

DESCRIPTION

TITLE OF INVENTION: FISHING ROD

Technical Field

[0001]

Cross Reference

The present application claims priority based on Japanese Patent Application No. 2023-219180 (filed on December 26, 2023), the contents of which are incorporated herein by reference in their entirety.

The present invention relates to a fishing rod.

Background Art

[0002]

In the related art, a fishing rod is known in which a spacer is interposed in a gap between an outer peripheral surface of a rod shaft and an inner peripheral surface of a reel seat (for example, see Patent Literature 1). The spacer is bonded to the reel seat and the rod shaft with an adhesive.

Citation List

Patent Literature

[0003]

Patent Literature 1: JP 2004-000058 A

Summary of Invention

Technical Problem

[0004]

In the fishing rod disclosed in Patent Literature 1, a spacer is

interposed in a gap between a rod shaft and a reel seat, which causes an increase in the number of components and the weight. In addition, in an assembly process of the fishing rod, two bonding processes of fixing the spacer to the rod shaft using an adhesive and fixing the reel seat to the spacer using an adhesive are required, and thus the overall assembly time becomes longer and the cost is increased. Furthermore, during actual fishing, vibration transmitted from the rod shaft to the reel seat is attenuated by the spacer, which may cause a decrease in sensitivity.

[0005]

The present invention has been made to solve the above-described problems, and an object thereof is to provide a fishing rod capable of achieving a reduction in assembly time while achieving weight reduction, and having good sensitivity.

Solution to Problem

[0006]

In order to solve the problems, the present invention provides a fishing rod comprising a front rod shaft; a rear rod shaft; and a tubular reel seat, in which the front rod shaft and the rear rod shaft are bonded to an inner peripheral surface of the reel seat. A rear portion of the front rod shaft and a front portion of the rear rod shaft are increased in diameter to a size corresponding to the inner peripheral surface of the reel seat.

[0007]

In the present invention, the rear portion of the front rod shaft and the front portion of the rear rod shaft can be directly bonded to the inner peripheral

surface of the reel seat. Therefore, it is not necessary to interpose a spacer to fix the reel seat and the rod shaft, and it is possible to reduce the number of components and achieve weight reduction. In addition, since the bonding process of the spacer can be eliminated, the assembly time can be shortened and cost reduction can be achieved. In addition, since vibration is directly transmitted from the front rod shaft to the reel seat, sensitivity during actual fishing is good.

[0008]

In addition, it is preferable that the rear portion of the front rod shaft and the front portion of the rear rod shaft are joined to each other with an adhesive.

[0009]

In this configuration, since the rear portion of the front rod shaft and the front portion of the rear rod shaft can be directly joined inside the reel seat, the strength can be improved. In addition, since vibration is directly transmitted to the reel seat from the rear portion of the front rod shaft and the front portion of the rear rod shaft, sensitivity during actual fishing is good.

[0010]

In addition, it is preferable that the reel seat comprises a clamping region in which a mounting leg portion of a fishing reel is clamped, and that the rear portion of the front rod shaft and the front portion of the rear rod shaft are joined to each other at a position corresponding to the clamping region.

[0011]

In this configuration, a joining part between the rear portion of the front rod shaft and the front portion of the rear rod shaft can be reinforced by a

mounting leg portion, and thus the strength of the fishing rod can be improved.

[0012]

In addition, it is preferable that the rear portion of the front rod shaft and the front portion of the rear rod shaft are joined to each other with an adhesive by a socket-and-spigot jointed structure or an ordinarily jointed structure.

[0013]

In this configuration, since the rear portion of the front rod shaft and the front portion of the rear rod shaft can be directly joined inside the reel seat, the strength of the fishing rod can be improved. In addition, since vibration is transmitted from the front rod shaft to the rear rod shaft by the socket-and-spigot jointed structure or the ordinarily jointed structure, vibration is transmitted to the reel seat from both the front rod shaft and the rear rod shaft. Therefore, sensitivity during actual fishing is good.

[0014]

In addition, it is preferable that a protrusion that protrudes radially inward is formed on the inner peripheral surface of the reel seat, and that the rear portion of the front rod shaft and the front portion of the rear rod shaft abut against the protrusion.

[0015]

In this configuration, the rear portion of the front rod shaft and the front portion of the rear rod shaft can be bonded to the inner peripheral surface of the reel seat while being brought into abutment with the protrusion, and thus, assembly work of the front rod shaft and the rear rod shaft to the reel seat can be easily performed. Therefore, productivity can be improved.

[0016]

In addition, it is preferable that the rear portion of the front rod shaft and the front portion of the rear rod shaft have different outer diameters.

[0017]

In this configuration, variations can be provided in a structure in which the rear portion of the front rod shaft and the front portion of the rear rod shaft are directly bonded to the inner peripheral surface of the reel seat, and the appearance of exposed portions can also be changed. As a result, the fishing rod can be configured in accordance with a fishing type.

