

DESCRIPTION

TITLE OF INVENTION: FISHING LINE GUIDE AND FISHING ROD EQUIPPED WITH SAID FISHING LINE GUIDE

Technical Field

[0001]

Cross Reference

The present application claims priority based on Japanese Patent Application No. 2024-003428 (filed on January 12, 2024), the contents of which are incorporated herein by reference in their entirety.

The present invention relates to a fishing line guide and a fishing rod comprising the fishing line guide.

Background Art

[0002]

In the related art, various fishing rods have been known in which a fishing line guide for guiding a fishing line is attached to the outside of the fishing rod.

[0003]

A fishing line guide used in such a fishing rod generally includes a guide ring for guiding the fishing line and a guide frame for holding the guide ring, and the guide frame includes a mounting portion for mounting to a rod body and a frame main body portion rising from the mounting portion. The guide ring is mounted in a ring mounting hole of the frame main body portion, and the fishing line is inserted through the guide ring and guided.

[0004]

As such a fishing line guide, for example, Patent Literature 1 discloses a fishing line guide that is mounted to the outside of a rod body and includes a guide ring for guiding a fishing line and a guide frame made of synthetic resin for holding the guide ring. The guide frame includes a mounting portion for mounting to the rod body and a frame main body portion that stands from the mounting portion and in which a ring mounting hole for mounting the guide ring is formed. The guide frame is integrally formed by injection molding, and the ring mounting hole is formed by performing hole processing so as to remove a predetermined portion including a gate mark after the injection molding.

Citation List

Patent Literature

[0005]

Patent Literature 1: JP 2016-135103 A

Summary of Invention

Technical Problem

[0006]

However, in the fishing line guide disclosed in Patent Literature 1, a gate is disposed on the inner diameter side of a ring holding portion, and the guide frame has a structure in which the gate needs to be removed during hole processing. Therefore, there has been a problem in that a gate removal process is unavoidable during the hole processing of the fishing line guide.

[0007]

The present invention has been made in view of the above

circumstances, and an object thereof is to provide a fishing line guide formed by injection molding in which a guide ring can be mounted to a guide body without removing a gate mark, thereby eliminating a gate mark removal process and also contributing to improvement in adhesive strength between the guide body and the guide ring by utilizing the gate mark that has conventionally been removed, and a fishing rod including the fishing line guide. Other objects of the present invention will become apparent by referring to the entirety of this specification.

Solution to Problem

[0008]

A fishing line guide according to one embodiment of the present invention is mounted to a fishing rod, and the fishing line guide comprises a guide body in which a through-hole is formed; a guide ring fitted to the through-hole of the guide body; and a gate mark that is formed in an inner peripheral surface defining the through-hole of the guide body and is formed to protrude into the through-hole of the guide body, in which, when viewed in a direction perpendicular to the guide body, a contour shape of the guide body defining the through-hole is formed to comprise one or more convex portions that bulge radially outward relative to a true circle, and the gate mark is disposed at a position of the inner peripheral surface defining the through-hole of the guide body where the one or more convex portions of the through-hole are formed.

[0009]

In the fishing line guide according to one embodiment of the present invention, in a case where the gate marks are formed in a plurality, one or more

convex portions are formed in a plurality corresponding to the number of the gate marks to be formed.

[0010]

In the fishing line guide according to one embodiment of the present invention, the one or more convex portions have a crescent shape.

[0011]

In the fishing line guide according to one embodiment of the present invention, the gate mark has a height in a range in which a maximum height (D1) is from 0.1 mm to 1.0 mm.

[0012]

In the fishing line guide according to one embodiment of the present invention, the gate mark is formed at a position that does not overlap, when viewed in a direction perpendicular to the guide body, with a central position of the inner peripheral surface defining the through-hole of the guide body or with positions at both end portions of the inner peripheral surface.

[0013]

In the fishing line guide according to one embodiment of the present invention, the one or more convex portions have a maximum height (L1) that is equal to or greater than a maximum height (D1) of the gate mark.

[0014]

In the fishing line guide according to one embodiment of the present invention, the guide ring is curved such that a gap is created between an outer peripheral surface thereof and the inner peripheral surface of the guide body, and the gate mark is formed between the outer peripheral surface of the guide ring and the inner peripheral surface of the guide body.

