

[Document Name] Description

[Title] Spinning Reel for Fishing

[Technical Field]

[0001]

The present invention relates to a spinning reel for fishing.

[Background]

[0002]

A spinning reel for fishing includes a rotor that rotates in coordination with the reel-in operation of a handle, a bail support member that is mounted on a support arm of the rotor and supports a bail, and a line roller that is supported on the bail support member and guides a fishing line to a spool on which the fishing line is wound and held (see Patent Literature 1). The line roller has a cylindrical roller that is rotatably provided on a shaft by means of a bearing.

[Prior Art]

[Patent Literatures]

[0003]

[Patent Literature 1] Japanese Unexamined Patent Application Publication No. 09-149749

[Summary]

[Technical Problems]

[0004]

The roller of the line roller has a fishing-line guiding portion (recessed portion) that guides the fishing line onto the spool. If the recessed width of the fishing line guide is large, the fishing line easily moves on the fishing-line guiding portion when it is reeled-in, and produces abnormal noise caused by rubbing between the fishing-line guiding portion and the fishing line. On the other hand, if the recessed width of the fishing line guide is small, when the bail is opened while the fishing line is under tension, the fishing-line guiding portion and the fishing line might rub against each other and the fishing

line might be damaged, depending on the depth of the recessed portion and the shape of its rounded portion.

[0005]

The present invention was created to solve these problems, and an object thereof is to provide a spinning reel for fishing that prevents generation of abnormal noise and damage to the fishing line that are caused by rubbing of the fishing line during the reel-in operation thereof.

[Solution to Problems]

[0006]

A spinning reel for fishing according to the present invention includes: a handle; a rotor that rotates in coordination with the reel-in operation of the handle; a support arm of the rotor; a bail; a bail support member that is mounted on the support arm and supports the bail; a spool around which a fishing line is wound and held; and a line roller that is supported on the bail support member and guides the fishing line to the spool; wherein the line roller includes a shaft, a bearing and a roller that is rotatably provided on the shaft by means of the bearing; the roller has: a fishing-line guiding portion that is formed on the bail support member side and guides the fishing line to the spool, a fishing-line steering portion that is larger in diameter than the fishing-line guiding portion and steers the fishing line to the fishing-line guiding portion, and a fishing-line regulating portion that is inclined between the fishing-line guiding portion and the fishing-line steering portion and regulates the movement of the fishing line in the axial direction of the shaft.

[0007]

According to the present invention, the fishing-line regulating portion that is inclined prevents the fishing line in the fishing-line guiding portion from moving a lot in the axial direction of the shaft, thereby preventing generation of abnormal noise caused by rubbing of the

fishing line during the reel-in operation thereof. Also, since the fishing-line regulating portion is inclined from the fishing-line guiding portion toward the fishing-line steering portion, even if the bail is raised while the fishing line is under tension, the fishing line is not caught in the fishing-line regulating portion or damaged.

[0008]

The inclination angle of the fishing-line regulating portion with respect to the center axis of the shaft is preferably 35° to 55° .

[0009]

According to the present invention, rubbing and twisting of fishing lines of various types are prevented more desirably, regardless of their thickness and materials.

[0010]

The inclination angle of the fishing-line steering portion with respect to the center axis of the shaft is preferably 1° to 7° .

[0011]

According to the present invention, since the fishing-line steering portion is inclined, the fishing line is steered easily to the fishing-line guiding portion.

[0012]

The axial width of the fishing-line guiding portion is preferably 1 mm or less.

[0013]

According to the present invention, the movement of the fishing line in the axis direction is regulated, and abnormal noise caused by rubbing of the fishing line and the roller is further prevented.

[Advantage Effects of Invention]

[0014]

The present invention provides a spinning reel for fishing that prevents generation of abnormal noise and

damage to the fishing line that are caused by rubbing of the fishing line during the reel-in operation thereof.

[Brief Description of Drawings]

[0015]

[Fig. 1] Fig. 1 is an overall configuration of a spinning reel for fishing.

[Fig. 2] Fig. 2 is a section view of a line roller.

[Fig. 3] Fig. 3 is a perspective view of a roller of the line roller.

[Descriptions of Embodiments]

[0016]

<Embodiment>

Now, an embodiment of the present invention will be described with reference to the accompanying drawings. In the descriptions of the drawings, identical elements are given the same reference numerals, and redundant descriptions thereof are omitted as appropriate.

[0017]

As shown in Fig. 1, a spinning reel for fishing includes: a reel body 1 and a foot 1a to mount the reel body 1 on a reel mounting portion of a fishing rod that is not shown in the figure. Inside the reel body 1, a drive gear, not shown in the figure, that is rotated by rotating the handle 2 is provided. A hollow pinion is meshed with the drive gear.

