



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.06.2010 Bulletin 2010/22

(51) Int Cl.:
F25D 17/04 (2006.01)

(21) Application number: **09382260.9**

(22) Date of filing: **25.11.2009**

(84) Designated Contracting States:
**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 SE SI SK SM TR**

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(30) Priority: **28.11.2008 ES 200803393**

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(54) **Vegetable compartment for a cooling appliance**

(57) Vegetable compartment for a cooling appliance, including a humidity control device (1) that comprises a housing in which is disposed a hygroscopic material, and at least one humidity transfer wall for transferring humidity between said material and at least part of the inside

of the compartment. Said hygroscopic material and said humidity transfer wall are disposed in a substantially vertical position. In addition, the humidity control device (1) comprises a water tank in contact with the hygroscopic material.

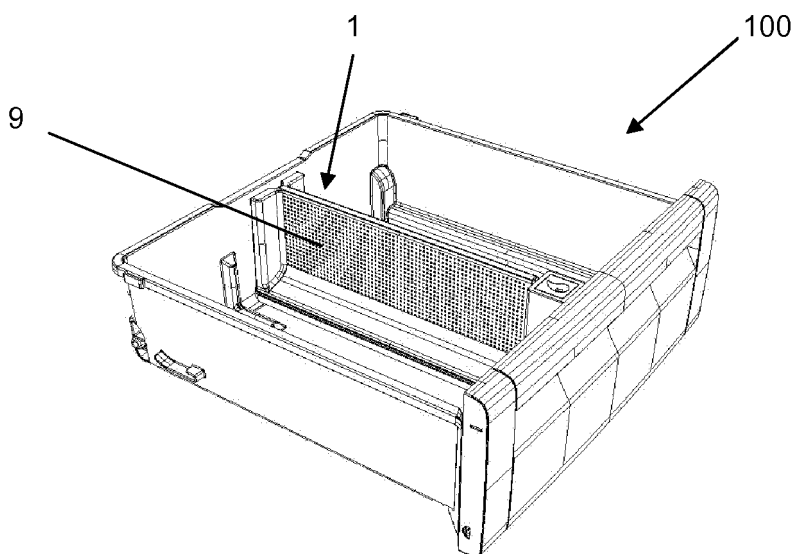


Fig. 1

Description**TECHNICAL FIELD**

[0001] The present invention relates to cooling appliances, and in particular to cooling appliances comprising a device for controlling humidity in the vegetable compartment.

PRIOR ART

[0002] There are known cooling appliances that incorporate means in the vegetable compartment for adjusting the level of humidity inside the compartment.

[0003] JP 05302781 describes a housing located in the top part of the vegetable compartment where a component is housed for controlling the humidity. Said component comprises a permeable element in laminar form, such as non-woven polyester fibre, a superabsorbent polymer that maintains humidity levels and a hydrophilic component such as silica gel.

[0004] JP 2001091144 discloses an element, also located in the top part of the vegetable compartment, for controlling humidity, which comprises a gel-organic material in the form of fine particles that are hygroscopic.

DISCLOSURE OF THE INVENTION

[0005] It is the object of this invention to provide a vegetable compartment with an optimal level of humidity in order to guarantee improved preservation of the foods inside the cooling appliance, as defined in the claims.

[0006] The vegetable compartment of the invention incorporates a device for controlling humidity. Said device comprises:

- a housing in which is disposed a hygroscopic material, and
- at least one humidity transfer wall for transferring humidity between said material and at least part of the inside of the compartment.

[0007] Said hygroscopic material and said humidity transfer wall are disposed in a substantially vertical position. In addition, the hygroscopic material is in contact with a water tank, which thus guarantees that the hygroscopic material always contains a sufficient level of humidity and may thus release it into the vegetable compartment.

[0008] These and other advantages and characteristics of the invention will be made evident in the light of the drawings and the detailed description thereof.

DESCRIPTION OF THE DRAWINGS**[0009]**

Figure 1 is a view in perspective of an embodiment

of the vegetable compartment of the invention.

Figure 2 is a view in perspective of the humidity control device of the vegetable compartment of Figure 1.

Figure 3 is a first cross-sectional view of the humidity control device of Figure 2.

Figure 4 is a second cross-sectional view of the humidity control device of Figure 2.

Figure 5 is a view in perspective of the water tank of the humidity control device of Figure 2.

Figure 6 is a first detailed view in perspective of a cross-section of the humidity control device of Figure 2.

