United States Patent	12382942
Kind Code	B2
Date of Patent	August 12, 2025
Inventor(s)	Omura; Kazuhito

Reel seat and fishing rod including same

Abstract

A reel seat for mounting a reel and a fishing rod including the reel seat are provided. The reel seat includes a seat body coupled to a rod body of the fishing rod, a movable hood movably coupled to the seat body along a central axis of the rod body and fixing a leg of the reel to the seat body, and a nut connected to the movable hood and threadedly coupled to the seat body. The nut includes a manipulation portion manipulated for rotation, and a plurality of concave portions disposed in the manipulation portion in a circumferential direction of the central axis. Each concave portion is defined by a bottom surface recessed from an outer peripheral surface of the manipulation portion toward the central axis, and a side surface extending from the bottom surface so as to form an obtuse angle with the bottom surface.

Inventors: **Omura; Kazuhito (Shizuoka, JP)**

Applicant: **FUJI KOGYO CO., LTD.** (Shizuoka, JP)

Family ID: **1000008749247**

Assignee: **FUJI KOGYO CO., LTD. (Shizuoka, JP)**

Appl. No.: **18/814691**

Filed: **August 26, 2024**

Prior Publication Data

Document Identifier	Publication Date
US 20250089692 A1	Mar. 20, 2025

Foreign Application Priority Data

KR	10-2023-0122393	Sep. 14, 2023
KR	10-2023-0192294	Dec. 27, 2023

Publication Classification

Int. Cl.: **A01K87/06** (20060101)

U.S. Cl.:

CPC **A01K87/06** (20130101);

Field of Classification Search

CPC: A01K (87/06)

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Primary Examiner: Ellis; Christopher P

Attorney, Agent or Firm: Oblon, McClelland, Maier & Neustadt, L.L.P.

Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION

(1) This application is based upon and claims the benefit of priority from Korean Patent Application No. 10-2023-0122393, filed on Sep. 14, 2023, and Korean Patent Application No. 10-2023-0192294, filed on Dec. 27, 2023, the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

(2) The present disclosure relates to a reel seat and a fishing rod including the same.

BACKGROUND

(3) In a fishing rod using a reel, a reel seat is attached to a rod body in order to mount the reel to the fishing rod. The reel seat has a fixed hood for fixing one reel leg of the reel to a reel seat body, which the rod body of the fishing rod is inserted into and passes through, and has a male thread of a certain length in a direction, which is opposite to the fixed hood and in which the other reel leg of the reel is fixed. The reel seat includes a movable hood which can be moved in an axial direction of the fishing rod by the rotation of a nut threadedly coupled to the male thread. The movable hood and the fixed hood fixedly support the reel legs, thereby fixing the reel.

(4) Japanese Patent Publication No. 2001-61381 discloses a fishing rod including a movable hood. Referring to FIG. **1**, a reel **2** is mounted on a reel seat **3**. The reel seat **3** includes a fixed hood **4** fixing one leg **2***a* of the reel **2**, and a movable hood **5** fixing the other leg **2***b* of the reel **2**. The one leg **2***a* of the reel **2** is covered by the fixed hood **4** and the other leg **2***b* of the reel **2** is covered by the movable hood **5**, whereby the reel **2** is fixed to the reel seat **3**. As a nut **6** disposed at one side of the movable hood **5** is rotated, the movable hood **5** can be moved toward or moved away from the fixed hood **4** along a central axis O of a fishing rod **1**.

(5) When a user is gripping the reel seat **3** during fishing as shown in FIG. **1**, the nut **6** may be rotated unintentionally by a hand, and therefore the looseness in fixing the reel **2** and the reel seat **3** should be prevented. To this end, the nut **6** in the conventional reel seat **3** is distinguished into a hood side portion **6***a*, on which a user's finger or palm can be positioned during fishing, and an opposite hood side portion **6***b*, which is gripped when the reel **2** is fixed or unfixed. A knurled portion **6***c* for preventing slippage between the hand and the nut **6** is formed on an outer peripheral surface of the nut **6**.

(6) In the nut **6** of the conventional reel seat **3**, to prevent the rotation of the nut **6** during fishing, the hood side portion **6***a* should be provided so as to have a relatively long length. Furthermore, to facilitate the rotation of the nut **6**, the opposite hood side portion **6***b* should be provided so as to have a relatively long length. Accordingly, the conventional nut **6** has a restriction on providing a compact or lightweight nut.

SUMMARY

(7) Embodiments of the present disclosure solve the aforementioned problems of the prior art technique. Specifically, the object of the embodiments of the present disclosure is to provide a nut, which can easily move a movable hood to facilitate coupling and separation of a reel and a reel seat, and has a lightweight and compact design.

(8) Disclosed embodiments relate to a reel seat for coupling a reel to a rod body of a fishing rod. According to one aspect of the embodiments of the reel seat, the reel seat for mounting a reel having first and second legs to a rod body of a fishing rod includes: a seat body coupled to the rod body, configured to support the first and second legs, and including a fixed hood configured to cover the first leg; a movable hood coupled to the seat body so as to be movable along a central axis of the rod body in an axial direction, and configured to be moved so as to cover the second leg to fix the second leg to the seat body; and a nut connected to the movable hood and threadedly coupled to the seat body so as to be rotatable in a circumferential direction of the central axis.

(9) The nut includes: a connection portion coupled to the movable hood so as to be rotatable in the circumferential direction; a manipulation portion extending from the connection portion and

manipulated for rotation of the nut; and a plurality of concave portions disposed in the manipulation portion in the circumferential direction. Each of the plurality of concave portions is defined by: a bottom surface recessed from an outer peripheral surface of the manipulation portion toward the central axis; and a side surface extending from an edge of the bottom surface so as to form an obtuse angle with the bottom surface.

(10) In one embodiment, the side surface may include: a pair of first side surfaces that face each other in the circumferential direction and form an obtuse angle with the bottom surface; and a pair of second side surfaces that face each other in the axial direction and form an obtuse angle with the bottom surface.

(11) In one embodiment, an included angle of the pair of first side surfaces may be in a range of 144 degrees to 150 degrees.

(12) In one embodiment, the plurality of concave portions may be arranged at an equal interval along the circumferential direction.

(13) In one embodiment, the plurality of concave portions may include five concave portions arranged at an equal interval along the circumferential direction, and an included angle of the pair of first side surfaces of the concave portions may be in a range of 144 degrees to 150 degrees.

(14) In one embodiment, the side surface has a trapezoidal shape with an edge adjoining the bottom surface as a short parallel side.

(15) In one embodiment, the movable hood may include an annular portion adjacent to the nut. When viewed in the axial direction, the bottom surface of the concave portion may have a circular arc shape centered on the central axis. A ratio of a radius of the bottom surface to an outer peripheral radius of the annular portion may be in a range of 90% to 93%.

(16) In one embodiment, a length of the manipulation portion in the axial direction may be in a range of 7 mm to 10 mm.

