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(54) ELECTRIC STRAIGHT ROD UMBRELLA OPENED AND CLOSED WITHOUT SHORT RIBS

(57) The present invention discloses an electric straight rod umbrella opened and closed without short ribs, which comprises a shaft and ribs, wherein a driving mechanism is provided in an inner cavity of the shaft, an opening is provided at the top end of the shaft, and an outer disc is provided at the top end of the shaft, the driving mechanism comprises a push rod capable of moving up and down and an inner disc provided at the top end of the push rod, a tail end of each rib is hingedly engaged with the inner disc, an assembly hole is provided on the rib, the rib is hinged with the outer disc by matching a locking screw with the assembly hole, and the push rod moves up and down to spread or retract the ribs. In the present application, driving is achieved by the push rod with the motor, which facilitates operation. In addition, the sunshade umbrella can be stably opened through cooperation of the outer disc, the push rod, the inner disc, and the pull rod. The ribs are more stable when the umbrella is opened and closed.

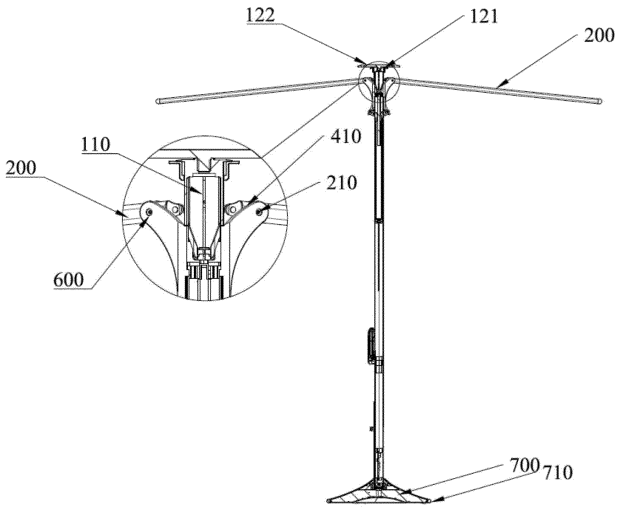

FIG. 3

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Description

TECHNICAL FIELD

[0001] The present invention belongs to the technical field of outdoor sunshade umbrellas, and more specifically pertains to an electric straight rod umbrella opened and closed without short ribs.

BACKGROUND

[0002] Outdoor sunshade umbrellas are generally large in size, and a rib structure thereof generally comprises long ribs and short ribs for support. There are many rib structures which are cumbersome to assemble, and short ribs are prone to damage during actual use. Therefore, some products no longer use short ribs, and the long ribs are directly connected with the pull rod. However, such a connection method also has a problem that the sunshade umbrella will shake during opening and closing.

[0003] In addition, current sunshade umbrellas are developing towards the direction of intellectualization, specifically, the umbrellas can be opened automatically, and the opening and closing process is labor-saving and convenient. It is found during use that driving thrust of pneumatic rods of the sunshade umbrellas opened and closed automatically is unstable, and the sunshade umbrellas are prone to shaking during opening and closing.

SUMMARY

[0004] In order to make up for the deficiencies of the prior art, the present invention provides a technical solution of an electric straight rod umbrella opened and closed without short ribs, which is easy and stable to be opened and closed as a sunshade umbrella without shaking and swinging during opening.

[0005] The electric straight rod umbrella opened and closed without short ribs comprises a shaft and ribs; a driving mechanism is provided in an inner cavity of the shaft, an opening is provided at the top end of the shaft, and an outer disc is provided at the top end of the shaft, the driving mechanism comprises a push rod capable of moving up and down and an inner disc provided at the top end of the push rod, a tail end of each rib is hingedly engaged with the inner disc, an assembly hole is provided on the rib, the rib is hinged with the outer disc by matching a locking screw with the assembly hole, and the push rod moves up and down to spread or retract the ribs.

[0006] Further, a plurality of sets of limiting grooves are provided on the outer disc, and the ribs are arranged in the limiting grooves.

