CLAIMS

1. A biaxial tourbillion mechanism of a mechanical watch, wherein the biaxial tourbillion mechanism is an open tandem-type structure, comprising a main plate ~~(1)~~, a third wheel component, a first support component, an inner tourbillion ~~(17)~~, a second support component and a transmission gear train, wherein the inner tourbillion ~~(17)~~ is provided on a first second bridge ~~(9)~~; a first support shaft on the first support component and a intermediate wheel ~~(4)~~ in the third wheel component are fixed as one body; a second support shaft on the second support component and a fourth second wheel in the transmission gear train are fixed as one body; the shaft centre of the first support shaft and that of the second support shaft are located on the same horizontal axis; and the third wheel component and the transmission gear train are provided on the main plate ~~(1).~~; wherein

the first support component comprises a first support shaft, a first jewelled bearing and a first support, wherein the first support shaft is provided on the first jewelled bearing of the first support; the first support shaft forms a square-shaped convex part matched with the inner diameter of the intermediate wheel; the second support component comprises a second support shaft, a second jewelled bearing and a second support, wherein the second support shaft is provided on the second jewelled bearing of the second support; and the first support shaft and the second support shaft are fixed on the first second bridge with a pillar and a bolt, respectively; and wherein

the third wheel component comprises a first third contrate gear, a third wheel gear and an intermediate wheel, wherein the third wheel gear and the first third contrate gear are riveted as one body and provided on a lower bridge; the intermediate wheel and the third wheel gear are meshed with each other; the transmission gear train comprises a fourth second wheel, a third second wheel gear, a third second wheel pinion, a second second wheel gear, a second second wheel pinion and a first second wheel pinion, wherein the fourth second wheel is fixed on the second support with the bolt;

the third second wheel gear and the third second wheel pinion are riveted as one body and provided on the second second bridge; the third second wheel gear and the fourth second wheel are meshed; the second second wheel gear and the second second wheel pinion are riveted as one body; the second second wheel gear and the third second wheel pinion are meshed; the first second wheel pinion and an inner tourbillion are fixed as one body; the first second wheel pinion is meshed with the second second wheel gear; and the second support is fixed on the main plate through the regulated device.

~~2. The biaxial tourbillion mechanism of the mechanical watch according to claim 1, wherein the first support component comprises a first support shaft (5), a first jewelled bearing (6) and a first support (7), wherein the first support shaft (5) is provided on the first jewelled bearing (6) of the first support (7); the first support shaft (5) forms a square-shaped convex part matched with the inner diameter of the intermediate wheel (4); the second support component comprises a second support shaft (10), a second jewelled bearing (11) and a seond support (12), wherein the second support shaft (10) is provided on the second jewelled bearing (11) of the second support (12); and the first support shaft (5) and the second support shaft (10) are fixed on the first second bridge (9) with a pillar (8) and a bolt, respectively.~~

~~3~~2. The biaxial tourbillion mechanism of the mechanical watch according to claim 1 ~~or 2~~, wherein the mechanism also comprises a regulated device; the regulated device regulates the axial highness of the second support ~~(12)~~ and further slightly regulates the coaxiality of the second jewelled bearing ~~(11)~~ born by the second support shaft ~~(10)~~ and the first jewelled bearing ~~(6)~~ born by the first support shaft ~~(5)~~; the regulated device comprises a tapped foot ~~(19)~~, a bushing ~~(20)~~, a bearing spring ~~(21)~~ and a regulated nut ~~(22)~~, wherein the regulated nut ~~(22)~~ and the bushing ~~(20)~~ are provided on the outer peripheral surface of the tapped foot ~~(19)~~; and the bearing spring ~~(21)~~ is provided between the regulated nut ~~(22)~~ and the bushing ~~(20)~~.

~~4~~3. The biaxial tourbillion mechanism of the mechanical watch according to claim 1 ~~or 2~~, wherein the mechanism also comprises the regulated device; the regulated device

comprises the tapped foot ~~(19)~~ and the bushing ~~(20)~~; and the highness of the bushing ~~(20)~~ is 0. 2－0. 5mm.

~~5. The biaxial tourbillion mechanism of the mechanical watch according to claim 1, wherein the third wheel component comprises a first third contrate gear (3a), a third wheel gear (3b) and an intermediate wheel (4), wherein the third wheel gear (3b) and the first third contrate gear (3a) are riveted as one body and provided on a lower bridge (2); the intermediate wheel (4) and the third wheel gear (3b) are meshed with each other; the transmission gear train comprises a fourth second wheel (13), a third second wheel gear (14a), a third second wheel pinion (14b), a second second wheel gear (15a), a second second wheel pinion (15b) and a first second wheel pinion (16), wherein the fourth second wheel (13) is fixed on the second support (12) with the bolt; the third second wheel gear (14a) and the third second wheel pinion (14b) are riveted as one body and provided on the second second bridge (18); the third second wheel gear (14a) and the fourth second wheel (13) are meshed; the second second wheel gear (15a) and the second second wheel pinion (15b) are riveted as one body; the second second wheel gear (15a) and the third second wheel pinion (14b) are meshed; the first second wheel pinion (16) and an inner tourbillion (17) are fixed as one body; the first second wheel pinion (16) is meshed with the second second wheel gear (15a); and the second support (12) is fixed on the main plate (1) through the regulated device.~~

~~6~~4. The biaxial tourbillion mechanism of the mechanical watch according to claim 1 or 2, wherein the third wheel gear ~~(3b)~~, the intermediate wheel ~~(4)~~, the fourth second wheel ~~(13)~~ and the third second wheel gear ~~(14a)~~ are all conical gears.

~~7~~5. The biaxial tourbillion mechanism of the mechanical watch according to claim 1, wherein the gear number proportion of the intermediate wheel ~~(4)~~ against the third wheel gear ~~(3b)~~ is 1:1; and the gear number proportion of the third second wheel pinion ~~(14b)~~ against the first second wheel pinion ~~(16)~~ is 1:1.

~~8~~6. The biaxial tourbillion mechanism of the mechanical watch according to claim ~~5~~1,

wherein the rotational speed of the outer framework is 2-10 minutes/cycle; the rotational speed of the inner tourbillion is 1 minute/cycle; and the gear number proportion of the third second wheel gear ~~(14a)~~ against the fourth second wheel ~~(13)~~ is 1: (2-10).

~~9~~7. The biaxial tourbillion mechanism of the mechanical watch according to claim ~~8~~6, wherein the gear number proportion of the third second wheel gear ~~(14a)~~ against the fourth second wheel ~~(13)~~ is 1: (2. 5) or 1:5.