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(71) Applicant: **Marcus, Gerardus Jacobus Jan**
3800 BM Amersfoort (NL)

(72) Inventor: **Marcus, Gerardus Jacobus Jan**
3800 BM Amersfoort (NL)

(74) Representative: **Bottema, Johan Jan**
Nederlandsch Octrooibureau
J.W. Frisolaan 13
2517 JS Den Haag (NL)

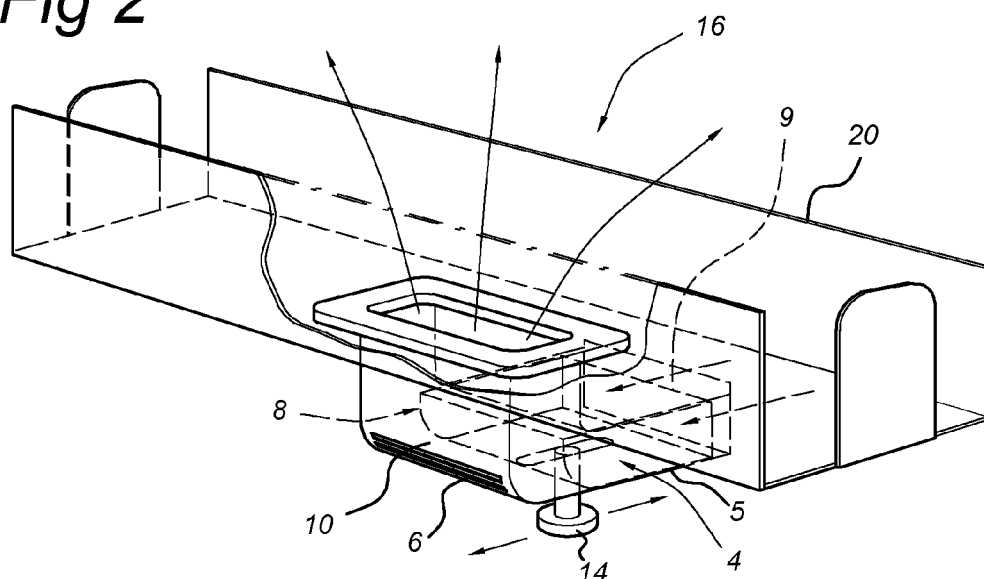
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(54) **Building construction and ventilation system**

(57) Ventilation system disposed in a building construction. The intention is, on the one hand, to provide a feed of fresh air originating from outside into a room while, on the other hand, recirculation of air originating from the room must be possible in that room. For this purpose, a ventilation system is present which extends through the wall of a building construction so that air can be drawn in through it from outside. Feed of this air is regulated by a valve disposed in the duct. Furthermore, a feed opening

for air originating from that room is present in this duct which extends to a heat exchanger. This air feed can also be opened and closed with the aid of a gate valve. A common operation is present in such a way that, when the opening for outside air is closed, the opening for recirculation is opened to the maximum extent, and vice versa. A manifold is present on the end of the duct which can be connected to a heat exchanger, in particular the underside thereof.

Fig 2



Description

[0001] The present invention relates to a building construction, comprising a partition wall which defines an inner area in relation to the outer area, wherein this partition wall is provided on the inside with a heat exchanger for heating/cooling this inner area, wherein an opening into this partition wall is present close to this heat exchanger to feed ventilation air from the outer area to this inner area, wherein this opening opens out near to this heat exchanger and a shut-off valve to feed ventilation air is disposed in this opening.

[0002] A construction of this type is generally known in the prior art. In winter, on the one hand to provide air originating from outside but, on the other hand, to prevent this cold air from creating an unpleasant feeling among persons located in the room, it is proposed to dispose an air feed opening in the partition wall, with which air can be displaced from the outside to the inside, and to connect this to a radiator which is used for heating. As a result, the incoming air is heated before it flows freely into the room concerned. Furthermore, due to the temperature difference, a chimney effect occurs in this way which enables the drawing in of air from outside under all circumstances. A shut-off valve can possibly be used to control the flow of air from outside.