[0007] Further, a pull rod is hingedly provided on the inner disc, and the other end of the pull rod is hingedly engaged with the tail end of the rib.

[0008] Further, a notch is provided on a side wall of the shaft, and the pull rod is limited in the notch.

[0009] Further, the top end of the shaft is provided with an upper end cover, the upper end cover comprises a sleeve and a cover plate provided at an end portion of the sleeve, and a diameter of the cover plate is larger than that of the sleeve.

[0010] Further, a base is provided at a bottom portion of the shaft, the base is a circular base, and the edge of the base is provided with a solid tire.

[0011] Further, a fitting tube is provided on the base, and a bottom end of the shaft is inserted into the fitting tube.

[0012] Further, the driving mechanism comprises a battery pack and a push rod motor, the battery pack is fixed by a battery pack fixing seat, the push rod is driven up and down by the push rod motor, and the push rod motor is electrically connected with the battery pack.

[0013] Further, a push rod sliding seat is fixedly provided in the inner cavity of the shaft, the push rod is inserted into the sliding seat, a pressing block is provided on the push rod, an upper side of the push rod motor and a lower side of the push rod sliding seat are respectively provided a limit switch, and the pressing block respectively abuts against the limit switches during a lifting process of the push rod to send out a control signal.

[0014] Further, an upper end and a lower end of the push rod motor are respectively provided with a motor fixing seat, the push rod motor is fixed in the inner cavity of the shaft by the motor fixing seats, and the limit switches are fixed on the motor fixing seat on the upper side.

[0015] Compared with the prior art, the present invention has the following advantages.

[0016] In the present application, driving is achieved by the push rod with the motor, which facilitates operation. In addition, the sunshade umbrella can be stably opened through cooperation of the outer disc, the push rod, the inner disc, and the pull rod. The ribs are more stable when the umbrella is opened and closed.

[0017] The edge of the base is fixedly provided with the solid tire to facilitate rolling of the base to move the straight rod umbrella.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018]

FIG. 1 is a schematic structural diagram of the present application;

FIG. 2 is a schematic diagram showing assembly of ribs and a shaft of a straight rod umbrella;

FIG. 3 is a schematic cross-sectional diagram of a straight rod umbrella of the present application;

FIG. 4 is a schematic diagram showing assembly of ribs and a disc; and

FIG. 5 is a schematic structural diagram of a driving mechanism.

DETAILED DESCRIPTION

[0019] The present invention will be further described below in conjunction with the accompanying drawings.

[0020] As shown in FIGs. 1-5, an electric straight rod umbrella opened and closed without short ribs comprises a shaft 100 and ribs 200; a driving mechanism 300 is provided in an inner cavity of the shaft 100, an opening is provided at the top end of the shaft 100, and an outer disc 400 is provided at the top end of the shaft 100, the driving mechanism 300 comprises a push rod 310 capable of moving up and down and an inner disc 500 provided at the top end of the push rod 310, a tail end of each rib 200 is hingedly engaged with the inner disc 500, an assembly hole 210 is provided on the rib 200, the rib 200 is hinged with the outer disc 400 by matching a locking screw 600 with the assembly hole 210, and the push rod 310 moves up and down to spread or retract the ribs 200. The driving mechanism 300 further comprises a battery pack 320 and a push rod motor 330, the battery pack 320 is fixed by a battery pack fixing seat 321, the push rod 310 is driven up and down by the push rod motor 330, and the push rod motor 330 is electrically connected with the battery pack 320. A push rod sliding seat 130 is fixedly provided in the inner cavity of the shaft 100, the push rod 310 is inserted into the sliding seat 130, a pressing block 340 is provided on the push rod 310, an upper side of the push rod motor 330 and a lower side of the push rod sliding seat 130 are respectively provided a limit switch 350, and the pressing block 340 respectively abuts against the limit switches 350 during a lifting process of the push rod 310 to send out a control signal. An upper end and a lower end of the push rod motor 330 are respectively provided with a motor fixing seat 331, the push rod motor 330 is fixed in the inner cavity of the shaft 100 by the motor fixing seats 331, and the limit switches 350 are fixed on the motor fixing seat 331 on the upper side. The limit switch 350 functions as a sensor and is in signal connection with the push rod motor to send out a control signal.

