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LOCKING STRIP FOR A LINER OF A SWIMMING POOL

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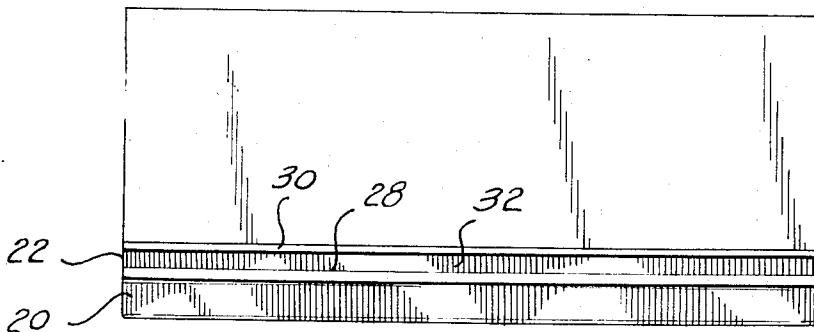
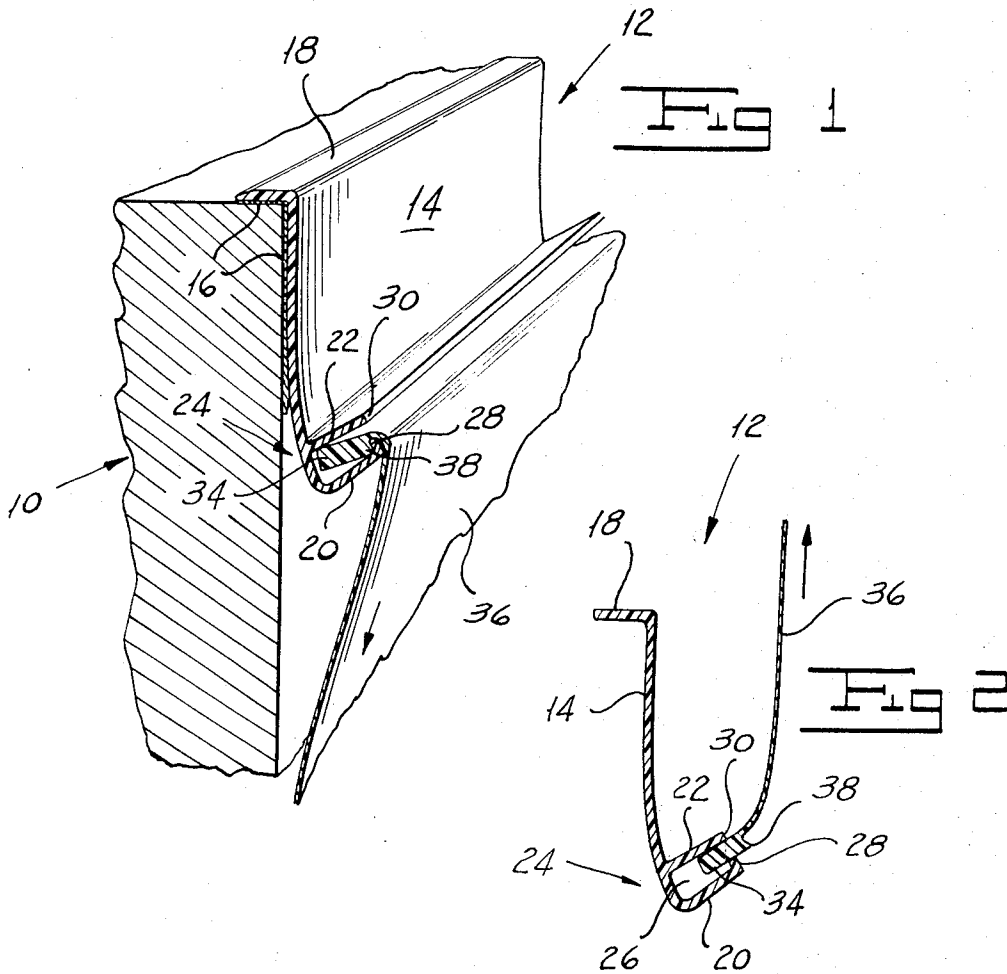


Fig 3

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LOCKING STRIP FOR A LINER OF A SWIMMING POOL

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ABSTRACT OF THE DISCLOSURE

The invention relates to a locking strip which receives and holds a resilient rectangular bead formed along an upper edge of a flexible plastic liner for a swimming pool. The locking strip and bead combining to hold the liner in a locked position within the pool, and also to be operable to readily release the bead and thereby the liner from its locked relation with the locking strip upon a proper force being applied to the plastic liner and rectangular bead.

