

Claims

1. A needle device, wherein the needle device comprises:

a needle base, having a first side which is close to skin when using;

a needle head, having a first end which is connected to the needle base, the needle head extends parallel to the first side;

a first structure part, the first structure part is arranged outside the needle base and slip matches with the needle base along extension direction of the needle head, a first limit mechanism is arranged between the first structure part and the needle base, the first limit mechanism is adapted to prevent the first structure part being separated from the needle base along extension direction of the needle head;

a second structure part, the second structure part is arranged outside the first structure part and slip matches with the first structure part along extension direction of the needle head, a second limit mechanism is arranged between the first structure part and the second structure part, the second limit mechanism is adapted to prevent the second structure part being separated from the first structure part along extension direction of the needle head;

the first structure part and the second structure part are adapted to slide along the extension direction of the needle head for holding a second end opposite to the first end into the second structure part; and the needle base at least comprises an installation portion, the installation portion is a segment of the needle base that may be covered by the first structure part during process of slip match of the first structure part, the first structure part does not exceed first side of the installation portion.

2. The needle device of claim 1, wherein the first limit mechanism comprises a first limit structure and a second limit structure respectively formed on the needle base and the first structure part, the first limit structure and the second limit structure are adapted to prevent the first structure part being separated from the needle base along the extension direction of the needle head through mutual match;

or the first limit mechanism comprises a first limit structure and a second limit structure respectively formed on the needle base and the first structure part, the first limit structure and the second limit structure are adapted to prevent the first structure part being separated from the needle base along the extension direction of the needle head through mutual match; the first limit structure and the second limit structure are adapted to lock the first structure part relative to the needle base when the first structure part moves to a first lock position along the extension direction of the needle head.

3. The needle device of claim 2, wherein at least one first limit structure is arranged on upper surface of the needle base, the first structure comprises a containing space, at least one elastic limit portion is arranged in the containing space, the elastic limit portion prevents the first limit structure from moving toward fixed end of the elastic limit portion when the first limit structure moves to a position between inner wall of the containing space and free end of the elastic limit portion.

4. The needle device of claim 3, wherein the first limit structure is a protrusion portion, the containing space is a through hole;

or the first limit structure is a protrusion portion, the containing space is a through hole; the first structure part further has a bar groove, the bar groove is communicated with the containing space, the bar groove is located above the protrusion portion;

or the first limit structure is a protrusion portion, the containing space is a through hole; the first structure part further has a bar groove, the bar groove is communicated with the containing space, the bar groove is located above the protrusion portion; the needle device comprises two elastic limit portions, two elastic limit portions are separately located at both sides of the bar groove;

or the first limit structure is a protrusion portion, the containing space is a through hole; the first structure part further has a bar groove, the bar groove is communicated with the containing space, the bar groove is located above the protrusion portion; the needle device comprises two elastic limit portions, two elastic limit portions are separately located at both sides of the bar groove; distance between the free ends of two elastic limit portions is less than distance between the fixed ends of two elastic limit portions;

or the first limit structure is a protrusion portion, the containing space is a through hole; the first structure part further has a bar groove, the bar groove is communicated with the containing space, the bar groove is located above the protrusion portion; the needle device comprises two elastic limit portions, two elastic limit portions are both located at one side of the bar groove; the needle device comprises two protrusion portions, two protrusion portions match with two elastic limit portions respectively;

or the first limit structure is a protrusion portion, the containing space is a through hole; the first structure part further has a bar groove, the bar groove is communicated with the containing space, the bar groove is located above the protrusion portion; the needle device comprises four elastic limit portions, two elastic limit portions are located at one side of the bar groove, and the other two elastic limit portions are located at the other side of the bar groove.

