

Double Bearing Reel

[Document Name] Description

[Technical Field]

[0001]

This invention relates to a double bearing reel, and in particular to a double bearing reel that provides good holdability with the thumb, of the hand holding the side plate of the reel body on the side opposite to the handle, when the fisher reels in the fishing line or jerks the fish rod.

[Background]

[0002]

Some double bearing reels, which include a spool rotatably supported between the right and left side plates of the reel body for winding the fishing line around, are used for jigging and the like which requires rough operations such as jerking the rod and reeling in with the handle while jerking the rod. For example, Patent Literature 1 discloses a double bearing reel that includes right and left side plates in a round shape and allows for easy thumbing when jerking the rod, while gripping the side plate on the side opposite to the handle. This double bearing reel improves the facing positions of the chamfered portion, formed at the outer circumferential end of the side plate on the side opposite to the handle, and the outer circumferential end surface of the flange of the spool so that the thumb can be moved between them easily, and is configured to allow for smooth thumbing during fishing without discomfort while gripping and holding the side plate on the side opposite to the handle.

[Background Art]

[Patent Literature]

[0003]

[Patent Literature 1] Japanese Unexamined Patent Application Publication No. 2016-178886

[Summary]

[Technical Problem]

[0004]

The structure disclosed in Patent Literature 1 above allows the thumb of the hand gripping and holding the reel to be smoothly moved to the fishing line side of the spool,

however, when the fisher jerks the rod during fishing, the fisher needs to hold the grip end of the fishing rod making the forearm of one hand contact it, and prevent the reel body from moving by tightly holding down the outer circumference of the side plate on the side opposite to the handle with the pad of the thumb of that hand. The shape of the upper face of the side plate of Patent Literature 1 only includes a chamfer formed on the inner side of the upper face to go along with the inclination of the spool flange so that the thumb is easily moved from the upper face to the spool flange. In other words, the outer surface other than the chamfer is substantially flat, and thus when the fisher jerks the rod while holding the upper face of the side plate with the thumb, the pad of the thumb easily slips outward from the outer circumference of the side plate, making it difficult to hold the side plate securely.

[0005]

The present invention was created in consideration of the above problems, and an object thereof is to provide a double bearing reel that allows for good holdability of the side plate on the side opposite to the handle, even when the fisher jerks the fishing rod intensely during jigging and the like.

[Solution to Problem]

[0006]

In order to achieve the above-described object, the present invention includes: a reel body including right and left side plates; a spool rotatably supported between the right and left side plates; and a handle that is provided on one of the side plates and rotates the spool; and a movement restriction portion is provided on an outer circumferential surface of the side plate of the reel body on the side opposite to the handle and prevents the fisher's thumb, holding down the side plate, from moving outward from the side plate.

[0007]

When jerking the fishing rod in jigging and the like while gripping and holding a double bearing reel of the above configuration together with the fishing rod, the fisher holds down, with the pad of the thumb, the outer circumference surface of the side plate on the side opposite to the handle. At this time, the movement restriction portion on the outer circumference surface of the side plate on the side opposite to the handle prevents the thumb of the hand holding the rod from moving outward from the side plate,

allowing for good holdability of the side plate and stable jerking operation and the like.

[Advantageous Effects]

[0008]

The present invention provides a double bearing reel that allows for good holdability of the side plate on the side opposite to the handle even when the fishing rod is jerked hard in jigging and the like.

[Brief Description of Drawings]

[0009]

[Fig. 1] Fig. 1 is a front view of an embodiment of a double bearing reel of the present invention, with the side plate on the side opposite to the handle held by a fisher.

[Fig. 2] Fig. 2 shows a relevant part of Fig. 1 (the outer circumferential surface of the side plate on the side opposite to the handle).

[Fig. 3] Fig. 3 is a rear view of the double bearing reel shown in Fig. 1.

[Fig. 4] Fig. 4 is a sectional view cut along line C-C in Fig. 3.

