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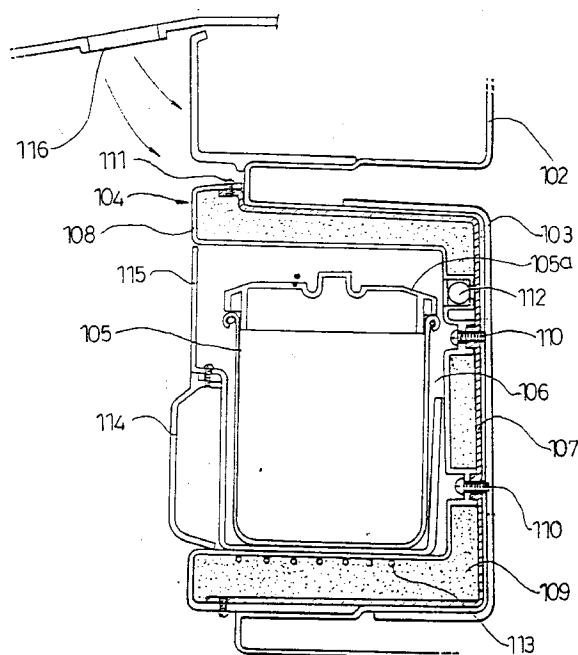
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(54) **A refrigerator.**

(57) A refrigerator has a fermentation section (106) adapted to receive a food product, and a heater (113) for warming food product therein. The fermentation section (106) can be in the form of a recess, and a food product removably supported therein using a holder (115). When mounted in the recess, the holder substantially closes the open face of the recess to isolate the fermentation section (106).

FIG. 2



This invention relates to a refrigerator and, more particularly, to the manufacture of fermented foods for storage therein.

Fermentation processes are used to produce various foods, such as yoghurt, which are sold by retailers. However, these products are often expensive. As a consequence, some consumers have chosen to carry out the fermentation process themselves. This was normally accomplished in a fermentation container, with the fermented product transferred to one or more other containers for storage.

The present invention aims to simplify the manufacture of fermentation foods by consumers. According to the invention a refrigerator includes a fermentation section adapted to receive a food product, and a heater for warming food product therein. The fermentation section is normally defined within the refrigerator body.

The temperature of food product in the fermentation section of a refrigerator according to the invention is preferably monitored by a sensor, and can be controlled in response to signals generated by the sensor. This enables the fermentation process to be managed with minimum manual control.

An embodiment of the invention will now be described by way of example and with reference to the accompanying drawings wherein:

Figure 1 is a perspective view of a refrigerator with a fermentation device mounted in the door; Figure 2 is a cross-sectional view of the fermentation device of Figure 1 along the line A-A.

In the embodiment of the invention illustrated in the Figures, a fermentation device is mounted against a door lining 102 on the inner side of the refrigerator door 101.

A box or housing 104 defines a fermentation section 106 in the form of a recess in which a container 10 is held in a cup or holder 115. The cup can substantially close the open side of the recess to minimise any heat loss therefrom to the interior of the refrigerator. The cup shown in the Figures has a handle 114. The box 104 comprises an outer case 107 and an inner case 108 with insulating material 109 therebetween, which are fastened together by bolts 111. Bolts 110 fix the box 104 to a bracket 103 on the inner side of the door lining 102.

A heater 113 is provided at or just below the recess 106, and a sensor 112 is mounted on the inner case 108 to monitor the temperature in the recess. The heater is controlled by a controller (not shown) and in response to signals from the sensor 112 to ferment food in the container 105. The controller can thus be programmed to manage a fermentation process for a particular product, according to size and constituents. The box 104 may be located below a freezing compartment of the refrigerator. Cold air from the freezing compartment may pass through an inhalation hole 116. This air serves to cool any warmer air

which may escape from the fermentation device, thereby minimising any effects of the device on other food in the refrigerator. Air may be driven through the hole 116 by a fan (not shown).

To ferment a foodstuff using the arrangement described above, it is first placed in the container 105, which is closed with a cover 105a. The container is placed in the cup or holder 115, which is then inserted in the recess 106. The holder 115 substantially closes the open face of the recess 106 to isolate it from the main volume of the refrigerator.

Power is supplied to the heater 113 by a controller (not shown) to promote the fermentation process. The sensor 112 monitors the temperature in the recess 106, and the power fed to the heater may be adjusted as necessary by the controller to maintain the desired temperature. The insulating material 109 serves to reduce the heat loss from the recess 106 to its surroundings.