[0018]

Into the pinion, a spool shaft that is not shown in the figure is inserted in the axial direction, and a spool 3 on which a fishing line is wound is mounted on a tip end of the spool shaft. A line winding body 4 is formed at the front of the spool 3. On the pinion, a rotor 5 that rotates integrally with the pinion is mounted. The rotor 5 includes a pair of support arms 5a (only one side shown in the figure). On the support arms 5a, a bail 7 is supported by means of a pair of bail support members 6 (only one side

shown in the figure). A line roller 20 is provided between the bail support members 6 and the bail 7.

[0019]

The bail 7 is provided in such a manner that it moves freely between a reel-in position and a casting position by means of the pair of bail support members 6. A line slider 7a is provided at an end of the bail 7 on the bail support member 6 side. The line slider 7a is a portion that moves the fishing line picked up by the bail 7 to the line roller 20. The line slider 7a gradually expands in diameter towards the line roller 20 and is hollow. The line roller 20 will be described in details below.

[0020]

The drive gear described above is engaged with an oscillating mechanism that is not shown in the figure, and the spool shaft (spool 3) is moved forward and backward by rotating the drive gear by the rotating operation of the handle 2.

[0021]

With the spinning reel for fishing of this configuration, when the fishing rod is casted with the bail 7 moved (rotated) to the casting position, and then the bail 7 is moved (rotated) to the reel-in position and the handle 2 is rotated, the rotating movement of the handle 2 is transmitted to the pinion by means of the drive gear, thereby rotating the pinion. At the same time, the rotating movement of the handle 2 is transmitted to the spool shaft by means of the oscillating mechanism, and the spool shaft moves forward and backward. At this time, as the rotor 5 rotates and the spool 3 moves forward and backward, the fishing line is wound evenly parallel around the fishing line winding body 4 of the spool 3, by means of the line roller 20.

[0022]

Now, the surrounding structure of the line roller 20 will be described. As shown in Figs. 1 to 3, the line

roller 20 includes a shaft 15, a roller 21, bearings 22, 23, and support members 24, 25.

[0023]

The shaft 15 is a fastener that is provided between the bail support member 6 and the line slider 7a and fastens the members of the line roller 20. The shaft 15 has a tip end screwed to a receiver 9 provided inside the bail support member 6. In the present embodiment, the shaft 15 is fastened from the line slider 7a side, but it may also be fastened from the bail support member 6 side.

[0024]

On the outer circumference of the shaft 15, the bearings 22, 23 are provided next to each other along the axial direction of the shaft 15. A cylindrical support member 24 is disposed between the bearing 22 and the roller 21. A cylindrical support member 25 is disposed between the bearing 23 and the roller 21. The support members 24 and 25 support the roller 21 from the inside of the roller 21. The roller 21 and the support members 24, 25 rotate around the shaft 15. A positioning recess 26 is formed along the circumferential direction at a portion where the support member 24 and the support member 25 are joined.

[0025]

The roller 21 is a cylindrical member that is rotatably disposed between the bail support member 6 and the line slider 7a. The roller 21 mainly includes on its outer circumference surface a fishing-line guiding portion 21a, a fishing-line steering portion 21b and a fishing-line regulating portion 21c. The fishing-line guiding portion 21a is formed on the bail support member 6 side and guides a fishing line N to the spool 3. The fishing-line guiding portion 21a may be parallel or inclined with respect to the center axis O. When inclined, the fishing-line guiding portion 21a is inclined in such a manner that the diameter of the fishing-line guiding portion 21a decreases toward the bail support member 6. The axial width (axial length)

of the fishing-line guiding portion 21a may be set as appropriate, and for example, 1 mm or less is preferable.

[0026]

The fishing-line steering portion 21b is disposed on the line slider 7a side with respect to the fishing-line guiding portion 21a, and steers the fishing line N toward the fishing-line guiding portion 21a. The fishing-line steering portion 21b has a larger diameter than the fishing-line guiding portion 21a. The fishing-line steering portion 21b has a curved or inclined surface, or both a curved surface and an inclined surface, that decrease in diameter toward the bail support member 6. The inclination angle of the fishing-line steering portion 21b with respect to the center axis O (inclination angle of the portion facing the fishing-line regulating portion 21c) may be set as appropriate, and for example, 1° to 7° is preferable.

[0027]

The fishing-line regulating portion 21c is inclined between the fishing-line guiding portion 21a and the fishing-line steering portion 21b, and regulates the movement of the fishing line N in the axial direction of the shaft 15. The fishing-line regulating portion 21c is inclined in such a manner that it decreases in diameter toward the bail support member 6. The inclination angle of the fishing-line regulating portion 21c with respect to the center axis O (inclination angle A in Fig. 2) may be set as appropriate, and for example, 35° to 55° is preferable. The edge between the fishing-line guiding portion 21a and the fishing-line regulating portion 21c may be inclined surfaces joined or may be a chamfered curved surface. Likewise, the edge between the fishing-line steering portion 21b and the fishing-line regulating portion 21c may be inclined surfaces joined or may be a chamfered curved surface.