(17) In one embodiment, the movable hood may include an annular portion adjacent to the nut. A difference between an outer peripheral radius of the manipulation portion and an outer peripheral radius of the annular portion may be in a range of 0 mm to 1 mm.

(18) In one embodiment, the reel seat may further include: a lock ring disposed at one side of the nut and coupled to the seat body so as to be movable in the axial direction; and a lock nut coupled to the lock ring so as to be rotatable in the circumferential direction and threadedly coupled to the seat body so as to be rotatable in the circumferential direction. As the lock nut is rotated, the lock ring may press the nut toward the fixed hood in the axial direction.

(19) In one embodiment, a difference between an outer peripheral radius of the manipulation portion and an outer peripheral radius of the lock ring may be in a range of 0 mm to 1 mm.

(20) In one embodiment, the nut may include a plurality of ridges each disposed between neighboring concave portions of the plurality of concave portions and arranged in the circumferential direction.

(21) The disclosed embodiments relate to a fishing rod including the reel seat. The fishing rod according to one embodiment includes a rod body, and the reel seat according to the above-described embodiment coupled to the rod body.

(22) According to the embodiments of the present disclosure, the nut may be provided to easily move the movable hood to facilitate coupling and separation of the reel and the reel seat, and have a lightweight and compact design. Further, according to the embodiments of the present disclosure, since the nut is designed so as to be lightweight and compact, the cost required for manufacturing the nut can be reduced.

Description

BRIEF DESCRIPTION OF DRAWINGS

(1) The accompanying drawings, which are incorporated in and constitute a part of the specification, illustrate embodiments of the present disclosure, and together with the general description given above and the detailed description of the embodiments given below, serve to explain the principles of the present disclosure.

(2) FIG. **1** is a view showing a conventional reel seat.

(3) FIG. **2** is a view showing a reel seat according to one embodiment.

(4) FIG. **3** is a view showing a process of assembling a movable hood to a seat body in one embodiment.

(5) FIG. **4** is a view showing a state where the movable hood is assembled to the seat body in one embodiment.

(6) FIG. **5** is a view showing a connection of a nut and a movable hood in one embodiment.

(7) FIG. **6** is a side view showing a process of assembling the movable hood to the seat body in one embodiment.

(8) FIG. **7** is a cross-sectional view of the movable hood assembly of FIG. **4** along line VII-VII of FIG. **4**.

(9) FIG. **8** is a side view of the nut according to one embodiment.

(10) FIG. **9** is a front view of the nut according to one embodiment.

(11) FIG. **10** is a cross-sectional view of the nut of FIG. **8** along line X-X of FIG. **8**.

(12) FIG. **11** is a cross-sectional view of the nut of FIG. **9** along line XI-XI of FIG. **9**.

(13) FIG. **12** is a view showing a closed state of a metal mold set for forming the nut according to one embodiment.

(14) FIG. **13** is a view showing an open state of the metal mold set of FIG. **12**.

(15) FIG. **14** is a view showing a motion of rotating the nut by means of fingertips to move the movable hood toward the fixed hood.

(16) FIG. **15** is a view showing a motion of rotating the nut by means of fingertips to retract the movable hood from the fixed hood.

(17) FIG. **16** is a view showing a state where the reel seat according to one embodiment is gripped.

(18) FIG. **17** is a view showing a movable hood assembly according to one embodiment.

(19) FIG. **18** is a front view of a nut of FIG. **17**.

(20) FIG. **19** is a view showing a state where the nut of FIG. **17** is gripped.

(21) FIG. **20** is a view showing a process of assembling a lock nut assembly to the seat body in one embodiment.

(22) FIG. **21** is a view showing a state where the lock nut assembly is coupled to the seat body in one embodiment.

(23) FIG. **22** is a view showing a process of coupling a lock ring to a lock nut in one embodiment.

(24) FIG. **23** is a side view showing a process of assembling the lock nut assembly to the seat body in one embodiment.

(25) FIG. **24** is a cross-sectional view of the movable hood assembly and the lock nut assembly of FIG. **21** along line XXIV-XXIV of FIG. **21**.

(26) FIG. **25** is a view showing a motion of moving the movable hood toward the fixed hood in a state where the lock nut assembly is coupled to the seat body.

(27) FIG. **26** is a view showing a motion of retracting the movable hood from the fixed hood in the state where the lock nut assembly is coupled to the seat body.

(28) FIG. **27** is a view showing a fishing rod according to one embodiment.

(29) FIG. **28** is a view showing a fishing rod according to another embodiment.

(30) FIG. **29** is a view showing the fishing rod in which the lock nut assembly is coupled to one side of the movable hood assembly of one embodiment with reference to FIG. **27**.

(31) FIG. **30** is a view showing the fishing rod in which the lock nut assembly is coupled to one

side of the movable hood assembly of one embodiment with reference to FIG. **28**.

DETAILED DESCRIPTION

(32) Embodiments of the present disclosure are illustrated for the purpose of explaining the technical idea of the present disclosure. The scope of the rights according to the present disclosure is not limited to the embodiments presented below or the detailed descriptions of such embodiments.

(33) All technical terms and scientific terms used in the present disclosure include meanings that are commonly understood by those of ordinary skill in the technical field to which the present disclosure pertains unless otherwise defined. All terms used in the present disclosure are selected for the purpose of describing the present disclosure more clearly, and are not selected to limit the scope of the rights according to the present disclosure.

(34) Expressions such as “comprising,” “including,” “having,” and the like used in the present disclosure are to be understood as open-ended terms having the possibility of encompassing other embodiments, unless otherwise mentioned in the phrase or sentence containing such expressions.

(35) Singular expressions described in the present disclosure may encompass plural expressions unless otherwise stated, which will also apply to singular expressions recited in the claims.

(36) Expressions such as “first,” “second,” etc. used in the present disclosure are used to distinguish a plurality of elements from one another, and are not intended to limit an order or importance of the elements.

(37) In the present disclosure, the description that one element is “connected” or “coupled” to another element should be understood to indicate that the aforesaid one element may be directly connected or coupled to the aforesaid another element, and should be further understood that the aforesaid one element may be connected or coupled to the aforesaid another element via a new element.

(38) The dimensional and numerical values described in the present disclosure are not limited only to the dimensional and numerical values that are described herein. Unless specified otherwise, the dimensional and numerical values may be understood to mean the described values and equivalent ranges including the values. For example, a dimension of “7 mm” described in the present disclosure may be understood to include “about 7 mm.”

(39) The directional terms “upward,” “upper,” and the like used in the present disclosure are based on a direction in which a reel is positioned with respect to a reel seat in the accompanying drawings, while the directional terms “downward,” “lower,” and the like mean a direction opposite to the upward or upper direction. The reel and the reel seat shown in the accompanying drawings may be oriented differently, and the directional terms may be construed accordingly.

(40) Hereinafter, the embodiments of the present disclosure are described with reference to the accompanying drawings. Like reference numerals in the accompanying drawings denote like or corresponding elements. Further, in the following description of the embodiments, redundant descriptions for the same or corresponding elements may be omitted. However, even if the descriptions of the elements are omitted, such elements are not intended to be excluded in any embodiment.

