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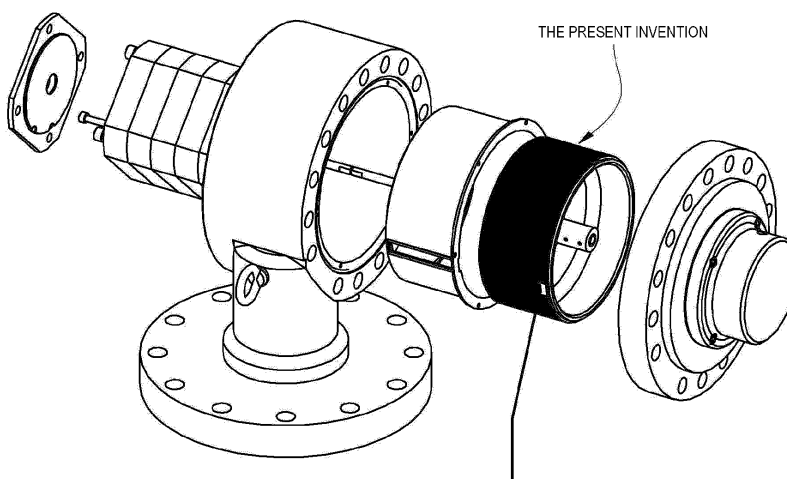
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(54) **Traversor guide apparatus**

(57) A traversor guide apparatus is disclosed, which comprises a cylindrical bobbin 10 which includes a plurality of spiral grooves 11, on which a wire 1 is wound, are formed in its outer surface at regular intervals in a longitudinal direction, and a rotation through hole 12 formed at a central portion of the interior of the same for receiving a shaft 2; a driving block 20 which includes an insertion hole 21, through which the wire 1 passes, and then is engaged to the spiral groove 11, and an engaging protrusion 22 formed at its inner surface and engaged to the spiral groove 11; and a cover 30 which covers an

outer portion of the bobbin 10 and includes a guide slot 31 for guiding the driving block 20 so that the driving block 20 can move in a right angle direction to the rotation direction of the bobbin 10 during the rotation of the bobbin 10, wherein the guide slot 31 includes an inwardly protruded escape prevention part 32 contacting with an outer surface of the driving block 20 for thereby preventing an escape of the driving block 20 from happening. The present invention makes it possible to accurately measure a moved distance of an object by keeping a wire tightly wound on a bobbin even when a bobbin has an instant rotation.

【Fig 3】



Description

TECHNICAL FIELD

[0001] The present invention relates to a traversor guide apparatus, and in particular to a traversor guide apparatus which makes it possible to accurately measure a moved distance of an object by keeping a wire tightly wound on a bobbin even when a bobbin instantly rotates.

BACKGROUND ART

[0002] The conventional traversors are disclosed in a Korean utility model publication number 1989-7806 entitled "traversor", a Korean patent registration number 10-214358 entitled "a traversor guide apparatus with a continuously variable transmission function", and a Korean utility model registration number 20-431019 entitled "traversor apparatus".

[0003] The Korean utility model publication number 1989-7806 entitled "traversor" is characterized in that an eccentric shaft in the interior of a body is made to cooperate with an angle adjusting lever and is closely attached to a semicircular tooth-shaped scale plate fixed at a front side, and a left and right movement bearing is installed at a lower side and is elastically disposed at an automatic operation member by using a coil spring, and a main drive bearing is inserted into a central shaft axially disposed at the automatic operation member and is supported at one side of the eccentric shaft, and a driven beating is axially supported at both sides, and a direction switch bracket is attached at its upper side for cooperation, so a steel material with a circular cross section can be reliably wound on a bobbin at regular intervals.

[0004] Next, the Korean patent registration number 10-214358 entitled "a traversor guide apparatus with a continuously variable transmission function" is characterized to comprise a slide shaft horizontally disposed at a rotatable body connected with a motor, a pair of slide bars which are horizontally disposed at the body and are positioned just above the slide shaft, a drive slider which can reciprocate straight along the slide shaft, a driven slider which is inserted movable into the slide bar in an engaged state to the drive slider, a support plate which is fixedly installed at the ends of the slide shaft and the slide bar, and a limit switch which is installed at a lower side of the drive slider and comes into contact with an operation plate which is installed at the body and the support plate, respectively, so the moving speed of the winding object guide can be optimum controlled to meet the general condition without changing the rotation speed of the slide shaft when the characteristic or the winding condition of the winding object is changed.

[0005] Next, the Korean utility model registration number 20-431019 entitled "traversor apparatus" is characterized to comprise a normal and reverse rotation driving force transfer apparatus engaged at an end portion of a table frame, a main shaft of which one end is engaged

at the normal and reverse rotation driving force transfer apparatus, and the other end is engaged at a shaft rest disposed at the other end of the table frame, a slider which is engaged at the main shaft and moves left and right by means of the rotation of the main shaft, a guide shaft which is disposed in parallel with the main shaft for guiding the movement of the slider, a touch sensor which is engaged at two fixing shafts disposed at the lower side of the main shaft or limiting the moving range of the slider, a controller which is engaged at the table frame in such a way to control the operation of the normal and reverse rotation driving force transfer apparatus by receiving a signal from the touch sensor, and a driving motor which is disposed at a lower side of the table frame and transfers a driving force to the normal and reverse rotation driving force transfer apparatus via a belt, so that it is possible to precisely adjust the winding pitches of the steel material wound on the bobbin by very precisely controlling the moving speed of the slider.

