(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 522 794 B1**

(12) **EUROPEAN PATENT SPECIFICATION**

(45) Date of publication and mention of the grant of the patent:
04.04.2012 Bulletin 2012/14

(51) Int Cl.:
F24D 19/06 *(2006.01)*

(21) Application number: **04445105.2**

(22) Date of filing: **05.10.2004**

(54) **Ventilation device**

Lüftungsgerät

Appareil de ventilation

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PL PT RO SE SI SK TR

(30) Priority: **08.10.2003 SE 0302693**

(43) Date of publication of application:
13.04.2005 Bulletin 2005/15

(60) Divisional application:
10177075.8 / 2 282 133

(73) Proprietor: **Acticon AB**
55112 Jönköping (SE)

(72) Inventor: **Borander, Jerry**
551 12 Jönköping (SE)

(74) Representative: **Jacobsson, Peter et al**
Awapatent AB
Östra Storgatan 7
553 21 Jönköping (SE)

(56) References cited:
WO-A1-00/31474
DE-U- 20 218 457
US-A- 5 655 963

Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).

EP 1 522 794 B1

Printed by Jouve, 75001 PARIS (FR)

Description

[0001] The present invention relates to an arrangement for improving ventilation indoors, which allows air flow from an air device to be preheated and distributed.

Background of the invention

[0002] Many dwellings that were built a number of years ago are largely equipped with ventilation systems of the natural draught or mechanical air discharge type. In these systems air is extracted from kitchens, toilets and bathrooms. Replacement air is taken in directly from outside via slit vents and fissures in the façade. Over time, the insulation of façades, etc., in a large number of buildings has been improved. This has meant that houses have become more impervious, thereby leading to a considerable deterioration in ventilation.

[0003] On the other hand, mechanical air discharge has in recent years become the most common method of ventilation in dwellings. This relies on so-called outside air devices, which both filter and heat the outside air before it is delivered to the dwelling. This type of air device is fitted behind a radiator or the like and uses this as heat source for heating the outside air. Air devices are installed virtually throughout in all new buildings.

[0004] DE 20218457 U shows an example of such an outside air device, which is fitted behind a radiator and reveals all the features of the preamble of claim 1.

[0005] In older property it is often both difficult and expensive to improve the ventilation by means of efficient air devices, since the air devices comprise a complete unit made of sheet metal. The (overall) depth of the air devices varies as does their minimum height behind the radiator.

[0006] In order to be able to fit these air devices without removing the radiator there must be at least 22-30 mm clearance between radiator and wall. Since the air devices must be lowered from the top between radiator and wall, there must not be any window-sill in the way. It is not feasible to insert these air devices from the side, since the radiator bracket gets in the way.

[0007] Since older radiators are usually fitted less than 22-30 mm from the wall and there is also often a window-sill, it is necessary to remove the radiator in order to be able to fit the outside air device. This necessitates extensive installation work. First the radiator system has to be drained and the radiators in question removed. After making holes in the façade wall, the outside air device is fitted to the wall. The radiator must then be fixed to its brackets. In cases where it is necessary to increase the distance between radiator and wall, the pipework connection to the radiator will not fit. The pipes coming up from the floor or running along the wall then have to be bent so that these can be coupled to the radiator. Bending old pipes is not to be recommended since cracking can easily occur leading to problems of leakage.

[0008] There is a need for an arrangement that will solve the aforementioned problems so as to be able to improve the indoor ventilation without the need for major intervention in existing installations...

Summary of the invention

[0009] An object of the present invention is to partially or entirely solve the aforementioned problems by providing an arrangement which:

- improves indoor ventilation,
- allows incoming air to be heated and distributed,
- facilitates the fitting of an air device behind a radiator without having to remove either the radiator or the window-sill, and
- affords the facility for adjusting the air device to the height of the radiator.

[0010] According to the present invention this object is achieved by an arrangement for fitting between a wall and a radiator arranged on a wall in order to improve the indoor ventilation, which arrangement will allow an air flow to be heated and distributed and which has the characterising features specified in claim 1 below, with preferred embodiments being set forth in the dependent claims.

