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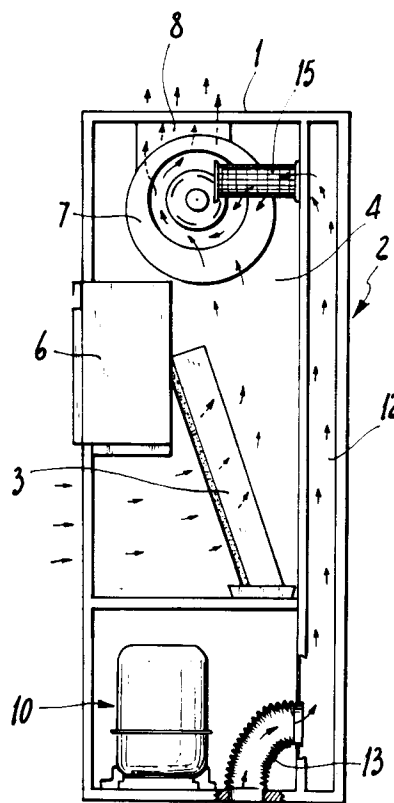
(11) Publication number:

**0 490 331 A2**

(12)

**EUROPEAN PATENT APPLICATION**(21) Application number: **91121152.2**(51) Int. Cl.<sup>5</sup>: **F24F 1/00, F24F 13/068**(22) Date of filing: **10.12.91**(30) Priority: **13.12.90 IT 3073390 U**(43) Date of publication of application:  
**17.06.92 Bulletin 92/25**(84) Designated Contracting States:  
**AT BE CH DE DK ES FR GB GR LI LU NL SE**(71) Applicant: **HIROSS S.p.A.**  
**Zona Industriale Tognana**  
**I-35028 Piove di Sacco Prov. Padova(IT)**(72) Inventor: **Morosin, Gabriele**  
**Via Umberto I, 190**  
**I-35020 Arzergrande (Padova)(IT)**(74) Representative: **Modiano, Guido et al**  
**MODIANO, JOSIF, PISANTY & STAUB**  
**Modiano & Associati Via Meravigli, 16**  
**I-20123 Milano(IT)**(54) **Air refrigeration unit.**

(57) The air refrigeration unit comprises a box-like body (1,2) in which an evaporator (3) is arranged between other refrigeration devices and fans (7). The evaporator (3) and the fans (7) are arranged in a channel (4) adapted for conveying ambient air. The unit according to the invention is characterized in that a channel (12) is defined therein which connects a region located downstream of the evaporator (3) to an opening (14) from which outside replacement air is drawn.

*Fig. 2***EP 0 490 331 A2**

The present invention relates to an air refrigeration unit.

Among the various types of air refrigeration unit currently commercially available, one is substantially constituted by a cabinet, composed of a frame and of covering panels, in which an evaporator is conveniently arranged between the other refrigeration devices and a series of two fans.

A channel is defined in the cabinet, which contains the evaporator and the fans and is suitable for conveying air from a room and for returning it thereto after treating it.

A duct suitable for drawing external replacement air is also currently defined in said channel so as to terminate upstream of the evaporator.

However, since the outlet of said duct is arranged upstream of the evaporator, i.e. in a region where the suction effect of the series of fans is scarcely felt, and since said evaporator constitutes an element which induces a high load loss on the airflow as passes through it, the drawn replacement air flow-rate is extremely low and thus insufficient.

In order to solve this problem, an additional fan has been arranged in the duct, but this obviously entails an increase in cost for the entire apparatus.

The aim of the present invention is to provide an air refrigeration unit which solves the problem described above in known types.

A consequent primary object is to avoid resorting to an auxiliary fan for the external replacement air.

Another object is to provide a refrigeration unit which is not more complicated than current units.

Not least object is to provide an air refrigeration unit which can be used with conventional machines and facilities.

This aim, these objects and others which will become apparent hereinafter are achieved by an air refrigeration unit of the type which comprises, in a box-like body composed of a supporting frame and covering panels, an evaporator arranged between the other refrigeration devices and a series of fans and contained, together with said series of fans, in a channel for conveying ambient air, said unit being characterized in that a channel is defined therein which connects the evaporator region to an opening for drawing outside replacement air.

Further characteristics and advantages of the invention will become apparent from the detailed description of an embodiment thereof, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a perspective view of the air refrigeration unit according to the invention, without the covering panels;

figure 2 is a side view of the refrigeration unit of figure 1.

