

(19)



(11)

EP 3 744 411 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.12.2020 Bulletin 2020/49

(51) Int Cl.:
B01B 1/00 (2006.01) **F25B 39/02 (2006.01)**
F25C 1/12 (2006.01) **F28D 1/047 (2006.01)**

(21) Application number: **19382430.7**

(22) Date of filing: **29.05.2019**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

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(54) **SAFETY DEVICE FOR AN ICE MACHINE**

(57) The invention relates to a vertical evaporation device comprising an evaporator (1) made of a vertical panel with a grid of dividers (1a) and flanges folded on the four sides (1b) thereof joined to a refrigeration tube coil (2) on the rear portion thereof and both being em-

bedded in a support framework (3), which in turn has a water distributor (4) by means of a hydraulic system with three inlet channels (4a) which is joined by means of clipping to the upper side (1b) of the device.

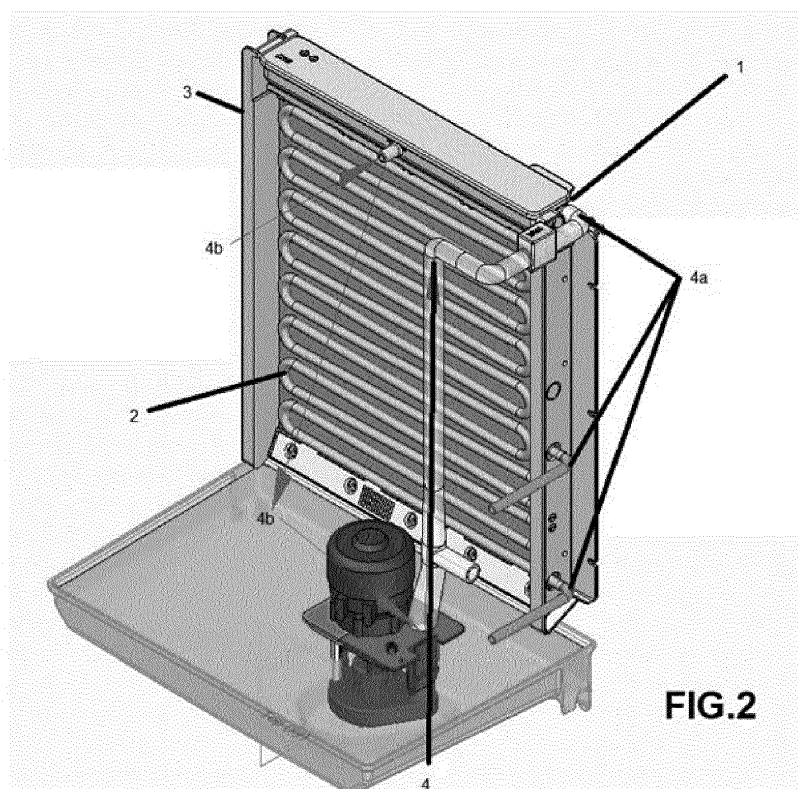


FIG.2

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Description

Object of the invention

[0001] The object of the present specification is a vertical evaporation device, the main distinguishing feature of which lies in the creation of ice starting from a vertical panel with a grid of dividers and flanges folded on the four sides thereof joined to a tube coil, by means of a system with freezing and detachment cycles.

Background of the invention

[0002] Currently, various solutions are known for treating said problem, but none of them has provided a solution like the one described herein.