[0003] However, it is not desirable under all circumstances to draw in air from outside. In such cases, the opening can be closed, but the heating capacity of the radiator concerned cannot be optimally used due to insufficient airflow. As a result, the temperature of the air stream emerging from the radiator or other heat exchanger is increased, which can produce an unpleasant feeling, and the heating efficiency is reduced.

[0004] The object of the present invention is to provide an improved building construction with ventilation through a partition wall.

[0005] This object is achieved with a construction described above in that a line which extends to this heat exchanger is disposed on this mouth of this opening, and in that a feed opening for air originating from this inner area is present in this line.

[0006] According to the present invention, a feed opening is present in the line near to the feed opening for feeding air from the environment outside the partition wall, with which air can be displaced from the room into the line. As a result, recirculation takes place. In this way, if the feed of air from outside is restricted, the heating or cooling capacity of the heat exchanger can be fully used in that air is fed from the room to the heat exchanger via this line.

[0007] In particular, the line can be a duct.

[0008] It is possible to hold the feed opening in a continuously open position so that, depending on the pressure of the fed air which originates from outside, more or less air from the room is recirculated through the feed opening.

[0009] A more effectively controllable system can be

obtained if the feed opening is also provided with a further shut-off valve. The operation of the shut-off valve which regulates the feed of air from outside and the air which enters through the feed opening is preferably common, so that an optimum setting can be obtained in a simple manner by all persons located in the room, wherein both shut-off valves are always located in a reciprocally optimum position. More particularly, according to the present invention, the operation is carried out in such a way that when one shut-off valve is opened, the other (further) shut-off valve is closed, and vice versa.

[0010] The shut-off valves concerned can be designed in any way conceivable in the prior art. According to a preferred embodiment of the present invention, one of the shut-off valves, and more particularly the shut-off valve which regulates the ambient air on the inside of the room, is designed as a butterfly valve. The further shut-off valve is preferably designed as a gate valve, wherein a gate may or may not be positioned in front of the feed opening. According to a further advantageous embodiment, the gate valve also operates the shut-off valve which regulates the feed of air from outside. If the shut-off valve is a butterfly valve, the closed position can be achieved by simply pressing it with the aid of the gate valve against this valve. Automatic opening can be obtained through the presence of a spring or through the imbalanced design of the butterfly valve. Obviously, this can also be implemented with the aid of a rod, cable or the like.

[0011] As described above, the heat exchanger may comprise a radiator. This preferably comprises a radiator of a water-filled central heating system. Obviously, the construction can also be used if a room needs to be cooled.

[0012] The connection of the line to the radiator is preferably established with the aid of a manifold. A manifold of this type is designed as preferably cup-shaped and is preferably connected to the underside of the radiator. More particularly, an as far as possible airtight connection is implemented between the manifold and the radiator, as a result of which the aforementioned draught or chimney effect is optimised. To do this, the walls of the manifold can be designed as adapted to the dimensions of the radiator.

[0013] Furthermore, the present invention relates to a ventilation system, comprising a line provided on one end with a valve and provided on the other end with a manifold, wherein a feed opening is disposed in this line, and also a further shut-off valve to close this feed opening. This ventilation system preferably has the characteristics described above with reference to the building construction.

[0014] The invention will be explained in detail below with reference to the embodiment illustrated in the drawing, in which:

Fig. 1 shows schematically a wall of a room;

Fig. 2 shows the ventilation system according to the

invention;

Fig. 3 shows the combination of the ventilation system according to the invention and the room in a first position of the shut-off valves; and

Fig. 4 shows the construction according to Fig. 3 in a second position of the shut-off valves.