[0018]

In addition, it is preferable that at least one of the rear portion of the front rod shaft and the front portion of the rear rod shaft is formed such that a wall thickness decreases toward an insertion end when being inserted into the inner peripheral surface of the reel seat.

[0019]

In this configuration, weight reduction can be achieved while securing a predetermined strength.

[0020]

In addition, it is preferable that the rear portion of the front rod shaft and the front portion of the rear rod shaft are disposed with a spacing in an axial direction of the reel seat.

[0021]

In this configuration, it is not necessary to join the rear portion of the front rod shaft and the front portion of the rear rod shaft inside the reel seat, and therefore an adhesive for the joining becomes unnecessary. As a result, cost

reduction can be achieved.

Advantageous Effects of Invention

[0022]

According to the fishing rod of the present invention, it is possible to provide a fishing rod capable of achieving a reduction in assembly time while achieving weight reduction, and having good sensitivity.

Brief Description of Drawings

[0023]

Fig. 1 is a cross-sectional view illustrating a principal part of a fishing rod according to a first embodiment of the present invention.

Fig. 2 is a cross-sectional view illustrating a principal part of a fishing rod according to a second embodiment of the present invention.

Fig. 3 is a cross-sectional view illustrating a principal part of a fishing rod according to a third embodiment of the present invention.

Fig. 4 is a cross-sectional view illustrating a principal part of a fishing rod according to a fourth embodiment of the present invention.

Fig. 5 is a cross-sectional view illustrating a principal part of a fishing rod according to a fifth embodiment of the present invention.

Fig. 6 is a cross-sectional view illustrating a principal part of a fishing rod according to a sixth embodiment of the present invention.

Fig. 7 is a cross-sectional view illustrating a principal part of a fishing rod according to a seventh embodiment of the present invention.

Fig. 8 is a cross-sectional view illustrating a principal part of a fishing

rod according to an eighth embodiment of the present invention.

Fig. 9 is a cross-sectional view illustrating a front rod shaft of a fishing rod according to a ninth embodiment of the present invention.

Fig. 10 is a cross-sectional view illustrating a principal part of a fishing rod according to a tenth embodiment of the present invention.

Fig. 11 is a cross-sectional view illustrating a principal part of a fishing rod according to an eleventh embodiment of the present invention.

Description of Embodiments

[0024]

Next, embodiments of a fishing rod of the present invention will be described in detail with reference to the drawings as appropriate. In the following description, "front" means the tip side, and "rear" means the butt side. In each embodiment, the reference numerals and description of the same members may be omitted. The cross-sectional views in the respective embodiments are schematic views, and the sizes, shapes, and the like of the respective portions are appropriately simplified in order to facilitate understanding.

[0025]

(First Embodiment)

Fig. 1 is a cross-sectional view illustrating a principal part of a fishing rod 1 according to a first embodiment of the present invention.

As illustrated in Fig. 1, the fishing rod 1 comprises a front rod shaft 10, a rear rod shaft 20, and a tubular reel seat 30. The front rod shaft 10 and the rear rod shaft 20 are directly bonded with an adhesive to a cylindrical inner

peripheral surface 35 formed in the reel seat 30.

[0026]

The front rod shaft 10 and the rear rod shaft 20 are configured as tubular bodies (hollow bodies) made of fiber-reinforced resin. The front rod shaft 10 and the rear rod shaft 20 are formed, for example, by winding a fiber-reinforced resin prepreg (prepreg sheet), in which reinforcing fibers (mainly carbon fibers, glass fibers, and the like) are impregnated with a synthetic resin such as an epoxy resin, around a mandrel, followed by a heating process and a process of removing the mandrel.

[0027]

The front rod shaft 10 comprises a front rod shaft main body portion 11 and a rear portion 12 continuous with a rear end portion of the front rod shaft main body portion 11. The rear rod shaft 20 comprises a rear rod shaft main body portion 21 and a front portion 22 continuous with a front end portion of the rear rod shaft main body portion 21. The rear portion 12 of the front rod shaft 10 and the front portion 22 of the rear rod shaft 20 are increased in diameter to have outer diameters corresponding to the inner diameter of the inner peripheral surface 35 of the reel seat 30.

[0028]

The front rod shaft main body portion 11 is a cylindrical rod shaft portion having a small diameter over the entirety in the axial direction, and has an outer diameter smaller than the inner diameter of the inner peripheral surface 35 of the reel seat 30. The rear portion 12 comprises a first inclined portion 13 continuous with the rear end portion of the front rod shaft main body portion 11, and a first large-diameter portion 14 continuous with a rear end

portion 13a of the first inclined portion 13. The first inclined portion 13 has a funnel shape (substantially conical shape) that gradually increases in diameter toward the rear. The outer diameter of a front end portion of the first inclined portion 13 corresponds to the outer diameter of the front rod shaft main body portion 11, and the outer diameter of the rear end portion 13a of the first inclined portion 13 corresponds to the inner diameter of the inner peripheral surface 35 of the reel seat 30. The rear end portion 13a of the first inclined portion 13 is located radially inward of a front end surface 30a of the reel seat 30. As a result, the first inclined portion 13 is exposed in front of the reel seat 30.

