LINERS

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Publication Classification

Int. Cl.  E04H 4/14  (2006.01)
U.S. Cl. .................................................. 4/506

ABSTRACT

An elongate beading is provided for attaching a pool liner to a pool wall. The elongate beading comprises a substantially planar liner attachment portion having an outer surface for attachment to a pool liner and an inner surface, the outer surface for attachment to a pool liner. The elongate beading also comprises a hook portion having a pair of opposed first and second legs interconnected by a connector portion. The first leg, second leg and connector portion have inner surfaces defining a channel and the first leg is substantially coplanar with the liner attachment portion and the second leg has an outer surface including a downwardly facing shoulder formed therein.
MULTI-PURPOSE BEADING FOR SWIMMING POOL LINERS


FIELD OF THE INVENTION

[0002] The present invention relates generally to a swimming pool liner beading, and more particularly to swimming pool liner beading compatible with multiple attachment configurations for attaching a swimming pool liner to a swimming pool wall.

BACKGROUND OF THE INVENTION

[0003] A common and well-known method of constructing swimming pools, including above-ground swimming pools, comprises the erection of fixed structural walls and a floor for the pool which are not watertight but which have sufficient structural strength to contain the water. A pool liner made of vinyl or a similar sheet material is then placed over the structural walls and floor of the pool to make it watertight. Swimming pool liners typically have a top peripheral edge portion that is located adjacent to the top of the structural walls of the pool. Generally, a beading is used to attach the liner to the top of the pool walls in order to ensure that the liner does not slip down below the water line.

[0004] There are a number of attachment configurations known in the art. It is common to have the beading overlap the pool wall acting as a hook to hold the liner up. Often times, particularly with roll-formed steel pools, for which the walls are made of metal, a cap is placed over the beading to secure the beading to the pool wall. Alternatively, a liner track formed by a so-called S-hook or J-hook may be applied to the top of the pool wall to provide a channel by which the beading is affixed to the pool wall.

[0005] Beading structures currently on the market vary depending on the attachment style. Different types of beadings are required for different pool wall configurations. Some attempts have been made to construct a multi-purpose beading that can be used with more than one attachment style. For example, U.S. Pat. No. 6,671,895, issued to Craig Lewis, one of the applicants in the present application, describes a dual purpose beading for swimming pool liners that is used for attaching a pool liner to a pool wall either by hanging the beading over a pool wall or folding a portion of the beading and securing the beading into a receptor type coupling in a pool wall. The dual purpose beading, however, is incompatible with S-hook or J-hook type liner tracks, which are commonly used for attaching pool liners to pool walls. This dual beading-purpose requires an extra step of folding and locking the beading into itself before the beading can be used in a second configuration.

SUMMARY OF THE INVENTION

[0006] Accordingly, one object of the present invention is to provide new and improved multi-purpose beadings for attaching swimming pool liners to swimming pool walls.

[0007] Another object of the present invention is to improve the efficiency with which pool liners are installed by providing beading that requires minimal manipulation for attachment to swimming pool walls.

[0008] Another object of the present invention is to provide new and improved multi-purpose beadings that can be used in conjunction with an S-track or J-hook liner track.

[0009] Still another object of the present invention is to provide a multi-purpose beading that does not require tearing or folding and locking of the beading into itself in order for the beading to be used in any of the attachment configurations for which it was intended.

[0010] In accordance with the present invention, these and other objects are attained by providing an elongate beading for attachment to a pool liner for attaching the pool liner to a pool wall. The beading comprises a substantially planar liner attachment portion having an outer surface and an inner surface. The beading also comprises a hook portion having a pair of opposed first and second legs interconnected by a connector portion, the first and second legs and connector portion have inner surfaces defining a channel. The first leg is substantially coplanar with the liner attachment portion and the second leg has an outer surface including a downwardly facing shoulder formed therein.

