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GUIDE RING FOR A FISHING ROD

Filed June 10, 1966

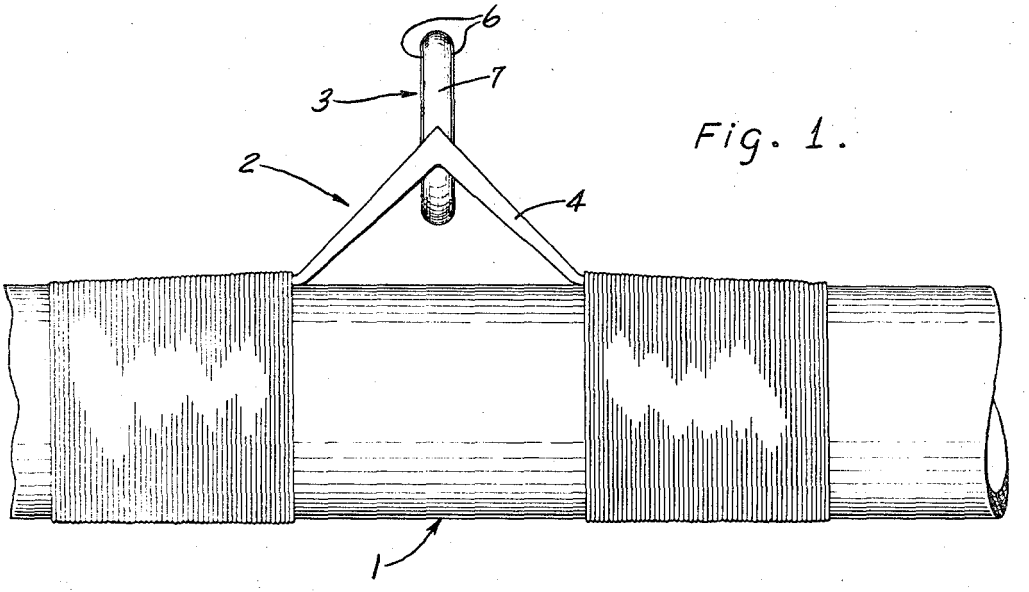


Fig. 1.

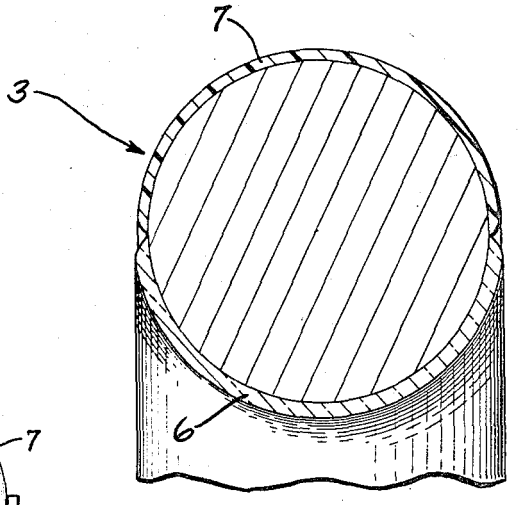
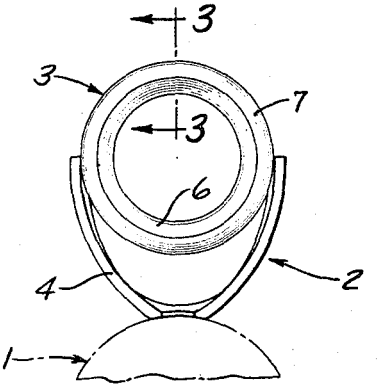


Fig. 3.

Fig. 2.



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GUIDE RING FOR A FISHING ROD

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This invention relates to a guide ring construction for a fishing rod, and more particularly to a guide ring assembly for a spinning or a casting rod.