(41) FIG. **2** is a view showing a reel seat **100** according to one embodiment. FIG. **3** is a view showing a process of assembling a movable hood assembly **130** to a seat body **110** in one embodiment. FIG. **4** is a view showing a state where the movable hood assembly **130** is assembled to the seat body **110** in one embodiment. FIG. **5** is a view showing a connection of a nut **150** and a movable hood **140** in one embodiment. FIG. **6** is a side view showing a process of assembling the movable hood **140** to the seat body **110** in one embodiment. FIG. **7** is a cross-sectional view of the movable hood assembly **130** of FIG. **4** along line VII-VII of FIG. **4**.

(42) Referring to FIG. **2**, a reel seat **100** is configured to fix a reel **20** to a fishing rod. The reel **20** includes a support **23** extending toward the reel seat **100** and a pair of reel legs **21** and **22** extending from a lower end of the support **23** oppositely from each other in an axial direction D**1**. The pair of

reel legs **21** and **22** are coupled to the reel seat **100**, thereby fixing the reel **20** to the fishing rod. The pair of reel legs **21** and **22** include a first leg **21** extending toward a fixed hood **111** of the fishing rod with reference to the support **23** of the reel **20**, and a second leg **22** extending in a direction opposite to the first leg **21** (or toward a movable hood **140**).

(43) The reel seat **100** includes a seat body **110** coupled to a rod body **30**. The seat body **110** is configured to support the pair of reel legs **21** and **22**.

(44) The reel seat **100** may include a grip **113** coupled to the seat body **110**. The grip **113** may be configured such that a portion of the seat body **110** is inserted into the grip. The grip **113** may be configured such that there is no step difference at a boundary between the grip and the seat body **110** when the grip **113** is coupled to the seat body **110**.

(45) The fixed hood **111** and a movable hood assembly **130** fix the reel legs **21** and **22** to the seat body **110**. The seat body **110** includes the fixed hood **111** configured to cover the first leg **21** of the pair of reel legs **21** and **22**. The fixed hood **111** may be formed integrally with the seat body **110**, or may be coupled to the seat body **110** after being provided as a member separate from the seat body **110**.

(46) The movable hood assembly **130** includes a movable hood **140** configured to cover the second leg **22** of the pair of reel legs **21** and **22**, and a nut **150** configured to move the movable hood **140** along a central axis O (or in the axial direction D**1**). The movable hood **140** is coupled to the seat body **110** so as to be movable in the axial direction D**1**. As the movable hood **140** is moved so as to cover the second leg **22**, the second leg is fixed to the seat body **110**.

(47) In the present disclosure, the description that the hoods **111** and **140** cover the reel legs **21** and **22** means that the hoods are disposed on at least a portion of the reel legs **21** and **22** and at least a portion of the reel legs **21** and **22** and at least a portion of the hoods **111** and **140** overlap with each other in a vertical direction.

(48) Referring to FIGS. **2** to **4**, a first gap G**1** is present below the fixed hood **111**. When an end portion of the first leg **21** is accommodated in the first gap G**1**, the fixed hood **111** covers the end portion of the first leg **21**. A second gap G**2** is present between the movable hood **140** and the seat body **110**. An end portion of the second leg **22** is accommodated in the second gap G**2**, and the movable hood **140** covers the end of the second leg **22**.

(49) The fixed hood **111** and the movable hood **140** can press the reel legs **21** and **22** downward while covering the reel legs **21** and **22**. Referring to FIG. **2**, the reel legs **21** and **22** may have an inclined surface that gradually descends in a direction away from the support **23**, and the hoods **111** and **140** may have a shape that gradually ascends toward the support **23**. As the fixed hood **111** and the movable hood **140** approach each other in the axial direction D**1** while coming into contact with the inclined surfaces of the reel legs **21** and **22**, the fixed hood **111** and the movable hood **140** can press downward the first leg **21** and the second leg **22**, respectively. Therefore, the reel legs **21** and **22** can be tightly fitted between the seat body **110** and the hoods **111** and **140**, and the reel **20** can be firmly fixed to the reel seat **100**.

(50) The movable hood **140** is coupled to the seat body **110** so as to be movable along the central axis O in the axial direction D**1**. In the present disclosure, the axial direction D**1** means a direction parallel to the central axis O of the rod body **30**. The movable hood **140** is configured to selectively cover the second leg **22**, which is the other of the pair of reel legs **21** and **22**, depending on a position of the movable hood on the seat body **110**. For example, the movable hood **140** moving toward the fixed hood **111** covers the second leg **22**, while the movable hood **140** moving away from the fixed hood **111** does not cover the second leg **22**.

(51) The seat body **110** may include, on an outer surface thereof, a guide groove **114** extending in the axial direction D**1**. Referring to FIG. **3**, the guide groove **114** may be provided on each lateral side of the outer surface of the seat body **110**. The movable hood **140** includes a guide protrusion **146** accommodated in the guide groove **114**. The movable hood **140** may include a pair of guide protrusions **146** which are accommodated in the pair of guide grooves **114**, respectively. The guide

protrusion **146** extends in the axial direction D**1**. When the movable hood **140** is coupled to the seat body **110**, the guide protrusion **146** is accommodated in the guide groove **114**, and therefore, the movement of the movable hood **140** with respect to the seat body **110** is restricted to the axial direction D**1**.

(52) The nut **150** is coupled to the movable hood **140** and is configured to adjust the position of the movable hood **140** along the central axis O. The nut **150** is configured to be moved along the central axis O on the seat body **110** by its rotation around the central axis O. The nut **150** may be threadedly coupled to the seat body **110** so as to be rotatable in a circumferential direction D**2** of the central axis O. The seat body **110** includes, on an outer peripheral surface thereof, a male thread **112** having a rotation axis in the central axis O, and the nut **150** may be threadedly coupled to the male thread **112**. The nut **150** may include, on an inner peripheral surface thereof, a female thread **156** that is engaged with the male thread **112** of the seat body **110**. Due to interaction of the male thread **112** and the female thread **156**, the nut **150** can be moved along the central axis O on the seat body **110** while being rotated around the central axis O.

(53) Referring to FIGS. **3**, **5**, and **7**, the movable hood **140** may include an annular portion **144** and a hood portion **142** extending from the annular portion **144**. The annular portion **144** may have a shape surrounding the outer peripheral surface of the seat body **110**. The hood portion **142** extends from an upper semicircle of the annular portion **144** in the axial direction D**1**. The guide protrusion **146** may be disposed at each of both ends of the hood portion **142** in the circumferential direction D**2**.