[0003] In the state of the art, Spanish patent ES 0 035 798 is known, which describes a simplified evaporator made up of an evaporating element as such and of an exchanger element for changing the temperature of gases. The evaporator element consists of two U-shaped tubes joined to each other; the respective loops and welds being in contact with each other, and the ends of two adjacent branches connecting to form a single conduit. One end of the exchanger element is in front of the other two free branches of the U-shaped portions, the external one being joined to the central tube of the exchanger and the other branch to the external wide tube of the exchanger. The other end of the exchanger, which should be a little lower, has one outlet for the central tube and another for the external tube. One or more branches of the U-shaped portions can be provided with flaps. A thin tube reaches and rests on the far end of the external tube of the exchanger and continues along it, welded on the surface if appropriate, and when it reaches the other end of the exchanger it is then grafted into the starting portion of the branch of the U-shaped portion joined to the central tube of the exchanger. A device in that place must let the gas coming from the central tube of the exchanger pass and prevent the liquid coming from the thin tube from falling therein.

Description of the invention

[0004] The technical problem solved by the present invention is the creation of ice by means of evaporation. To do so, the vertical evaporation device object of the present specification comprises an evaporator made of a vertical panel with a grid of dividers and folded flanges on the four sides thereof, attached to a refrigerating tube coil by the rear portion thereof and both being embedded in a framework as a support, which, in turn, houses a water distributor with three input channels joined to the upper side of the device by means of clipping.

[0005] Thanks to the design thereof, the recommended set will enjoy a series of advantages such as a robust and hygienic assembly, since all the tubes, bolts, nuts and anchors of the system are hidden; in addition to easy

installation and disassembly without tools thanks to the snap-fit system used, which in turn facilitates cleaning and maintenance tasks.

[0006] Also, thanks to the inlet of new water in sheets on the back of the evaporator, it helps the detachment and the water of the next cycle is prechilled, improving production and energy efficiency.

[0007] The use of the inlet channels to the distributor will enable a continuous and uniform sheet to be obtained on the evaporator with the minimum amount of water possible, which will prevent empty or incomplete cubes from being obtained throughout the process, in addition to water losses and/or splashing.

[0008] Furthermore, the fact that there is a difference in refrigeration performance between the inlet and outlet of the coil implies that the shape thereof, whether the shape is the one compensating it, thus obtains an ice slab with uniform thickness throughout the surface of the evaporator, which will cause the detachment of the ice to be simultaneous in all the area thereof and the slab will be demoulded parallel to the evaporator.

[0009] Finally, another objective reached by implementing the invention recommended herein is the improvement of thermal transmission by minimising the welding material by pressing the refrigeration coil beforehand.

Brief description of the figures

[0010] What follows is a very brief description of a series of drawings that aid in better understanding the invention and which are expressly related to an embodiment of said invention that is presented by way of a non-limiting example of the same.

FIG. 1 Shows a perspective view of the vertical evaporation device, object of the present specification.

FIG. 2 Shows a rear perspective view of the vertical evaporation device.

Description of a detailed embodiment of the invention

[0011] The attached figures show a preferred embodiment of the invention. More specifically, the vertical evaporation device is characterised in that it comprises an evaporator (1) made by means of a vertical panel with a grid of dividers (1a) and flanges folded on the four sides (1b) thereof joined to a refrigeration tube coil (2) on the rear portion thereof and both being embedded in a support framework (3), which in turn incorporates a water distributor (4) with three inlet channels (4a) which is joined by means of clipping to the upper side (1b) of the device.

[0012] In a preferred embodiment, the evaporator (1) recommended herein will be made of copper coated with chemical nickel.

[0013] Likewise, in a preferred embodiment, the grid of dividers (1a) will determine the size of the ice cubes.

[0014] The support framework (3), will be made of a series of plastic ends which are screwed to the evaporator (1) by means of bolts, and the function of which will be to fasten the evaporator (1) to the frame of the machine in a robust manner and in position; acting as a thermal barrier in the edge of the evaporator (1), anchoring the water distributor (4), and finally, ensuring a uniform flow of water in the inlet of the evaporator (1), in the outlet to the tank and in the rear portion towards the coil (2).

[0015] In a preferred embodiment, the water distributor (4) has a channel intended for the inlet of the water into the device (4b), lower flaps intended to slow down the water speed, a second channel intended to distribute the water in the grid of dividers (1a), and a third channel intended for the inlet of new water for the next cycle.

