

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
9 July 2009 (09.07.2009)

PCT

(10) International Publication Number
WO 2009/084870 A2

(51) International Patent Classification:
F03D 3/06 (2006.01)

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(21) International Application Number:
PCT/KR2008/007700

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(22) International Filing Date:
26 December 2008 (26.12.2008)

(25) Filing Language: Korean

(26) Publication Language: English

(30) Priority Data:
10-2007-0138184
27 December 2007 (27.12.2007) KR

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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Published:

— *without international search report and to be republished upon receipt of that report*



WO 2009/084870 A2

(54) Title: THE VERTICAL AXIS-WIND POWER SYSTEM HAVING MULTIPLE ROTOR BLADE-TYPE

(57) Abstract: The vertical shaft type wind power system having multiple rotor blades comprises a pole which is vertically installed on the ground; a generation part which is installed on a top of the pole and is equipped with a center output side one direction output driving device A; a plurality of horizontally installed rotor frames which is engaged vertically with respect to the pole; and a driving part which includes a plurality of rotor blades installed in an end of each rotor frame and rotating by means of wind, and a rotor side one direction output driving device B which rotates depending on the rotation of the rotor blade and is connected with the center output side one direction output driving device A for thereby transferring a rotational force.

Description

THE VERTICAL AXIS-WIND POWER SYSTEM HAVING MULTIPLE ROTOR BLADE-TYPE

Technical Field

- [1] The present invention relates to a vertical shaft type wind power system having multiple rotor blades, and in particular to a vertical shaft type wind power system having multiple rotor blades which is configured to efficiently generate power by concentrating each rotational power to one output driving device by rotating multiple rotor blades irrespective of a wind direction.

[2]

Background Art

- [3] A power generation method might be classified into a water power method, a fossil power method and an atomic power method. The above power generation methods require a huge size of power generation facilities. So, lot of petroleum or charcoal energy is needed so as to drive the above power generation facilities. As charcoal resource runs out, a new innovative power generation is urgently needed, which does not need petroleum and charcoal resource as compared to a conventional power generation method such as a water power method, a fossil power method and an atomic power method.
- [4] In the methods which do not need petroleum and charcoal resources, there are various power generation methods such as a solar energy method, a water wave power generation method, a tide power generation method and a wind power generation method. Among the above methods, the wind power generation method can be most easily applied in the industry.
- [5] The wind power generation device can be easily installed while not producing any wastes. A main shaft is mainly rotated by means of a huge cylindrical and propeller type impeller, and a power generator is connected with the main shaft for thereby generating power.
- [6] The conventional propeller type device can produce power irrespective of a wind direction, but it disadvantageously occupies a lot of space.
- [7] In order to improve the above problems, a method for installing a propeller in a vertical direction, but it is basically configured to rotate in one direction, so when a wind direction changes, it cannot rotate and produce power.

[8]

Disclosure of Invention

Technical Problem

[9] Accordingly, it is an object of the present invention to provide a vertical shaft type wind power system having multiple rotor blades which can generate power by means of wind power by installing a plurality of rotor blades in a vertical shaft, and can generate power all the time even when a wind direction changes for thereby enhancing the performance of a power generation system.

[10]

Technical Solution

[11] To achieve the above objects, there is provided a vertical shaft type wind power system having multiple rotor blades, comprising a pole 1 which is vertically installed on the ground; a generation part which is installed on a top of the pole 1 and is equipped with a center output side one direction output driving device A; a plurality of horizontally installed rotor frames 2 which is engaged vertically with respect to the pole 1; and a driving part which includes a plurality of rotor blades 5 installed in an end of each rotor frame 2 and rotating by means of wind, and a rotor side one direction output driving device B which rotates depending on the rotation of the rotor blade 5 and is connected with the center output side one direction output driving device A for thereby transferring a rotational force.

[12]

Advantageous Effects

[13] In the present invention, it is possible to double a power generation efficiency as compared to the conventional art under the same condition. It is possible to generate energy irrespective of a wind direction, and the driving device according to the present invention can be standardized and manufactured in a module type for thereby providing a high valued universal type wind power system along with a high manufacture efficiency.

[14] The present invention can be applied as providing an independent power resource in an isolated island or a deep mountain area and a farm.

[15] In addition, the present invention can be applied as a power resource in a sidewalk lighting means of a coastal road.

[16]

Brief Description of Drawings

[17] 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;

[18] Figure 1 is a perspective view illustrating a wind power generation device according to the present invention;

[19] Figure 2 is a cross sectional view illustrating an engaged state of a wind power

generation device according to the present invention;

[20] Figure 3 is an enlarged view of a center output side one direction output driving device of Figure 2;

[21] Figures 4 and 5 are views of another embodiment of the present invention;

[22] Figure 6 is a view of a blade adapted in the present invention; and

[23] Figure 7 is an enlarged view of a rotor side one direction output driving device of Figure 2.

[24]

Best Mode for Carrying out the Invention

[25] The vertical shaft type wind power system having multiple rotor blades according to the present invention comprises a pole 1 which is vertically installed on the ground; a generation part which is installed on a top of the pole 1 and is equipped with a center output side one direction output driving device A; a plurality of horizontally installed rotor frames 2 which is engaged vertically with respect to the pole 1; and a driving part which includes a plurality of rotor blades 5 installed in an end of each rotor frame 2 and rotating by means of wind, and a rotor side one direction output driving device B which rotates depending on the rotation of the rotor blade 5 and is connected with the center output side one direction output driving device A for thereby transferring a rotational force.