(54) Referring to FIGS. **7** and **8**, the annular portion **144** may include, on the inner peripheral surface thereof, an engagement groove **145** formed in the circumferential direction D**2**. The nut **150** includes a connection portion **152** connected to the movable hood **140**. The connection portion **152** may include an engagement protrusion **153**, which is formed in the circumferential direction D**2** and is accommodated in the engagement groove **145** of the annular portion **144**. When the connection portion **152** of the nut **150** is inserted into the annular portion **144**, the engagement protrusion **153** is fitted into the engagement groove **145**, and therefore the nut **150** is rotatably coupled to the movable hood **140**.

(55) By rotation of the nut **150** rotatably coupled to the movable hood **140**, the movable hood **140** can be moved along the central axis O on the seat body **110** together with the nut **150**. For example, when the nut **150** is rotated in a clockwise direction, the movable hood assembly **130** advances toward the fixed hood **111**. When the nut **150** is rotated in a counterclockwise direction, the movable hood assembly **130** retracts from the fixed hood **111**. In the present disclosure, the clockwise direction and the counterclockwise direction mean a clockwise rotation direction and a counterclockwise rotation direction, respectively, when the reel seat **100** is viewed from the movable hood **140** toward the fixed hood **111** along the axial direction D**1**. Further, in the present disclosure, the term “advance” with regard to the movements of the movable hood **140**, the nut **150**, and the like in the axial direction D**1** means the movement in the direction where the movable hood **140** is moved toward the fixed hood **111**, and the term “retract” means the movement in the direction where the movable hood **140** is moved away from the fixed hood **111**.

(56) The seat body **110** may include a projecting portion **116** which is disposed below the hood portion **142** when the movable hood **140** is moved toward the fixed hood **111**. That is, the projecting portion **116** of the seat body **110** is disposed so as to be located adjacent to the hood portion **142** of the movable hood **140** in the circumferential direction D**2**. When the movable hood **140** is moved toward the fixed hood **111** and the hood portion **142** is partially disposed above the projecting portion **116**, at least a portion of the guide protrusion **146** is covered by the projecting portion **116** and may not be exposed to an outside of the reel seat **100**.

(57) The movable hood **140** may include a reinforcing cover **148** preventing deformation of the movable hood **140** and the guide protrusion **146**. The reinforcing cover **148** surrounds the outside of the movable hood **140** and the guide protrusion **146**. The reinforcing cover **148** may be made of

a material having rigidity higher than a material of the movable hood **140** or the guide protrusion **146**. For example, the movable hood **140** and the guide protrusion **146** may be made of plastic, and the reinforcing cover **148** may be made of metal such as aluminum or stainless steel.

(58) FIG. **8** is a side view of the nut **150** according to one embodiment. FIG. **9** is a front view of the nut **150** according to one embodiment. FIG. **10** is a cross-sectional view of the nut **150** of FIG. **8** along line X-X of FIG. **8**. FIG. **11** is a cross-sectional view of the nut **150** of FIG. **9** along line XI-XI of FIG. **9**.

(59) Referring to FIG. **8**, the nut **150** may be provided in a generally annular shape. The nut **150** includes the connection portion **152** and a manipulation portion **154** extending from the connection portion **152**. The connection portion **152** is configured to be coupled to the movable hood **140** so as to be rotatable in the circumferential direction D**2**. The manipulation portion **154** is a portion that is manipulated for rotation of the nut **150**. The manipulation portion **154** is exposed to the outside of the reel seat **100** and can be gripped by a user.

(60) The manipulation portion **154** of the nut **150** may have a generally cylindrical shape. In the drawings of the present disclosure, the manipulation portion **154** of the nut **150** has a cylindrical shape having a constant radius along the axial direction D**1**, but embodiments of the present disclosure are not limited thereto. In other embodiments, the manipulation portion **154** of the nut **150** may have a conical shape, the radius of which changes along the axial direction D**1**.

(61) A plurality of concave portions **160** are disposed in the manipulation portion **154** of the nut **150** in the circumferential direction D**2**. Referring to FIGS. **7** and **8**, each concave portion **160** may be defined by a bottom surface **161**, which is recessed from an outer peripheral surface **157** of the manipulation portion **154** toward a center of the nut **150**, and a side surface extending from an edge of the bottom surface **161**.

(62) Referring to FIGS. **8** to **11**, the side surface of the concave portion **160** may include a pair of first side surfaces **162***a* and **162***b* extending from both edges of the bottom surface **161** in the circumferential direction D**2**, respectively, and a pair of second side surfaces **163***a* and **163***b* extending from both edges of the bottom surface **161** in the axial direction D**1**, respectively. The pair of first side surfaces **162***a* and **162***b* face each other in the circumferential direction D**2**, and the pair of second side surfaces **163***a* and **163***b* face each other in the axial direction D**1**. The pair of first side surfaces **162***a* and **162***b* may extend in the axial direction D**1**, and the pair of second side surfaces **163***a* and **163***b* may extend in the circumferential direction D**2**.

(63) When viewed in the axial direction D**1**, the concave portion **160** has a shape recessed in a direction toward the central axis O. Referring to FIG. **10**, the concave portion **160** may be partially defined by the bottom surface **161** and the pair of first side surfaces **162***a* and **162***b*. The bottom surface **161** is recessed between two protruding surfaces **158** of a plurality of protruding surfaces **158** from the protruding surface **158** toward the central axis O, and the pair of first side surfaces **162***a* and **162***b* extend from the bottom surface **161** to both protruding surfaces **158**, respectively.

(64) When viewed from a side view, the concave portion **160** has a shape recessed in the direction toward the central axis O. Referring to FIG. **11**, the concave portion **160** may be partially defined by the bottom surface **161** and the pair of second side surfaces **163***a* and **163***b*. The bottom surface **161** is recessed from the outer peripheral surface **157** toward the central axis O, and the pair of second side surfaces **163***a* and **163***b* extend from the bottom surface **161** to both outer peripheral surfaces **157**, respectively.

(65) Referring to FIGS. **10** and **11**, the side surfaces of the concave portion **160** may extend obliquely from the bottom surface **161**. For example, the first side surfaces **162***a* and **162***b* and the bottom surface **161** may form an angle larger than 90 degrees, and the second side surfaces **163***a* and **163***b* and the bottom surface **161** may form an angle larger than 90 degrees.

(66) Referring to FIG. **8**, since the side surfaces of the concave portion **160** are provided obliquely with respect to the bottom surface **161**, when the concave portion **160** is viewed from above, each of the side surfaces of the concave portion **160** may have a trapezoidal shape with an edge

adjoining the bottom surface as a short parallel side. The trapezoidal shape in the present disclosure is not limited to a trapezoid defined by a strict mathematical definition. The trapezoidal shape may include a shape where one of two parallel sides located opposite to each other in appearance is shorter than the other of them and a distance between a pair of oblique sides each interconnecting both ends of each of the two parallel sides gradually increases from the small parallel side toward the long parallel side. Further, the trapezoidal shape of the present disclosure may include an approximately trapezoidal shape where the sides defining a trapezoid are not straight lines, but curved lines.

