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Preparation process of lithium battery electrolyte.

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The present invention relates to a preparation process of lithium battery electrolyte. The electrolyte is prepared from the following raw materials in parts by weight: 130-140 parts of an organic solvent, 10-15 parts of tri-n-butylamine, 4-8 parts of multilayer graphene, 13-17 parts of lithium salt and 10-16 parts of an additive. The organic solvent is a carbonic esters organic solvent or a carboxylic esters organic solvent. When the electrolyte is prepared by means of a machining device, a first motor on an electrically controlled box works to drive a rotary column to rotate, thus driving a connecting rotary rod to rotate on a fixed contact to achieve electrical connection between the fixed contact and different fixed contacts and then achieve electrical connection of a semiconductor refrigeration sheet to a first power supply and a second power supply.

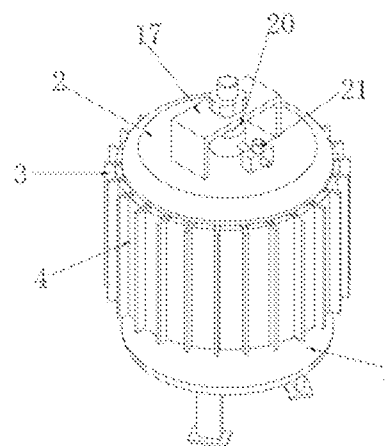


FIG. 1

PREPARATION PROCESS OF LITHIUM BATTERY ELECTROLYTE

TECHNICAL FIELD

[01] The present invention relates to the technical field of lithium battery machining, in particular to a preparation process of lithium battery electrolyte.

BACKGROUND ART

[02] In recent years, due to environmental pollution and energy shortage, all countries are forced to look for new environment-friendly and sustainable energy. High-energy environment-friendly lithium ion batteries which emerged in the 1990s have become one of the most attractive power sources because of its high energy density, long cycle life, high working voltage and the like.

[03] In a preparation process of lithium battery electrolyte, stirring and mixing are realized by means of a machining device. When the existing machining devices are used for machining, the temperature needs to be adjusted quickly and accurately, otherwise the normal preparation of electrolyte will be affected. At the same time, during machining, stirring in a single direction is inefficient and time-consuming; and after machining, the device needs to be cleaned, otherwise a deviation easily occurs in the subsequent contents of raw materials that prepare the electrolyte.

SUMMARY

[04] The problems solved by the present invention are to provide a preparation process of lithium battery electrolyte. The following technical problems are solved: In a preparation process of lithium battery electrolyte, stirring and mixing are realized by means of a machining device. When the existing machining devices are used for machining, the temperature needs to be adjusted quickly and accurately, otherwise the normal preparation of electrolyte will be affected. At the same time, during machining, stirring in a single direction is inefficient and time-consuming; and after machining, the device needs to be cleaned, otherwise a deviation easily occurs in the subsequent contents of raw materials that prepare the electrolyte.

[05] In order to achieve the foregoing purpose, the present invention adopts the following technical solution:

A preparation process of lithium battery electrolyte is provided. The electrolyte is prepared from the following raw materials in parts by weight: 130-140 parts of an organic solvent, 10-15 parts of tri-n-butylamine, 4-8 parts of multilayer graphene, 13-17 parts of lithium salt and 10-16 parts of an additive; and the organic solvent is a carbonic esters organic solvent or a carboxylic esters organic solvent.

The process includes the following specific operation steps:

adding the organic solvent into a machining device to neutralize the tri-n-butylamine; then adjusting the temperature to 0-5°C; adding the lithium salt and the multilayer graphene in a stirring state; then adjusting the temperature to 3-8°C; and finally adding the additive and performing hard stirring for 10-20 min to prepare the lithium battery electrolyte.

A first motor on an electrically controlled box works to drive a rotary column to

rotate, thus driving a connecting rotary rod to rotate on a fixed contact to achieve electrical connection between the fixed contact and different fixed contacts and then achieve electrical connection of a semiconductor refrigeration sheet to a first power supply and a second power supply; furthermore, positive and negative poles of the first power supply and the second power supply electrically connected to the semiconductor refrigeration sheet are opposite, so that the semiconductor refrigeration sheet is controlled to be heated and refrigerated respectively; a heat exchange contact area with the outside is enlarged by means of heat conduction grids, thus quickly adjusting the temperature inside a barrel body; a second motor works; a speed reducer adjusts the speed to drive a stirring shaft and stirring vanes to rotate; meanwhile, a transmission shaft and rotary vanes rotate by means of meshed transmission of a worm and a worm wheel in a transfer box, so that upper electrolyte and lower electrolyte in the barrel body are fully mixed and are finally discharged through a control valve; and a liquid pump works to convey cleaning fluid into a sleeve, and the cleaning fluid is sprayed from spraying holes through liquid inlet holes to completely clean the barrel body as the stirring shaft rotates.

[06] The machining device includes the barrel body and a barrel cover; several heat conduction grids are mounted on an outer side of the barrel body; semiconductor refrigeration sheets are mounted between adjacent heat conduction grids; the barrel body is provided with the control valve; the electrically controlled box is mounted on a side wall of the barrel body; and the electrically controlled box is electrically connected to the semiconductor refrigeration sheets and a power supply.