[Fig. 5] Fig. 5 is a plan view of the double bearing reel shown in Fig. 1, gripped and held by a fisher.

[Fig. 6] Fig. 6 is a table showing the results of the sensory test (results of evaluation of the anti-slip properties) of the first embodiment of the double bearing reel of the present invention.

[Fig. 7] Fig. 7 is a table showing the results of the sensory test (results of evaluation of the reeling operability) of the first embodiment of the double bearing reel of the present invention.

[Fig. 8] Fig. 8 shows a first modification example of the movement restriction portion.

[Fig. 9] Fig. 9 shows a second modification example of the movement restriction portion.

[Description of Embodiments]

[0010]

Now, an embodiment of a double bearing reel according to the present invention will be described with reference to Figs. 1 to 5.

[0011]

A double bearing reel 1 of the present embodiment has a structure most suitable for jigging and includes a reel body 2 that is provided with a left side plate 2A, a right

side plate 2B and a spool 3 rotatably supported between the two side plates 2A, 2B. In the present embodiment, a handle 5 is provided on the right side plate 2B side, and reeling-in with the handle 5 rotates the spool 3 through a known power transmission mechanism arranged in the right side plate.

[0012]

The reel body 2 includes a frame 7 that constitutes the right and left side plates 2A, 2B. This frame 7 is integrally formed, for example, of a metal material of aluminum alloy or the like and includes a left frame body 7A having a substantially circular shape in side view and constituting the left side plate (the side plate on the side opposite to the handle) 2A itself and a right frame body 7B having a substantially circular shape in side view and constituting, with a cover body 8 mounted thereto, the right side plate 2B. In this case, the side plate 2A (the left frame body 7A) on the side opposite to the handle is smaller than the side plate 2B housing the power transmission mechanism on the handle side, to improve the gripping and holding performance and downsize the reel body.

[0013]

In this frame structure, the frame 7 includes connecting portions that connect the left side plate 2A (the left frame body 7A) and the right frame body 7B. In the present embodiment, a front connecting portion 7C, a rear connecting portion 7D and two lower connecting portions 7E are provided, respectively, in front of, in rear of, and below and adjacent to the spool 3, and these connecting portions are integrally formed together with the left side plate 2A and the right frame body 7B. Note that a reel leg 7F to be mounted on a reel seat of a fishing rod is integrally mounted on the lower connecting portion 7E. The reel leg 7F may be integrally formed with the frame 7.

[0014]

The left side plate 2A of the frame 7 has a substantially circular shape in side view as described above, and its interior has a thin solid structure. As shown in Figs. 1 and 5, this left side plate 2A is configured for the fisher to hold the reel body 2 and the fishing rod R together by holding down the outer circumferential surface (circumferential surface) 7a with the pad of the thumb T2 of the left hand while holding the fishing rod R with the index finger T1 of the same hand.

[0015]

More specifically, with the configuration of the present embodiment as shown in

Fig. 5, the fisher does not make the entire palm of the left hand contact the outer face of the left side plate 2A (meaning, not the type that the fisher holds the reel body with the palm), and thus, if the thumb holding down the reel body is easily displaced, the holding performance will be reduced. For this reason, a movement restriction portion 20 is provided to prevent the thumb T2, which is holding down the outer circumference surface 7a of the left side plate, from moving outward from the left side plate to achieve a stable hold.

Now, the configuration of the movement restriction portion 20 of the present embodiment will be described.

[0016]

As shown in Figs. 1 and 3, in the double bearing reel of the present embodiment, the upper part of the spool 3 rotatably supported between the right and left side plates is open (no connecting portion such as a thumb rest provided), and in this configuration, the movement restriction portion 20 is formed directly on the outer circumferential surface 7a of the side plate (left side plate) 2A on the side opposite to the handle. Thus, according to the configuration of the reel body 2 of the present embodiment, it is possible to form the movement restriction portion 20 integrally when forming the frame 7, by forming the outer circumferential surface 7a on the upper face side of the left side plate 2A into a certain shape described below.