(67) Referring to FIGS. **8** and **11**, a lower surface **162***c* of each of the first side surfaces **162***a* and **162***b* may have a trapezoidal shape with its edge adjoining the bottom surface **161** as a short parallel side. Each of the second side surfaces **163***a* and **163***b* may have a trapezoidal shape with its edge adjoining the bottom surface as a short parallel side.

(68) The side surfaces of the concave portion **160** may extend from the respective edges of the bottom surface **161** so as to form an obtuse angle with the bottom surface **161**. The pair of first side surfaces **162***a* and **162***b* may extend in such a way that a distance therebetween in the circumferential direction D**2** gradually increases in a direction away from the bottom surface **161**. The pair of second side surfaces **163***a* and **163***b* may extend in such a way that a distance therebetween in the axial direction D**1** gradually increases in the direction away from the bottom surface **161**.

(69) Since the side surfaces of the concave portion **160** are inclined from the bottom surface **161**, a contact area between a user's fingertip and the surfaces defining the concave portion **160** can increase. Therefore, a force may be easily applied to the concave portion **160** by the fingertip in both the circumferential direction D**2** and the axial direction D**1**. Where the side surfaces of the concave portion **160** extend perpendicularly from the bottom surface **161**, the contact area between the fingertip and the surface of the concave portion **160** in contact with each other would be reduced, and the fingertip applying a force to the small contact area would be pressed with high pressure, and discomfort such as pain may be caused to the fingertip. As a result, the nut **150** cannot be rotated with a strong force and the movable hood **140** cannot press the reel legs **21** and **22** with a sufficient force. Therefore, there may be a problem that the coupling between the reel **20** and the reel seat **100** becomes unstable. In the concave portion **160** according to one embodiment of the present disclosure, the side surfaces of the concave portion are formed so as to be inclined from the bottom surface **161**. Thus, the contact area between a finger and the concave portion **160** increases, and thus, a relatively strong force can be applied to the nut **150** without discomfort. The movable hood **140** can be moved toward the fixed hood **111** by means of the nut **150** such that the movable hood **140** can sufficiently press the reel legs **21** and **22**, and this enables the reel **20** to be firmly coupled to the reel seat **100**.

(70) Further, since the concave portion **160** of the nut **150** according to one embodiment of the present disclosure is recessed toward the central axis O even when viewed from a side view, a force in the axial direction D**1** can be easily applied to the nut **150**. Applying the force in the axial direction D**1** to the nut **150** can further facilitate the movement of the movable hood **140** in the axial direction D**1**. For example, when the movable hood **140** is advanced toward the fixed hood **111** by the rotation of the nut **150** in the clockwise direction, pushing the nut **150** toward the fixed hood **111** can advance the movable hood **140** more easily. Further, when the movable hood **140** is retracted from the fixed hood **111** by the rotation of the nut **150** in the counterclockwise direction, pulling the nut **150** in a direction away from the fixed hood can retract the movable hood **140** more easily.

(71) The nut **150** may include the protruding surface **158** having an outer peripheral radius larger than the outer peripheral surface **157**. Referring to FIG. **11**, each of the first side surfaces **162***a* and **162***b* may include the lower surface **162***c* extending from the bottom surface **161** up to a height of the outer peripheral surface **157**, and an upper surface **162***d* extending from the lower surface **162***c*

to the protruding surface **158**. That is, since the protruding surfaces **158** are provided, the heights of the first side surfaces **162***a* and **162***b* (i.e., the difference between an outer peripheral radius R4 of the protruding surface **158** and an outer peripheral radius R2 of the bottom surface **161** (R4−R2)) become higher. The first side surfaces **162***a* and **162***b* are the surfaces to which the force in the circumferential direction D**2** is applied by a fingertip. Thus, as the heights of the first side surfaces **162***a* and **162***b* from the bottom surface **161** become higher, a user can stably and strongly apply a force for rotating the nut **150** by means of the fingertip. Further, a torque may be determined in part by the magnitude of a product of the magnitude of a force applied to the second side surfaces **163***a* and **163***b* and a distance from the central axis O to a point of application. As the heights of the first side surfaces **162***a* and **162***b* become higher, the point of application of the force can be moved away from the central axis O, and therefore, a strong torque can be applied to the nut **150** with a relatively small force.

(72) Referring to FIGS. **7** and **8**, the nut **150** may include an inclined surface **159** extending from an end of the protruding surface **158** in the axial direction D**1**. An outer peripheral radius of the inclined surface **159** gradually decreases from a boundary between the inclined surface **159** and the protruding surface **158** toward an either end of the manipulation portion **154** in the axial direction D**1**. At the either end of the manipulation portion **154** in the axial direction D**1**, the outer peripheral radius of the inclined surface **159** may be equal to the outer peripheral radius of the outer peripheral surface **157**. The manipulation portion **154** of the nut **150** is in contact with the movable hood **140** (or the annular portion **144** of the movable hood **140**). Since the inclined surface **159** is disposed between the movable hood **140** and the protruding surface **158**, inconvenience that occurs when a user grips a region between the movable hood **140** and the protruding surface **158** can be eliminated or minimized. Further, the manipulation portion **154** of the nut **150** is in contact with a lock ring **180**, which is described later. Since the inclined surface **159** is disposed between the lock ring **180** and the protruding surface **158**, inconvenience that occurs when the user grips a region between the lock ring **180** and the protruding surface **158** can be eliminated or minimized.

(73) The plurality of concave portions **160** may be disposed at an equal interval in the circumferential direction D**2** of the manipulation portion **154**. For example, five concave portions **160** may be disposed at an equal interval in the circumferential direction D**2** of the manipulation portion **154**. When viewed in the axial direction D**1**, an angle θ**1** formed by the pair of first side surfaces **162***a* and **162***b*, that is, an included angle of the pair of first side surfaces **162***a* and **162***b* may be in a range of 144 degrees to 150 degrees. Where the included angle θ**1** of the pair of first side surfaces **162***a* and **162***b* is less than 144 degrees, there may be a problem that metal molds for molding the nut **150** become complicated as described later with reference to FIGS. **12** and **13**, and therefore a manufacturing cost of the nut **150** increases. Where the angle θ**1** is larger than 150 degrees, there may be a problem that a fingertip slips easily when the concave portions **160** is pushed by the fingertip. Further, where the included angle θ**1** of the pair of first side surfaces **162***a* and **162***b* is larger than 150 degrees, a large portion of the force pushing the first side surfaces **162***a* and **162***b* by the fingertip is directed toward the central axis O. In other words, with regard to the pushing force, the magnitude of the force in the circumferential direction D**2** that actually rotates the nut **150** decreases. Therefore, the reel **20** cannot be firmly fixed to the reel seat **100** although the nut **150** is strongly tightened and, on the other hand, the strongly tightened nut **150** cannot be easily loosened.

(74) In one embodiment of the present disclosure, five concave portions **160** are disposed in the circumferential direction D**2**, but this is only exemplary. In other embodiments, the number of the concave portions **160** may be two to four, or six or more.

