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COOLING APPARATUS

BACKGROUND OF THE INVENTION

The present invention relates to a cooling apparatus equipped with a refrigerant circuit which includes a compressor to be controlled for a speed of rotation and uses carbon dioxide as a refrigerant.

In a conventional cooling apparatus of such a kind, e.g., a showcase installed at a store, a refrigerant circuit is constituted by sequentially connecting a compressor, a gas cooler (condenser) and expansion valve means (capillary tube or the like) which constitute a condensing unit and an evaporator installed on a showcase main body side through a pipe in an annular shape. A refrigerant gas compressed by the compressor to become high in temperature and pressure is discharged to the gas cooler. Heat is radiated from the refrigerant gas at the gas cooler, and then the refrigerant gas is directed by the expansion valve means to be fed to the evaporator. The refrigerant evaporates there, and absorbs heat from its surroundings to exhibit a cooling function, thereby cooling the chamber (space to be cooled) of the showcase (e.g., see Japanese Patent Application Laid-Open No. 11-257830).

Incidentally, in order to solve a problem of ozone layer destruction, a proposal has recently been made to use carbon dioxide as a refrigerant in the cooling apparatus of the described kind. In the case of using the carbon