[0017]

As shown in Figs. 1 and 5, the movement restriction portion 20 only needs to have a structure that prevents outward displacement of the thumb holding down the outer circumferential surface 7a of the left side plate, and in the present embodiment, the movement restriction portion 20 includes an inclined portion 7d formed by expanding the frame 7 outward in the radial direction from an outer circumferential edge 7b of the frame on the spool side, which defines the opening above the spool 3, toward the outward of the side opposite to the spool. This inclined portion 7d can be easily formed when the frame is formed, and during fishing, the inclination keeps the thumb T2 holding down the inclined portion 7d from moving outward in the axial direction, with no discomfort felt by the fisher holding it down, and allows for stable gripping and holding even when the fisher reels in with the handle during intense jigging operation.

[0018]

As described here, when forming the inclined portion 7d that is the movement restriction portion 20 directly on the outer circumferential surface 7a of the left side plate 2A, it may be formed entirely over the outer circumferential surface, or it is also sufficient to form it at least at the area that the fisher holds down with the pad of the thumb gripping and holding the side plate. Specifically, the inclined portion 7d is formed within the range of the axial width A of the left side plate 2A (the axial width that the pad of the thumb T2 can make contact with when holding down the left side plate 2A from above) in such a manner that it rises from the outer circumferential edge 7b, and the width and inclination angle of the inclined portion are determined with consideration of the anti-slip properties (gripping and holding performance with the thumb when jerking the rod) and the reeling operability (holdability, operation feeling, and furthermore, ease of gripping, size, feel of weight and the like when the reel is held together with the fishing rod).

[0019]

In other words, holdability and operability are reduced if the axial width A of the left side plate 2A is too thin or too thick, and the left side plate 2A becomes heavy if the axial width is too thick, while the width B of the inclined portion formed within the width A may lead to lack of holdability and operability and cause discomfort if it is determined with no consideration of the ratio (B/A). Also, the angle of the inclined portion 7d (the inclination angle α rising from the axial direction X that is parallel to the spool axis) is too large, the side plate itself becomes large in diameter and the contact with the pad of the thumb becomes tight, reducing holdability and operability, while if the angle is too small on the other hand, displacement of the thumb will not be prevented well.

[0020]

From this point of view, for the configuration in which the inclined portion 7d that is the movement restriction portion 20 is formed directly on the outer circumferential surface 7a of the left side plate 2A, sample reels were made and a sensory test was conducted to determine the inclination angle α of the inclined portion 7d and the ratio of the width B (the width outward in the axial direction from the outer circumferential edge 7b of the outer circumferential surface 7a on the spool side), which

provide satisfactory anti-slip properties and reeling operability.

[0021]

As shown in the figures, the sample reels used in the sensory test were prepared with circular side plates, one of which on the side opposite to the handle has a smaller diameter, and five testers evaluated their holding performance (anti-slip properties and reeling operability) when gripping, with one hand, the side plate of each sample reel on the side opposite to the handle together with the grip end of the fishing rod R as shown in Fig. 1. The five testers were asked to evaluate the performance on a 3-point scale using the symbols of $\circ$ (3 points; good), Δ (2 points; no particular problem in use), and $\times$ (1 point; somewhat uncertain in use), and if the total score of the five testers was 12 to 15 points, a “ $\circ$ ” was given in the evaluation table shown in Figs. 6 and 7, and a “ Δ ” was given if the total score was 8 to 11 points, while a “ $\times$ ” was given if it was 5 to 7 points.

[0022]

These samples were prepared, as shown in Fig. 2, with the inclined portion 7d formed on the outer circumferential surface 7a of the side plate (the left side plate 2A) on the side opposite to the handle, and each inclined portion 7d had a width of a ratio (B/A) that was different between each sample, and for each sample with the inclined portion 7d of a width of the different ratio, more samples were prepared with different inclination angles α . In each sample, the total width A of the side plate on the side opposite to the handle, the spool, the frame body, the side plate on the handle side, the drive mechanism, and the like were all made to have the same conditions.

