A fishing line guide is secured to a rod by a thread winding wound from a starting end which is tucked under a line guide to a tail end which is secured by heat fusion to an adjacent turn of the thread winding. The thread winding forms a single thread layer. In order to fuse the tail end to an adjacent turn of the thread winding, the thread is wound about the guide and rod and, with the unwound portion of the thread held taut, a heated rod is swept across the point where the thread leaves the rod to melt and sever the thread thereat while fusing the resultant tail end to the adjacent turn of the thread winding.

19 Claims, 5 Drawing Figures
HEAT SEALED THREAD WINDING AS FOR FISHING RODS

This invention relates to a heat-sealed thread winding and to a method of securing a thread winding to a rod. Heretofore, it has been known to secure fishing line guides to fishing rods or to apply decorative thread windings to rods in a number of different manners. In one case, where the fishing line guide has a tail disposed along the fishing rod, a winding of thread has been used to secure the guide to the rod. In this case, the starting end of a thread has generally been secured to the rod, for example by a drop of adhesive, and thereafter the thread has been wound about the guide tail and rod with the finishing end being secured within a thread loop which is drawn under the winding. According to one technique, before the thread winding is completed, the winding operation is stopped at about four to six turns from the desired finished length. At this point, a small length of thread is manually formed into a loop, with the loop projecting over the bare rod and the loop ends extending over the already wound portion of the thread winding. The winding is then continued over the loop and rod for the remaining number of turns. When the winding is completely, the thread being wound is severed and the severed end is drawn through the loop which has been secured to the rod by these last turns. A pull is then exerted on the free ends of the loop so as to draw the severed end of the cut thread underneath the previously applied turns to firmly lock the severed end to the wound thread. The thread length used for the loop may then be discarded, and any projecting tail end of the winding can then be cut close to the winding to substantially hide the tail end.

This technique is, however, time-consuming and as a result relatively expensive in terms of labor. Furthermore, the tail end of the winding may project from the rod if not severed at a contiguous point on the rod and, at the same time, the winding may be damaged if the tail end is severed too close to the winding. Further, there is a slight bulge in the winding due to the presence of thread under the last turns.

It has also been known to secure the end of a winding to a rod by an adhesive. This, however, may provide an unsightly appearance, require a "setting" time for the adhesive, and may interfere with subsequent coating operations to which the rod is subjected. In order to avoid problems inherent in the above types of thread securement, it has also been known to use tapes or sleeves to secure a guide to a rod. In the case of tapes, such have been made of heat-shrinkable resinated cloth and wound about theguide and rod. After winding, the tapes have been subjected to heat in order to shrink the tapes and secure the tapes to the rod. However, such a procedure requires substantially more manipulation in order to properly position the turns of the tape winding so as to impart a quality appearance to the final product. Further, the procedure is time-consuming. Still further, the technique has usually utilized a plurality of tape windings with the result that the finished winding has a bulky appearance.

In the case of sleeves, such have been telescoped over the rod and the tails of the guide so as to frictionally secure the guide to the rod. However, this has required the separate and serial mounting of each line guide on the rod as each sleeve must be separately telescoped over an end of the rod and then be advanced to the corresponding line guide tail. Further, where the rod is tapered, a supply of sleeves having different inside diameters is required in order to secure guides in place along the length of the rod.

Accordingly, it is an object of this invention to provide a winding for securing a fishing line guide to a fishing rod which is attractive in appearance and simple to effect.

It is another object of this invention to provide a winding which can be rapidly and economically secured in place on a rod.

It is another object of this invention to reduce the time required to secure a fishing line guide to a fishing rod.

It is another object of this invention to provide a simple technique for securing a thread winding to a rod.

Briefly, the invention provides a method of securing a winding of thread to a rod in which the tail end of the thread is heat fused to an adjacent turn of the winding. In addition, the invention provides a winding having a single layer of thread for securing a fishing line guide to a fishing rod or for securement to a rod for decorative purposes.

In accordance with the method hereof, a fishing line guide is first positioned on a fishing rod in any suitable manner, for example, by an adhesive. Thereafter, the starting end of a thread is secured with respect to the guide, for example by being tucked under the guide and then wound about the guide and rod to form a winding with a plurality of turns of thread. Next, the unwound portion of the thread is held adjacent the previous winding turn in a taut manner, and heat is applied to the thread at the point where the thread leaves the rod in order to melt and sever the thread at that point while fusing the resultant tail end of the thread to the adjacent winding turn at that same point.

After the winding has been completed, a plastic coating such as a synthetic varnish can be applied over the winding and the rod in a conventional manner.