[26]

Mode for the Invention

[27] The preferred embodiments of the present invention will be described with reference to the accompanying drawings.

[28] Figure 1 is a perspective view illustrating a wind power generation device according to the present invention, and Figure 2 is a cross sectional view illustrating an engaged state of a wind power generation device according to the present invention.

[29] As shown in Figures 1 and 2, there is provided a vertical shaft type wind power system having multiple rotor blades, comprising a pole 1 which is vertically installed on the ground; a generation part which is installed on a top of the pole 1 and is equipped with a center output side one direction output driving device A; a plurality of horizontally installed rotor frames 2 which is engaged vertically with respect to the pole 1; and a driving part which includes a plurality of rotor blades 5 installed in an end of each rotor frame 2 and rotating by means of wind, and a rotor side one direction output driving device B which rotates depending on the rotation of the rotor blade 5 and is connected with the center output side one direction output driving device A for thereby transferring a rotational force.

[30] The generation part includes a box shaped protection casing 7; a center output side

one direction output driving device A which is installed in the interior of the protection casing 7; a multiple pole type generator 8 which is engaged to the center output side one direction output driving device A; a converter 9 which converts a variable rectified voltage from the multiple pole generator 8 into a constant output voltage and charges a certain level output into a battery 10; a charging battery 10; an inverter 11 for inverting the DC voltage of the charged battery 10 into an AC voltage; a wind speed and rotation detection sensor 12; and an over current and over charging prevention device 13.

[31] Figure 3 is an enlarged view of a center output-based one direction output driving device of Figure 2.

[32] As shown in Figure 3, the center output side one direction driving device A includes a lower driving shaft 50-1 in which a chain sprocket 40 is axially engaged; a first normal direction clutch bearing 20-1 which is axially engaged to the lower driving shaft 50-1; an outer flange 30-1 which is installed while contacting with an outer side of the first normal direction clutch bearing 20-1; a first reverse direction clutch bearing 20-2 which is axially engaged to the lower driving shaft 50-1 and is axially engaged to an upper side of the first normal direction clutch bearing 20-1; a lower linear gear 60-1 which is installed while contacting with an outer side of the first reverse direction clutch bearing 20-2; a common planetary gear 70 which is engaged with the lower linear gear 60-1; an outer surface gear type ring gear 10-1 of which an inner surface is engaged with the common planetary gear 70, and an outer surface is engaged with the gear of the rotor shaft of the generator 8; an upper driving shaft 50-2 in which a chain sprocket 40 is axially engaged; a second normal direction clutch bearing 20-4 which is axially engaged to the upper driving shaft 50-2; a second upper linear gear 60-3 which is installed while contacting with outer side of the second normal direction clutch bearing 20-4; a planetary gear 80-1 which is engaged with an inner surface of the outer surface gear type ring gear 10-1 engaged to the second upper linear gear 60-3; a second planetary gear 80-2 which is engaged with the planetary gear 80-1 and is engaged with an inner surface of the outer surface gear type ring gear 10-1; a second reverse direction clutch bearing 20-3 which is axially engaged to the upper driving shaft 50-2 and is installed in a lower side of the second normal direction clutch bearing 20-4; a first upper linear gear 60-2 which is installed while contacting with an outer surface of the second reverse direction clutch bearing 20-3 and is engaged with the common planetary gear 70; and an upper flange 30-2 which covers the upper side of the outer surface gear type ring gear 10-1 and is fixed in the fixing bracket 90, with the through holes engaged with the upper driving shaft 50-2 being formed in the center of the upper flange, and with the first and second fixing pins 100-1 and 100-2 being axially engaged to the same.

[33] The first and second normal direction or reverse direction clutch bearings 20-1

through 20-4 are configured to have different clutch operations depending on their attaching sides like the coin has different images in its both sides. When the inner wheel is rotated in a clockwise direction, a rotational force is transferred to the outer wheel, so the outer wheel rotates in a clockwise direction, and when the inner wheel is rotated in a counterclockwise direction, a rotational force is not transferred to the outer wheel, so only the inner wheel idle-rotates. At this time, the outer wheel can rotate by itself in a clockwise direction, which is called a normal direction clutch bearing. The operation opposite to the above operation is called a reverse direction clutch bearing.

- [34] As shown in Figure 1, the rotor frame 2 is equipped with a connection member for connecting the center output side one direction output driving device A and the rotor side one direction output driving device B, and is formed in a straight shape or a cross shape.
- [35] As shown in Figure 1, the rotor blade 5 includes an upper rotor shaft 3 which is axially engaged with the rotor side one direction output driving device B in a vertical direction, and a plurality of blades 51 installed in the upper rotor shaft 3. The blade 51 is formed of air foil.
- [36] The number of the rotor blades 5 might change depending on the shape of the rotor frame 2.
- [37] The rotor blade 5 might be selectively installed in either the upper rotor shaft 3 or the lower rotor shaft 3' of the rotor side one direction output driving device B or might be installed in both the same.
- [38] As shown in Figure 1, when the rotor frame 2 is a straight shape, the rotor blade 5 is installed at both ends of the same, namely two rotor blades are installed.
- [39] Figures 4 and 5 show another embodiment of the present invention.
- [40] As shown in Figure 4, when the rotor frame 2 is a cross shape, the rotor blade 5 is installed in each end of the same, namely, four rotor blades are installed.
- [41] As shown in Figure 5, the rotor frame 2 is formed in a cross shape, and the rotor blade 5 is installed in all ends of the same and then is installed in opposite ends, so eight rotor blades are installed.
- [42] Figure 6 is a view of a rotor blade applied to the present invention.
- [43] As shown in Figure 6, the rotor blade 5 is formed in one shape selected from a darrieus shape (a), a cycloid shape (b), a savonius shape(c), a double-side cup shape(d), and a turbine shape(e).
- [44] In the present embodiment of the present invention, the cycloid shape(b) is applied, but it is not limited thereto.
- [45] Figure 7 is an enlarged view of a rotor side one direction output driving device of Figure 2.