5. The needle device of at least one of claims 2 to 4, wherein,

the first limit structure has an inclined plane engaging with outer surface of the needle base, the inclined plane locates at a side of the needle base adjacent to the second end of the needle head, the first limit structure has a recess groove at top;

the second limit structure is an elastic limit portion at a side of the first structure part that is away from the second end of the needle head, the elastic limit portion has an elastic limit portion chunk; the inclined plane of the first limit structure is adapted to slip match with the elastic limit portion chunk to elastically deform the elastic limit portion, and the elastic limit portion chunk is adapted to be clamped in the recess groove through elastic recovery of the elastic limit portion.

6. The needle device of at least one of claims 1-5, wherein the second limit mechanism comprises a third limit structure and a forth limit structure respectively formed on the first structure part and the second structure part, the third limit structure and the forth limit structure are

adapted to prevent the second structure part being separated from the first structure part along the extension direction of the needle head through mutual match;

or the second limit mechanism comprises a third limit structure and a forth limit structure respectively formed on the first structure part and the second structure part, the third limit structure and the forth limit structure are adapted to prevent the second structure part being separated from the first structure part along the extension direction of the needle head through mutual match; the third limit structure and the forth limit structure are adapted to lock the second structure part relative to the first structure part when the second structure part moves to a second lock position along the extension direction of the needle head;

or the second limit mechanism comprises a third limit structure and a forth limit structure respectively formed on the first structure part and the second structure part, the third limit structure and the forth limit structure are adapted to prevent the second structure part being separated from the first structure part along the extension direction of the needle head through mutual match; the third limit structure is a protrusion structure formed on the first structure part, the protrusion structure has an inclined plane engaging with outer surface of the first structure part, the inclined plane locates at a side adjacent to the second end of the needle head, the protrusion structure has a recess groove at top; the forth limit structure is an elastic button at a side of the second structure part that is away from the second end of the needle head, the elastic button has an elastic button chunk; the inclined plane of the button is adapted to slip match with the elastic button chunk to elastically deform the elastic button, and the elastic button chunk is adapted to be clamped in the recess groove of the protrusion structure through elastic recovery of the elastic button.

7. The needle device of at least one of claims 1-5, wherein the second limit mechanism comprises a first blocking portion, a second blocking portion, a third blocking portion and an elastic button; the first blocking portion and the second blocking portion are arranged on upper surface of the first structure part, the elastic button is arranged on upper surface of the second structure part, the third blocking portion is arranged on lower surface of the second structure part, the second blocking portion prevents the third blocking portion from further moving when the elastic button moves to a position in front of the first blocking portion.

8. The needle device of at least one of claims 1-7, wherein the first structure part is a first sleeve part, the first sleeve part sheathes the needle base; the second structure part is a second sleeve part, the second sleeve part sheathes the first sleeve part;

or length of the needle base is larger than 2 mm, length of the first structure part is larger than 2 mm, and length of the second structure part is larger than 2 mm.

9. The needle device of at least one of claims 1-8, wherein the first structure part is opened at first side of the installation portion;

or the installation portion has a top surface which is opposite to the first side and is away from skin when using, the first structure part has a bottom surface which is adjacent to skin when using, the bottom surface of the first structure part is located between the first side of the installation portion and the top surface of the installation portion

10. The needle device of at least one of claims 1-9, wherein the second structure part has a bottom structure which exceeds the first side of the installation portion;

or the second structure part has a bottom structure which exceeds the first side of the installation portion; the second structure part has an opened structure at the first side of the installation portion, the bottom structure is edge of the opened structure of the second structure part;

or the second structure part has a bottom structure which exceeds the first side of the installation portion; a cushion is arranged at bottom of the second structure part, the bottom structure is the cushion, bottom of the cushion is a flat surface, and the installation portion and the first structure part are arranged inside the space surrounded by the second structure part;

or the second structure part has a bottom structure which exceeds the first side of the installation portion; a cushion is arranged at bottom of the second structure part, the bottom structure is the cushion, bottom of the cushion is a flat surface, and the installation portion and the first structure part are arranged inside the space surrounded by the second structure part; a clamping portion is arranged at lower section of the second structure part, and the cushion is clamped by the clamping portion;