[0015] In Fig. 1, a wall of a building construction is indicated by 1. As shown in Fig. 3 and 4, this is a partition wall or external wall between a room 17 and the outer area 18. A frame 2, under which a radiator 3 or other heat exchanger is located, is disposed in the wall 1. This is preferably a radiator heated or cooled by means of a central heating system with circulating fluid such as water. On the underside of this radiator 3, the mouthpiece 16 of a ventilation system 4 is present, details of which are shown in Fig. 2. This mouthpiece 16 is provided with walls 20 which slide over the underside of the panels of the radiator 3 as shown in Fig. 3 and 4, so that only one line, designed here as a duct 5, is visible on the underside of the radiator. This line 5, which is provided with a feed opening 6, is connected to the mouthpiece 16. The end of the line 5 opens out into a shut-off valve housing 13, in which a shut-off valve 7 and, more particularly, a butterfly valve is disposed, which is pivotable around the axis 21. Furthermore, a shut-off valve 8 consisting of a gate which can be moved back and forth with the aid of an operating button 14, as shown in Fig 3 and 4, is located in the line 5. For this purpose, a groove can be disposed in the line 5, but it is similarly possible to provide for displacement of the gate 8 without making an opening. The gate 8 comprises a duct part 9 (see Fig. 2 and 3) which is provided on the front with a tight front wall 10. This front wall 10 has a shape which matches the shape of the feed opening 6 and, in the position shown in Fig. 3, the feed opening 6 can be closed.

[0016] On the outside 18, a grille 12 is located in the wall 1. Furthermore, the opening 19 in the wall 1 is provided with a finishing ring 15.

[0017] As shown in Fig. 3 and 4, the building construction described above works with the ventilation system as follows. In the position shown in Fig. 3, the gate 8 (further shut-off valve) is moved into a position wherein the feed opening 6 is closed. Air originating from outside moves through the grille 12 along the opened butterfly valve 7 through the duct part 9 to the outflow mouthpiece 16 between the panels of the radiator 3 where this cold air (winter) is heated by the radiator. If the user requires less feed of fresh air and more recirculation of air in the room, he moves the gate 8 to the right, as shown in Fig. 4, with the aid of the operating button 14, as a result of which the feed opening 6 is released. With this movement, the duct part 9 presses the butterfly valve 7 into the closed position, so that only air from the room is circulated via the radiator. In this way, the heating surface of the radiator can always be used in an optimum manner and the heat transfer between the radiator and air flowing along it is always optimum without excessively heated

air being produced.

[0018] Obviously, it is possible to provide a position between that shown in Fig. 3 and 4, i.e. a position wherein both a part of the air is recirculated via the feed opening 6 and another part of the air originates from outside. Precise regulation is possible with the aid of the operating button 14 according to the present invention. Furthermore, a sign indicating the operating condition to which the position of the operating button 14 corresponds can be present on the outside of the line 5.

[0019] The system described above is simple to install and remove. The latter may be of importance in the event of cleaning work.

[0020] Along with the above, it will be understood that countless possibilities exist for further designing the invention. Thus, the shut-off valves may be other types of shut-off valve which, for example, are interconnected with a rod mechanism or the like. These and further variants which are obvious in the light of the above lie within the scope of the attached claims. Furthermore, rights are expressly requested for designs as described in the follow-up claims independently from the main claim.

Claims

1. Building construction, comprising a partition wall (1) which defines an inner area (17) in relation to the outer area (18), wherein this partition wall (1) is provided on the inside with a heat exchanger (3) for heating/cooling this inner area, wherein an opening (19) into this partition wall (1) is present close to this heat exchanger to feed ventilation air from the outer area (18) to the inner area (17), wherein this opening (19) opens out near to this heat exchanger and a shut-off valve (7) to feed ventilation air is disposed in this opening, **characterized in that** a line (5) which extends to this heat exchanger (3) is disposed on this mouth of this opening (19), and that a feed opening (6) for air originating from this inner area (17) is present in this line.
2. Construction according to Claim 1, wherein this feed opening (6) is provided with a further shut-off valve (8).
3. Construction according to Claim 2, wherein this shut-off valve (7) and this further shut-off valve (8) comprise a common operation (14).
4. Construction according to Claim 3, wherein this operation (14) is designed in such a way that, when this shut-off valve (7) is opened, this further shut-off valve (8) is closed, and vice versa.
5. Construction according to one of the preceding claims, wherein this (further) shut-off valve is a gate valve.

