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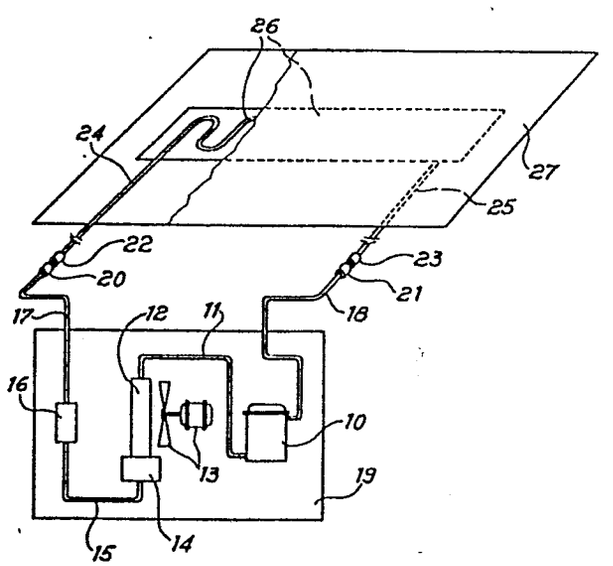
(54) Coffin cooling unit.

(57) The invention relates to a refrigerating circuit for coffins, of the type comprising a compressor (10), a condenser (12), one or more evaporating valves (16), and an evaporator (26) in a situation of heat exchange with the interior of the coffin.

In order to avoid any trouble when the refrigerating circuit is disconnected, the evaporator (26) is in the form of a disposable element fitted with rapid attachment (22, 23) for its connection and disconnection with the remaining circuit parts.



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The present invention concerns a cooling unit for coffins, of the type using a refrigerating circuit consisting of a compressor, a condenser, one or more expansion or similar valves and an evaporator, which is in a situation of heat exchange with the interior of the coffin.

Similar cooling units are already known and used when it is necessary to delay the final closing of the coffin for whatever reason. In general these units consist of mobile and re-useable units, with an evaporator consisting of a heat exchanger which operates in a situation of heat exchange with the interior of the coffin, which obviously remains closed to prevent losses to the exterior.

It is accepted that the efficiency of these known cooling units has never been completely satisfactory, esentially because the evaporator, which constitutes the cooling element, is located in the coffin in such a way as to limit its range of action and therefore a more powerful cooling circuit is required to fulfill the requirements. Other problems are caused by the fact that when the coffin has to be finally closed all the cooling circuit has to be removed from the coffin and it is necessary to to have a perfect seal of that part of the coffin previously occupied by the evaporator.

With the above as premise, an object of the present invention is a cooling unit of the type and for the

application mentioned above, which presents a new and improved configuration, so as to improve the use and efficiency of the same, avoiding the problems already mentioned.

According to the invention, the above object is realized by a cooling unit consisting of a refrigeration circuit as defined above, characterized in that the evaporator of the circuit is composed of at least one circuit permanently installed in the coffin and pre-charged under pressure with the refrigeration fluid, such circuit being equipped with rapid attachment points to connect it to the remaining parts of the refrigeration circuit and to disconnect it from the same parts when the cooling is interrupted.

In other words, the cooling unit according to the invention consists of two parts, one part composed of all the components of a refrigeration circuit, to be eventually contained in a transportable container, and the other part consisting only of the evaporator, which is connected to the remaining parts to close the refrigeration circuit but which is detachable from them and constitutes a disposable element along with the coffin. The other components of the refrigeration circuit can be afterwards connected to another evaporator permanently connected to another coffin.

In this way, it is possible to have optimum cooling conditions inside the coffin because the cooling coil can be

located in optimum position, and there exist no problems about the closure of the coffin when the components of the refrigeration circuit, with the exception of the evaporator, are detached, because it is simply a matter of disconnecting the rapid attachment connectors and of providing for the sealing of the same in the coffin.

Since the attachment and disconnection of the rapid attachment connectors always involves a loss, however small, of refrigeration fluid , generally freon, the components of the said circuit which operate on a new evaporator should include a tank, containing freon under pressure, which allows the loss to be made good at least for a certain number of operations.

As far as the evaporator coil is concerned, it would be advantageous to have a flat coil of the type used in domestic refrigerators and called roll-bond. Such a coil could be distributed in the most appropriate way inside the coffin, close to the remains; for example, in the lining of the coffin or below the same, or in a winding sheet, but always as a disposable item.