[0011] The arrangement according to the invention is characterised in that it comprises a first part and a second part which are joined by a flexible duct made of a flexible material selected from a group comprising textile, rubber, rubberised fabric, film, or fibrous material.

[0012] Some advantages of the present invention are that the air device improves indoor ventilation and allows incoming air to be heated and distributed. It is easy to fit the air devices behind a radiator without having to remove either the radiator or the window-sill, and the fact that the duct can be made to the desired length without affecting other functions makes it possible to adjust the air device to the height of the radiator.

[0013] According to one embodiment the first part is a filter box for filtering said air flow from an air inlet to the duct and having a filter hatch for changing the filter. The fact that the air flow contains particles such as pollutants and many different types of pollen means that for many people there is a great need to be able to filter out such substances which present problems, primarily for allergy sufferers but also for the public at large. With the present invention the incoming air flow is filtered at an early stage and it is very easy to change filters and when necessary to clean the filter device.

[0014] According to one embodiment the second part comprises at least one expeller opening for expelling the air flow towards the radiator, the expeller opening moreover being designed to guide the air flow along the rear side of the radiator, which heats the incoming air flow and prevents cold draughts along the floor.

[0015] The arrangement is designed so that the incoming air flow is delivered at high velocity and is angled

upwards behind the radiator.

[0016] A high velocity is important in order to prevent the cold air in wintertime "dropping" down below the radiator due to the high density of the air. If this should happen it results in cold draughts along the floor. Another important effect achieved by a high velocity delivered air flow is that the air flow then also expels the indoor air, that is to say it entrains the indoor air in proximity to the lower parts of the radiator. This means that warm indoor air mixes effectively with the cold outside air, which means that the temperature of the mixed air flow increases. This effect is particularly important in autumn and in spring when the temperature of the outside air may be low whilst the heating system is not in operation. During the heating period the air flow is also heated by the hot radiator. It is also important that the air flow be allowed scope for proper warming by the radiator in that the air flow blows out towards the lower parts of the radiator. It is not effective, for example, to use an air device 230 mm behind a radiator which is 600 mm high. Since the arrangement according to the present invention allows the air flow to blow out against the lower parts of the radiator, this provides efficient heating of the outside air, since the air flow is forced to flow such a long distance along the radiator.

[0017] According to a preferred embodiment the flexible duct is a substantially airtight fabric and the second part is suspended behind the radiator in the duct and the duct is suspended behind the radiator in the first part. This solves the problem of fitting an air device behind a radiator without having to remove either the radiator or the window-sill. This affords the advantage that the arrangement can be applied without the need to remove the radiator and the weight of the second part keeps the duct taut and in place.

Brief description of the drawings

[0018]

Fig: 1 is a perspective view of a detached first part of the arrangement according to the present invention with associated filter box, filter and filter hatch.

Fig: 2 is a view of a complete arrangement, viewed from one side thereof, in connection with a radiator.

Fig: 3 is a view of a complete arrangement, viewed from the other side thereof, in connection with a radiator.

Fig: 4 is a view of a complete arrangement, viewed from one side thereof.

Fig: 5 is a view of a complete arrangement, viewed from the other side thereof.

Fig: 6 is a view of a complete arrangement, viewed from one side thereof, with the various parts separated from one another,

Fig: 7 is a view of a complete arrangement, viewed from the other side thereof, with the various parts separated from one another.

Fig: 8 is a perspective view of a complete arrangement with the various parts thereof separated from one another.

Fig: 9 is a perspective view of a complete arrangement with the various parts thereof fitted to one another.

Description of preferred embodiments

[0019] The invention will now be described in more detail with reference to the schematic drawings which show an embodiment of the present invention. The arrangement according to the present invention comprises three parts assembled into one unit. The arrangement has a depth, also known to the person skilled in the art as the overall depth, of approximately 17 mm, which corresponds to the minimum dimension encountered between radiator and wall. Its height behind the radiator is adjusted so that the largest possible proportion of the radiator is utilised.

