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Shelf for upright freezers
Ablage für senkrechten Gefrierschrank
Etagère pour congélateur vertical

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Description

[0001] This invention relates to an internal shelf for upright freezers. The shelf comprises a flat serpentine section of the evaporator of the upright freezer refrigeration circuit in which the straight portions of the flat serpentine of that section are connected together by substantially transverse rod elements to form an overall grid structure provided with passages. Such a freezer is known from FR-A-2538514.

[0002] Upright freezers, the preservation compartment of which is accessible via a door hinged about a vertical axis, are known to comprise within that compartment a series of horizontal shelves positioned at different heights and each comprising a section of the freezer refrigeration circuit evaporator. Each section is formed from a flat serpentine the straight portions of which are connected together by metal rod elements.

[0003] The evaporator and hence the relative sections are sized on the basis of the required performance, which is variable.

[0004] This necessitates the production of different series of freezers, with an obvious greater expenditure in terms of components and costs.

[0005] An object of the invention is therefore to enable all freezers to be produced on the production line with the same evaporator, to then differentiate them on the basis of their required performance, before packaging.

[0006] It is already known to use eutectic mixture containers in freezers in order to reduce energy consumption and/or to increase the temperature rise time. These eutectic containers hence operate as thermal stabilizers, able to provide cold even during temporary lack of electricity.

[0007] These rigid eutectic containers are placed in the most varied positions within the freezer compartment, creating problems by virtue of their bulk and poor appearance.

[0008] A further object of the invention is therefore to overcome the aforesaid bulk and appearance problems.

[0009] These objects are attained by a freezer shelf in accordance with the features of claim 1.

[0010] The invention will be more apparent from the detailed description of a preferred embodiment thereof given hereinafter by way of nonlimiting example and illustrated on the accompanying drawings, on which:

Figure 1 shows an upright freezer incorporating shelves of the invention;
Figure 2 is a perspective view of a series of horizontal sections through the evaporator, in which each section forms part of a different shelf of the freezer;
Figure 3 is a perspective view relating to a detail of one of the sections; and
Figure 4 is a cross-section through one of the sections.

[0011] With reference to the figures, the reference numeral 1 indicates overall an upright freezer, the preservation compartment of which is divided into sub-compartments by a series of horizontal shelves 2 on which the frozen product or the product to be frozen rests. Each shelf comprises a section of the freezer refrigeration circuit evaporator. Each section comprises a tubular flat serpentine 3 formed from straight portions 4 and curved portions 5.

[0012] Solid metal rod elements 6 are connected to the straight portions both upperly and lowerly, for example by welding, to extend transversely to the straight portions 4.

[0013] As can be seen in Figure 4, the result of such a construction is that between adjacent straight portions 4 and rod elements 6, passages 7 are formed to receive by insertion a closed body or vesicle 10 formed from a flexible plastic casing 8, for example of polyethylene, enclosing a mass 9 of eutectic mixture.

[0014] Such a body can be inserted into some or all of said passages 7 and involve the whole or part of the length of these passages.

[0015] In Figure 3, all the passages 7 of the two upper sections are occupied by the bodies or vesicles 10, whereas the third section from the top has only three adjacent passages occupied by these bodies.

[0016] Of the known eutectic mixtures 9 those which can be advantageously used have a freezing point of between -10°C and -40°C.

[0017] Although the most advantageous and preferable solution is to use a flexible casing 8 for the body or vesicle 10, the scope of the invention also covers the use of casings of rigid or semirigid plastics.

[0018] The solution of the invention enables the evaporator to operate on average at a hotter evaporation temperature (smaller temperature difference between the evaporator and the air), as the eutectic mixture functions as a stabilizer by accumulating and releasing cold during the operating cycles of the freezer (or of the relative refrigeration circuit). This results in better working conditions for the compressor of this circuit, and hence lower energy consumption.

[0019] The solution of the invention also allows modular construction which enables all freezers to be produced on the production line with the same evaporator, and be differentiated prior to packaging, on the basis of the required performance, by placing the eutectic mixture containers in the desired position and quantity (to reduce energy consumption these containers should be placed in the first and last sections, to increase refrigeration capacity they should be placed in the central sections, and to increase the temperature rise time they should be placed only in the upper sections).

Claims

1. An internal shelf (2) for upright freezers (1) compris-
ing a flat serpentine section (3), connectable to the freezer refrigeration circuit evaporator, in which the straight portions (4) of the flat serpentine are connected together by rod elements (6), the combined serpentine (3) and rod elements (6) forming a grid structure provided with passages (7), characterised in that a closed container (10) of eutectic mixture is inserted into at least one of the passages.

2. A shelf as claimed in claim 1, wherein the eutectic mixture container (10) is of flexible plastic.

3. An upright freezer incorporating at least one shelf in accordance with claim 1 or 2.

Patentansprüche

1. Ablagebord (2), die im Innern von Gefrierschränken (1) angeordnet sind und einen flachen Schlangenabschnitt (3) aufweisen, der mit dem Kühlkreis des Gefrierschranks verbindbar ist, wobei die flachen Teile (4) der flachen Schlage durch Stabelemente (6) miteinander verbunden sind und die Schlange (3) mit den mit ihr kombinierten Stabelementen (6) einen mit Durchgängen (7) versehenen Gitteraufbau bildet, dadurch gekennzeichnet, dass ein eine eutektische Mischung enthaltender, geschlossener Behälter (10) in mindestens einen der Durchgänge eingefügt ist.

2. Ablagebord nach Anspruch 1, dadurch gekennzeichnet, dass der die eutektische Mischung enthaltende Behälter (10) aus flexiblem Kunststoff besteht.


Revendications

1. Etagère intérieure (2) pour congélateurs verticaux (1) comprenant une section (3) en forme de serpentin plat, pouvant être raccordée à l'évaporateur du circuit de réfrigération du congélateur et dans laquelle les parties rectilignes (4) du serpentin plat sont raccordées entre elles par des éléments de tige (6), l'ensemble combiné du serpentin (3) et des éléments de tige (8) formant une structure de grille pourvue de passages (7), caractérisée en ce qu'un récipient fermé (10) contenant un mélange eutectique est inséré dans au moins l'un des passages.

2. Etagère selon la revendication 1, dans laquelle le