[46] As shown in Figure 7, the rotor side one direction output driving device B includes a lower rotor shaft 3' in which a rotor blade 5 is axially engaged; a first normal direction clutch bearing 20-1 which is axially engaged to the lower rotor shaft 3'; a lower flange 30-1 which is installed while contacting with an outer side of the first normal direction clutch bearing 20-1 and is fixed to the outer surface chain sprocket type ring gear 10-1'; a first reverse direction clutch bearing 20-2 which is axially engaged to the lower rotor shaft 3' and is axially engaged to the upper side of the first normal direction clutch bearing 20-1; a lower linear gear 60-1 which is installed while contacting with an outer side of the first reverse direction clutch bearing 20-2; a common planetary gear 70 which is engaged with the lower linear gear 60-1; an outer surface chain sprocket type ring gear 10-1' of which an inner surface is engaged with the common planetary gear 70; an upper rotor shaft 3 in which the rotor blade 5 is axially engaged; a second normal direction clutch bearing 20-4 which is axially engaged to the upper rotor shaft 3; a second upper linear gear 60-3 which is installed while contacting with the second normal direction clutch bearing 20-4; a planetary gear 80-1 which is engaged with the second upper line gear 60-3; a second planetary gear 80-2 which is engaged in relation to the planetary gear 80-1 and is engaged with an inner surface of the outer surface chain sprocket type ring gear 10-1'; a second reverse direction clutch bearing 20-3 which is axially engaged to the upper rotor shaft 3 and is installed in a lower side of the second normal direction clutch bearing 20-4; a first upper linear gear 60-2 which is installed while contacting with the second reverse direction clutch bearing 20-3 and is engaged with the common planetary gear 70; and an upper flange 30-2 which covers an upper side of the outer surface chain sprocket type ring gear 10-1', with a through hole being formed in the center of the upper flange for an engagement of the upper rotor shaft 3, and with a first fixing pin 100-1 for fixing the common planet gear 70 and the planetary gear 801 and a second fixing pin 100-2 for fixing the second planetary gear 80-2 being axially engaged to the upper flange, respectively.

[47] The construction and operation of the present invention will be described with reference to Figure 3.

[48] The rotational force transferred irrespective of the rotational direction of the chain sprocket 40 is collected to the upper and lower driving shafts 50-2, and the rotor of the generator 8 is driven by means of one direction rotation output of the outer surface gear type ring gear 10-1.

[49] The outer surface gear type ring gear 10-1 having teeth on its outer surface is engaged with the gear fixed in the shaft of the rotor of the generator 8. As the outer surface gear type ring gear 10-1 rotates the rotor of the generator 8 for thereby generating power.

[50] As shown in Figure 3, the lower flange 30-1 in which the first normal direction

clutch bearing 20-1 is inserted is attached to one side of the outer surface gear type ring gear 10-1, and the lower driving shaft 50-1 in which the chain sprocket 40 is axially engaged is fixedly inserted into the inner wheel of the first normal direction clutch bearing 20-1.

[51] The inner wheel of the first reverse direction clutch bearing 20-2 is fixed at one end of the lower driving shaft 50-1, and the lower linear gear 60-1 having teeth is fixed in the outer wheel of the same.

[52] The lower linear gear 60-1 is engaged with the common planetary gear 70, and the common planetary gear 70 is engaged with the teeth of the inner surface of the outer surface gear type ring gear 10-1.

[53] The second reverse direction clutch bearing 20-3 is inserted into an outer surface of one end of the upper driving shaft 50-2 in which the chain sprocket 40 is axially engaged. The first upper linear gear 60-2 having teeth is fixed in the outer wheel of the second reverse direction clutch bearing 20-3 and is engaged with the common planetary gear 70, and the common planetary gear 70 is engaged with the teeth of the inner side of the outer surface gear type ring gear 10-1.

[54] The second normal direction clutch bearing 20-4 is axially engaged to the upper driving shaft 50-2, and the second upper linear gear 60-3 having teeth is fixed in the outer wheel of the second normal direction clutch bearing 20-4 and is engaged with the planetary gear 80-1. The planetary gear 80-1 is engaged with the second planetary gear 80-2, and the second planetary gear 80-2 is engaged with the teeth of the inner surface of the outer surface gear type ring gear 10-1.

[55] One end of the upper driving shaft 50-2 is inserted into the bearing of the upper flange 30-2, and one surface of the upper flange 30-2 is fixed in the fixing bracket 90, and the common planetary gear 70 and the planetary gear 80-1 are hinged at the outer surface of the fixing bracket 90 by means of the first and second fixing pins 100-1 and 100-2.

[56] A chain is connected to the chain sprocket 40 of the upper and lower driving shafts 50-2 and 50-1 as a connection member and is connected with the rotor side one direction output driving device B.

[57] The operation of the center output side one direction driving device A will be described.