[0015]

The fishing line guide according to one embodiment of the present invention further comprises an adhesive disposed in the gap.

[0016]

A fishing rod according to one embodiment of the present invention comprises at least one of the fishing line guides described above.

Advantageous Effects of Invention

[0017]

According to the above embodiment, in a fishing line guide formed by injection molding, a guide ring can be mounted to a guide body without removing a gate mark, and by eliminating a gate mark removal process, processes in the related art can be effectively simplified and cost reduction can be achieved. Furthermore, by utilizing the gate mark that has conventionally been removed, it is also possible to improve the adhesive strength between the guide body and the guide ring, thereby providing a fishing line guide and a fishing rod comprising the fishing line guide.

Brief Description of Drawings

[0018]

Fig. 1 is a diagram illustrating a fishing rod according to one embodiment of the present invention.

Fig. 2 is a perspective view illustrating a fishing line guide (without a guide ring) according to one embodiment of the present invention.

Fig. 3 is a longitudinal sectional view illustrating a fishing line guide

according to one embodiment of the present invention.

Fig. 4 is a perspective view illustrating a fishing line guide (with a guide ring) according to one embodiment of the present invention.

Fig. 5(a) is a diagram illustrating a part of a ring holding portion of a fishing line guide according to one embodiment of the present invention, Fig. 5(b) is an enlarged view illustrating a part of the ring holding portion of the fishing line guide according to one embodiment of the present invention, and Fig. 5(c) is a sectional view of the ring holding portion of the fishing line guide according to one embodiment of the present invention taken along line Z-Z in Fig. 5(a).

Fig. 6 is a diagram illustrating a gate mark of a guide body of a fishing line guide according to one embodiment of the present invention.

Fig. 7 is a diagram illustrating a contour shape defining a through-hole of a guide body of a fishing line guide according to one embodiment of the present invention.

Description of Embodiments

[0019]

Hereinafter, embodiments of a fishing line guide according to the present invention and a fishing rod comprising the fishing line guide will be specifically described with reference to the accompanying drawings.

Components common to a plurality of drawings are denoted by the same reference numerals throughout the plurality of drawings. It should be noted that the drawings are not necessarily drawn to scale for convenience of explanation.

[0020]

Fig. 1 is a diagram illustrating one embodiment of a fishing rod according to the present invention. As illustrated, a fishing rod 1 according to one embodiment of the present invention comprises a rod body 2, a reel 6 mounted to the rod body 2 via a reel seat 9, and a fishing line guide 10 mounted to the rod body 2. In the illustrated embodiment, each of the reel seat 9 and the fishing line guide 10 corresponds to a mounting component mounted to an outer peripheral surface of the rod body.

[0021]

The rod body 2 is configured, for example, by connecting a butt rod 3, a middle rod 5, a tip rod 7, and the like. These rod bodies are joined, for example, by an ordinarily jointed type. The butt rod 3, the middle rod 5, and the tip rod 7 may be joined by a telescopic type, an inversely jointed type, a socket-and-spigot jointed type, or any other known joining type. The rod body 2 may also be configured from a single rod body.

[0022]

The butt rod 3, the middle rod 5, and the tip rod 7 are formed of, for example, tubular bodies made of fiber-reinforced resin. The tubular bodies made of fiber-reinforced resin are produced by winding a fiber-reinforced resin prepreg (prepreg sheet), in which reinforcing fibers are impregnated with a matrix resin, around a mandrel and heating and curing the prepreg sheet. As the reinforcing fibers contained in the prepreg sheet, for example, carbon fibers, glass fibers, and any other known reinforcing fibers can be used. As the matrix resin contained in the prepreg sheet, a thermosetting resin such as an epoxy resin can be used. After the prepreg sheet is cured, the mandrel is removed.

The outer surface of the tubular body is also polished as appropriate. Each rod body may be configured as a solid body.

