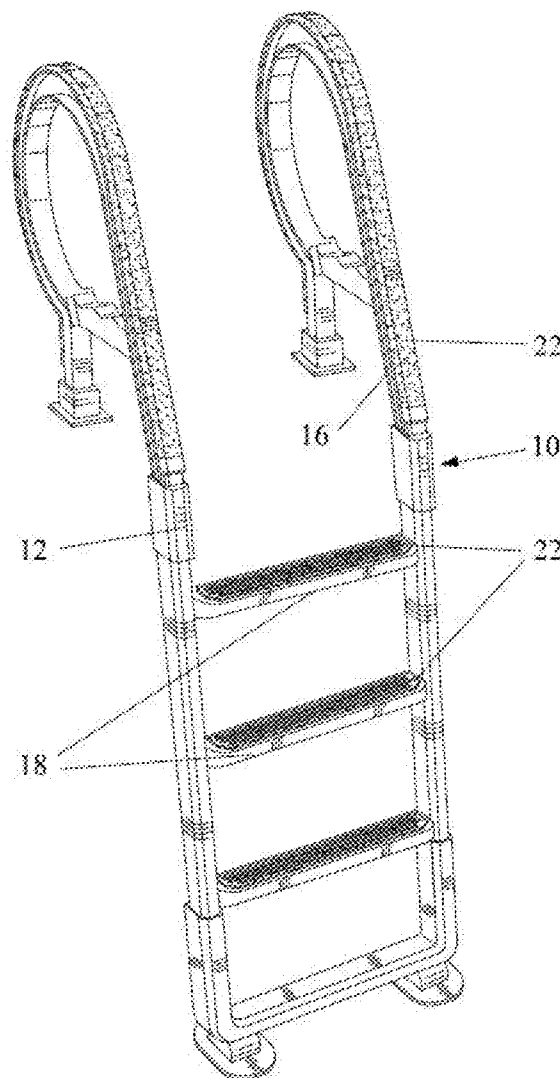




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(19) **United States**(12) **Patent Application Publication**
LAFONTAINE(10) **Pub. No.: US 2014/0353084 A1**(43) **Pub. Date: Dec. 4, 2014**(54) **SWIMMING POOL DESCENDING
STRUCTURE WITH OVERMOLDED
ANTI-SLIP COATING**(52) **U.S. Cl.**CPC **E04H 4/144** (2013.01)USPC **182/106; 182/194**(71) Applicant: **CANADIAN PLASTICS INC.**, Lasalle
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(CA)(21) Appl. No.: **13/908,704**(22) Filed: **Jun. 3, 2013****Publication Classification**(51) **Int. Cl.**
E04H 4/14 (2006.01)(57) **ABSTRACT**

The present invention relates to a swimming pool structure with steps and handrails, installed inside a swimming pool to permit entering and exiting a pool. An anti-slip surface is incorporated into the steps and handrails, which improves friction between the structure and a user's feet and hands to promote safety when entering and exiting a swimming pool. The anti-slip surface is an overmolded coating that covers all parts of the structure that come into contact with the user's body. The overmolded coating is an elastomeric material such as a thermoplastic or natural elastomer with rubber-like features.