The aforesaid is illustrated schematically in the single drawing attached.

With reference to that drawing, a refrigeration circuit of the classic type is shown consisting of a compressor 10 which sends the gas along the pipe 11 to the condenser 12,

which can be cooled by a fan 13. The liquid obtained from the condenser 12 is collected in a tank 14 and sent along the pipe 15 to an expansion valve 16 which in its turn sends the expanded and cooled gas along the pipe 17 to the evaporator, from where the gas returns along the pipe 18 once again to the compressor 10. All the components of the refrigeration circuit could be enclosed in a container 19 and be made transportable.

The pipes 17 and 18, respectively the delivery and return of the expanded gas, end in the rapid attachments 20 and 21, of a type already known, which are able to guarantee the seal on the pipes 17 and 18 conserving the pressure in the tract of circuit which goes from one to the other of the said rapid attachments.

Corresponding to the attachments 20 and 21 are attachments 22 and 23, which can be connected or disconnected to the former, connected respectively to a delivery pipe 24 and a return pipe 25 for the same refrigerating fluid, in general freon, which is made to circulate in an evaporator consisting of a cooling coil 26 fed from the delivery 24 and from which the fluid leaves through the return pipe 25.

The pipes 24 and 25 and the coil 26 are themselves filled with the refrigerating fluid under pressure maintained by the attachments 22 and 23. Further, the coil 26 is distributed in the best possible way inside the coffin, for

example it could be inserted into the lining of the coffin or even in the winding sheet which is used in these cases, or, anyhow, in an element 27 of the coffin very close to the remains.

In any case, the evaporator 26 constitutes a disposable item, which can be connected or disconnected to the other components of the refrigerator circuit, which are re-usable through being connected to another evaporator connected permanently to another coffin, in such a way that those other components can be re-used a number of times, each time serving a new coffin. The highest cost derives from the substitution of the disposable evaporators and is offset by the smaller demands made on the refrigerator circuit, the small size and lower weight, not to mention the ease with which the coffin can be closed when the cooling unit has been disconnected.

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CLAIMS

1. A cooling unit for coffins, consisting of a refrigerating circuit with a compressor, a condenser, one or more expansion or similar valves and an evaporator in a situation of heat exchange with the interior of the coffin, characterized in that the evaporator is composed of at least one coil permanently installed in the coffin and pre-charged with refrigeration fluid under pressure, such coil being fitted with rapid attachments for its attachment to the remaining components of the refrigerating circuit and for its disconnection from those said components when the cooling is interrupted.

2. A cooling unit according to Claim 1, characterized in that the refrigerating circuit includes a tank for the fluid used in the cycle, so as to compensate for the losses during the connection and disconnection of various disposable evaporators.

3. A cooling unit according to Claim 1, characterized in that the evaporator coil is a flat coil (roll-bond) distributed in the coffin close to the remains.

4. A cooling unit according to Claim 3, characterized in that the flat coil is incorporated into the lining of the coffin.

