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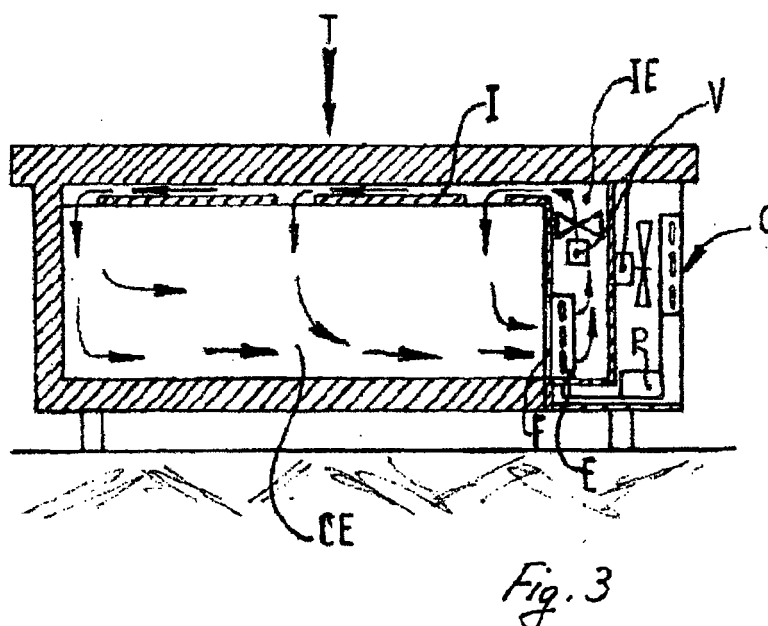
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(54) **Innovative cooling system of foodstuffs in a refrigerated table**

(57) Innovative system for cooling food in a refrigerated table consists of a refrigerated table (T), a refrigerating cell (C) inside it (T), of a group consisting of an evaporator (E), a compressor (P) and a condenser (C) realizing a "single unit", a gap (I) and an opening defined hole (F), this system is operated by the forced circulation of air, chilled by the evaporator (E) inside the jacket (I) by a fan (VC), the air as well as being placed in forced motion is also heavier than air because of the cell (C), since colder, and this tends to fall down and cool the food

substances contained in cell (C) same, then the air, the heat acquired from food substances in the cell (C) continues its course, drawn by the fan (VC), defined in the opening hole (F) which is placed next to the evaporator (E) that will deprive moisture contained in it cooling it and returning it to retrace the journey mentioned above, this system also being characterized in that the cooling unit consisting of the evaporator (E), from (P) and capacitor (C) forming the "block only" is easily removable from the refrigerated table (T).



Description

[0001] The present invention relates to an innovative system for cooling foodstuffs in a refrigerated table made a removable refrigeration device that is equipped with a system of air circulation cooling, all obtained and placed in a refrigerated counter of a table.

[0002] Are commonly known various types of refrigerated tables for commercial / professional uses, i.e. for the restoration and distribution of foodstuffs, etc., these tables are commonly made by a common element forming a horizontal refrigerator inside which is placed an evaporator for removing heat and externally to said table is willing the compressor and condenser group for the disposal of heat removed from the refrigerator.

[0003] The system above mentioned involves significant setbacks and difficulties of maintenance and repair, in fact evaporators groups placed inside the table are subject to suffer of formations of fouling of ice due to the fact that the opening of their doors for access to food substances involve the release of outdoor air in the refrigerator, the air entered, contains water dissolved in it, causing the subsequent condensation of the same groups of evaporation and the subsequent formation of ice.

[0004] All this implies that the efficiency of refrigerating cell above mentioned decreases and then has to be conducted to "defrosting" of the cell of refrigerated table with consequents working stops, the risk of degradation of foodstuffs which must be quickly relocated to other refrigerated cells, etc..in addition, the traditional systems of cooling of tables refrigerated involve that, if the group / evaporator / condenser, for any reason fails, we must therefore proceed to the stop of the entire refrigerated table, to the removal of all food substances in it contained and then to the repair in site of the group above mentioned that in this case is difficult to do and this is due to problems of access to parts of the group to repair or replace it, not less intervention result expensive because of significant operational difficulties due to the above and then the whole results therefore both from the operational point of view of the operating table refrigerated, and from the maintenance and repair was very expensive both economically and maintenance and also from the management point of view by the operator.