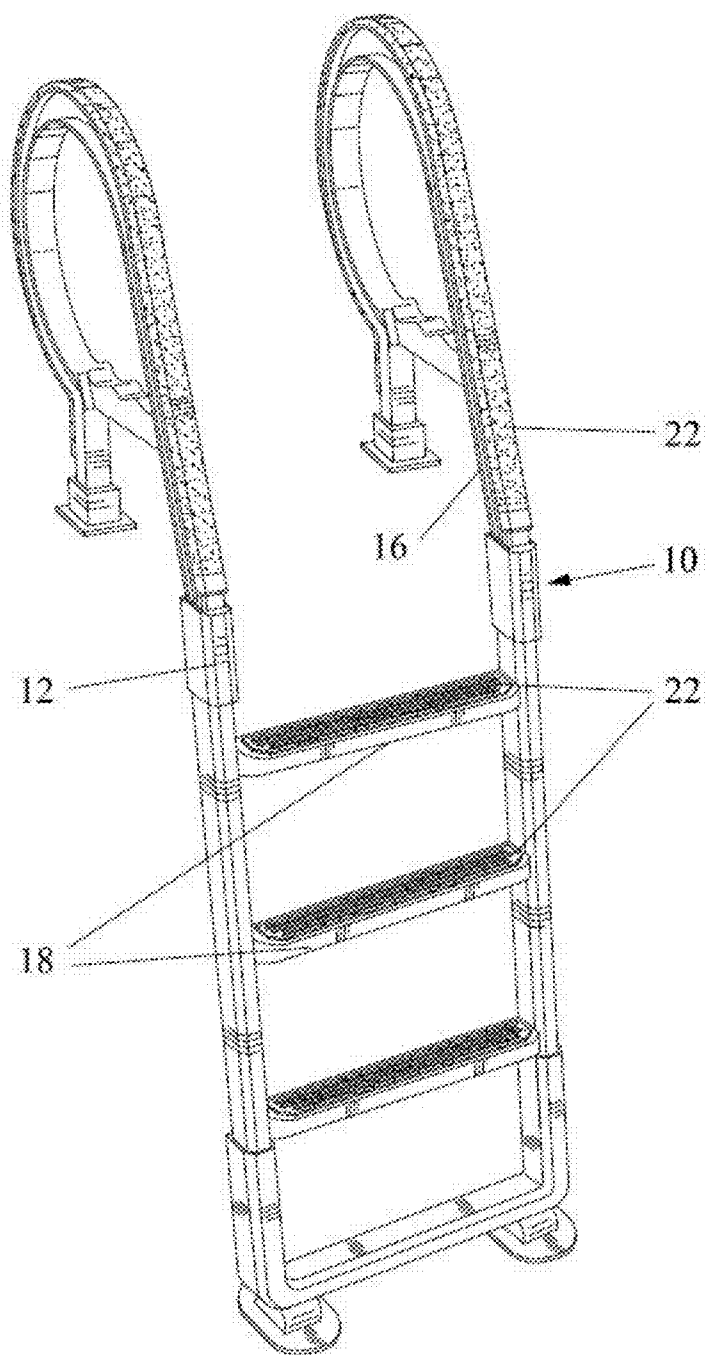


Figure 1

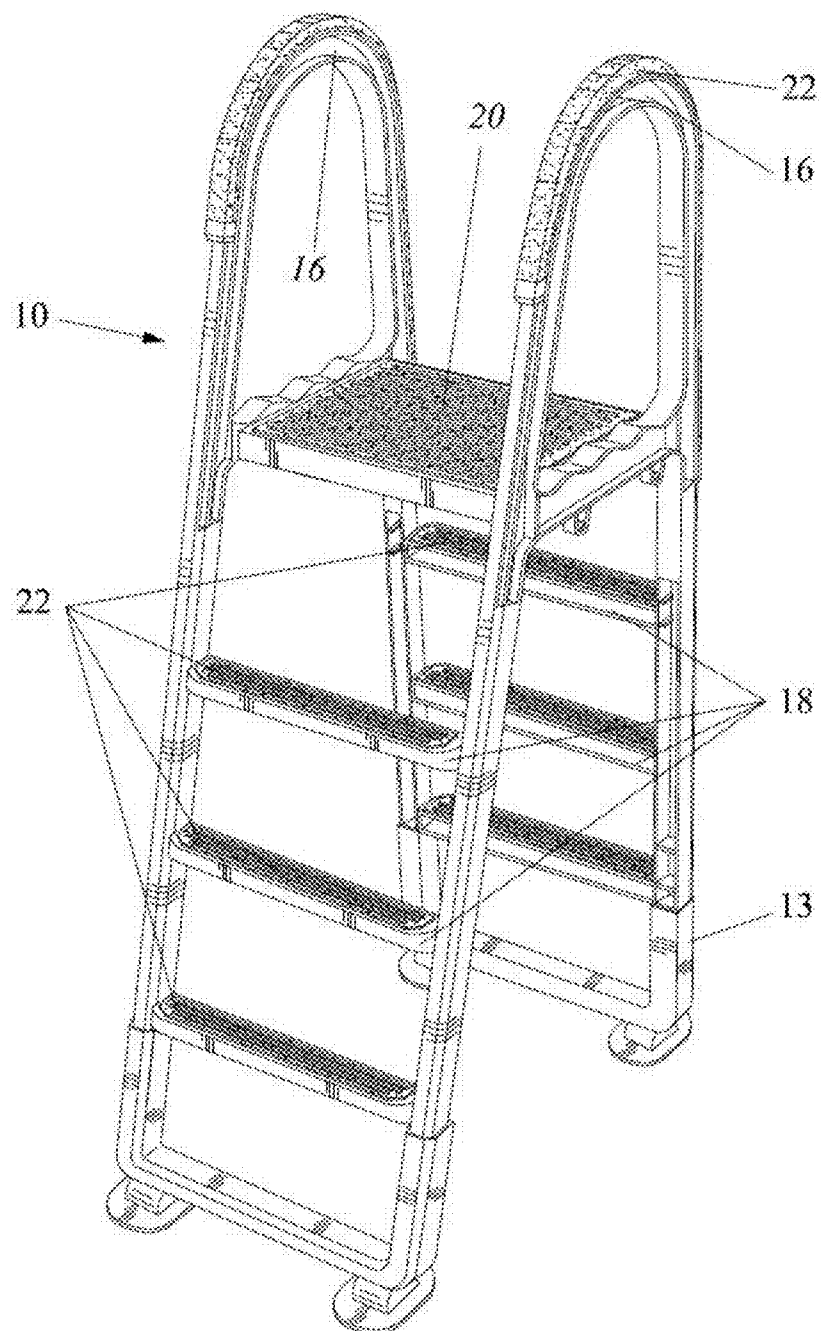


Figure 2

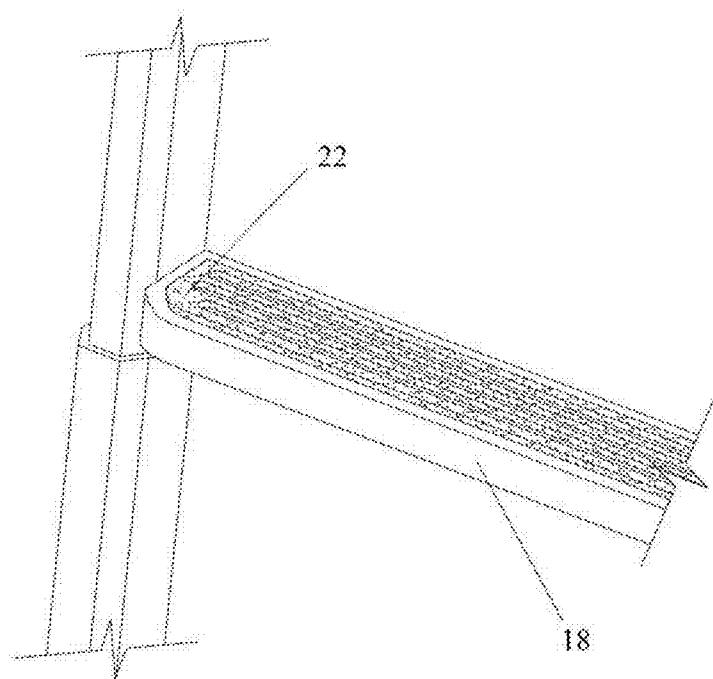


Figure 3

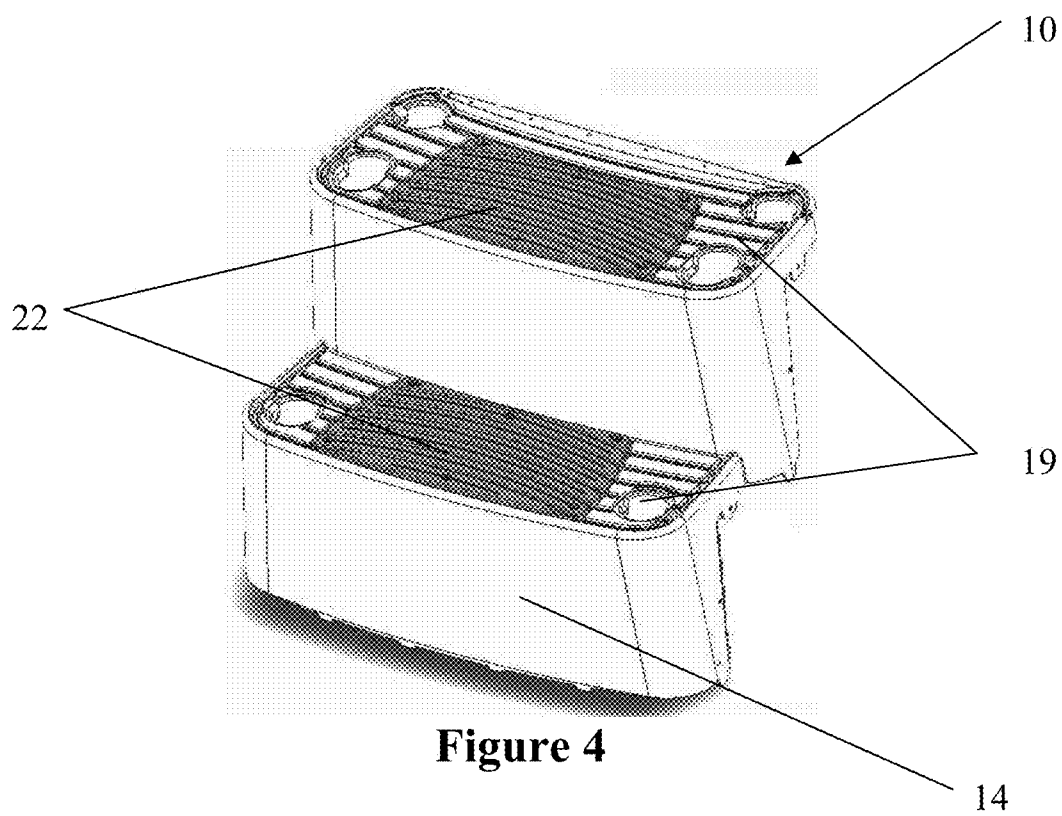


Figure 4

SWIMMING POOL DESCENDING STRUCTURE WITH OVERMOLDED ANTI-SLIP COATING

[0001] This application is based on provisional application Ser. No. 61/741,538, filed on Jul. 23, 2012.

[0002] The present invention relates to an improvement to apparatus for entering and exiting swimming pools. More specifically, the invention resides in the addition of an over-molded coating of thermoplastic elastomer with rubber-like properties onto pool steps. This addition improves friction between the user's feet and hands, and pool steps, for safer entry and exit of a swimming pool, particularly underwater.

BACKGROUND

[0003] The issue of pool safety is tantamount, with tragic consequences often due to lack of vigilance or flaws in pool safety technology. Losing one's footing and slipping while getting into or out of a pool is always a risk one takes when using a swimming pool. Therefore, the surer the grip of a user's foot or hand on the steps, the less chance of an accident.