[0028]

As shown in Fig. 2, the roller 21 has on its inner circumference surface a convex portion 21d protruding toward the center axis O. The convex portion 21d is a portion that is fitted into the positioning recess 26. With the convex portion 21d, the roller 21 is easily positioned with respect to the support members 24, 25.

[0029]

At an end of the fishing-line steering portion 21b, an extended portion 21e extending toward the line slider 7a is formed. The extended portion 21e faces the inner circumference surface of the line slider 7a with a small gap therebetween. The extended portion 21e prevents water, dust, the fishing line N, and the like from entering the line slider 7a.

[0030]

An end of the fishing-line guiding portion 21a has a rising portion 21f, a folded portion 21g and an extended portion 21h that extend continuously toward the bail support member 6. The rising portion 21f rises vertically in the radially outward direction from an end of the fishing-line guiding portion 21a. The folded portion 21g is formed on the line slider 7a side with respect to the rising portion 21f. The fishing-line guiding portion 21a, the rising portion 21f and the folded portion 21g form a concave portion 21j recessed toward the bail support member 6.

[0031]

The extended portion 21h extends from the folded portion 21g toward the bail support member 6. The extended portion 21h is formed in such a manner that it expands in diameter toward the bail support member 6. The extended portion 21h faces the inner circumference surface of the bail support member 6 with a small gap therebetween. The extended portion 21h prevents water, dust, the fishing line N, and the like from entering the bail support member 6.

[0032]

According to the spinning reel for fishing of the present embodiment described above, the fishing-line regulating portion 21c that is inclined prevents the fishing line N in the fishing-line guiding portion 21a from moving a lot in the axial direction of the shaft 15, thereby preventing generation of abnormal noise caused by rubbing of the fishing line N during the reel-in operation thereof. The fishing-line regulating portion 21c is inclined in such a manner that it decreases in diameter from the fishing-line steering portion 21b to the fishing-line guiding portion 21a, and thus even if the bail 7 is raised while the fishing line N is under tension, the fishing line N is not caught in the fishing-line regulating portion 21c or damaged.

[0033]

Also, since the inclination angle of the fishing-line regulating portion 21c with respect to the center axis O of the shaft 15 is 35° to 55° , the fishing-line regulating portion 21c more desirably prevents rubbing and twisting of the fishing lines N of various types, regardless of their thickness and materials.

[0034]

In addition, since the fishing-line steering portion 21b is inclined at an angle of 1° to 7° to the center axis O of the shaft 15, the fishing line N is easily steered to the fishing-line guiding portion 21a. Also, with the concave portion 21j provided, the fishing-line regulating portion 21c and the concave portion 21j further regulate the movement of the fishing line N in the axial direction and in the height direction, and the fishing line N is easily fit in the fishing-line guiding portion 21a.

[0035]

Furthermore, since the axial width of the fishing-line guiding portion 21a is 1 mm or less, the movement of the fishing line N in the axis direction is regulated, and

abnormal noise caused by rubbing of the fishing line N and the roller 21 is further prevented.

[0036]

An embodiment of the present invention have been described above. The present invention is not limited to the embodiment, and the components may be modified as appropriate to the extent that does not depart from the intended purposes of the present invention.

[Description of Reference Numerals]

[0037]

- 1 reel body
- 1a foot
- 2 handle
- 3 spool
- 4 line winding body
- 5 rotor
- 6 bail support member
- 7 bail
- 20 line roller
- 20a fishing-line guiding portion
- 20b fishing-line steering portion
- 20c fishing-line regulating portion

[Document Name] Claims

[Claim 1]

A spinning reel for fishing, comprising:
a handle;
a rotor that rotates in coordination with the reel-in operation of the handle;
a support arm of the rotor;
a bail;
a bail support member that is mounted on the support arm and supports the bail;
a spool around which a fishing line is wound and held;
and
a line roller that is supported on the bail support member and guides the fishing line to the spool; wherein
the line roller includes a shaft, a bearing and a roller that is rotatably provided on the shaft by means of the bearing;
the roller has:
a fishing-line guiding portion that is formed on the bail support member side and guides the fishing line to the spool,
a fishing-line steering portion that is larger in diameter than the fishing-line guiding portion and steers the fishing line to the fishing-line guiding portion, and
a fishing-line regulating portion that is inclined between the fishing-line guiding portion and the fishing-line steering portion and regulates the movement of the fishing line in the axial direction of the shaft.

[Claim 2]

The spinning reel for fishing according to claim 1, wherein the inclination angle of the fishing-line regulating portion with respect to the center axis of the shaft is 35° to 55°.

[Claim 3]

The spinning reel for fishing according to claim 1 or 2, wherein the inclination angle of the fishing-line

steering portion with respect to the center axis of the shaft is 1° to 7°.

[Claim 4]

The spinning reel for fishing according to any one of claims 1 to 3, wherein the axial width of the fishing-line guiding portion is 1 mm or less.