May 19, 1970 A. H. WILLINGER 3,512,223

LOOP FORMED OF SYNTHETIC FIBRE CORD

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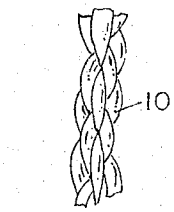


FIG. 1.

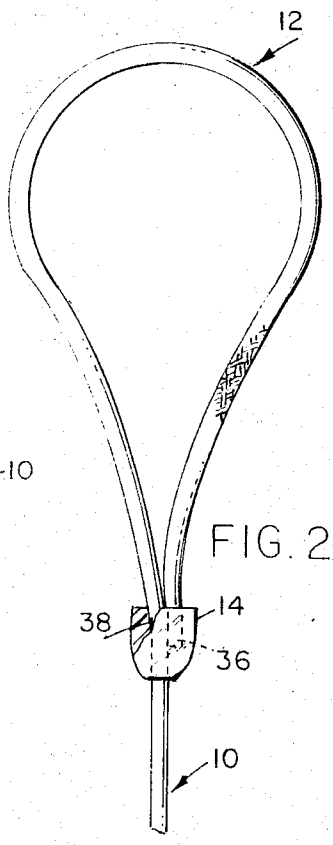


FIG. 2.

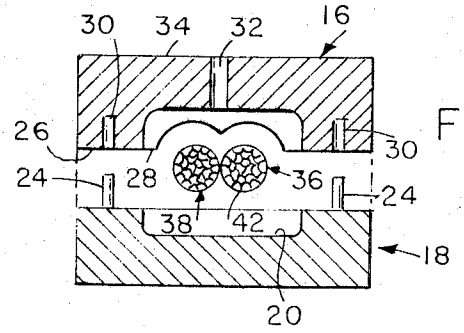


FIG. 3.

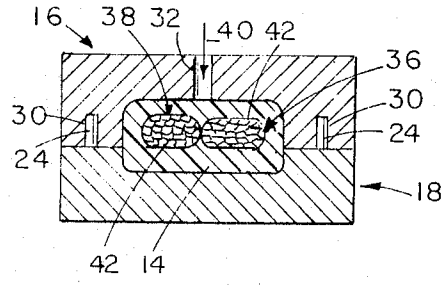


FIG. 4.

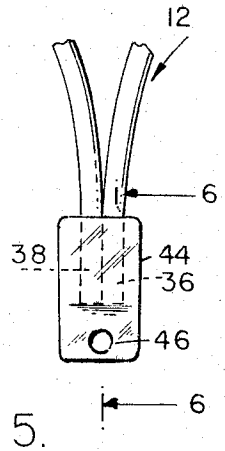


FIG. 5.

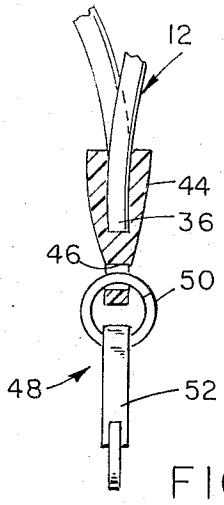


FIG. 6.

INVENTOR.

ALLAN H. WILLINGER

BY Friedman & Goodman

Attorneys

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LOOP FORMED OF SYNTHETIC FIBRE CORD

Allan H. Willinger, New Rochelle, N.Y., assignor to Aquariums Incorporated, Maywood, N.J., a corporation of Delaware

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U.S. Cl. 24—123 1 Claim

ABSTRACT OF THE DISCLOSURE

This invention and this disclosure are directed to a new and improved loop formed of synthetic fibre cord e.g., nylon. More particularly, the loop is formed in a housing provided with a cavity and means to accommodate the cord to be looped. The portions of the cord to be joined and in edge-to-edge abutting relationship and the cavity is provided with an inlet port. Molten thermoplastic material or the like is poured through the inlet port into the cavity thereby securing the cords together. The result is a loop being locked in a plastic splice fitting with the cords in close edge-to-edge abutting relationship.

It is an object of the present invention to provide a a highly simple and efficient method for forming synthetic fibre cords into closed loops.

It is another object of the present invention to provide a loop formed in a synthetic fibre cord.

It is another object of the present invention to lock spaced portions of a cord into a loop.

Other and further objects and advantages of the present invention will be readily apparent from a consideration of the following specification taken in connection with the appended drawing.

In the drawing, which illustrates the best mode presently contemplated for carrying out the invention,

FIG. 1 is a fragmentary portion or length of a hollow braided cord formed of synthetic fibre which is utilized in the present invention;

FIG. 2 illustrates a loop formed of the cord illustrated in FIG. 1, a portion being broken away for purposes of illustration;

FIGS. 3 and 4 are cross-sectional views through a mold utilized to form a splice fitting pursuant to the present invention so as to provide the loop illustrated in FIG. 2, FIG. 3 illustrating the mold in open or inoperative condition, and FIG. 4 illustrating the mold in closed or operative condition;

FIG. 5 is a fragmentary view showing the ends of the cord locked in another type of splice fitting; and

FIG. 6 is a fragmentary sectional view taken through the line 6—6 of FIG. 5 and illustrates a swivel snap hook secured in the splice fitting of FIG. 5.