[0029]

The first large-diameter portion 14 is a cylindrical rod shaft portion having a large diameter over the entirety in the axial direction, and has an outer diameter corresponding to the inner diameter of the inner peripheral surface 35 of the reel seat 30. The first large-diameter portion 14 is bonded to the inner peripheral surface 35 of the reel seat 30 with an adhesive.

[0030]

The rear rod shaft main body portion 21 is a cylindrical rod shaft portion having a small diameter over the entirety in the axial direction, and, similarly to the front rod shaft main body portion 11, has an outer diameter smaller than the inner diameter of the inner peripheral surface 35 of the reel seat 30. The front portion 22 comprises a second inclined portion 23 continuous with the front end portion of the rear rod shaft main body portion 21, and a second large-diameter portion 24 continuous with a front end portion 23a of the second inclined portion 23. The second inclined portion 23 has a funnel shape (substantially conical shape) that gradually increases in diameter toward

the front. The outer diameter of a rear end portion of the second inclined portion 23 corresponds to the outer diameter of the rear rod shaft main body portion 21, and the outer diameter of the front end portion 23a of the second inclined portion 23 corresponds to the inner diameter of the inner peripheral surface 35 of the reel seat 30. The front end portion 23a of the second inclined portion 23 is located radially inward of a rear end surface 30b of the reel seat 30. As a result, the second inclined portion 23 is exposed behind the reel seat 30.

[0031]

The second large-diameter portion 24 is a cylindrical rod shaft portion having a large diameter over the entirety in the axial direction, and has an outer diameter corresponding to the inner diameter of the inner peripheral surface 35 of the reel seat 30. The second large-diameter portion 24 is bonded to the inner peripheral surface 35 of the reel seat 30 with an adhesive. The outer diameter and the inner diameter of the second large-diameter portion 24 are the same as the outer diameter and the inner diameter of the first large-diameter portion 14. A front end surface 25 of the second large-diameter portion 24 is joined to (abutted against) a rear end surface 15 of the first large-diameter portion 14 of the front rod shaft 10, and is bonded to the rear end surface 15 with an adhesive. As a result, the front rod shaft 10 and the rear rod shaft 20 are integrally connected inside the reel seat 30.

[0032]

The reel seat 30 is a member for attaching a mounting leg portion of a fishing reel (not illustrated). In addition, the reel seat 30 functions as a member for fixing the front rod shaft 10 and the rear rod shaft 20, and the front

rod shaft 10 and the rear rod shaft 20 are integrally configured via the reel seat 30. The inner peripheral surface 35 of the reel seat 30 is a cylindrical surface having a large diameter over the entirety in the axial direction, and has an inner diameter into which the first large-diameter portion 14 of the front rod shaft 10 and the second large-diameter portion 24 of the rear rod shaft 20 are inserted.

[0033]

When assembling the fishing rod 1 as described above, the front rod shaft 10 and the rear rod shaft 20 are bonded with an adhesive to the inner peripheral surface 35 of the reel seat 30. In this case, the adhesive is applied to the outer peripheral surface of the first large-diameter portion 14 of the front rod shaft 10, the rear end surface 15 of the first large-diameter portion 14, and the inner peripheral surface 35 of the reel seat 30, and the first large-diameter portion 14 is inserted from the front of the reel seat 30 into the inner peripheral surface 35 to a predetermined position. Next, the adhesive is applied to the outer peripheral surface of the second large-diameter portion 24 of the rear rod shaft 20 and the front end surface 25 of the second large-diameter portion 24, and the second large-diameter portion 24 is inserted from the rear of the reel seat 30 into the inner peripheral surface 35. Then, the front end surface 25 of the second large-diameter portion is brought into abutment with the rear end surface 15 of the first large-diameter portion 14. As a result, the fishing rod 1 in which the front rod shaft 10 and the rear rod shaft 20 are respectively bonded to the reel seat 30 with the adhesive is assembled.

[0034]

The assembly procedure is not limited to the above. The fishing rod 1 may also be assembled by first joining the front rod shaft 10 and the rear rod

shaft 20 in advance and then inserting them into the inner peripheral surface 35 of the reel seat 30.

The joining position (abutment position) between the front rod shaft 10 and the rear rod shaft 20 is not limited to a central portion of the inner peripheral surface 35 in the axial direction, and may be set to be shifted to another position in the axial direction.

[0035]

With the fishing rod 1 of the present embodiment described above, a part of the rear portion 12 of the front rod shaft 10 and a part of the front portion 22 of the rear rod shaft 20 can be directly bonded to the inner peripheral surface 35 of the reel seat 30. Therefore, it is not necessary to interpose a spacer to fix the front rod shaft 10 and the rear rod shaft 20, and it is possible to reduce the number of components and achieve weight reduction. In addition, since the bonding process for bonding the spacer can be eliminated, the assembly time can be shortened and cost reduction can be achieved.

