Claims

1. A unipod rotating apparatus, comprising a ~~main rod~~main tube (1), an adapting platform (2) for fixing a photographic equipment, and a rotating device connecting the adapting platform (2) to said ~~main rod~~main tube (1) in a rotatable manner, wherein,

said rotating device comprises

a rotating tube (3), sleeved around said ~~main rod~~main tube (1);

a first connecting structure, fixedly connecting said adapting platform (2) to an upper end of said rotating tube (3);

a second connecting structure, fixedly connected to an upper end of said ~~main rod~~main tube (1); and

a rotation connecting structure, arranged between said first connecting structure and said second connecting structure, such that said first connecting structure and said second connecting structure are connected with each other in a relatively rotatable manner.

2. The unipod rotating apparatus of claim 1, wherein,

said first connecting structure comprises an upper joint (41) and an adapting screw (42), wherein an upper joint internal threaded hole is axially formed in said upper joint (41), and said adapting platform (2) is connected to said upper joint (41) in such a manner that said adapting screw (42) passes through said upper joint internal threaded hole; said upper end inner wall of said rotating tube (3) and an outer wall of said upper joint (41) are connected by means of threads;

said second connecting structure comprises a ~~main rod~~main tube joint (51), and an inner wall of said upper end of said ~~main rod~~main tube (1) and an outer wall of the ~~main rod~~main tube joint (51) are in threaded connection with each other; and

said rotation connecting structure comprises a connecting seat (61) arranged between said upper joint (41) and said ~~main rod~~main tube joint (51), and a connecting screw (62), wherein a stepped hole is axially formed in said connecting seat (61), and

an inner wall of the stepped hole and an lower end outer wall of said upper joint (41) are in threaded connection with each other; a head of said connecting screw (62) is disposed in said stepped hole, and abuts against an step surface of said stepped hole; and a threaded rod part of said connecting screw (62) protrudes out of said stepped hole and is in threaded connection with a first ~~main rod~~main tube threaded hole formed on said ~~main rod~~main tube joint (51).

3. The unipod rotating apparatus of claim 2, wherein,

said connecting seat (61) is in the shape of a drum with a central hole formed on a bottom face thereof; said stepped hole is formed by the drum-shaped inner cavity of said connecting seat (61) and said central hole; and an accommodating cavity adapted for receiving a lower end of the connecting seat (61) is formed in said ~~main rod~~main tube joint (51), and said first ~~main rod~~main tube threaded hole is coaxially provided at a lower end of said accommodating cavity and is communicated with said accommodating cavity.

4. The unipod rotating apparatus of claim 2, wherein,

said upper joint internal threaded hole of said upper joint (41) is provided at a lower end of said upper joint (41), and an insertion hole is provided at an upper end of said upper joint (41), and is coaxially communicated with said upper joint internal threaded hole; a boss adapted for being inserted into insertion hole is formed at a lower end of the adapting platform (2), and said adapting platform (2) is axially provided with a stepped hole, which passes through said boss; said adapting screw (42) is a stud with a stop flange in the middle and threads at both ends, said stop flange of said stub abuts against a step surface of said adapting platform (2), and a lower end of said stud passes through said insertion hole and is screwed into said upper joint internal threaded hole; and a radial threaded hole communicated with said upper joint internal threaded hole is radially formed on a side wall of said upper joint (41), and a fastening screw (84) passes through said radial threaded hole and abuts against said

boss of said adapting platform (2) to lock said adapting platform (2).

5. The unipod rotating apparatus of claim 1, wherein,

said first connecting structure comprises a top end joint (43), an adapting screw (42) and a rotating tube connecting seat (44), wherein, a top end internal threaded hole is formed axially in said top end joint (43), and said adapting platform (2) is connected to said top end joint (43) in such a manner that said adapting screw (42) passes through said top end internal threaded hole; said rotating tube connecting seat (44) is arranged between said top end joint (43) and an upper end of the rotating tube (3), and said upper end of said rotating tube (3) is adapted for being in threaded connection with said top end joint (43); and a lower end of the rotating tube connecting seat (~~3~~44) is adapted for being in threaded connection with said upper end of the rotating tube (3);

said second connecting structure is a ~~main rod~~main tube joint (51), and a lower end inner wall of said ~~main rod~~main tube joint (51) is in threaded connection with said upper end outer wall of said ~~main rod~~main tube (1);

said rotation connecting structure is a connecting screw (62); a through hole is formed in the rotating tube connecting seat (44), and a second ~~main rod~~main tube threaded hole coaxial with said through hole is formed in said ~~main rod~~main tube joint (51); and said connecting screw (62) successively passes through said though hole and said second ~~main rod~~main tube threaded hole, and connects said rotating tube connecting seat (44) with said ~~main rod~~main tube joint (51).