[0016] In a practical embodiment, the refrigeration tube coil (2) will be pressed beforehand, flattening the exposed face thereof, in order to favour thermal transmission.

[0017] In a particular embodiment, the grid of dividers (1a) is tilted in order to favour the sliding of the plate when performing the demoulding.

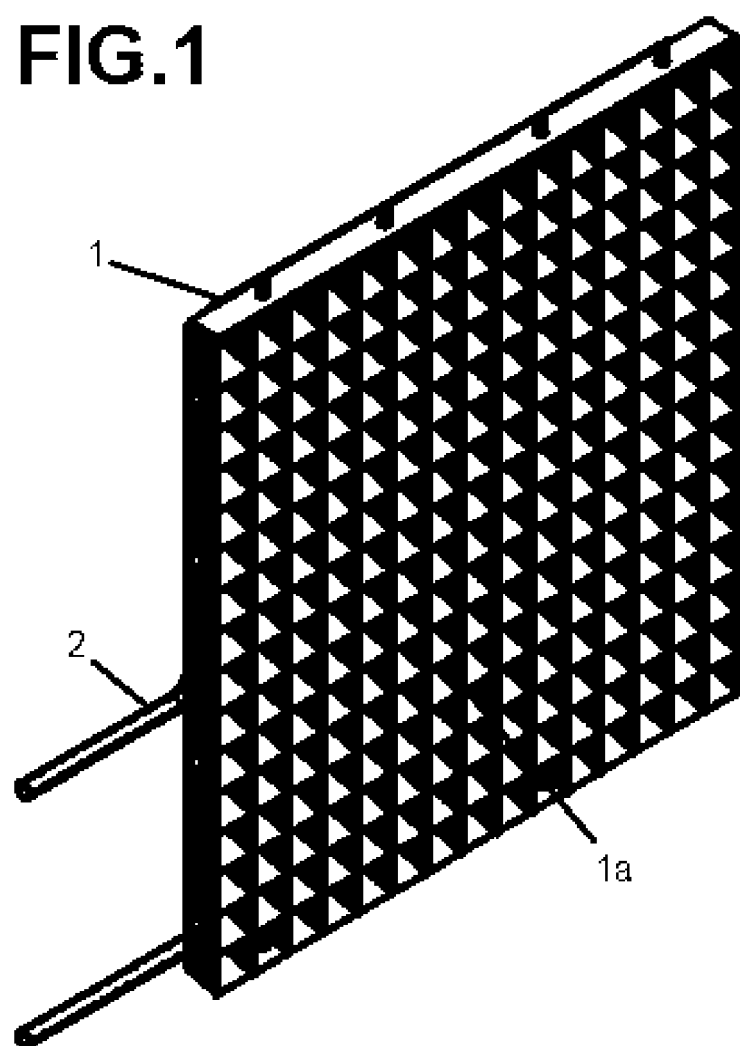
erator (1) by means of bolts.