A stirring mechanism is rotatably mounted on a bottom side of the barrel cover; the stirring mechanism includes the stirring shaft; the stirring shaft is provided with several stirring vanes; the stirring shaft is rotatably provided with the transmission shaft through the transfer box; the transmission shaft and the stirring shaft are perpendicular to each other; and the several stirring vanes are mounted on outer sides of two ends of the transmission shaft at equal distances.

[07] Preferably, a movable contact and two fixed contacts located on two sides of the movable contact are mounted in the electrically controlled box; the rotary column is mounted in the movable contact; the connecting rotary rod is mounted on the rotary column; the first motor is mounted on an outer side of the electrically controlled box; the first motor is connected with the rotary column; and an insulating coating layer is arranged between the first motor and the rotary column.

[08] Preferably, the movable contact is electrically connected with a first connection end of the semiconductor refrigeration sheet; the movable contact is electrically connected with a positive pole of the first power supply and a negative pole of the second power supply; the two fixed contacts are both electrically connected with a second connection end of the semiconductor refrigeration sheet; and the two fixed contacts are respectively electrically connected with a negative pole of the first power supply and a positive pole of the second power supply.

[09] Preferably, a mounting frame is mounted on a top side of the barrel cover; the speed reducer is mounted on a top side of the mounting frame; an output end of the speed reducer is connected with the stirring shaft; and an input end of the speed reducer

is connected with an output end of the second motor.

[10] Preferably, the stirring shaft is of a hollow structure; several liquid inlet holes are formed in an outer side of a top end of the stirring shaft; and several spraying holes are formed in an outer side of the stirring shaft.

[11] Preferably, the sleeve is mounted at a top of the barrel cover; the sleeve is connected with the stirring shaft through a sealing bearing; an outer side of the sleeve is communicated with the liquid pump on the barrel cover; the liquid pump is communicated with an external water pipe; and the sleeve is communicated with the liquid inlet holes.

[12] Preferably, the worm is mounted on the outer side of the stirring shaft and is located inside the transfer box; the worm wheel is mounted on an outer side of the transmission shaft and is located inside the transfer box; and the worm is meshed with the worm wheel.

[13] Beneficial effects of the present invention are as follows: When the electrolyte is prepared by means of a machining device, a first motor on an electrically controlled box works to drive a rotary column to rotate, thus driving a connecting rotary rod to rotate on a fixed contact to achieve electrical connection between the fixed contact and different fixed contacts and then achieve electrical connection of a semiconductor refrigeration sheet to a first power supply and a second power supply; positive and negative poles of the first power supply and the second power supply electrically connected to the semiconductor refrigeration sheet are opposite, so that the semiconductor refrigeration sheet is controlled to be heated and refrigerated respectively; and furthermore, a heat exchange contact area with the outside is enlarged by means of heat conduction grids, thus quickly adjusting the temperature inside a barrel body and guaranteeing efficient preparation of the electrolyte.

Meanwhile, when a stirring shaft rotates, a transmission shaft and rotary vanes rotate by means of meshed transmission of a worm and a worm wheel in a transfer box, so that upper electrolyte and lower electrolyte in a barrel body are fully mixed to realize full mixing and stirring of the electrolyte in the barrel body, thus improving the stirring efficiency. Furthermore, after the preparation is completed, as the stirring shaft rotates, a liquid pump works to convey cleaning fluid into the sleeve, and the cleaning fluid is sprayed from spraying holes through liquid inlet holes to completely clean the barrel body, thus improving the cleaning efficiency, and avoiding the impact of the electrolyte remaining in the barrel body on the subsequent contents of the preparation raw materials in cyclic preparation.

BRIEF DESCRIPTION OF THE DRAWINGS

[14] FIG. 1 is a schematic diagram of an entire structure of the present invention;

FIG. 2 is an overall side view of the present invention;

FIG. 3 is a sectional view of an electrically controlled box of the present invention;

FIG. 4 is a schematic diagram of an internal structure of the present invention;
and

FIG. 5 is a schematic structural diagram of mounting a worm and a worm wheel

of the present invention.

[15] Illustrations in the drawings:

1-barrel body; 2-barrel cover; 3-heat conduction grid; 4-semiconductor refrigeration sheet; 5-control valve; 6-electrically controlled box; 7-movable contact; 8-fixed contact; 9-connecting rotary rod; 10-first motor; 11-rotary column; 12-stirring shaft; 13-stirring vane; 14-transfer box; 15-transmission shaft; 16-rotary vane; 17-mounting frame; 18-speed reducer; 19-second motor; 20-sleeve; 21-liquid pump; 22-liquid inlet hole; 23-spraying hole; 24-worm; and 25-worm wheel.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[16] The technical solutions in the embodiments of the present invention will be described clearly and completely below in combination with the accompanying drawings of the embodiments of the present invention. Apparently, the described embodiments are only part of the embodiments of the present invention, not all embodiments. Based on embodiments of the present invention, all other embodiments obtained by those of ordinary skill in the art without creative work shall fall within the scope of protection of the present invention.

