



EUROPEAN PATENT APPLICATION

(43) Date of publication:
13.08.2003 Bulletin 2003/33

(51) Int Cl.7: **F25D 21/04, F25D 23/08**

(21) Application number: **02013597.6**

(22) Date of filing: **20.06.2002**

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**
Designated Extension States:
AL LT LV MK RO SI

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(30) Priority: **11.02.2002 ES 200200325 U**

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(54) **An anti-frost frame for a refrigerated machine**

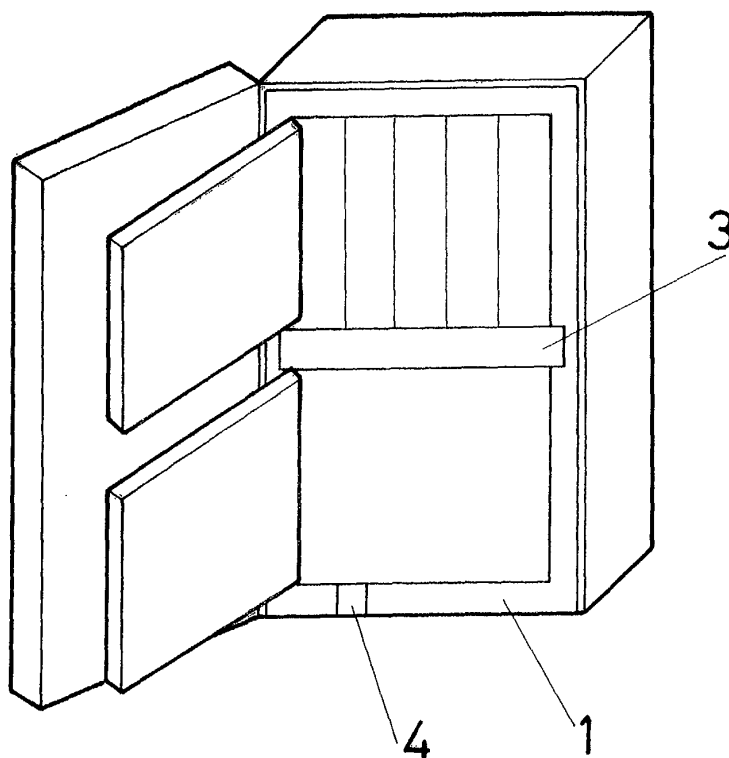
(57) An anti-frost frame for a refrigerated machine comprises a rectangular frame (1) of an L-shaped cross section, bearing

on its internal side a heating device (5, 10) formed by an electric resistance (5) enclosed within a duct (10) fastened by a number of parallel lugs (6) and

on the external edges a rim (2) allowing the mounting of the frame to the machine body.

The frame also comprises a transverse hollow cross bar (3) also accommodating a heating device (5, 10) and fastened by end lugs (12) to cavities (7) in the frame jambs.

Fig. 7



Description

FIELD OF THE INVENTION

[0001] The present invention relates to an anti-frost frame for a refrigerated machine, which includes significant innovations and advantages.

[0002] More specifically, the invention refers to an anti-frost frame designed to be incorporated into a refrigerated machine in which the temperature remains below zero degrees and has internal doors for opening and closing the chamber. Said frame includes a light mounting provided with a surrounding electrical heater and an internal cross-piece in order to melt frost, thus avoiding it from gathering.

BACKGROUND OF THE INVENTION

[0003] The applicant is aware of the existence of several anti-frost systems applied to the evaporator of a refrigerated machine, formed by heating devices periodically starting and operating in order to remove frost developed on its surface. The heat generated by these heating devices melts frost, which is removed in a liquid state.

[0004] These frost problems also appear in machine areas distant from the evaporator, such as the access door frame, for in those areas a high stream of wet air coming from outdoors is generated and comes in contact with elements at a temperature below freezing point.

[0005] This is the case of the Spanish Utility Model no. 2000.00659, in which an automatic vending machine is described which comprises, behind a main door, two isolating doors tightening with rubber joints. Said internal doors are opened for long periods during the loading of the machine and, as a result, an significant volume of frost is formed on the frame of the doors.

