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(54) Ventilating arrangement

(57) Air-circulation device comprising a device (2) for feeding air to a space and a device (6) for the removal of air from that space, whereby the feed device (2) comprises at least one valve (3, 4) including a valve frame (15), a temperature sensitive sensory body (11) a regulating body (12), which is designed to fit tightly against the valve frame (15) or open up for passage on cue from the sensory body (11) so that the valve (3, 4) opens and

closes as a function of the temperature, which removal device (6) includes a first (7) and a second (8) duct which can be used alternately and each of which exhibits an opening (9, 10) at that end of the device, which during operation, is intended to be turned towards the space which is to be air-circulated and that said openings (9, 10) are arranged within the device so that they face different directions within the space during operation.

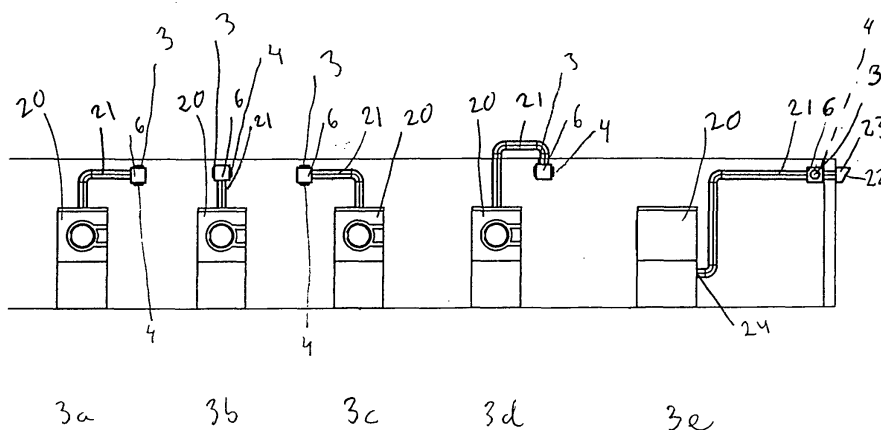


Fig. 3

Description

Background

[0001] The invention relates to an air-circulation device comprising a device for feeding air to a space and a device for removal of air from that space, whereby the feeding device includes at least one valve comprising a valve frame, a temperature sensitive sensing body, a regulating body designed to fit tightly against the valve frame or to allow for passage on cue from the sensing body so that the valve opens and closes as a function of the temperature.

State of the art

[0002] Drying laundry in a drying cabinet or a tumble dryer requires good air-circulation in order to achieve good results and good economy in the drying process. Traditionally, drying of laundry in laundry rooms has been carried out with the aid of drying cabinets, tumble dryers and the like, without any regulation of the air supply from the outside, or the transport of air from the inside to the outside of the drying room. The air has been drawn in wherever cracks occur and leaked out in the same way. This has resulted in cold draughts in laundry rooms, long drying times as well as an economically poor drying process.

[0003] In order to solve these problems an air-circulation device for transporting air to and from laundry rooms or other drying rooms has been constructed. This air-circulation device includes a feed device for feeding air to the space, comprising a temperature sensitive valve for feeding air to the drying space. Below a certain given temperature limit the valve is shut and the air feed is decreased. Further, the air-circulation device includes a removal device for the removal of air from the space. Such a construction provides good drying effect and good drying economy as well as improving the environment in the laundry room for the person handling the laundry.

[0004] One problem associated with the above construction is that the mounting of the removal device on a possible dry tumbler or drying cabinet will be complicated.

Description of the invention

[0005] The above-mentioned problem is solved by the invention by constructing the air-circulation device so that the removal device comprises a first and a second duct which can be used alternately and each of which exhibits an opening at that end of the device which, when in operation, is intended to be turned towards the space being air-circulated and that said openings in the device are arranged to face different directions within the space.

[0006] According to one embodiment of the invention

the openings of the ducts are arranged perpendicular to each other.

[0007] The invention is further characterized in that a lid covers one of the openings.

[0008] According to one preferred embodiment the feed device includes two valves. For most of the normally dimensioned drying spaces a feed device, comprising at least two valves, will feed enough intake air in order to achieve an effective drying process.

Description of the drawings

[0009]

Figure 1 illustrates an air-circulation device according to the invention.

