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(54) **Title:** DETECTING CONTAMINATION OF A CRYOGENIC REFRIGERANT IN A CRYOGENIC REFRIGERATION SYSTEM

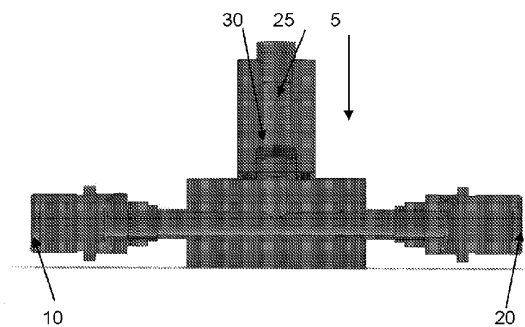


Figure 1

(57) **Abstract:** A sensor for detecting contamination of a cryogenic refrigerant in a cryogenic refrigeration system, a method and a refrigeration system are disclosed. The sensor comprises: an inlet (10) for coupling to a cryogenic refrigerant flow path in the cryogenic refrigeration system and a thermal conductivity detector (5) in fluid communication with the inlet. The thermal conductivity detector (5) is configured to generate a signal indicative of a detected thermal conductivity of the cryogenic refrigerant received from the cryogenic refrigeration system when the sensor is coupled thereto. The sensor also comprises circuitry configured to convert the thermal conductivity signal to an indication of contamination of the cryogenic refrigerant; and an output configured to output the indication of contamination of the cryogenic refrigerant.



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