Once fermentation is completed, the heater 113 is turned off. The controller may be configured to operate the heater in accordance with preset parameters. The container is then cooled by the refrigerator, and then maintained at an appropriate temperature for storage of the resulting fermented food.

Various foodstuffs other than yoghurt may of course be manufactured in a refrigerator of the invention; for example, bean-paste soup made from ground fermented soybeans, and cucumbers pickled in salt.

Claims

1. A refrigerator characterised by including a fermentation section (106) adapted to receive a food product, and a heater (113) for warming food product therein.
2. A refrigerator according to Claim 1 wherein the fermentation section (106) is defined within the refrigerator body.
3. A refrigerator according to Claim 1 wherein the fermentation section (106) is defined on the inner side of the refrigerator door (101).
4. A refrigerator according to any preceding Claim wherein the fermentation section (106) takes the form of a recess in a wall section of the refrigerator.
5. A refrigerator according to any one of Claims 1 to 3 wherein the fermentation section (106) is in a housing (104) mounted on a wall section (102) of the refrigerator.
6. A refrigerator according to any preceding Claim comprising a holder (115) for removably support-

ing a food product in the fermentation section (106) and substantially isolating the fermentation section (106) when so doing.

7. A refrigerator according to any preceding Claim 5 wherein the wall of the fermentation section (106) includes insulation material (109).
8. A refrigerator according to any preceding Claim including a sensor (112) for monitoring the temperature in the fermentation section (106).
9. A refrigerator according to Claim 8 including a controller for controlling the heater (113) in response to signals from the sensor (112), and for thereby managing the fermentation process.
10. A refrigerator according to any preceding Claim wherein the fermentation section (106) is disposed below a freezing compartment of the refrigerator.