[0021] A pull rod 510 is hingedly provided on the inner disc 500, and the other end of the pull rod 510 is hingedly engaged with the tail end of the rib 200. A notch 110 is provided on a side wall of the shaft 100, and the pull rod 510 is limited in the notch 110.

[0022] A plurality of sets of limiting grooves 410 are provided on the outer disc 400, and the ribs 200 are arranged in the limiting grooves 410. The top end of the shaft 100 is provided with an upper end cover 120, the upper end cover 120 comprises a sleeve 121 and a cover plate 122 provided at an end portion of the sleeve 121, and a diameter of the cover plate 122 is larger than that of the sleeve 121.

[0023] Further, a base 700 is provided at a bottom portion of the shaft 100, the base 700 is a circular base, and the edge of the base 700 is provided with a solid tire 710. A fitting tube 720 is provided on the base 700, and a bottom end of the shaft 100 is inserted into the fitting tube 720.

[0024] During assembly, the ribs are connected with the outer disc by the locking screws, and then connected with the inner disc at the top end of the push rod by the pull rod. During opening and closing of the umbrella, triangles appear between the ribs and the pull rod, which makes the movement of the ribs more stable.

[0025] When the umbrella is fully open, the pressing block on the push rod motor is lowered to the limit switch on the motor sliding seat and sends out a stop signal to a circuit board, causing the motor to stop. When the umbrella needs to be closed, the pressing block goes down until it touches the limit switch arranged on the motor fixing seat to send out a stop signal, at which time the umbrella is fully closed.

Claims

1. An electric straight rod umbrella opened and closed without short ribs, comprising a shaft (100) and ribs (200), wherein a driving mechanism (300) is provided in an inner cavity of the shaft (100), an opening is provided at the top end of the shaft (100), and an outer disc (400) is provided at the top end of the shaft (100), the driving mechanism (300) comprises a push rod (310) capable of moving up and down and an inner disc (500) provided at the top end of the push rod (310), a tail end of each rib (200) is hingedly engaged with the inner disc (500), an assembly hole (210) is provided on the rib (200), the rib (200) is hinged with the outer disc (400) by matching a locking screw (600) with the assembly hole (210), and the push rod (310) moves up and down to spread or retract the ribs (200).

2. The electric straight rod umbrella opened and closed without short ribs according to claim 1, wherein a plurality of sets of limiting grooves (410) are provided on the outer disc (400), and the ribs (200) are arranged in the limiting grooves (410).

3. The electric straight rod umbrella opened and closed without short ribs according to claim 1, wherein a pull rod (510) is hingedly provided on the inner disc (500), and the other end of the pull rod (510) is hingedly engaged with the tail end of the rib (200).

4. The electric straight rod umbrella opened and closed without short ribs according to claim 3, wherein a notch (110) is provided on a side wall of the shaft (100), and the pull rod (510) is limited in the notch (110).

5. The electric straight rod umbrella opened and closed without short ribs according to claim 1, wherein the top end of the shaft (100) is provided with an upper end cover (120), the upper end cover (120) comprises a sleeve (121) and a cover plate (122) pro-

vided at an end portion of the sleeve (121), and a diameter of the cover plate (122) is larger than that of the sleeve (121).

6. The electric straight rod umbrella opened and closed without short ribs according to claim 1, wherein a base (700) is provided at a bottom portion of the shaft (100), the base (700) is a circular base, and the edge of the base (700) is provided with a solid tire (710).

7. The electric straight rod umbrella opened and closed without short ribs according to claim 6, wherein a fitting tube (720) is provided on the base (700), and a bottom end of the shaft (100) is inserted into the fitting tube (720).