Figure 7 is a second detailed view in perspective of a cross-section of the humidity control device of Figure 2.

DETAILED DISCLOSURE OF THE INVENTION

[0010] Figure 1 shows an embodiment of the vegetable compartment 100 for a cooling appliance that incorporates a device 1 for controlling humidity. Said device comprises:

- a housing in which is disposed a hygroscopic material, and
- at least one humidity transfer wall 9 for transferring humidity between said material and at least part of the inside of the compartment.

[0011] The hygroscopic material and the humidity transfer wall 9 are disposed in a substantially vertical position, where the hygroscopic material is in contact with a water tank.

[0012] In the embodiment shown in the figures, the humidity control device 1 is built into a divider, in other words, said device 1 is configured in such a way that it also performs the function of a conventional vegetable compartment divider. Other arrangements are also possible, however, such as those in which the humidity control device 1 is built into some of the side walls or even in the front of the compartment 100.

[0013] The hygroscopic material used can be any insoluble material with humidity-absorption properties. In the preferred embodiment of the invention, the hygroscopic material used is a superabsorbent polymer, such as a polyacrylate polymer, which is disposed inside a permeable fabric bag 10 that is located, as shown in Figure 3, between the transfer walls 9. In the embodiment of the invention, an antibacterial agent is added in the fabric of the permeable bag.

[0014] Preferably, as shown in Figure 3, the water tank 8 is located in the base of the humidity control device 1,

and is situated beneath the hygroscopic material. As a result, as the hygroscopic material is in contact with the water tank 8, the hygroscopic material always contains a sufficient level of humidity and may thus release it inside the compartment 100.

[0015] Said water tank 8 comprises an enclosed area 11 in which is disposed one end of the hygroscopic material, said enclosed area 11 being separated from the rest of the water tank 8 by means of a wall with a plurality of grooves 13. These grooves are shown in Figure 5.

[0016] The humidity control device 1 of the invention also comprises a base body 6 which also comprises holes 14, shown in detail in Figure 6. When the base body 6 and the water tank 8 are assembled, the grooves 13 and the holes 14 are positioned at par, as shown in detail in Figure 6. As a result, this embodiment can regulate and control the passage of water from the water tank 8 to the enclosed area 11 and guarantees a contact between the water and the lower surface of the hygroscopic material.

[0017] The hygroscopic material, which is in contact with the water tank 8, and more specifically with the water contained in the enclosed area 11, absorbs the water from the enclosed area 11, with the result that it can release said humidity through holes disposed in the transfer wall 9. As stated above, it is possible to use any hygroscopic material that is capable of absorbing water from the water tank 8 and transfer it into the compartment 100. Using a superabsorbent polymer can get also, when necessary, that said superabsorbent polymer absorbs humidity from the inside of the compartment 100 through the transfer wall 9.

[0018] The humidity control device 1 also comprises an inlet pipe for filling the water tank 8. Figure 4 shows a cross-section of it. Water is supplied to the humidity control device 1 using a dispenser cup 2, which is housed with its mouth facing down on the inlet pipe. The water is poured on to a funnel 3, which is housed on a filter holder 5. The funnel 3 has holes disposed in its lower part, these also being partly visible in Figure 4, to allow the water to pass to the filter holder 5. The water is filtered in said filter holder 5, where an organic material 16, also shown in Figure 4, is deposited previously to ensure the quality of the water. As a result, there is no need to use treated or distilled water in order not to damage the hygroscopic material of the humidity control device 1. The filter holder 5 in the lower part is also disposed with holes (not shown in the drawings) to allow the water to pass into the water tank 8.

[0019] In the embodiment of Figure 4, a permeable element 4 is positioned in both the lower part and the top part of the filter holder 5, in order to keep the organic material 16 inside the filter holder 5 as shown in Figure 5. As a result, the organic material 16 is retained inside the filter holder 5.

[0020] The humidity control device 1 of the invention also comprises a level gauge 7, shown in Figures 2 and 7. Said level gauge 7 is supported on an auxiliary permeable fabric bag 15 as shown in Figure 7, which con-

tains hygroscopic material in its interior and is located in an enclosed area 12, shown in Figure 5, which contains water from the water tank 8. In a preferred embodiment the word "OK" is included in the top part of the level gauge 7.