DESCRIPTION OF THE INVENTION

[0006] The anti-frost frame for a refrigerated machine according to the present invention is designed to provide a system to maintain the isolating frame in which the main door is adjusted to be as clean and frost-free as possible. The concept developed herein consists of maintaining the frame at a temperature higher than the water freezing point while the main door is open during certain periods when the machine is in operation, thus impeding the gathering of frost as a result of the outdoor damp air, at the same time ensuring the tightening indoor of the inner chamber thanks to the rubber joints that are provided in the doors'edges.

[0007] Said frame is specially designed to fit inside a machine of the kind described in the Spanish Utility Model no. 2000.00659. The frame is made up of a mounting of a plastic material or similar with an L-shaped cross-section, adapted to be fixed to the internal

isolating wall of the machine by bolts, screws or similar means, its side contour extending to the front part.

[0008] The frame shows a surrounding heating device on its internal side. Said heating device consists of an electrical resistance lodged in a tubular duct. This duct is retained by a number of clips or pressure lugs, allowing a fast and easy mounting and dismounting.

[0009] A connection box exists in the lower section of the frame, where power supply wires join the binding posts of the machine.

[0010] The machine described in the Spanish Utility Model no. 2000.00659 shows two internal doors vertically mounted apart. In turn, for a full insulation the frame comprises an intermediate cross bar at a height corresponding to the lower edge of the upper door and the upper edge of the lower door.

[0011] Said cross bar consists of a closed, hollow parallelepipedic element, with a long, U-shaped cross section form. It also encloses an electric heating device, which is fastened by clips, and a cover closes the rear side. The bar is fixed to the frame by two end lugs, lodged in corresponding cavities in the frame jambs. A small hole is provided near an end of the bar to allow the power supply wires to enter in a point close to the frame area where the two wires exist.

[0012] The frame shows on one side two notches to accommodate the door locking mechanisms, and its front side is completely smooth, thus allowing the settlement of the doors. Both doors fit tightly to the frame thanks to the surrounding rubber joints.

[0013] To complete the description below and to facilitate a better understanding of the features of the invention, a set of drawings is enclosed showing, in an illustrative but not limiting way, the most outstanding aspects of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014]

Figure 1 is a front elevation view of the novel frame.

Figure 2 is a rear elevation view of the frame.

Figure 3 is a cross section view of the frame sections as per a plane A-A' in figure 2.

Figure 4 is an enlarged particular of the fastening of the heating device.

Figure 5 is a perspective, exploded view of the intermediate cross bar.

Figure 6 shows the lower connection box in the frame.

Figure 7 illustrates the frame with its two doors as mounted in the refrigerated machine body.

DESCRIPTION OF A PREFERRED EMBODIMENT

[0015] In view of the above mentioned drawings and according to the numbering adopted, a preferred but non limiting embodiment of the invention can be seen.

It consists of a frame (1) (figures 1 & 2) of rectangular form and L-shaped cross section, having a forward extended, side rim (2) along its edges.

[0016] A surrounding heating device (5, 10) (figures 3 & 4) exists at the rear side of the frame, formed by a hollow duct (10) that encloses an electric resistance (5). The duct (10) is fastened by a number of flexible lugs or clips (6).

[0017] Frame (1) shows in its central part a cross bar (3) fixed by lugs (12) to cavities (7) in the frame jambs. The said cross bar (3) accommodates as well a longitudinal heating device (5, 10) fastened by clips or lugs (6) (figure 4), and has a closing cover (8) on the rear side.

[0018] The cross bar (3) also shows a hole (9) to allow electric supply wires entering to feed the resistance (5).

[0019] Frame (1) in its lower section shows a dismountable connection box (4) allowing passing of the feeding wires for heating devices (5, 10) through respective holes (9).

[0020] The contour (2) of the frame (1) shows, as said, notches (11) suitable for the mounting of internal door locking mechanisms.

in that the frame (1) is provided with a surrounding L-shaped side (2) that is suitable for to its connection to the machine wall by means of bolts, screws, adhesive, soldering or similar.

5. An anti-frost frame for a refrigerated machine, according to claim 1, **characterised**

in that the surrounding side (2) shows notches (11) to accommodate internal door locking mechanisms.