[0023]

Fig. 6 is a table showing the results of evaluation of the anti-slip properties (gripping and holding performance with the thumb when jerking the fish rod), and Fig. 7 is a table showing the results of evaluation of the reeling operability (holdability and operation feeling) when reeling in with the handle while gripping and holding the reel body.

As these evaluation results show, when the inclination angle α is small (5°), the thumb tends to slip easily as shown in Fig. 6, while the inclination angle is set to 10° , the anti-slip effect is improved (Fig. 6), and the reeling operability (Fig. 7) was generally satisfactory. As for the upper limit of the inclination angle α , the larger the angle is, the higher the anti-slip effect is, however, if the angle is too large, it will

become very uncomfortable for the fisher to grip and hold the side plate with the thumb when jerking the rod. According to the evaluation results shown in Fig. 6, it is preferable to set the angle at 35° or smaller, but if the reeling operability is also considered (see Fig. 7), it is preferable to set the angle at 25° to 30° or smaller, and 20° or smaller is even more preferable.

[0024]

Thus, to reduce outward slipping of the pad of the thumb, the inclination angle α is preferably in the range of 10° to 30°, and even more preferably in the range of 10° to 20°.

[0025]

Although it depends on the relationship with the above-described inclination angle α , if the inclination angle α is specifically in the range of 10° to 30° as described above, the ratio (B/A) of the inclined portion 7d to the total width is preferably 30% or more, or even more preferably 40% or more. The upper limit thereof is preferably 80% or less since when it is 90%, if the inclination angle is large (25° or more), the feeling of the small size and light weight is disturbed (see Fig. 7).

[0026]

As described here, the results show that the ratio (B/A) of the inclined portion 7d to the total width is preferably in the range of 30% to 80%, and even more preferably in the range of 40% to 80%. In particular, when the inclination angle α is within the range of 10° to 20° and the ratio (B/A) is within the range of 40% to 70%, a double bearing reel that is used for jigging will have a configuration more favorable for both the anti-slip properties and the reeling operability.

[0027]

The present invention is characterized in that the thumb is less likely to be displaced when the fisher grips and holds the side plate on the side opposite to the handle, and thus, when the reel body 2 is a frame structure integrally formed of a metal material of aluminum alloy or the like as in the above embodiment, it is preferable to integrally form a structure that further improves the function of the movement restriction portion 20, on the left side plate side of the rear connecting portion 7D in rear of the spool.

[0028]

For example, as shown in Figs. 3 and 4, a concave 7e may be formed on the left side plate side of the rear connecting portion 7D in such a manner that it is continued from the movement restriction portion 20 formed of the inclined portion 7d, so that when the fisher grips and holds the side plate as shown in Fig. 5, the base of the thumb on the pad side is housed therein making a good contact therewith, and thus the gripping and holding performance is even more improved. This concave 7e may be continuously formed from the upper face to the rear face of the rear connecting portion 7D so that the fisher can hold the side plate in a more stable manner without discomfort at the base of the thumb.

[0029]

The movement restriction portion 20 of the above embodiment includes an inclined portion that rises in a straight line outward in the axial direction, however, the configuration of the movement restriction portion may be modified as desired, only if it is provided on the outer circumferential surface of the side plate that the fisher holds down with the thumb of the hand gripping and holding the reel together with the fish rod, and keeps the thumb from moving outward and provides the good reeling operability when the fisher jerks the rod or reels in with the handle while jerking the rod.

[0030]

Fig. 8 illustrates a first modification example of the movement restriction portion provided on the outer circumferential surface of the side plate on the side opposite to the handle.