Cross reference to related applications

The invention relates to an anchoring means for a plastic liner of a swimming pool which may be of type such as disclosed in our copending U.S. application Ser. No. 461,920, filed June 7, 1965, entitled a Swimming Pool Assembly and Means for Supporting the Sidewalls of the Pool.

Description of the prior art

Prior means and methods for installing a flexible liner in a swimming pool are disclosed in a U.S. Patent No. 3,177,501, issued Apr. 13, 1965, to John P. Kwake for "Swimming Pools and Method of Installing Liners Therefor." It has been found that such prior type "snap-in" liners and securing means fail when the amount of water in the liner of the pool, as during filling or draining, is insufficient to keep the upper edge of the liner adjacent the locking means taut. When this occurs, the wind will flex the sides of the liner, causing the liner bead to slip out of its slot. Such loose and flapping liners frequently become damaged.

Summary

The present invention relates to improvements in the anchoring means for a flexible liner for a swimming pool of the types disclosed in the aforementioned U.S. Patent No. 3,177,501 and in the copending U.S. application Ser. No. 461,920, and particularly in the provision of a simplified locking strip which includes a vertically extending main portion which may be secured by suitable means to an upper surface portion of the wall of the swimming pool. The main portion has an upper flange portion extending outwardly and backwardly at a right angle to the main portion. The upper flange portion may also be secured by suitable means to the top surface of a deck surrounding the pool. A pair of lower flanges extend from the main portion of the locking strip in spaced relation outwardly and forwardly in an acute angular relation to the main portion. The slot or groove formed by the pair of spaced lower flanges is adapted to receive an extruded bead of rectangular shape provided along an upper edge portion of the flexible liner. The extruded bead is adapted to be wedged in a locking relationship in the groove between the pair of lower flanges, and has a lip which is adapted to engage an outer projection formed on the lower flange.

An object of the invention is the provision of a locking strip having a pair of lower flanges extending longitudinally in spaced relation along the entire length of the main portion thereof with the lowermost flange of said

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pair of flanges being inclined angularly and upwardly at a slightly greater angle of inclination than its opposite or upper flange to form therebetween a groove providing a restricted opening into the groove and through which there may be slidably fitted the rectangular resilient bead of the liner.

Another object of the invention is to provide a resilient rectangular bead at the upper edge portion of the liner that may be slidably "snapped into" the restricted groove of the locking strip under hand pressure and between the outer ends of the pair of flanges defining the open side into the groove, said rectangular bead being received within the groove, having dimensions of width and depth somewhat greater than that of the rectangular resilient bead, so that the rectangular bead may be locked within the groove upon an angular displacement thereof in a sense to cause the lip portion of the rectangular bead to engage in a locking relationship with a projection extending inwardly from the lowermost flange upon the liner extending downwardly into the pool, thereby preventing displacement of the bead from the groove or a release of the liner from the locking strip when there is insufficient water in the liner of the pool to keep its sidewalls taut.

A further object of the invention is to arrange the locking strip in relation to the rectangular bead protruding from the upper portion of the pool liner so that the bead may be readily released from locking relationship in the groove of the locking strip upon an angular displacement thereof in an opposite direction within the groove and between the angularly inclined pair of flanges upon a force being applied to the plastic liner in a reverse or upward direction so that the lip portion of the resilient bead disengages the projection extending inwardly from the lower most flange, whereby the rectangular bead in turn slides along the inner surface of the opposite or uppermost of said pair of spaced flanges and through the restricted opening to thereupon release the liner from locking relationship with the locking strip.

Another object of the invention is to arrange the locking strip so that the upper portion thereof may be attached to the upper edge of the wall of the swimming pool with the upper flange portion extending outwardly over the deck surrounding the pool while the lower spaced flanges extend inwardly of the pool area. The locking strip may be secured in the above manner with conventional fastening means, such as a suitable plastic cement serving to secure either the vertical main portion or the upper flange of the locking strip or both to the pool wall or deck as the case may be. If the pool supporting structure is made of wood and nails are to be used to secure the locking strip to the swimming pool, they should be used only to secure the vertical main portion to the vertical wall of the pool.

A further object of the invention is to arrange the vertically extending main portion of the locking strip so that it may serve to cover the exposed edges of the interior perimeter of the wall of the pool, while the horizontally extending upper attachment flange portion serves to prevent the locking strip for the liner from being pulled from the perimeter of the wall of the pool and provides an alignment feature which assures ease in the installation of the locking strip to the pool.