[0021] The variation in the volume of the hygroscopic material that is inside the auxiliary permeable bag 15 is proportional to the amount of water supplied to the water tank 8. As a result, when said hygroscopic material absorbs water from the enclosed area 12, it swells up and increases in height. The level gauge 7 moves in a vertical direction pushed by the auxiliary permeable bag 15. When the "OK" on the level gauge 7 is in a higher position, it means that the humidity control device 1 of the invention is sufficiently hydrated and may thus provide the vegetable compartment with the necessary humidity to ensure the food is kept in optimum humidity conditions.

[0022] When the "OK" on the level gauge 7 is in a lower position it means that the humidity control device 1 of Figure 2 is not sufficiently hydrated, which means that it must be supplied with more water using the dispenser cup 2 of Figure 2.

[0023] The humidity control device 1 of the invention comprises two substantially vertical dividing walls that delimit the housing of the hygroscopic material as shown in Figure 3. In a preferred embodiment, both dividing walls are humidity transfer walls 9. However, other embodiments are possible, such as one of said dividing walls being used as the humidity transfer wall 9.

[0024] The humidity control device 1 of the invention can be extracted, thereby making it easier to maintain and clean.

Claims

1. Vegetable compartment for a cooling appliance comprising a humidity control device (1) that comprises

a housing in which is disposed a hygroscopic material, and
at least one humidity transfer wall for transferring humidity between said material and at least part of the inside of the compartment,

characterised in that said hygroscopic material and said humidity transfer wall are disposed in a substantially vertical position, the humidity control device (1) comprising a water tank (8) in contact with the hygroscopic material.

2. Vegetable compartment according to claim 1, wherein the hygroscopic material is a superabsorbent polymer disposed in a permeable fabric bag.
3. Vegetable compartment according to claim 2, wherein the permeable fabric bag comprises an an-

tibacterial agent.

es a vegetable compartment according to any of claims 1 to 12.

4. Vegetable compartment according to any of claims 1 or 2, wherein the water tank (8) is disposed beneath the housing of the hygroscopic material. 5
5. Vegetable compartment according to any of the preceding claims, wherein the water tank (8) comprises an enclosed area (11) in which is disposed one end of the hygroscopic material, said enclosed area (11) being separated from the rest of the water tank (8) by means of a wall with a plurality of grooves. 10
6. Vegetable compartment according to any of the preceding claims, wherein the humidity control device (1) comprises an inlet pipe for filling the water tank (8), said inlet pipe comprising an organic material for filtering the water. 15
7. Vegetable compartment according to claim 6, wherein the inlet pipe comprises a dispenser cup (2) that is housed with its mouth facing down on said inlet pipe. 20
8. Vegetable compartment according to any of claims 6 or 7, wherein the humidity control device (1) comprises a level gauge (7) supported on an auxiliary hygroscopic material in contact with an enclosed area (12) comprised in the water tank (8), with the result that there is a correlation between the position of the level gauge (7) and the amount of water present in the humidity control device (1). 25 30
9. Vegetable compartment according to any of the preceding claims, wherein the humidity control device (1) is built into a divider. 35
10. Vegetable compartment according to claim 9, wherein the humidity control device (1) comprises two substantially vertical dividing walls that delimit the housing of the hygroscopic material, both dividing walls being humidity transfer walls (9). 40
11. Vegetable compartment according to claim 9, wherein the humidity control device (1) comprises two substantially vertical dividing walls that delimit the housing of the hygroscopic material, one of said dividing walls being the humidity transfer wall (9). 45
12. Vegetable compartment according to any of the preceding claims, wherein the humidity control device (1) is extractable. 50
13. Vegetable compartment divider, **characterised in that** it forms part of a vegetable compartment according to any of claims 9 to 12. 55
14. Cooling appliance **characterised in that** it compris-