[0005] We don't go on any in the descriptions of defects and/or maintenance problems and/or repairs operations because are known and clear to all operators and technicians and to the medium technician

[0006] The purpose of this invention is to overcome the drawbacks, limitations and defects above not least of all that is limiting and covered in traditional systems and this is achieved with the innovative cooling system object of this invention.

[0007] To better understand the characteristics and the benefits of construction obtained, not only, but also the advantages in using this innovative cooling system applicable to a refrigerated table, all just an example and

without limitation is described below with reference to the accompanying drawings in which:

- Figure 1 is a front view of refrigerated table which is applied to the type of refrigeration system improved;
- Figure 2 is a side view of refrigerated table of figure 1;
- Figure 3 represents views sectioned the refrigerated counter of figure 1 along the line II of Figure 2;
- Figure 4 shows as Figure 3 the same view sectioned, but highlighting the removal of the refrigeration group.

[0008] It is stressed that the particulars common will be indicated with the same numerical references. With particular reference to Figures 1 and 2 be noted that externally the refrigerated table T, for cooling and storage of foods, those food, will be of equivalent form and all the same to conventional refrigerated available commercially.

[0009] Particular attention is instead to be reported in Figures 3 and 4 which show the main innovative elements of said refrigerated table T, ie of the innovative system of food refrigeration applied to it. Specifically with reference to figures 3 and 4 it was noticed that Figure 3 is the view sectioned of Figure 2 and highlights that Group G of refrigeration made from, condenser and evaporator, interconnected, will be placed on a preferred side of refrigerated table.

[0010] The evaporator will be placed in an area proximal to the side F of refrigerated table T.

[0011] The evaporator is also equipped with an EV fan for moving air cooling of the foodstuffs placed within the cell C of the refrigerated table T. Always as visible by Figure 3 also highlight the P and capacitor C is also equipped with a ventilator fan equal to VC applied to the evaporator E.

[0012] Always from Figure 3 will be noticed that the refrigerated table T will have, cut into the upper side of the refrigerating cells C of the true and appropriate cavities I they are, as below described made in order to operate in the guise of tubular manifolds for the supply of cold air to the cell C. It was also noted that the cell C will also be provided with a hole in F, proximal to the evaporator E, for the purposes described below.

[0013] To better understand the operation of refrigerated table T will be passed to describe the application and functionality of the real elements previously described to obtain the cooling effect in cell C of the refrigerated table T.

[0014] The operation of the refrigerated table T is as follows: operated the cooling unit consisting of P, and evaporator and condenser C, there will be the removal of heat from the cell C to the outside world in a way itself known.

[0015] It should be noted however that the evaporator E rub off heat generating cooling of the air. This cold air, indicated with arrows, will be putted in motion by the fan VE placed inside the cavity I obtained around the fan VE

and to the evaporator E and will flow into the cavity I forming the cold air supply duct in the refrigerating cell. For reasons known by physics, the cold air being heavier than hot air escaping from the vents supply, to cell C, the cavities I, for ventilation and for gravity will tend to fall naturally, and forcedly pushed, down to lick in an homogeneous way food substances contained in cell C. The cold air then absorbs heat from food substances and from the walls of the cell C and consequently it get warm. The air that has absorbed heat from the cell C and by food-stuffs, at this point will be sucked by the fan VE through the intake hole F corresponding to the evaporator E and giving up its heat and then being recirculated into the described circuit. As stated above, the air is recirculated, i.e. the air contained inside the refrigerated table T, more precisely in cell C and in cavities I and cavity obtained around to the evaporator and, is forced, when the doors of the refrigerated table T are closed, to undergoes a action of closed circuit and therefore defined as a "recycling".

[0016] This "recycling" of air allows a lower risk of polluting substances into the cell C of the refrigerated table T, an optimization of the cooling of foodstuffs contained, better hygiene and especially also avoid the defrost cycle which are subjected to conventional cooling systems refrigerated allowing a continuous cycle of use of refrigerated table without any kind of maintenance downtime for defrosting or other measures of exercise maintenance are usually normal in conventional applied to refrigerated cooling units.

[0017] Defined the innovative cooling system applied to the refrigerated table T will be to highlight a second innovative feature that can not be separated from the first, but in reality are linked to each other and consequent

[0018] This "recycling" of air Allows a lower risk of polluting Substances into the cell C of the refrigerated table T, to optimization of the cooling of contained Foodstuffs, Particularly to better hygiene and Also Avoid the defrost cycle They undergo the conventional refrigeration system of refrigerated tables Allowing a continuous cycle of use of refrigerated table Any kind of maintenance without downtime for maintenance or other actions operating defrosting That Usually are normal In conventional refrigeration units to Applied refrigerated.