[0020] The first part 1 is referred to as a filter box. Fitted in this is a replaceable filter 10. When changing filters a filter hatch 6, which may be insulated against condensation, is undone, providing access to the filter. When the filter is removed there is a free passage out to the incoming air duct (in the façade wall). This can then easily be cleaned from indoors. A flexible and substantially airtight duct 3 is arranged in the lower edge of the filter box. The term substantially airtight means that the greater part of the air flow passes through the duct. The material for the duct can also be selected so that a minor leakage is permitted, which cannot be deemed to affect the functioning of the duct, however. It is intended that the duct material be selected according to requirements, a flexible material being chosen, that is to say a material such as textile, rubber, rubberised fabric, film, fibrous material.

[0021] Arranged at the other end of the flexible duct 3 is a second part 2, which may also be known to the person skilled in the art as an expeller. The term expeller relates to a nozzle for blowing the air flow out and directing it, and which can be varied according to requirements. Other variants with equivalent characteristics may be used, however. The second part 2 is designed so that the incoming air flow is delivered at high velocity and is angled upwards behind a radiator 5.

[0022] A high velocity is important in order to prevent the cold air in wintertime "dropping" down below the radiator 5 (due to the high density of the air). If this should happen it results in cold draughts along the floor. Another

important effect achieved by a high velocity of the delivered air flow is that the air flow then also expels the indoor air. This means that warm indoor air mixes effectively with the cold outside air, which means that the temperature of the mixed air flow increases. This effect is particularly important in autumn and in spring when the temperature of the outside air may be low whilst the heating system is not in operation. During the heating period the air flow is naturally also heated by the hot radiator 5

[0023] The design of the air device, with the duct 3 of flexible material, makes it possible to adjust the height of the air device so that the outside air is at all times delivered to the lower edge of the radiator 5. In order to utilise the space behind the radiator 5 and to obtain the maximum possible effect, the duct 3 has an elongated cross-section.

[0024] Using an air device which is half the height of the radiator 5 behind which it is located, for example, is not effective. It is better if the outdoor air delivered is at all times delivered down behind the radiator 5 and is heated by the radiator 5 over the longest possible distance. This affords effective heating of the outside air since the air flow is forced to flow further along the radiator 5.

[0025] In order to facilitate cleaning of the duct 3, it is secured in such a way that it can readily be removed, see below for a more detailed description of the removal of the duct 3. The duct 3 can be cleaned or replaced with a new one. In addition, the filter box 1 and the second part 2 can also be cleaned, for example, in a dishwasher, manually or by any other suitable method, so as to thereby clean the affected parts.

[0026] The first part 1, the filter box, comprises a box, the front side of which has an opening 7 in order to permit installation and changing of filters. The filter box 1 further more has a rear side which bears against a house wall which is provided with holes for the incoming air. In order to allow the incoming air to flow into the filter box 1 there is also at least one opening 8 on the rear side of the box against the house wall. In the rear wall of the filter box 1 there are holes 13 for fitting the filter box 1 to the house wall. There are preferably just two holes 13 with corresponding notches in the filter box 1 in order to allow screws to be fixed in the house wall, on to which the filter box 1 is then firmly hooked and slipped down so that the screws are carried along the notches, the screws then be properly tightened. Between the rear side of the filter box 1 and the house wall there is a sealing strip (not shown) for sealing between the filter box 1 and the house wall. The sealing strip prevents air from percolating out between the filter box 1 and the house wall. The opening 8 at the rear of the filter box 1 is somewhat over-dimensioned, the opening 8 being extra wide and high, in order to make the filter box 1 easier to install and adjust to the holes made in the house wall. It is possible to open up a number of holes in the house wall and the holes are not restricted to a particular size. However, the holes must be accommodated within the boundary of the rear opening 8 of the filter box.

[0027] This also allows any existing openings left by slit vents to be used, these usually being wide and narrow (low). The wide opening 8 on the rear side of the filter box 1, however, allows the filter box 1 also to be used for these openings.

[0028] The filter hatch 6 for closing the front opening 7 of the filter box 1 is arranged at the front of the filter box 1. This means that the incoming air coming from the holes in the house wall is guided downwards towards the duct 3 and on to the second part 2. The filter hatch 6 also allows the filter 10 to be replaced or cleaned, as required.