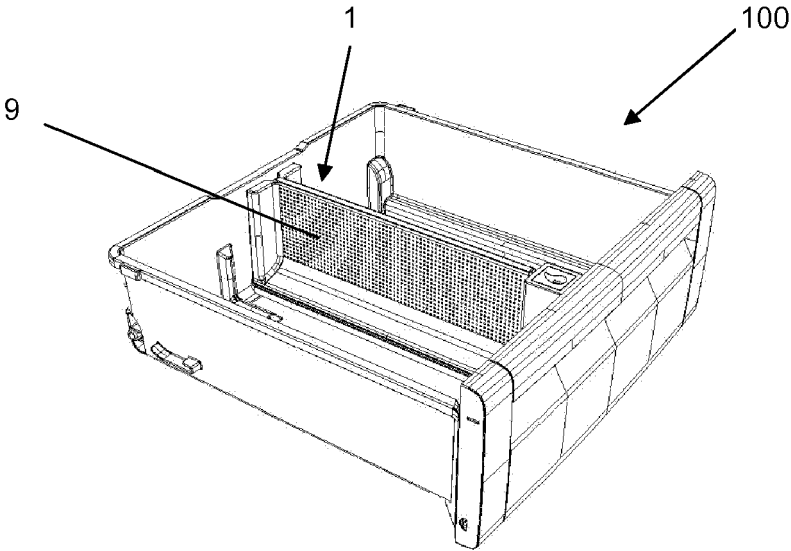


Fig. 1

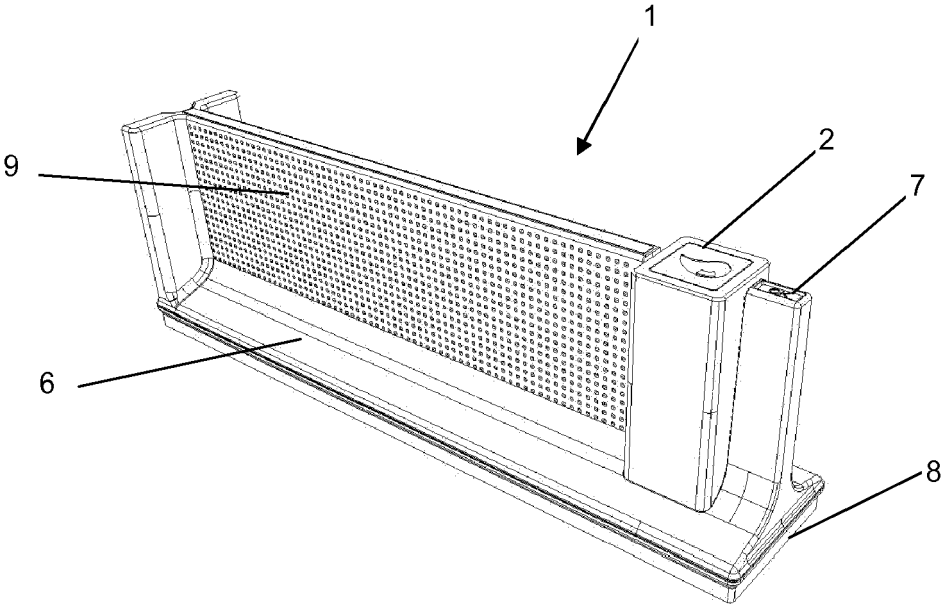


Fig. 2

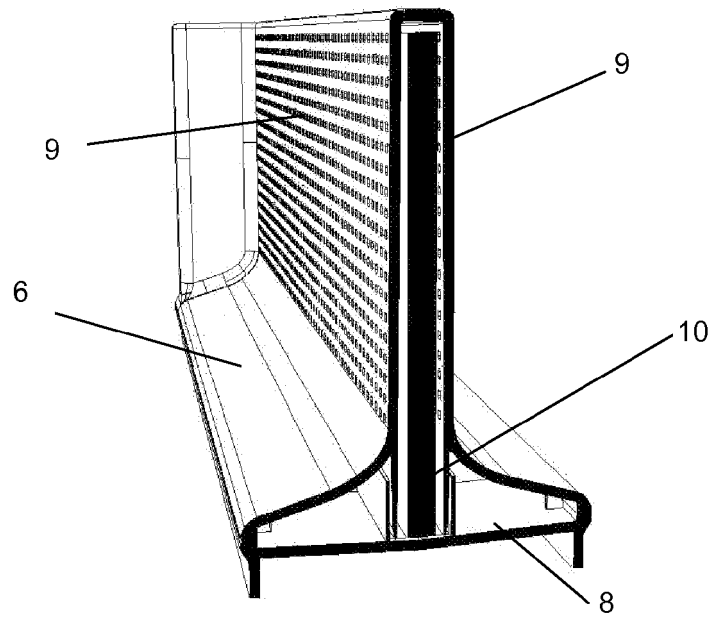


Fig. 3

