separator 20 from flowing into the return passage 23.

[0009]

Note that other technologies related to the present invention are also disclosed in, for example, PTLs 2 to 4.

[Citation List]

[Patent Literature]

[0010]

[PTL 1] JP 2004-349551 A

[PTL 2] WO 2015/072128 A

[PTL 3] JP 2014-122782 A

[PTL 4] JP 08-145385 A

[Summary]

[0011]

However, there is a possibility that, depending on the pressure of gas-phase refrigerant flowing into the gas-liquid separator 20 from the boiling cooler 15, the float valve 21 is floated up and the return passage 23 is unexpectedly opened. If the return passage 23 is opened when all liquid-phase refrigerant in the gas-liquid separator 20 has flowed out, gas-phase refrigerant unexpectedly flows into the boiling cooler 15 via the return passage 23. There has been a problem in that, as a result of the above behavior, cooling efficiency of the heating element 35 is reduced.

[0012]

Embodiments are to provide a cooling device etc. that enables heat from a heating element to be cooled efficiently.

[0013]

A cooling device of an aspect includes: an evaporator that, upon receiving heat from a heating element, evaporates liquid-phase

refrigerant retained internally by means of the heat of the heating element and allows gas-phase refrigerant to flow out; a condenser that condenses the gas-phase refrigerant flowing out of the evaporator and allows liquid-phase refrigerant to flow out; and a refrigerant relay device that is connected to the evaporator and the condenser, retains the gas-phase refrigerant flowing out of the evaporator and, in conjunction therewith, allows the gas-phase refrigerant to flow out to the condenser, and retains the liquid-phase refrigerant flowing out of the condenser and, in conjunction therewith, allows the liquid-phase refrigerant to flow out to the evaporator.The refrigerant relay device includes: a casing that retains the liquid-phase refrigerant and the gas-phase refrigerant; a refrigerant inflow opening that allows the liquid-phase refrigerant flowing out of the condenser to flow into the casing therethrough; a refrigerant outflow opening that allows the gas-phase refrigerant retained inside the casing to flow out to the condenser therethrough; and a refrigerant inflow piping one end part of which is connected to the refrigerant inflow opening, at the other end part of which an opening part is formed, and that allows the liquid-phase refrigerant flowing into the refrigerant inflow opening to flow into the casing from the opening, and the opening part is disposed so as to face a bottom part of the casing.

[0014]

A refrigerant relay device of an aspect includes: a casing that retains liquid-phase refrigerant and gas-phase refrigerant; a refrigerant inflow opening that allows the liquid-phase refrigerant to flow into the casing therethrough; a refrigerant outflow opening that allows the gas-phase refrigerant to flow out of the casing therethrough; and a refrigerant inflow piping one end part of which is connected to the refrigerant inflow opening, at the other end part of which an opening part is formed, and that allows the liquid-phase refrigerant flowing into the

refrigerant inflow opening to flow into the casing from the opening part, wherein the casing is formed into a cylindrical shape and includes: a cylindrical casing that has an opening at least at one end part thereof; and a lid part on which the refrigerant inflow opening is formed and that closes the opening of the cylindrical casing, and the opening part is disposed so as to face a bottom part of the casing of claim 1.

[Advantageous Effects of Invention]

[0015]

A cooling device or the like according to the present invention enables heat from a heating element to be cooled efficiently.

[Brief Description of Drawings]

[0016]

[Fig. 1] Fig. 1 is a cross-sectional view illustrating a configuration of a refrigerant relay device in an example embodiment of the present invention;

[Fig. 2] Fig. 2 is an exploded cross-sectional view illustrating the configuration of the refrigerant relay device in the example embodiment of the present invention in an exploded manner;

[Fig. 3] Fig. 3 is a diagram illustrating an outline of a configuration of a cooling device in the example embodiment of the present invention;

[Fig. 4] Fig. 4 is an external perspective view illustrating the configuration of the cooling device in the example embodiment of the present invention;

[Fig. 5] Fig. 5 is an external perspective view illustrating the configuration of the refrigerant relay device in the example embodiment of the present invention;

[Fig. 6] Fig. 6 is a cross-sectional view illustrating the configuration of the refrigerant relay device in the example embodiment of

the present invention;

[Fig. 7] Fig. 7 is a cross-sectional view illustrating another configuration of the refrigerant relay device in the example embodiment of the present invention; and