Claims:

1. A single-channel chemiluminescent micro-fluidic chip, including a chip body, wherein the chip body includes an optical path scanning window, a whole blood filter cavity, a quantification-reaction cavity and a waste liquid cavity, a fluid outlet of the whole blood filter cavity is sequentially communicated with the quantification-reaction cavity and the waste liquid cavity through a micro-fluidic passage, the optical path scanning window is disposed over the quantification-reaction cavity, a fluid inlet of the quantification-reaction cavity is communicated with external fluid paths through a cleaning solution delivery branch and a chromogenic reagent delivery branch respectively, and the whole blood filter cavity is communicated with an external air path; characterized in that the quantification-reaction cavity is composed of a quantification-reaction pool on a lower portion and a reaction pool cover plate for sealing an opening of the quantification-reaction pool, the quantification-reaction pool is equally divided into three cavities by two partition plates a disposed perpendicular to a fluid flow direction, a labeled antibody is placed in the middle cavity, coated antibodies are placed in the partitioned cavities on two sides, a surface, facing the quantification-reaction pool, of the reaction pool cover plate is equally divided into two cover plate parts by a partition plate b disposed perpendicular to the fluid flow direction, and the coated antibodies are embedded in the cover plate parts.

2. The single-channel chemiluminescent micro-fluidic chip according to claim 1, wherein the fluid outlet of the whole blood filter cavity is communicated with the fluid inlet of the quantification-reaction cavity through a first anti-backflow device, and a fluid outlet of the cleaning solution delivery branch and a fluid outlet of the chromogenic reagent delivery branch are converged and then communicated with the fluid inlet of the quantification-reaction pool through a second anti-backflow device; the first

anti-backflow device and the second anti-backflow device are of the same structure and each includes an anti-backflow structure located above the micro-fluidic passage and provided with an anti-backflow passage for increasing a liquid level of the micro-fluidic passage at an anti-backflow structure mounting position; and when the micro-fluidic passage is communicated with the external air path, fluid in the micro-fluidic passage through both sides of each said anti-backflow device is driven by air from the external air path to circulate by overcoming a pressure generated by the liquid level, increased by the corresponding anti-backflow passage at the corresponding anti-backflow structure mounting position, of the micro-fluidic passage.

3. The single-channel chemiluminescent micro-fluidic chip according to claim 1, wherein a valve device is disposed on the micro-fluidic passage between the quantification-reaction cavity and the waste liquid cavity and includes a detection mechanism used to sense whether or not fluid flows through a valve device mounting position; the valve device in a normally-open state in the chip body automatically closes to be in an interruption state when a numerical value fed back by the detection mechanism indicates that fluid flows through the valve device mounting position, and the valve device in the interruption state is regularly opened to be in a circulation state; and when the valve device is in the circulation state, fluid is pushed by air flow from the external air path to circulate in the valve device.

4. The single-channel chemiluminescent micro-fluidic chip according to claim 1, wherein first absorbent paper is disposed in the waste liquid cavity, and the waste liquid cavity is provided with two waste cavity parts communicated with each other, namely a waste liquid cavity part a and waste liquid cavity part b, wherein an air flow channel is formed between an inner wall of the waste liquid cavity part a and the first absorbent paper, and the waste liquid cavity part b is provided with an air outlet.

5. The single-channel chemiluminescent micro-fluidic chip according to claim 4, wherein the waste liquid cavity includes a waste liquid pool, a middle cover plate for sealing an opening of the waste liquid pool, and an upper cover plate for covering the middle cover plate; a plurality of waste liquid guiding components are disposed on a wall, corresponding to the waste liquid cavity part a, of the waste liquid pool, and absorbent paper fixing columns are disposed at a bottom of the waste liquid pool and are adjacent to the waste liquid guiding components; the waste liquid guiding components are each in an arc tooth shape and sequentially disposed on the corresponding wall of the waste liquid pool in respective arc directions, the first absorbent paper is disposed in the waste liquid pool through absorbent paper fixing columns, and a side edge of the first absorbent paper makes contact with tips of the waste liquid guiding components; the middle cover plate is provided with a middle through hole, communicated with the opening of the waste liquid pool, at a position corresponding to the waste liquid cavity part a and a middle vent hole, communicated with the opening of the waste liquid pool, at a position corresponding to the waste liquid cavity part b; an absorbent paper groove is formed in a position of the middle vent hole, and second absorbent paper is disposed in the absorbent paper groove; and the upper cover plate is provided with a vent hole sealing cover, used to cover the middle vent hole, at a position corresponding to the middle vent hole and an upper vent hole, communicated with the middle vent hole, at a position corresponding to the middle vent hole.

6. The single-channel chemiluminescent micro-fluidic chip according to claim 1, wherein the whole blood filter cavity is provided with a sample inlet part to be connected with external gas, the sample inlet part is provided with a sample introduction port and riser vents, and the distance from each said riser vent to a bottom of the whole blood filter cavity is greater than the distance from the sample introduction port to the bottom of the

whole blood filter cavity.