[17] Specific embodiments are provided below.

[18] Referring to FIG. 1 to FIG. 5, a preparation process of lithium battery electrolyte is shown. The electrolyte is prepared from the following raw materials in parts by weight: 130-140 parts of an organic solvent, 10-15 parts of tri-n-butylamine, 4-8 parts of multilayer graphene, 13-17 parts of lithium salt and 10-16 parts of an additive. The organic solvent is a carbonic esters organic solvent or a carboxylic esters organic solvent.

The process includes the following specific operation steps:

adding the organic solvent into a machining device to neutralize the tri-n-butylamine; then adjusting the temperature to 0-5°C; adding the lithium salt and the multilayer graphene in a stirring state; then adjusting the temperature to 3-8°C; and finally adding the additive and performing hard stirring for 10-20 min to prepare the lithium battery electrolyte.

A first motor 10 on an electrically controlled box 6 works to drive a rotary column 11 to rotate, thus driving a connecting rotary rod 9 to rotate on a fixed contact 8 to achieve electrical connection between the fixed contact 8 and different fixed contacts 8 and then achieve electrical connection of a semiconductor refrigeration sheet 4 to a first power supply and a second power supply; positive and negative poles of the first power supply and the second power supply electrically connected to the semiconductor refrigeration sheet 4 are opposite, so that the semiconductor refrigeration sheet 4 is controlled to be heated and refrigerated respectively; a heat exchange contact area with the outside is enlarged by means of heat conduction grids 3, thus quickly adjusting the temperature inside a barrel body 1; a second motor 19 works; a speed reducer 18 adjusts the speed to drive a stirring shaft 12 and stirring vanes 13 to rotate; a transmission shaft 15 and rotary vanes 16 rotate by means of meshed transmission of a worm 24 and a worm wheel 25 in a transfer box 14, so that upper electrolyte and lower electrolyte in the barrel body 1 are fully mixed and are finally discharged through a control valve 5;

and a liquid pump 21 works to convey cleaning fluid into a sleeve 20, and the cleaning fluid is sprayed from spraying holes 23 through liquid inlet holes 22 to completely clean the barrel body 1 as the stirring shaft 12 rotates.

[19] The machining device includes the barrel body 1 and a barrel cover 2; several heat conduction grids 3 are mounted on an outer side of the barrel body 1; semiconductor refrigeration sheets 4 are mounted between adjacent heat conduction grids 3; the barrel body 1 is provided with the control valve 5; the electrically controlled box 6 is mounted on a side wall of the barrel body 1; and the electrically controlled box 6 is electrically connected to the semiconductor refrigeration sheets 4 and a power supply.

A stirring mechanism is rotatably mounted on a bottom side of the barrel cover 2; a mounting frame 17 is mounted on a top side of the barrel cover 2; the speed reducer 18 is mounted on a top side of the mounting frame 17; an output end of the speed reducer 18 is connected with the stirring shaft 12; and an input end of the speed reducer 18 is connected with an output end of the second motor 19. The second motor 19 works, and the speed reducer 18 adjusts the speed to drive a stirring shaft 12 and stirring vanes 13 to rotate. The stirring mechanism includes the stirring shaft 12; the stirring shaft 12 is provided with several stirring vanes 13; the stirring shaft 12 is rotatably provided with the transmission shaft 15 through the transfer box 14; and the transmission shaft 15 and the stirring shaft 12 are perpendicular to each other. The worm 24 is mounted on the outer side of the stirring shaft 12 and is located inside the transfer box 14; the worm wheel 25 is mounted on an outer side of the transmission shaft 15 and is located inside the transfer box 14; and the worm 24 is meshed with the worm wheel 25. As the stirring shaft 12 rotates, the transmission shaft 15 and the rotary vanes 16 rotate by means of meshed transmission of the worm 24 and the worm wheel 25 in the transfer box 14. The several stirring vanes 13 are mounted on outer sides of two ends of the transmission shaft 15 at equal distances. The stirring shaft 12 is of a hollow structure; several liquid inlet holes 22 are formed in an outer side of a top end of the stirring shaft 12; and several spraying holes 23 are formed in an outer side of the stirring shaft 12. The sleeve 20 is mounted at a top of the barrel cover 2; the sleeve 20 is connected with the stirring shaft 12 through a sealing bearing; an outer side of the sleeve 20 is communicated with the liquid pump 21 on the barrel cover 2; the liquid pump 21 is communicated with an external water pipe; and the sleeve 20 is communicated with the liquid inlet holes 22. The liquid pump 21 works to convey the cleaning fluid into the sleeve 20, and the cleaning fluid is sprayed from the spraying holes 23 through the liquid inlet holes 22.