[0004] There are numerous patents for pool steps with anti-skid, anti-slip and tread technologies.

[0005] For example, U.S. Pat. No. 3,964,572 incorporates an "appropriate anti-skid finish" for each step.

[0006] U.S. Pat. No. 5,366,051 discloses steps with "slip resistant tread pattern".

[0007] U.S. Pat. No. 5,400,556 mentions "ridges and channels" to "define a non-slip surface for each stair tread".

[0008] The more recent U.S. Pat. No. 6,966,405 mentions that "the steps have an anti-skid surface. The anti-skid surface of the steps 32 may consist of small protuberances molded onto the steps 32, or of similar means, for instance, an abrasive such as sand bonded to the anti-skid surface of the steps 32".

[0009] All prior art has one thing in common: the anti-slip means are molded into the steps. This means that the anti-slip means are only as good as the pattern of the molded steps, but nowhere near optimal range due to the fact that the steps are made of hard plastic with low friction coefficient.

[0010] The present invention solves this problem by over molding a thermoplastic or natural elastomeric material with a higher friction coefficient.

[0011] The closest patent that mentions a non-slip material is U.S. Pat. No. 5,025,747 for Flotation Supported Submersible Swim Platform. However, this invention is not for pool steps, and does not mention overmolding.

OBJECT OF THE INVENTION

[0012] The present invention improves the safety, comfort and aesthetics of all pool access apparatus, namely pool ladders and pool steps. By adding a layer of over molded elastomeric material onto the steps, the user can benefit from a better grip of the step's surface, a more pleasant ingress and egress experience, and improved appearance.

[0013] As mentioned above, many present pool steps and ladders incorporate anti-slip means. Ridges, grooves, protrusions and other features are formed into the steps. The role of these features is to dig into a user's skin to prevent the user from slipping off, but can feel offensive and unpleasant to the user.