[0006] The above-described conventional arts are directed to a winding per se; however the traversor of Figure 1 is used a measuring sensor which makes it possible to measure the moved distance of an object, to be measured, like a cylinder or other firefighting hose, the cylinder designed to open the water gate by using a change in the length of the wire wound on the bobbin.

[0007] The wire connected to the measured object is wound or unwound from the bobbin 105 as the measured object moves; at this time a moving distance computation unit installed at one side of a rotary shaft 104 which functions like a rotation center of the bobbin 105 computes a moved distance of the measured object by computing the change in the length of the wire wound on the bobbin 105.

[0008] The traversor is constructed in such a way that the rotary shaft 104 and the thread shaft 103 are connected by a timing belt 108, and a moving member 101 moving left and right in cooperation with the rotation of the thread shaft 103 is thread-engaged to the thread shaft 103, and a hole 02 is formed at the moving member 101 for feeding the wire connected with the measured object to the bobbin 105, so the moving member 101, namely, the hole 102 moves as the bobbin 105 rotates, thus adjusting the position where the wire having passed the hole 102 is to be wound.

[0009] In the above arts, the tensional fore of the wire wound on the bobbin 105 via the hole 102 of the moving member 101 is not easy to maintain due to diverse environmental changes, so the wire wound on the bobbin 105 is overlapped in double or triple tiers as shown in Figure 2A or is wound at different intervals as shown in Figure 2B, which results in a problem that the revolution of the bobbin 105 and the length of the wire wound on the bobbin 105 are not proportional to each other.

[0010] In other words, what the revolution of the bobbin 105 and the length of the wire wound on the bobbin 105 are not proportional to each other comes since the measurement of the moved distance of the measure object is

not accurate. When the wire as shown in Figure 2A is overlapped once or more, friction occurs between the wires, thus damaging the wire, which leads to shortening the service life of wires.

[0011] When the position of the measured object is instantly moved, the wires gets instantly wound on the bobbin or unwound from the same, which loosens the wire, thus twisting the wires.

DISCLOSURE OF THE INVENTION

[0012] Accordingly, it is an object of the present invention to provide a traversor guide apparatus which overcomes the above problems and makes it possible to accurately measure a moved distance of an object by keeping a wire tightly wound on a bobbin even when a bobbin instantly rotates.

[0013] To achieve the above object, there is provided a traversor guide apparatus which comprises a cylindrical bobbin 10 which includes a plurality of spiral grooves 11, on which a wire 1 is wound, are formed in its outer surface at regular intervals in a longitudinal direction, and a rotation through hole 12 formed at a central portion of the interior of the same for receiving a shaft 2; a driving block 20 which includes an insertion hole 21, through which the wire 1 passes, and then is engaged to the spiral groove 11, and an engaging protrusion 22 formed at its inner surface and engaged to the spiral groove 11; and a cover 30 which covers an outer portion of the bobbin 10 and includes a guide slot 31 for guiding the driving block 20 so that the driving block 20 can move in a right angle direction to the rotation direction of the bobbin 10 during the rotation of the bobbin 10, wherein said guide slot 31 includes an inwardly protruded escape prevention part 32 contacting with an outer surface of the driving block 20 for thereby preventing an escape of the driving block 20 from happening.

[0014] In addition, at least two engaging protrusions 22 are provided and thread-engaged with the spiral grooves 11, respectively, at two or more portions.

[0015] In addition, the guide slot 31 further comprises an escape prevention part 32 which is inwardly protruded, thus preventing the escape of the driving block 20 from happening as the guide slot 31 comes into contact with the driving block 20.

ADVANTAGEOUS EFFECTS

[0016] The traversor guide apparatus according to the present invention makes it possible to accurately measure a moved distance of an object by keeping a wire tightly wound on a bobbin even when a bobbin has an instant rotation.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The present invention will become better understood with reference to the accompanying drawings

which are given only by way of illustration and thus are not limitative of the present invention, wherein;

Figure 1 is a perspective view illustrating a conventional traversor guide apparatus;

Figures 2A and 2B are schematic side views illustrating a state that a wire is wound on a bobbin in a non-uniform shape by means of the traversor guide apparatus of Figure 1;

Figure 3 is a schematic view illustrating a state that a traversor guide apparatus is installed at a body according to a preferred embodiment of the present invention;

Figure 4 is a perspective view illustrating a traversor guide apparatus according to a preferred embodiment of the present invention;

Figure 5 is a disassembled perspective view illustrating a traversor guide apparatus according to a preferred embodiment of the present invention; and Figures 6 and 7 are views illustrating a state that a wire having passed through an insertion of a driving block of a traversor guide apparatus is being wound on an outer surface of a bobbin according to a preferred embodiment of the present invention.

MODES FOR CARRYING OUT THE INVENTION

[0018] The preferred embodiments of the present invention will be described with reference to the accompanying drawings. The same references of the figures represent the same elements. In the descriptions of the present invention, the detailed descriptions of the related known functions or construction will be omitted so as to clarify the subject matters of the present invention.

