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Anti-static bearing assembly and elliptical machine

Abstract

Disclosed are an anti-static bearing assembly and an elliptical machine. The anti-static bearing assembly includes a bearing seat, a bearing mechanism, and a conductive part, where an accommodating slot hole is provided in one side of the bearing seat, the bearing mechanism includes a bearing inner ring and a bearing outer ring, the bearing outer ring is connected to the bearing seat, a guide hole is provided in the bearing seat, a placement slot is provided in the bearing seat, a first end of the conductive part is inserted into the guide hole and is in conductive contact with the bearing mechanism, and a second end of the conductive part is placed in the placement slot and at least partially protrudes from an outer circumferential side of the bearing seat, such that the second end of the conductive part can be in conductive contact with the armrest swing rod.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS

(1) This application claims priority to Chinese Patent Application 202311380924.4, filed on Oct. 24, 2023, which is incorporated herein by reference.

TECHNICAL FIELD

(2) The present disclosure relates to the technical field of elliptical machines, specifically to an anti-static bearing assembly and an elliptical machine.

BACKGROUND

(3) In an existing elliptical machine, a stationary shaft is arranged on a stand column main frame, two armrest swing rods are rotatably mounted on two sides of the stationary shaft through bearing assemblies each including a bearing seat and a bearing mechanism, the bearing mechanisms are arranged on two sides of the stationary shaft in a penetration manner, the bearing seats are sleeved outside the bearing mechanisms, and the armrest swing rods are fixedly sleeved outside the bearing seats. A plug is connected to the stand column main frame, such that as a main part of a conductive system of the elliptical machine, the stand column main frame can lead out most of static electricity to be grounded. However, there is also part of static electricity on the armrest swing rods. The bearing seats are made of plastics, such that when the elliptical machine is used by a user, the static electricity on the armrest swing rods cannot be transmitted to the bearing mechanisms through the bearing seats, and thus cannot be transmitted to the stationary shaft and the stand column main frame to implement grounding, thereby affecting usage experience of the user. Therefore, the conductive system is still not perfect enough, and there are certain safety risks.

SUMMARY

(4) An objective of the present disclosure is to provide an anti-static bearing assembly, to solve the above technical problems.

(5) To achieve the above objective, the present disclosure adopts the following technical solution: an anti-static bearing assembly includes a bearing seat, a bearing mechanism, and a conductive part, where an accommodating slot hole is provided in one side of the bearing seat, the bearing mechanism is mounted in the accommodating slot hole and includes a bearing inner ring and a bearing outer ring which are coaxially arranged and relatively rotatable, the bearing inner ring is fixedly connected to a conductive stationary shaft, the bearing outer ring is fixedly connected to the bearing seat, an outer circumferential side of the bearing seat is used for an armrest swing rod to be fixedly sleeved on, a guide hole communicating with the accommodating slot hole is provided in the bearing seat, a placement slot is provided in the outer circumferential side of the bearing seat, a first end of the conductive part is inserted into the guide hole and is in conductive contact with the bearing mechanism, and a second end of the conductive part is placed in the placement slot and at least partially protrudes from the outer circumferential side of the bearing seat, such that the second end is capable of being in conductive contact with the armrest swing rod when the bearing seat is fixedly sleeved and matched with the armrest swing rod.

(6) The conductive part includes a vertical part, and a first extension part and a second extension part located at two ends of the vertical part and extending towards a same side, the first extension part and the second extension part form the first end and the second end, the first extension part is inserted into the guide hole, the first end is in conductive contact with the bearing outer ring of the bearing mechanism, and the second extension part is placed on the placement slot, such that the second end is in conductive contact with the armrest swing rod; and the bearing mechanism is integrally conductive, that is, the bearing inner ring is conductively connected to the bearing outer ring.