With reference to the above figures, the air

refrigeration unit according to the invention comprises a frame 1 made of metallic elements defining a parallelepipedal box-like body 2 which is conveniently closed by covering panels, which are not illustrated.

The various air treatment elements are arranged in said body 2.

In particular, an evaporator 3 is arranged transversely and in an inclined position in a median region inside a channel 4 defined in said structure. The intake opening 5 of the evaporator 3 is arranged in a median lateral region in a position directly underlying an operation and control panel 6.

Said channel 4, which is substantially L-shaped, ends above the evaporator 3 in the region wherein a battery of two fans 7 is arranged, the delivery outlets 8 of said fans being directed upward and thus being suitable for returning the treated air into the room.

The other refrigeration devices, generally indicated by the reference numeral 10, are arranged below said evaporator 3 and are divided therefrom by means of a wall 9 which delimits the channel 4.

According to the invention, a channel 12, having a substantially rectangular cross-section and arranged vertically, is defined on the side opposite to said intake opening 5 in the unit between the walls 11 of the channel system 4 and the covering panels.

Said channel 12 is connected, in a downward position, by means of a flexible connecting hose 13, to an opening 14 which is defined in the bottom in the region of the devices 10 and is adapted for drawing outside replacement air.

In an upward position, said channel 12 has a lateral hole at which a cylindrical filter 15 is arranged; said filter connects said channel to the region downstream of the evaporator 3 immediately upstream of the axial suction inlet of one of the fans 7.

The fact that the outlet of the channel 12 is in the region downstream of the evaporator 3, i.e. in a region wherein the air suction produced by the fans 7 is felt considerably, causes an amount of replacement air sufficient to provide a sufficient replacement in the room to be drawn through said outlet.

With this arrangement of the channel 12 it is therefore no longer necessary to use an additional fan as provided in current types.

In practice it has thus been observed that the air refrigeration unit according to the invention has achieved the intended aim and objects, the disadvantages observed in known types having been eliminated by defining in said unit a particular channel suitable for drawing replacement air.

The air refrigeration unit can be manufactured

without particular problems by modifying the current structures and is more economical than known types by virtue of the fact that it does not have the additional fan.

In practice, the materials employed, so long as they are compatible with the contingent use, and the dimensions may be any according to the requirements.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

### Claims

1. Air refrigeration unit of the type which comprises, in a box-like body composed of a supporting frame and covering panels, an evaporator arranged between the other refrigeration devices and a series of fans and is contained, together with said series of fans, in a channel for conveying ambient air, said unit being characterized in that a channel is defined therein which connects the region after the evaporator to an opening for drawing outside replacement air.
2. Air refrigeration unit, according to claim 1, characterized in that said evaporator is arranged above said other refrigeration devices and below said fans and is inserted in said ambient air conveyance channel, which conveniently is L-shaped with lateral suction and upward delivery.
3. Air refrigeration unit according to one or more of the preceding claims, characterized in that said channel for replacement air is arranged vertically on the side opposite to the intake opening of said ambient air channel.
4. Air refrigeration unit according to one or more of the preceding claims, characterized in that said replacement air channel is defined between the inner walls and the covering panels of said unit.
5. Air refrigeration unit according to one or more of the preceding claims, characterized in that said replacement air channel is connected, by means of a flexible hose, to said intake opening defined in the bottom of said box-like body in the region of said other refrigeration devices.
6. Air refrigeration unit according to one or more of the preceding claims, characterized in that said replacement air channel is connected to the region downstream of said evaporator by means of a filter.