[0019] Figure 3 is a schematic view illustrating a state that a traversor guide apparatus is installed at a body according to a preferred embodiment of the present invention, Figure 4 is a perspective view illustrating a traversor guide apparatus according to a preferred embodiment of the present invention, Figure 5 is a disassembled perspective view illustrating a traversor guide apparatus according to a preferred embodiment of the present invention; and Figures 6 and 7 are views illustrating a state that a wire having passed through an insertion of a driving block of a traversor guide apparatus is being wound on an outer surface of a bobbin according to a preferred embodiment of the present invention.

[0020] The traversor guide apparatus according to a preferred embodiment of the present invention comprises a bobbin 10, a driving block 20, a cover 30, a spiral groove 11, a rotation through hole 12, an insertion hole 12, an engaging protrusion 22, a guide slot 31 and an escape prevention part 32.

[0021] The bobbin 10 will be first described.

[0022] As shown in Figures 3 and 4, the bobbin 10 is made from a cylindrical member and has a spiral groove 11 on its outer surface. The spiral groove 11 is continuously formed in a spiral shape in its longitudinal direction.

The engaging protrusion 22 of the driving block 20 is inserted into the spiral groove 11 and moves along an outer surface of the bobbin 10.

[0023] As shown in Figures 3 and 4, at the inner center of the bobbin 10 is formed a rotation through hole 12, and a shaft is inserted into the rotation through hole 12. The engaging construction and method of the shaft 2 and the rotation through hole 12 might be implemented like the disclosure of the Korean patent registration number 10-0927441 entitled "Traversor guide apparatus", and their construction and method are not limited thereto.

[0024] The driving block 20 will be described.

[0025] As shown in Figures 3 and 4, the driving block 20 is a member engaged to a spiral groove 11 formed on an outer surface of the bobbin 10. When the driving block 20 comes into contact with the bobbin 10, the engaging protrusion 22 formed on an inner surface of the driving block 20 is thread-engaged with the spiral groove 11.

[0026] When the bobbin 10 rotates about the shaft 2 inserted in the rotation through hole 12 the driving block 20 moves along an outer surface of the bobbin 10 by means of the engagement between the spiral groove 11 and the engaging protrusion 22. At this time, the driving block 20 moves at the right angle direction with respect to the rotation direction of the bobbin 10 by means of the guide slot formed at the cover 30.

[0027] As shown in Figure 7, at least two engaging protrusions 22 are provided. When more than two engaging protrusions 22 are provided, since the contact area between the driving block 20 and the bobbin 10 increases, the driving block 20 can stably moved along the outer surface of the bobbin 10.

[0028] The cover 30 will be described.

[0029] The cover 30 serves to cover the outer side of the bobbin 10 and has a guide slot 31.

[0030] The guide slot 31 becomes open in the direction in consistent with the longitudinal direction of the bobbin 10. The driving block 20 is guided in the longitudinal direction of the bobbin 10 by means of the guide slot 31.

[0031] As shown in Figures 5 and 6, it is preferred that a driving block penetration part 33 sequentially formed with the guide slot 31 is formed at one end of the cover 30 so that the driving block 20 can penetrate into the guide slot 31 when the cover 30 and the bobbin 10 engaged with each other.

[0032] It is preferred that the escape prevention part 32 is formed at the guide slot 31 for preventing the escape of the driving block 20 from happening. The escape prevention part 32 is inwardly protruded from the upper side of the guide slot 31.

[0033] The inner lower surface of the inwardly protruded escape prevention part 32 contacts with the outer surface of the driving block 20, thus preventing the escape of the driving block 20 from happening.

[0034] The cover 30 covers the outer surface of the bobbin 10 in such a way to reliably fix the wire 1 at the spiral groove 11.

[0035] In another example of the present invention, the driving block 20 is fixed by the cover 30; however a hook (not shown) to be elastically engaged with the spiral groove 11 might be provided at the driving block 20.

[0036] It is preferred that the escape prevention part 32 is protruded to an extent that the position of the driving block 20 can be recognized by a photo sensor from the outside while preventing an escape of the driving block 20 from happening.

[0037] As shown in Figures 6 and 7, there is shown an example that the wire having passed through the insertion hole 21 of the driving block 20 is wound on an outer surface of the bobbin 10, so the wire 1 can be more reliably fixed by the inner surface of the cover 30.

[0038] As the present invention may be embodied in several forms without departing from the spirit or essential characteristics thereof, it should also be understood that the above-described examples are not limited by any of the details of the foregoing description, unless otherwise specified, but rather should be construed broadly within its spirit and scope as defined in the appended claims, and therefore all changes and modifications that fall within the meets and bounds of the claims, or equivalences of such meets and bounds are therefore intended to be embraced by the appended claims.