(7) The first extension part includes a transverse section and an inclined contact section located on one side of the transverse section that is away from the vertical part, the first end is one end of the inclined contact section that is away from the transverse section and is in conductive contact with an outer circumferential side wall of the bearing outer ring of the bearing mechanism, the second extension part includes a placement section and a bending contact section located on one side of the placement section that is away from the vertical part, the second end is one end of the bending contact section that is away from the placement section, the placement section is located in the placement slot, and the bending contact section protrudes from the placement slot, such that the second end is in conductive contact with the armrest swing rod.

(8) The bearing seat is a plastic or rubber bearing seat, one side of the bearing seat that is away from the accommodating slot hole is an inner side of the bearing seat, and the conductive part is U-

shaped, is mounted on the inner side of the bearing seat, and is provided with an opening towards an outer side.

(9) The bearing seat includes an annular end cover and an annular convex column connected to the annular end cover, the accommodating slot hole is provided in a middle of the annular convex column, a plurality of bumps arranged in a radial shape are arranged on a periphery of the annular convex column, upper surfaces of the bumps form the outer circumferential side of the bearing seat, and the placement slot is located on the upper surface of one of the bumps.

(10) The present disclosure further provides an elliptical machine, including any one of the above anti-static bearing assemblies, armrest swing rods, and a conductively grounded stationary shaft, where the armrest swing rods are rotatably mounted on the stationary shaft by the bearing assemblies and are conductively connected to the stationary shaft by the anti-static bearing assemblies.

(11) Both the armrest swing rods and the stationary shaft are metal conductors; and there are two armrest swing rods rotatably mounted on two sides of the stationary shaft by the bearing assemblies respectively, each of the armrest swing rods includes an armrest, a sleeve, and a swing rod connected in sequence, two opposite bearing assemblies are mounted on each of two sides of the stationary shaft, and the sleeve is fixedly sleeved outside the two opposite bearing assemblies on a same side of the stationary shaft.

(12) The elliptical machine further includes an elliptical machine body, and foot pedal connecting rods and connecting rods pivotally connected to each other, where a conductively grounded stand column main frame is arranged on the elliptical machine body, the stationary shaft is arranged on and conductively connected to the stand column main frame, a damping rotary table is arranged in the elliptical machine body, a base is mounted at a lower part of the elliptical machine body, guide rails are arranged on a rear side of the base that corresponds to the elliptical machine body, front ends of the connecting rods are rotatably connected to the damping rotary table, rear ends of the connecting rods are provided with pulleys, the pulleys are in sliding fit with the guide rails, a front end of each of the foot pedal connecting rods is pivotally connected to a bottom end of the swing rod, and a rear end of the foot pedal connecting rod is provided with a foot pedal.

(13) The elliptical machine further includes screw lock assemblies, buffer pad seats, and hollow spherical balls, where an annular part is fixedly mounted at the bottom end of the swing rod, the spherical balls are rotatably arranged in the annular parts, fixing brackets are arranged at upper parts of the front ends of the foot pedal connecting rods, each of the fixing brackets includes lugs, through holes for the screw lock assemblies to penetrate through and match with are provided in the lugs, the spherical balls are fixedly locked and mounted on the fixing brackets by the screw lock assemblies, and the buffer pad seats are located between the spherical balls and the lugs.

(14) The annular parts, the fixing brackets, and the spherical balls are metal conductors, the annular parts are in conductive contact with the spherical balls, and the buffer pad seats are plastic insulating parts; and the elliptical machine further includes a conductive seat which is mounted on one side of a corresponding one of the lugs and is in conductive contact with a corresponding one of the spherical balls to implement conductive connection between a corresponding one of the fixing brackets and a corresponding one of the annular parts.