5. A cooling unit according to Claim 3 or 4, characterized in that the flat coil is incorporated into a winding sheet.

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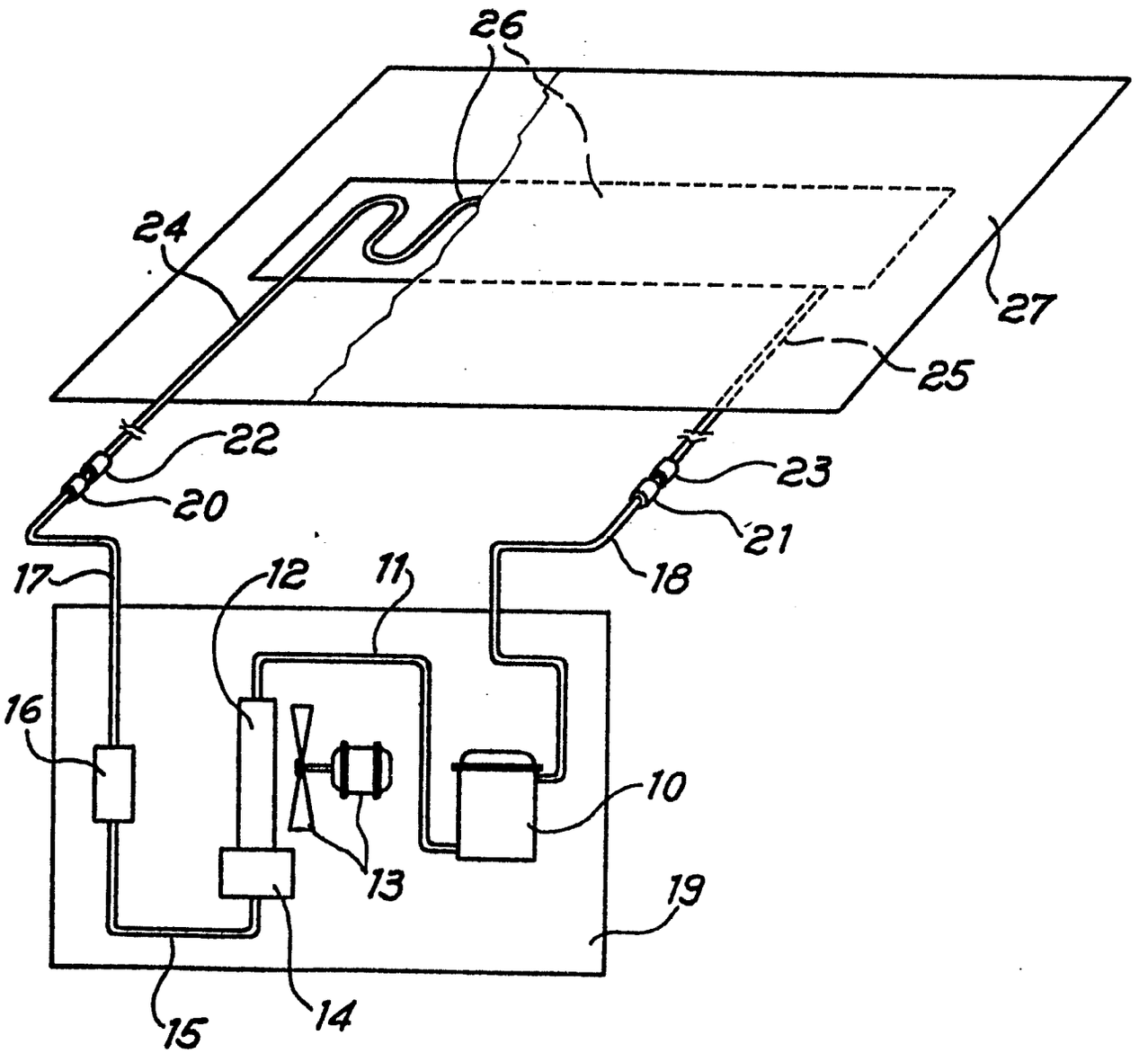

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EUROPEAN SEARCH REPORT

0230595
Application number

EP 86 11 7317

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.4)
Y	US-A-3 618 336 (PALMA) * Column 2, lines 39-49; figure 4 *	1	A 61 G 17/00 F 25 D 15/00
Y	US-A-4 103 510 (HALL) * Column 3, line 9 - column 5, line 34; figures 2-6 *	1	
A	US-A-2 612 761 (HILKER) * Column 1, line 29 - column 2, line 46; figures 1-4 *	1,4	
A	DE-A-2 549 922 (NETHERY) * Page 11, paragraph 2 - page 13, paragraph 1; figure 2 *	1,5	
A	FR-A-2 206 485 (L'AURORE) * Page 3, line 25 - page 5, line 35; figures 1-3 *	1,2	TECHNICAL FIELDS SEARCHED (Int. Cl.4) F 25 D A 61 G F 25 B
A	US-A-3 507 322 (TETRICK) * Column 4, lines 41-44,67-72; figures 1-12 *	2	
A	DE-A-2 516 156 (LINDE) * Page 4, last paragraph - page 7, paragraph 1; figures 1,2 *	3,4	

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	16-03-1987	BOETS A.F.J.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	US-A-3 122 006 (JACOBS) * Column 2, line 66 - column 4, line 16; figures 1-7 *	3	
A	DE-A-2 943 251 (GROENEWEGEN)		
A	FR-A-1 246 267 (MARAIS)		
A	FR-A-2 539 620 (HAMEL)		
A	FR-A-2 292 941 (BRIAUD)		TECHNICAL FIELDS SEARCHED (Int. Cl.4)
A	FR-A-1 288 373 (CORGIER)		

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