[Descriptions of the reference numerals]

[0039]

10: bobbin	11: spiral groove
12 rotation through hole	
20: driving block	21: insertion hole
22: engaging protrusion	
30: cover	31: guide slot
32: escape prevention part	

Claims

1. A traversor guide apparatus, comprising:

a cylindrical bobbin 10 which includes a plurality of spiral grooves 11, on which a wire 1 is wound, are formed in its outer surface at regular intervals in a longitudinal direction, and a rotation through hole 12 formed at a central portion of the interior of the same for receiving a shaft 2; a driving block 20 which includes an insertion hole 21, through which the wire 1 passes, and then is engaged to the spiral groove 11, and an engaging protrusion 22 formed at its inner surface and engaged to the spiral groove 11; and a cover 30 which covers an outer portion of the bobbin 10 and includes a guide slot 31 for guiding the driving block 20 so that the driving block 20 can move in a right angle direction to the ro-

tation direction of the bobbin 10 during the rotation of the bobbin 10, wherein said guide slot 31 includes an inwardly protruded escape prevention part 32 contacting with an outer surface of the driving block 20 for thereby preventing an escape of the driving block 20 from happening.

2. The apparatus of claim 1, wherein at least two engaging protrusions 22 are provided and thread-engaged with the spiral grooves 11, respectively, at two or more portions.

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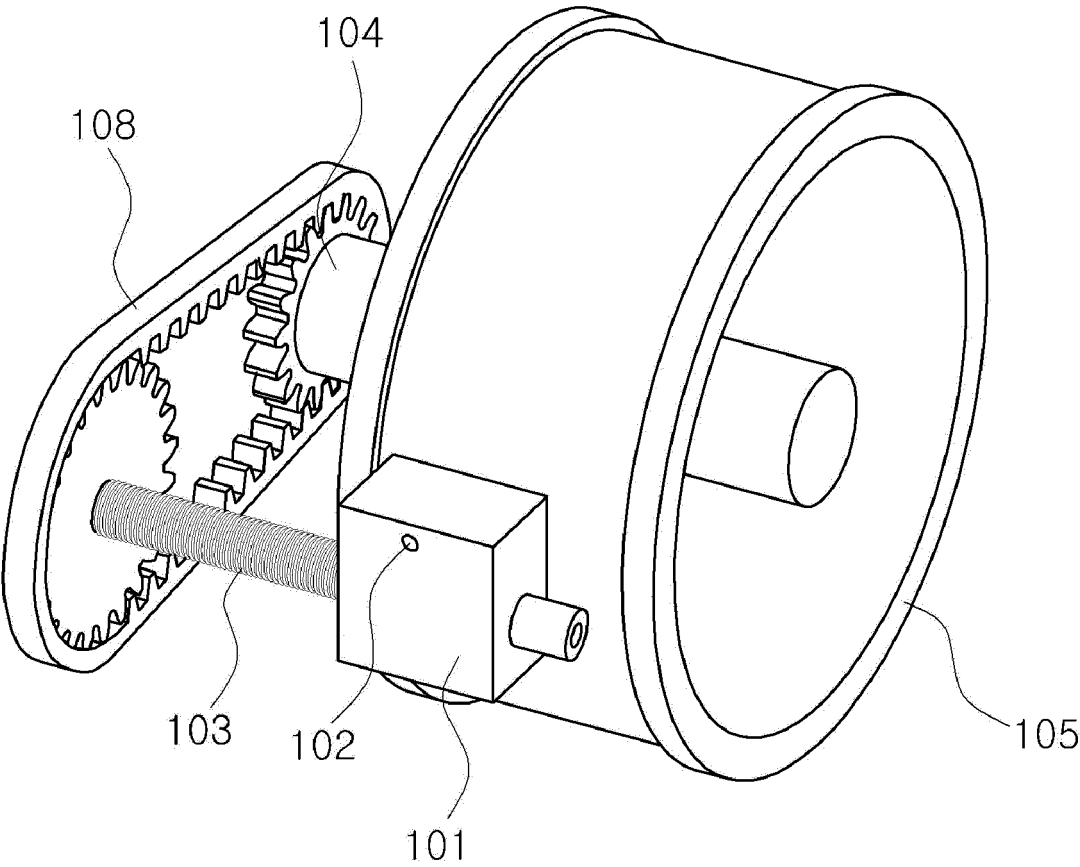
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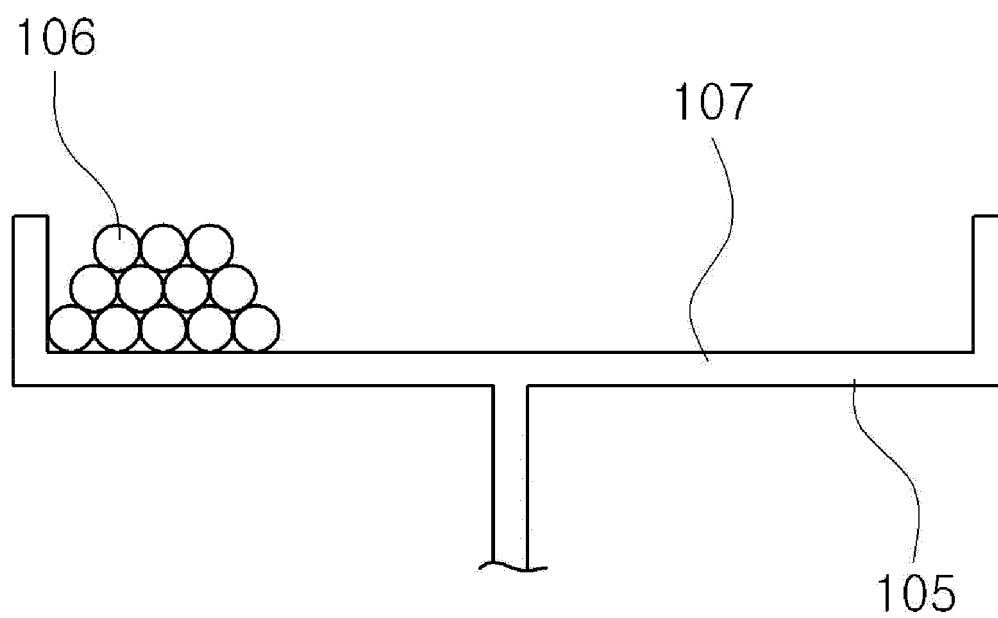
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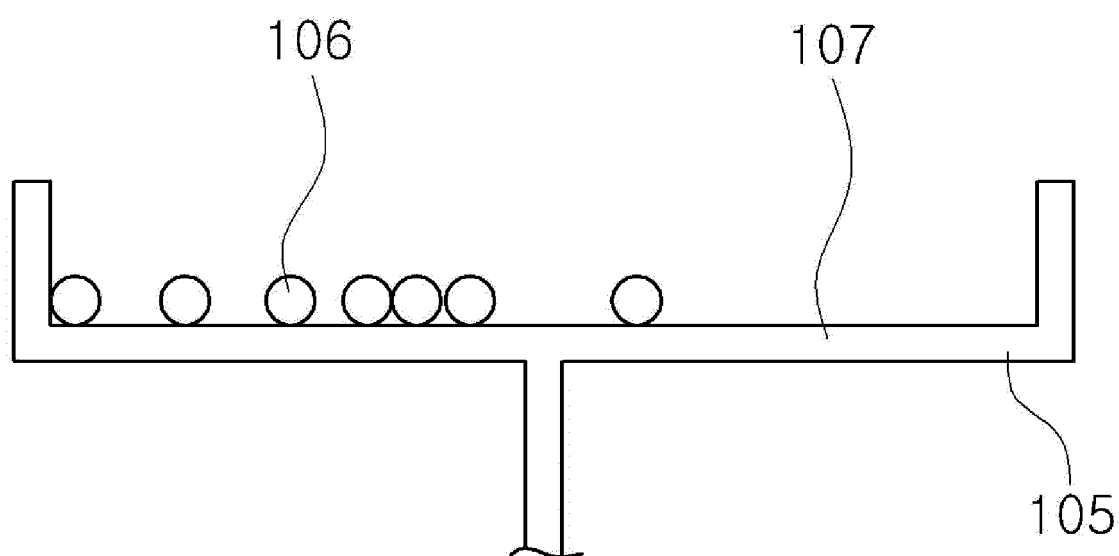
【Fig 1】