[0036]

Further, in a case where vibration is input to the front rod shaft 10 due to a fish bite or a fish being hooked, the vibration is directly transmitted from the front rod shaft 10 and the rear rod shaft 20 to the reel seat 30. Therefore, the vibration is easily transmitted to a hand gripping the reel seat 30, and sensitivity during actual fishing is good.

[0037]

In addition, since the rear portion 12 of the front rod shaft 10 and the front portion 22 of the rear rod shaft 20 are joined inside the reel seat 30, the strength of the fishing rod 1 can be improved.

[0038]

(Second Embodiment)

Next, a fishing rod 1A according to a second embodiment will be described with reference to Fig. 2. Fig. 2 is a cross-sectional view illustrating a principal part of the fishing rod 1A according to the second embodiment of the present invention. The present embodiment differs from the first embodiment in that the rear portion 12 of the front rod shaft 10A and the front portion 22 of the rear rod shaft 20A are joined (abutted) at a position corresponding to a clamping region L1 in which a mounting leg portion 50 of the fishing reel is clamped.

[0039]

As illustrated in Fig. 2, the first large-diameter portion 14 of the front rod shaft 10A has a longer shape in the axial direction than that in the first embodiment. On the other hand, the second inclined portion 23 of the rear rod shaft 20A has a larger inclination angle than that in the first embodiment. The second large-diameter portion 24 of the rear rod shaft 20A has a shorter shape in the axial direction than that in the first embodiment.

[0040]

The reel seat 30 comprises a fixed hood 31 and a movable hood 32. A placement surface 33 on which the mounting leg portion 50 of the fishing reel is placed is formed between the fixed hood 31 and the movable hood 32. The mounting leg portion 50 is attached to the reel seat 30 by being clamped by the fixed hood 31 and the movable hood 32 in a state of being placed on the placement surface 33. The clamping region L1 is a region defined by the fixed hood 31 and the movable hood 32. Such a clamping region L1 is substantially

reinforced by the mounting leg portion 50 being placed thereon.

[0041]

In the present embodiment, the rear portion 12 of the front rod shaft 10A and the front portion 22 of the rear rod shaft 20A are joined (abutted) at a position corresponding to the clamping region L1 of the mounting leg portion 50. That is, the joining position is set within the clamping region L1.

[0042]

According to the present embodiment, the joining part between the rear portion 12 of the front rod shaft 10 and the front portion 22 of the rear rod shaft 20 can be reinforced by the mounting leg portion 50, and thus the strength of the fishing rod 1A can be improved.

[0043]

(Third Embodiment)

Next, a fishing rod 1B according to a third embodiment will be described with reference to Fig. 3. Fig. 3 is a cross-sectional view illustrating a principal part of the fishing rod 1B according to the third embodiment of the present invention. The present embodiment differs from the first and second embodiments in that a socket-and-spigot jointed structure is adopted as a joining structure.

[0044]

As illustrated in Fig. 3, an annular member 40 for the socket-and-spigot joining is bonded in advance with an adhesive to an inner surface of a rear end portion 14a of the first large-diameter portion 14. A front end portion 24a of the second large-diameter portion 24 is fitted externally onto a rear outer surface of the annular member 40 and is bonded with an adhesive. By such a

socket-and-spigot jointed structure, the rear portion 12 of a front rod shaft 10B and the front portion 22 of a rear rod shaft 20B are joined.

The annular member 40 may also be configured to be bonded in advance with an adhesive to an inner surface of the front end portion 24a of the second large-diameter portion 24. In this case, the rear end portion 14a of the first large-diameter portion 14 is fitted externally onto a front outer surface of the annular member 40 and is bonded with an adhesive.

[0045]

According to the present embodiment, the rear portion 12 of the front rod shaft 10B and the front portion 22 of the rear rod shaft 20B can be directly joined inside the reel seat 30 by the socket-and-spigot jointed structure, and thus the strength of the fishing rod 1B can be improved. In addition, since vibration is suitably transmitted from the front rod shaft 10B to the rear rod shaft 20B by the socket-and-spigot jointed structure, vibration is transmitted to the reel seat 30 from both the front rod shaft 10B and the rear rod shaft 20B. Therefore, sensitivity during actual fishing is good.

[0046]

(Fourth Embodiment)

Next, a fishing rod 1C according to a fourth embodiment will be described with reference to Fig. 4. Fig. 4 is a cross-sectional view illustrating a principal part of the fishing rod 1C according to the fourth embodiment of the present invention. The present embodiment differs from the first to third embodiments in that an ordinarily jointed structure is adopted as a joining structure.

[0047]

As illustrated in Fig. 4, the rear end portion 14a of the first large-diameter portion 14 is formed in a stepped cylindrical shape reduced in diameter so as to form the ordinarily jointed structure. The front end portion 24a of the second large-diameter portion 24 is fitted externally onto the rear end portion 14a of the first large-diameter portion 14 and is bonded with an adhesive. By such an ordinarily jointed structure, the rear portion 12 of a front rod shaft 10C and the front portion 22 of a rear rod shaft 20C are joined.