Another object of the invention is to provide a locking strip that may be made in desired lengths or with a desired degree of curvature or of a desired angular shape such as a ninety degree arc for fitting corners of a rectangular shaped pool wall so as to secure thereto a bead protruding from an upper edge of the flexible liner for a swimming pool in a locking relation which may be readily released by the application of an upwardly directed force to the liner and bead protruding therefrom.

These and other objects and advantages of the invention are pointed out in the following description in terms of the embodiment thereof which is shown in the accompanying drawings. It is to be understood, however, that the drawings are for the purpose of illustration only and are not a definition of the limits of the invention, reference being had to the appended claims for this purpose.

Description of the drawings

FIGURE 1 is a fragmentary sectional view of a swimming pool wall and a locking strip embodying the invention mounted on the upper edge of the wall and showing a rectangular bead protruding from an upper edge portion of a flexible liner for the pool installed in the locking strip in locking relation so as to prevent the liner from being released or falling down when there is insufficient water in the pool to maintain the sides of the liner taut;

FIGURE 2 is a sectional end view of the locking strip of FIGURE 1, showing a fragmentary sectional view of the rectangular bead and flexible liner with the lip portion of the resilient bead disengaged from the projection extending inwardly from the lowermost flange of the locking strip and showing the rectangular bead slidably positioned along the inner surface of the uppermost of said pair of flanges so as to pass through the restricted opening defined by the outer end portions of said pair of flanges, thereby releasing the liner from a locking relationship with the locking strip upon a force being applied to the plastic liner and rectangular bead in an upwardly direction as indicated by the arrow of FIGURE 2;

FIGURE 3 is a side elevational view of a section of the locking strip of FIGURE 2 with the liner removed and showing the pair of spaced lower flanges extending longitudinally along the main portion of the locking strip to illustrate the restricted opening defined by the outer end portions thereof.

Description of the invention

Referring more particularly to FIGURE 1, there is shown a wall 10 of a swimming pool, which may be of a type erected above ground such as disclosed in the aforementioned U.S. Patent No. 3,177,501 and in our copending U.S. application Ser. No. 461,920.

A locking strip 12 is secured to an upper portion of the wall 10. The locking strip 12 may be formed of a suitable rigid metal or plastic material. The locking strip 12, as shown by FIGURES 1, 2 and 3, includes a vertically extending main portion 14, which may be secured by any suitable means, such as a conventional adhesive or plastic cement 16, to an upper edge portion of the wall 10. The main portion 14 of the locking strip 12 has an upper flange portion 18 extending outwardly and backwardly from the main portion 14. The upper flange portion 18 may also have applied over its underside thereof an adhesive or plastic cement 16 so as to secure the upper flange portion 18 to the upper surface of the wall 10 or deck surrounding the pool.

A pair of flanges 20 and 22 project from a lower portion 24 of the locking strip 14 and extend in spaced relation outwardly and forwardly in an acute angular relation thereto, as for example, seventy-five degrees (75°) and eighty degrees (80°), respectively, as shown by FIGURE 2.

Referring now to FIGURE 3, it will be noted that the pair of lower flanges 20 and 22 extend longitudinally in spaced relation along the entire length of the locking strip 12 with the lowermost flange 20, as best shown in FIGURE 2, being inclined angularly upwardly at a slightly greater angle of inclination, for example one hundred and five degrees (105°), than the angle of upward inclination, for example one hundred degrees (100°), of the other flange 22 so as to form therebetween a groove 26 with the pair of flanges 20 and 22 providing outer end portions 28 and 30 defining a restricted opening 32 into the groove 26.

The restricted opening 32 is arranged to slidably re-

ceive therein a rectangular shaped resilient bead 34 which protrudes from the upper edge of a flexible liner 36, forming the water holding means for the swimming pool. As shown by FIGURES 1 and 2, the rectangular bead 34 has a width substantially the same as the width of the restricted opening 32 between the end portions 28 and 30 of the flanges 20 and 22 so that the rectangular bead 34 may be slidably passed through the restricted opening 32 under hand pressure and "snapped into" the groove 26 (see FIG. 12), which has a width and length somewhat greater than the rectangular bead 34, as best shown in FIGURE 1.