[58] When the lower driving shaft 50-1 rotates in a counterclockwise direction, the inner wheel of the first normal direction clutch bearing 20-1 inserted into the lower flange 30-1 idle-rotates in the reverse direction along with the lower driving shaft 50-1 with respect to the outer wheel, and the inner wheel of the first reverse direction clutch bearing 20-2 axially engaged to the lower driving shaft 50-1 rotates in the reverse direction.

- [59] When the inner wheel of the first reverse direction clutch bearing 20-2 rotates in the reverse direction, the rotational force is transferred to the outer wheel, so the lower linear gear 60-1 integral with the outer wheel rotates in the reverse direction.
- [60] The engaged common planetary gear 70 changes its rotation direction and starts rotating in the clockwise direction, and the rotational force is transferred to the outer surface type ring gear 10-1, and the rotational force is applied in the clockwise direction for thereby rotating a multiple pole type generator 8.
- [61] The outer wheel of the first normal clutch bearing 20-1 fixed in the lower flange 30-1 rotates in a clockwise direction since the outer surface type ring gear 10-1 and the lower flange 30-1 are fixed with each other, but when the inner wheel rotates depending on the feature of the first normal clutch bearing 20-1 rotates, the rotational force is not applied to the outer wheel, so it rotates in the direction opposite to the rotation direction of the inner wheel while provoking any interference in their constructions.
- [62] In addition, since the lower driving shaft 50-1 is separated from the upper driving shaft 50-2, the rotational force applied in the counterclockwise direction is not transferred to the upper driving shaft 50-2.
- [63] The common planetary gear 70 rotates in a clockwise direction, and the first upper linear gear 60-2 fixed to the outer wheel of the second reverse direction clutch bearing 20-3 rotates in a counterclockwise direction. When the outer wheel rotates in a clockwise direction depending on the feature of the second reverse direction clutch bearing 20-3 rotates, the rotational force is not transferred to the inner wheel, so the inner wheel idle-rotates. As a result, when the lower driving shaft 50-1 rotates in a counterclockwise direction, a rotational force is not transferred to the upper driving shaft 50-2 fixed to the inner wheel of the second reverse direction clutch bearing 20-3, the upper driving shaft 50-2 does not rotate.
- [64] At this time, since the outer surface gear type ring gear 10-1 keeps rotating in a clockwise direction, the second plant gear 80-2 rotates in a clockwise direction, and the plant gear 80-2 engaged thereto rotates in a counterclockwise direction. At this time, the rotational force is applied to the outer wheel of the second normal direction clutch bearing 20-4, and the second upper linear gear 60-3 rotates in a clockwise direction. When the outer wheel rotates in a clockwise direction depending on the feature of the second normal direction clutch bearing 20-4, the rotational force is not transferred to the inner wheel, so it idle-rotates. Therefore, the inner wheel does not receive the rotational force.
- [65] The upper driving shaft 50-2 engaged thereto does not move, and the outer surface gear type ring gear 10-1 rotates in a clockwise direction.
- [66] When the lower driving shaft 50-1 rotates in a clockwise direction, the inner wheel of

the first normal direction clutch bearing 20-1 in the lower flange 30-1 rotates in a clockwise direction, and the then rotational force is transferred to the outer wheel and allows the outer surface gear type ring gear 10-1 connected with the lower flange 30-1 to rotate in a clockwise direction, so that the rotor of the generator 8 is driven.

- [67] When the inner wheel of the first reverse direction clutch bearing 20-2 axially engaged to the lower driving shaft 50-1 rotates in a clockwise direction, the inner wheel of the first reverse direction clutch bearing 20-2 does not transfer a rotational force with respect to the outer wheel, so it rotates in a clockwise direction along with the lower driving shaft 50-1.
- [68] When the lower driving shaft 50-1 rotates in a clockwise direction, since it is separated from the upper driving shaft 50-2, the rotational force is not transferred to the upper driving shaft 50-2.
- [69] The outer surface gear type ring gear 10-1 rotates in a clockwise direction, and the common planetary gear 70 engaged with an inner surface of the outer surface gear type ring gear 10-1 rotates in a clockwise direction, and the lower and upper linear gears 60-1 and 60-2 engaged with the same rotate in a counterclockwise direction.
- [70] The lower and upper lineage gears 60-1 and 60-2 are fixed with the outer wheels of the first and second reverse direction clutch bearings 20-2 and 20-3, so since the counterclockwise direction rotational force of the outer wheel is not transferred to the inner wheel with an idle rotation. The upper driving shaft 50-2 does not move.
- [71] When the outer surface gear type ring gear 10-1 rotates in a clockwise direction, the second planetary gear 80-2 is driven thereby and rotates in a counterclockwise direction. The planetary gear 80-1 engaged thereto rotates in a clockwise direction, and the second upper linear gear 60-3 rotates in a clockwise direction. When the outer wheel rotates in a clockwise direction depending on the feature of the second reverse direction clutch 20-3, the rotational force is not transferred to the inner wheel, and it idle-rotates. The upper driving shaft 50-2 does not receive any rotational force.
- [72] When the lower driving shaft 50-1 rotates either in a clockwise direction or in a counterclockwise direction, any external force is not transferred to the upper driving shaft 50-2, and the outer surface gear type ring gear 10-1 rotates in a clockwise direction.
- [73] Since the outer surface gear type ring gear 10-1 can rotate in a clockwise direction all the time even when the lower driving shaft 50-1 rotates either in a clockwise direction or in a counterclockwise direction, so that the gears fixed in the front end of the rotor shafts of the multiple pole type generator 8 can rotate for thereby generating power.
- [74] Namely, the outer surface gear type ring gear 10-1 can always rotate in a clockwise direction even when the upper driving shaft 50-1 rotate either in a clockwise direction or in a counterclockwise direction in combination with the one direction clutch bearing

20-1 through 20-4, the linear gears 60-1 through 60-3 and the planetary gears, so that the gears fixed to the front ends for the rotor shafts of the multiple pole generator 8 can rotate for thereby generating power.