Figure 2 illustrates a valve for application in an air-circulation device according to the invention.

Figure 3 illustrates different ways of connecting an air-circulation device to dry tumblers according to the state of the art.

Detailed description of the invention

[0010] Figure 1 illustrates a perspective view of an air-circulation device according to the invention. The air-circulation device exhibits a casing 1. The casing 1 has a cubical shape where each of the sides has a length of 200-350 mm. Other dimensions are possible within the scope of the invention. The dimensioning is dependent upon the size of the drying space, among other things. In the casing 1, a device 2 for feeding air is provided. The feed device 2 comprises an inlet for external air (not shown), a first 3 and a second 4 temperature sensitive valve as well as a duct 5 for transporting air there between. Within the scope of the invention it is also possible to have a different number of valves, for example one valve. The number of valves within the air-circulation device is dependent upon the amount of air to be circulated. That is, it is dependent upon the type of drying equipment. The air-circulation device further exhibits a device 6 for the removal of air. The removal device 6 comprises an external air outlet (not shown), two ducts 7, 8 for transporting air to the external air outlet from the two openings 9, 10 via which the discharge air pipe of the drying equipment is to be connected to the removal device 6. The ducts 7, 8 join and form a duct 19 leading to the external air outlet.

[0011] The openings 9, 10 have a circular cross-section and a diameter of 100-200 mm. Other types of cross-sections and other dimensions are of course possible within the scope of the invention. The dimensioning is as indicated above according to the required capacity of air-circulation.

[0012] Figure 1 illustrates schematically, and figure 2 in more detail, the arrangement of the temperature sen-

sitive valve, 3, 4 which is included in the air-circulation device. The valve 3, 4 includes a sensing body 11, a regulating body 12 and a valve casing 13. The sensing body 11 is temperature sensitive and it is arranged in such a way that it expands when the temperature rises and contracts when the temperature falls. The regulating body 12 is arranged to be affected by the sensing body 11 so that a passage 14, regulated by the regulating body 12, is opened or closed. The regulating body 12 is preferably shaped like a disc and is manually adjustable in order to adjust the width V of the passage 14 between the frame 15, the space 18 and the regulating body 12.

[0013] When air flows in the direction of the arrow P through an opening 16 in the lid 17 to the hole-shaped space 18 of the casing and comes into contact with the sensory body 11, said body is arranged to expand or contract. Thereby the sensory body 11 is affected so that the casing 13 and the regulating body 12 are displaced and thereby the passage 14 is affected.

[0014] For the sake of the invention it is not necessary to arrange the valve with all of the above-described details.

[0015] Figure 3 a-d illustrates, according to the state of the art, fittings of an air-circulation device to tumble dryers in a drying space. The tumble dryer 20 is connected to a discharge air pipe 21. The discharge air pipe 21 is connected to the air-circulation device and to the removal device 6 by the opening 9. The discharge air then passes through the duct 7 which is fitted to the opening 9 and out through the external air outlet 22, as shown in figure 3e. The intake air passes through the external air inlet 23 and out into the drying space through the valves 3, 4. As can be seen in figure 3, the piping can become complicated depending on where the discharge air outlet 24 of the dry tumbler is positioned in relation to the opening 7 on the removal device 6. It may be necessary to fit the pipes using several bends.

[0016] The problems stated above are eliminated by the invention. The invention will of course work just as well for any type of drying equipment, such as tumble dryers or drying cabinets.

each of which exhibits an opening (9, 10) at that end of the device, which during operation, is intended to be turned towards the space which is to be air-circulated and that said openings (9, 10) are arranged within the device so that they, during operation, face different directions within the space.

2. Air-circulation device according to claim 1 **characterized in that** the openings (9, 10) are perpendicular in relation to each other.
3. Air-circulation device according to claim 1 or 2 **characterized in that** a lid covers one of the openings (9, 10).
4. Air-circulation device according to any of the preceding claims **characterized in that** the feed device (2) comprises two valves (3, 4).