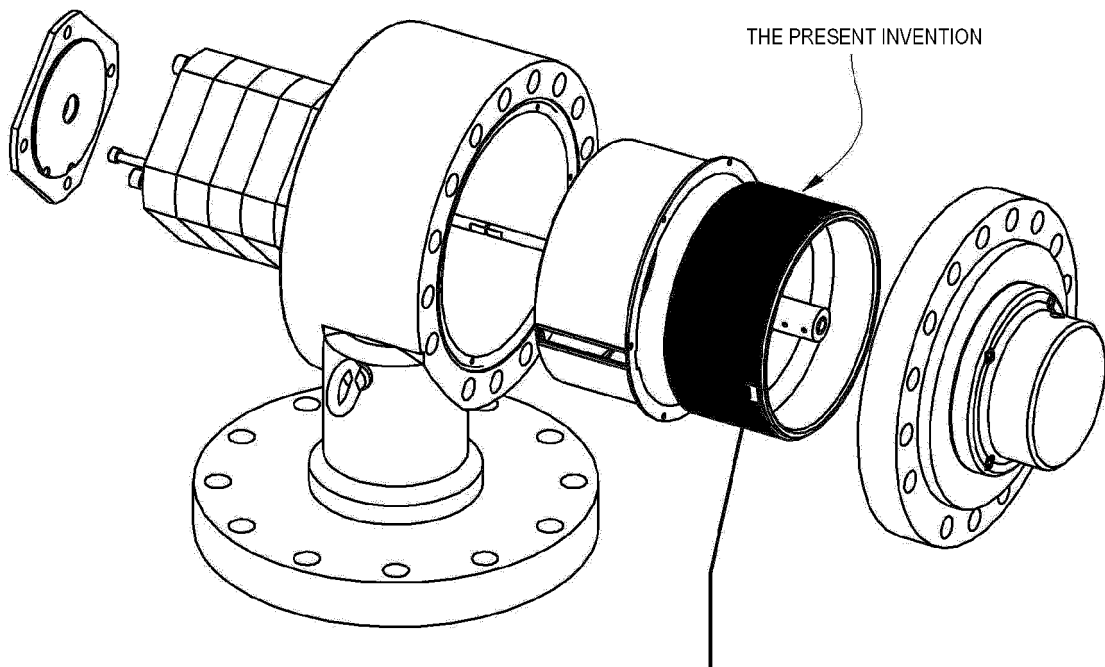
【Fig 2a】



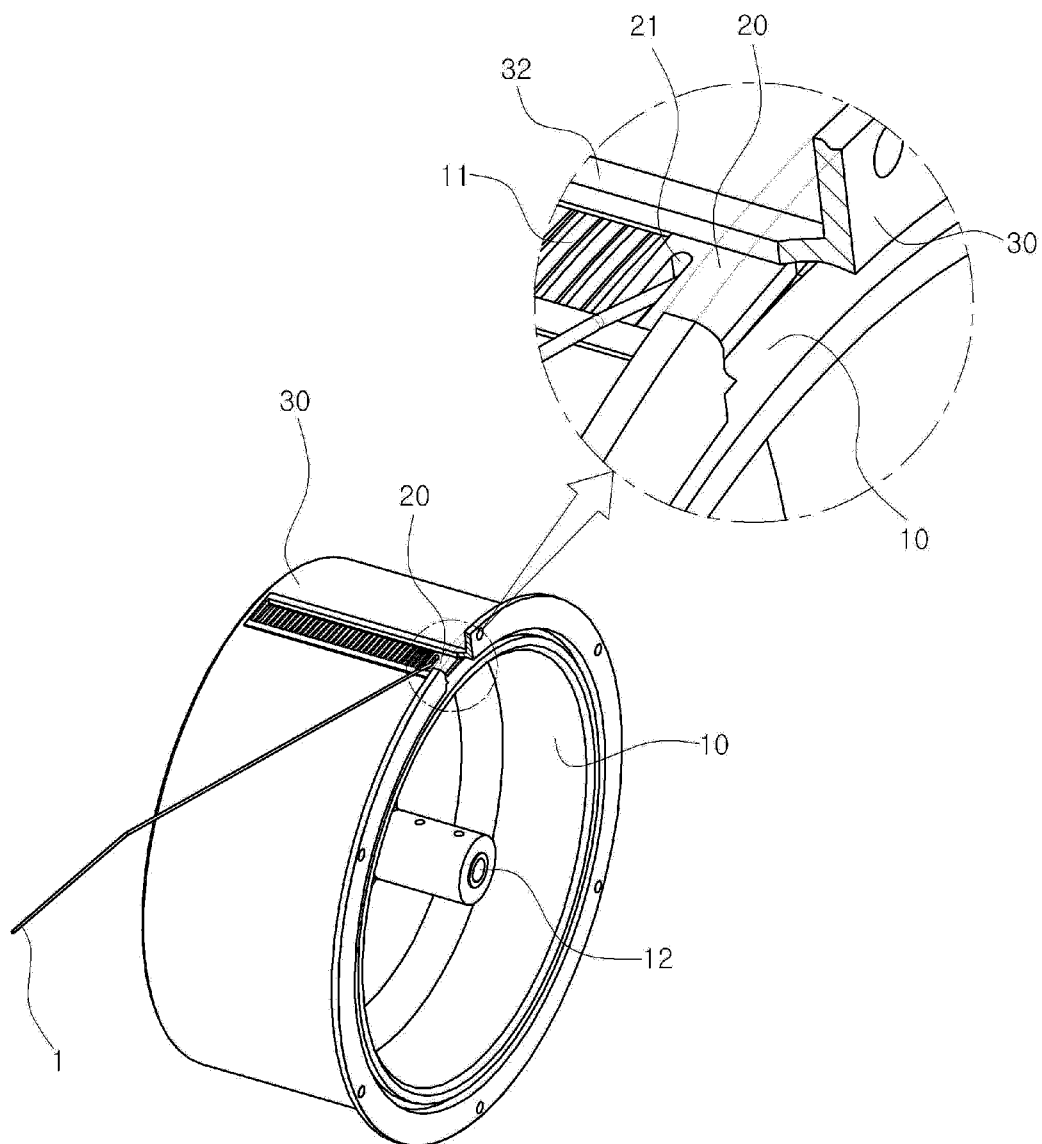
【Fig 2b】



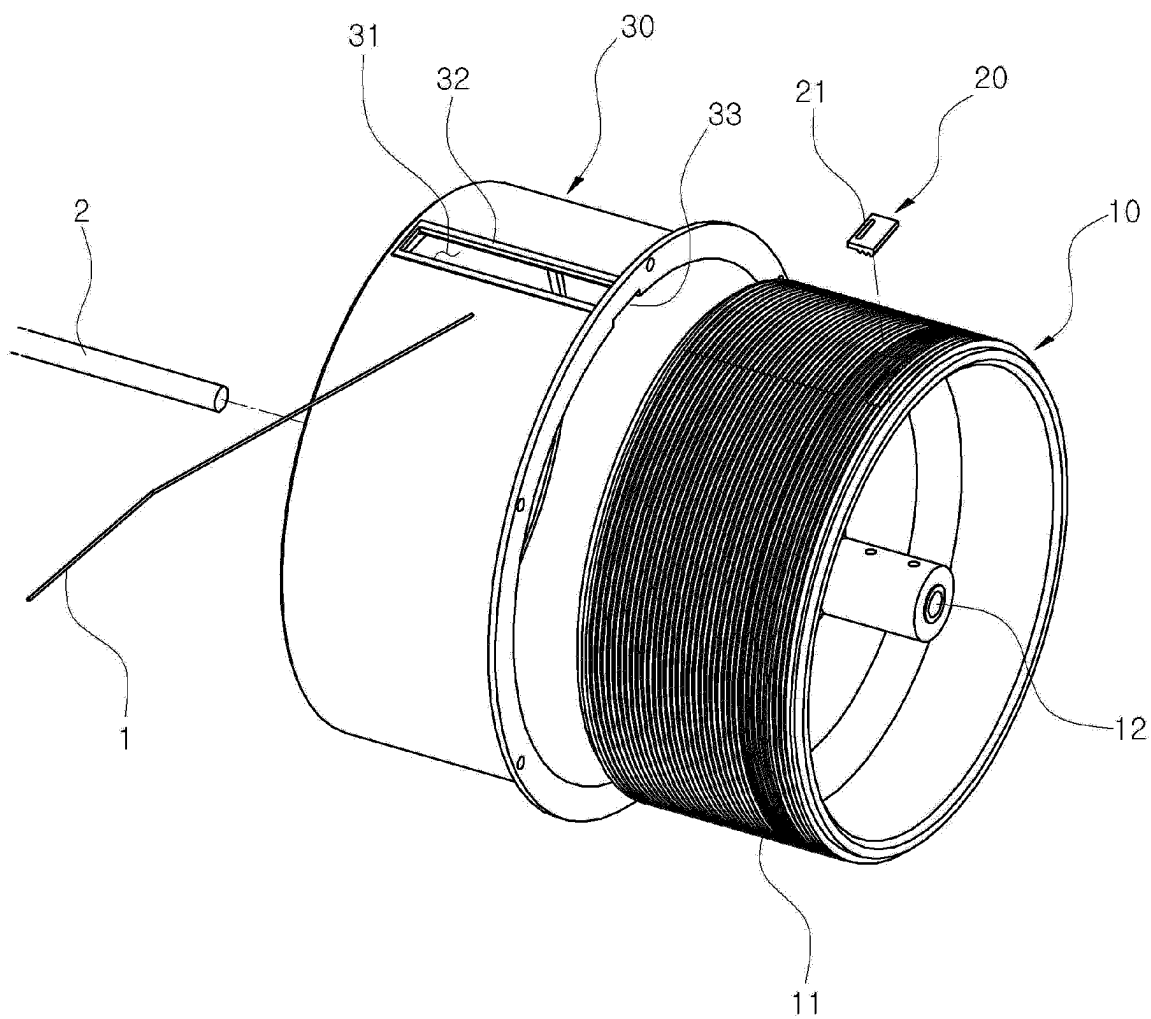