Claims

1. An anti-frost frame for a refrigerated machine, of the kind designed for a machine showing two internal front doors vertically located in column, **characterised**

in that the frame comprises a frame mounting (1) made of a light material, accommodating within it a surrounding heating device (5, 10), and

in that said heating device (5, 10) is formed by a hollow duct (10) enclosing an electric resistance (5), and

in that the duct (10) is fastened by a number of clips (6).
2. An anti-frost frame for a refrigerated machine, according to claim 1, **characterised**

in that it comprises a hollow cross bar (3) mounted between the jambs of frame (1) and provided with a rear cover (8), said cross bar accommodating a heating device (5, 10) fastened by clips, and

in that the cross bar (3) has at its ends respective extended lugs (12) for fastening inside cavities (7) existing in the frame jambs.
3. An anti-frost frame for a refrigerated machine, according to claim 1, **characterised**

in that the frame (1) has in its lower section a box (4) for connecting supply wires for the resistances (5) with the power network of the machine.
4. An anti-frost frame for a refrigerated machine, according to claim 1, **characterised**

Fig. 1

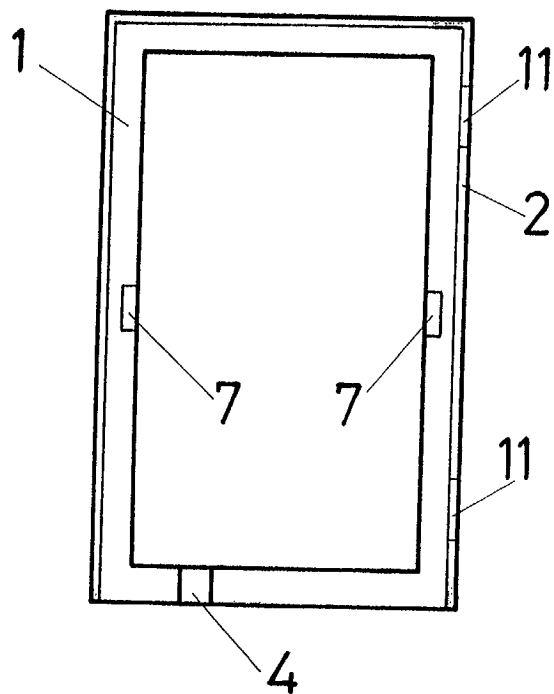


Fig. 2

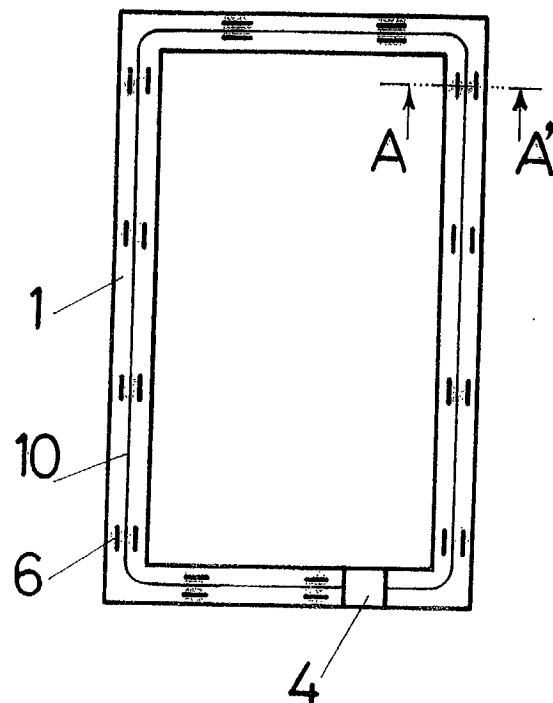


Fig. 3 (A-A')