[0023]

In the illustrated embodiment, a plurality of fishing line guides 10 (fishing line guides 10A to 10D) for guiding a fishing line drawn out from the reel 6 mounted to the reel seat 9 are provided on the butt rod 3, the middle rod 5, and the tip rod 7. More specifically, the fishing line guide 10A is provided on the butt rod 3, the fishing line guide 10B is provided on the middle rod 5, and the fishing line guide 10C is provided on the tip rod 7. A top guide 10D is provided at a tip of the tip rod 7, but a detailed description thereof is omitted.

[0024]

Next, the fishing line guide 10 according to one embodiment of the present invention will be described with reference to Figs. 2 to 7. Fig. 2 is a perspective view illustrating a fishing line guide (without a guide ring) according to one embodiment of the present invention, Fig. 3 is a longitudinal sectional view illustrating the fishing line guide, and Fig. 4 is a perspective view illustrating a fishing line guide (with a guide ring) according to one embodiment of the present invention. Fig. 5(a) is a diagram illustrating a part of a ring holding portion of a fishing line guide according to one embodiment of the present invention, Fig. 5(b) is an enlarged view illustrating a part of the ring holding portion of the fishing line guide according to one embodiment of the present invention, and Fig. 5(c) is a sectional view of the ring holding portion of the fishing line guide according to one embodiment of the present invention taken along line Z-Z in Fig. 5(a). Fig. 6 is a diagram illustrating a gate mark of a guide body of a fishing line guide according to one embodiment of the present

invention, and Fig. 7 is a diagram illustrating a contour shape defining a through-hole of a guide body of a fishing line guide according to one embodiment of the present invention.

[0025]

As illustrated in Fig. 3, the fishing line guide 10 comprises a guide body 11 and an annular guide ring 12 mounted to the guide body 11. The guide body 11 comprises a foot portion 13 mounted to any one of the rod body 3, the rod body 5, or the rod body 7, and a plate-shaped ring holding portion 14 connected to the foot portion 13. As illustrated in Fig. 4, the annular guide ring 12 is normally fixed to an inner peripheral surface of the ring holding portion 14 via an adhesive (adhesive layer) 21. Note that the adhesive (adhesive layer) 21 is normally 0.1 mm or less, but, in order to more clearly illustrate the appearances of the guide ring 12 and the ring holding portion 14, the gap is illustrated as being larger in Figs. 3 and 4 for convenience. For convenience of description, the following description will be given by taking as an example a case in which the fishing line guide 10 is mounted to the rod body 5.

[0026]

In one embodiment of the present invention, the foot portion 13 is an elongated plate-shaped or tongue-shaped member extending along an outer peripheral surface of the rod body 5. The foot portion 13 is wound around the rod body 5 by, for example, a winding thread formed of nylon fibers. Fig. 2 illustrates a single-foot type fishing line guide that is mounted to the rod body by a single foot portion, but the guide ring to which the present invention is applicable is not limited to this single-foot type. For example, the present invention is also applicable to a double-foot type guide ring. The double-foot

type fishing line guide has a pair of foot portions respectively extending forward and rearward from the ring holding portion, and the fishing line guide is fixed to the rod body by the pair of foot portions. The present invention is also applicable to both a fixed fishing line guide and a movable fishing line guide (sometimes referred to as a floating guide).

[0027]

In one embodiment of the present invention, the ring holding portion 14 extends from an upper end of the foot portion 13. The ring holding portion 14 is inclined upward from a rear side toward a front side of the rod body 5. That is, when the guide 10 is mounted to the rod body 5, the ring holding portion 14 takes a posture inclined forward of the rod body 5. As illustrated, a through-hole that substantially penetrates the ring holding portion 14 in a front-rear direction of the rod body 5 is formed in the ring holding portion 14. The through-hole is defined by an inner peripheral surface 14a of the ring holding portion 14. The guide ring 12 is fitted into the through-hole. The ring holding portion 14 is a substantially flat plate-shaped member, but a connection portion with the foot portion 13 is gently curved as illustrated in Fig. 3. That is, the ring holding portion 14 comprises a flat portion which is substantially flat and in which the through-hole into which the guide ring 12 is fitted is formed and a curved portion which is gently curved and is connected to the foot portion 13.