(75) When viewed in the axial direction D**1**, the bottom surface **161** of the concave portion **160** may have a circular arc shape centered on the central axis O. For example, the bottom surface **161** of the concave portion **160** may have the same shape as an outer peripheral surface of a cylinder having its central axis on the central axis O. In this case, a ratio of the radius R2 of the bottom

surface **161** of the concave portion **160** to the outer peripheral radius R1 of the annular portion **144** (R2/R1*100) may be in a range of 90% to 93%.

(76) The nut **150** of the present disclosure includes the plurality of concave portions **160** in the outer peripheral surface **157**, and the nut **150** can be easily rotated by the fingertip engaging with the concave portion **160**. Thus, an overall length of the nut **150** can be shortened, and the nut **150** can be provided in a compact size. A length of the manipulation portion **154** of the nut **150** in the axial direction D**1** may be in a range of 7 mm to 10 mm.

(77) An outer peripheral radius of a portion of the manipulation portion **154** of the nut **150**, which is adjacent to the movable hood **140**, may be equal to the outer peripheral radius of the annular portion **144**. A difference between the outer peripheral radius of the manipulation portion **154** of the nut **150** and the outer peripheral radius of the annular portion **144** may be in a range of 0 mm to 1 mm. Referring to FIG. **7**, a difference between the outer peripheral radius R3 of the outer peripheral surface **157** of the nut **150** and the outer peripheral radius R1 of the annular portion **144** (R3−R1) may be in the range of 0 mm to 1 mm. As another example, a difference between the outer peripheral radius R4 of the protruding surfaces **158** of the nut **150** and the outer peripheral radius R1 of the annular portion **144** (R4−R1) may be in the range of 0 mm to 1 mm.

(78) FIG. **12** is a view showing a closed state of a metal mold set for forming the nut **150** according to one embodiment. FIG. **13** is a view showing an open state of the metal mold set of FIG. **12**.

(79) Referring to FIGS. **12** and **13**, the nut **150** according to one embodiment may be manufactured using a metal mold set consisting of an upper mold M**1** and a lower mold M**2**. The upper mold M**1** and the lower mold M**2** may include cavities C**1** and C**2**, respectively, which correspond to a partial shape of the nut **150**.

(80) The nut **150** may include five concave portions **160** disposed at an equal interval in the circumferential direction D**2**. Referring to FIG. **12**, the nut **150** may include a first concave portion **160***a*, a second concave portion **160***b*, a third concave portion **160***c*, a fourth concave portion **160***d*, and a fifth concave portion **160***e*, which are disposed sequentially in a counterclockwise direction. The nut **150** may include a first protruding surface **158***a*, a second protruding surface **158***b*, a third protruding surface **158***c*, a fourth protruding surface **158***d*, and a fifth protruding surface **158***e*, which are disposed sequentially in the counterclockwise direction.

(81) The nut **150** may be formed, by the metal mold set, in such a form that a center of the second concave portion **160***b* and a center of the fifth protruding surface **158***e* are aligned on a V-axis. The internal cavities C**1** and C**2** of the upper and lower molds M**1** and M**2** may be provided in a form symmetrical with reference to the V-axis.

(82) The upper mold M**1** may include the cavity C**1** which can form a surface of the nut from a first boundary B**1** between the first concave portion **160***a* and the first protruding surface **158***a* up to a second boundary B**2** between the third concave portion **160***c* and the fourth protruding surface **158***d* in the counterclockwise direction. The lower mold M**2** may include the cavity C**2** which can form the remaining surface of the nut **150**, that is, the surface of the nut from the second boundary B**2** up to the first boundary B**1** in the counterclockwise direction. An H-axis is a horizontal axis interconnecting the first boundary B**1** and the second boundary B**2**.

(83) The included angle θ**1** of the pair of first side surfaces **162***a* and **162***b* in each of the five concave portions **160** may be in the range of 144 degrees to 150 degrees. Where the angle between the pair of first side surfaces **162***a* and **162***b* facing each other in the circumferential direction D**2** is 144 degrees or more, in the four quadrants formed by the H-axis and the V-axis, an angle θ**2**, which any surface of the nut **150** present in the first quadrant Q**1** forms with the H-axis, is 90 degrees or more. In particular, an angle, which the first side surface **162***a* between the bottom surface **161** of the first concave portion **160***a* and the second protruding surface **158***b* forms with the H-axis, is not an acute angle. Further, an angle θ**3**, which any surface of the nut **150** present in the second quadrant Q**2** forms with the negative H-axis, is 90 degrees or more. In particular, the angle, which the first side surface **162***a* between the bottom surface **161** of the third concave portion **160***a* and

the third protruding surface **158***c* forms with the negative H-axis, is not an acute angle. That is, in the nut **150** formed by the upper mold M**1**, a width W**1** in the H-axis direction monotonically decreases upward (i.e., in a direction of the positive V-axis). Therefore, a portion of the nut **150**, which is formed by the upper mold M**1** (i.e., a portion located in the first quadrant Q**1** and the second quadrant Q**2** in the H-V plane), can be easily separated from the upper mold M**1** when the cavity C**1** of the upper mold M**1** is opened. Where the included angle θ**1** of the pair of first side surfaces **162***a* and **162***b* is less than 144 degrees, the nut **150** would include a portion where the width W**1** in the H-axis direction increases upward. In such a case, it is difficult to separate the nut **150** from the upper mold M**1** due to interference between the nut **150** and the upper mold M**1**.
(84) Where the included angle θ**1** of the pair of first side surfaces **162***a* and **162***b* is 144 degrees or more, a width W**2** of the nut **150** in the H-axis direction, which is present in the third quadrant Q**3** and fourth quadrant Q**4**, also monotonically decreases downward (i.e., in a direction of the negative V-axis direction). Therefore, a portion of the nut **150**, which is formed by the lower mold M**2** (i.e., a portion located in the third quadrant and the fourth quadrant in the H-V plane), can be easily separated from the lower mold M**2** when the cavity C**2** of the lower mold M**2** is opened.
(85) Where the included angle θ**1** of the pair of first side surfaces **162***a* and **162***b* is 144 degrees or more, the nut **150** can be formed using the metal mold set having a simple structure as shown in FIGS. **12** and **13**. This can improve the precision of the metal molds and save the cost of manufacturing and maintaining the metal molds.
(86) FIG. **14** is a view showing a motion of rotating the nut **150** by means of fingertips to move the movable hood **140** toward the fixed hood **111**. FIG. **15** is a view showing a motion of rotating the nut **150** by means of fingertips to retract the movable hood **140** from the fixed hood **111**. FIG. **16** is a view showing a state where the reel seat **100** according to one embodiment is gripped.
(87) Referring to FIG. **14**, a user positions fingertips of an index finger F**2** and a thumb F**1** in the concave portions **160** and rotates the nut **150** around the central axis O in the clockwise direction, whereby the movable hood **140** can be advanced. Referring to FIG. **15**, the user positions the fingertips of the index finger F**2** and the thumb F**1** in the concave portions **160** and rotates the nut **150** around the central axis O in the counterclockwise direction, whereby the movable hood **140** can be retracted.
(88) When the fingertip is accommodated in the concave portions **160**, the first side surfaces **162***a* and **162***b* of the concave portions **160** prevent the fingertip from slipping in the circumferential direction D**2** or the axial direction D**1**. Thus, the force in the circumferential direction D**2** and the force in the axial direction D**1** can be easily and stably applied to the nut **150**. The user can rotate the nut **150** with ease by applying the force in the circumferential direction D**2** to the first side surfaces **162***a* and **162***b* of the concave portions **160** by means of the fingertips.
(89) The concave portions **160** of the nut **150** have the second side surfaces **163***a* and **163***b* that can receive the force in the axial direction D**1**. Thus, the user can rotate the nut **150** while pushing or pulling the second side surfaces **163***a* and **163***b*. That is, the user can simultaneously apply both the force in the circumferential direction D**2** and the force in the axial direction D**1** to the nut **150** by means of the fingertips. The nut **150** is threadedly coupled to the seat body **110** and is moved in the axial direction D**1** when rotated in the clockwise direction. Thus, when the user rotates the nut **150** by means of the fingertips, pushing or pulling the nut **150** in the axial direction D**1** is advantageous to the rotation of the nut **150**. Moreover, when the nut **150** is rotated, the user's fingertips also move in the axial direction D**1** in the state of being accommodated in the concave portion **160** of the nut **150**. Thus, when the nut **150** is rotated, it is more comfortable to push or pull the nut **150** in the axial direction D**1**. According to one embodiment of the present disclosure, since the user can push or pull the nut **150** while rotating the nut **150**, it is possible to eliminate or minimize the stress felt by the user while rotating the nut **150**.
(90) Referring to FIG. **16**, the concave portions **160** are recessed toward the central axis O in comparison with the outer peripheral surfaces **157** or the protruding surfaces **158** of the nut **150**.