[0011] A beam-liner assembly comprising a pool liner and an attached elongate beading is also provided. The elongate beading comprises a substantially planar liner attachment portion having an inner surface and an outer surface, the outer surface being attached to the pool liner. The elongate beading also includes a hook portion having a pair of opposed first and second legs interconnected by a connector portion. The first leg, second leg and connector portion have inner surfaces defining a channel. The first leg is substantially coplanar with the liner attachment portion and the second leg has an outer surface including a downwardly facing shoulder formed therein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] A more complete appreciation of the present invention and many of the attendant advantages thereof will be readily understood by reference to the following detailed description when taken in conjunction with the accompanying drawings, in which:

[0013] FIG. 1 is a front perspective view of a beading-liner assembly comprising a beading attached to a pool liner in accordance with an embodiment of the present invention;

[0014] FIG. 2 is a rear perspective view of the beading-liner assembly as shown in FIG. 1;

[0015] FIG. 3 is a cross-sectional view of the beading-liner assembly shown in FIG. 1, in which the beading is attached to a pool wall in an overlap configuration utilizing a cap to secure the beading to the pool wall;

[0016] FIG. 4 is a cross-sectional view of the beading-liner assembly shown in FIG. 1, wherein the beading is attached to a pool wall in an overlap configuration without a cap;

[0017] FIG. 5 is a cross-sectional view of the beading-liner assembly shown in FIG. 1, wherein the beading is connected to an S-hook pool liner track; and

[0018] FIG. 6 is a rear perspective view of the beading-liner assembly as shown in FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0019] Referring now to the drawings, in which like reference characters designate identical or corresponding parts
throughout the several views, the beading of the present invention is generally designated 20 and is shown in various attachment configurations. The beading of the invention is generally useful for attaching a pool liner, such as a vinyl liner to the upper walls of the structural walls of an above-ground pool. Referring to FIGS. 1 and 2, beading 20 comprises an elongate liner attachment portion 22 and a hook portion 28. Liner attachment portion 22 has an inner surface 26 and a substantially planar outer surface 24 to which the upper end portion of an inner surface 11 of a pool liner 10 is adhered. Pool liner 10 is constructed of a strong and flexible material suitable for use with swimming pools such as, although not limited to, a flexible polyvinyl chloride sheet. Pool liner 10 is permanently adhered or bonded to outer surface 24 of liner attachment portion 22 by any of a number of methods known in the art for adhering or bonding such materials, including, but not limited to, RF sealing, heat sealing, impulse welding, solvent bonding, and ultrasonic welding.

[0020] Hook portion 28 includes a pair of opposed first and second legs 30 and 32 interconnected by a connector portion 34. Connector portion 34 provides the beading with a downwardly opening, substantially “C”-shaped bend. Inner surface 36 of first leg 30, inner surface 38 of second leg 32 and inner surface 39 of connector portion 34 together define a channel 42 defined within hook portion 28. Channel 42 is structured and arranged to snugly receive an upper end region of a swimming pool wall. The upper end region of the swimming pool wall is folded over and is approximately the same width as channel 42. Second leg 32 of hook portion 28 has a first thicker upper portion 48 and a second thinner lower portion 50, which meet to define a downwardly facing shoulder 46. An outwardly extending protuberance 52 is located at the free end of second leg 32.

[0021] Beading 20 is preferably constructed of a durable, water tight, flexible material suitable for use with a swimming pool, such as, although not limited to, UV-stabilized polyvinylchloride, nylon, polyurethane, and neoprene. Other materials, however, may be selected to accommodate the particular configuration and dimensions of a swimming pool liner 10 and swimming pool wall 12. Beading 20 is manufactured generally by an extrusion process, wherein the beading is formed as a single unit.

[0022] Referring now to FIG. 6, the overall height, H of beading 20 is generally from about 1 inch to about 3 inches, with the height h1 of liner attachment portion 22 is generally in the range of between about 0.5 to about 1.5 inches in height and with a thickness t1, in the range of between about 0.03 inches to about 0.05 inches in thickness. The first and second legs 30 and 32 have a height h2 in the range of between about 0.5 inches to about 1.5 inches, with a thickness t2 in the range of between about 0.050 inches to about 0.150 inches. At the connector portion 34, beading 20 has a thickness, t3 in the range of between of from about 0.14 inches to about 0.38 inches. The first upper portion 48 of second leg 32 has a thickness t4 in the range of between about 0.050 inches to about 0.200 inches. The length of beading 20 is determined by the dimensions of the pool since beading 20 is continuous along the length of the pool. The beading material is preferably has an average durometer Shore A hardness of about, but not limited to 78-84. Beading 20 is preferably used with pool walls having a thickness of up to 0.100 inches. It is understood, however, that beading 20 can be of any size, dimension, and circumference to accommodate the use, size, dimension and circumference of a specific pool liner and a swimming pool.

