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(54) SNOW PLOW

(57) A snowplow (100) includes a housing (10), an auger assembly (20) and a driving assembly (30). The housing (10) is provided with an opening. The auger assembly (20) is installed in the housing (10). The driving assembly (30) is installed on an outer side of the housing (10), and the driving assembly (30) includes a motor (31) and a planetary reducer (32). A power input end of the planetary reducer (32) is connected with an output shaft (311) of the motor (31), and a power output end of the planetary reducer (32) is connected with the auger assembly (20) through a transmission structure. The motor (31) and the planetary reducer (32) are integrated in a same outer housing (33).

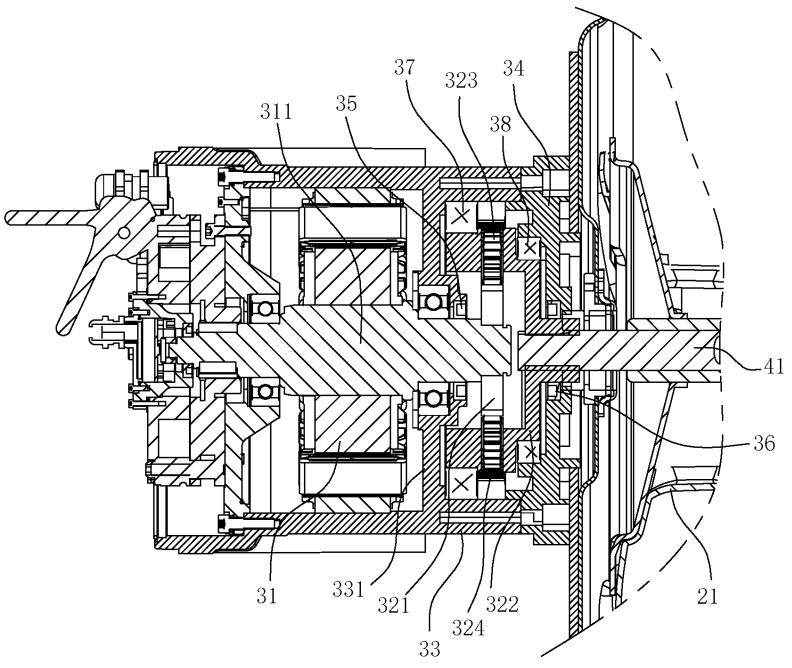

Figure 6

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Description

TECHNICAL FIELD

[0001] The invention belongs to a technical field of snowplows and specifically relates to a snowplow.

BACKGROUND

[0002] Snowplows are a kind of snow-clearing accessories that may be attached to a front of a vehicle or other mobile device. They usually include a device with a rotating blade or a shovel that may quickly clear the accumulated snow to the side of the road. The Snowplows may improve the efficiency and convenience of snow clearing, especially when there is a large area of the accumulated snow, it may effectively reduce the time required for manual snow clearing. The Snowplows in the conventional art generally use a belt transmission.

SUMMARY

[0003] The present invention provides a snowplow with a compact structure and high transmission efficiency.

[0004] One or more embodiments of the invention provide the snowplow. The snowplow includes a housing, an auger assembly and a driving assembly.

[0005] The housing is provided with an opening.

[0006] The auger assembly is installed in the housing.

[0007] The driving assembly is installed on an outer side of the housing and includes a motor and a planetary reducer. A power input end of the planetary reducer is connected with an output shaft of the motor, a power output end of the planetary reducer is connected with the auger assembly through a transmission structure, and the motor and the planetary reducer are integrated in a same outer housing.

[0008] In an embodiment of the invention, the planetary reducer includes a sun gear, a planetary carrier, a planetary gear and a ring gear, the sun gear is fixed to the output shaft of the motor, the planetary carrier is rotatably connected with the outer housing, the ring gear is fixedly connected with the outer housing, the planetary gear is rotatably connected with the planetary carrier, the planetary gear is respectively meshed with the sun gear and the ring gear, and the planetary carrier includes the power output end of the planetary reducer.

[0009] In an embodiment of the invention, a first bearing is arranged between the planetary carrier and the outer housing.

[0010] In an embodiment of the invention, a cover is arranged at one end of the outer housing away from the motor, and the cover is connected with the outer housing through a first fastener.

[0011] In an embodiment of the invention, a second bearing is arranged between the planetary carrier and the cover.

[0012] In an embodiment of the invention, a connecting part is arranged on the cover, and the connecting part is connected with the housing through a second fastener.

[0013] In an embodiment of the invention, the transmission structure includes a first transmission shaft, the cover is provided with a first through hole for the first transmission shaft to pass through, and a first mechanical sealing device is arranged between the cover and the first transmission shaft or between the cover and the planetary carrier.

[0014] In an embodiment of the invention, a separating board is arranged in the outer housing, the motor and the planetary reducer are placed on two sides of the separating board respectively, the separating board is provided with a second through hole for the output shaft of the motor to pass through, and a second mechanical sealing device is arranged between the second through hole and the output shaft of the motor.

[0015] In an embodiment of the invention, the auger assembly includes a snow throwing impeller, the snow throwing impeller includes a base and at least two scrapers arranged at intervals along a circumferential direction of the base, the transmission structure includes a first transmission shaft, the first transmission shaft is synchronously rotatably connected with the planetary carrier, and the base is fixedly connected with the first transmission shaft.

[0016] In an embodiment of the invention, the auger assembly further includes an auger, the auger includes an auger blade, the transmission structure further includes a second transmission shaft, the auger blade is arranged around the second transmission shaft and is fixedly connected with the second transmission shaft, the second transmission shaft is rotatably connected with the housing, the second transmission shaft is arranged perpendicular to or at an angle to the first transmission shaft, the second transmission shaft is in a transmission connection with the first transmission shaft through a transmission joint, and the transmission joint is configured to be capable of converting a rotation motion of the first transmission shaft into a rotation motion of the second transmission shaft.

[0017] In an embodiment of the invention, the driving assembly is installed on a housing wall at a rear side of the housing.

[0018] Technical effects of one or more embodiments of the invention are that a transmission connection between a driving component and a working component is realized through the planetary reducer, and the planetary reducer is integrated with the motor at the same time, thereby further reducing a size of the driving assembly and improving a flexibility of the snowplow. Such arrangement may also reduce a number of parts and simplify an assembling process.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019]

FIG. 1 is a perspective view of a snowplow in a usage state according to at least one of the embodiments of the invention.

FIG. 2 is a perspective view of the snowplow according to at least one of the embodiments of the invention.

FIG. 3 is a perspective view of the snowplow from another angle according to at least one of the embodiments of the invention.

FIG. 4 is a bottom view of the snowplow according to at least one of the embodiments of the invention.

FIG. 5 is a cross-sectional view taken along line A-A in FIG. 4.