(15) The present disclosure has the following beneficial effects: (1) According to the present disclosure, the conductive part is additionally arranged on the bearing seat, such that static electricity at the armrest swing rod can be sequentially transmitted to the bearing mechanism and the stationary shaft through the conductive part, and finally static grounding is implemented, thereby preventing the static electricity at the armrest swing rod from being unable to be grounded and led out to affect usage experience of a user, making a conductive system of the elliptical machine more perfect, and improving the safety and reliability. (2) The bearing seat is the plastic or rubber bearing seat, which has high mounting accuracy, is easy to control, and has low mounting difficulty and processing cost compared with a metal bearing seat. In addition, the design of

combining the plastic or rubber bearing seat with the conductive part cleverly solves the mounting and cost problems of the metal bearing seat and implements the function of electricity conduction.
(3) The conductive part includes the vertical part, a first extension part, and a second extension part, the first extension part and the second extension part form the first end and the second end, the first extension part is inserted into the guide hole, the first end is in conductive contact with the bearing outer ring of the bearing mechanism, and the second extension part is placed on the placement slot, such that the second end is in conductive contact with the armrest swing rod. This design is skillfully characterized in that the armrest swing rod, the bearing seat, and the bearing outer ring are in a relatively static assembly relationship and do not rotate relatively, such that the conductive part is assembled more stably, prevented from being worn after being used for a certain period of time, and ensured in conductive reliability and service life; and the conductive part is shorter, such that more materials and costs are saved.

Description

BRIEF DESCRIPTION OF DRAWINGS
(1) FIG. **1** is an outer side view of a bearing assembly according to an embodiment of the present disclosure;
(2) FIG. **2** is an inner side view of a bearing assembly according to an embodiment of the present disclosure;
(3) FIG. **3** is a schematic structural diagram of a bearing seat according to an embodiment of the present disclosure;
(4) FIG. **4** is a schematic structural diagram of a bearing mechanism according to an embodiment of the present disclosure;
(5) FIG. **5** is a schematic structural diagram of a conductive part according to an embodiment of the present disclosure;
(6) FIG. **6** is a three-dimensional view of an elliptical machine according to an embodiment of the present disclosure;
(7) FIG. **7** is a front side view of an elliptical machine according to an embodiment of the present disclosure;
(8) FIG. **8** is a schematic assembly diagram of a stationary shaft, a bearing assembly, and an armrest swing rod according to an embodiment of the present disclosure;
(9) FIG. **9** is a diagram of a transmission path of static electricity among a sleeve of an armrest swing rod, a bearing assembly, and a stationary shaft;
(10) FIG. **10** is a schematic assembly diagram of an armrest swing rod and a foot pedal connecting rod according to an embodiment of the present disclosure;
(11) FIG. **11** is a schematic disassembly diagram of an armrest swing rod and a foot pedal connecting rod according to an embodiment of the present disclosure;
(12) FIG. **12** is a schematic structural diagram of a conductive seat according to an embodiment of the present disclosure; and
(13) FIG. **13** is a sectional view of a pivot assembly between an armrest swing rod and a foot pedal connecting rod according to an embodiment of the present disclosure.
(14) In the drawings: **1**—elliptical machine body, **2**—damping rotary table, **3**—stand column main frame, **4**—stationary shaft, **5**—armrest swing rod, **51**—armrest, **52**—sleeve, **53**—swing rod, **6**—bearing seat, **61**—accommodating slot hole, **62**—guide hole, **63**—placement slot, **64**—annular convex column, **65**—annular end cover, **66**—bump, **7**—bearing mechanism, **71**—bearing inner ring, **72**—bearing outer ring, **8**—conductive part, **81**—vertical part, **82**—first extension part, **821**—transverse section, **822**—inclined contact section, **83**—second extension part, **831**—placement section, **832**—bending contact section, **9**—screw, **10**—protective cover, **11**—foot pedal connecting

rod, **12**—connecting rod, **13**—base, **14**—guide rail, **15**—pulley, **16**—foot pedal, **17**—screw lock assembly, **18**—nut, **19**—buffer pad seat, **20**—spherical ball, **21**—annular part, **22**—fixing bracket, **221**—lug, **222**—through hole, **223**—insertion hole, **23**—conductive seat, **231**—conductive insert, and **24**—guard.

