CLAIMS

[Claim 1]

A refrigerator comprising:

a storage compartment;

a refrigerant circuit in which a compressor, a radiator, a plurality of capillary tubes having different Cv values, a selecting unit configured to select at least one of the plurality of capillary tubes, and a cooler are connected to each other via pipes to circulate refrigerant, the refrigerant flowing through the at least one of the plurality of capillary tubes;

a first sensor configured to output a first sensor value on a basis of detection of an evaporating temperature of the refrigerant or an evaporating pressure of the refrigerant;

a second sensor configured to output a second sensor value on a basis of detection of at least one of a condensing temperature of the refrigerant and a condensing pressure of the refrigerant; and

a controller configured to control the selecting unit on a basis of a flow rate of the refrigerant based on a rotational frequency of the compressor, the first sensor value, and the second sensor value,

the plurality of capillary tubes including a first capillary tube having a first Cv value, and a second capillary tube having a second Cv value smaller than the first Cv value,

the selecting unit being configured to select one of a first stage in which the refrigerant flows to both of the first capillary tube and the second capillary tube, a second stage in which the refrigerant flows only to the first capillary tube, and a third stage in which the refrigerant flows only to the second capillary tube,

the controller being configured to control the selecting unit to periodically select the first stage and the second stage alternately, or the second stage and the third stage alternately.

[Claim 2]

The refrigerator of claim 1, wherein the controller is configured to calculate a target Cv value on a basis of the flow rate of the refrigerant based on the rotational frequency of the compressor, the first sensor value, and the second sensor value, and control the selecting unit on a basis of the calculated target Cv value.

[Claim 3]

The refrigerator of claim 2, wherein the controller is configured to control the selecting unit so that an average of the Cv values of the plurality of capillary tubes is equal to the target Cv value.

[Claim 4]

The refrigerator of claim 2 or 3, wherein the controller is configured to control the selecting unit to periodically select the first stage and the second stage alternately when the target Cv value is not larger than a sum of the first Cv value and the second Cv value and larger than the first Cv value.

[Claim 5]

The refrigerator of any one of claims 2 to 4, wherein the controller is configured to control the selecting unit to periodically select the second stage and the third stage alternately when the target Cv value is not larger than the first Cv value and is larger than the second Cv value.

[Claim 6]

The refrigerator of any one of claims 2 to 5, wherein

the selecting unit is further configured to select a fourth stage in which the refrigerant flows to none of the first capillary tube and the second capillary tube, and

the controller is configured to control the selecting unit to periodically select the third stage and the fourth stage alternately when the target Cv value is not larger than the second Cv value.

[Claim 7]

The refrigerator of any one of claims 2 to 6, wherein, when the first stage and the second stage are alternately selected periodically, or when the second stage and

the third stage are alternately selected periodically, the controller is configured to change a duration of each stage on a basis of the target Cv value.

[Claim 8]

The refrigerator of any one of claims 2 to 7, wherein, when the first stage and the second stage are alternately selected periodically, or when the second stage and the third stage are alternately selected periodically, the controller is configured to set a duration of each stage in one period so that an average of the Cv values in the one period is equal to the target Cv value.

[Claim 9]

The refrigerator of any one of claims 1 to 8, wherein the plurality of capillary tubes are different in at least one of diameter and length.

[Claim 10]

The refrigerator of any one of claims 1 to 9, further comprising a soundproof material disposed around the selecting unit.

[Claim 11]

A method of controlling a flow rate of refrigerant for a refrigerator,

the refrigerator comprising:

a storage compartment;

a refrigerant circuit in which a compressor, a radiator, a plurality of capillary tubes having different Cv values, a selecting unit configured to select at least one of the plurality of capillary tubes, and a cooler are connected to each other via pipes to circulate refrigerant, the refrigerant flowing through the at least one of the plurality of capillary tubes; and

a controller,

the method comprising:

outputting a first sensor value on a basis of detection of an evaporating temperature of the refrigerant or an evaporating pressure of the refrigerant;

outputting a second sensor value on a basis of detection of at least one of a condensing temperature of the refrigerant and a condensing pressure of the refrigerant; and

controlling the selecting unit on a basis of a flow rate of the refrigerant based on a rotational frequency of the compressor, the first sensor value, and the second sensor value,

the plurality of capillary tubes including a first capillary tube having a first Cv value, and a second capillary tube having a second Cv value smaller than the first Cv value,

the controlling the selecting unit including

periodically selecting a first stage in which the refrigerant flows to both of the first capillary tube and the second capillary tube, and a second stage in which the refrigerant flows only to the first capillary tube alternately, or

periodically selecting the second stage, and a third stage in which the refrigerant flows only to the second capillary tube alternately.