[75] Even when the upper driving shaft 50-2 rotates in a clockwise direction or a counterclockwise direction or when the lower driving shaft 50-1 rotates in a clockwise direction or a counterclockwise direction, or when the upper and lower driving shafts 50-2 and 50-1 concurrently rotate in clockwise directions or counterclockwise directions, or when they rotate in alternate directions, the outer surface gear type ring gear 10-1 can rotate in a clockwise direction all the time.

[76] In the present invention, the rotational force in the normal or reverse direction by means of the rotor blades 5 axially engaged to the upper and lower rotor shafts 3 and 3' of the rotor side one direction output driving devices B rotates the chain sprocket 40 axially engaged to the separate upper and lower driving shafts 50-2 and 50-1 of the center output side one direction output driving device A through the connection member such as a chain or something, and each rotational force is concentrated and used for driving the rotor of the multiple pole generator 8 for thereby generating power.

[77] The operation of the outer surface chain sprocket type ring gear 10-1 equipped with a chain sprocket 40 in its outer surface and the rotor side one direction output driving device B is the same as that of the center output side one direction output driving device A. Namely, even when each rotor blade axially engaged to the upper and lower rotor shafts 3 and 3' rotates irrespective of a clockwise direction or a counterclockwise direction, the outer surface chain sprocket type ring gear 10-1 of the rotor side one direction output driving device B can rotate in one direction, so that the rotational force can be reliably transferred to the chain sprocket 40 axially engaged to the upper and lower driving shafts 50-2 and 50-1 of the center output side one direction output driving device A through a connection member such as a chain or something.

[78]

Industrial Applicability

[79] According to the present invention, it is possible to double a power generation efficiency as compared to the conventional art under the same condition. It is possible to generate energy irrespective of a wind direction, and the driving device according to the present invention can be standardized and manufactured in a module type for thereby providing a high valued universal type wind power system along with a high manufacture efficiency.

[80] The present invention can be applied as providing an independent power resource in an isolated island or a deep mountain area and a farm.

[81] In addition, the present invention can be applied as a power resource in a sidewalk lighting means of a coastal road.

[82] 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.

Claims

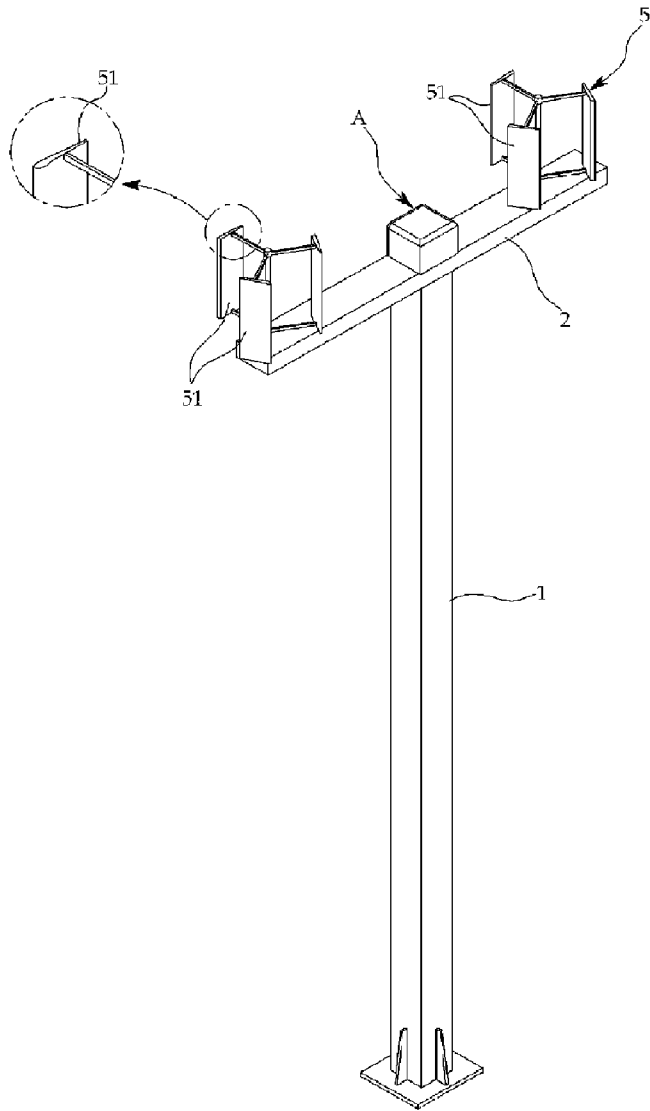
- [1] A vertical shaft type wind power system having multiple rotor blades, comprising:
a pole 1 which is vertically installed on the ground;
a generation part which is installed on a top of the pole 1 and is equipped with a center output side one direction output driving device A;
a plurality of horizontally installed rotor frames 2 which is engaged vertically with respect to the pole 1; and
a driving part which includes a plurality of rotor blades 5 installed in an end of each rotor frame 2 and rotating by means of wind, and a rotor side one direction output driving device B which rotates depending on the rotation of the rotor blade 5 and is connected with the center output side one direction output driving device A for thereby transferring a rotational force.
- [2] The system of claim 1, wherein said generation part includes:
a box shaped protection casing 7;
a center output side one direction output driving device A which is installed in the interior of the protection casing 7;
a multiple pole type generator 8 which is engaged to the center output side one direction output driving device A;
a converter 9 which converts a variable rectified voltage from the multiple pole generator 8 into a constant output voltage and charges a certain level output into a battery 10;
a charging battery 10;
an inverter 11 for inverting the DC voltage of the charged battery 10 into an AC voltage;
a wind speed and rotation detection sensor 12; and
an over current and over charging prevention device 13.
- [3] The system of claim 2, wherein said center output side one direction driving device A includes:
a lower driving shaft 50-1 in which a chain sprocket 40 is axially engaged;
a first normal direction clutch bearing 20-1 which is axially engaged to the lower driving shaft 50-1;
an outer flange 30-1 which is installed while contacting with an outer side of the first normal direction clutch bearing 20-1;
a first reverse direction clutch bearing 20-2 which is axially engaged to the lower driving shaft 50-1 and is axially engaged to an upper side of the first normal direction clutch bearing 20-1;