The thread used for the winding is a synthetic plastic material which is heated to its melting point in order to bring about the fusion of the tail end of the thread to the adjacent winding turn. For example, the thread can be a twisted multifilament Nylon 6/6 thread which has a melting point of 495°F. Any other suitable thread may also be used, for example, monofilaments or multifilaments made from polyester (Dacron), polyethylene, polypropylene, the general class of olefins, nylon 6 (a polyamide having a lower melting point than 6/6), or any other thread made from a thermoplastic material which, when heat is applied, will sever and heat-fuse an end to an adjacent turn of thread. Further, the threads utilized may range in diameter from 0.005 inches to 0.025 inches. For example, the twisted multifilament Nylon 6/6 thread has a diameter of 0.01 inches. The heat required to bring about the melting is generally in the range of between 300° to 700°F.

The time required for heating the thread to bring about severing and fusing is usually less than 1 second. As a result, the time required to secure a fishing line guide to a fishing rod can be reduced to a relative minimum.

The invention also provides a combination of a fishing rod, a line guide mounted on the rod and a thread wound about the guide and fishing rod which secures the guide to the rod. The thread includes a plurality of
winding turns and has a tail end fused to an adjacent turn of the winding in a single thread layer at a point spaced from the guide. The starting end of the thread is tucked under the line guide and, where the line guide has a foot and at least one tail extending from the foot, the thread is, for example, tucked under an inner end of the foot with the successive winding turns wound over the tail.

It is to be noted that the nature of the fusion of the tail end of the thread to the adjacent winding may not be a fastening which is sufficiently secure in itself for all conditions of use of the fishing rod being made, but the fastening is at least sufficient to hold the thread in place until the winding is coated with a plastic finish.

These and other objects and advantages of the invention will become more apparent from the following detailed description and appended claims taken in conjunction with the accompanying drawings in which:

FIG. 1 illustrates a fragmentary perspective view of a fishing line guide secured to a fishing rod by a winding according to the invention;

FIG. 2 illustrates the position of a thread relative to a rod immediately prior to severing and fusing of the tail end of the winding to an adjacent winding turn;

FIG. 3 illustrates a view of a heated rod in contact with the thread for severing of the thread;

FIG. 4 illustrates a perspective view of the tail end of a winding made in accordance with the invention; and

FIG. 5 illustrates a view taken on line 5—5 of FIG. 4.

Referring to FIG. 1, a fishing rod 10, for example of tapered contour and of glass fiber reinforced plastic construction, is provided with a fishing line guide 11 which is secured thereto by two thread windings 12. The guide 11 is of suitable known construction and includes an eyelet 13, a pair of feet 14 mounting the eyelet 13 therebetween, and a pair of tails 15 which extend from the respective feet 14 axially along the surface of the rod 10. Each thread winding 12 is made up of a plurality of winding turns 16 which form a single thread layer and define a first closely wound section having a multiplicity of winding turns therein, an intermediate section in which the winding turns are spaced apart at a greater pitch and a final section in which the winding turns are again closely wound in contiguous relationship.

The starting end (not shown) of each winding 12 is tucked under the inner ends of the respective guide feet 14 in a suitable known manner. The tail end 17 of each winding 12 is heat fused to the adjacent winding turn 16' and is disposed within the same single thread layer as the remainder of the winding turns 16.

In order to secure the guide 11 to the rod 10, the starting end of a thread 18 is first tucked under a foot 14 of the guide 11. Next, the thread is wound under tension about the tail 15 of the guide 11 and the rod 10 to form a first section of closely wound winding turns. After a number of winding turns are so formed, the thread is then wound at a greater pitch to provide widely spaced apart winding turns. After a number of these widely spaced apart winding turns are formed, the thread is again wound at a closer pitch to form a number of contiguous winding turns.

Referring to FIG. 2, at the end of the winding steps, the unwound portion of the thread 18 is held adjacent to the previous winding turn 16' in a taut manner so as to maintain the tension in the thread. Next, as shown in FIG. 3, a heated rod 19, such as a small pencil type soldering iron, is swept across the point 20 where the thread 18 leaves the rod 10 at the end of the previous winding turn 16'. The rod 19 imparts sufficient heat to the thread 18 at the point 20 where the thread leaves the rod so as to raise the temperature of and melt the thread 18 at said point 20, while at the same time becoming severed with the resultant tail end 17 fusing to the adjacent winding turn 16' as shown in FIGS. 4 and 5. In bringing the heated rod 19 into contact with the thread 18 at the point 20, the rod 19 need only be in contact with the thread for a period of time less than one second in order to effect severing and fusing.

