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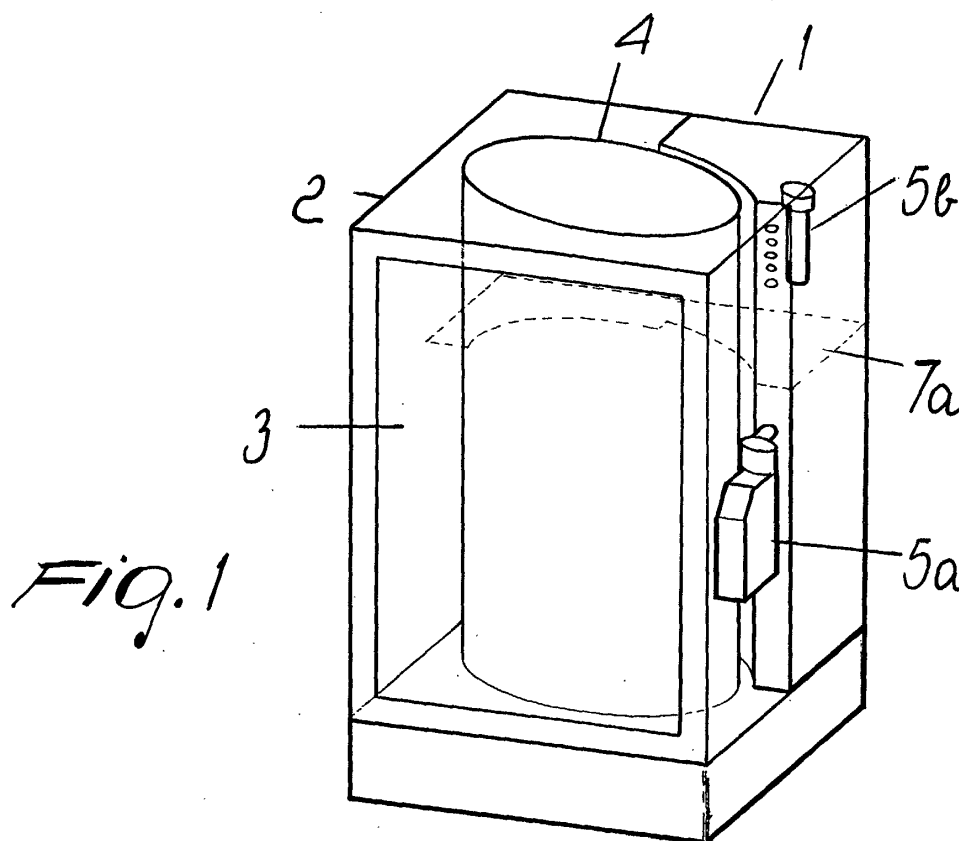
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(54) **Refrigerated vending machine**

(57) A refrigerated vending machine (1), comprising an external housing (2) that contains a plurality of superimposed disks meant to perform a respective angular stroke about a rotation axis, an internal portion of the housing being accessible from outside, the vending ma-

chine having a plurality of refrigeration means (5) suitable to circulate fluids at different temperatures and means (7) for partially separating portions located inside the housing which are meant to be affected by the fluids at different temperatures.



*Fig. 1*

EP 1 255 233 A2

## Description

**[0001]** The present invention relates to a refrigerated vending machine.

**[0002]** In the background art there are refrigerated vending machines that allow the user to check out a chosen product and ensure that the product, when it is inside the vending machine, is maintained in the optimum temperature conditions for its correct preservation.

**[0003]** Although these vending machines are widely used, they are not free from drawbacks.

**[0004]** They do allow to control the temperature inside them, but the set temperature is uniform in all sections of the vending machine.

**[0005]** The aim of the present invention is to provide a refrigerated vending machine that can be used to contain and accordingly offer simultaneously products that must be kept at different temperatures for correct preservation.

**[0006]** Within this aim, an object of the invention is to provide a refrigerated vending machine that allows to offer to the user, in the same machine, both fresh products and products to be stored at ambient temperature.

**[0007]** Another object of the invention is to provide a refrigerated vending machine that is efficient, reliable and has low production costs.

**[0008]** This aim and these and another objects that will become better apparent hereinafter are achieved by a refrigerated vending machine, comprising an external housing that contains a plurality of superimposed disks meant to perform a respective angular stroke about a rotation axis, an internal portion of said housing being accessible from outside, characterized in that it comprises refrigeration means suitable to circulate fluids at different temperatures and means for partially separating portions located inside said housing, said portions being meant to be affected by said fluids at different temperatures.

**[0009]** Advantageously, a vending machine according to the invention is characterized in that said refrigeration means comprise a first fan, which is suitable to draw cold air from an evaporator, and a second fan, which is suitable to circulate air at a higher temperature than said cold air.

**[0010]** Further characteristics and advantages of the present invention will become better apparent from the following detailed description of a preferred embodiment thereof, given by way of non-imitative example with reference to the accompanying drawings, wherein:

Figure 1 is a perspective view of a refrigerated vending machine according to the invention;

Figure 2 is a side elevation view of a refrigerated vending machine; and

Figure 3 is a front elevation view of a vending machine according to the invention.

**[0011]** A vending machine according to the invention,

generally designated by the reference numeral 1, is constituted by an external housing 2 which has, at the wall that during use lies at the front, a transparent element, generally constituted by a glass door 3.

**[0012]** The transparent door 3 allows the user to view the products located inside the vending machine 1 in order to possibly decide to purchase them.

**[0013]** In particular, inside the housing 2 there is a compartment 4 for accommodating a plurality of superimposed disks, not shown in the figures; said disks are advantageously divided into sectors by using radial partitions.