a lower linear gear 60-1 which is installed while contacting with an outer side of the first reverse direction clutch bearing 20-2;
a common planetary gear 70 which is engaged with the lower linear gear 60-1;
an outer surface gear type ring gear 10-1 of which an inner surface is engaged with the common planetary gear 70, and an outer surface is engaged with the gear of the rotor shaft of the generator 8;
an upper driving shaft 50-2 in which a chain sprocket 40 is axially engaged;
a second normal direction clutch bearing 20-4 which is axially engaged to the upper driving shaft 50-2;
a second upper linear gear 60-3 which is installed while contacting with outer side of the second normal direction clutch bearing 20-4;
a planetary gear 80-1 which is engaged with an inner surface of the outer surface gear type ring gear 10-1 engaged to the second upper linear gear 60-3;
a second planetary gear 80-2 which is engaged with the planetary gear 80-1 and is engaged with an inner surface of the outer surface gear type ring gear 10-1;
a second reverse direction clutch bearing 20-3 which is axially engaged to the upper driving shaft 50-2 and is installed in a lower side of the second normal direction clutch bearing 20-4;
a first upper linear gear 60-2 which is installed while contacting with an outer surface of the second reverse direction clutch bearing 20-3 and is engaged with the common planetary gear 70; and
an upper flange 30-2 which covers the upper side of the outer surface gear type ring gear 10-1 and is fixed in the fixing bracket 90, with the through holes engaged with the upper driving shaft 50-2 being formed in the center of the upper flange, and with the first and second fixing pins 100-1 and 100-2 being axially engaged to the same.

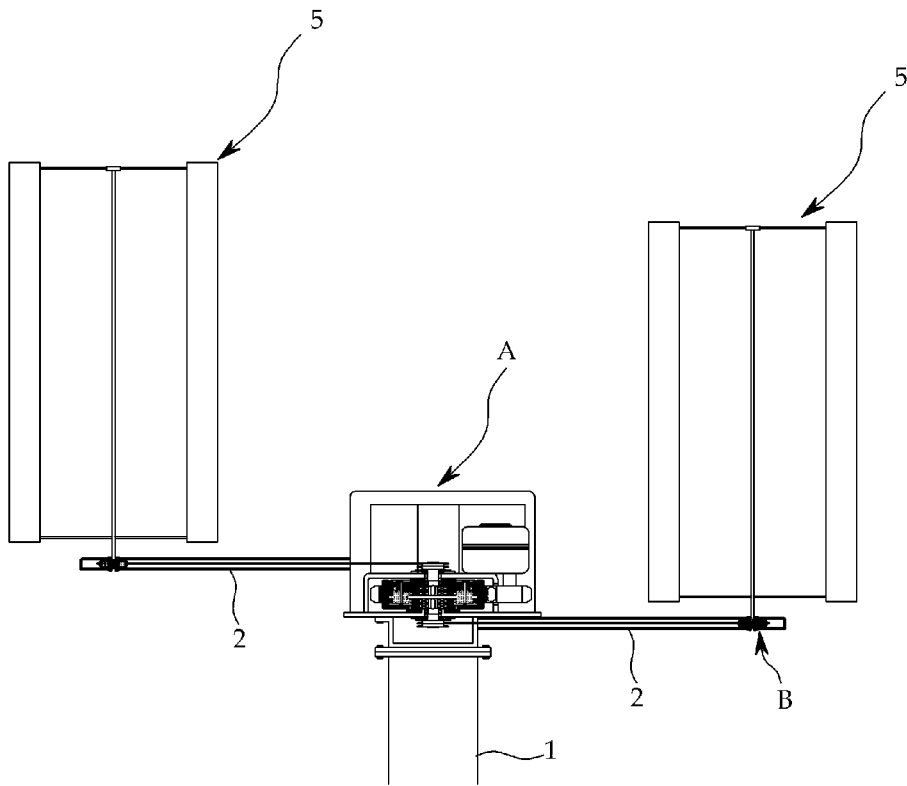
- [4] The system of claim 1, wherein said rotor frame 2 is equipped with a connection member for connecting the center output side one direction output driving device A and the rotor side one direction output driving device B, and is formed in a straight shape or a cross shape.
- [5] The system of claim 1, wherein said rotor blade 5 includes an upper rotor shaft 3 which is axially engaged with the rotor side one direction output driving device B in a vertical direction, and a plurality of blades 51 installed in the upper rotor shaft 3.
- [6] The system of claim 5, wherein said blade 51 is formed of air foil.
- [7] The system of claim 1, wherein said rotor blade 5 is formed in one shape selected from a darrieus shape (a), a cycloid shape (b), a savonius shape(c), a double-side cup shape(d), and a turbine shape(e).