The movement restriction portion 20A of this modification example includes a plurality of concave-convex shapes 22 continuously formed in the axial direction on the outer circumferential surface of the side plate, at the area that the fisher holds down with the thumb. These concave-convex shapes 22 may be formed on an inclined surface as shown in Fig. 2, or may be formed on a not-inclined surface. In particular, if the concave-convex shapes 22 are formed on the inclined portion formed at an inclination angle α in the range of 10° to 30° and a ratio (B/A) to the total width in the range of 30% to 80% as in the embodiment described above, the resulting double bearing reel exhibits further improved anti-slip properties and reeling operability.

[0031]

Fig. 9 illustrates a second modification example of the movement restriction portion provided on the outer circumferential surface of the side plate on the side opposite to the handle.

The movement restriction portion 20B of this modification example includes a concave 23 formed on the outer circumferential surface of the side plate at the area that the fisher holds down with the thumb. Desirably, the concave 23 is formed into a curved shape that fits the pad of the thumb holding down the concave 23 so that the thumb is housed therein in a comfortable manner, and the resulting double bearing reel provides good anti-slip properties and reeling operability. In this configuration, the concave-convex shapes 22 shown in Fig. 8 may also be formed.

[0032]

Although the embodiments of the present invention are described here, the present invention is not limited to the above-described embodiments and may be modified in various ways.

For example, the structure described above includes the handle mounted on the right side plate, however, it may be mounted on the left side plate. Also, the frame may have a desired structure, and the side plate on the side opposite to the handle may be fitted with a cover as the right side plate is. The shape of the side plate may also be modified in a desired manner, such as to a non-circular shape or the like.

[0033]

The above-described movement restriction portions 20, 20A, 20B are formed directly on the outer circumferential surface of the side plate (frame), however, only if they are provided above the outer circumferential surface of the side plate and within the width A of the side plate, the movement restriction portion may be formed on a member fixed to the outer circumferential surface of a side plate that is separate from the frame, such as a thumb rest and a control case provided with a display that indicates the amount of fishing line pulled out. As described here, the movement restriction portion formed on the side plate of a member that is separate from the side plate also allows the fisher to stably grips and holds the side plate, preventing the pad of the thumb holding down the side plate from slipping outward.

[Explanation of Reference Numerals]

[0034]

- 1 Double bearing reel
- 2 Reel body
- 2A, 2B Right and left side plates
- 3 Spool
- 5 Handle
- 7 Frame
- 7A, 7B Right and left frames
- 7a Outer circumferential surface
- 7d Inclined portion
- 20, 20A, 20B Movement restriction portion
- R Fishing rod
- T1 Index finger
- T2 Thumb

[Document Name] Claims

[Claim 1]

A double bearing reel comprising:
a reel body including right and left side plates;
a spool rotatably supported between the right and left side plates; and
a handle that is provided on one of the side plates and rotates the spool; wherein
a movement restriction portion is provided on an outer circumferential surface of
the side plate of the reel body on the side opposite to the handle and prevents the
fisher's thumb, holding down the side plate, from moving outward from the side plate.

[Claim 2]

The double bearing reel of claim 1, wherein the right and left side plates are open
above the spool, and the movement restriction portion is provided on the outer
circumference of the right or left side plate that is on the side opposite to the handle.

[Claim 3]

The double bearing reel of claim 1, wherein the movement restriction portion
includes an inclined portion expanded outward in the radial direction from an outer
circumferential edge on the spool side toward the outward of the side opposite to the
spool.

[Claim 4]

The double bearing reel of any one of claims 1 to 3, wherein the movement
restriction portion is integrally formed with the side plate on the side opposite to the
handle.

[Claim 5]

The double bearing reel of any one of claims 1 to 4, wherein the side plate on the
side opposite to the handle is smaller than the outer diameter of the side plate on the
handle side.

[Claim 6]

The double bearing reel of any one of claims 3 to 5, wherein the movement
restriction portion is formed in a range of 30% to 80% of the total width of the side
plate on the side opposite to the handle and at an angle of 10° to 30° to a reference line
parallel to the axial direction of the spool axis.