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FIG. 1

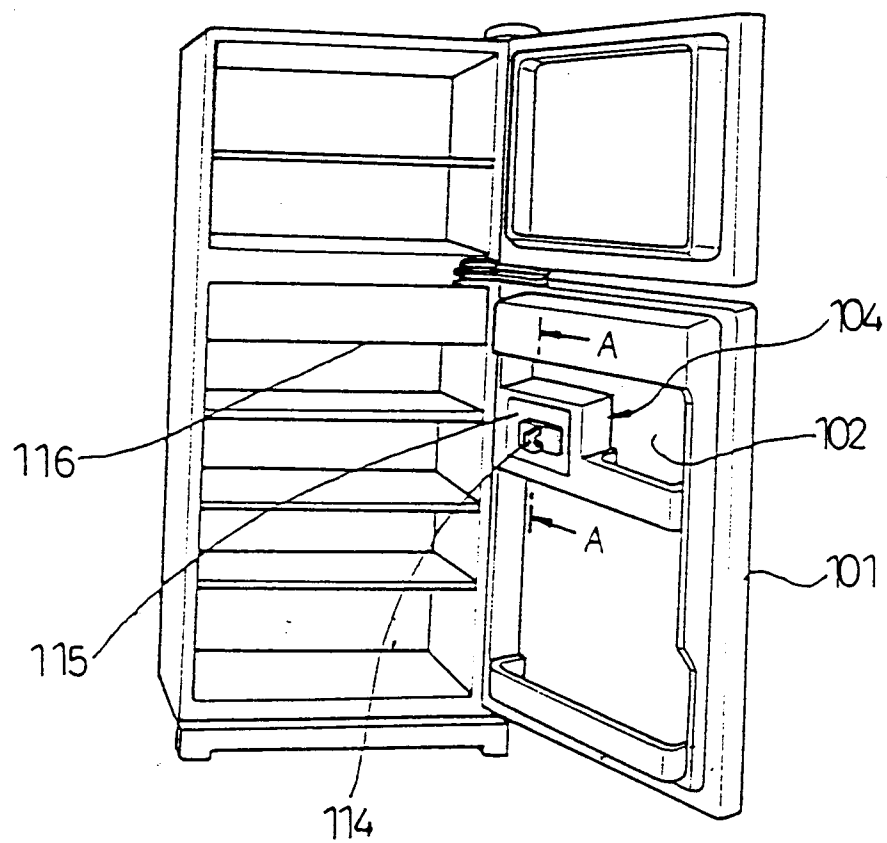
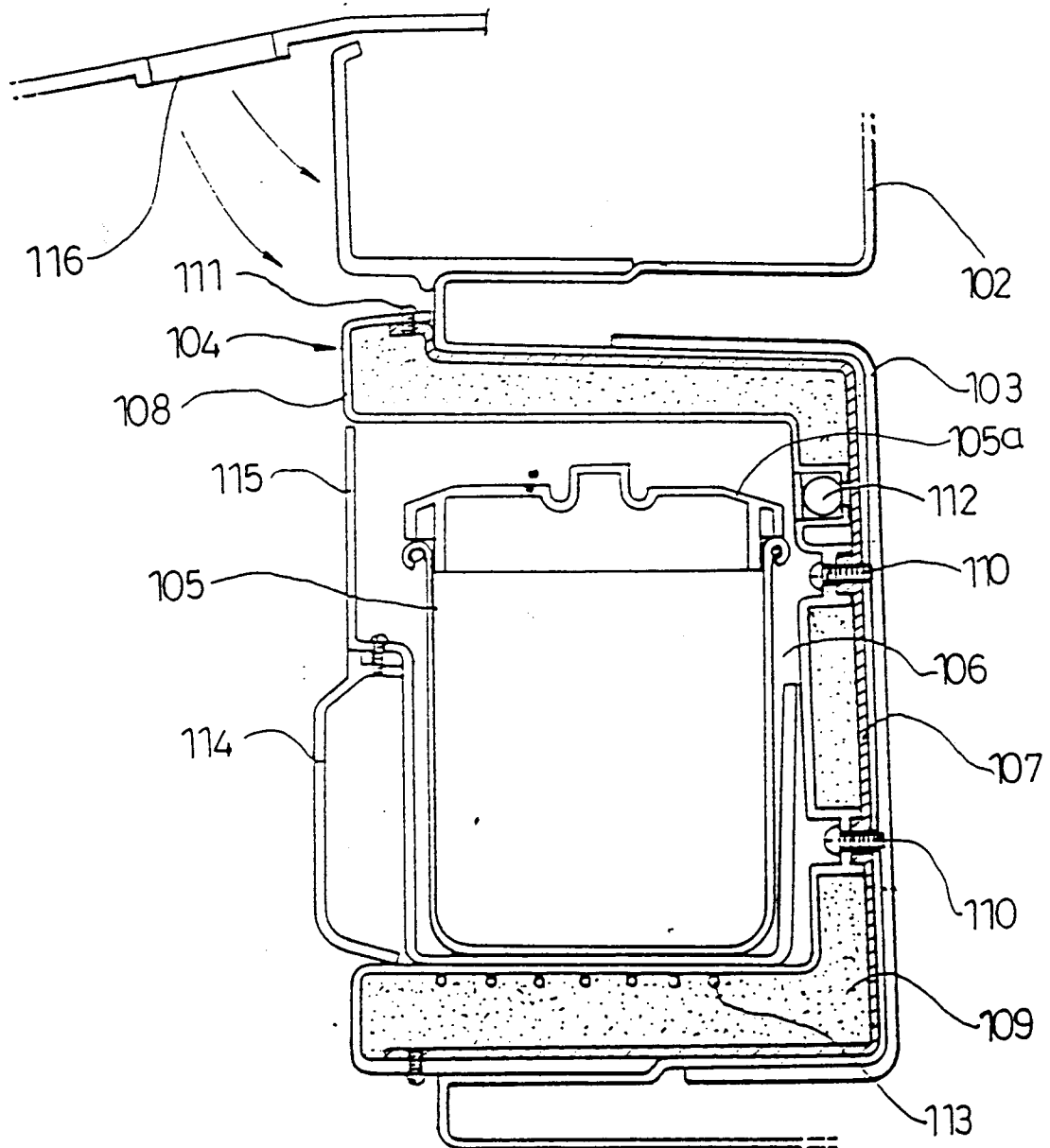


FIG. 2





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 94 30 9307

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	US-A-5 228 499 (YOON) * column 2, line 60 - column 3, line 6; figure 1 *	1,2,8-10	F25D23/12 F25D23/04
Y	---	3-5	
Y	US-A-2 783 030 (DOUGLAS) * column 1, line 21 - column 3, line 21; figures *	3-5	
X	---	1,2,6-9	
	PATENT ABSTRACTS OF JAPAN vol. 17, no. 574 (M-1498) 19 October 1993 & JP-A-05 164 460 (MATSUSHITA REFRIG. CO. LTD.) 29 June 1993 * abstract *		
X	---	1,2,8,9	
	PATENT ABSTRACTS OF JAPAN vol. 15, no. 97 (M-1090) 8 March 1991 & JP-A-02 309 169 (HITACHI LTD.) 25 December 1990 * abstract *		
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			F25D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 15 March 1995	Examiner Eccetto, M
CATEGORY OF CITED DOCUMENTS 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 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			

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