Thus, during fishing, the fingertips or the inner surfaces of fingers may be placed on the outer peripheral surfaces **157** or the protruding surfaces **158** of the nut **150** except the concave portions **160**. Therefore, it is possible to prevent the nut **150** from being rotated unintentionally by a finger during fishing.

(91) FIG. **17** is a view showing a movable hood assembly **230** according to one embodiment. FIG. **18** is a front view of a nut **250** of FIG. **17**. FIG. **19** is a view showing a state where the nut **250** of FIG. **17** is gripped.

(92) Referring to FIGS. **17** and **18**, the nut **250** may include a knurled portion **258** which is disposed between the neighboring concave portions **160** of the plurality of concave portions **160**. The knurled portion **258** may include a plurality of ridges **258***a* arranged in the circumferential direction D**2**. The ridges **258***a* extend in the axial direction D**1**. The ridges **258***a* may have a radially convex shape when viewed in the axial direction D**1**. A groove **258***b* extending in the axial direction D**1** is disposed between the neighboring ridges **258***a*. In FIGS. **17** and **18**, the knurled portion **258** includes three ridges **258***a*, but this is only exemplary. The number of the ridges **258***a* may be two or four or more.

(93) Referring to FIG. **19**, since the nut **250** includes the knurled portion **258**, when the index finger F**2** and thumb F**1** surround the manipulation portion **154**, the friction force between the fingers and the manipulation portion **154** further increases, and the fingers do not slip. Therefore, it is possible to turn the nut **250** with a stronger force by a hand. Further, when the fingertips are positioned in the concave portions **160** during gripping, the friction force between the hand and the nut **250** can be further increased.

(94) FIG. **20** is a view showing a process of assembling a lock nut assembly **170** to the seat body **110** in one embodiment. FIG. **21** is a view showing a state where the lock nut assembly **170** is coupled to the seat body **110** in one embodiment. FIG. **22** is a view showing a process of coupling a lock ring **180** to a lock nut **190** in one embodiment. FIG. **23** is a side view showing a process of assembling the lock nut assembly **170** to the seat body **110** in one embodiment. FIG. **24** is a cross-sectional view of the movable hood assembly **130** and the lock nut assembly **170** of FIG. **21** along line XXIV-XXIV of FIG. **21**.

(95) Referring to FIGS. **20** and **21**, the reel seat **100** may further include the lock nut assembly **170**. The lock nut assembly **170** is coupled to the seat body **110** and is disposed at one side of the movable hood assembly **130**. The lock nut assembly **170** is configured to prevent the nut **150** from loosening.

(96) The lock nut assembly **170** includes the lock ring **180** and the lock nut **190**. The lock ring **180** is disposed at one side of the nut **150** and is coupled to the seat body **110** so as to be movable in the axial direction D**1**. Referring to FIG. **22**, the lock ring **180** is coupled to the lock nut **190**, and the assembly of the lock ring **180** and the lock nut **190**, i.e., the lock nut assembly **170**, is coupled to the seat body **110**.

(97) The lock ring **180** is coupled to the lock nut **190** so as to be rotatable in the circumferential direction D**2**. Referring to FIGS. **22** and **24**, the lock ring **180** may include an engagement protrusion **182** extending in the circumferential direction D**2**, and the lock nut **190** may include an engagement groove **192** configured to accommodate the engagement protrusion **182** of the lock ring **180**. The lock ring **180** is coupled to the seat body **110** so as to be movable in the axial direction D**1**. Referring to FIG. **24**, the lock ring **180** may include, on its inner peripheral surface, a guide protrusion **184** accommodated in the guide groove **114** of the seat body. The guide protrusion **184** of the lock ring **180** may extend in the axial direction D**1**.

(98) The lock nut **190** is threadedly coupled to the seat body **110** so as to be rotatable in the circumferential direction D**2**. The lock nut **190** may include, on its inner peripheral surface, a female thread **194**, which is threadedly coupled to the male thread **112** formed on the outer peripheral surface of the seat body **110**. Referring to FIG. **20**, as the lock nut **190** is fitted on the seat body **110** and is rotated in the clockwise direction, the lock nut can be advanced along the male