[0028]

The foot portion 13 and the ring holding portion 14 of the fishing line guide 10 can be integrally formed by injection molding using metal or synthetic resin. As will be described later in detail, during injection molding, a gate mark is inevitably formed on the inner peripheral surface forming the through-hole of

the ring holding portion 14. In the related art, in order to fit the guide ring 12 into the ring holding portion 14, a process of first removing the gate mark has been adopted. Here, the term "gate" refers to an inlet for resin (an inlet through which resin is filled into a product portion in a mold), and the term "gate mark" refers to a remaining portion (a cut end) of a gate portion that remains at a position where the gate is cut off during the process of injection molding. In contrast, as illustrated as an example in Fig. 6, in the fishing line guide 10 according to one embodiment of the present invention, a structure has been devised in which the guide ring 12 can be fitted into the ring holding portion 14 and adhesively fixed without removing such a gate mark. Details will be described later.

[0029]

As described above, the annular guide ring 12 is fitted into the through-hole of the ring holding portion 14. The guide ring 12 is normally in the shape of an ellipse, a true circle, or a substantially true circle, but is not limited thereto. As illustrated in Fig. 3, the guide ring 12 has a ring inner peripheral surface 12a extending annularly in a circumferential direction of the guide ring 12 and a ring outer peripheral surface 12b extending substantially parallel to the ring inner peripheral surface 12a. The guide ring 12 is formed of, for example, ceramics, metal, an alloy, or a composite material thereof. In the example illustrated in Fig. 3, the guide ring 12 is formed of a ceramic material. However, it should be noted that a cross-sectional shape of the guide ring 12 is not necessarily uniform and may vary depending on a material used.

[0030]

Next, details of the fishing line guide 10 according to one embodiment

of the present invention will be described again with reference to Figs. 2, 3, and 5 to 7. The fishing line guide 10 according to one embodiment of the present invention is mounted to the fishing rod 1, and the fishing line guide 10 comprises the guide body 11 in which a through-hole is formed; the guide ring 12 fitted into the through-hole of the guide body 11; and a gate mark 16 (although one gate mark 16 is illustrated in Fig. 6, a plurality of gate marks 16 may be provided) formed on an inner peripheral surface 15 defining the through-hole of the guide body 11 and formed to protrude into the through-hole of the guide body 11. When viewed in a direction perpendicular to the guide body 11, the contour shape of the guide body 11 defining the through-hole (the contour shape of the inner peripheral surface 15) is formed so as to comprise one or more convex portions 18 (one convex portion 18 in the example illustrated in Fig. 5) that bulge radially outward relative to a true circle, and the gate mark 16 is disposed at a position of the inner peripheral surface 15 defining the through-hole of the guide body 11 where the one or more convex portions 18 of the through-hole are formed.

[0031]

The contour shape defining the through-hole (the contour shape of the inner peripheral surface 15) may be, for example, an oval (elliptical) shape, a shape in which one or more trapezoidal shapes (or shapes in which corners of the trapezoid are rounded) are formed as convex portions on a true circle, a shape in which one or more circular shapes having a smaller diameter are formed as convex portions on a true circle, a shape in which one or more triangular shapes (or shapes in which corners of the triangle are rounded) are formed as convex portions on a true circle, or a shape in which one or more

quadrangular shapes (or shapes in which corners of the quadrangle are rounded) are formed as convex portions on a true circle. However, the contour shape is not limited thereto. A contour shape 20 defining the through-hole (the contour shape of the inner peripheral surface 15) comprises a true circular portion 17 and one or more convex portions (convex parts) 18. Here, the direction perpendicular to the guide body 11 refers to a direction (a vertical axis X illustrated in Fig. 2) perpendicular to an extension surface of the ring holding portion 14 of the guide body 11. The contour shape of the guide body 11 defining the through-hole refers to a contour shape defining the through-hole at a central position of the inner peripheral surface 15 of the guide body 11 when viewed in a direction of the vertical axis X.

[0032]

With the fishing line guide 10 according to one embodiment of the present invention and the fishing rod comprising the fishing line guide, in a fishing line guide formed by injection molding, a guide ring can be mounted to a guide body without removing a gate mark, and by eliminating a gate mark removal process, processes in the related art can be effectively simplified and cost reduction can be achieved. Furthermore, by utilizing the gate mark that has conventionally been removed, it is also possible to improve the adhesive strength between the guide body and the guide ring, thereby providing a fishing line guide and a fishing rod comprising the fishing line guide.