The rectangular bead 34, as shown by FIGURES 1 and 2, has a lip portion 38 which engages in locking relation with the projection 28 extending inwardly from the lowermost flange 20 upon the liner 36 extending downwardly into the pool, as indicated by the arrow of FIGURE 1. Such downward extension of the liner 36 causes the rectangular bead 34 within the groove 26 to be angularly displaced so as to cause the lip portion 38 thereof to engage in locking relation with the projecting portion 28 of the flange 20, whereupon the rectangular bead 34 will be wedged in the groove 26 and between the plates 20 and 22 so as to anchor the liner 36 in the locking strip 12, as best shown by FIGURE 1. Such a locking arrangement will effectively prevent release of the liner 36 from the locking strip 12 when there is insufficient water in the pool to hold the upper edge of the liner 36 taut.

The bead 34 may be readily released from its locking relation in the groove 26 of the locking strip 12 upon an angular displacement of the bead 34 in the groove 26 in an opposite direction, as shown by FIGURE 2, and which may be effected upon a force being applied to the edge of the flexible liner 36 in a reverse upward direction, as indicated by the arrow of FIGURE 2, so as to cause the lip portion 38 of the bead 34 to disengage the projection 28 of the flange 20 and the rectangular bead 34 in turn to be drawn along the inner surface of the flange 22 and through the restricted opening 32, leading from the groove 26 so as to thereupon release the bead 34 and thereby the liner 36 from locking relation with the locking strip 12.

The locking strip 12 may be made in sections, as shown by FIGURE 3, of convenient lengths and positioned about the sidewalls of the swimming pool either in spaced relation or in abutting end to end relation as may be desired. Furthermore, while the locking strips are shown in straight sections, the same may be formed with a desired curvature or of an angular shape as desired to fit angular corners or the curvature of the sidewalls of the pool.

The upper backwardly extending flange 18 of the main portion 14 of the locking strip 12 is such that it serves to cover the exposed edges of the interior perimeter of the wall 10 of the pool and serves to prevent the locking strip 12 for the liner 36 from being pulled from the perimeter of the wall 10 of the pool by persons climbing into and out of the pool. The flange 18 further provides an alignment feature which assures ease in the installation of the liner 36 in the pool.

Although one embodiment of the invention has been illustrated and described, various changes in the form and relative arrangements of the parts, which will now appear obvious to those skilled in the art, may be made without departing from the scope of the invention. Reference is therefore, to be had to the appended claims for a definition of the limits of the invention.

What we claim is:

1. A locking strip for anchoring to a wall of a swimming pool a flexible liner having a bead at an edge portion thereof,

(a) said locking strip comprising a vertically extending main portion,

(b) means to secure the main portion to an upper portion of the wall of said swimming pool,

(c) a pair of flanges opposite said securing means and

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extending forwardly in spaced relation from the main portion and at an acute angular relation to the main portion,

(d) said pair of flanges providing therebetween a groove,

(e) and one of said pair of flanges having an inwardly extending projection to engage the bead of the flexible liner in a locking relation in the groove between said pair of flanges.

2. A locking strip as defined by claim 1 including an upper flange portion extending outwardly and backwardly at a right angle to the main portion, and means to secure an underside of the upper flange to an upper surface of the wall of the swimming pool.

3. A locking strip as defined by claim 1 in which the pair of flanges extend longitudinally along the main portion of the locking strip in an upwardly inclined spaced relation,

(a) said pair of flanges including outer end portions defining a restricted opening into the groove between said flanges and through which restricted opening the bead at the edge portion of the liner may be slidably fitted into locking relation in the groove between said pair of flanges.

4. A locking strip as defined by claim 3 in which the lowermost flange of said pair of flanges is inclined angularly upwardly at a slightly greater angle of inclination than the other of said pair of flanges, and said lowermost flange including an inwardly extending projection to engage the bead of the flexible liner in locking relation in the groove between said pair of flanges.

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5. A locking strip as defined by claim 4 in which the bead at the upper portion of the flexible liner is of a rectangular shape and includes a lip portion to engage in a locking relation with the inwardly extending projection of the lowermost flange upon the flexible liner extending downwardly into the swimming pool.

6. A locking strip as defined by claim 5 in which the lip portion of the rectangular bead of the liner is adapted to disengage the inwardly extending projection of the lowermost flange upon an upward force being applied to the flexible liner and thereby to the rectangular bead so as to draw the rectangular bead along an inner surface of the upper of said flanges and through the restricted opening defined by the outer lip portions of the pair of flanges, thereby releasing the bead from locking relation in the groove between said pair of flanges.

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