6. The unipod rotating apparatus of claim 5, wherein,

a cylindrical boss is formed on a lower end face of said top end joint (43), and a second ~~main rod~~main tube internal threaded hole is formed in said cylindrical boss, and an insertion hole adapted for insertion of the cylindrical boss is formed at the center of the head end face of the connecting screw (62).

7. The unipod rotating apparatus of claim 5, wherein,

said top end internal threaded hole of said top end joint (43) is provided at a lower end of said top end joint (43), and an insertion hole is provided at an upper end of said top end joint (43), and is coaxially communicated with said top end internal threaded hole; a boss adapted for being inserted into said insertion hole is formed at a lower end of said adapting platform (2), and said adapting platform (2) is axially provided with a stepped hole, which passes through said boss; said adapting screw (42) is a stud with a stop flange in the middle and threads at both ends, said stop flange of said stub abuts against a step surface of said adapting platform (2), and a lower end of said stud passes through said insertion hole and is screwed into said top end internal threaded hole; and a radial threaded hole communicated with said top end internal threaded hole is radially formed on a side wall of said top end joint (43), and a fastening screw (84) passes through said radial threaded hole and abuts against said boss of said adapting platform (2) to lock said adapting platform (2).

8. The unipod rotating apparatus of claim 1, wherein, further comprising a locking structure, which comprises

a ~~fixing rod~~fixing tube (71) sleeved around said ~~main rod~~main tube (1) and arranged inside said rotating tube (3), an upper end of said ~~fixing rod~~fixing tube (71) connected with said ~~main rod~~main tube joint (51);

a locking port (72) being cone-shaped, arranged at a lower end of said rotating tube (3), and located between an inner wall of said rotating tube (3) and an outer wall of said ~~fixing rod~~fixing tube (71); and

a locking assembly comprising a conical locking ring (73) adapted for being inserted into said locking port (72) for cooperation in a locking manner, and a locking knob (74) connected with said locking ring (73), wherein, said locking knob (74) is arranged at a lower end of said ~~fixing rod~~fixing tube (71) in such a manner that the locking knob is axially reciprocal movable along said ~~fixing rod~~fixing tube (71), so as to be able to drive said locking ring (73) to be inserted into or separated from said

locking port (72).

9. The unipod rotating apparatus of claim 8, wherein,

a rotating tube lower joint (31) is provided at the lower end of the rotating tube (3), and said rotating tube lower joint (31) is in threaded connection with said lower end of the rotating tube (3); and said locking port (72) is formed by an inner cavity of said rotating tube lower joint (31) and said outer wall of said ~~fixing rod~~fixing tube (71).

10. The unipod rotating apparatus of claim 9, wherein,

a recess is formed below a joint between said rotating tube lower joint (31) and said rotating tube (3), and a rubber ring (32) is disposed in said recess.

11. The unipod rotating apparatus of claim 10, wherein,

said locking knob (74) is arranged at said lower end of said ~~fixing rod~~fixing tube (71) and in threaded connection with said lower end of said ~~fixing rod~~fixing tube (71).

12. The unipod rotating apparatus of claim 11, wherein,

a ~~fixing rod~~fixing tube lower joint (75) is provided at said lower end of said ~~fixing rod~~fixing tube (71) , and said locking knob (74) is threaded connection with said ~~fixing rod~~fixing tube lower joint (75).

13. The unipod rotating apparatus of claim 12, wherein,

a recess is formed on an outer side wall of said locking ring (73) , and a projection for insertion into the recess is formed on an inner side wall of said locking knob (74) ; and said locking knob (74) is adapted for driving said locking ring (73) to lock outward or retract through cooperation of said recess and said projection.

14. The unipod rotating apparatus of claims 1, wherein,

a wear-proof ring (81) is connected to a lower end of said rotating tube (3) and sleeved around the ~~main rod~~main tube (1).