[0023] Referring to FIG. 3, beading 20 is shown in a first attachment configuration used with swimming pools that are referred to as overlap-type swimming pools which denotes the nature of coupling of beading 20 to the pool wall. Beading 20 is secured to a pool wall 12 by inserting the folded over upper end region 14 of the pool wall 12 into channel 42. Channel 42 is structured and arranged to snugly receive the upper end region 14 of pool wall 12. Typical overlap-type swimming pools include a roll-formed steel cap positioned at the top of the wall. Preferably, inner surface 26 of liner attachment portion 22 and inner surface 36 of first leg 30 lie flush against the inner surface of pool wall 12.

[0024] Cap 54 is placed over connector portion 34 of beading 20 to secure liner attachment portion 22 and hook portion 28 against pool wall 12. Cap 54 is typically formed of rolled-form steel having two ends 56 and 58 which, when cap 54 is attached, pinch the legs of hook portion 28 tightly against pool wall 12 to help hold beading 20 in place. Additionally, cap 54 provides protection to beading 20 by distributing any downward force applied to the legs of the hook portion over several spaced regions of the extrusion.

[0025] Referring now to FIG. 4, beading 20 is shown in a configuration similar to the configuration of FIG. 3, but does not utilize a cap 54. This configuration is typically used with rotationally molded above-ground plastic pools. Pools having walls formed by rotational molding generally have a top skin area made of plastic and do not utilize a cap. Beading 20 is fitted over the pool wall 12 such that the folded upper end region 14 of pool wall 12 is snugly received in channel 42. Channel 42 has approximately the same width as the folded upper end region 14 of pool wall 12. When beading 20 is coupled to pool wall 12, inner surface 36 of first leg 30 presses against pool wall 12 to secure beading 20 to pool wall 12. Preferably, inner surface 26 of liner attachment portion 22 and inner surface 36 of first leg 30 lie flush with the inner surface of pool wall 12.

[0026] Referring now to FIG. 5, beading 20 is shown in another configuration in use with a liner track, specifically a J-hook or S-hook liner track 60, for connecting a beading to a pool wall 12. An S-hook liner track is “S” shaped with an first upper channel 62 facing in a downward direction and a second lower channel 64 facing in an upward direction. Lower channel 64 has a lip 66 that protrudes from its end in an inward direction. Upper channel 62 and lower channel 64 are connected via a shank portion 68. Preferably, lower channel 64 has a greater width than upper channel 62.

[0027] In this attachment configuration, upper channel 62 of the S-hook 60 is placed over the folded over upper edge region 14 of pool wall 12 to securely connect S-hook 60 to pool wall 12. When S-hook 60 is hung on pool wall 12, shank portion 68 preferably lies substantially flush against pool wall 12 in order to attach the beading liner assembly to the S-hook. The legs of hook portion 28 are pressed together and are bent over the outer wall of lower channel 64 of S-hook 60 and inserted into lower channel 64. Lip 66 of lower channel 64 becomes engaged with shoulder 46, thereby locking beading 20 onto S-track 60. Preferably, while shoulder 46 locks beading 20 onto S-hook 60, connector portion 34 of beading 20 presses against shank portion 68 to ensure that hook portion 28 does not straighten and subsequently fall off S-hook 60. The connector portion 34 of beading 20 within channel 64 is
enhanced by the outwardly extending protuberance 62, which bears against the outer wall of lower channel 64 to inhibit disengagement of shoulder 46 from lip 66.

[0028] Unless defined otherwise, all technical and scientific terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention pertains. Although any methods and materials similar or equivalent to those described herein can also be used in the practice or testing of the present invention, the preferred methods and materials are now described.