With a spinning or casting rod the fishing line is guided through a series of guide rings which are attached at spaced positions along the length of the rod. The guide rings generally consist of an eyelet or ring, through which the line passes, and a base or support which connects the eyelet to the rod. In the past a common type of eyelet included an inner stone or agate ring clamped within an outer metal ring, and the agate ring provided a wear resistant guide surface over which the line traveled. Recently monofilament plastic lines have been developed which are very thin and the agate inserts have not proven satisfactory with the monofilament lines. As the agate ring is not bonded to the outer metal ring, the agate is often cracked on impact and the thin monofilament line will catch in the crack and the line will break. Consequently, the industry has decreased the use of agate inserts in the guide eyelets.

Attempts have been made to employ chromium plated stainless steel eyelets but again these have not proven satisfactory with monofilament lines because the thin line will groove the metal eyelet. Extremely hard alloys, such as titanium carbide can be employed as the eyelet and will not groove, but these eyelets are very expensive.

The present invention is directed to an improved fishing rod guide ring assembly adapted to be used with monofilament line. The guide ring assembly includes a ring or eyelet formed of carbon steel, stainless steel, brass or other metal, and bonded to the inner annular surface of the metal ring is a layer of vitreous enamel or glass. The glass provides a hard, wear resistant guide surface which will not be grooved or abraded by the monofilament line. As the glass is chemically bonded to the metal ring it is extremely resistant to fracture and thus overcomes the disadavantage of the traditional agate ring. Moreover, the glass provides a smooth, slick surface which reduces the frictional resistance over other conventional materials and thus allows the line to slip through the eyelet more readily and permits longer casts.

Other objects and advantages will appear in the course of the following description.

The drawings illustrate the best mode presently contemplated of carrying out the invention.

In the drawings:

FIG. 1 is a side elevation of a portion of a fishing rod and showing the attachment of the guide ring assembly;

FIG. 2 is an end view of the guide ring assembly; and

FIG. 3 is a transverse section taken along line 3—3 of FIG. 2.

The drawings illustrate a portion of a spinning or casting rod **1** and a series of guide ring assemblies **2** are mounted in spaced relation along the length of the rod. As shown in the drawings, each guide ring assembly **2** comprises an eyelet or ring **3** formed of a metal such as stainless steel, carbon steel, or the like, and the ring is welded or soldered to a base **4**. Base **4** is secured to the rod **1** by a winding of nylon cord or other fibrous material. A layer of glass or vitreous enamel **6** is bonded to the inner annular guide surface of the ring **3** and the line which passes through the ring **3** rides over the glass layer **6**.

In addition, a coating **7** of a resin or plastic material can be applied over the exposed metal of ring **3** and aids in protecting the metal ring against salt water spray as well as adding a decorative appearance to the guide ring assembly.

As best shown in FIG. 3, the glass coating **6** is applied only to the inner guide surface of the ring **3** and not on the outer surface of the ring where it may be exposed to impact and breakage. Generally, the glass coating **6** extends through an arc of about 120° to 200° and extends from 60° to 100° on each side of a plane passing through the midpoint of the ring and extending perpendicular to the axis of the ring.

The glass coating **6** has a thickness in the range of 0.003 to 0.010 inch and preferably in the range of 0.004 to 0.008 inch. If the thickness of the coating is greater than 0.010 inch the coating may crack on impact and act in a manner similar to the agate or stone inserts used in conventional guide ring assemblies. Conversely, if the thickness is less than about 0.003 inch the wear resistance of the guide coating **6** will be reduced to a level which may not be adequate for the use with a monofilament line.