[0033]

In the fishing line guide 10 according to one embodiment of the present invention, in a case where the gate marks 16 are formed in a plurality, one or more convex portions 18 are formed in a plurality corresponding to the

number of the gate marks 16 to be formed. In this manner, the gate marks 16 can be accommodated and prevented from being visible from the outside by utilizing a space between the guide body and the guide ring. As a result, by eliminating a gate mark removal process, processes in the related art can be effectively simplified and cost reduction can be achieved. In the fishing line guide 10 according to one embodiment of the present invention, in a case where the gate marks 16 are formed in a plurality, the gate marks 16 are formed, for example, at positions corresponding to 0 o'clock and 6 o'clock, positions corresponding to 0 o'clock, 4 o'clock, and 8 o'clock, or positions corresponding to 0 o'clock, 3 o'clock, 6 o'clock, and 9 o'clock when positions illustrated for the gate marks 16 in Figs. 5 and 6 are regarded as 0 o'clock in a clock-like manner.

[0034]

As illustrated in Fig. 7, in the fishing line guide 10 according to one embodiment of the present invention, one or more convex portions 18 have a crescent shape (in the illustrated example, each of two convex portions forms a crescent shape). In this manner, the gate marks 16 can be accommodated and prevented from being visible from the outside by utilizing a space between the guide body and the guide ring. As a result, by eliminating a gate mark removal process, processes in the related art can be effectively simplified and cost reduction can be achieved. In the fishing line guide 10 according to one embodiment of the present invention, the one or more convex portions 18 may have, for example, a triangular shape, a quadrangular shape, a trapezoidal shape, or a circular shape.

[0035]

As illustrated in Fig. 5(b), in the fishing line guide 10 according to one embodiment of the present invention, the gate mark 16 is formed such that a maximum height (D1) is in a range from 0.1 mm to 1.0 mm. The reason is that if a height of the gate mark is too small, it becomes difficult to exhibit an effect as an anchor, whereas if the height of the gate mark is too large, a clearance between the ring and the frame becomes large and adhesive strength decreases. In this manner, the gate marks 16 can be accommodated and prevented from being visible from the outside by utilizing a space between the guide body and the guide ring.

[0036]

As described above, Fig. 5(c) is a sectional view of the ring holding portion 14 of the guide body 11 taken along line Z-Z in Fig. 5(a). In the fishing line guide 10 according to one embodiment of the present invention, the gate mark 16 is formed at a position that does not overlap, when viewed in a direction (the direction of the vertical axis X in Fig. 2) perpendicular to the guide body 11, with a central position (a position illustrated in Fig. 5(c) and indicated as position AC in Fig. 5(c)) of the inner peripheral surface 15 defining the through-hole of the guide body 11 or with positions at both end portions of the inner peripheral surface (positions A1 and A2 in Fig. 5(c) are the end positions). In this manner, when the ring is bonded, the gate mark does not appear on a surface, thereby providing a good appearance.

[0037]

The maximum height (L1) and the maximum height (D1) are as illustrated in Figs. 5(b) and 7. In the fishing line guide 10 according to one embodiment of the present invention, the one or more convex portions 18 have

a maximum height (L1) that is equal to or greater than the maximum height (D1) of the gate mark. Here, the maximum height (L1) of the one or more convex portions 18 is formed, for example, to be in a range from 0.1 mm to 1.0 mm. In this manner, the gate marks 16 can be accommodated and prevented from being visible from the outside by utilizing a space between the guide body and the guide ring. As a result, by eliminating a gate mark removal process, processes in the related art can be effectively simplified and cost reduction can be achieved.

[0038]

As illustrated in Fig. 3, in the fishing line guide 10 according to one embodiment of the present invention, the guide ring 12 is formed such that a gap is created between the outer peripheral surface 12b thereof and the inner peripheral surface 15 of the ring holding portion 14 of the guide body 11 (an adhesive (adhesive layer) 21 is filled in the gap), and the gate mark 16 is formed between the outer peripheral surface 12b of the guide ring 12 and the inner peripheral surface 15 of the ring holding portion 14 of the guide body 11. In this manner, the gate marks 16 can be accommodated and prevented from being visible from the outside by utilizing a space between the guide body and the guide ring. As a result, by eliminating a gate mark removal process, processes in the related art can be effectively simplified and cost reduction can be achieved.