DESCRIPTION OF EMBODIMENTS

(15) To further describe embodiments, the present disclosure provides accompanying drawings. These drawings constitute a part of content of the present disclosure and are mainly used to illustrate the embodiments and to explain the operating principles of the embodiments in conjunction with the related description of the specification. With reference to the content, those of ordinary skill in the art can understand other possible embodiments and advantages of the present disclosure. Components in figures are not drawn to scale, and similar component signs are often used to refer to similar components.

(16) Referring to FIGS. **1** to **5**, as an embodiment of the present disclosure, an anti-static bearing assembly is provided, including a bearing seat **6**, a bearing mechanism **7**, and a conductive part **8**, where an accommodating slot hole **61** is provided in one side of the bearing seat **6**; the bearing mechanism **7** is mounted in the accommodating slot hole **61** and includes a bearing inner ring **71** and a bearing outer ring **72** which are coaxially arranged and relatively rotatable, and the bearing mechanism **7** in the prior art is generally a metal bearing; the bearing inner ring **71** is conductively connected to the bearing outer ring **72** by a roller or a ball, that is, the bearing mechanism **7** is integrally conductive, the bearing inner ring **71** is fixedly connected to a conductive stationary shaft **4**, and the bearing outer ring **72** is fixedly connected to the bearing seat **6**; an outer circumferential side of the bearing seat **6** is used for an armrest swing rod **5** to be fixedly sleeved on; in order to ensure the assembly precision and the processing cost, the bearing seat **6** is a plastic or rubber bearing seat **6**; a guide hole **62** communicating with the accommodating slot hole **61** is provided in the bearing seat **6**; a placement slot **63** is provided in the outer circumferential side of the bearing seat **6**; and a first end of the conductive part **8** is inserted into the guide hole **62** and is in conductive contact with the bearing mechanism **7**, and a second end of the conductive part **8** is placed in the placement slot **63** and at least partially protrudes from the outer circumferential side of the bearing seat **6**, such that the second end is capable of being in conductive contact with the armrest swing rod **5** when the bearing seat **6** is fixedly sleeved and matched with the armrest swing rod **5**. According to the present disclosure, the bearing assembly may be specifically applied to the elliptical machine, such that static electricity at the armrest swing rod **5** can be sequentially transmitted to the bearing mechanism **7** and the stationary shaft **4** through the conductive part **8**, and finally static grounding is implemented, thereby preventing the static electricity at the armrest swing rod **5** from being unable to be grounded and led out to affect usage experience of a user, making a conductive system of the elliptical machine more perfect, and improving the safety and reliability.

(17) Certainly, in other cases, the bearing seat **6** may be made of a metal, but has high requirements for mounting accuracy, is difficult to control, and has high mounting difficulty and processing cost. Therefore, the design of combining the plastic bearing seat **6** with the conductive part **8** cleverly solves the defect problems of the metal bearing seat **6** and implements the function of electricity conduction. In addition, even if the bearing seat **6** is made of an expensive and conductive material, the conductive reliability will be reduced due to wear during use, so it is necessary to add the design of the conductive part **8** to further improve the conductive reliability.

(18) In this embodiment, the conductive part **8** includes a vertical part **81**, and a first extension part **82** and a second extension part **83** located at two ends of the vertical part **81** and extending towards a same side, the first extension part **82** and the second extension part **83** form the first end and the second end, the first extension part **82** is inserted into the guide hole **62**, the first end is in conductive contact with the bearing outer ring **72** of the bearing mechanism **7**, and the second extension part **83** is placed on the placement slot **63**, such that the second end is in conductive

contact with the armrest swing rod **5**. Specifically, the first extension part **82** includes a transverse section **821** and an inclined contact section **822** located on one side of the transverse section **821** that is away from the vertical part **81**, the first end is one end of the inclined contact section **822** that is away from the transverse section and is in conductive contact with an outer circumferential side wall of the bearing outer ring **72** of the bearing mechanism **7**. This design is skillfully characterized in that the armrest swing rod **5**, the bearing seat **6**, and the bearing outer ring **72** are in a relatively static assembly relationship and do not rotate relatively, such that the conductive part **8** is assembled more stably, prevented from being worn after being used for a certain period of time, and ensured in conductive reliability and service life; and the conductive part is shorter, such that more materials and costs are saved. In addition, the inclined contact section **822** is clamped between the outer circumferential side wall of the bearing outer ring **72** and an annular side wall of the accommodating slot hole **61**, which further improves the assembly stability at the first extension part **82**.