The winding 12 is made of any suitable thread which can be melted so as to be severed and fused as described above. For example, the thread 18 is made of a synthetic plastic material such as a multi-filament Nylon 6/6 of a diameter of 0.01 inches and with a melting point of about 495°F. The temperature of the heated rod 19 is thus higher than the melting point of the thread so as to effect melting thereof. The thread 18 may also be made of any suitable thermoplastic material such as monofilaments or multi-filaments of polyester, polyethylene, polypropylene, olefin and Nylon 6, or any other suitable thread. Generally, the melting points of the material are such that the rod 19 can be brought to a temperature in a range of from 300° to 700°F to effect severing and fusing. The diameter of the various threads can also vary between approximately 0.005 inches to 0.025 inches.

After each guide of a rod has been secured in place by the respective windings, or winding in the case where a single tail is formed on the guide, the entire assembly can then be coated with a plastic coating 21 (see FIG. 5), such as a synthetic varnish, as is known, applied over the windings 12 and the rod 10 to secure the tail end 17 of the respective windings 12 to the adjacent winding turn 16' in its permanent manner. In this respect, it is noted that the heat-fusing of the tail end 17 of the winding 12 to the adjacent winding turn 16' need not be a very secure fastening in itself, but need only be sufficient to hold the tail end 17 in place until the coating 21 is applied.

The windings 12 can be applied and secured to each guide foot 14 simultaneously by a plurality of heating rods 19, or individually. Also such can be applied manually or automatically. In order to initially position and mount the fishing line guide 11 on the rod 12, an adhesive may be used, as is well known.

The invention thus provides a method which can be utilized manually or automatically to effect a securement of fishing line guides to a fishing rod or to effect securement of a winding itself to a rod.

The invention further provides a winding which is of smooth uniform appearance in which the tail end is disposed within the same single thread layer as the remainder of the winding turns.

What is claimed is:

1. A method of securing a fishing line guide to a rod comprising the steps of positioning a line guide on a rod; securing a starting end of a synthetic thermoplastic thread with respect to the line guide and rod; winding the thread about at least a portion of the line guide and rod to form a plurality of winding turns thereon;
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holding an unwound portion of the thread in a taut manner; and heating the unwound portion of the thread at the point where the thread leaves the rod to melt and sever the thread thereat and to fuse the thread to an adjacent winding turn thereat.

2. A method as set forth in claim 1 which further comprises the step of applying a plastic coating over said winding turns and the rod to secure said turns to the rod.

3. A method as set forth in claim 1 which further comprises the step of adhesively mounting the guide to the rod prior to winding the thread thereon.

4. A method as set forth in claim 1 wherein said starting end of the thread is tucked under the line guide prior to said winding of the thread.

5. A method as set forth in claim 1 wherein said heating step comprises heating thread to the melting point thereof within a range of from 300°F to 700°F.

6. A method of securing a winding of synthetic thermoplastic thread to a rod comprising the steps of securing a starting end of the thread to the rod; winding the thread about the rod to form a single thread layer of a plurality of winding turns; holding an unwound portion of the thread under tension and adjacent the last of said winding turns; and heating said unwound portion of the thread adjacent said last winding turn to a temperature sufficient to melt and sever the thread thereat while heat-fusing the resultant tail end of the thread to said last winding turn.

7. In combination with a fishing rod having a line guide mounted thereon, the improvement comprising a thread wound about the line guide and fishing rod to secure the line guide to the fishing rod, said thread including a plurality of winding turns and having a tail end fused to an adjacent winding turn.

8. The combination as set forth in claim 7 wherein said tail end is located within a single thread layer with said winding turns.

9. The combination as set forth in claim 7 wherein said thread is of synthetic plastic material.

10. The combination as set forth in claim 9 wherein said thread is a polyamide.

11. The combination as set forth in claim 9 wherein said thread is selected from the group consisting of Nylon 6/6, polyester, polyethylene, polypropylene, olefins, and Nylon 6.

12. The combination as set forth in claim 9 wherein said thread is a monofilament.

13. The combination as set forth in claim 9 wherein said thread is a multi-filament.

14. The combination as set forth in claim 9 wherein said thread is of a diameter of from 0.005 inches to 0.025 inches.

15. The combination as set forth in claim 7 wherein said line guide includes at least one foot and at least one tail extending along said rod from said foot, and wherein said thread has a starting end tucked under said foot with successive winding turns wound over said tail.

16. The combination as set forth in claim 7 further comprising a plastic coating over said winding turns and said rod.

17. In combination with a rod; a synthetic thermoplastic thread wound about said rod forming a plurality of winding turns thereon, said thread having a tail end in contact with said rod and heat-fused to an adjacent one of said winding turns.

18. The combination as set forth in claim 17 wherein said tail end and said winding turns are located within a single thread layer on said rod.

19. The combination as set forth in claim 17 wherein said winding turns include a section of widely spaced apart winding turns and a number of contiguous winding turns.

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