A movable contact 7 and two fixed contacts 8 located on two sides of the movable contact 7 are mounted in the electrically controlled box 6; the rotary column 11 is mounted in the movable contact 7; the connecting rotary rod 9 is mounted on the rotary column 11; the first motor 10 is mounted on an outer side of the electrically controlled box 6; the first motor 10 is connected with the rotary column 11; and an insulating coating layer is arranged between the first motor 10 and the rotary column 11. The movable contact 7 is electrically connected with a first connection end of the semiconductor refrigeration sheet 4; the movable contact 7 is electrically connected with a positive pole of the first power supply and a negative pole of the second power

supply; the two fixed contacts 8 are both electrically connected with a second connection end of the semiconductor refrigeration sheet 4; and the two fixed contacts 8 are respectively electrically connected with a negative pole of the first power supply and a positive pole of the second power supply. The first motor 10 on the electrically controlled box 6 works to drive the rotary column 11 to rotate, thus driving the connecting rotary rod 9 to rotate on the fixed contact 8 to achieve electrical connection between the fixed contact 8 and different fixed contacts 8 and then achieve electrical connection of the semiconductor refrigeration sheet 4 to the first power supply and the second power supply; and positive and negative poles of the first power supply and the second power supply electrically connected to the semiconductor refrigeration sheet 4 are opposite, so that the semiconductor refrigeration sheet 4 is controlled to be heated and refrigerated respectively.

[20] The first motor 10 on the electrically controlled box 6 works to drive the rotary column 11 to rotate, thus driving the connecting rotary rod 9 to rotate on the fixed contact 8 to achieve electrical connection between the fixed contact 8 and different fixed contacts 8 and then achieve electrical connection of the semiconductor refrigeration sheet 4 to the first power supply and the second power supply; positive and negative poles of the first power supply and the second power supply electrically connected to the semiconductor refrigeration sheet 4 are opposite, so that the semiconductor refrigeration sheet 4 is controlled to be heated and refrigerated respectively; and furthermore, a heat exchange contact area with the outside is enlarged by means of heat conduction grids 3, thus quickly adjusting the temperature inside a barrel body 1 and guaranteeing efficient preparation of the electrolyte.

Meanwhile, when the stirring shaft 12 rotates, the transmission shaft 15 and the rotary vanes 16 rotate by means of the meshed transmission of the worm 24 and the worm wheel 25 in the transfer box 14, so that the upper electrolyte and the lower electrolyte in the barrel body 1 are fully mixed to realize full mixing and stirring of the electrolyte in the barrel body 1, thus improving the stirring efficiency. Furthermore, after the preparation is completed, as the stirring shaft 12 rotates, the liquid pump 21 works to convey cleaning fluid into the sleeve 20, and the cleaning fluid is sprayed from the spraying holes 23 through the liquid inlet holes 22 to completely clean the barrel body 1, thus improving the cleaning efficiency, and avoiding the impact of the electrolyte remaining in the barrel body 1 on the subsequent contents of the preparation raw materials in cyclic preparation.

[21] The above descriptions are only specific preferred implementation modes of the present invention, but the scope of protection of the present invention is not limited thereto. For any person skilled in the art, within the technical scope disclosed by the present invention, equivalent substitutions or changes made according to the technical solution of the present invention and an inventive idea of the present invention shall all fall within the scope of protection of the present invention.

CLAIMS:

1. A preparation process of lithium battery electrolyte, characterized in that the electrolyte is prepared from the following raw materials in parts by weight: 130-140 parts of an organic solvent, 10-15 parts of tri-n-butylamine, 4-8 parts of multilayer graphene, 13-17 parts of lithium salt and 10-16 parts of an additive; the organic solvent is a carbonic esters organic solvent or a carboxylic esters organic solvent;

the process comprises the following specific operation steps:

adding the organic solvent into a machining device to neutralize the tri-n-butylamine; then adjusting the temperature to 0-5°C; adding the lithium salt and the multilayer graphene in a stirring state; then adjusting the temperature to 3-8°C; and finally adding the additive and performing hard stirring for 10-20 min to prepare the lithium battery electrolyte;

a first motor (10) on an electrically controlled box (6) works to drive a rotary column (11) to rotate, thus driving a connecting rotary rod (9) to rotate on a fixed contact (8) to achieve electrical connection between the fixed contact (8) and different fixed contacts (8) and then achieve electrical connection of a semiconductor refrigeration sheet (4) to a first power supply and a second power supply; positive and negative poles of the first power supply and the second power supply electrically connected to the semiconductor refrigeration sheet (4) are opposite, so that the semiconductor refrigeration sheet (4) is controlled to be heated and refrigerated respectively; a heat exchange contact area with the outside is enlarged by means of heat conduction grids (3), thus quickly adjusting the temperature inside a barrel body (1); a second motor (19) works; a speed reducer (18) adjusts the speed to drive a stirring shaft (12) and stirring vanes (13) to rotate; a transmission shaft (15) and rotary vanes (16) rotate by means of meshed transmission of a worm (24) and a worm wheel (25) in a transfer box (14), so that upper electrolyte and lower electrolyte in the barrel body (1) are fully mixed and are finally discharged through a control valve (5); and a liquid pump (21) works to convey cleaning fluid into a sleeve (20), and the cleaning fluid is sprayed from spraying holes (23) through liquid inlet holes (22) to completely clean the barrel body (1) as the stirring shaft (12) rotates.

