

HEAT EXCHANGER FOR USE IN COOLING LIQUIDS

Abstract

A heat exchanger has at least one inlet and outlet to permit circulation of refrigerant therethrough. Each heat exchanger includes a plurality of thin sections of material arranged between a pair of thin flat outer plates. Each of the thin sections of material is comprised of parallel flow paths, allowing for the refrigerant to flow through the inlet, then from one section to the next, and finally out the outlet. The arrangement of the sections of parallel flow paths allows for the refrigerant to come into contact with the majority of the inside wall of the outer plates, allowing for maximum heat exchange. In use for cooling liquids, the heat exchangers are arranged within a frame and brought into contact with the liquid to be cooled. When the heat exchangers are used to cool liquid sufficiently to produce ice crystals, a rotating scraping device sweeps across the surface of the heat exchanger, removing any ice crystals that have formed.

Fig. 3