or the second structure part has a bottom structure which exceeds the first side of the installation portion; a cushion is arranged at bottom of the second structure part, the bottom structure is the cushion, bottom of the cushion is a flat surface, and the installation portion and the first structure part are arranged inside the space surrounded by the second structure part; the second structure part comprising the cushion is integrally formed;

or the second structure part has a bottom structure which exceeds the first side of the installation portion; a cushion is arranged at bottom of the second structure part, the bottom structure is the cushion, bottom of the cushion is a flat surface, and the installation portion and the first structure part are arranged inside the space surrounded by the second structure part; vertical distance between the needle head and the bottom of the cushion is larger than 0.05 mm;

or the second structure part has a bottom structure which exceeds the first side of the installation portion; the second structure part is a sleeve piece, the second structure part has a flat bottom at the first side of the installation portion, the bottom structure is the flat bottom segment of the second structure part;

or the second structure part has a bottom structure which exceeds the first side of the installation portion; the second structure part is a sleeve piece, the second structure part has a flat bottom at the first side of the installation portion, the bottom structure is the flat bottom segment of the second structure part; external of the flat bottom segment of the second structure part is provided with convex portions extending parallel to the first side, concave portion extending parallel to the first side is formed between adjacent convex portions;

or the second structure part has a bottom structure which exceeds the first side of the installation portion; the bottom structure is soft structure;

or the second structure part has a bottom structure which exceeds the first side of the

installation portion; inner wall of the bottom structure slip matches with the first side of the installation portion.

11. The needle device of at least one of claims 1-10, wherein a first connection structure and a second connection structure which are mutually slip matched are respectively formed on the needle base and the first structure part; a third connection structure and a forth connection structure which are mutually slip matched are respectively formed on the first structure part and the second structure part;

or a first connection structure and a second connection structure which are mutually slip matched are respectively formed on the needle base and the first structure part; a third connection structure and a forth connection structure which are mutually slip matched are respectively formed on the first structure part and the second structure part; the first connection structure and the second connection structure are respectively a first slide railway and a first slide track which are arranged along the extension direction of the needle head, or the first connection structure and the second connection structure are respectively a first slide track and a first slide railway which are arranged along the extension direction of the needle head, the third connection structure and the forth connection structure are respectively a second slide railway and a second slide track which are arranged along the extension direction of the needle head, or the third connection structure and the forth connection structure are respectively a second slide track and a second slide railway which are arranged along the extension direction of the needle head.

12. The needle device of at least one of claims 1-11, a pressing portion is arranged on upper surface of the second structure part.

13. The needle device of at least one of claims 1-12, wherein the needle base is provided with an operating handle, the operating handle is provided with at least one wing portion;

or the needle base is provided with an operating handle, the operating handle is provided with at least one wing portion; the needle device comprises one wing portion, the wing portion is located at one side of the needle base;

or the needle base is provided with an operating handle, the operating handle is provided with at least one wing portion; the needle device comprises two wing portions, the wing portions are located at both sides of the needle base separately;

or the needle base is provided with an operating handle, the operating handle is provided with at least one wing portion; the operating handle is sleeved with the needle base, or the operating handle is integrally formed with the needle base, or the operating handle is clamped by the needle base;

or the needle base is provided with an operating handle, the operating handle is provided with at least one wing portion; the operating handle further comprises a bent portion, the bent portion is arranged between the wing portion and the needle base.

14. The needle device of at least one of claims 1-13, wherein both of the first structure part and the second structure part are slot shaped;

or the needle device comprises a plurality of first structure parts, the plurality of first

structure parts are arranged by layer and are mutually slip matched along the extension direction of the needle head, limit mechanism is arranged between mutual matched first structure parts to prevent the first structure parts being separated along the extension direction of the needle head, an innermost first structure part slip matches with the needle base, an outermost first structure part slip matches with the second structure part;

or the needle device is intravenous needle, blood taking needle, remaining needle or injection needle.