7. The single-channel chemiluminescent micro-fluidic chip according to claim 6, wherein the sample inlet part is provided with an annular groove and an annular flange, an outer side wall of the annular flange is an inner side wall of the annular groove, and an air source connector is disposed in the annular groove; and the riser vents include a first riser vent and a second riser vent, the first riser vent is formed in an end face of the annular flange connected with the a sample introduction port through a convergence transition face, the second riser vent is formed in the convergence transition face and is next to an inner wall of the annular flange, and the second riser vent is adjacent to the first riser vent in position.

8. The single-channel chemiluminescent micro-fluidic chip according to claim 6, wherein the whole blood filter cavity includes a whole blood sample filter tank and a top cover for sealing the whole blood sample filter tank, and the sample inlet part is disposed on the top cover; the whole blood sample filter tank is provided with a filtered sample outlet and has a side wall extending to the filtered sample outlet in a gradually converging mode, and the side wall extending in the gradually converging mode is provided with teeth used for guiding flow; and whole blood sample filter paper is laid in the whole blood sample filter tank, and a side edge of the whole blood sample filter paper makes contact with internal tips of the adjacent teeth on the tooth-shaped side wall of the whole blood sample filter cavity.

9. A single-channel chemiluminescent micro-fluidic chip, including a chip body; characterized in that the chip body is of a three-piece structure and includes an upper chip layer, a middle chip layer and a lower chip layer sequentially stacked together from top to bottom, and every two of the upper chip layer, the middle chip layer and the lower chip layer are stacked together through cooperative connection of positioning columns and

positioning holes; wherein:

a whole blood filter tank, a quantification-reaction pool and a waste liquid pool are disposed on the lower chip layer, a fluid outlet of the whole blood filter tank is sequentially communicated with the quantification-reaction pool and the waste liquid pool through a micro-fluidic passage, a fluid inlet of the quantification-reaction pool is communicated with corresponding external fluid paths through a cleaning solution delivery branch and a chromogenic reagent delivery branch respectively, and the whole blood filter tank is communicated with an external air path;

the quantification-reaction pool is equally divided into three cavities by two partition plates a disposed perpendicular to a fluid flow direction, a labeled antibody is placed in the middle cavity, and coated antibodies are placed in the partitioned cavities on two sides; and a surface, facing the quantification-reaction pool, of the reaction pool cover plate is equally divided into two cover plate parts by a partition plate b disposed perpendicular to the fluid flow direction, and the coated antibodies are embedded in the cover plate parts;

the middle chip layer is provided with a sample inlet part at a position corresponding to the whole blood filter tank, the reaction pool cover plate, used for sealing an opening of the quantification-reaction pool, is disposed at a position corresponding to the quantification-reaction pool, a middle cover plate, used for sealing an opening of the waste liquid pool, is disposed at a position corresponding to the waste liquid pool, a cleaning solution connector is disposed at a position corresponding to a fluid inlet of the cleaning solution delivery branch, and a chromogenic reagent connector is disposed at a position corresponding to a fluid inlet of the chromogenic reagent delivery branch;

the upper chip layer is provided with a sample inlet part through hole at a position corresponding to the sample inlet part, an optical path scanning window is disposed at a position corresponding to the reaction pool cover plate, an upper cover plate is disposed at a position corresponding to the middle cover plate, a cleaning solution connector through hole is disposed at a position corresponding to the cleaning solution connector, and a chromogenic reagent connector through hole is disposed at a position corresponding to the chromogenic reagent connector;

a first anti-backflow device is disposed at the micro-fluidic passage between the whole blood filter tank and the quantification-reaction pool, and a second anti-backflow device is disposed on the micro-fluidic passage from a junction of the cleaning solution delivery branch and a chromogenic reagent delivery branch to the quantification-reaction pool;

the first anti-backflow device and the second anti-backflow device are of a same structure and each includes an anti-backflow structure located above the micro-fluidic passage and provided with an anti-backflow passage for increasing a liquid level of the micro-fluidic passage at an anti-backflow structure mounting position; and when the micro-fluidic passage is communicated with the external air path, fluid in the micro-fluidic passage on both sides of each said anti-backflow device is driven by air from the external air path to circulate by overcoming a pressure generated by the liquid level, increased by the corresponding anti-backflow passage at the corresponding anti-backflow structure mounting position, of the micro-fluidic passage;

a valve device is disposed on the micro-fluidic passage between the quantification-reaction pool and the waste liquid pool and includes a detection

mechanism used to sense whether or not fluid flows through a valve device mounting position; the valve device in a normally-open state in the chip body automatically closes to be in an interruption state when a numerical value fed back by the detection mechanism indicates that fluid flows through the valve device mounting position, and the valve device in the interruption state can be regularly opened to be in a circulation state; and when the valve device is in the circulation state, fluid is pushed by air flow from the external air path to circulate in the valve device.