FIG. 6 is a cross-sectional view of a driving assembly according to one of the embodiments of the invention.

FIG. 7 is a perspective view of the driving assembly according to at least one of the embodiments of the invention.

FIG. 8 is an exploded view of the driving assembly according to one of the embodiments of the invention.

FIG. 9 is an exploded view of a planetary carrier and a planetary gear according to at least one of the embodiments of the invention.

FIG. 10 is a transmission schematic view of the driving assembly according to at least one of the embodiments of the invention.

PART NUMBER DESCRIPTION

[0020] 100-snowplow, 200-external carrier, 300-vehicle, 10-housing, 20-auger assembly, 21-snow throwing impeller, 22-auger, 30-driving assembly, 31-motor, 311-output shaft, 32-planetary reducer, 321-sun gear, 322-planetary carrier, 3221-pin shaft, 3222-third bearing, 323-planetary gear, 324-ring gear, 33-outer housing, 331-separating board, 34-cover, 341-connecting part, 35-second mechanical sealing device, 36-first mechanical sealing device, 37-first bearing, 38-second bearing, 41-first transmission shaft, 42-second transmission shaft, 43-transmission joint.

DETAILED DESCRIPTION

[0021] The following describes the implementation of the invention through specific embodiments, and those skilled in the art can easily understand other advantages and effects of the invention from the content disclosed in this specification. The invention may also be implemented or applied through other different specific embodiments. Various details in this specification may also be modified or changed based on different viewpoints and applications without departing from the invention. It should be noted that, the following embodiments and the features in the embodiments can be combined with each other without conflict.

[0022] It should be noted that drawings provided in the embodiments are only illustrative of a basic idea of the invention. The drawings only show assemblies related to the invention instead of drawing according to the number, shape and size of the assemblies in actual implementation. In actual implementation, the type, quantity and ratio of each assembly may be changed at will, and a layout of the assemblies may also be more complicated.

[0023] Please refer to FIG. 1 and FIG. 2. The snowplow 100 of the invention may be attached to a vehicle 300, and in an embodiment, for example, may be attached to a front end or two sides of the vehicle 300. In order to more conveniently connect the snowplow 100 with the vehicle 300, the snowplow 100 may be attached to an external carrier 200, and then the external carrier 200 is connected with the vehicle 300. The external carrier 200 may be a non-powered carrier. In a specific embodiment, the external carrier 200 may further be provided with an adjustment mechanism for adjusting a posture or height of the snowplow 100. For example, the snowplow 100 and the external carrier 200 are hinged, and a telescopic driving element is arranged between the snowplow 100 and the external carrier 200, so as to drive the snowplow 100 closer to or away from a ground. When a snow removal is required, the snowplow 100 may be driven close to the ground to ensure the thorough snow removal. After the snow removal is completed or during a process of transferring the snowplow 100, the snowplow 100 may be driven away from the ground to improve vehicle's passibility. Of course, in some other embodiments, the external carrier 200 may be omitted, and the snowplow100 may be directly attached to the vehicle 300.

[0024] Driving components and working components of conventional snowplows are generally transmitted through a pulley mechanism. However, the pulley mechanism is large in size, which affects a flexibility of the snowplow. In addition, transmission efficiency of the pulley mechanism is low, which will cause an unnecessary energy waste, especially in icy and snowy weather environments, and affect an endurance of the snowplow. Therefore, the invention provides the snowplow 100 driven by gears, and the snowplow 100 integrates a motor 31 with a planetary reducer 32, which can significantly reduce a volume of the driving components and transmission components and improve the flexibility of the snowplow 100. In addition, a transmission path between the driving components and the working components is shorter and the transmission efficiency is higher, which can effectively improve the endurance of the snowplow 100.

[0025] Please refer to FIG. 3 through FIG. 10. Technical solutions of the invention are described in detail below in conjunction with specific embodiments.

[0026] Please refer to FIG. 2, FIG. 3, FIG. 6 through FIG. 8 and FIG. 10. The snowplow 100 includes a housing 10, an auger assembly 20 and a driving assembly 30.

[0027] Please refer to FIG. 2 and FIG. 3. The housing 10 is provided with an opening. As the snowplow 100 moves forward, accumulated snow on the ground can

enter the housing 10 from a front side of the housing 10. In a specific embodiment, the housing 10 may be, for example, made of multiple plates joined together by welding, riveting, bolting, etc. Of course, in some other embodiments, the housing 10 may also be integrated through stamping, die-casting, etc.

[0028] Please refer to FIG. 2, FIG. 4 and FIG. 5. The auger assembly 20 is installed in the housing 10. In a specific embodiment, the auger assembly 20 may include, for example, a snow throwing impeller 21 and an auger 22. The auger 22 is used to gather the accumulated snow in a width direction of the snowplow 100 at one place, and the snow throwing impeller 21 is used to throw the gathered snow to an outer side of a road.

[0029] Please refer to FIG. 4 and FIG. 5. In a specific embodiment, the auger 22 may include, for example, an auger blade, which can push the accumulated snow to move along the width direction of the snowplow 100 during rotation, so that the snow is gathered at one place. For example, the auger blade may be two spiral leaf blades with opposite spiral directions symmetrically arranged about a center of the width direction of the snowplow 100. At this time, the auger blade can gather the accumulated snow in the width direction of the snowplow 100 to the center of the width direction of the snowplow 100. It should be understood that a specific arrangement of the auger 22 is not limited. For example, in some other embodiments, the auger 22 may also be a single section of spiral leaf blade with a single spiral direction. At this time, the auger blade can push the accumulated snow in the width direction of the snowplow 100 to one side of the width direction of the snowplow 100.

[0030] Please refer to FIG. 5. In a specific embodiment, the snow throwing impeller 21 may, for example, include a base and at least two scrapers arranged at intervals along a circumferential direction of the base. A position of the snow throwing impeller 21 in the width direction of the snowplow 100 is determined by a working mode of the auger 22. For example, when the auger 22 gathers the accumulated snow in the width direction of the snowplow 100 to a middle of the width direction of the snowplow 100, the snow throwing impeller 21 should be installed in the middle of the width direction of the snowplow 100. And when the auger 22 gathers the accumulated snow in the width direction of the snowplow 100 to one side of the width direction of the snowplow 100, the snow throwing impeller 21 should be arranged on the side where the snow is gathered. A working principle of the snow throwing impeller 21 is to use a centrifugal force to throw away the accumulated snow. Therefore, a corresponding guiding structure needs to be arranged on the housing 10 to guide a snow throwing path. For example, a snow blowing chute assembly for guiding the snow throwing path may be arranged on the housing 10. In a further embodiment, the snow blowing chute assembly may be movably connected with the housing 10 to enable a snow throwing direction to be adjustable.

