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(54) **Title:** REFRIGERANT VAPOR COMPRESSION SYSTEM AND METHOD OF TRANSCRITICAL OPERATION

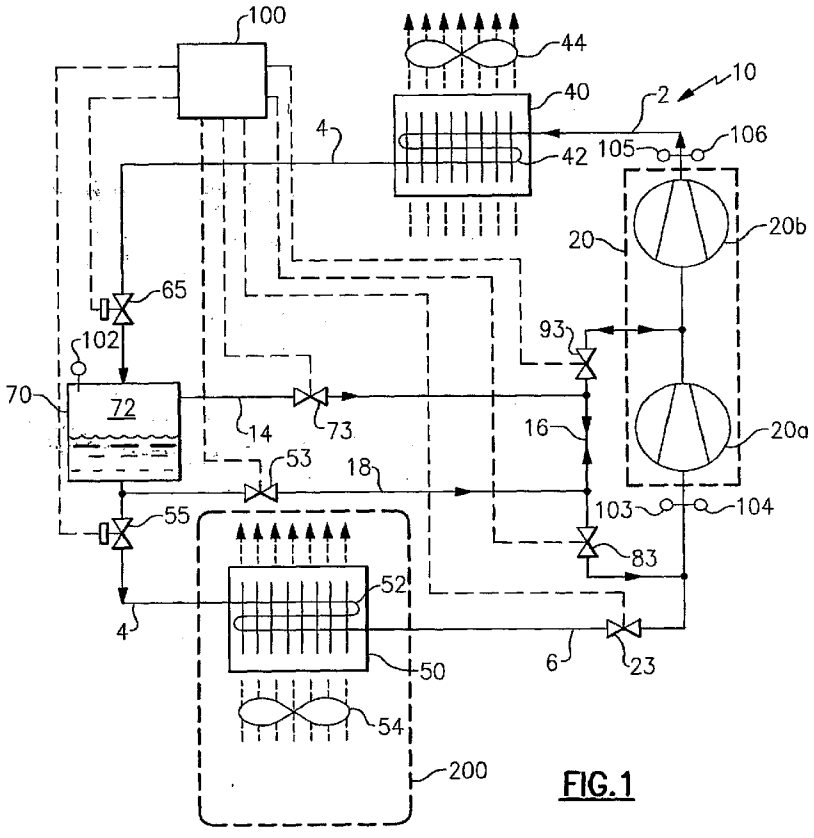


FIG. 1

(57) **Abstract:** A refrigerant vapor compression system includes a flash tank economizer defining a separation chamber is disposed in the refrigerant circuit intermediate a refrigerant heat rejection heat exchanger and a refrigerant heat absorption heat exchanger. A primary expansion valve is interdisposed in the refrigerant circuit in operative association with and upstream of the refrigerant heat absorption heat exchanger and a secondary expansion valve is interdisposed in the refrigerant circuit in operative association and upstream of the flash tank economizer. A refrigerant vapor injection line establishes refrigerant flow communication between an upper portion of the separation chamber and an intermediate pressure stage of the system's compression device and a suction pressure portion of the refrigerant circuit. A refrigerant liquid injection line establishes refrigerant flow communication between a lower portion of said separation chamber and an intermediate pressure stage of the compression device and a suction pressure portion of the refrigerant circuit.

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