[0014] The present invention improves this flaw by adding an over molded elastomeric material having rubber-like structure which remains anti-slip above and below the water,

feels soft and pleasant to step on, and can be arranged in various colors to improve aesthetics of pool steps or pool ladders.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. 1 is a perspective view of the present invention applied to a pool ladder.

[0016] FIG. 2 is a perspective view of the present invention applied to an A-frame pool ladder.

[0017] FIG. 3 is a detailed view of the present invention.

[0018] FIG. 4 is a perspective view of the present invention applied to pool steps.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0019] The present invention comprises pool access apparatus or structure with the addition of an overmolded coating of a material having rubber-like structure, such as elastomeric material, which is applied to all parts of a pool structure that comes into contact with the user's hands or feet. It retains its anti-slip properties underwater, which is a highly desirable feature for pool steps or ladders. In one embodiment of the present invention, elastomeric material is a natural elastomer which inherently has a rubber-like structure. In the other embodiment of the present invention, elastomeric material is a thermoplastic elastomer having rubber-like structure. Both of those materials perform the same purpose: to retain anti-slip properties underwater and above the water.

[0020] Referring now to Figures, FIG. 1 shows pool access apparatus 10, namely pool ladder 12 with railings 16 and steps 18. Overmolding 22 is localized to the top surfaces of all steps 18.

[0021] FIG. 2 demonstrates an A-frame pool ladder 13 comprising railings 16, steps 18, and platform 20. Overmolding 22 covers all surfaces that may come in contact with the user's hands or feet, namely all upper surfaces of steps 18, platform 20 and, in railings 16. FIG. 3 is a detailed view of FIG. 2's step 18. Overmolding 22 covers step 18 in such a way as to protrude slightly higher than step 18's surface, making sure that a user's feet comes in full contact with anti-slip overmolding 22 rather than step 18.

[0022] FIG. 4 shows pool access apparatus 10, being pool steps 14. Steps 14 comprise plastic steps 19 with overmolding 22. Not only does overmolding 22 add significant grip between a user's feet (not shown) and step 19, overmolding 22 is also more pleasant to step on due to the fact that if anti-slip means are molded in, said anti-slip means usually work by digging into the user's skin.

[0023] Overmolding 22 can be of any color, and adds a level of sophistication due to its soft-looking nature. All surfaces that are touched by the user can be covered by overmolding 22, not only the surfaces described in the present specification.

[0024] Present invention has the following advantages over prior art:

[0025] Some known methods use gluing of anti-slip padding to rubber or metal steps. However such technique is very labor-consuming and not very aesthetic.

[0026] Other methods use mechanical means to connect anti-slip padding. Again, it would be labor-intensive and least-effective way to permanently attach the padding.

[0027] There is also known a heat-staking technique, wherein a device will heat both the surface of the plastic

portion of the steps and the elastomeric part of the padding, so that bonding of both materials occurs when one material melts into the other material. This method is labor-intensive if compared to the efficient technique of overmolding of the present invention.

[0028] Thus, it can be seen that the objects of the present invention have been satisfied by the structure presented hereinabove. While in accordance with the Patent Statutes, only the best mode and preferred embodiments of the present invention have been presented and described in detail, it is to be understood that the invention is not limited thereto or thereby. Accordingly, for an appreciation of the true scope and breadth of the invention, references should be made to the following claims.

1. A swimming pool descending structure provided with a number of steps and adapted to be installed adjacent to the swimming pool, said structure comprising:

anti-slip surfaces incorporated into said structure, said anti-slip surfaces being provided to improve friction between said structure and a user's feet and hands to facilitate safety during entering into and exiting out of said swimming pool, said anti-slip surfaces comprise an overmolded coating, said overmolded coating is provided to cover all parts of said structure that come into contact with the user's body.

2. A swimming pool descending structure according to claim 1, wherein said overmolded coating comprises an elastomer, said elastomer having a high friction coefficient to facilitate friction between said structure and said user's feet and hands, and to ensure a proper grip to avoid unwanted accidents.

3. A swimming pool descending structure according to claim 2, wherein said structure is a pool ladder, said pool ladder comprises step portions and hand railing portions, wherein said overmolded coating is localized on top surfaces of all said step portions and on upper surfaces of said hand railing portions.

4. A swimming pool descending structure according to claim 2, wherein said structure is an A-frame pool ladder, said A-frame pool ladder comprises step portions and hand rail portions, wherein said overmolded coating is localized on top surfaces of all of said step portions and on upper surfaces of said hand rail portions.