2. The preparation process of the lithium battery electrolyte according to claim 1, characterized in that the machining device comprises the barrel body (1) and a barrel cover (2); several heat conduction grids (3) are mounted on an outer side of the barrel body (1); semiconductor refrigeration sheets (4) are mounted between adjacent heat conduction grids (3); the barrel body (1) is provided with the control valve (5); the electrically controlled box (6) is mounted on a side wall of the barrel body (1); and the electrically controlled box (6) is electrically connected to the semiconductor refrigeration sheets (4) and a power supply;

a stirring mechanism is rotatably mounted on a bottom side of the barrel cover (2); the stirring mechanism comprises the stirring shaft (12); the stirring shaft (12) is provided with several stirring vanes (13); the stirring shaft (12) is rotatably provided with the transmission shaft (15) through the transfer box (14); the transmission shaft (15) and the stirring shaft (12) are perpendicular to each other; and the several stirring vanes

(13) are mounted on outer sides of two ends of the transmission shaft (15) at equal distances.

3. The preparation process of the lithium battery electrolyte according to claim 2, characterized in that a movable contact (7) and two fixed contacts (8) located on two sides of the movable contact (7) are mounted in the electrically controlled box (6); the rotary column (11) is mounted in the movable contact (7); the connecting rotary rod (9) is mounted on the rotary column (11); the first motor (10) is mounted on an outer side of the electrically controlled box (6); the first motor (10) is connected with the rotary column (11); and an insulating coating layer is arranged between the first motor (10) and the rotary column (11).

4. The preparation process of the lithium battery electrolyte according to claim 3, characterized in that the movable contact (7) is electrically connected with a first connection end of the semiconductor refrigeration sheet (4); the movable contact (7) is electrically connected with a positive pole of the first power supply and a negative pole of the second power supply; the two fixed contacts (8) are both electrically connected with a second connection end of the semiconductor refrigeration sheet (4); and the two fixed contacts (8) are respectively electrically connected with a negative pole of the first power supply and a positive pole of the second power supply.

5. The preparation process of the lithium battery electrolyte according to claim 2, characterized in that a mounting frame (17) is mounted on a top side of the barrel cover (2); the speed reducer (18) is mounted on a top side of the mounting frame (17); an output end of the speed reducer (18) is connected with the stirring shaft (12); and an input end of the speed reducer (18) is connected with an output end of the second motor (19).

6. The preparation process of the lithium battery electrolyte according to claim 2, characterized in that the stirring shaft (12) is of a hollow structure; several liquid inlet holes (22) are formed in an outer side of a top end of the stirring shaft (12); and several spraying holes (23) are formed in an outer side of the stirring shaft (12).

7. The preparation process of the lithium battery electrolyte according to claim 2, characterized in that the sleeve (20) is mounted at a top of the barrel cover (2); the sleeve (20) is connected with the stirring shaft (12) through a sealing bearing; an outer side of the sleeve (20) is communicated with the liquid pump (21) on the barrel cover (2); the liquid pump (21) is communicated with an external water pipe; and the sleeve (20) is communicated with the liquid inlet holes (22).

8. The preparation process of the lithium battery electrolyte according to claim 2, characterized in that the worm (24) is mounted on the outer side of the stirring shaft (12) and is located inside the transfer box (14); the worm wheel (25) is mounted on an outer side of the transmission shaft (15) and is located inside the transfer box (14); and the worm (24) is meshed with the worm wheel (25).

ANSPRÜCHE

1. Verfahren zur Herstellung eines Lithiumbatterie-Elektrolyten, **dadurch gekennzeichnet, dass** der Elektrolyt aus den folgenden Rohstoffen in Gewichtsteilen hergestellt wird: 130-140 Teile eines organischen Lösungsmittels, 10-15 Teile tri-n-Butylamin, 4-8 Teile mehrlagiges Graphen, 13-17 Teile Lithiumsalz und 10-16 Teile eines Zusatzstoffes; wobei das organische Lösungsmittel ein organisches Carbonsäureester-Lösungsmittel oder ein organisches Carboxylsäureester-Lösungsmittel ist;

das Verfahren die folgenden spezifischen Arbeitsschritte umfasst:

Hinzufügen des organischen Lösungsmittels in eine Bearbeitungsvorrichtung, um das tri-n-Butylamin zu neutralisieren; dann Einstellen der Temperatur auf 0-5 °C; Hinzufügen des Lithiumsalzes und des mehrschichtigen Graphens in einem Rührzustand; dann Einstellen der Temperatur auf 3-8 °C; und schließlich Hinzufügen des Zusatzstoffes und Durchführen von festem Rühren für 10-20 min, um den Lithiumbatterie-Elektrolyten herzustellen;

