CLAIMS

[Claim 1]

A heat exchanger comprising:

a first tube through which a first heat medium flows; and

a second tube through which a second heat medium flows, the second tube being wound around the first tube,

the first tube having a plurality of protrusions protruding inside of the first tube,

the plurality of protrusions being provided in a plurality of streaks being provided in a spiral manner in a direction to which the first heat medium of the first path flows in the first tube,

the heat exchanger being characterized by

one streak of the plurality of streaks including the plurality of protrusions each being arranged at unequal spacing intervals.

[Claim 2]

The heat exchanger of claim 1, wherein, from among the plurality of protrusions provided in the one streak and the plurality of protrusions provided in an other streak of the plurality of streaks, two protrusions adjacent to each other in a tube axis direction of the first tube are each provided on one of different straight lines being in parallel to the tube axis direction.

[Claim 3]

The heat exchanger of claim 1 or 2, wherein, in a projection in which the first tube is projected in the tube axis direction,

an angle θ between the protrusions is arranged to fall within a range given by expression (5),

[Expression 5]

$$\frac{4 \times W}{Dwi} \leq \theta \leq \left(2 \times \pi - 2 \times \frac{W \times \sum_{i=2}^{n} i}{Dwi} \right) \quad \cdots (5)$$

where W is a width of each of the plurality of protrusions,

Dwi is an inner diameter of the first tube, and

n is the number of the plurality of protrusions to be provided per circumferential length of the first tube.

[Claim 4]

The heat exchanger of any one of claims 1 to 3, wherein the first tube is a corrugated tube.

[Claim 5]

The heat exchanger of any one of claims 1 to 3, wherein

the first tube includes:

a peak portion protruding in a radially expanding direction in which a diameter of the first tube expands; and

a valley portion in which an outer diameter of the first tube is smaller than in a portion where the peak portion is formed, and around which the second tube is wound,

the peak portion being formed in a spiral manner in a direction to which the first heat medium of the first path flows,

the valley portion being formed in a spiral manner along the peak portion,

the plurality of protrusions being provided in a spiral direction that is the direction in which the valley portion is formed.

[Claim 6]

A refrigeration cycle apparatus comprising the heat exchanger of any one of claims 1 to 5 as a condenser, wherein, in the heat exchanger, the first heat medium

flowing through a first path of the first tube constituting the heat exchanger is heated by the second heat medium flowing through a second path of the second tube constituting the heat exchanger.

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