To fabricate the guide ring assembly, the ring **3** is usually initially welded to the base **4**. The glass composition is then applied to the inner annular surface of a ring **3** in the form of a slip or slurry by a dip applicator which is merely rubbed against the surface of the ring. To form the slip, the glass frit is milled with a conventional mill addition, and a typical slip may have the following composition in parts by weight:

Glass frit	100.0
$NaNO_2$	0.2
Clay	6.0
Bentonite	0.4
Water	45.0

The glass frit to be used in the slip is a conventional type and has the following formulation in weight percent:

General Composition		Specific Formulation	
		1	2
Al_2O_3	0–12	9	8
B_2O_3	5–12	12	10
ZrO_2	0–5		3
TiO_2	0–5	2	5
CaO	0–8	2	6
BaO	0–7	3	7
Na_2O	8–14	11	12
K_2O	0–10	3	2
MgO	0–5	2	
Li_2O	0–4	1	2
SiO_2	(1)	56	45

[1] Balance.

While the use of a glass slip is the preferred method of providing the coating **6** on ring **3**, in some cases a dry dust coating of the glass frit may be used in place of the slip.

Following the application of the glass slip, the guide ring assembly is heated to a temperature of about 300° F. to evaporate the water and subsequently the assembly is fired at a temperature of about 1400° to 1600° F. to fuse the glass coating to the steel ring.

If it is desired to apply the plastic coating **7**, the entire assembly is immersed in an electrocoating bath and by conventional techniques, the plastic or resin will be coated on the exposed metal of the eyelet **3**. As the glass coating **6** is an electrical insulator the resin will not be coated on the glass coating **6**.

In the conventional electrocoating process the resin, such as an alkyd resin, an epoxy resin or an oleoresinous material, is dispersed as a 5 to 12% solids dispersion in water, with the constituents of the film to be deposited, including the vehicle, pigment and coalescing agents, having a negative charge. The guide assembly **2** is made the

anode while the tank is the cathode, and under the influence of an electrical field the negatively charged particles migrate and coat out on the exposed metal areas of the guide ring assembly.

The guide ring assembly of the invention is particularly adaptable for use with a monofilament plastic line for the glass coating **6** has exceptional wear resistance and will not be grooved or abraded by the line. As the thin glass coating is bonded to the steel, the coating takes on the strength of the metal and is thereby highly resistant to cracking and chipping.

The glass coating provides a smooth, slick guide surface which reduces frictional resistance thereby permitting the line to move more smoothly and enabling longer casts to be made.

The plastic coating **7** which can be applied over the exposed portion of the metal ring **3** aids in protecting the metal against extreme types of corrosion, such as salt water spray, and as the plastic can be colored it adds a decorative appearance to the guide ring assembly.

Various modes of carrying out the invention are contemplated as being within the scope of the following claims particularly pointing out and distinctly claiming the subject matter which is regarded as the invention.

I claim:

1. A guide line assembly for a fishing rod, comprising a ring having an inner annular guide surface, means for attaching the ring to a fishing rod, and a coating of vitreous enamel bonded to said guide surface and extending through an arc of 60° to 100° on each side of a plane extending through the midpoint of the ring and extending perpendicular to the axis of the opening defined by said ring.

2. The guide line assembly of claim **1** in which the vitreous enamel coating has a thickness in the range of 0.003 to 0.010 inch.

3. The guide line assembly of claim **1** in which the ring is formed of ferrous metal.

4. The guide ring assembly of claim **3** and including a coating of a plastic material bonded to the exposed surface of the metal ring and said coating of vitreous enamel being free of said plastic coating.

5. The guide ring assembly of claim **3** in which said vitreous enamel coating has a thickness in the range of 0.004 to 0.008 inch.

6. The method of forming a guide line assembly for a fishing rod, comprising applying a glass composition to the inner annular guide surface of a metal ring with said glass composition extending through an arc of about 60° to 100° on each side of a plane extending through the midpoint of the ring and extending perpendicular to the axis of the opening defined by said ring, and thereafter firing the glass coated ring at a temperature sufficient to fuse the glass to the ring to provide an integral structure.

7. The method of claim **6**, and including the steps of making the glass coated ring the anode in an aqueous electrolytic bath containing a dispersion of a resin, and applying a current to said bath to thereby coat said resin on the exposed metal portion of said ring.

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