15. The unipod rotating apparatus of claim 2, wherein,

a gasket (82) is arranged between said connecting screw (62) and said connecting seat (61).

16. The unipod rotating apparatus of claim 1, wherein,

a wrist strap buckle (83) is arranged below said adapting platform (2).

17. The unipod rotating apparatus of claim 1, wherein,

a hand guard sheath (85) is sleeved around said rotating tube (3).

Claims

1. A unipod rotating apparatus, comprising a main tube (1), an adapting platform (2) for fixing a photographic equipment, and a rotating device connecting the adapting platform (2) to said main tube (1) in a rotatable manner, wherein,

said rotating device comprises

a rotating tube (3), sleeved around said main tube (1);

a first connecting structure, fixedly connecting said adapting platform (2) to an upper end of said rotating tube (3);

a second connecting structure, fixedly connected to an upper end of said main tube (1); and

a rotation connecting structure, arranged between said first connecting structure and said second connecting structure, such that said first connecting structure and said second connecting structure are connected with each other in a relatively rotatable manner.

2. The unipod rotating apparatus of claim 1, wherein,

said first connecting structure comprises an upper joint (41) and an adapting screw (42), wherein an upper joint internal threaded hole is axially formed in said upper joint (41), and said adapting platform (2) is connected to said upper joint (41) in such a manner that said adapting screw (42) passes through said upper joint internal threaded hole; said upper end inner wall of said rotating tube (3) and an outer wall of said upper joint (41) are connected by means of threads;

said second connecting structure comprises a main tube joint (51), and an inner wall of said upper end of said main tube (1) and an outer wall of the main tube joint (51) are in threaded connection with each other; and

said rotation connecting structure comprises a connecting seat (61) arranged between said upper joint (41) and said main tube joint (51), and a connecting screw (62), wherein a stepped hole is axially formed in said connecting seat (61), and an

inner wall of the stepped hole and an lower end outer wall of said upper joint (41) are in threaded connection with each other; a head of said connecting screw (62) is disposed in said stepped hole, and abuts against an step surface of said stepped hole; and a threaded rod part of said connecting screw (62) protrudes out of said stepped hole and is in threaded connection with a first main tube threaded hole formed on said main tube joint (51).

3. The unipod rotating apparatus of claim 2, wherein,

said connecting seat (61) is in the shape of a drum with a central hole formed on a bottom face thereof; said stepped hole is formed by the drum-shaped inner cavity of said connecting seat (61) and said central hole; and an accommodating cavity adapted for receiving a lower end of the connecting seat (61) is formed in said main tube joint (51), and said first main tube threaded hole is coaxially provided at a lower end of said accommodating cavity and is communicated with said accommodating cavity.

4. The unipod rotating apparatus of claim 2, wherein,

said upper joint internal threaded hole of said upper joint (41) is provided at a lower end of said upper joint (41), and an insertion hole is provided at an upper end of said upper joint (41), and is coaxially communicated with said upper joint internal threaded hole; a boss adapted for being inserted into insertion hole is formed at a lower end of the adapting platform (2), and said adapting platform (2) is axially provided with a stepped hole, which passes through said boss; said adapting screw (42) is a stud with a stop flange in the middle and threads at both ends, said stop flange of said stub abuts against a step surface of said adapting platform (2), and a lower end of said stud passes through said insertion hole and is screwed into said upper joint internal threaded hole; and a radial threaded hole communicated with said upper joint internal threaded hole is radially formed on a side wall of said upper joint (41), and a fastening screw (84) passes through said radial threaded hole and abuts against said boss of said adapting platform (2) to lock said adapting platform (2).

5. The unipod rotating apparatus of claim 1, wherein,

said first connecting structure comprises a top end joint (43), an adapting screw (42) and a rotating tube connecting seat (44), wherein, a top end internal threaded hole is formed axially in said top end joint (43), and said adapting platform (2) is connected to said top end joint (43) in such a manner that said adapting screw (42) passes through said top end internal threaded hole; said rotating tube connecting seat (44) is arranged between said top end joint (43) and an upper end of the rotating tube (3), and said upper end of said rotating tube (3) is adapted for being in threaded connection with said top end joint (43); and a lower end of the rotating tube connecting seat (44) is adapted for being in threaded connection with said upper end of the rotating tube (3);

said second connecting structure is a main tube joint (51), and a lower end inner wall of said main tube joint (51) is in threaded connection with said upper end outer wall of said main tube (1);

said rotation connecting structure is a connecting screw (62); a through hole is formed in the rotating tube connecting seat (44), and a second main tube threaded hole coaxial with said through hole is formed in said main tube joint (51); and said connecting screw (62) successively passes through said though hole and said second main tube threaded hole, and connects said rotating tube connecting seat (44) with said main tube joint (51).