[0031] Please refer to FIG. 3, FIG. 6 through FIG. 10. The driving assembly 30 is installed on an outer side of the housing 10 and includes the motor 31 and the planetary reducer 32. A power input end of the planetary reducer 32 is connected with an output shaft 311 of the motor 31, a power output end of the planetary reducer 32 is connected with the auger assembly 20 through a transmission structure, and the motor 31 and the planetary reducer 32 are integrated in a same outer housing 33. Compared with the pulley transmission mechanism, a structure of the planetary reducer 32 is more compact. On this basis, the invention integrates the planetary reducer 32 with the motor 31, thereby further reducing an axial dimension of the driving assembly 30 and improving a flexibility of the snowplow 100. At the same time, the invention further reduces a number of parts and simplifies an assembling process.

[0032] Please refer to FIG. 6 and FIG. 10. In an embodiment of the invention, the planetary reducer 32 includes a sun gear 321, a planetary carrier 322, a planetary gear 323 and a ring gear 324, the sun gear 321 is fixedly connected to the output shaft 311 of the motor 31, the planetary carrier 322 is rotatably connected with the outer housing 33, the ring gear 324 is fixedly connected with the outer housing 33, the planetary gear 323 is rotatably connected with the planetary carrier 322, the planetary gear 323 is respectively meshed with the sun gear 321 and the ring gear 324, and the planetary carrier 322 includes the power output end of the planetary reducer 32.

[0033] A transmission principle of the driving assembly 30 is as follows: the output shaft 311 of the motor 31 drives the sun gear 321 to rotate. Since the planetary gear 323 is meshed with the sun gear 321, the planetary gear 323 and the sun gear 321 rotate synchronously in an opposite direction. Since the planetary gear 323 is meshed with the ring gear 324, the planetary gear 323 rolls along a circumferential direction of the ring gear 324, thereby driving the planetary carrier 322 to rotate. It should be understood that a reduction ratio of the planetary reducer 32 is determined by a transmission ratio between the sun gear 321 and the planetary gear 323 and a transmission ratio between the planetary gear 323 and the ring gear 324. In practical applications, the planetary reducer 32 may achieve a desired deceleration effect by controlling the transmission ratio between the sun gear 321 and the planetary gear 323 or the transmission ratio between the planetary gear 323 and the ring gear 324.

[0034] Please refer to FIG. 6 and FIG. 8. In an embodiment of the invention, a first bearing 37 is arranged between the planetary carrier 322 and the outer housing 33. Further, please refer to FIG. 9. The planetary carrier 322 may, for example, include a disc-shaped body, and a side surface of the body is provided with a cavity for accommodating the planetary gear 323. A pin shaft 3221 is arranged in the cavity, and the planetary gear 323 is rotatably arranged on the pin shaft 3221 through a third bearing 3222. A hole or a groove for accommodating the sun gear 321 is arranged in a center of the body, an

inner side of the planetary gear 323 protrudes into the hole or the groove and meshes with the sun gear 321, and an outer side of the planetary gear 323 protrudes out of an outer annular surface of the body and is meshed with the ring gear 324. A corresponding step part may further be arranged on the outer annular surface of the body for installing and positioning the bearing. In order to ensure a dynamic balance of the planetary carrier 322, a plurality of planetary gears 323 may be arranged at equal intervals along a circumferential direction of the planetary carrier 322. In this embodiment, the planetary gear 323 is installed inside the planetary carrier 322, and rotation supports may be arranged at two ends of the planetary carrier 322, which can effectively improve a stability of the planetary carrier 322 during operation.

[0035] It should be understood that an assembling method between the planetary carrier 322 and the planetary gear 323 is not limited. For example, in some other embodiments, the planetary gear 323 may also be directly installed on one end of the planetary carrier 322.

[0036] Please refer to FIG. 6 through FIG. 8. In an embodiment of the invention, a cover 34 is arranged at one end of the outer housing 33 away from the motor 31, and the cover 34 is connected with the outer housing 33 through a first fastener. The cover 34 and the outer housing 33 are detachably arranged. When the cover 34 is removed, an installation space of the planetary reducer 32 can be fully exposed, so that an assembly or maintenance of the planetary reducer 32 is convenient. In a specific embodiment, the cover 34 and the outer housing 33 may be connected by bolts, for example.

[0037] Please refer to FIG. 6 and FIG. 8. In an embodiment of the invention, a second bearing 38 is arranged between the planetary carrier 322 and the cover 34. In a specific embodiment, part of the cover 34 protrudes into the outer housing 33, which may compress the first bearing 37 and the ring gear 324 inside the outer housing 33. In addition, in this embodiment, the second bearing 38 is arranged between the planetary carrier 322 and the cover 34, which can not only improve a stability of the planetary carrier 322 during operation, but also facilitate an installation and disassembly of the second bearing 38.

[0038] Please refer to FIG. 7 and FIG. 8. In an embodiment of the invention, a connecting part 341 is arranged on the cover 34, and the connecting part 341 is connected with the housing 10 through a second fastener. In a specific embodiment, the connecting part 341 may be, for example, a bolt hole, and the cover 34 may be connected with the housing 10 by bolts, thereby achieving a fixation between the driving assembly 30 and the housing 10.

[0039] Please refer to FIG. 4 through FIG. 6 and FIG. 10. In an embodiment of the invention, the transmission structure includes a first transmission shaft 41, the cover 34 is provided with a first through hole for the first transmission shaft 41 to pass through, and a first mechanical sealing device 36 is arranged between the cover 34 and the first transmission shaft 41 or between the cover 34 and the planetary carrier 322. The first mechanical sealing device can prevent the accumulated snow or melted snow from entering the outer housing 33 of the driving assembly 30, thereby increasing a duration life of the driving assembly 30.

[0040] Please refer to FIG. 6 and FIG. 10. In an embodiment of the invention, a separating board 331 is arranged in the outer housing 33, the motor 31 and the planetary reducer 32 are placed on two sides of the separating board 331 respectively, the separating board 331 is provided with a second through hole for the output shaft 311 of the motor 31 to pass through, and a second mechanical sealing device 35 is arranged between the second through hole and the output shaft 311 of the motor 31. It should be understood that in order to protect various components in the planetary reducer 32, a cavity space in which the planetary reducer 32 is located is generally filled with lubricating oil or grease. The second mechanical sealing device 35 can prevent these lubricating oil or grease from entering an interior of the motor 31 which may causing adverse effects on an operation of the motor 31.

[0041] Please refer to FIG. 5 and FIG. 6. In an embodiment of the invention, the transmission structure includes a first transmission shaft 41, the first transmission shaft 41 is synchronously rotatably connected with the planetary carrier 322, and the base of the snow throwing impeller 21 is fixedly connected with the first transmission shaft 41. Power output by the planetary reducer 32 is directly transmitted to the snow throwing impeller 21 through the first transmission shaft 41, which improves the transmission efficiency.