[0029] The filter box 1 is furthermore open at the bottom, where the duct 3 is intended to be fixed. The opening at the bottom allows the incoming air to flow towards the duct 3 and onwards to the second part 2, which is fixed to the other end of the duct 3. Where the filter box 1 opens to the duct 3, two of the longitudinal sides of the filter box 1 are preferably angled towards the front and rear side respectively of the filter box 1, which allows the duct 3 to be fixed to the filter box 1. Two grooves with rails reinforcing the grooves are correspondingly formed on the duct 3. In order to secure the duct 3, the reinforced grooves of the duct 3 are bent backwards and pressed into the hooks formed by the backward angled parts 12 of the filter box 1.

[0030] The first opening of the duct 3 is fixed to the lower opening of the filter box 1 and the second part 2 is accordingly fixed to the second opening of the duct 3 in the same way, using the same technique with which the duct 3 and the filter box 1 are connected to one another. It is possible to vary the height of the duct 3, that is to say the distance between the filter box 1 and the second part 2, so that the overall height of the filter device according to the present invention is adjusted according to the varying radiator heights encountered. Certain heights of radiators 5 are more common than others, however, which means that a standard height of air device will suffice for most radiator heights. For special designs of radiators 5 it is consequently very easy to adapt the air device to the height of the radiator 5 by using a suitable height for the duct 3.

[0031] In order to dismantle the duct 3, that is to say to release the duct 3 from the filter box 1 and the second part 2, the ends of the duct 3 are respectively pulled or pushed towards the filter box or the second part 2. This causes the reinforced grooves of the duct 3 to be released from the hooks formed by the backwards angled part 12 of the filter box 1 and the backward angled part 9 of the second part 2. When the grooves are released from the backward angled parts 9, 12, the reinforced grooves are bent outwards making it possible to pull the duct 3 free from the filter box 1 and the second part 2.

[0032] The second part 2 has an opening 11 to the duct 3 and said backward angled parts 9 for fixing the second part 2 to the duct 3. The second part 2 also comprises at least one opening 4, an expeller, which is angled in order to allow the air flow from the duct 3 to be discharged towards the radiator 5 away from the floor and

upwards. In this way the air flow is guided for a longer distance along the radiator 5, so that it is heated to the desired temperature and assumes a reduced velocity when the air flow leaves the radiator upwards and out into the room in which the air device and the radiator 5 are located. The second part 2 preferably comprises two or more openings 4, so as to be able to guide the air flow between the panels of radiators having double panels or triple panels. It is also possible to use collapsible expellers so as to be able to adjust the angles at which the air flow is guided and also to allow an opening 4 to be completely closed.

Installation is performed as follows:

[0033] If the radiator 5 is not to be removed:

1. Make one or more holes (for example 1x85, 1x105, 2x55 or 3x55 mm) in the façade wall above the radiator 5. There is no need to specially shape the holes. They may be of any suitable format, for example angular or circular.
2. Fit a façade duct (in the façade wall) and façade grille.
3. The device according to the present invention is inserted down behind the radiator 5 (start with the part comprising the expeller). The weight of the second part 2 stretches the duct 3 so that this hangs vertically. Note that there is no need to remove the window-sill.
4. The filter box 1 with its two holes 13 and associated notches is suspended on screws (2-off) previously fixed in the wall. Then tighten the screws so that the sealing strip (not shown) of the filter box 1 is pressed against the wall.
5. Insert the filter into the filter box 1 and fit the filter hatch 6.

[0034] If the radiator 5 is to be removed because there is not space to make holes above the radiator 5:

1. Make one or more holes (for example 1x85, 1x105, 2x55 or 3x55 mm) in the façade wall behind the radiator 5. There is no need to specially shape the holes. They may be of any suitable format, for example angular or circular.
2. Fit a façade duct (in the façade wall) and façade grille.
3. The device according to the present invention (the filter box 1) with its two holes 13 and associated notches is suspended on screws (2-off) previously fixed in the wall. Then tighten the screws so that the sealing strip (not shown) of the filter box 1 is pressed against the wall. The weight of the second part 2 stretches the duct 3 so that this hangs vertically.
4. Insert the filter into the filter box 1 and fit the filter hatch 6.