【Fig 3】



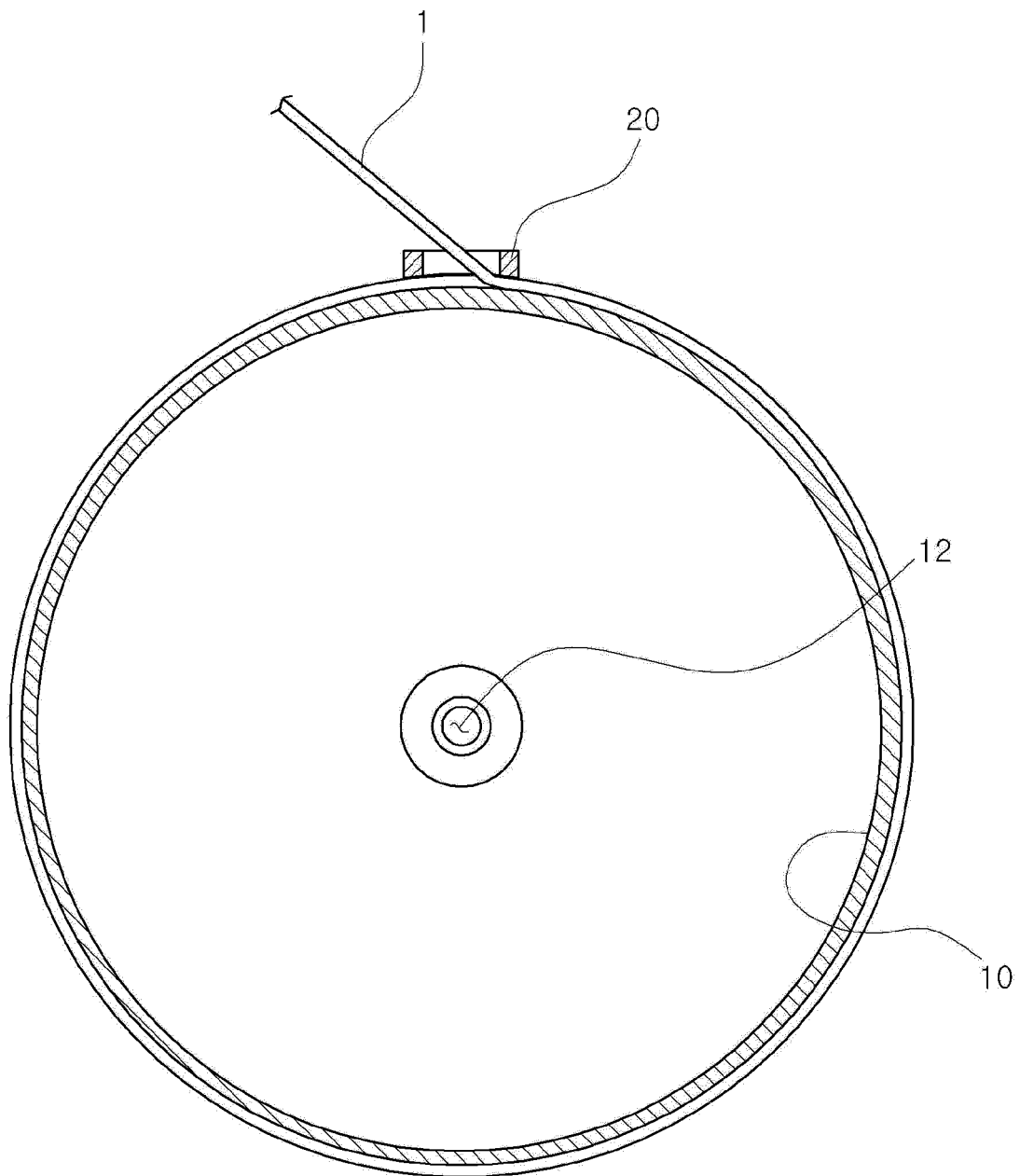
【Fig 4】



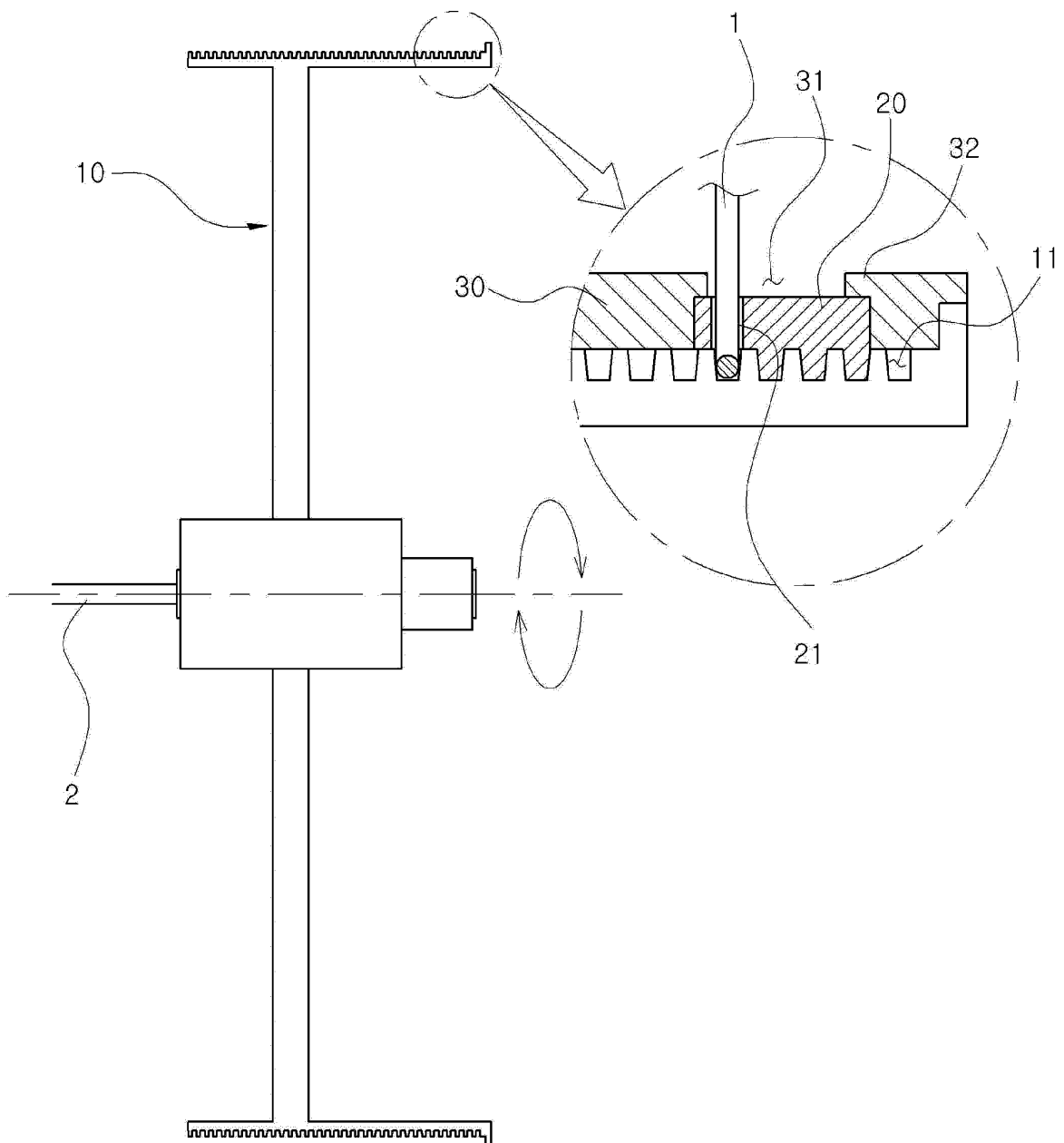
【Fig 5】



【Fig 6】



【Fig 7】



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- KR 19897806 [0002] [0003]
- KR 10214358 [0002] [0004]
- KR 20431019 [0002] [0005]
- KR 100927441 [0023]