[0042] Please refer to FIG. 4 and FIG. 5. In an embodiment of the invention, the transmission structure further includes a second transmission shaft 42, the auger blade of the auger 22 is arranged around the second transmission shaft 42 and is fixedly connected with the second transmission shaft 42. The second transmission shaft 42 is rotatably connected with the housing 10, and the second transmission shaft 42 is arranged perpendicular to or at an angle to the first transmission shaft 41. The second transmission shaft 42 is in a transmission connection with the first transmission shaft 41 through a transmission joint 43, and the transmission joint 43 is configured to be capable of converting a rotation motion of the first transmission shaft 41 into a rotation motion of the second transmission shaft 42. It should be understood that the transmission joint 43 may adopt any mechanism capable of transmitting power between two non-parallel shafts. For example, in a specific embodiment, the transmission joint 43 may include a worm gear mechanism or a bevel gear mechanism.

[0043] Please refer to FIG. 3 through FIG. 5. In an embodiment of the invention, the driving assembly 30 is installed on a housing wall on the rear side of the housing 10. Correspondingly, the snow throwing impeller 21 is installed on an inner wall on the rear side of the housing 10. When the snowplow 100 moves forward, the

accumulated snow can continuously move toward a direction of the snow throwing impeller 21, thereby ensuring that the accumulated snow in the housing 10 can be fully discharged, which avoids an accumulation of snow in the housing 10 and causes an obstruction of the auger 22.

[0044] In summary, the invention realizes a transmission connection between the driving component and the working component through the planetary reducer, and at the same time integrates the planetary reducer with the motor, which further reduces a size of the driving component and improves the flexibility of the snowplow. The invention further reduces the number of parts and simplifies the assembling process. The invention installs the planetary gear inside the planetary carrier, and the rotation supports may be arranged at the two ends of the planetary carrier, which can effectively improve the stability of the planetary carrier during operation. The invention arranges the second bearing between the planetary carrier and the cover, which can not only improve the stability of the planetary carrier during operation, but also facilitate the installation and disassembly of the second bearing. The first mechanical sealing device can prevent the accumulated snow or melted snow from entering the interior of the outer housing of the driving assembly, thereby increasing the duration life of the driving assembly. The second mechanical sealing device can prevent these lubricating oils or greases from entering the interior of the motor which may cause adverse effects on the operation of the motor. The power output by the planetary reducer is directly transmitted to the snow throwing impeller through the first transmission shaft, which greatly improves the transmission efficiency. The snow throwing impeller is installed on the inner wall on the rear side of the housing. When the snowplow moves forward, the accumulated snow can continuously move toward the direction of the snow throwing impeller, thereby ensuring that the accumulated snow in the housing can be fully discharged, which avoids the accumulation of snow in the housing that may cause the obstruction of the auger.

[0045] The above embodiments only illustrate principles and effects of the invention, but are not intended to limit the invention. Anyone familiar with this technology may modify or change the above embodiments without departing from a scope of the invention as defined by the appended claims.

[0046] In the description herein, numerous specific details are provided, such as examples of components and/or methods, to provide a thorough understanding of embodiments of the invention. However, one skilled in the art will recognize that embodiments of the invention may be practiced without one or more of the specific details, or with other devices, systems, assemblies, methods, components, materials, parts, and so forth. In other instances, well-known structures, materials, or operations are not specifically shown or described in detail to avoid obscuring aspects of the embodiments of the invention.

Claims

1. A snowplow (100), comprising:

   a housing (10), the housing (10) is provided with an opening;
   an auger assembly (20), the auger assembly (20) is installed in the housing (10); and a driving assembly (30), the driving assembly (30) is installed on an outer side of the housing (10) and comprises a motor (31) and a planetary reducer (32), wherein a power input end of the planetary reducer (32) is connected with an output shaft (311) of the motor (31), a power output end of the planetary reducer (32) is connected with the auger assembly (20) through a transmission structure, and the motor (31) and the planetary reducer (32) are integrated in a same outer housing (33).

2. The snowplow (100) according to claim 1, wherein, the planetary reducer (32) comprises a sun gear (321), a planetary carrier (322), a planetary gear (323) and a ring gear (324), the sun gear (321) is fixed to the output shaft (311) of the motor (31), the planetary carrier (322) is rotatably connected with the outer housing (33), the ring gear (324) is fixedly connected with the outer housing (33), the planetary gear (323) is rotatably connected with the planetary carrier (322), the planetary gear (323) is respectively meshed with the sun gear (321) and the ring gear (324), and the planetary carrier (322) comprises the power output end of the planetary reducer (32).

3. The snowplow (100) according to claim 2, wherein a first bearing (37) is arranged between the planetary carrier (322) and the outer housing (33).

4. The snowplow (100) according to any one of claims 1 to 3, wherein a cover (34) is arranged at one end of the outer housing (33) away from the motor (31), and the cover (34) is connected with the outer housing (33) through a first fastener.

5. The snowplow (100) according to any one of claims 3 or 4, wherein a second bearing (38) is arranged between the planetary carrier (322) and the cover (34).

6. The snowplow (100) according to any one of claims 4 or 5, wherein a connecting part (341) is arranged on the cover (34), and the connecting part (341) is connected with the housing (10) through a second fastener.

7. The snowplow (100) according to any one of claims 4 to 6, wherein the transmission structure comprises a first transmission shaft (41), the cover (34) is pro-

vided with a first through hole for the first transmission shaft (41) to pass through, and a first mechanical sealing device (36) is arranged between the cover (34) and the first transmission shaft (41) or between the cover (34) and the planetary carrier (322).

8. The snowplow (100) according to any one of claims 1 to 7, wherein a separating board (331) is arranged in the outer housing (33), the motor (31) and the planetary reducer (32) are placed on two sides of the separating board (331) respectively, the separating board (331) is provided with a second through hole for the output shaft (311) of the motor (31) to pass through, and a second mechanical sealing device (35) is arranged between the second through hole and the output shaft (311) of the motor (31).

9. The snowplow (100) according to any one of claims 7 to 8, wherein the auger assembly (20) comprises a snow throwing impeller (21), the snow throwing impeller (21) comprises a base and at least two scrapers arranged at intervals along a circumferential direction of the base, the first transmission shaft (41) is synchronously rotatably connected with the planetary carrier (322), and the base is fixedly connected with the first transmission shaft (41).

10. The snowplow (100) according to claim 9, wherein the auger assembly (20) further comprises an auger (22), the auger (22) comprises an auger blade, the transmission structure further comprises a second transmission shaft (42), the auger blade is arranged around the second transmission shaft (42) and is fixedly connected with the second transmission shaft (42), the second transmission shaft (42) is rotatably connected with the housing (10), the second transmission shaft (42) is arranged perpendicular to or at an angle to the first transmission shaft (41), the second transmission shaft (42) is in a transmission connection with the first transmission shaft (41) through a transmission joint (43), and the transmission joint (43) is configured to be capable of converting a rotation motion of the first transmission shaft (41) into a rotation motion of the second transmission shaft (42).