6. The unipod rotating apparatus of claim 5, wherein,

a cylindrical boss is formed on a lower end face of said top end joint (43), and a second main tube internal threaded hole is formed in said cylindrical boss, and an insertion hole adapted for insertion of the cylindrical boss is formed at the center of the head end face of the connecting screw (62).

7. The unipod rotating apparatus of claim 5, wherein,

said top end internal threaded hole of said top end joint (43) is provided at a lower end of said top end joint (43), and an insertion hole is provided at an upper end of said top end joint (43), and is coaxially communicated with said top end internal threaded hole; a boss adapted for being inserted into said insertion hole is formed at a lower end of said adapting platform (2), and said adapting platform (2) is axially provided with a stepped hole, which passes through said boss; said adapting screw (42) is a stud with a stop flange in the middle and threads at both ends, said stop flange of said stub abuts against a step surface of said adapting platform (2), and a lower end of said stud passes through said insertion hole and is screwed into said top end internal threaded hole; and a radial threaded hole communicated with said top end internal threaded hole is radially formed on a side wall of said top end joint (43), and a fastening screw (84) passes through said radial threaded hole and abuts against said boss of said adapting platform (2) to lock said adapting platform (2).

8. The unipod rotating apparatus of claim 1, wherein, further comprising a locking structure, which comprises

a fixing tube (71) sleeved around said main tube (1) and arranged inside said rotating tube (3), an upper end of said fixing tube (71) connected with said main tube joint (51);

a locking port (72) being cone-shaped, arranged at a lower end of said rotating tube (3), and located between an inner wall of said rotating tube (3) and an outer wall of said fixing tube (71); and

a locking assembly comprising a conical locking ring (73) adapted for being inserted into said locking port (72) for cooperation in a locking manner, and a locking knob (74) connected with said locking ring (73), wherein, said locking knob (74) is arranged at a lower end of said fixing tube (71) in such a manner that the locking knob is axially reciprocal movable along said fixing tube (71), so as to be able to drive said locking ring (73) to be inserted into or separated from said locking port (72).

9. The unipod rotating apparatus of claim 8, wherein,

a rotating tube lower joint (31) is provided at the lower end of the rotating tube (3), and said rotating tube lower joint (31) is in threaded connection with said lower end of the rotating tube (3); and said locking port (72) is formed by an inner cavity of said rotating tube lower joint (31) and said outer wall of said fixing tube (71).

10. The unipod rotating apparatus of claim 9, wherein,

a recess is formed below a joint between said rotating tube lower joint (31) and said rotating tube (3), and a rubber ring (32) is disposed in said recess.

11. The unipod rotating apparatus of claim 10, wherein,

said locking knob (74) is arranged at said lower end of said fixing tube (71) and in threaded connection with said lower end of said fixing tube (71).

12. The unipod rotating apparatus of claim 11, wherein,

a fixing tube lower joint (75) is provided at said lower end of said fixing tube (71) , and said locking knob (74) is threaded connection with said fixing tube lower joint (75).

13. The unipod rotating apparatus of claim 12, wherein,

a recess is formed on an outer side wall of said locking ring (73) , and a projection for insertion into the recess is formed on an inner side wall of said locking knob (74) ; and said locking knob (74) is adapted for driving said locking ring (73) to lock outward or retract through cooperation of said recess and said projection.

14. The unipod rotating apparatus of claims 1, wherein,

a wear-proof ring (81) is connected to a lower end of said rotating tube (3) and sleeved around the main tube (1).

15. The unipod rotating apparatus of claim 2, wherein,

a gasket (82) is arranged between said connecting screw (62) and said connecting seat (61).

16. The unipod rotating apparatus of claim 1, wherein,

a wrist strap buckle (83) is arranged below said adapting platform (2).

17. The unipod rotating apparatus of claim 1, wherein,

a hand guard sheath (85) is sleeved around said rotating tube (3).