(19) The second extension part **83** includes a placement section **831** and a bending contact section **832** located on one side of the placement section **831** that is away from the vertical part **81**, the second end is one end of the bending contact section **832** that is away from the placement section **831**, the placement section **831** is located in the placement slot **63**, and the bending contact section **832** protrudes from the placement slot **63**, such that the second end is in conductive contact with the armrest swing rod **5**. This design ensures the stability of the second extension part **83** mounted in the placement slot **63**, thereby ensuring the conductive stability. Certainly, the second extension part **83** is a separate placement section **831**, and the placement section **831** is mounted in the placement slot **63** and protrudes from the placement slot **63** to be in conductive contact with the armrest swing rod **5**. That is to say, the first extension part **82** and the second extension part **83** may be specifically bent or inclined according to an actual assembly condition, so as to ensure the best conductive effect.

(20) In other embodiments, the bearing mechanism may not be integrally conductive, for example, the bearing outer ring is a ceramic outer ring. When the bearing outer ring is a metal inner ring, the first end of the conductive part may be directly in conductive contact with the metal inner ring to transmit static electricity to the stationary shaft, and finally static grounding is implemented. However, because the armrest swing rod, the bearing seat, and the bearing outer ring are in a relatively rotating assembly relationship with the bearing inner ring, if the first end is in conductive contact with the bearing inner ring, the assembly stability of the conductive part is poor, the wear easily occurs after long-term use, the conductive reliability and the service life are reduced and shortened, the length is longer, and the cost is higher.

(21) In this embodiment, one side of the bearing seat **6** that is away from the accommodating slot hole **61** is an inner side of the bearing seat **6**; the conductive part **8** is a metal conductive part, which is more common and economical; and the conductive part **8** is U-shaped, is mounted on the inner side of the bearing seat **6**, and is provided with an opening towards an outer side. This ensures the airtightness, reliability, stability, and attractiveness of assembly between an outer side surface of the bearing seat **6** and the armrest swing rod **5**.

(22) In this embodiment, the bearing seat **6** includes an annular end cover **65** and an annular convex column **64** connected to the annular end cover, the accommodating slot hole **61** is provided in a middle of an outer side of the annular convex column **64**, a plurality of bumps **66** arranged in a radial shape are arranged on a periphery of the annular convex column **64**, upper surfaces of the bumps **66** form the outer circumferential side of the bearing seat **6**, and the placement slot is located on the upper surface of one of the bumps **66**. This design reduces the weight of the bearing seat **6** as a whole and facilitates holding and direction identification for assembly. The annular end cover **65** and the annular convex column **64** are distributed on an outer side and an inner side of the bearing seat **6** respectively, making the assembly more reasonable and attractive.

(23) Referring to FIGS. **6** to **13**, the present disclosure further provides an elliptical machine,