The joining structure is not limited to this configuration. The front end portion 24a of the second large-diameter portion 24 may be formed in a stepped cylindrical shape reduced in diameter so as to form the ordinarily jointed structure, and the rear end portion 14a of the first large-diameter portion 14 may be fitted externally onto the front end portion 24a of the second large-diameter portion 24 and bonded with an adhesive.

[0048]

Also in the present embodiment, the rear portion 12 of the front rod shaft 10C and the front portion 22 of the rear rod shaft 20C can be directly joined inside the reel seat 30 by the ordinarily jointed structure, and thus the strength of the fishing rod 1C can be improved. In addition, since vibration is suitably transmitted from the front rod shaft 10C to the rear rod shaft 20C by the ordinarily jointed structure, vibration is transmitted to the reel seat 30 from both the front rod shaft 10C and the rear rod shaft 20C. Therefore, sensitivity during actual fishing is good.

[0049]

(Fifth Embodiment)

Next, a fishing rod 1D according to a fifth embodiment will be

described with reference to Fig. 5. Fig. 5 is a cross-sectional view illustrating a principal part of the fishing rod 1D according to the fifth embodiment of the present invention. The present embodiment differs from the first to fourth embodiments in that a joining protrusion 36 is provided on the inner peripheral surface 35 of a reel seat 30D.

[0050]

As illustrated in Fig. 5, the protrusion 36 protrudes annularly radially inward from the inner peripheral surface 35 of the reel seat 30D. The rear end surface 15 of the first large-diameter portion 14 of a front rod shaft 10D abuts against a front surface of the protrusion 36 and is bonded with an adhesive. In addition, the front end surface 25 of the second large-diameter portion 24 of a rear rod shaft 20D abuts against a rear surface of the protrusion 36 and is bonded with an adhesive. The front surface and the rear surface of the protrusion 36 have sizes corresponding respectively to the rear end surface 15 of the front rod shaft 10D and the front end surface 25 of the rear rod shaft 20D.

[0051]

Although the protrusion 36 is illustrated as protruding annularly from the inner peripheral surface 35, the configuration is not limited thereto, and the protrusion 36 may protrude partially from the inner peripheral surface 35. The protrusion height of the protrusion 36 (the amount of protrusion radially inward) may be set as appropriate. The protrusion 36 may also be formed in a wall shape that partitions the inner peripheral surface 35 in the radial direction, and the rear end surface 15 of the front rod shaft 10D and the front end surface 25 of the rear rod shaft 20D may abut against the front surface and the rear surface of the protrusion 36.

[0052]

According to the present embodiment, the same advantageous effects as those of the above-described embodiments can be obtained, and during assembly of the fishing rod 1D, positioning of the rear portion 12 of the front rod shaft 10D and the front portion 22 of the rear rod shaft 20D with respect to the inner peripheral surface 35 can be easily performed. Therefore, the assembly time can be shortened, and cost reduction and improvement in productivity can be achieved.

[0053]

(Sixth Embodiment)

Next, a fishing rod 1D1 according to a sixth embodiment will be described with reference to Fig. 6. Fig. 6 is a cross-sectional view illustrating a principal part of the fishing rod 1D1 according to the sixth embodiment of the present invention. The present embodiment is a modified example of the fifth embodiment, and differs in that a joining protrusion 36D1 is provided on the inner peripheral surface 35 of a reel seat 30D1, and a front end surface 25a of the second large-diameter portion 24 is joined (abutted) to the rear end surface 15 of the first large-diameter portion 14 of the front rod shaft 10.

[0054]

As illustrated in Fig. 6, the protrusion 36D1 protrudes annularly radially inward from the inner peripheral surface 35 of the reel seat 30D1. The protrusion 36D1 is formed to have a smaller protrusion height (amount of protrusion radially inward) than the protrusion 36 of the fifth embodiment (see Fig. 5). A part of the rear end surface 15 of the first large-diameter portion 14 of the front rod shaft 10D1 abuts against the front surface of the protrusion

36D1 and is bonded with an adhesive. In addition, a second front end surface 25b, which will be described later, of the second large-diameter portion 24 of a rear rod shaft 20D1 abuts against a rear surface of the protrusion 36D1 and is bonded with an adhesive.

[0055]

The front end portion 24a of the second large-diameter portion 24 of the rear rod shaft 20D1 is formed in a stepped cylindrical shape reduced in diameter so as to abut against the rear end surface 15 of the first large-diameter portion 14 of the front rod shaft 10. The front end portion 24a comprises a first front end surface 25a, the second front end surface 25b, and a reduced-diameter outer peripheral surface 25c. The first front end surface 25a abuts against a part of the rear end surface 15 of the first large-diameter portion 14 and is bonded with an adhesive. The second front end surface 25b abuts against a rear surface of the protrusion 36D1 and is bonded with an adhesive. In addition, the reduced-diameter outer peripheral surface 25c abuts against an inner peripheral surface of the protrusion 36D1 and is bonded with an adhesive. That is, the front end portion 24a of the second large-diameter portion 24 extends forward so as to cover the protrusion 36D1 from the inner peripheral surface side, and is joined to a part of the rear end surface 15 of the first large-diameter portion 14. As a result, the front end portion 24a of the second large-diameter portion 24 is bonded to both the protrusion 36D1 and the rear end surface 15 of the first large-diameter portion 14.