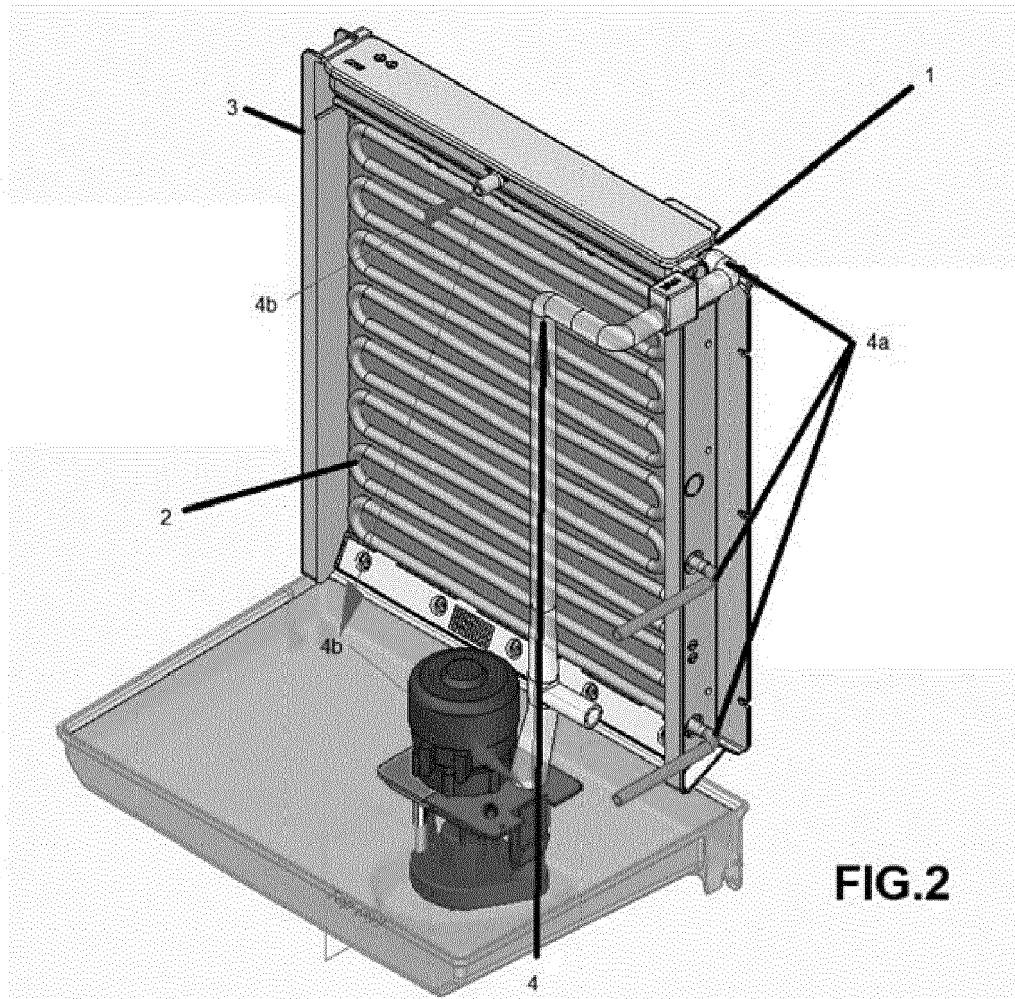
6. The vertical evaporation device according to claim 1, wherein the panel of the evaporator (1) is made of copper coated with chemical nickel.

Claims

1. A vertical evaporation device **characterised in that** it has an evaporator (1) made of a vertical panel with a grid of dividers (1a) and flanges folded on the four sides (1b) thereof joined to a refrigeration tube coil (2) on the rear portion thereof and both being embedded in a support framework (3), which in turn has a water distributor (4) by means of a hydraulic system with three inlet channels (4a) which is joined by means of clipping to the upper side (1b) of the device.
2. The vertical evaporation device according to claim 1, wherein the water distributor (4) has a channel intended for the inlet of the water into the device (4b), lower flaps intended to slow down the water speed, a second channel intended to distribute the water in the grid of dividers (1a), and a third channel intended for the inlet of new water for the next cycle.
3. The vertical evaporation device according to claim 1, wherein the refrigeration tube coil (2) is pressed beforehand in order to favour thermal transmission.
4. The vertical evaporation device according to claim 1, wherein the grid of dividers (1a) is tilted in order to favour the sliding of the plate when performing the demoulding.
5. The vertical evaporation device according to claim 1, wherein the support framework (3) is made of a series of plastic ends which are screwed to the evap-

FIG.1







EUROPEAN SEARCH REPORT

Application Number
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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			F25C B01B F25D F25B F28F F28D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 8 October 2019	Examiner Thibault, Valerie
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
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5 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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