including the anti-static bearing assemblies described in the above embodiment, armrest swing rods **5**, and a conductively grounded stationary shaft **4**, where both the armrest swing rods **5** and the stationary shaft **4** are metal conductors, the armrest swing rods **5** are rotatably mounted on the stationary shaft **4** by the bearing assemblies and are conductively connected to the stationary shaft **4** by the bearing assemblies. Specifically, there are two armrest swing rods **5** rotatably mounted on two sides of the stationary shaft **4** by the bearing assemblies respectively, each of the armrest swing rods **5** includes an armrest **51**, a sleeve **52**, and a swing rod **53** connected in sequence, two opposite bearing assemblies are mounted on each of two sides of the stationary shaft **4**, the sleeve **52** is fixedly sleeved outside the two opposite bearing assemblies on a same side of the stationary shaft **4**, that is, annular end covers **65** of two bearing seats **6** are mounted at two ends of the sleeve **52** in a blocking manner respectively, and finally a protective cover **10** is mounted on an outer side of the sleeve **52** through locking fit between a screw **9** and the stationary shaft **4**, thereby achieving the effect of protective shielding, and improving the attractiveness. As shown in FIG. **9**, a dashed line is a transmission path of static electricity, and an arrow direction is a transmission direction. The static electricity at the armrest swing rod **5** can be transmitted to the stationary shaft **4** sequentially through the sleeve **52**, the conductive part **8**, the bearing outer ring **72**, and the bearing inner ring **71**, and finally static grounding is implemented, thereby ensuring usage experience of a user, making a conductive system of the elliptical machine more perfect, and improving the safety and reliability.

(24) In this embodiment, the elliptical machine further includes an elliptical machine body **1**, and foot pedal connecting rods **11** and connecting rods **12** pivotally connected to each other, where a conductively grounded stand column main frame **3** is arranged on the elliptical machine body **1**, the stationary shaft **4** is arranged on and conductively connected to the stand column main frame **3**, a damping rotary table **2** is arranged in the elliptical machine body **1**, a base **13** is mounted at a lower part of the elliptical machine body **1**, guide rails **14** are arranged on a rear side of the base **13** that corresponds to the elliptical machine body **1**, front ends of the connecting rods **12** are rotatably connected to the damping rotary table **2**, rear ends of the connecting rods **12** are provided with pulleys **15**, the pulleys **15** are in sliding fit with the guide rails **14**, a front end of each of the foot pedal connecting rods **11** is pivotally connected to a bottom end of the swing rod **53**, a rear end of the foot pedal connecting rod **11** is provided with a foot pedal **16**, and a data display screen and fixed handles are arranged at a top of the stand column main frame **3**.

(25) In this embodiment, the elliptical machine further includes screw lock assemblies, buffer pad seats **19**, and hollow spherical balls **20**, where an annular part **21** is fixedly mounted at the bottom end of the swing rod **53**, the spherical balls **20** are rotatably arranged in the annular parts **21**, fixing brackets **22** are arranged at upper parts of the front ends of the foot pedal connecting rods **11**, each of the fixing brackets **22** includes lugs **221**, through holes **222** for the screw lock assemblies to penetrate through and match with are provided in the lugs **221**, the spherical balls **20** are fixedly locked and mounted on the fixing brackets **22** by the screw lock assemblies, and the buffer pad seats **19** are located between the spherical balls **20** and the lugs **221**. The annular parts **21**, the fixing brackets **22**, and the spherical balls **20** are metal conductors, the annular parts **21** are in conductive contact with the spherical balls **20**, and the buffer pad seats **19** are plastic insulating parts, thereby achieving the buffering effect.

(26) In this embodiment, in order to further improve the conductive system of the elliptical machine to transmit static electricity at the foot pedal connecting rods **11** to the armrest swing rods **5** and finally implement grounding, the elliptical machine further includes a conductive seat **23** which is mounted on one side of a corresponding one of the lugs **221** and is in conductive contact with a corresponding one of the spherical balls **20** to implement conductive connection between a corresponding one of the fixing brackets **22** and a corresponding one of the annular parts **21**. Specifically, each of the screw lock assemblies includes a bolt **17** and a nut **18** matched with each other, the conductive seat **23** is mounted between the bolt **17** and the outer side wall of the lug **221**,

the conductive seat **23** extends inwards to form a conductive insert **231**, the lug **221** is provided with an insertion hole **223**, and the conductive insert **231** penetrates into the insertion hole **223** to be in conductive contact with the spherical ball **20**. This design ensures that the static electricity at the foot pedal connecting rods **11** can be transmitted to the spherical balls **20** through the conductive seats **23** and then transmitted to the stationary shaft **4** and the stand column main frame **3** sequentially through the armrest swing rods **5** and the bearing assemblies, and finally static grounding is implemented, thereby further improving the usage experience of the user, and improving the safety and reliability.