ein erster Motor (10) an einem elektrisch gesteuerten Kasten (6) arbeitet, um eine Drehsäule (11) in Drehung zu versetzen, wodurch eine verbindende Drehstange (9) angetrieben wird, um sich auf einem festen Kontakt (8) zu drehen, um eine elektrische Verbindung zwischen dem festen Kontakt (8) und verschiedenen festen Kontakten (8) zu erreichen und dann eine elektrische Verbindung einer Halbleiter-Kühlplatte (4) mit einer ersten Stromversorgung und einer zweiten Stromversorgung zu erreichen; positive und negative Pole der ersten Stromversorgung und der zweiten Stromversorgung, die elektrisch mit der Halbleiter-Kühlplatte (4) verbunden sind, entgegengesetzt sind, so dass die Halbleiter-Kühlplatte (4) so gesteuert wird, dass sie jeweils geheizt und gekühlt wird; eine Kontaktfläche für den Wärmeaustausch mit der Außenseite mittels Wärmeleitgittern (3) vergrößert wird, wodurch die Temperatur im Inneren eines Zylinderkörpers (1) schnell angepasst wird; ein zweiter Motor (19) arbeitet; ein Untersetzungsgetriebe (18) die Drehzahl anpasst, um eine Rührwelle (12) und Rührflügel (13) in Drehung zu versetzen;

eine Getriebewelle (15) und Drehflügel (16) sich mittels eines ineinandergreifenden Getriebes einer Schnecke (24) und eines Schneckenrads (25) in einem Verteilergetriebe (14) drehen, so dass der obere Elektrolyt und der untere Elektrolyt im Zylinderkörper (1) vollständig vermischt werden und schließlich durch ein Steuerventil (5) abgelassen werden; und eine Flüssigkeitspumpe (21) arbeitet, um Reinigungsflüssigkeit in eine Hülse (20) zu befördern, und die Reinigungsflüssigkeit aus Sprühöffnungen (23) durch Flüssigkeitseinlassöffnungen (22) gesprüht wird, um den Zylinderkörper (1) vollständig zu reinigen, während sich die Rührwelle (12) dreht.

2. Verfahren zur Herstellung des Lithiumbatterie-Elektrolyten nach Anspruch 1, **dadurch gekennzeichnet, dass** die Bearbeitungsvorrichtung den Zylinderkörper (1) und einen Zylinderdeckel (2) aufweist; mehrere Wärmeleitgitter (3) an einer Außenseite des Zylinderkörpers (1) angebracht sind; Halbleiter-Kühlplatten (4) zwischen benachbarten Wärmeleitgittern (3) angebracht sind; der Zylinderkörper (1) mit dem Steuerventil (5) versehen ist; der elektrisch gesteuerte Kasten (6) an einer Seitenwand des Zylinderkörpers (1) angebracht ist; und der elektrisch gesteuerte Kasten (6) elektrisch mit den Halbleiter-Kühlplatten (4) und einer Stromversorgung verbunden ist;
ein Rührmechanismus drehbar an einer Unterseite des Zylinderdeckels (2) angebracht ist; der Rührmechanismus die Rührwelle (12) umfasst; die Rührwelle (12) mit mehreren Rührflügeln (13) versehen ist; die Rührwelle (12) drehbar mit der Übertragungswelle (15) durch das Verteilergetriebe (14) verbunden ist; die Übertragungswelle (15) und die Rührwelle (12) senkrecht zueinander stehen; und die mehreren Rührflügel (13) an Außenseiten der beiden Enden der Übertragungswelle (15) in gleichen Abständen angebracht sind.
3. Verfahren zur Herstellung des Lithiumbatterie-Elektrolyten nach Anspruch 2, **dadurch gekennzeichnet, dass** ein beweglicher Kontakt (7) und zwei feste Kontakte (8), die sich auf zwei Seiten des beweglichen Kontakts (7) befinden, in dem elektrisch gesteuerten Kasten (6) angebracht sind; die Drehsäule (11)

in dem beweglichen Kontakt (7) angebracht ist; die verbindende Drehstange (9) an der Drehsäule (11) angebracht ist; der erste Motor (10) an einer Außenseite des elektrisch gesteuerten Kastens (6) angebracht ist; der erste Motor (10) mit der Drehsäule (11) verbunden ist; und eine isolierende Beschichtungsschicht zwischen dem ersten Motor (10) und der Drehsäule (11) angeordnet ist.

4. Verfahren zur Herstellung des Lithiumbatterie-Elektrolyten nach Anspruch 3, **dadurch gekennzeichnet, dass** der bewegliche Kontakt (7) elektrisch mit einem ersten Anschlussende der Halbleiter-Kühlplatte (4) verbunden ist; der bewegliche Kontakt (7) elektrisch mit einem positiven Pol der ersten Stromversorgung und einem negativen Pol der zweiten Stromversorgung verbunden ist; die beiden festen Kontakte (8) beide elektrisch mit einem zweiten Anschlussende der Halbleiter-Kühlplatte (4) verbunden sind; und die beiden festen Kontakte (8) elektrisch mit einem negativen Pol der ersten Stromversorgung bzw. einem positiven Pol der zweiten Stromversorgung verbunden sind.
5. Verfahren zur Herstellung des Lithiumbatterie-Elektrolyten nach Anspruch 2, **dadurch gekennzeichnet, dass** ein Montagerahmen (17) an einer Oberseite des Zylinderdeckels (2) montiert ist; das Untersetzungsgetriebe (18) an einer Oberseite des Montagerahmens (17) montiert ist; ein Ausgangsende des Untersetzungsgetriebes (18) mit der Rührwelle (12) verbunden ist; und ein Eingangsende des Untersetzungsgetriebes (18) mit einem Ausgangsende des zweiten Motors (19) verbunden ist.
6. Verfahren zur Herstellung des Lithiumbatterie-Elektrolyten nach Anspruch 2, dadurch gekennzeichnet, dass die Rührwelle (12) eine hohle Struktur aufweist; mehrere Flüssigkeitseinlasslöcher (22) in einer Außenseite eines oberen Endes der Rührwelle (12) ausgebildet sind; und mehrere Sprühlöcher (23) in einer Außenseite der Rührwelle (12) ausgebildet sind.