[0019] Defined the innovative cooling system Applied to the table T will be refrigerated to highlight a second innovative feature That can not be separated from the first, But in reality are linked to Each Other and consequential

[0020] This "recycling" of air allows a lower risk of polluting substances into the cell C of the refrigerated table T, an optimization of the cooling of contained foodstuffs, a better hygiene and over all also avoid the defrost cycle which they undergo in the conventional refrigeration system of refrigerated tables, allowing a continuous cycle of use of refrigerated table any kind of maintenance without downtime for maintenance or other actions that usually are normal in conventional refrigeration units applied to

refrigerated tables. Defined the innovative cooling system applied to the refrigerated table T will be to highlight a second innovative feature that cannot be separated from the first, but in reality are linked and consequential each to other.

[0021] The group evaporator E, compressor P and condenser C, as can be seen in figures 3 and 4 are configured in such a way as to define a "single unit" of refrigeration and that "single unit" is removable from the refrigerated table without having to perform all operations that traditionally takes place in conventional tables. The single unit then completely changes the approach to maintenance and to the possible and / or subsequent repair of refrigeration units as they are considered today. The single unit is removable, so it can be removed from its S and repositionable in that home S after the operations and maintenance or repair of that single unit. This option to remove the single unit can not be stopped using the table, because you can apply a cooling unit consists of a "mule" equal to the single unit, allowing continuous operation of a refrigerated table T by the user, it also provides access to key parts of the cooling unit easily and more rational on the part of specialist performing maintenance or repair. It is possible to remove the cooling unit that consists of one block, take it to the service center, repair it or make it on the maintenance operations more easily and therefore better and bring the bloc said in perfect working condition, at the user, who has meanwhile continued to work without having any kind of stop.

[0022] The innovation of this system in the following conclusion is divided into two parts, namely:

- The air circulation system makes it possible to avoid unnecessary stops for defrosting of the refrigerated cell obtained in the refrigerated table through an internal recirculation of cold air that is constantly being dried in ways known and therefore will not allow the formation of ice inside the refrigerated cell C.
- The system as designed will allow easy and efficient removal of the removable cooling unit called "single unit" for the maintenance and / or repair of the same, allowing for easier operation at each of its components by the technician. This system also allows, thanks to this possibility to be removed of the "single unit", not to block the pursuit of the end user that uses refrigerated table These and other advantages are clear and readily understandable to the average technical capabilities that evaluate the operational and functional.

[0023] Is easily understood that this innovative system described is implemented in a preferred embodiment and only illustrative and not exhaustive and that can vary widely on the shape without going beyond the scope of the approach described and claimed below with reference to the drawings attachments, and then the domain of industrial property protection of this

Claims

1. Innovative system for cooling food in a refrigerated table consists of a refrigerated table (T), a refrigerating cell (C) inside it (T), of a group consisting of an evaporator (E), a compressor (P) and a condenser (C) realizing a "single unit", a gap (I) and an opening defined hole (F), **characterized by** the fact that this system is operated by the forced circulation of air, chilled by the evaporator (E) inside the gap (I) by a fan (VC), the air as well as being placed in forced motion is also heavier than air because of the cell (C), since colder, and this tends to fall down and cool the food substances contained in cell (C) same, then the air, the heat acquired from food substances in the cell (C) continues its course, drawn by the fan (VC), defined in the opening hole (F) which is placed next to the evaporator (E) that will deprive moisture contained in it cooling it and returning it to retrace the journey mentioned above, this system also being **characterized in that** the cooling unit consisting of the evaporator (E), from (P) and capacitor (C) forming the "block only "is easily removable from the refrigerated table (T).