8. The electric straight rod umbrella opened and closed without short ribs according to claim 1, wherein the driving mechanism (300) comprises a battery pack (320) and a push rod motor (330), the battery pack (320) is fixed by a battery pack fixing seat (321), the push rod (310) is driven up and down by the push rod motor (330), and the push rod motor (330) is electrically connected with the battery pack (320).

9. The electric straight rod umbrella opened and closed without short ribs according to claim 8, wherein a push rod sliding seat (130) is fixedly provided in the inner cavity of the shaft (100), the push rod (310) is inserted into the sliding seat (130), a pressing block (340) is provided on the push rod (310), an upper side of the push rod motor (330) and a lower side of the push rod sliding seat (130) are respectively provided a limit switch (350), and the pressing block (340) respectively abuts against the limit switches (350) during a lifting process of the push rod (310) to send out a control signal.

10. The electric straight rod umbrella opened and closed without short ribs according to claim 9, wherein an upper end and a lower end of the push rod motor (330) are respectively provided with a motor fixing seat (331), the push rod motor (330) is fixed in the inner cavity of the shaft (100) by the motor fixing seats (331), and the limit switches (350) are fixed on the motor fixing seat (331) on the upper side.

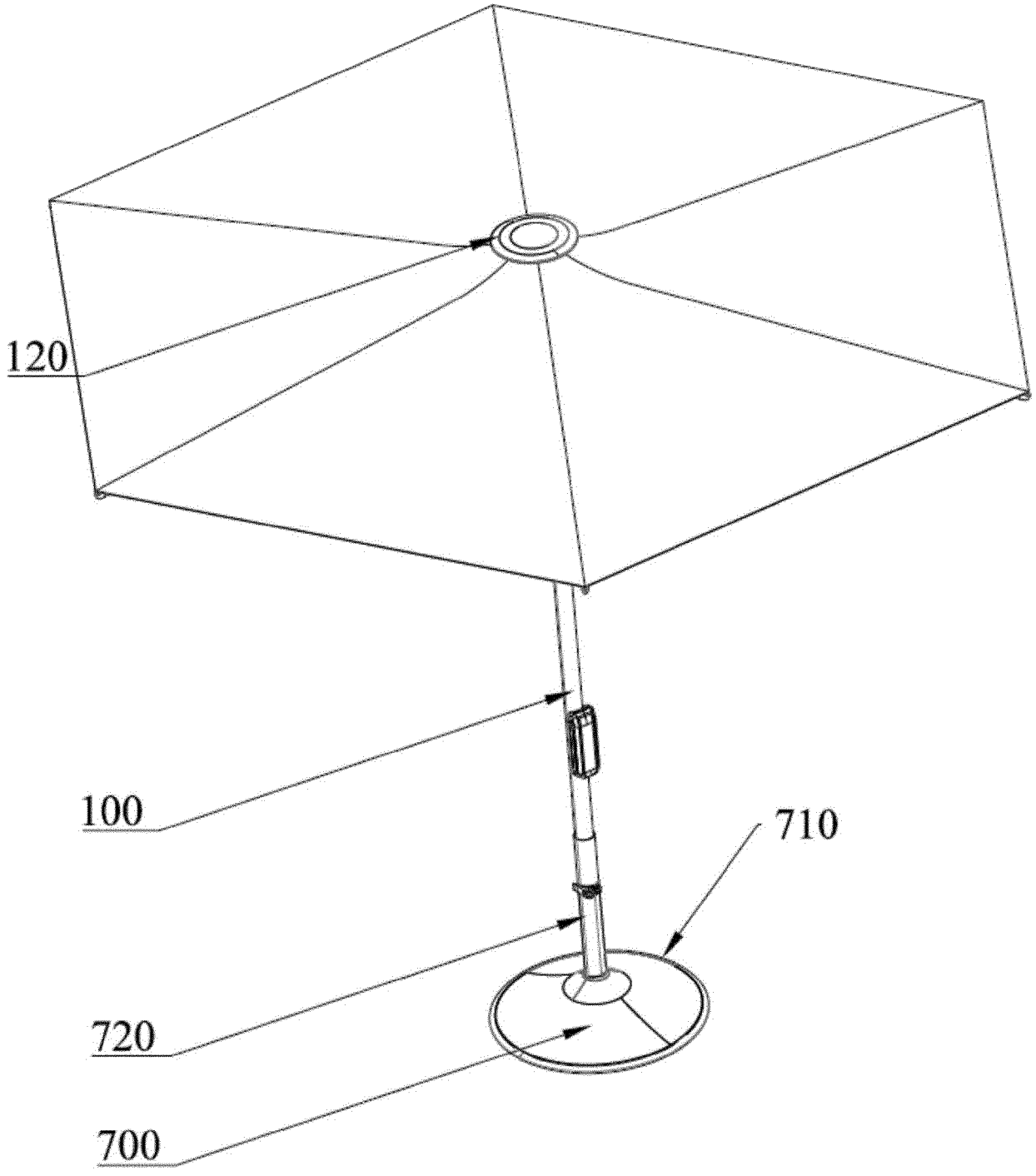

FIG. 1

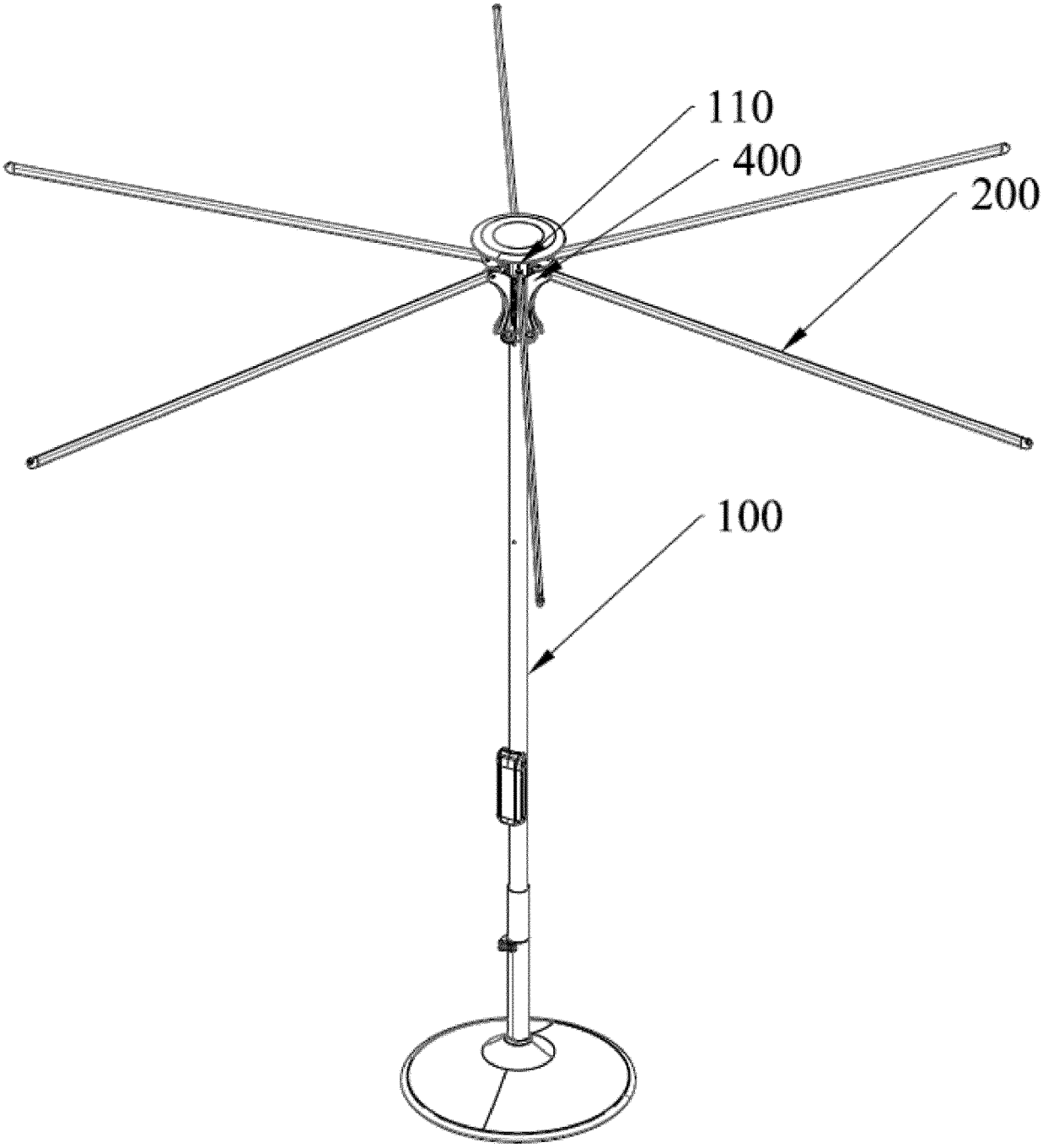

FIG. 2

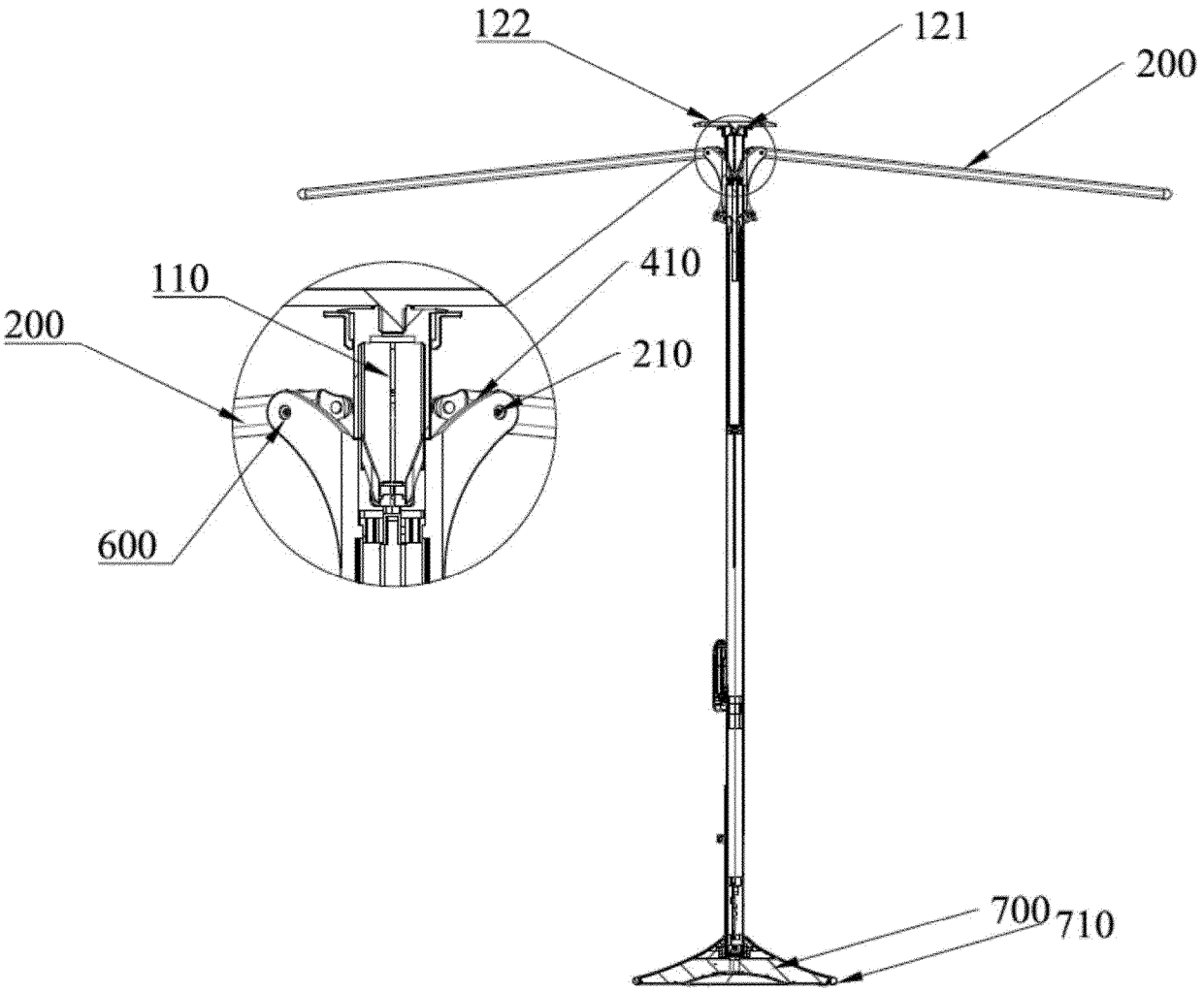

FIG. 3