[0035] The embodiment can be varied in different ways without departing from the scope of the claims. It is possible, for example, for the duct 3 and the second, lower part 2 to comprise one integral unit, preferably made from one and the same material.

Claims

1. A ventilation arrangement for fitting between a wall and a radiator (5) arranged on a wall in order to improve indoor ventilation, which arrangement guides an incoming air flow behind the radiator (5) in order to heat and distribute the air flow, the ventilation arrangement comprising a first part (1) and a second part (2), the parts (1, 2) being joined by a duct (3), the first part (1) being intended to be located on the wall so that it takes in air from one or more ventilation openings and guides the air flow towards the duct (3), the duct (3) guiding the air flow from the first part (1) to the second part (2), and the second part (2) being intended to guide the air flow out towards the radiator (5), **characterized in that** the duct (3) is a flexible duct made from a flexible material selected from a group consisting of textile, rubber, rubberised fabric, film or fibrous material, such that the flexible duct is so flexible that the ventilation arrangement can be fitted behind the radiator without removing either the radiator or a window sill.

2. A ventilation arrangement according to claim 1, **characterised in that** the second part (2) comprises at least one expeller opening (4) for expelling the air flow towards the radiator (5).

3. A ventilation arrangement according to claim 1 or 2, **characterised in that** the expeller opening (4) is designed to guide the air flow along the surface of the radiator (5).

4. A ventilation arrangement according to any one of the preceding claims, **characterised in that** the expeller opening (4) is designed to guide the air flow along the rear side of the radiator (5).

5. A ventilation arrangement according to any one of the preceding claims, **characterised in that** the second part (2) is supported by the duct (3) and can be arranged between the radiator (5) and the wall.

6. A ventilation arrangement according to any one of the preceding claims, **characterised in that** the duct (3) is supported by the first part (1) and can be arranged between the radiator (5) and the wall.

7. A ventilation arrangement according to any one of the preceding claims, **characterised in that** the flexible duct (3) is made in a material that is substantially

airtight.

8. A ventilation arrangement according to any one of the preceding claims, **characterised in that** the duct (3) has an elongated cross-section.

9. A ventilation arrangement according to any one of the preceding claims, **characterised in that** the duct (3) and the second part (2) comprise one integral unit.

10. A ventilation arrangement according to any one of the preceding claims, **characterised in that** the first part (1) comprises a filter box for filtering said air flow.

11. A ventilation arrangement according to any one of the preceding claims, **characterised in that** the filter box (1) has a filter hatch (6) for changing the filter (10).

12. A set of parts for producing a ventilation arrangement for fitting between a wall and a radiator (5) arranged on a wall in order to improve the indoor ventilation, which arrangement guides an incoming air flow behind the radiator (5) in order to heat and distribute the air flow, wherein said set of parts comprises a first part (1), a second part (2) and a duct (3), said duct (3) being designed to connect said first part (1) and second part (2), the first part (1) being intended to be located on the wall so that it covers one or more ventilation openings and guides the air flow towards the duct (3), the duct (3) guiding the air flow from the first part (1) to the second part (2), and the second part (2) being intended to guide the air flow out towards the radiator (5), wherein the duct is a flexible duct made from a flexible material selected from a group consisting of textile, rubber, rubberised fabric, film or fibrous material, such that the flexible duct is so flexible that the ventilation arrangement can be fitted behind the radiator without removing either the radiator or a window sill.