[0056]

In the present embodiment, the front end portion 24a of the second large-diameter portion 24 of the rear rod shaft 20D1 is illustrated as being

formed in a stepped cylindrical shape, but is not limited thereto, and the rear end portion 14a of the front rod shaft 10D1 may be reduced in diameter and formed in a stepped cylindrical shape. In this case, the rear end portion 14a of the first large-diameter portion 14 extends rearward so as to cover the protrusion 36D1 from the inner peripheral surface side, abuts against a part of the front end surface 25 of the second large-diameter portion 24 (see Fig. 5), and is bonded with an adhesive.

[0057]

According to the present embodiment, the same advantageous effects as those of the above-described embodiments can be obtained, and during assembly of the fishing rod 1D1, positioning of the rear portion 12 of the front rod shaft 10D1 and the front portion 22 of the rear rod shaft 20D1 with respect to the inner peripheral surface 35 can be easily performed. Therefore, the assembly time can be shortened, and cost reduction and improvement in productivity can be achieved.

[0058]

In addition, since the rear portion 12 of the front rod shaft 10D1 and the front portion 22 of the rear rod shaft 20D1 are joined inside the reel seat 30D1, the strength of the fishing rod 1D1 can be improved.

[0059]

(Seventh Embodiment)

Next, a fishing rod 1E according to a seventh embodiment will be described with reference to Fig. 7. Fig. 7 is a cross-sectional view illustrating a principal part of the fishing rod 1E according to the seventh embodiment of the present invention. The present embodiment differs from the first to sixth

embodiments in that the outer diameter of the rear portion 12 of a front rod shaft 10E and the outer diameter of the front portion 22 of a rear rod shaft 20E are different from each other.

[0060]

As illustrated in Fig. 7, the rear portion 12 of the front rod shaft 10E has an overall larger diameter than the front portion 22 of the rear rod shaft 20E. Conversely, the front portion 22 of the rear rod shaft 20E has an overall smaller diameter than the rear portion 12 of the front rod shaft 10E. Correspondingly, the inner peripheral surface 35 of a reel seat 30E is formed in a stepped cylindrical shape comprising a large-diameter inner peripheral surface 35a and a small-diameter inner peripheral surface 35b having different inner diameters. A stepped surface 35c is formed at a boundary portion between the large-diameter inner peripheral surface 35a and the small-diameter inner peripheral surface 35b.

[0061]

The first large-diameter portion 14 of the front rod shaft 10E is bonded to the large-diameter inner peripheral surface 35a with an adhesive. The rear end surface 15 of the first large-diameter portion 14 is bonded in a state where a part thereof abuts against the stepped surface 35c of the inner peripheral surface 35.

The second large-diameter portion 24 of the rear rod shaft 20E is bonded to the small-diameter inner peripheral surface 35b with an adhesive. The front end surface 25 of the second large-diameter portion 24 is bonded in a state where a part thereof abuts against the rear end surface 15 of the first large-diameter portion 14.

[0062]

According to the present embodiment, the same advantageous effects as those of the above-described embodiments can be obtained, and during assembly of the fishing rod 1E, the rear end surface 15 of the first large-diameter portion 14 can be bonded while being brought into abutment with the stepped surface 35c, and the front end surface 25 of the second large-diameter portion 24 can be bonded while being brought into abutment with the rear end surface 15 of the first large-diameter portion 14. Therefore, these assembly operations can be easily performed. As a result, the assembly time can be shortened, and cost reduction and improvement in productivity can be achieved.

[0063]

In addition, variations can be provided in a structure in which the rear portion 12 of the front rod shaft 10E and the front portion 22 of the rear rod shaft 20E are directly bonded to the inner peripheral surface 35 of the reel seat 30, and the appearance of exposed portions can also be changed. As a result, the fishing rod 1E can be configured in accordance with a fishing type.

[0064]

(Eighth Embodiment)

Next, a fishing rod 1F according to an eighth embodiment will be described with reference to Fig. 8. Fig. 8 is a cross-sectional view illustrating a principal part of the fishing rod 1F according to the eighth embodiment of the present invention. The present embodiment is a modified example in which the fifth embodiment and the seventh embodiment are combined, and differs in that the outer diameter of the rear portion 12 of a front rod shaft 10F and the outer diameter of the front portion 22 of a rear rod shaft 20F are made different

from each other, and the rear portion 12 of the front rod shaft 10F and the front portion 22 of the rear rod shaft 20F are brought into contact (abutted) with a protrusion 36F provided on the inner peripheral surface 35.