(27) In this embodiment, the bearing mechanism **7** further includes a plurality of rolling elements mounted between the bearing inner ring **71** and the bearing outer ring **72**. Specifically, the rolling elements are balls or rollers, so as to implement relative rotation and conductive connection between the bearing inner ring **71** and the bearing outer ring **72**.

(28) In this embodiment, the annular part **21**, the bolt **17**, the nut **18**, the conductive seat **23**, the buffer pad seat **19**, the spherical ball **20**, and the fixing bracket **22** constitute a pivot assembly, and a guard **24** is mounted at a periphery of the bottom end of the swing rod **53** that corresponds to the pivot assembly, is configured to shield and protect the pivot assembly, and improves the attractiveness.

(29) A usage process for the present disclosure is as follows: The user holds the armrests **51** with both hands and steps on the two pedals **16** with both feet alternately to drive the foot pedal connecting rods **11**, the connecting rods **12**, and the armrest swing rods **5** to act in cooperation, and then the damping rotary table **2** is driven to rotate, thereby achieving the purpose of body building. The operation is convenient and simple. Static electricity generated by the hands of the user can be transmitted to the stand column main frame **3** sequentially through the armrest swing rods **5**, the conductive parts **8**, the bearing mechanisms **7**, and the stationary shaft **4**, and finally the grounding is implemented. Static electricity generated by the feet of the user can be transmitted to the armrest swing rods **5** sequentially through the foot pedal connecting rods **11**, the conductive seats **23**, the spherical balls **20**, and the annular parts **21**, and finally transmitted to the stand column main frame **3** through the bearing assemblies to implement the grounding, thereby ensuring the usage experience of the user, and improving the safety and reliability.

(30) While the present disclosure has been specifically shown and described with reference to preferred embodiments, it is to be understood by those skilled in the art that various changes in form and details may be made to the present disclosure without departing from the spirit and scope of the present disclosure defined by the appended claims, and all fall within the scope of protection of the present disclosure.

Claims

1. An anti-static bearing assembly, comprising a bearing seat, a bearing mechanism, and a conductive part, wherein an accommodating slot hole is provided in one side of the bearing seat, the bearing mechanism is mounted in the accommodating slot hole and comprises a bearing inner ring and a bearing outer ring which are coaxially arranged and relatively rotatable, the bearing inner ring is fixedly connected to a conductive stationary shaft, the bearing outer ring is fixedly connected to the bearing seat, an outer circumferential side of the bearing seat is configured for an armrest swing rod to be fixedly sleeved thereon, a guide hole communicating with the accommodating slot hole is provided in the bearing seat, a placement slot is provided in the outer circumferential side of the bearing seat, a first end of the conductive part is inserted into the guide hole and is in conductive contact with the bearing mechanism, and a second end of the conductive part is placed in the placement slot and at least partially protrudes from the outer circumferential side of the bearing seat, such that the second end is configured to be in conductive contact with the armrest swing rod when the bearing seat is fixedly sleeved and matched with the armrest swing