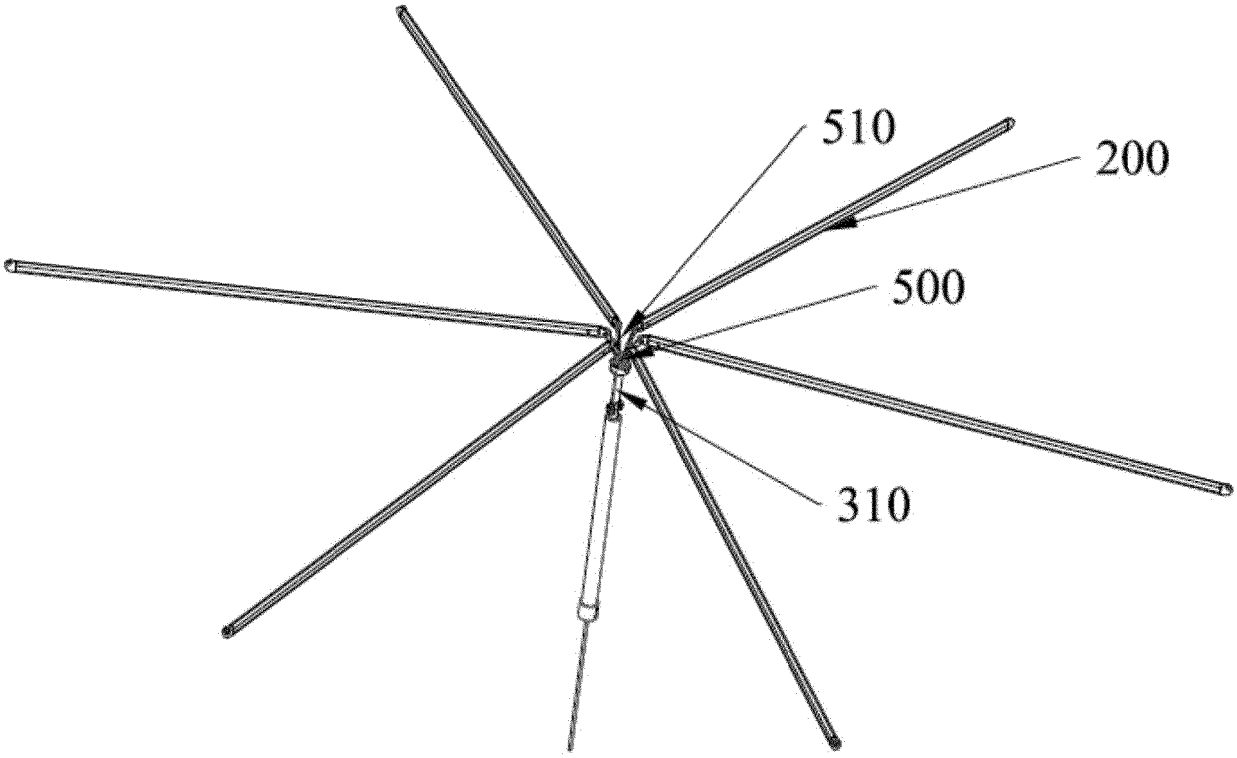

FIG. 4

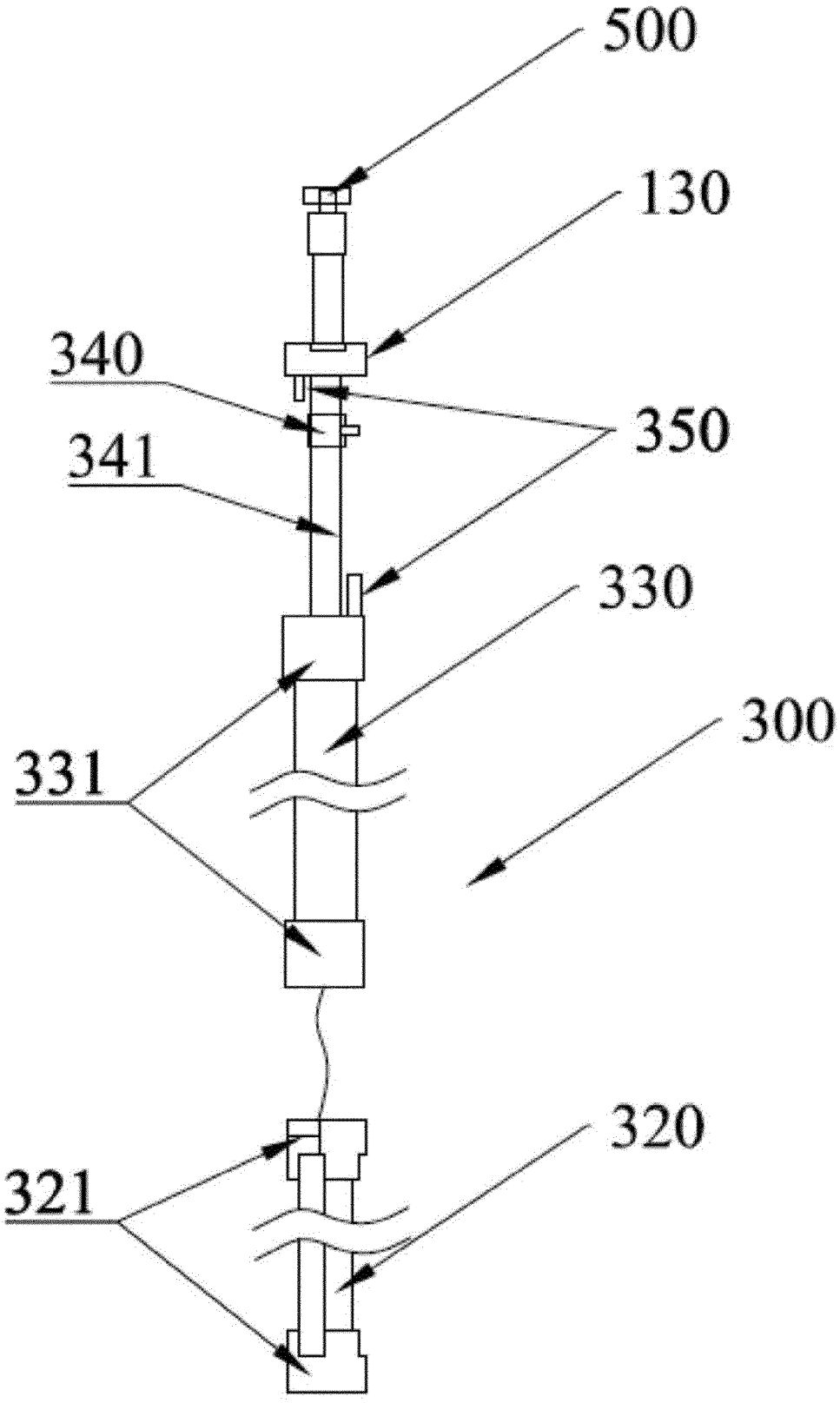

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 23 20 6555

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TECHNICAL FIELDS SEARCHED (IPC)

A45B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	5 March 2024	Zattoni, Federico

CATEGORY OF CITED DOCUMENTS

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