[0065]

As illustrated in Fig. 8, the rear portion 12 of the front rod shaft 10F has an overall larger diameter than the front portion 22 of the rear rod shaft 20F. Conversely, the front portion 22 of the rear rod shaft 20F has an overall smaller diameter than the rear portion 12 of the front rod shaft 10F. Correspondingly, the inner peripheral surface 35 of a reel seat 30F comprises the large-diameter inner peripheral surface 35a and the small-diameter inner peripheral surface 35b having different inner diameters. The inner peripheral surface 35 has a stepped cylindrical shape.

[0066]

The protrusion 36F protrudes annularly radially inward at a boundary portion between the large-diameter inner peripheral surface 35a and the small-diameter inner peripheral surface 35b. The rear end surface 15 of the first large-diameter portion 14 of a front rod shaft 10F abuts against a front surface of the protrusion 36 and is bonded with an adhesive. In addition, the front end surface 25 of the second large-diameter portion 24 of a rear rod shaft 20F abuts against a rear surface of the protrusion 36 and is bonded with an adhesive.

[0067]

According to the present embodiment, the same advantageous effects as those of the fifth and seventh embodiments described above can be obtained. That is, during assembly of the fishing rod 1F, positioning of the rear portion 12 of the front rod shaft 10F and the front portion 22 of the rear rod shaft

20F can be easily performed. Therefore, the assembly time can be shortened, and cost reduction and improvement in productivity can be achieved. In addition, variations can be provided in a structure in which the rear portion 12 of the front rod shaft 10F and the front portion 22 of the rear rod shaft 20F are directly bonded to the inner peripheral surface 35 of the reel seat 30, and the appearance of exposed portions can also be changed. As a result, the fishing rod 1F can be configured in accordance with a fishing type.

[0068]

(Ninth Embodiment)

Next, a fishing rod 1G according to a ninth embodiment will be described with reference to Fig. 9. Fig. 9 is a cross-sectional view illustrating a front rod shaft 10G of the fishing rod 1G according to the ninth embodiment of the present invention. The present embodiment differs from the first to eighth embodiments in that the wall thickness of the rear portion 12 of the front rod shaft 10G is formed to become thinner toward the rear end portion 14a (insertion end).

[0069]

As illustrated in Fig. 9, the first inclined portion 13 of the rear portion 12 in the front rod shaft 10G is formed such that the wall thickness gradually decreases from the front side toward the rear side. Accordingly, the first large-diameter portion 14 continuous with the first inclined portion 13 also has a smaller wall thickness than those in the above-described embodiments. The first large-diameter portion 14 is illustrated as being formed with substantially the same wall thickness over the entirety in the axial direction, but is not limited thereto, and the wall thickness may be formed to further decrease toward the

rear end portion 14a.

[0070]

Also in the present embodiment, since the first large-diameter portion 14 (rear portion 12) of the front rod shaft 10G is directly bonded to the inner peripheral surface 35 of the reel seat 30 (see Fig. 1 and the like), a predetermined strength can be secured. In addition, weight reduction of the fishing rod 1G can be achieved by the thin-walled structure.

Note that a rear rod shaft 20G (not illustrated) may also be formed such that the wall thickness of the second inclined portion 23 of the front portion 22 gradually decreases from the rear side toward the front side, similarly to the front rod shaft 10G. Alternatively, only the rear rod shaft 20G may be formed such that the wall thickness becomes thinner.

[0071]

(Tenth Embodiment)

Next, a fishing rod 1H according to a tenth embodiment will be described with reference to Fig. 10. Fig. 10 is a cross-sectional view illustrating a principal part of the fishing rod 1H according to the tenth embodiment of the present invention. The present embodiment differs from the first to ninth embodiments in that the rear portion 12 of a front rod shaft 10H and the front portion 22 of a rear rod shaft 20H are disposed with a spacing S1 therebetween in the axial direction of the reel seat 30.

[0072]

As illustrated in Fig. 10, the rear end surface 15 of the first large-diameter portion 14 of the front rod shaft 10H and the front end surface 25 of the second large-diameter portion 24 of the rear rod shaft 20H face each other

inside the reel seat 30 with the spacing S1 therebetween and are disposed in a non-contact state. The size of the spacing S1 can be set as appropriate.

[0073]

According to the present embodiment, the same advantageous effects as those of the above-described embodiments can be obtained, and it is not necessary to join the rear portion 12 of the front rod shaft 10H and the front portion 22 of the rear rod shaft 20H inside the reel seat 30, and accordingly, the adhesive for such joining becomes unnecessary. As a result, cost reduction can be achieved.

[0074]

(Eleventh Embodiment)

Next, a fishing rod 1J according to an eleventh embodiment will be described with reference to Fig. 11. Fig. 11 is a cross-sectional view illustrating a principal part of the fishing rod 1J according to the eleventh embodiment of the present invention. The present embodiment differs from the first to tenth embodiments in that the first large-diameter portion 14 of a front rod shaft 10H and the second large-diameter portion 24 of a rear rod shaft 20H are provided to be exposed in front of and behind the reel seat 30.