Claims

1. Air-circulation device comprising a device (2) for feeding air to a space and as a device (6) for the removal of air from that space, whereby the feed device (2) includes at least one valve (3, 4) comprising a valve frame (15), a temperature sensitive sensory body (11) a regulating body (12) which is designed to fit tightly against the valve frame (15) or open up for passage on cue from the sensory body (11) so that the valve (3, 4) opens and closes as a function of the temperature, **characterized in that** the removal device (6) includes a first (7) and a second (8) duct which can be used alternately and

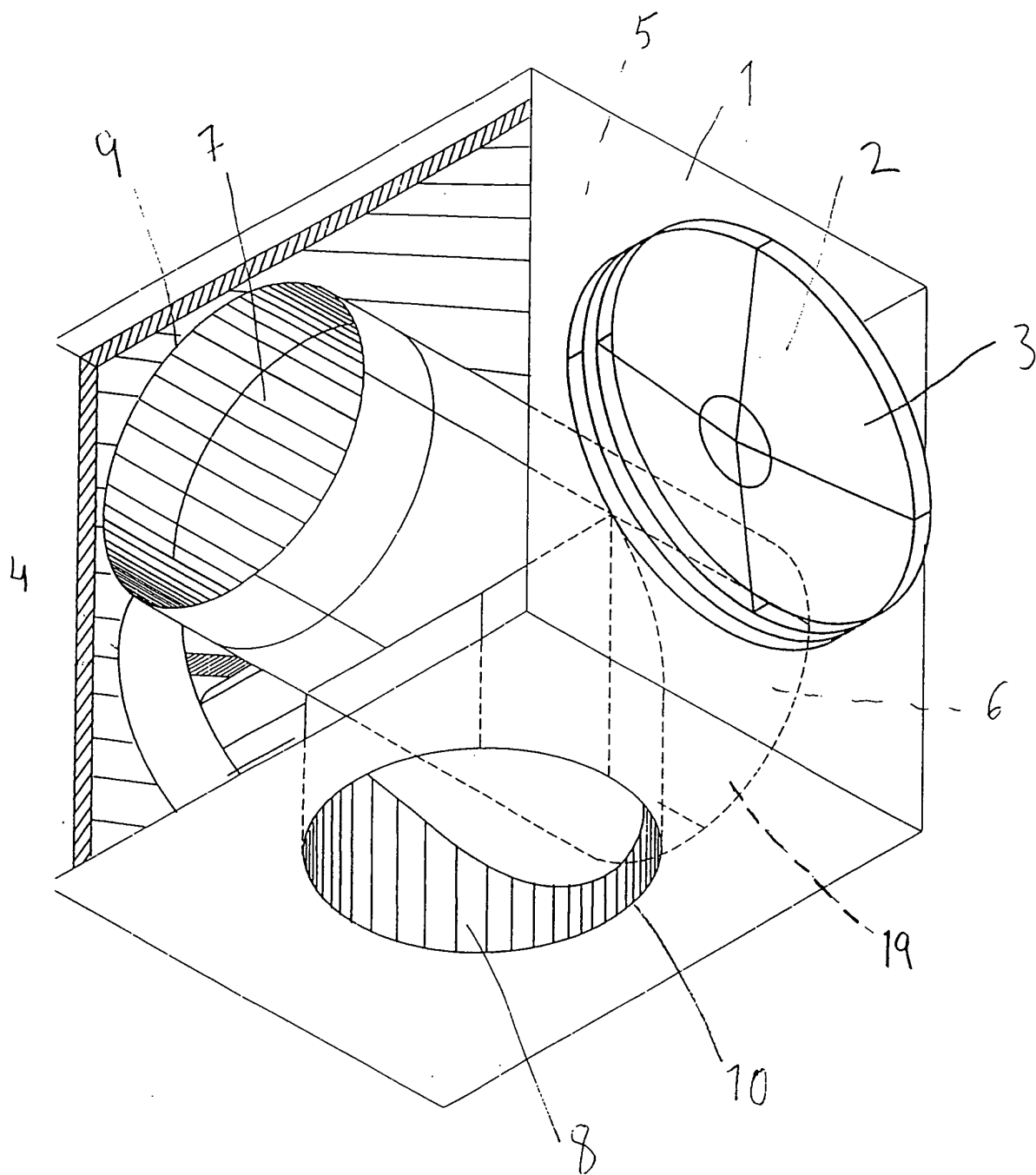


Fig. 1

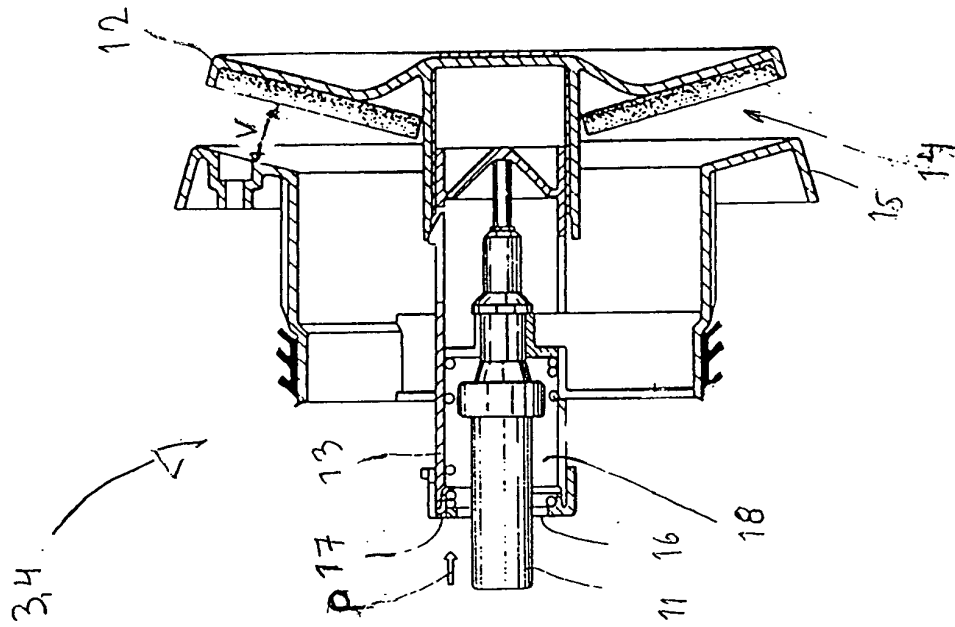


Fig. 2

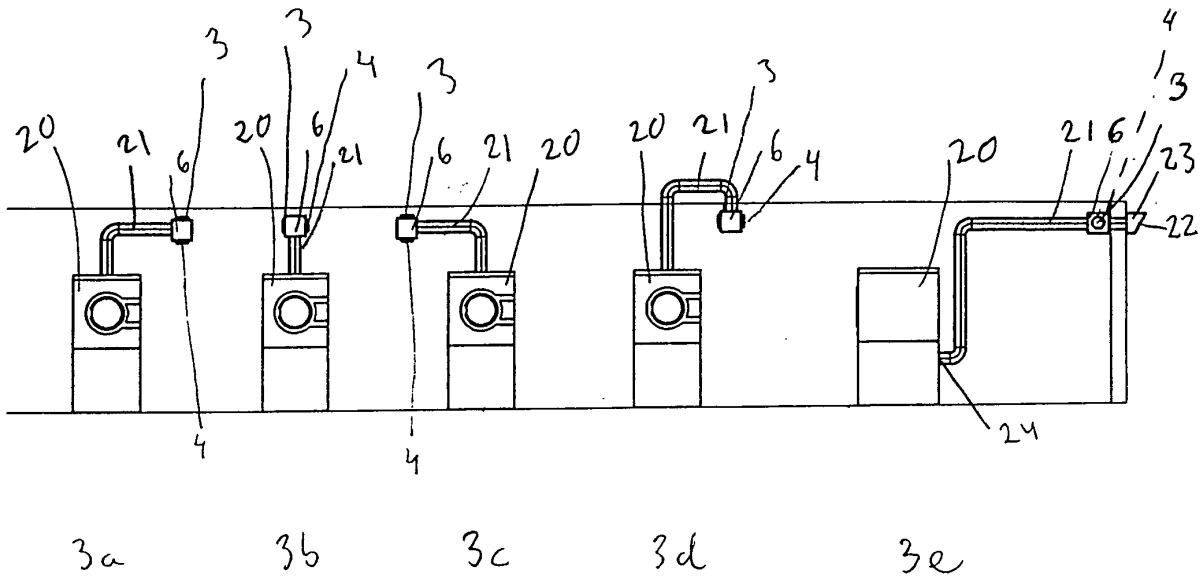


Fig. 3