REFRIGERANT COOLING APPARATUS

Abstract

A refrigerant cooling apparatus is provided, in which a circulating refrigerant may be cooled to a prescribed temperature efficiently in a stable condition even when the cooling temperature of the circulating refrigerant is near the freezing point of the circulating refrigerant. This apparatus is one which cools the circulating refrigerant by countercurrent indirect heat exchange between a circulating refrigerant which cools objects to be cooled such as a low temperature reaction vessel 11 and a cryogenic liquid in a heat exchanger 17, wherein a first flow control means 23 which controls the amount of cryogenic liquid supplied by detecting the temperature of the circulating refrigerant allowed to flow out from the heat exchanger 17 with a first temperature detecting means 20 and a second flow control means 25 which controls the amount of cryogenic liquid supplied by detecting the heating surface temperature at the inside of the heat exchanger with a second temperature detecting means 21 are arranged in series on a cryogenic liquid inflow path 16 which provides the cryogenic liquid to the heat exchanger.

Fig. 1