6. Construction according to one of the preceding claims, wherein this (further) shut-off valve comprises a butterfly valve and the operation for this butterfly valve comprises a part displaceable in the butterfly valve housing (13) which engages this butterfly valve (7). 5
7. Construction according to Claim 6, wherein that displaceable part can release and close this feed opening (6). 10
8. Construction according to one of the preceding claims, wherein this heat exchanger (3) comprises a water-filled radiator. 15
9. Construction according to Claim 8, wherein this radiator (3) comprises a panel radiator.
10. Construction according to one of the preceding claims, wherein a manifold (16), which is fitted against the underside of this heat exchanger, is connected to this line (5). 20
11. Construction according to Claim 10, wherein that manifold comprises walls (20) laterally gripping the heat exchanger. 25
12. Ventilation system comprising a line (5) provided on one end with a shut-off valve (7) and provided on the other end with a manifold (16), wherein a feed opening (6) is disposed in this line, and also a further shut-off valve to close this feed opening (6). 30
13. Ventilation system according to Claim 12, comprising common operating means (14) for this shut-off valve and this further shut-off valve. 35

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Fig 1

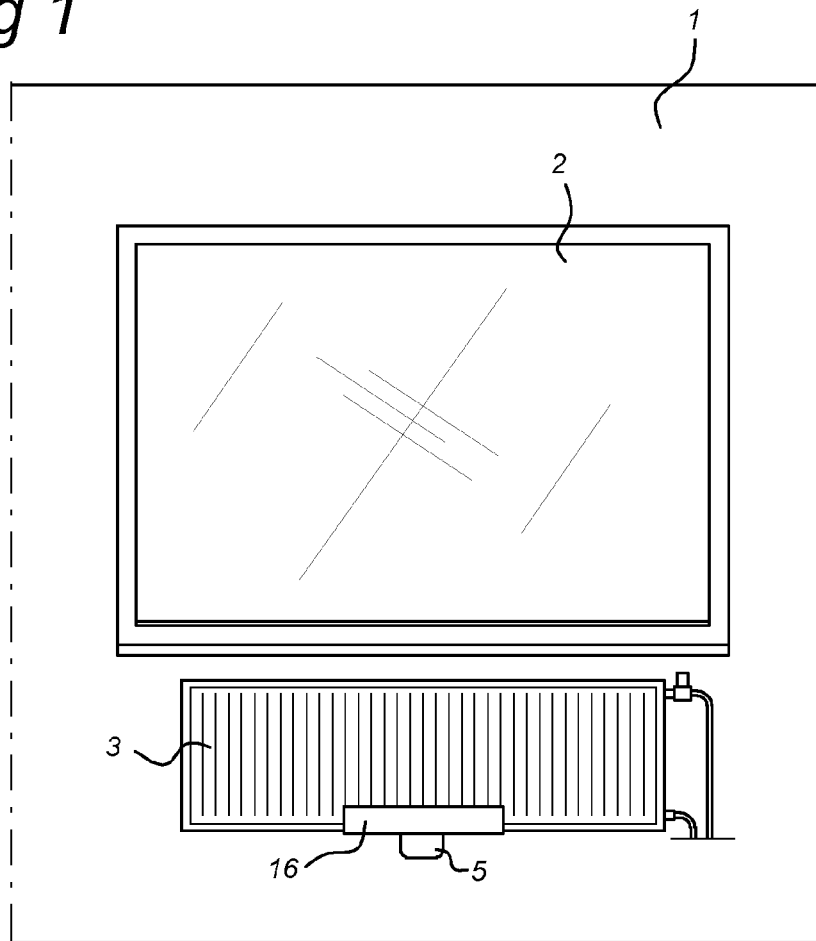


Fig 2

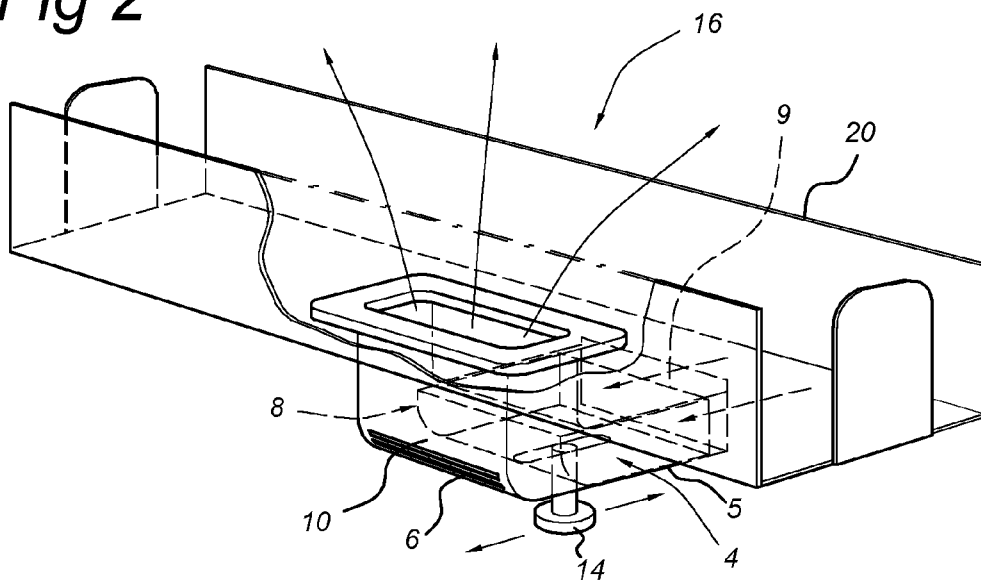


Fig 3

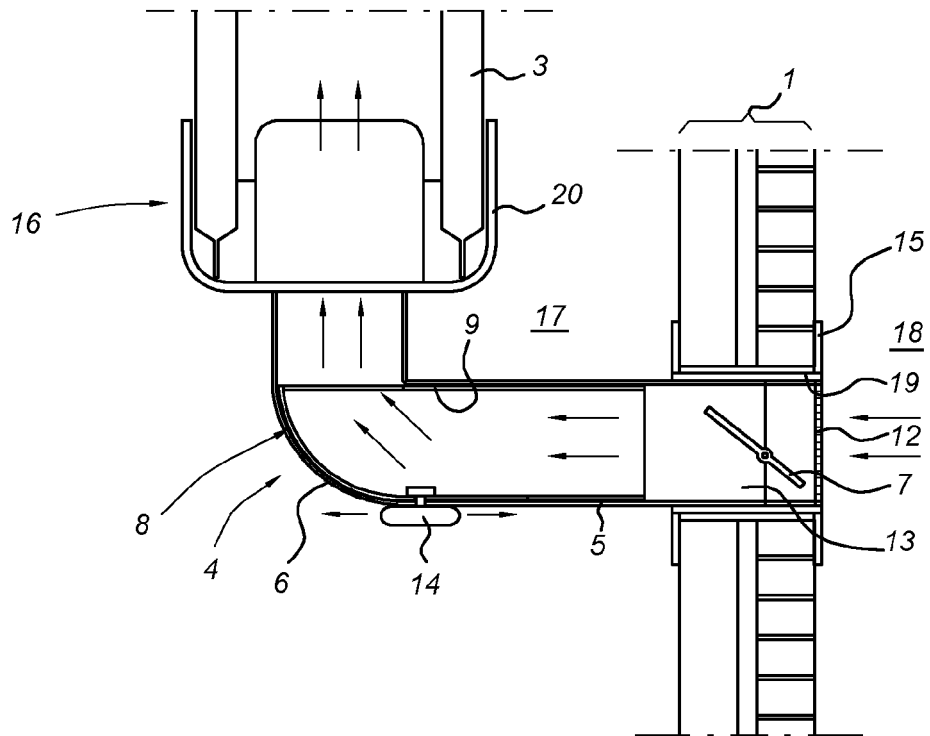


Fig 4