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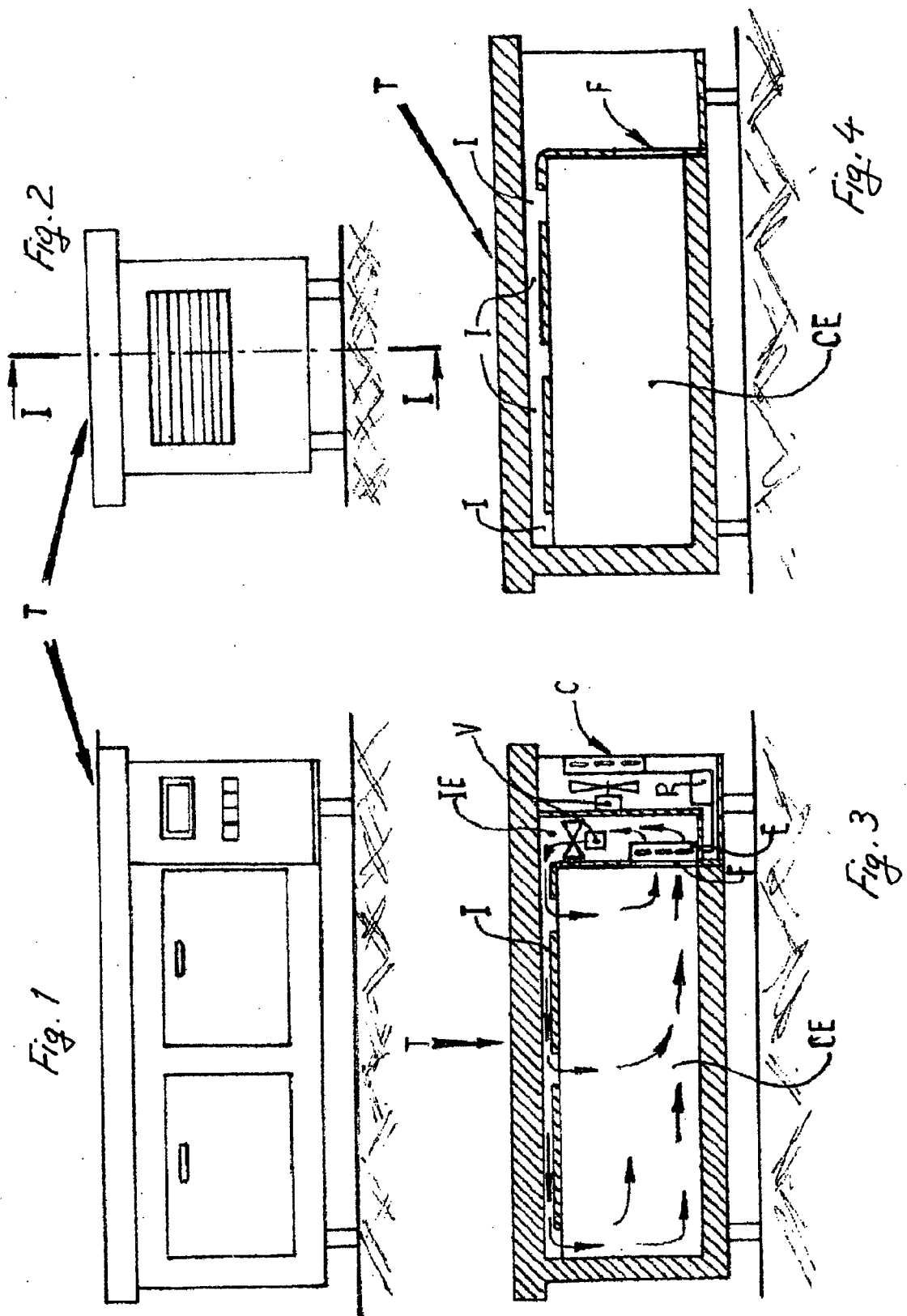
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EUROPEAN SEARCH REPORT

Application Number
EP 10 01 3589

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 6 014 868 A (HIROSAWA MASARU [JP] ET AL) 18 January 2000 (2000-01-18) * abstract; figures 1-7 * * column 2, line 51 - line 53 * * column 5, line 21 - line 27 * -----	1,2	INV. F25D17/06 F25D19/00
X	EP 0 582 940 A1 (HOERSTKE GROSSKUECHENEINRICHTU [DE]) 16 February 1994 (1994-02-16) * abstract; figures 1-8 * * page 4, line 6 - line 8 * * page 4, line 26 - line 28 * -----	1,2	
X	US 2004/168458 A1 (SUNG KI RIN [KR]) 2 September 2004 (2004-09-02) * abstract; figures 1, 2, 5, 6 * -----	1,2	
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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			F25D
Place of search The Hague		Date of completion of the search 13 April 2011	Examiner Yousufi, Stefanie
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 10 01 3589

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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13-04-2011

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