11. The snowplow (100) according to any one of claims 1 to 10, wherein the driving assembly (30) is installed on a housing wall at a rear side of the housing (10).

12. A snowplow vehicle, comprising:

a vehicle (300); and
a snowplow (100) according to any one of claims 1 to 11.

13. The snowplow vehicle according to claim 12, wherein the snowplow is attached to the vehicle (300) through an external carrier (200).

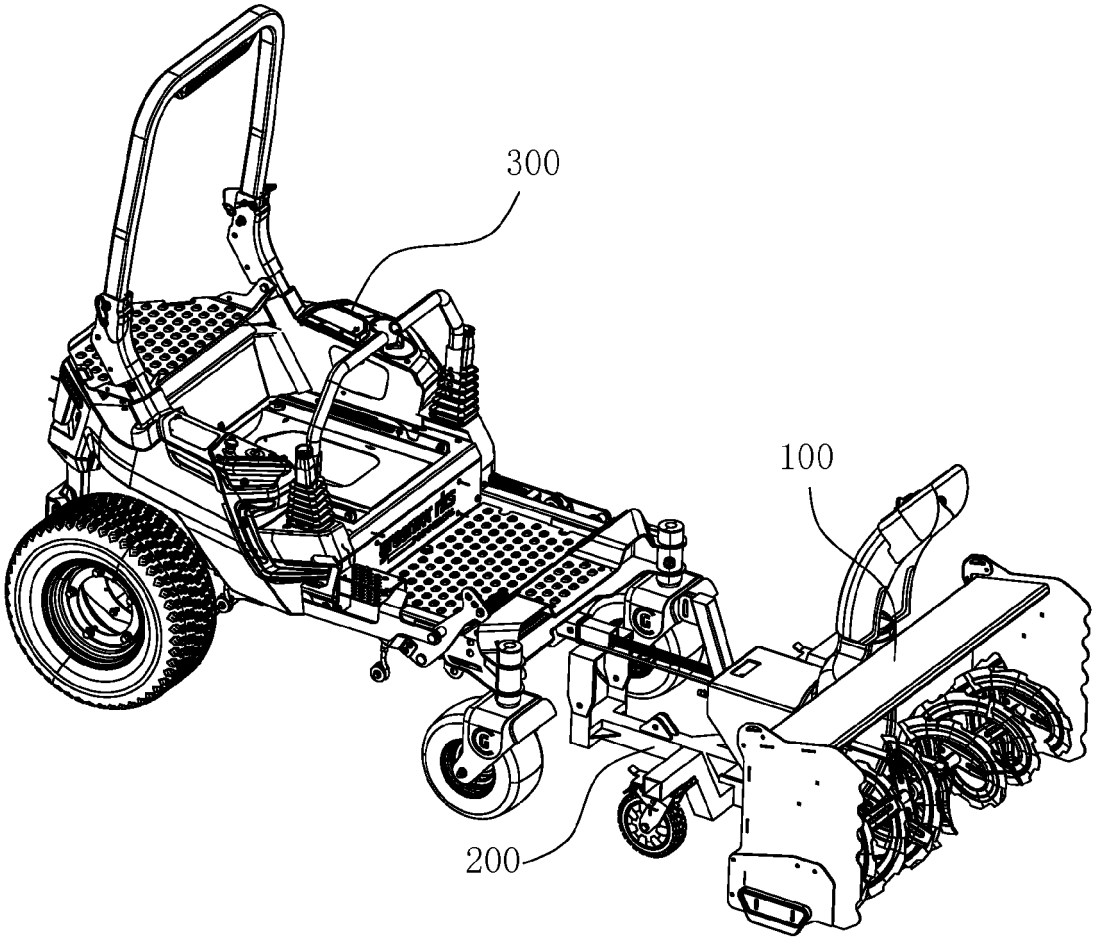

Figure 1

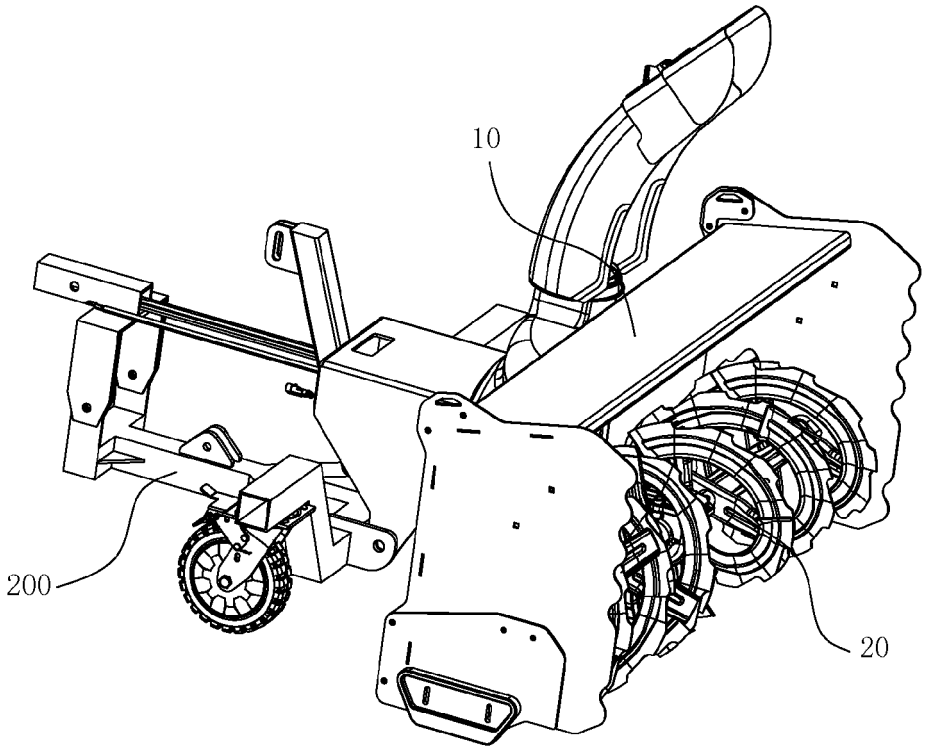

Figure 2

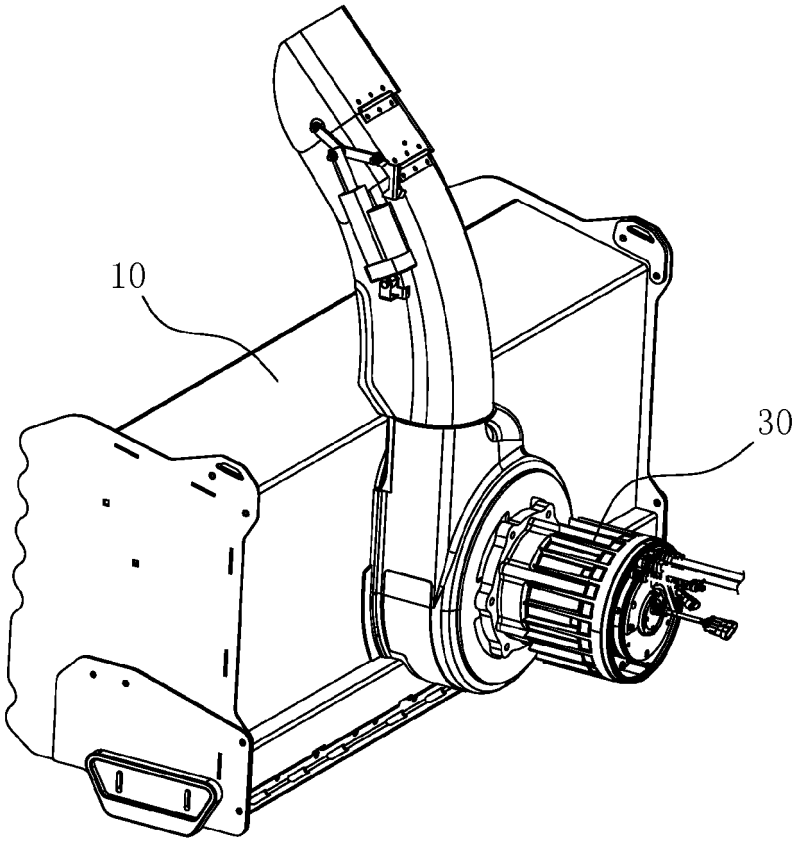

Figure 3

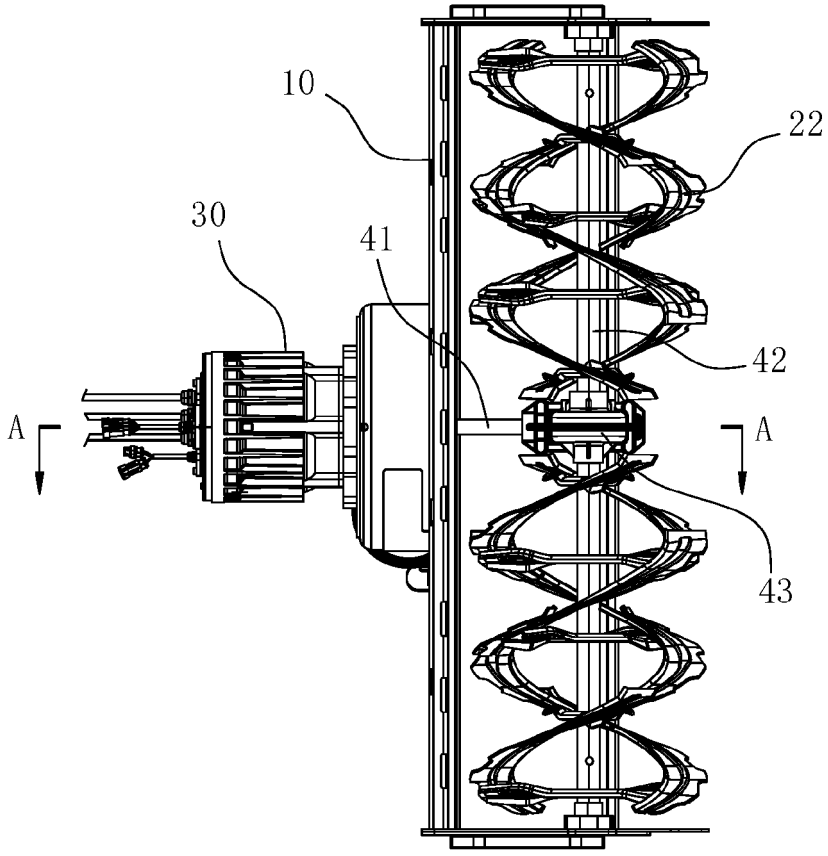

Figure 4

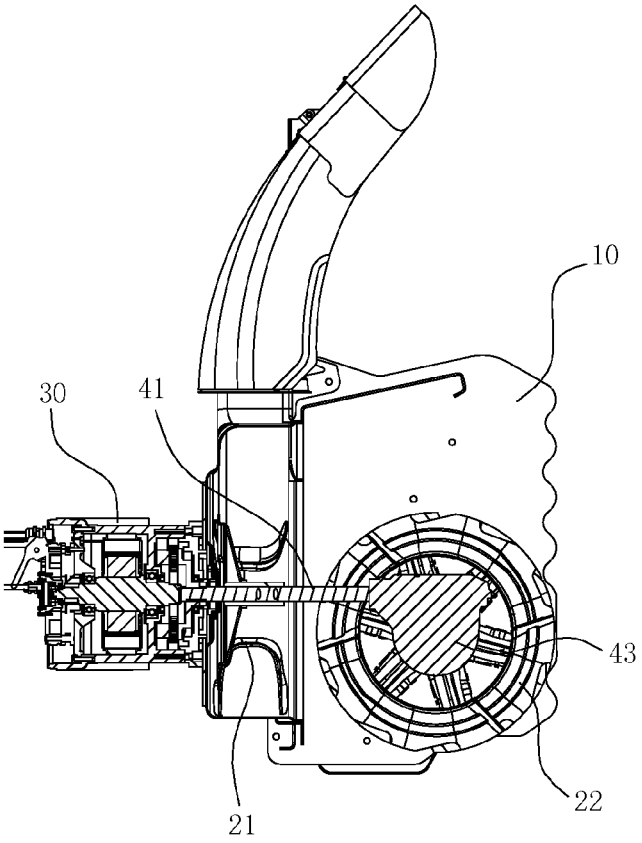

Figure 5

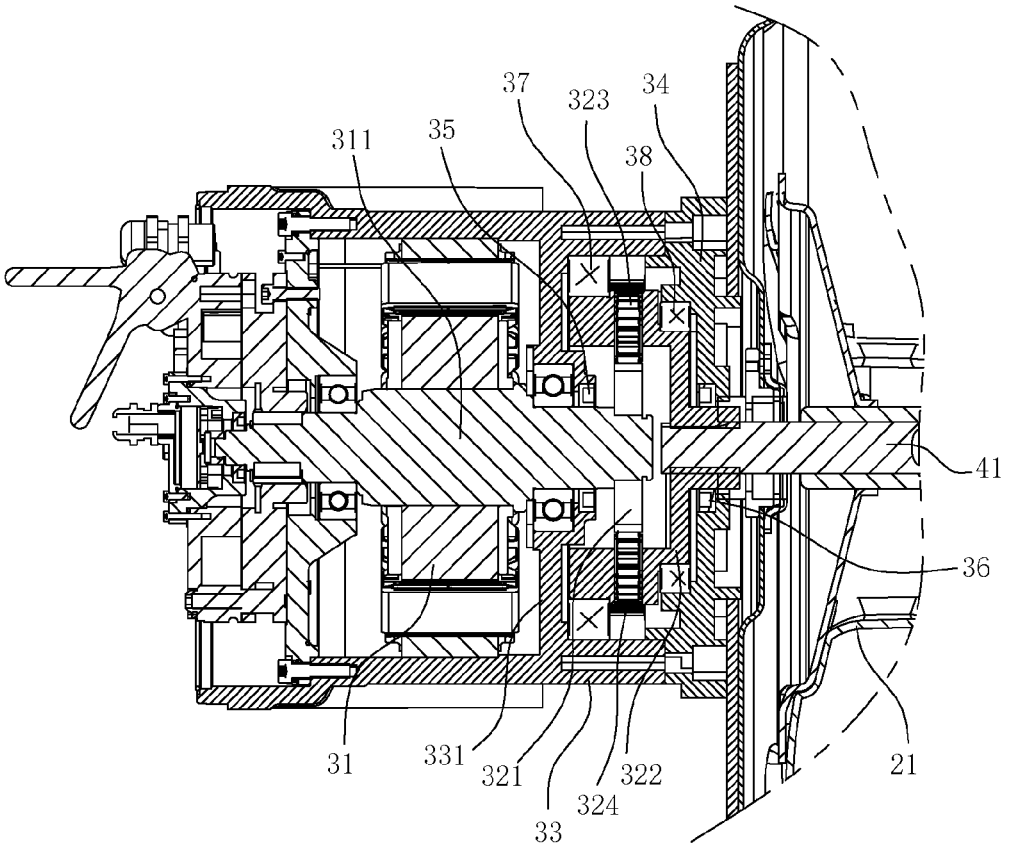

Figure 6

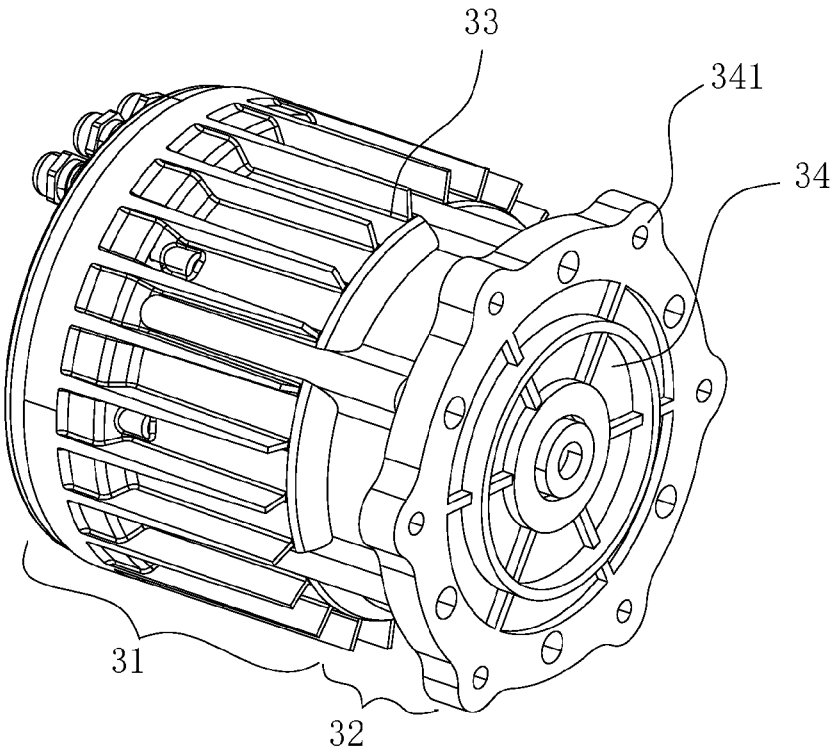

Figure 7

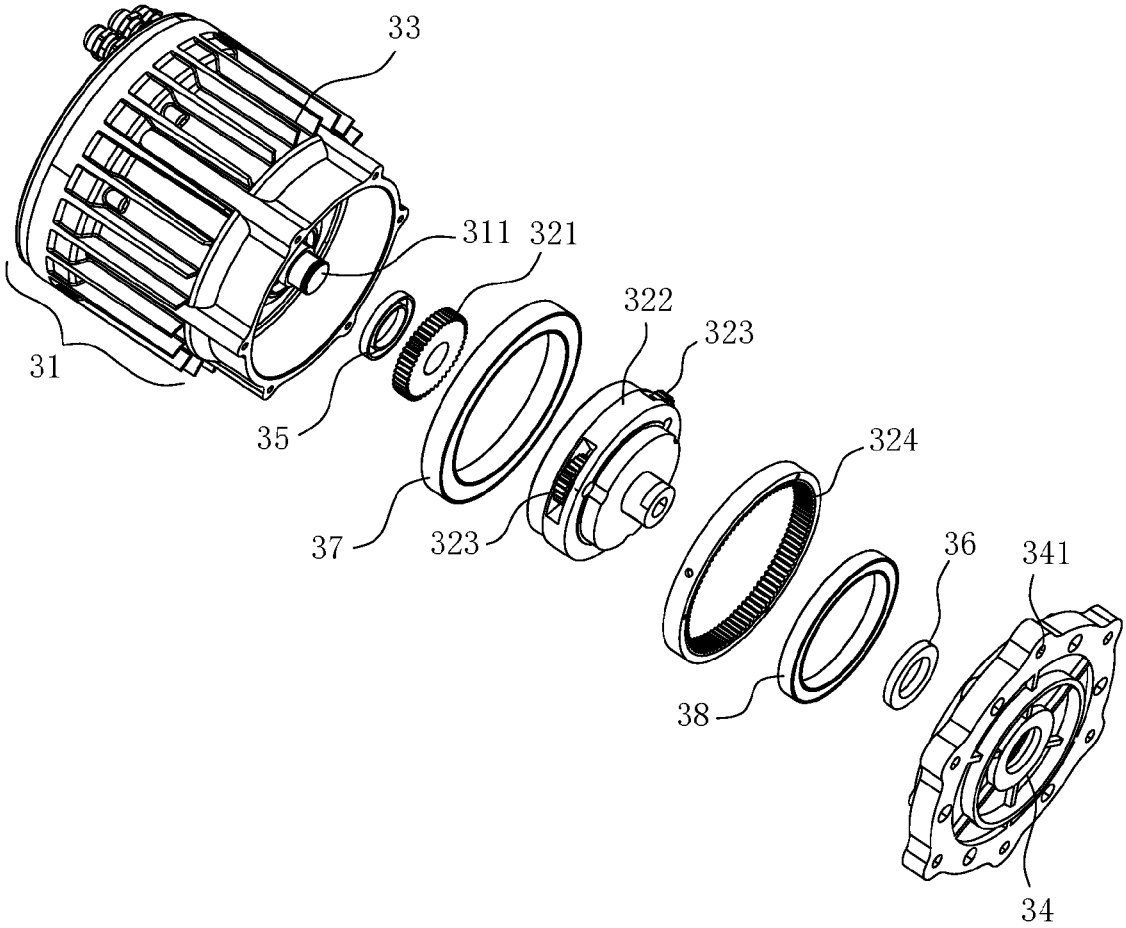

