CLAIMS

1. A refrigerant distributor, characterized in that the refrigerant distributor (4) comprises:

a box body (42);

a refrigerant inlet (41) arranged on an upper surface (421) of the box body (42);

liquid exit openings (46) evenly arranged on a lower surface (422) of the box body (42);

end plates arranged at both ends of the box body (42) in a length direction and enclosing the box body (42) from the two ends; and

a pre-distributor (3, 3a) arranged inside the box body (42), the top of the pre-distributor (3, 3a) being arranged under the upper surface (421), a length direction of the pre-distributor (3, 3a) being in parallel with a length direction of the box body (42), and the pre-distributor (3, 3a) comprising an inlet (31) for allowing the refrigerant to flow into an internal flow space of the pre-distributor (3, 3a),

wherein, in a height direction from the lower surface (422) to the upper surface (421) of the box body (42) and within a predetermined height range starting from the lower surface (422), a width of the box body (42) increases gradually,

side surfaces of the box body (42) are closed;

the pre-distributor (3, 3a) comprises a distribution box (32) or a distribution pipe (32a), the refrigerant flows into the distribution box (32) or the distribution pipe (32a) through the inlet (31); and

the pre-distributor (3, 3a) is arranged above the lower surface (422) of the box body (42), and the liquid exit openings (46) are distributed on a part of the lower surface (422) of the box body (42) located below the pre-distributor (3, 3a).

2. The refrigerant distributor according to claim 1, characterized in that the refrigerant distributor further comprises:

a ventilation slot (45) arranged on the upper surface (421) of the box body (42); and

a wire mesh separator (47) covering over the ventilation slot (45), an area of the wire mesh separator (47) being greater than or equal to an area of the ventilation slot (45).

3. The refrigerant distributor according to claim 1 or claim 2, characterized in that,

a cross-sectional shape of the box body (42) in a direction perpendicular to the length direction is octagonal.

4. The refrigerant distributor according to claim 1, characterized in that the refrigerant distributor further comprises:

support plates (44) arranged inside the box body (42) and extending in a width direction of the box body (42), the support plates (44), the lower surface (422) and a side surface (423) adjacent to the lower surface being connected in a sealed manner, and the number of the support plates (44) being at least two,

and the pre-distributor (3) is supported on upper ends of the support plates (44).

5. The refrigerant distributor according to claim 4, characterized in that,

upper parts of the support plates (44) comprise through holes (441).

6. The refrigerant distributor according to claim 1, characterized in that the pre-distributor (3) comprises a cover plate (34) covering an upper part of the distribution box (32),

the inlet (31) being arranged in the cover plate (34),

the distribution box (32) comprising side walls (321) at both sides along the length direction,

first pre-distributor openings (33) being formed in the side walls (321), and distances between the first pre-distributor openings (33) and the inlet (31) being greater than a predetermined threshold,

and in the height direction, distances between at least a part of the first pre-distributor openings (33) to a bottom of the distribution box (32) being less than a half of a height of the distribution box (32) and greater than zero.

7. The refrigerant distributor according to claim 6, characterized in that,

an area of the cover plate (34) is larger than an area of the bottom of the distribution box (32), and a bending portion (341) bent toward the distribution box (32) is formed at an edge of the cover plate (34).

8. The refrigerant distributor according to claim 6, characterized in that,

a cross-sectional shape of the distribution box (32) parallel to the cover plate (34) is octagonal, quadrilateral or of other figures formed by straight line segments.

9. The refrigerant distributor according to claim 6, characterized in that,

the closer to the inlet (31), the larger sizes and/or the larger distribution density of the first pre-distributor openings (33).

10. The refrigerant distributor according to claim 6, characterized in that,

in the length direction, the first pre-distributor openings (33) are asymmetric with respect to the inlet (31).

11. The refrigerant distributor according to claim 10, characterized in that,

in the length direction, with the inlet (31) as the center, the first pre-distributor openings (33) on one side and the other side of the inlet (31) are staggered with respect to the inlet (31).

12. The refrigerant distributor according to claim 1, characterized in that,

the inlet (31) being arranged at the top of a pipe wall (321a) of the distribution pipe (32a),

second pre-distributor openings (33a) being formed in the tube wall (321a),

and in the height direction, distances between at least a part of the second pre-distributor openings (33a) and a bottom of the distribution pipe (32a) being less than a half of a height of the distribution pipe (32a) and greater than zero.

13. The refrigerant distributor according to claim 12, characterized in that,

the pre-distributor (3a) further comprises a second cover plate (34a) arranged on the upper part of the distribution pipe (32a),

an area of the second cover plate (34a) being larger than a cross-sectional area of the distribution pipe (32a) parallel to the length direction.

14. The refrigerant distributor according to claim 12, characterized in that,

the closer to the inlet (31), the larger sizes and/or the larger distribution density of the second pre-distributor openings (33a).

15. The refrigerant distributor according to claim 12, characterized in that,

in the length direction, the second pre-distributor openings (33a) are asymmetric with respect to the inlet (31).

16. The refrigerant distributor according to claim 15, characterized in that,

in the length direction, with the inlet (31) as the center, the second pre-distributor openings (33a) on one side and the other side of the inlet (31) are staggered with respect to the inlet (31).

17. An evaporator, characterized in that the evaporator (10) comprises the refrigerant distributor (4) as claimed in any one of claims 1-16;

wherein the evaporator (10) further comprises: an evaporator housing (1), a liquid inlet pipe (2), an air intake opening (9) and a heat exchange tube bundle (5),

the refrigerant distributor (4) is located above the heat exchange tube bundle (5),

the liquid inlet pipe (2) passes through the evaporator housing (1) and is connected to the refrigerant inlet (41),

and the air intake opening (9) is arranged on the top of the evaporator housing (1).

18. The evaporator according to claim 17, characterized in that,

the evaporator (10) further comprises:

a heat exchange tube bundle support plate (6) located under the refrigerant distributor (4) and supporting the heat exchange tube bundle (5);

side baffles (7) located under the refrigerant distributor (4) and at both sides of the heat exchange tube bundle (5); and

a mist catcher (8) located between the side baffles (7) and the evaporator housing (1) and is supported by the heat exchange tube bundle support plate (6).