[0029] The invention has been described with reference to an embodiment that illustrates the principles of the invention but which is not meant to limit the scope of the invention. Modifications and alterations may occur to others upon reading and understanding the preceding detailed description. It is intended that the scope of the invention be construed as including all modifications and alterations that may occur to others upon reading and understanding the preceding detailed description insofar as they come within the scope of the following claims or equivalents thereof. Various changes may be made without departing from the spirit and scope of the invention.

We claim:

1. An elongate beading for attaching a pool liner to a pool wall comprising:
a substantially planar liner attachment portion having an inner surface and an outer surface, the outer surface for attachment to a pool liner,
a hook portion having a pair of opposed first and second legs interconnected by a connector portion, said first leg, second leg and connector portion having inner surfaces defining a channel, wherein said first leg is substantially coplanar with said liner attachment portion and said second leg has an outer surface including a downwardly facing shoulder formed thereon.

2. The elongate beading according to claim 1, wherein said second leg includes a first upper portion and a second lower portion having a thickness less than the thickness of said upper portion and wherein said shoulder is defined at the location at which said first upper portion meets said second lower portion.

3. The elongate beading according to claim 1, wherein said second leg has an outwardly extending protuberance.

4. The elongate beading according to claim 1, wherein said hook portion is moveable from first orientation structured and arranged for connection to an upper edge of a pool wall to a second orientation structured and arranged for connection to a liner track.

5. The elongate beading according to claim 5, wherein said liner track is an S-hook or J-hook liner track.

6. The elongate beading according to claim 1, further comprising a hollow, elongated cap with an opening, the cap structured and arranged to press said first leg and said second leg of the hook portion against a pool wall.

7. An beading-liner assembly for attaching a pool liner to a pool wall comprising:
a pool liner; and
an elongate beading comprising:
a substantially planar liner attachment portion having an inner surface and an outer surface, the outer surface of said liner attachment attached to said pool liner; and
a hook portion having a pair of opposed first and second legs interconnected by a connector portion, said first leg, second leg and connector portion having inner surfaces defining a channel, wherein said first leg is substantially coplanar with said liner attachment portion and said second leg has an outer surface including a downwardly facing shoulder formed therein.

8. The beading-liner assembly according to claim 7, wherein said second leg includes a first upper portion and a second lower portion having a thickness less than the thickness of said upper portion and wherein said shoulder is defined at the location at which said first upper portion meets said second lower portion.

9. The beading-liner assembly according to claim 7, wherein said pool liner is permanently adhered to said liner attachment portion.

10. The beading-liner assembly according to claim 7, wherein said hook portion is moveable from first orientation structured and arranged for connection to an upper edge of a pool wall to a second orientation structured and arranged for connection to a liner track.

11. The beading-liner assembly according to claim 7, further comprising a hollow, elongated cup with an opening, the cap structured and arranged to press said first leg and said second leg of the hook portion against a pool wall.

12. An beading-liner assembly for attaching a pool liner to a pool wall comprising:
a pool liner; and
an elongate beading comprising:
a substantially planar liner attachment portion having an outer surface and an inner surface, the outer surface attached to said pool liner; and
a hook portion having a pair of opposed first and second legs interconnected by a connector portion, said first leg, second leg and connector portion having inner surfaces defining a channel, wherein said first leg is substantially coplanar with said liner attachment portion and said second leg has an outer surface including a downwardly facing shoulder formed therein; and
a liner track having a first downwardly opening channel for connection to a pool wall and a second upwardly opening channel for connection to the elongate beading, wherein said second upwardly opening channel and said first downwardly opening channel are connected by a shank portion, and wherein said second upwardly opening channel terminates in an inwardly protruding lip.

13. The beading-liner assembly according to claim 12, wherein said downwardly facing shoulder of said beading engages with said inwardly protruding lip of said liner track, thereby locking said beading onto said liner track.

14. The beading-liner assembly according to claim 13, wherein said connector portion of said beading engages a said shank portion of said liner track.

15. The beading-liner assembly according to claim 12, wherein said second leg of said beading has an outwardly extending protuberance structured and arranged to engage a portion of said liner track.

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