[0075]

As illustrated in Fig. 11, the first large-diameter portion 14 of the front rod shaft 10H extends forward of the front end surface 30a of the reel seat 30, and a part thereof is exposed in front of (outside) the reel seat 30. As a result, the rear end portion 13a of the first inclined portion 13 is also located forward of the front end surface 30a of the reel seat 30.

[0076]

Similarly, the second large-diameter portion 24 of the rear rod shaft 20H extends rearward of the rear end surface 30b of the reel seat 30, and a part thereof is exposed behind (outside) the reel seat 30. As a result, the front end portion 23a of the second inclined portion 23 is also located rearward of the rear end surface 30b of the reel seat 30.

[0077]

Alternatively, either one of the first large-diameter portion 14 of the front rod shaft 10H and the second large-diameter portion 24 of the rear rod shaft 20H may be configured to be exposed outside the reel seat 30.

[0078]

According to the present embodiment, variations can be provided in a structure in which the rear portion 12 of the front rod shaft 10J and the front portion 22 of the rear rod shaft 20J are directly bonded to the inner peripheral surface 35 of the reel seat 30, and the appearance of exposed portions can also be changed. As a result, the fishing rod 1J can be configured in accordance with a fishing type.

[0079]

Although the embodiments of the present invention have been described above, design modifications can be made as appropriate within a scope not departing from the gist of the present invention.

For example, in each of the above embodiments, the first inclined portion 13 and the second inclined portion 23 are illustrated as being provided to be exposed outside the reel seat 30, but are not limited thereto, and may be configured such that a part thereof is disposed inside the inner peripheral surface 35 of the reel seat 30.

[0080]

Further, for example, a hole may be formed in the reel seat 30 (30D or the like) such that a joined state (abutment state) between the rear portion 12 of the front rod shaft 10 (10A or the like) and the front portion 22 of the rear rod shaft 20 (20A or the like) can be visually confirmed from outside the reel seat 30.

[0081]

In each of the above embodiments, the front rod shaft 10 (10A or the like) and the rear rod shaft 20 (20A or the like) are illustrated as being configured as tubular bodies (hollow bodies), but are not limited thereto, and one or both of the front rod shaft 10 (10A or the like) and the rear rod shaft 20 (20A or the like) may be configured as a solid body.

[0082]

In addition, the rear portion 12 of the front rod shaft 10 (10A or the like) may be configured by a fiber-reinforced resin prepreg (prepreg sheet) different from that of the front rod shaft main body portion 11. Similarly, the front portion 22 of the rear rod shaft 20 (20A or the like) may be configured by a fiber-reinforced resin prepreg (prepreg sheet) different from that of the rear rod shaft main body portion 21.

Reference Signs List

[0083]

1 to 1J fishing rod

10, 10A to 10J front rod shaft

12 rear portion

14a rear end portion (insertion end)
22 front portion
20, 20A to 20J rear rod shaft
30, 30D to 30F reel seat
35 inner peripheral surface
50 mounting leg portion
L1 clamping region

CLAIMS

[Claim 1]

A fishing rod comprising: a front rod shaft; a rear rod shaft; and a tubular reel seat, wherein the front rod shaft and the rear rod shaft are bonded to an inner peripheral surface of the reel seat, and

a rear portion of the front rod shaft and a front portion of the rear rod shaft are increased in diameter to a size corresponding to the inner peripheral surface of the reel seat.

[Claim 2]

The fishing rod according to claim 1, wherein the rear portion of the front rod shaft and the front portion of the rear rod shaft are joined to each other with an adhesive.

[Claim 3]

The fishing rod according to claim 2, wherein the reel seat comprises a clamping region in which a mounting leg portion of a fishing reel is clamped, and the rear portion of the front rod shaft and the front portion of the rear rod shaft are joined to each other at a position corresponding to the clamping region.

[Claim 4]

The fishing rod according to claim 1, wherein the rear portion of the front rod shaft and the front portion of the rear rod shaft are joined to each other

with an adhesive by a socket-and-spigot jointed structure or an ordinarily jointed structure.

[Claim 5]

The fishing rod according to claim 1, wherein
a protrusion that protrudes radially inward is formed on the inner
peripheral surface of the reel seat, and
the rear portion of the front rod shaft and the front portion of the rear
rod shaft abut against the protrusion.

[Claim 6]

The fishing rod according to claim 1, wherein the rear portion of the
front rod shaft and the front portion of the rear rod shaft have different outer
diameters.

[Claim 7]

The fishing rod according to claim 1, wherein at least one of the rear
portion of the front rod shaft and the front portion of the rear rod shaft is formed
such that a wall thickness decreases toward an insertion end when being
inserted into the inner peripheral surface of the reel seat.

[Claim 8]

The fishing rod according to claim 1, wherein the rear portion of the
front rod shaft and the front portion of the rear rod shaft are disposed with a
spacing in an axial direction of the reel seat.