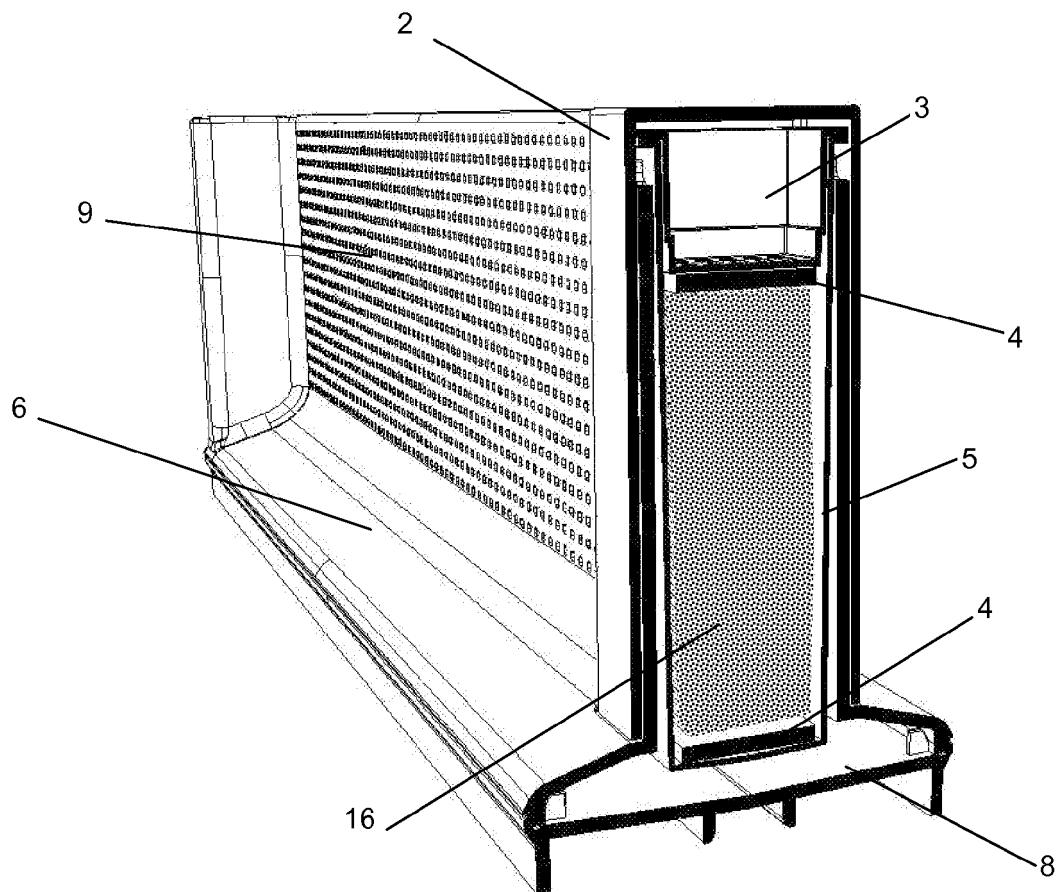


Fig. 4

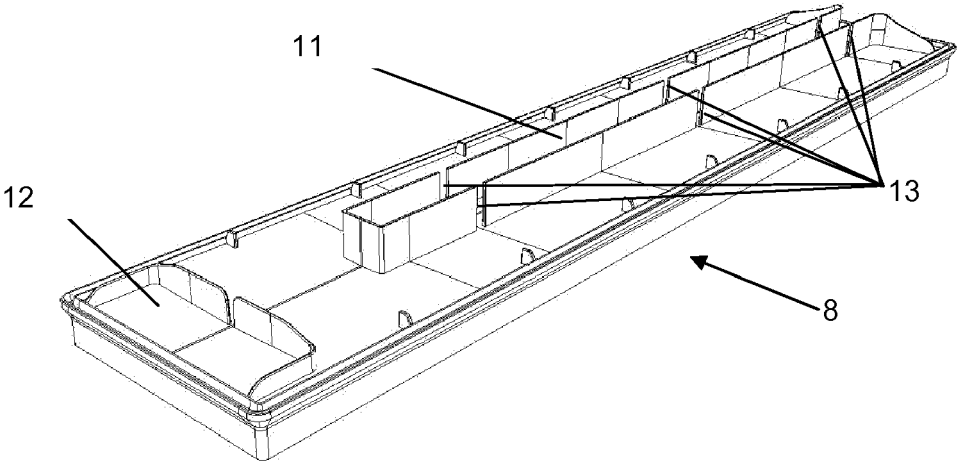


Fig.5

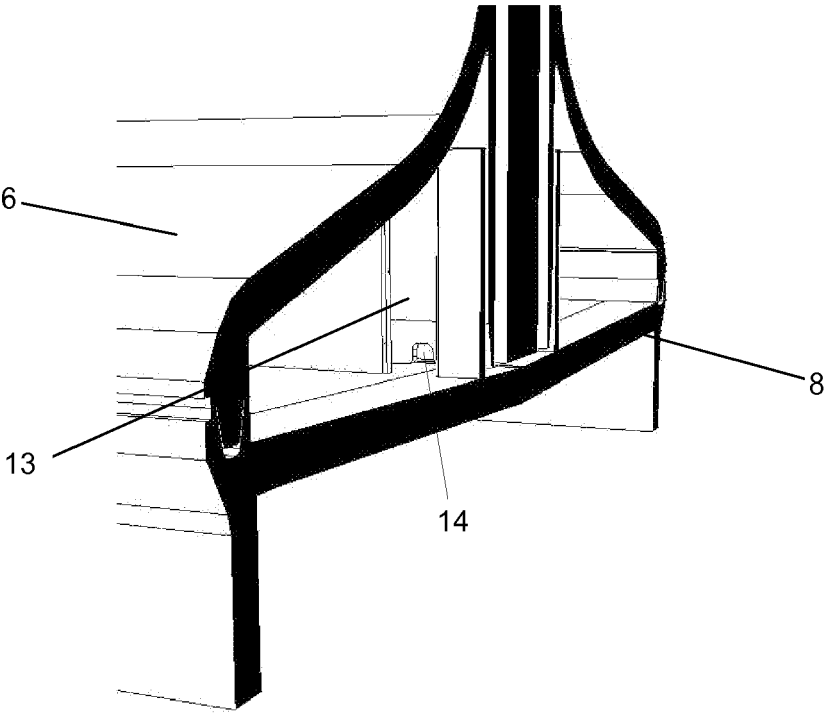


Fig.6