**[0014]** Conveniently, at the glass door 3 there is a series of flaps, by virtue of which the user can access a region inside the housing so as to check out the purchased product or products.

**[0015]** The compartment 4 is provided with a motorization device, not shown in the figures; once the customer has identified the product to purchase, said motorization device allows to rotate the compartment 4, or part thereof, for example by acting on appropriately provided selection devices, so as to place the identified product at a region, inside the housing, that can be accessed from the flaps.

**[0016]** As shown in the figures, the vending machine 1 is provided with refrigeration means that are suitable to circulate fluids at different temperatures.

**[0017]** In particular, said refrigeration means are constituted by two or more of a plurality of fans 5 meant to circulate, inside the housing, air at different temperatures.

**[0018]** More particularly, the plurality of fans comprise a first fan 5a and a second fan 5b: the first fan 5a draws cold air chilled by an evaporator and directs it into the outer housing and in particular at the compartment 4.

**[0019]** The second fan instead circulates air at a different temperature with respect to the cold air circulated by the first fan.

**[0020]** Conveniently, the second fan is located approximate to heating means, such as a for example a resistor, that allow to heat the air that leaves it.

**[0021]** In a manner that is equivalent to this embodiment, the refrigeration means can be constituted by a single fan, meant to draw air cooled by an evaporator, provided with two output ducts.

**[0022]** In this case, at one of the two output ducts there is a resistor in order to allow to heat the (previously cooled) air to be blown into the housing.

**[0023]** The vending machine is further provided with means for partially separating portions inside the housing that are meant to be affected by the fluids that leave the output ducts.

**[0024]** In particular, the partial separation means are constituted by one or more conveyance partitions 7, which are interposed between the output ducts of the fans 5; for example, as shown in the figures, a vending machine 1 provided with two fans 5a and 5b is provided with a conveyance partition 7a.

[0025] The conveyance partition 7a is located at a part of the vending machine that is located to the rear during use.

[0026] Furthermore, the partition lies on a plane that is substantially perpendicular to the rotation axis of the compartment 4 and generally lies outside the part of the housing that is affected by the rotation of the superimposed disks.

[0027] The use of the vending machine according to the invention is as follows.

[0028] If one wishes to use a vending machine to provide both so-called fresh products (generally to be kept at a temperature of approximately 5 °C) and products to be stored at ambient temperature (for which preservation at low temperatures would entail a lack of "tastability" of the food product), a first fan 5a and a second fan 5b are used inside the housing 1.

[0029] The fan 5a, connected to an evaporator and located, during use, in a downward region, introduces in the vending machine air at an optimum temperature for preservation of the so-called fresh products.

[0030] The fan 5b, which is associated with a resistor, instead circulates, at a part of the vending machine that during use lies in an upper region, air at a higher temperature so as to provide ideal conditions of preservation for the products to be kept at ambient temperature.

[0031] The conveyance partition 7a allows to divide the two streams of air at different temperatures at the output thereof from the fans, while as regards the portion of the vending machine that during use is located at the front and at which no physical divisions can be provided, a fluidodynamic separation division is produced.

[0032] In this manner, one obtains, in the regions above and below the conveyance partition 7a, two different temperatures although at least at the front portion of the vending machine 1 there is no physical separation between the two regions.

[0033] Advantageously, the vending machine according to the invention has a control device which, by means of thermostats, allows to set the intended temperatures in the various sections.

[0034] The invention described above is susceptible of numerous modifications and variations within the protective scope defined by the content of the appended claims.

[0035] For example, if one wishes to have, inside the vending machine, three regions at different temperatures, it is possible to install three fans with two conveyance partitions interposed between the fans, and so forth.

[0036] The materials and the dimensions may be any according to requirements.

[0037] The disclosures in Italian Utility Model Application No. VR2001U000024 from which this application claims priority are incorporated herein by reference.

[0038] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of in-

creasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

## Claims

1. A refrigerated vending machine (1), comprising an external housing (2) that contains a plurality of superimposed disks meant to perform a respective angular stroke about a rotation axis, an internal portion of said housing being accessible from outside, **characterized in that** it comprises refrigeration means (5) suitable to circulate fluids at different temperatures and means (7) for partially separating portions located inside said housing, said portions being meant to be affected by said fluids at different temperatures.
2. The vending machine according to claim 1, **characterized in that** said refrigeration means (5) comprise a first fan (5a) suitable to aspirate cold air from an evaporator and a second fan (5b) suitable to circulate air at a higher temperature than said cold air.
3. The vending machine according to claim 2, **characterized in that** said refrigeration means (5) comprise a resistor located at the output duct of said second fan.
4. The vending machine according to at least one of the preceding claims, **characterized in that** said partial separation means (7) comprise at least one conveyance partition (7a), which is interposed between the output ducts of said first (5a) and second fans (5b).
5. The vending machine according to at least one of the preceding claims, **characterized in that** said conveyance partition (7a) lies on a plane that is substantially perpendicular to said rotation axis.
6. The vending machine according to at least one of the preceding claims, **characterized in that** said output duct of said first fan is arranged, during use, in a downward region with respect to said output duct of said second fan (5b).
7. The vending machine according to any one of the preceding claims, **characterized in that** said conveyance partition (7a) is arranged at a part of said vending machine that lies to the rear during use.
8. The vending machine according to any one of the preceding claims, **characterized in that** said conveyance partition (7a) is located outside said superimposed disks.

9. The vending machine according to any one of the preceding claims, **characterized in that** it comprises a control device which has a plurality of thermostats suitable to control the temperature at regions affected by said fluids circulated by said refrigeration means. 5

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