[0039]

The fishing line guide 10 according to one embodiment of the present invention further comprises an adhesive disposed in the gap. In this manner, the guide ring 12 can be adhesively fixed to the ring holding portion 14 of the

guide body 11.

[0040]

The fishing rod 1 according to one embodiment of the present invention comprises at least one of the fishing line guides 10 described above. With the fishing rod 1 comprising the fishing line guide 10 according to one embodiment of the present invention, in a fishing line guide formed by injection molding, a guide ring can be mounted to a guide body without removing a gate mark, and by eliminating a gate mark removal process, processes in the related art can be effectively simplified and cost reduction can be achieved. Furthermore, by utilizing the gate mark that has conventionally been removed, it is also possible to improve the adhesive strength between the guide body and the guide ring, thereby providing a fishing line guide and a fishing rod comprising the fishing line guide.

[0041]

Dimensions, materials, and arrangements of respective components described in the present specification are not limited to those explicitly described in the embodiments, and each of the components may be modified to have any dimensions, materials, and arrangements that can fall within the scope of the present invention. In addition, components not explicitly described in the present specification may also be added to the described embodiments, and some of the components described in each embodiment may be omitted.

Reference Signs List

[0042]

1	fishing rod
2	rod body
3	butt rod
5	middle rod
6	reel
7	tip rod
9	reel seat
10	fishing line guide
11	guide body
12	guide ring
12b	outer peripheral surface
12h	guide top portion
13	foot portion
14	ring holding portion
15	inner peripheral surface
16	gate mark
17	true circle portion (true circular portion)
18	convex portion (convex part)
20	contour shape
21	adhesive (adhesive layer)
AC	central position of inner peripheral surface
A1, A2	position of end portion of inner peripheral surface
L	fishing line

CLAIMS

[Claim 1]

A fishing line guide that is mounted to a fishing rod, the fishing line guide comprising:

a guide body in which a through-hole is formed;

a guide ring fitted to the through-hole of the guide body; and

a gate mark that is formed in an inner peripheral surface defining the through-hole of the guide body and is formed to protrude into the through-hole of the guide body, wherein

when viewed in a direction perpendicular to the guide body, a contour shape of the guide body defining the through-hole is formed to comprise one or more convex portions that bulge radially outward relative to a true circle, and

the gate mark is disposed at a position of the inner peripheral surface defining the through-hole of the guide body where the one or more convex portions of the through-hole are formed.

[Claim 2]

The fishing line guide according to claim 1, wherein

in a case where the gate marks are formed in a plurality, the one or more convex portions are formed in a plurality corresponding to the number of the gate marks to be formed.

[Claim 3]

The fishing line guide according to claim 1, wherein the one or more convex portions have a crescent shape.

[Claim 4]

The fishing line guide according to claim 1, wherein the gate mark has a height in a range in which a maximum height (D1) is from 0.1 mm to 1.0 mm.

[Claim 5]

The fishing line guide according to claim 1, wherein
the gate mark is formed at a position that does not overlap, when viewed in a direction perpendicular to the guide body, with a central position of the inner peripheral surface defining the through-hole of the guide body or with positions at both end portions of the inner peripheral surface.

[Claim 6]

The fishing line guide according to claim 1, wherein the one or more convex portions have a maximum height (L1) that is equal to or greater than a maximum height (D1) of the gate mark.

[Claim 7]

The fishing line guide according to claim 1, wherein
the guide ring is curved such that a gap is created between an outer peripheral surface thereof and the inner peripheral surface of the guide body,
and

the gate mark is formed between the outer peripheral surface of the guide ring and the inner peripheral surface of the guide body.

[Claim 8]

The fishing line guide according to claim 7, further comprising
an adhesive disposed in the gap.

[Claim 9]

A fishing rod comprising
at least one of the fishing line guides according to any one of claims 1
to 8.