5. A swimming pool descending structure according to claim 4, wherein said A-frame pool ladder further includes a platform, said platform is formed on an upper end of said pool ladder, wherein overmolded coating is covering an upper surface of said platform.

6. A swimming pool descending structure according to claim 2, wherein said structure comprises a pool step structure, said overmolded coating is localized on all upper surfaces of said pool step structure.

7. A swimming pool descending structure according to claim 2, wherein said elastomer is a thermoplastic elastomer, wherein said thermoplastic elastomer has a rubber-like structure, wherein said rubber-like structure is provided to ensure said proper grip and to ensure anti-slip properties in both conditions: above and below water of said swimming pool.

8. A swimming pool descending structure according to claim 2, wherein said elastomer is a natural elastomer.

9. A swimming pool descending structure provided with a number of steps and adapted to be installed adjacent to the swimming pool, said structure comprises:

anti-slip surfaces incorporated into said structure, said anti-slip surfaces being provided to improve friction between said structure and a user's feet and hands to facilitate safety during entering into and exiting out of said swimming pool, said anti-slip surfaces comprising an overmolded coating, said overmolded coating being provided to cover all parts of said structure that come into contact with the user's body, and

wherein said overmolded coating is an elastomer, said elastomer having a high friction coefficient to facilitate friction between said user's feet and hands and to ensure proper grip to avoid unwanted accidents.

10. A swimming pool descending structure according to claim 9, wherein said structure is a pool ladder, said pool ladder comprises step portions and hand railing portions, wherein said overmolded coating is localized on top surfaces of all step portions and on upper surfaces of said hand railing portions.

11. A swimming pool descending structure according to claim 9, wherein said structure is an A-frame pool ladder, said A-frame pool ladder comprises step portions and a hand rail portions, wherein said overmolded coating is localized on top surfaces of all step portions and upper surfaces of said hand rail portions.

12. A swimming pool descending structure according to claim 11, wherein said A-frame pool ladder further includes a platform, said platform is formed on an upper end of said pool ladder, wherein overmolded coating is covering an upper surface of said platform.

13. A swimming pool descending structure according to claim 9, wherein said structure comprises a pool step structure, said overmolded coating being localized on all upper surfaces of said pool step structure.

14. A swimming pool descending structure according to claim 9, wherein said elastomer is a thermoplastic elastomer, wherein said thermoplastic elastomer has a rubber-like structure provided to ensure said proper grip and to ensure anti-slip properties in both conditions: above and below water inside said swimming pool.

15. A swimming pool descending structure provided with a number of steps and adapted to be installed adjacent to the swimming pool, said structure comprises:

anti-slip surfaces incorporated into said structure, said anti-slip surfaces being provided to improve friction between said structure and a user's feet and hands to facilitate safety of entering into and exiting out of said swimming pool, said anti-slip surfaces comprising an overmolded coating, said overmolded coating being provided to cover all parts of said structure that come into contact with the user's body,

wherein said overmolded coating is an elastomer, said elastomer having a high friction coefficient adapted to facilitate friction between said user's feet and hands and to ensure a proper grip to avoid unwanted accidents, and wherein said elastomer has a rubber-like structure provided to ensure the proper grip and to ensure anti-slip properties in both conditions: above and below water inside said swimming pool.

16. A swimming pool descending structure according to claim 15, wherein said structure is a pool ladder, said pool ladder comprises step portions and hand railing portions, wherein said overmolded coating is localized on top surfaces of all step portions and on upper surfaces of said hand railing portions.

17. A swimming pool descending structure according to claim 15, wherein said structure is an A-frame pool ladder, said A-frame pool ladder comprising step portions and hand rail portions, wherein said overmolded coating is localized on top surfaces of all step portions and on upper surfaces of said hand railing portions.

18. A swimming pool descending structure according to claim 17, wherein said A-frame pool ladder further includes a platform, said platform is formed on an upper end of said pool ladder, wherein overmolded coating is covering an upper surface of said platform.

19. A swimming pool descending structure according to claim 15, wherein said structure comprises a pool step structure, wherein said overmolded coating is localized on all upper surfaces of said pool step structure.

20. A swimming pool descending structure according to claim 15, wherein said elastomer is a thermoplastic elastomer, wherein said thermoplastic elastomer has a rubber-like structure.

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