thread **112** of the seat body **110** in the axial direction D**1**.
(99) The lock ring **180** may include an inserting portion **185** extending in a direction toward the nut **150**. The inserting portion **185** is configured to be inserted into the nut **150**. The nut **150** includes an accommodating portion **155** configured to accommodate the inserting portion **185**. The inserting portion **185** has an outer peripheral radius smaller than the outer peripheral radius R5 of the lock ring **180**. When the inserting portion **185** is inserted into the accommodating part **155** of the nut **150**, the nut **150** surrounds the inserting portion **185** in the circumferential direction D**2**.
(100) As the lock nut **190** is rotated around the central axis O, the lock nut **190** is moved in the axial direction D**1**, and the lock ring **180** is also moved in the axial direction D**1** accordingly. Since the guide protrusion **184** of the lock ring **180** is moved along the guide groove **114**, the lock ring **180** is moved only in the axial direction D**1** without rotation.
(101) Referring to FIGS. **23** and **24**, as the lock nut **190** is rotated in the clockwise direction, a frontward surface **181** of the lock ring **180** can be brought into contact with a rearward surface **151** of the nut **150**. As the lock nut **190** is strongly turned, the lock ring **180** can strongly push the rearward surface **151** of the nut **150** toward the movable hood **140**. To loosen the nut **150**, the nut **150** is needed to be moved rearward (i.e., in the direction away from the fixed hood **111**). However, in the state where the lock ring **180** is pushing the nut **150**, the nut **150** cannot be moved rearward. Therefore, by pushing the nut **150** by the lock ring **180**, the nut **150** can be prevented from being loosened from the seat body **110**.
(102) An outer peripheral radius of a portion of the manipulation portion **154** of the nut **150**, which is adjacent to the lock ring **180**, may be equal to an outer peripheral radius of the lock ring **180**. A difference between the outer peripheral radius of the manipulation portion **154** of the nut **150** and the outer peripheral radius of the lock ring **180** may be in the range of 0 mm to 1 mm. A difference between the outer peripheral radius R3 of the outer peripheral surface **157** of the nut **150** and the outer peripheral radius R5 of the lock ring **180** (R3−R5) may be in the range of 0 mm to 1 mm. A difference between the outer peripheral radius R4 of the protruding surfaces **158** of the nut **150** and the outer peripheral radius R5 of the lock ring **180** (R4−R5) may be in the range of 0 mm to 1 mm.
(103) FIG. **25** is a view showing a motion of moving the movable hood **140** toward the fixed hood **111** in a state where the lock nut assembly **170** is coupled to the seat body **110**. FIG. **26** is a view showing a motion of retracting the movable hood **140** from the fixed hood **111** in the state where the lock nut assembly **170** is coupled to the seat body **110**. Referring to FIGS. **25** and **26**, even in the state where the lock nut assembly **170** is assembled to the seat body **110**, the nut **150** can be easily rotated. The user can rotate the nut **150** by means of only fingertips by inserting the fingertips to the concave portions **160** of the nut **150** and applying a force in the circumferential direction D**2** to the nut **150**. Therefore, since the force of the fingers can be concentrated to the concave portions **160** of the nut **150**, the user can easily rotate the nut **150** without feeling inconvenience even if the lock nut assembly **170** is close to the nut **150**.
(104) FIG. **27** is a view showing a fishing rod according to one embodiment. FIG. **28** is a view showing a fishing rod **10**′ according to another embodiment. The fishing rods **10** and **10**′ may include the reel seat **100** of the present disclosure. Referring to FIG. **27**, the fixed hood **111** and the movable hood assembly **130** may be arranged in a direction from a tip of the fishing rod toward a rear grip **40**. Referring to FIG. **28**, the movable hood assembly **130** and the fixed hood **111** may be arranged in the direction from the tip of the fishing rod **10**′ toward the rear grip **40**.
(105) FIG. **29** is a view showing the fishing rod in which the lock nut assembly **170** is coupled to one side of the movable hood assembly **230** of one embodiment with reference to FIG. **27**. FIG. **30** is a view showing the fishing rod in which the lock nut assembly **170** is coupled to one side of the movable hood assembly **230** of one embodiment with reference to FIG. **28**.
(106) The technical idea of the present disclosure has been described heretofore with reference to some embodiments and examples shown in the accompanying drawings. However, it is to be understood that various substitutions, modifications, and alterations may be made without

departing from the technical idea and scope of the present disclosure that can be understood by those of ordinary skill in the technical field to which the present disclosure pertains. Further, it is to be understood that such substitutions, modifications, and alterations fall within the scope of the appended claims.

Claims

1. A reel seat for mounting a reel having first and second legs to a rod body of a fishing rod, the reel seat comprising: a seat body coupled to the rod body, configured to support the first and second legs, and including a fixed hood configured to cover the first leg; a movable hood coupled to the seat body so as to be movable along a central axis of the rod body in an axial direction, and configured to be moved so as to cover the second leg to fix the second leg to the seat body; and a nut connected to the movable hood and threadedly coupled to the seat body so as to be rotatable in a circumferential direction of the central axis, wherein the nut includes: a connection portion coupled to the movable hood so as to be rotatable in the circumferential direction; a manipulation portion extending from the connection portion and manipulated for rotation of the nut; and a plurality of concave portions disposed in the manipulation portion in the circumferential direction, and wherein each of the plurality of concave portions is defined by: a bottom surface recessed from an outer peripheral surface of the manipulation portion toward the central axis; and a side surface extending from an edge of the bottom surface so as to form an obtuse angle with the bottom surface.
2. The reel seat of claim 1, wherein the side surface includes a pair of first side surfaces that face each other in the circumferential direction and form an obtuse angle with the bottom surface, and a pair of second side surfaces that face each other in the axial direction and form an obtuse angle with the bottom surface.
3. The reel seat of claim 2, wherein an included angle of the pair of first side surfaces is in a range of 144 degrees to 150 degrees.
4. The reel seat of claim 1, wherein the plurality of concave portions are arranged at an equal interval along the circumferential direction.
5. The reel seat of claim 2, wherein the plurality of concave portions include five concave portions arranged at an equal interval along the circumferential direction, and an included angle of the pair of first side surfaces of the concave portions is in a range of 144 degrees to 150 degrees.
6. The reel seat of claim 1, wherein the side surface has a trapezoidal shape with an edge adjoining the bottom surface as a short parallel side.
7. The reel seat of claim 1, wherein the movable hood includes an annular portion adjacent to the nut, wherein, when viewed in the axial direction, the bottom surface of the concave portion has a circular arc shape centered on the central axis, and wherein a ratio of a radius of the bottom surface to an outer peripheral radius of the annular portion is in a range of 90% to 93%.
8. The reel seat of claim 1, wherein a length of the manipulation portion in the axial direction is in a range of 7 mm to 10 mm.
9. The reel seat of claim 1, wherein the movable hood includes an annular portion adjacent to the nut, and wherein a difference between an outer peripheral radius of the manipulation portion and an outer peripheral radius of the annular portion is in a range of 0 mm to 1 mm.
10. The reel seat of claim 1, further comprising: a lock ring disposed at one side of the nut and coupled to the seat body so as to be movable in the axial direction; and a lock nut coupled to the lock ring so as to be rotatable in the circumferential direction and threadedly coupled to the seat body so as to be rotatable in the circumferential direction, wherein, as the lock nut is rotated, the lock ring presses the nut toward the fixed hood in the axial direction.
11. The reel seat of claim 10, wherein a difference between an outer peripheral radius of the manipulation portion and an outer peripheral radius of the lock ring is in a range of 0 mm to 1 mm.

12. The reel seat of claim 1, wherein the nut includes a plurality of ridges each disposed between neighboring concave portions of the plurality of concave portions and arranged in the circumferential direction.
13. A fishing rod comprising: a rod body; and the reel seat of claim 1 coupled to the rod body.