Figure 8

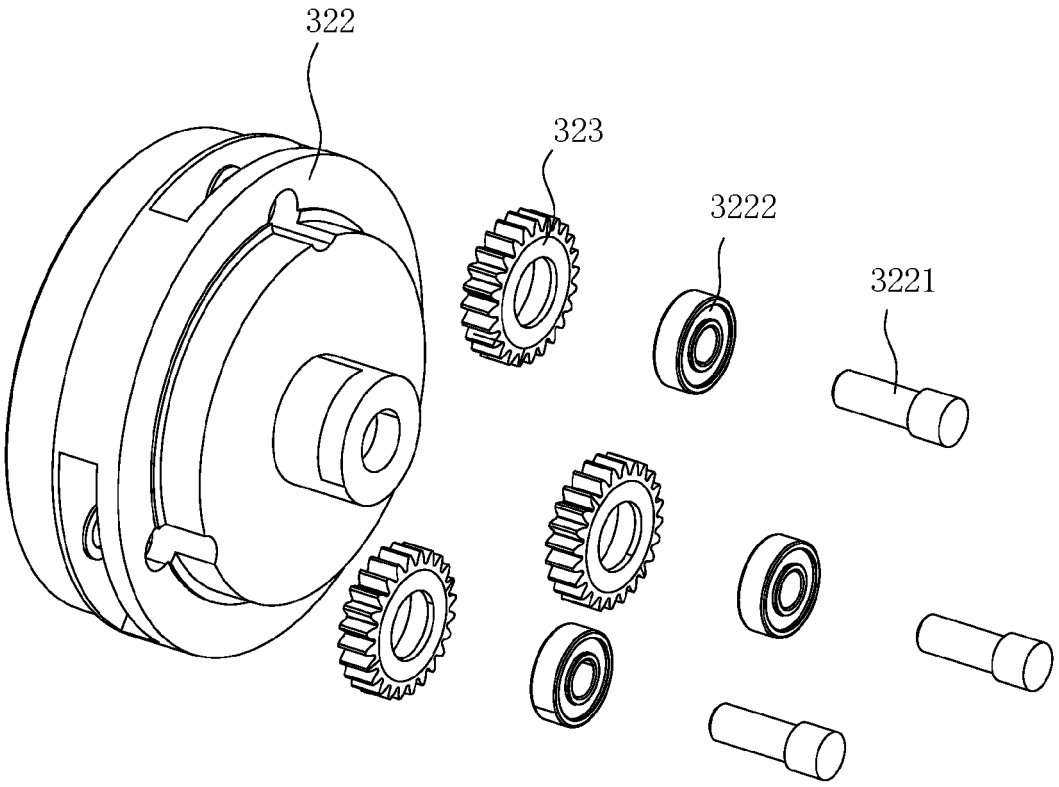

Figure 9

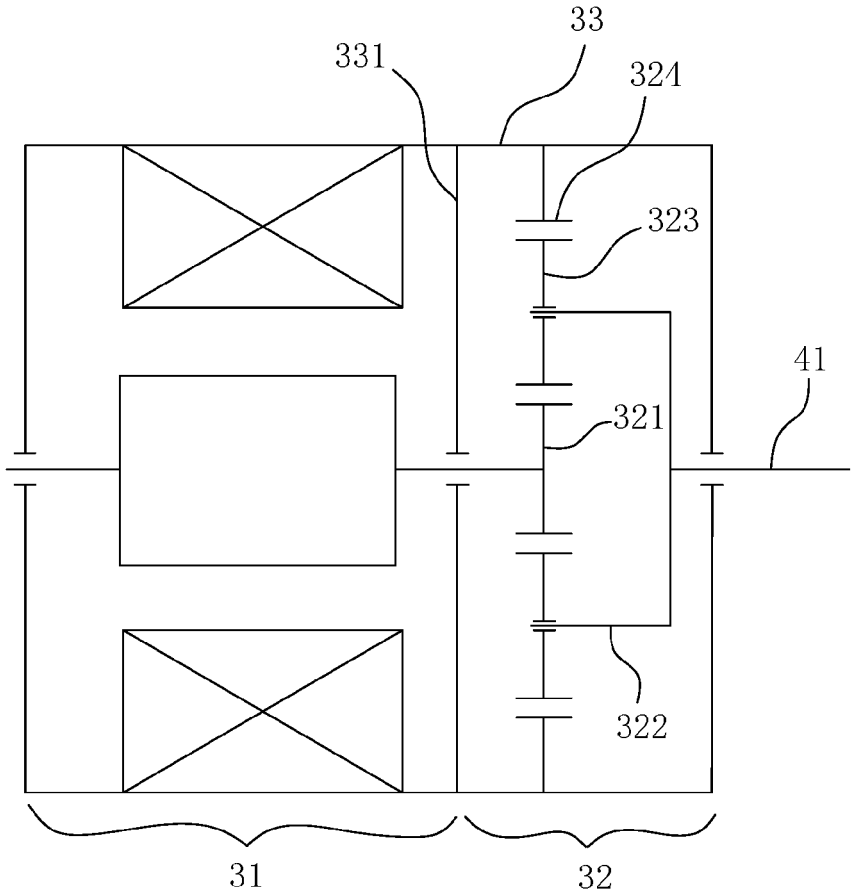

Figure 10

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EUROPEAN SEARCH REPORT

Application Number
EP 25 15 0492

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2023/093872 A1 (GLOBE JIANGSU CO LTD [CN]) 1 June 2023 (2023-06-01) * figures 1-8 *	1-13	INV. E01H5/09
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A	US 2022/098811 A1 (BONNEY MICHAEL ALLEN [US]) 31 March 2022 (2022-03-31) * paragraphs [0021] - [0024]; figure 5 *	1-13	

TECHNICAL FIELDS SEARCHED (IPC)

E01H

The present search report has been drawn up for all claims

1

Place of search	Date of completion of the search	Examiner
Munich	21 May 2025	Saretta, Guido

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