- [8] The system of claim 1, wherein said rotor side one direction output driving device B includes:
- a lower rotor shaft 3' in which a rotor blade 5 is axially engaged;
 - a first normal direction clutch bearing 20-1 which is axially engaged to the lower rotor shaft 3';
 - a lower flange 30-1 which is installed while contacting with an outer side of the first normal direction clutch bearing 20-1 and is fixed to the outer surface chain sprocket type ring gear 10-1';
 - a first reverse direction clutch bearing 20-2 which is axially engaged to the lower rotor shaft 3' and is axially engaged to the upper side of the first normal direction clutch bearing 20-1;
 - a lower linear gear 60-1 which is installed while contacting with an outer side of the first reverse direction clutch bearing 20-2;
 - a common planetary gear 70 which is engaged with the lower linear gear 60-1;
 - an outer surface chain sprocket type ring gear 10-1' of which an inner surface is engaged with the common planetary gear 70;
 - an upper rotor shaft 3 in which the rotor blade 5 is axially engaged;
 - a second normal direction clutch bearing 20-4 which is axially engaged to the upper rotor shaft 3;
 - a second upper linear gear 60-3 which is installed while contacting with the second normal direction clutch bearing 20-4;
 - a planetary gear 80-1 which is engaged with the second upper line gear 60-3;
 - a second planetary gear 80-2 which is engaged in relation to the planetary gear 80-1 and is engaged with an inner surface of the outer surface chain sprocket type ring gear 10-1';
 - a second reverse direction clutch bearing 20-3 which is axially engaged to the upper rotor shaft 3 and is installed in a lower side of the second normal direction clutch bearing 20-4;
 - a first upper linear gear 60-2 which is installed while contacting with the second reverse direction clutch bearing 20-3 and is engaged with the common planetary gear 70; and
 - an upper flange 30-2 which covers an upper side of the outer surface chain sprocket type ring gear 10-1', with a through hole being formed in the center of the upper flange for an engagement of the upper rotor shaft 3, and with a first fixing pin 100-1 for fixing the common planet gear 70 and the planetary gear 80-1 and a second fixing pin 100-2 for fixing the second planetary gear 80-2 being axially engaged to the upper flange, respectively.

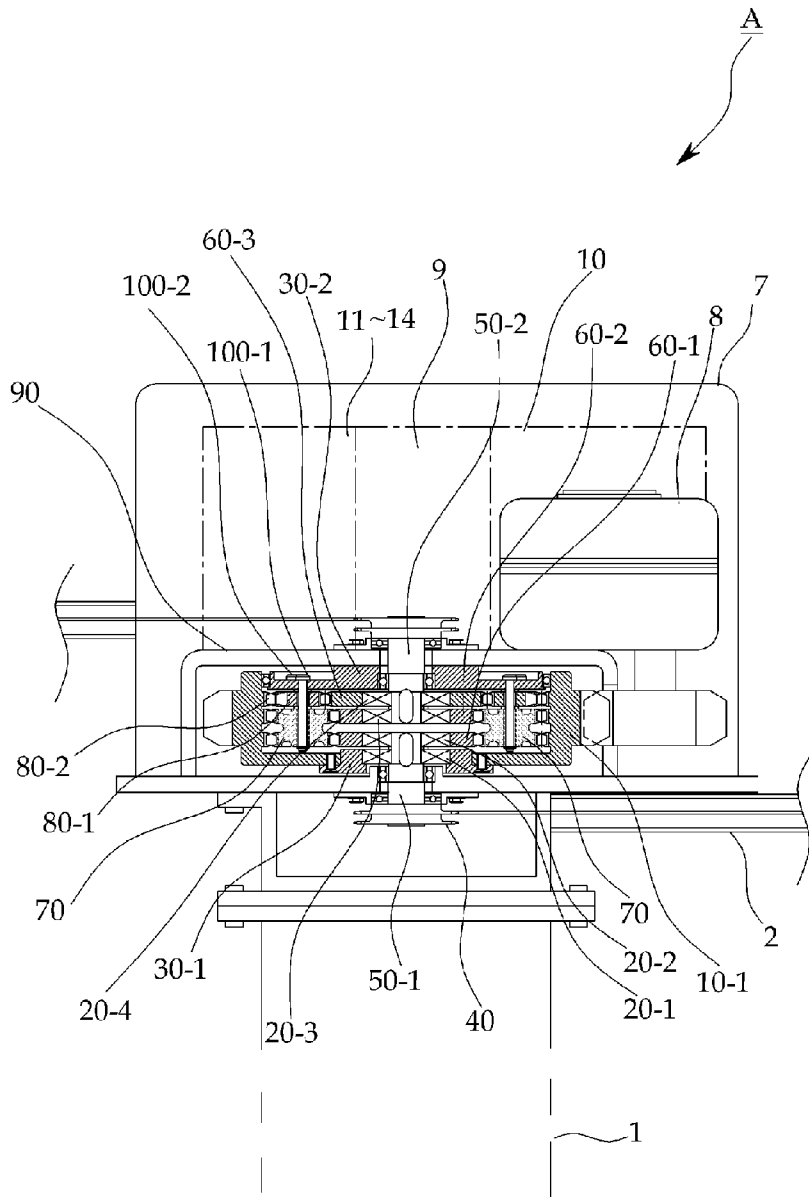
[Fig. 1]



