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(54) **HEAT TREATMENT FURNACE AND HEAT TREATMENT METHOD**

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(57) **ABSTRACT**

Provided is a heat treatment furnace used to anneal a workpiece to be heat-treated, including a heating chamber configured to heat the workpiece, a first cooling chamber and a second cooling chamber configured to cool the workpiece having passed through the heating chamber, and an atmosphere gas supply device configured to supply, as an in-furnace atmosphere gas, an exothermic converted gas to each of the first cooling chamber and the second cooling chamber, the first cooling chamber having a first cooling state of cooling the workpiece by using a first coolant and a second cooling state of cooling the workpiece by using not the first coolant but a second coolant different from the first coolant, and the second cooling chamber having a similar configuration to the first cooling chamber.

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