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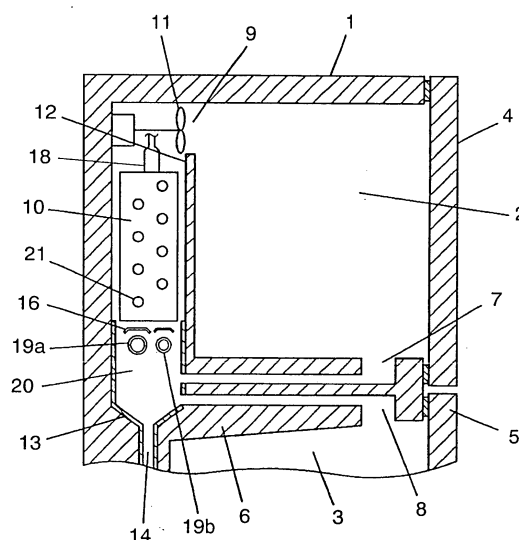
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(54) **Refrigerator**

(57) In a refrigerator employing a combustible refrigerant, a plurality of glass-tube heaters (19a,19b) for defrosting is disposed close to an evaporator (10) of a combustible-refrigerant-sealed refrigeration cycle. By controlling the application of an electric current or voltage to the glass-tube heater (19a,19b), the surface temperature of the heater can be kept below the ignition temperature of the combustible refrigerant. Furthermore, following structures are effective in decreasing the surface temperature of the heater (19) - i) making contact the glass-tube heater (115) to fins (108) of the evaporator, ii) forming the glass-tube heater (139) into a tube-in-tube structure and disposing a sealing member (142) at an end of the glass tube (140,141). Such structured refrigerator prevents the combustible refrigerant from catching fire even if defrosting is performed in an environment where leakage of the refrigerant occurs, and improves poor refrigeration due to residual frost.

FIG. 2



**PARTIAL EUROPEAN SEARCH REPORT**

Application Number

under Rule 62a and/or 63 of the European Patent Convention.
This report shall be considered, for the purposes of
subsequent proceedings, as the European search report

EP 07 00 1116

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	GB 2 277 663 A (MITSUBISHI ELECTRIC CORP [JP]) 2 November 1994 (1994-11-02) * page 4; figures 1,2 * -----	2-5,8	INV. F25D21/08 H05B3/44 H05B3/50
A	JP 11 257831 A (TOSHIBA CORP) 24 September 1999 (1999-09-24) * abstract; figures 1-3 * -----	2-5,8	
			TECHNICAL FIELDS SEARCHED (IPC)
			F25D H05B
INCOMPLETE SEARCH			
The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC so that only a partial search (R.62a, 63) has been carried out. Claims searched completely : Claims searched incompletely : Claims not searched : Reason for the limitation of the search: see sheet C			
Place of search Munich		Date of completion of the search 8 May 2012	Examiner Amous, Moez
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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**INCOMPLETE SEARCH
SHEET C**

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Claim(s) completely searchable:
2-5, 8

Claim(s) not searched:
1, 6, 7

Reason for the limitation of the search:

R62a EPC

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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08-05-2012

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 2277663 A	02-11-1994	GB 2277663 A	02-11-1994
		JP 6313664 A	08-11-1994
		SG 49108 A1	18-05-1998

JP 11257831 A	24-09-1999	NONE	