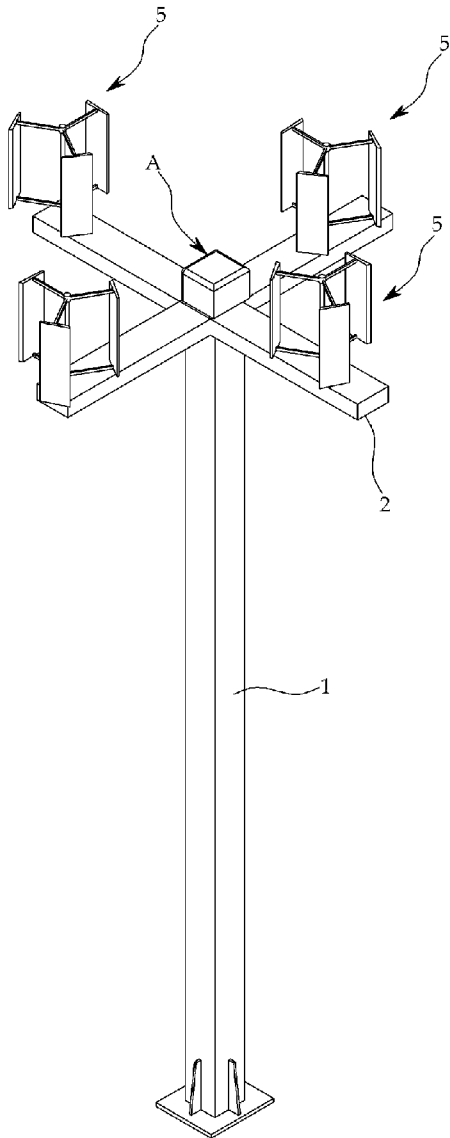
[Fig. 2]



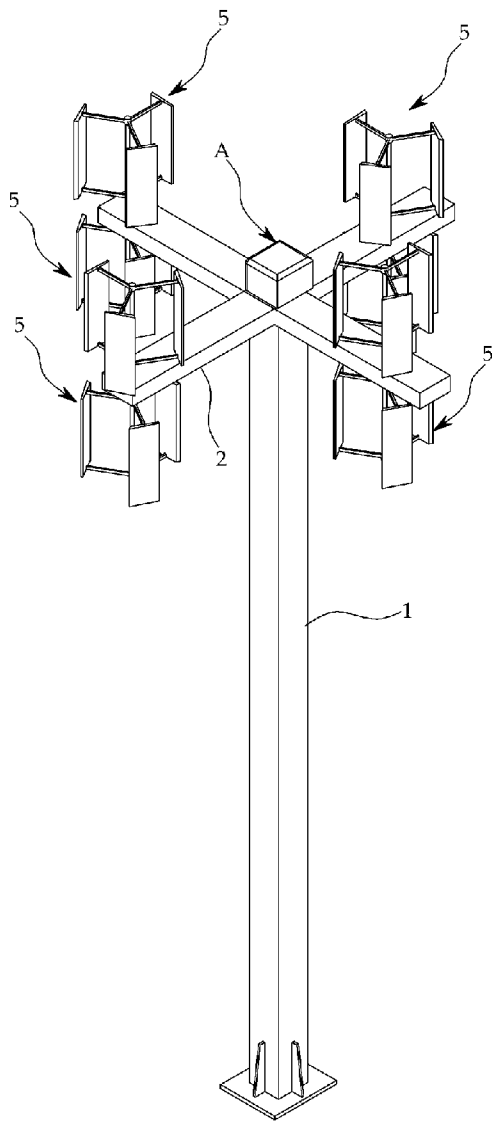
[Fig. 3]



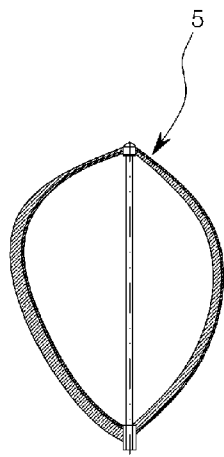
[Fig. 4]



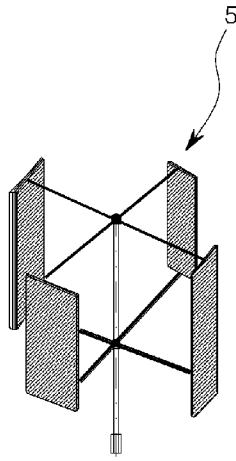
[Fig. 5]



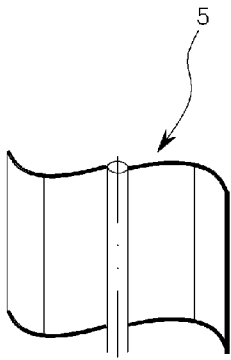
[Fig. 6]



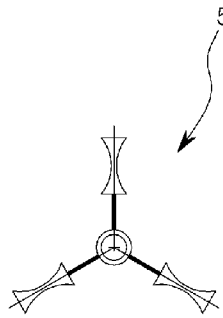
(a)



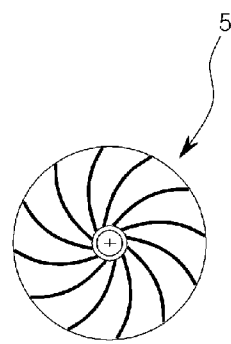
(b)



(c)



(d)



(e)

[Fig. 7]