Referring now to FIGS. 1 through 4 in detail, there is shown in FIG. 1 a length **10** of a hollow braided cord. The cord **10** is formed of any suitable synthetic material such as, for example, and not by way of limitation, polyethylene, nylon, polypropylene or polyester. As here shown, the cord **10** is in the form known as a hollow braided cord.

Pursuant to the present invention, a loop **12** is provided in the cord **10** by means of a molded plastic splice fitting **14**. The splice fitting **14** may be formed, if desired, of the same type of plastic material of which the cord **10** is formed or of another type.

Pursuant to the present invention, the splice fitting **14** is formed by means of a molding operation about the ends of the loop **12**. More specifically, provision is made for the companion mold pieces **16** and **18**. The lower mold segment **18** is provided with a mold cavity **20** defined in its upper surface **22** and with a pair of laterally spaced pins **24**—**24** which extend upwardly from the mold surface at opposite sides of the mold cavity. The companion upper mold segment **16** is provided at its lower surface **26** with a mold cavity **28** which is complementary to the mold cavity **20** and with a pair of laterally spaced recesses **30** which are adapted to receive the pins **24**. The upper mold segment **16** is provided also with a feed channel **32** which extends from its upper surface **34** to the cavity **28**.

As shown in FIG. 3, there is positioned in the mold between the upper mold segment **16** and the lower mold segment **18** one end **36** of the loop **10** which is constituted by one end of the length of cord **10** and the other end **38** of the loop **12** which, as here shown, is constituted by an intermediate portion of the cord **10** but which, if desired, may be constituted by the other end of the cord **10**. With the loop ends so positioned, the mold segments are brought together so that the pins **24** enter the cooperating recesses **30**. Thereafter, a suitable plastic material is inserted or fed through the channel **32** as indicated by the arrow **40**. The melted plastic flows around the loop ends **36** and **38** as shown in FIG. 4 to form the splice fitting **14**. It will be noted that there is a tendency to flatten the loop ends as shown in that figure. Where the material of which the splice fitting **14** is formed, is the same as the material of which the rope **10** is formed, the melted heated plastic fed in through the channel **32** will tend to melt the surface strands along the exterior of the loop ends **36** and **38** and also to flow between the inner strands of the cord **10**. This will provide a superbly solid lock for the ends of the loop **12**. This is due to the fact that some of the melted material has flown between the individual stands **42** which make up the braided cord **10** and upon cooling, solidify between said strands or filaments. In addition, a fusing action takes place along the periphery of the loop ends **36** and **38** due to the described melting of the filaments at the periphery of the lop ends which, upon cooling, fuses with the material of the fitting **14**.

However, it will be noted that the foregoing described fusing action, where the melting temperature of the plastic which forms the fitting **14** is the same as the melting temperature of the plastic which forms the filaments **42**, is not essential to the present invention. In this connection, it is also possible to form the fitting **14** of a plastic material which has a lower melting point than the material which forms the filaments **42**. In this latter case, as well as in the prior situation, the molten plastic will flow between the filaments **42** of the cord **10** so that upon cooling, the splice fitting **14** will securely lock the loop ends **36** and **38** in position within the fitting.

The loop **12** illustrated in FIG. 2 may have many and different uses. For example, it is eminently suitable as a dog leash or other simiuar use. It also may have many applications in marine use.

Referring now to FIGS. 5 and 6 in detail, there is shown another embodiment of the splice fitting. As here shown, provision is made for a splice fitting **44** which locks in position the two ends **36** and **38** of the loop **12**. Moreover, it will be noted that in the present embodiment, both loop ends **36** and **38** constitute the opposite ends of the cord length **10**. Pursuant to the present embodiment, the described molding operation also forms an aperture **46** in the fitting **44**. The aperture **46** is eminently suitable for securing a swivel snap hook **48** in the splice fitting **44**. More specifically, the ring **50** of the swivel snap hook **48** is passed through the aperture **46** and the snap hook **52** is provided on the ring **50**. A loop **12** provided with a fitting **44** and a swivel snap hook **48** is eminently useful in many different fields and

for many different purposes. In situations where added strength is required, one of the loop ends may be disposed about the aperture **46** and thus molded into the fitting **44**. Example, and not by way of limitation, it may find extended use in the marine field for holding anchor lines, water ski ropes of the like.

In view of the foregoing, it will be apparent that there has been illustrated and described a highly novel loop formed of braided cord which is formed of plastic material, the ends of the loop being locked in a plastic fitting. It will be understood that various changes and modifications may be made within the present invention without, however, departing from the basic inventive concept thereof.

I claim:

1. A loop formed of a synthetic fibre cord, the ends of said loop being locked in a plastic splice fitting with the portions of the cord being so locked being in edge-to-edge abutting relation, one end of the loop constituting one end of said cord, the other end of the loop constituting an intermediate portion of said cord, said cord and said fitting having a substantially similar melting temperature, said fitting being fused to said cord, the locked ends

of said loop having a slightly altered cross-sectional conformation.

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BERNARD A. GELAK, Primary Examiner

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24—73; 114—230; 119—109; 264—263, 279; 294—74