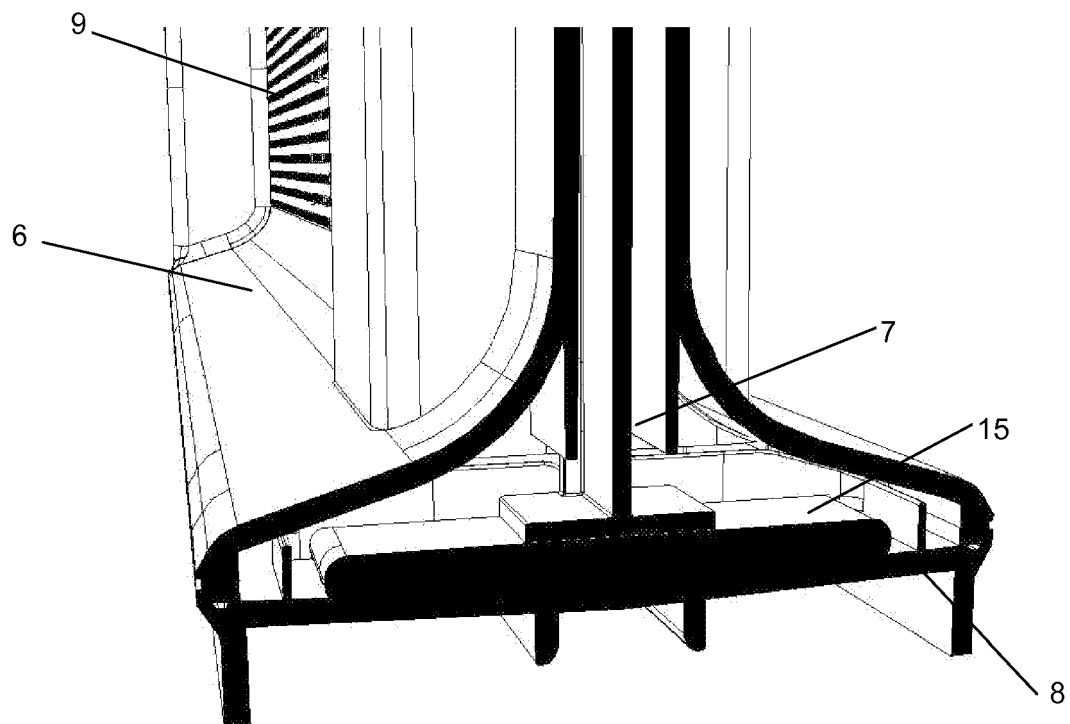


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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