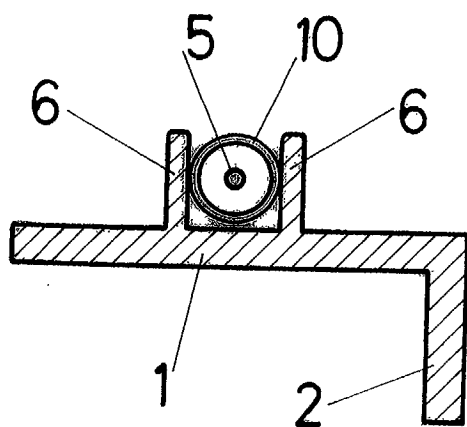


Fig. 4

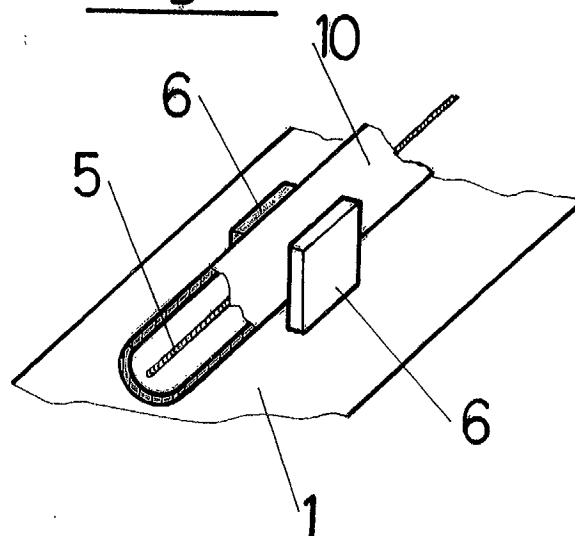


Fig. 5

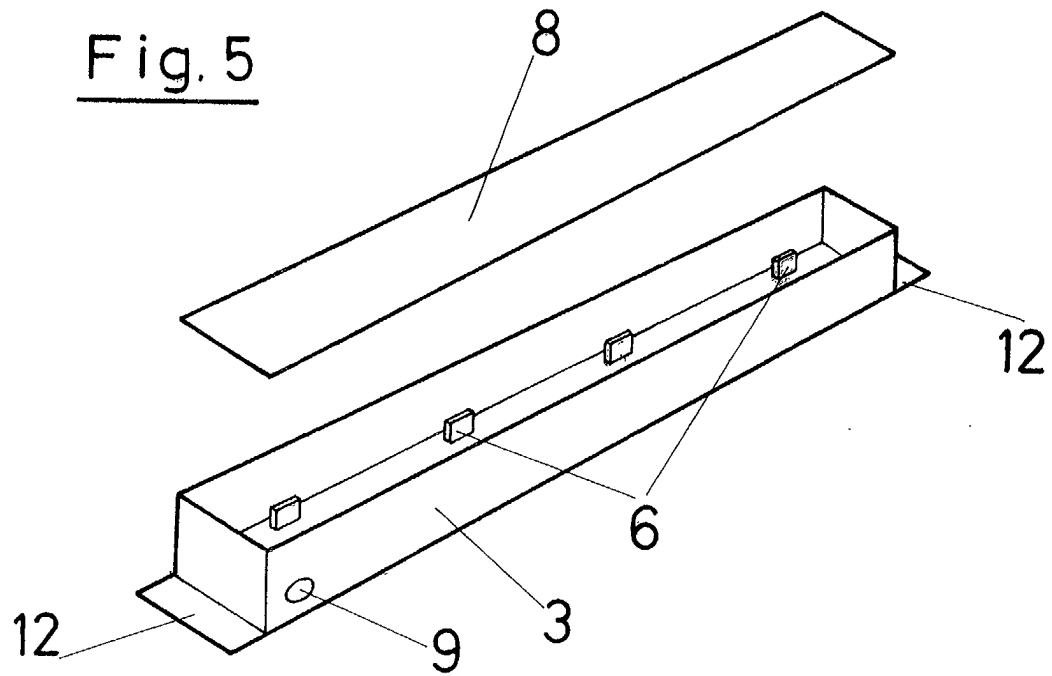


Fig. 6

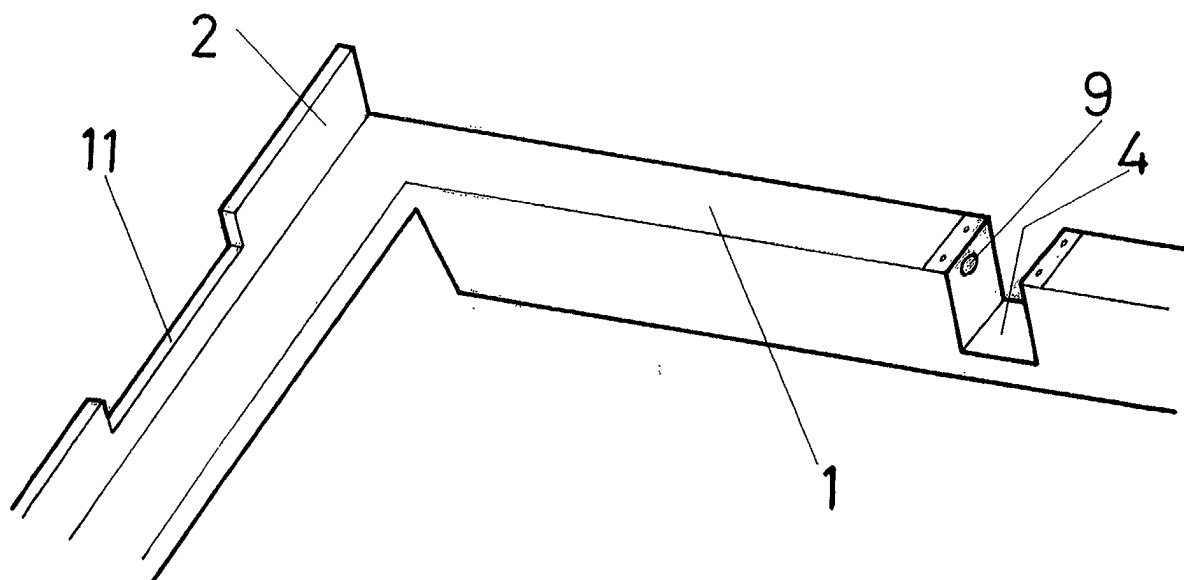
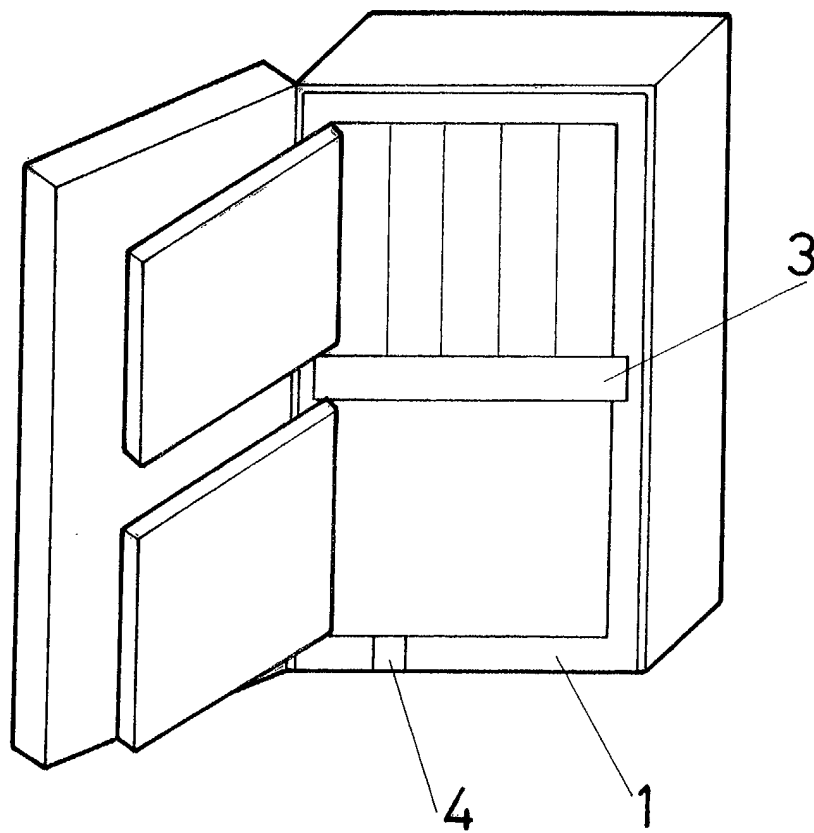


Fig. 7





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 01 3597

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Y	* column 6, line 18 - column 8, line 2; figure 4 *	3	

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	* column 3, line 41 - column 4, line 10; figures 1,2 *		

The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7) F25D
Place of search MUNICH		Date of completion of the search 25 April 2003	Examiner Zanotti, L
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			

EPO FORM 1503 03.82 (P04C01)

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

EP 02 01 3597

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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25-04-2003

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