rod.
2. The anti-static bearing assembly according to claim 1, wherein the conductive part comprises a vertical part, and a first extension part and a second extension part located at two ends of the vertical part and extending towards a same side, the first extension part and the second extension part form the first end and the second end, the first extension part is inserted into the guide hole, the first end is in conductive contact with the bearing outer ring of the bearing mechanism, and the second extension part is placed on the placement slot, such that the second end is configured to be in conductive contact with the armrest swing rod; and the bearing inner ring is conductively connected to the bearing outer ring such that the bearing mechanism is integrally conductive.
3. The anti-static bearing assembly according to claim 2, wherein the first extension part comprises a transverse section and an inclined contact section located on one side of the transverse section that is away from the vertical part, the first end is one end of the inclined contact section that is away from the transverse section and is in conductive contact with an outer circumferential side wall of the bearing outer ring of the bearing mechanism, the second extension part comprises a placement section and a bending contact section located on one side of the placement section that is away from the vertical part, the second end is one end of the bending contact section that is away from the placement section, the placement section is located in the placement slot, and the bending contact section protrudes from the placement slot, such that the second end is configured to be in conductive contact with the armrest swing rod.
4. The anti-static bearing assembly according to claim 2, wherein the bearing seat is a plastic or rubber bearing seat, one side of the bearing seat that is away from the accommodating slot hole is an inner side of the bearing seat, and the conductive part is U-shaped, is mounted on the inner side of the bearing seat, and is provided with an opening towards an outer side.
5. The anti-static bearing assembly according to claim 1, wherein the bearing seat comprises an annular end cover and an annular convex column connected to the annular end cover, the accommodating slot hole is provided in a middle of the annular convex column, a plurality of bumps arranged in a radial shape are arranged on a periphery of the annular convex column, upper surfaces of the plurality of bumps form the outer circumferential side of the bearing seat, and the placement slot is located on the upper surface of one of the plurality of bumps.
6. An elliptical machine, comprising a plurality of antistatic bearing assemblies according to claim 1, armrest swing rods, and a conductively grounded stationary shaft, wherein the armrest swing rods are rotatably mounted on the conductively grounded stationary shaft by the anti-static bearing assemblies and are conductively connected to the conductively grounded stationary shaft by the anti-static bearing assemblies.
7. The elliptical machine according to claim 6, wherein both the armrest swing rods and the conductively grounded stationary shaft are metal conductors; and there are two of the armrest swing rods rotatably mounted on two sides of the conductively grounded stationary shaft by the anti-static bearing assemblies respectively, each of the armrest swing rods comprises an armrest, a sleeve, and a swing rod connected in sequence, two opposite anti-static bearing assemblies of the anti-static bearing assemblies are mounted on each of two sides of the conductively grounded stationary shaft, and the sleeve is fixedly sleeved outside the two opposite anti-static bearing assemblies on a same side of the conductively grounded stationary shaft.
8. The elliptical machine according to claim 7, further comprising an elliptical machine body, and foot pedal connecting rods and connecting rods pivotally connected to each other, wherein a conductively grounded stand column main frame is arranged on the elliptical machine body, the conductively grounded stationary shaft is arranged on and conductively connected to the conductively grounded stand column main frame, a damping rotary table is arranged in the elliptical machine body, a base is mounted at a lower part of the elliptical machine body, guide rails are arranged on a rear side of the base that corresponds to the elliptical machine body, front ends of the connecting rods are rotatably connected to the damping rotary table, rear ends of the connecting

rods are provided with pulleys, the pulleys are in sliding fit with the guide rails, a front end of each of the foot pedal connecting rods is pivotally connected to a bottom end of the swing rod, and a rear end of each of the foot pedal connecting rods is provided with a foot pedal.

9. The elliptical machine according to claim 8, further comprising screw lock assemblies, buffer pad seats, and hollow spherical balls, wherein an annular part is fixedly mounted at the bottom end of the swing rod, the hollow spherical balls are rotatably arranged in the annular part, fixing brackets are arranged at upper parts of the front ends of the foot pedal connecting rods, each of the fixing brackets comprises lugs, through holes for the screw lock assemblies to penetrate through and match with are provided in the lugs, the hollow spherical balls are fixedly locked and mounted on the fixing brackets by the screw lock assemblies, and the buffer pad seats are located between the hollow spherical balls and the lugs.

10. The elliptical machine according to claim 9, wherein the annular part, the fixing brackets, and the hollow spherical balls are metal conductors, the annular part is in conductive contact with the hollow spherical balls, and the buffer pad seats are plastic insulating parts; and the elliptical machine further comprises a conductive seat which is mounted on one side of a corresponding one of the lugs and is in conductive contact with a corresponding one of the hollow spherical balls to implement conductive connection between a corresponding one of the fixing brackets and the annular part.