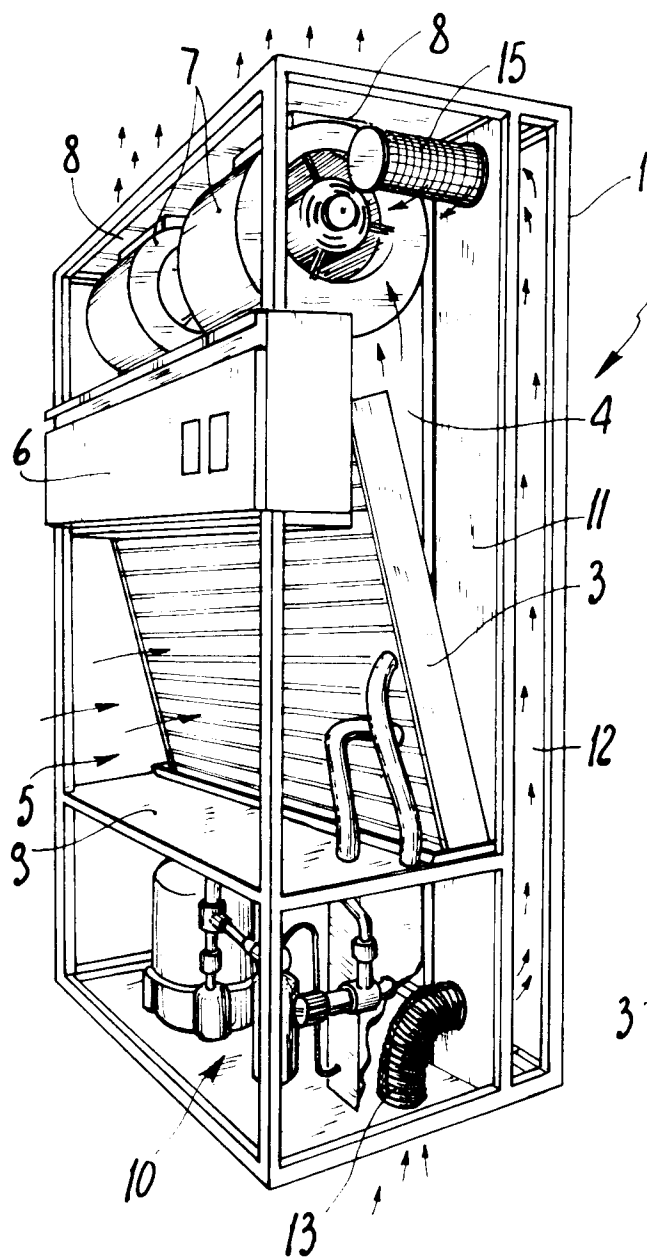


Fig. 1

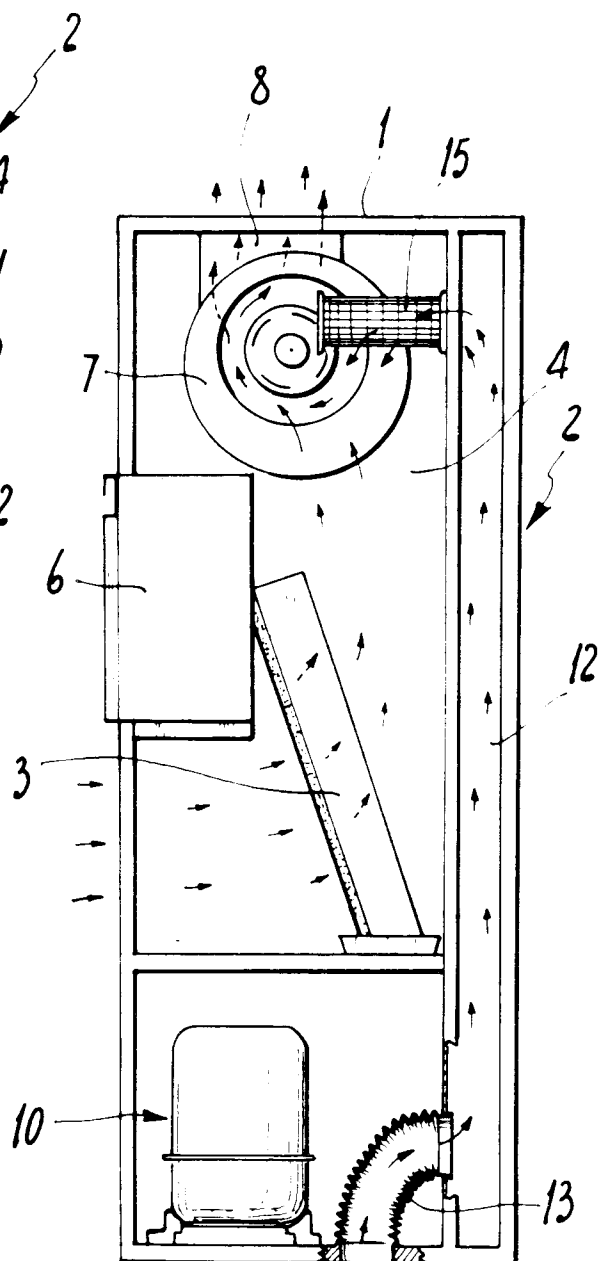


Fig. 2