7. Verfahren zur Herstellung des Lithiumbatterie-Elektrolyten nach Anspruch 2, **dadurch gekennzeichnet, dass** die Hülse (20) an einer Oberseite des Zylinderdeckels (2) angebracht ist; die Hülse (20) mit der Rührwelle (12) über ein Dichtungslager verbunden ist; eine Außenseite der Hülse (20) mit der Flüssigkeitspumpe (21) an dem Zylinderdeckel (2) in Verbindung steht; die Flüssigkeitspumpe (21) mit einem externen Wasserrohr in Verbindung steht; und die Hülse (20) mit den Flüssigkeitseinlassöffnungen (22) in Verbindung steht.
8. Verfahren zur Herstellung des Lithiumbatterie-Elektrolyten nach Anspruch 2, **dadurch gekennzeichnet, dass** die Schnecke (24) an der Außenseite der Rührwelle (12) angebracht ist und sich im Inneren des Verteilergetriebes (14) befindet; das Schneckenrad (25) an einer Außenseite der Übertragungswelle (15) angebracht ist und sich im Inneren des Verteilergetriebes (14) befindet; und die Schnecke (24) mit dem Schneckenrad (25) in Eingriff steht.

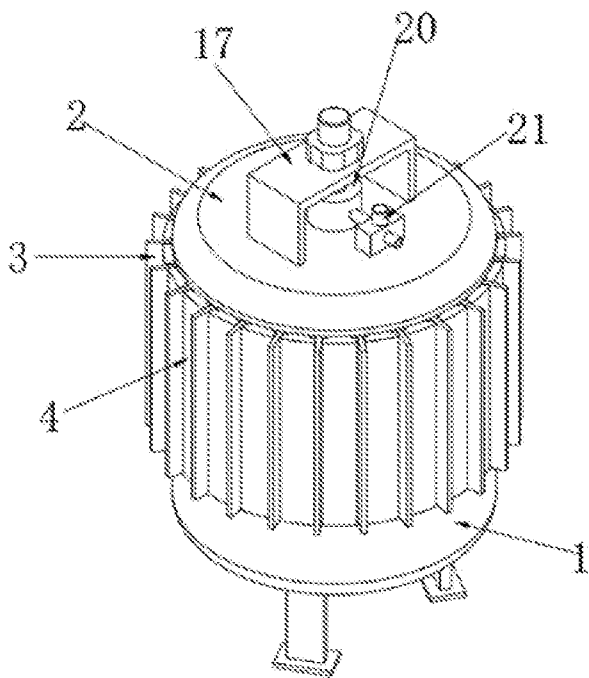


FIG. 1

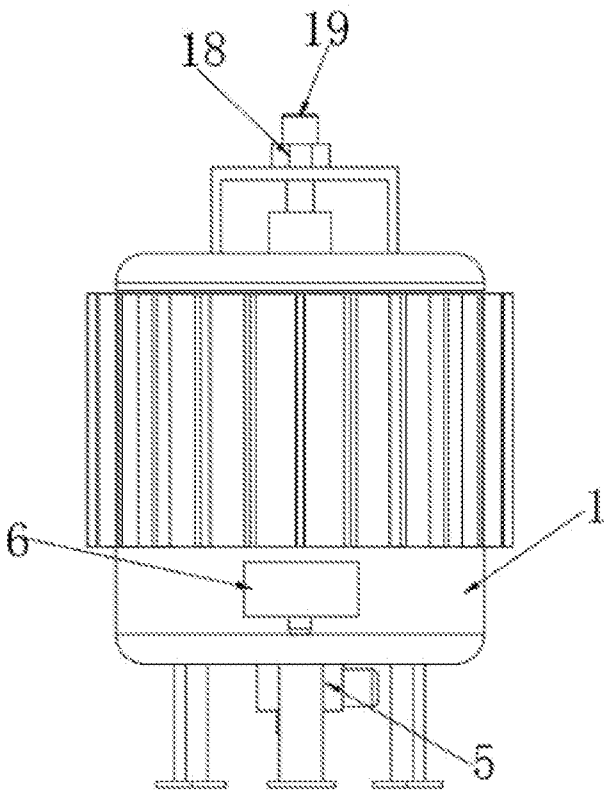


FIG. 2

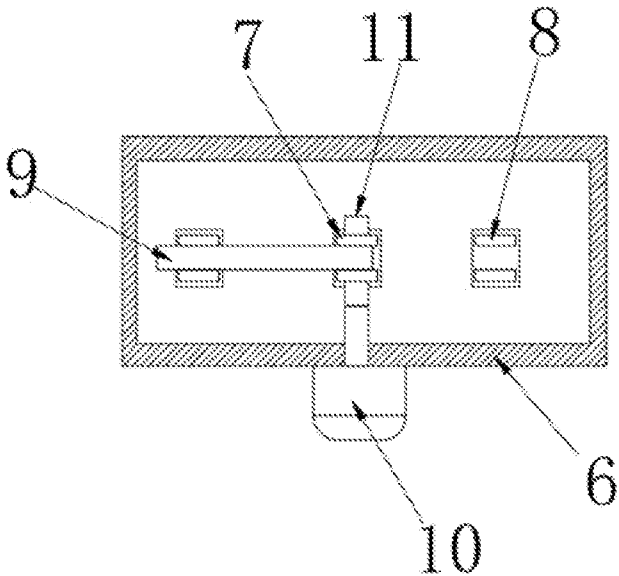


FIG. 3

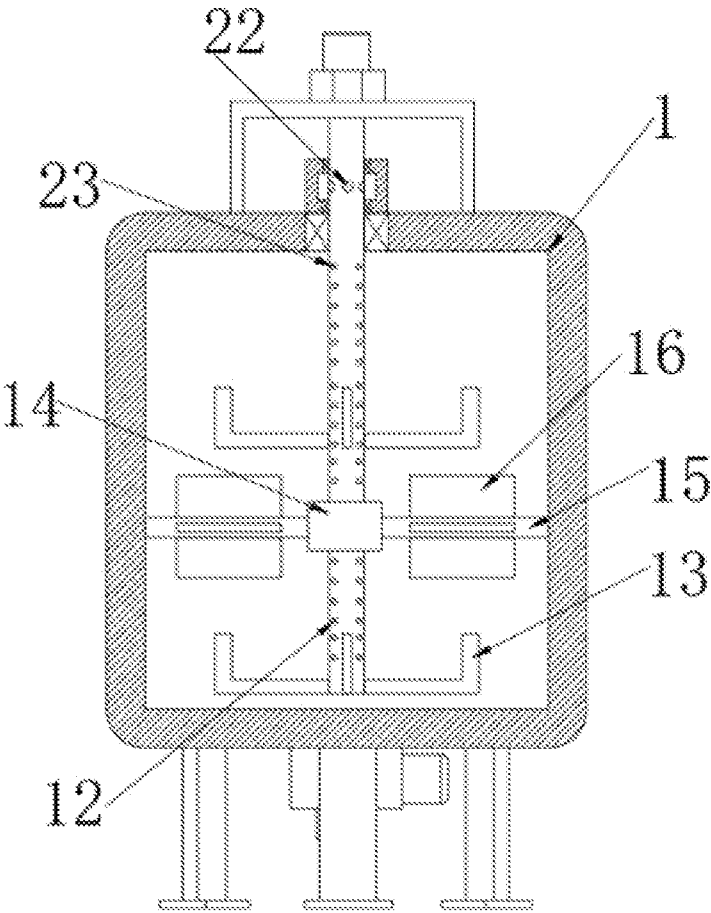


FIG. 4

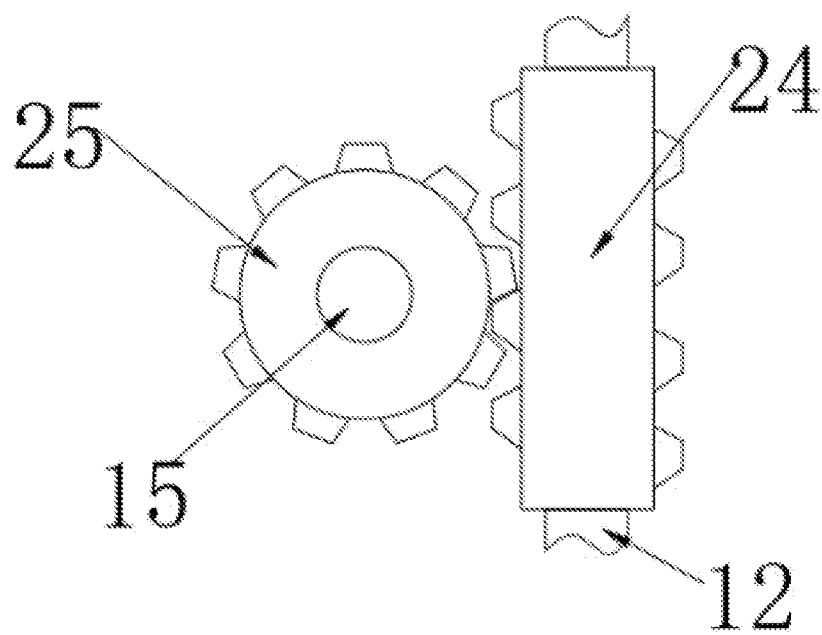


FIG. 5