Patentansprüche

1. Lüftungsanordnung zum Anbringen zwischen einer Wand und einem an einer Wand angeordneten Radiator (5), um die Innenraumlüftung zu verbessern, wobei die Anordnung einen zuströmenden Luftstrom hinter den Radiator (5) führt, um den Luftstrom zu erwärmen und zu verteilen, wobei die Lüftungsanordnung ein erstes Teil (1) und ein zweites Teil (2) umfasst, wobei die Teile (1, 2) durch einen Kanal (3) verbunden sind, wobei das erste Teil (1) dazu bestimmt ist, an der Wand angeordnet zu sein, derart, dass es Luft von einer oder mehreren Lüftungsöffnungen eindringen lässt und den Luftstrom zu dem Kanal (3) hinführt, wobei der Kanal (3) den Luftstrom von dem ersten Teil (1) zu dem zweiten Teil (2) führt, und wobei das zweite Teil (2) dazu bestimmt ist, den Luftstrom zu dem Radiator (5) hinaus zu führen, **dadurch gekennzeichnet, dass** der Kanal (3) ein flexibler Kanal ist, der aus einem flexiblen Material, welches aus einer Gruppe umfassend Textil-, Gummi-, gummiertes Gewebe-, Film- oder Fasermaterial ausgewählt wurde, hergestellt ist, derart, dass der flexible Kanal so flexibel ist, dass die Lüftungsanordnung hinter dem Radiator angebracht werden kann, ohne den Radiator oder eine Fensterbank zu entfernen.

2. Lüftungsanordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** das zweite Teil (2) mindestens eine Ausstoßöffnung (4) zum Ausstoßen der Luftstroms zu dem Radiator (5) hin umfasst.

3. Lüftungsanordnung nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die Ausstoßöffnung (4) ausgebildet ist, um den Luftstrom die Oberfläche des Radiators (5) entlang zu führen.

4. Lüftungsanordnung nach einem beliebigen der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Ausstoßöffnung (4) ausgebildet ist, um den Luftstrom die Rückseite des Radiators (5) entlang zu führen.

5. Lüftungsanordnung nach einem beliebigen der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das zweite Teil (2) durch den Kanal (3) getragen wird und zwischen dem Radiator (5) und der Wand angeordnet werden kann.

6. Lüftungsanordnung nach einem beliebigen der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Kanal (3) durch das erste Teil (1) getragen wird und zwischen dem Radiator (5) und der Wand angeordnet werden kann.

7. Lüftungsanordnung nach einem beliebigen der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der flexible Kanal (3) aus einem im Wesentlichen luftdichten Material hergestellt ist.

8. Lüftungsanordnung nach einem beliebigen der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Kanal (3) einen länglichen Querschnitt aufweist.

9. Lüftungsanordnung nach einem beliebigen der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Kanal (3) und das zweite Teil (2) eine einstückige Einheit bilden.

10. Lüftungsanordnung nach einem beliebigen der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das erste Teil (1) einen Filterkasten zum

Filtern des Luftstroms umfasst.

11. Lüftungsanordnung nach einem beliebigen der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** der Filterkasten (1) eine Filterklappe (6) zum Wechseln des Filters (10) aufweist.

12. Satz von Teilen zum Herstellen einer Lüftungsanordnung zum Anbringen zwischen einer Wand und einem an einer Wand angeordneten Radiator (5), um die Innenraumlüftung zu verbessern, wobei die Anordnung einen zuströmenden Luftstrom hinter den Radiator (5) führt, um den Luftstrom zu erwärmen und zu verteilen, wobei der Satz von Teilen ein erstes Teil (1), ein zweites Teil (2) und einen Kanal (3) umfasst, wobei der Kanal (3) ausgebildet ist, um das erste Teil (1) und das zweite Teil (2) zu verbinden, wobei das erste Teil (1) dazu bestimmt ist, an der Wand angeordnet zu sein, so dass es eine oder mehrere Lüftungsöffnungen abdeckt und den Luftstrom zu dem Kanal (3) hinführt, wobei der Kanal (3) den Luftstrom von dem ersten Teil (1) zu dem zweiten Teil (2) führt, und wobei das zweite Teil (2) dazu bestimmt ist, den Luftstrom zu dem Radiator (5) hinaus zu führen, wobei der Kanal ein flexibler Kanal ist, der aus einem flexiblen Material, welches aus einer Gruppe umfassend Textil-, Gummi-, gummiertes Gewebe-, Film- oder Fasermaterial ausgewählt wurde, hergestellt ist, derart, dass der flexible Kanal so flexibel ist, dass die Lüftungsanordnung hinter dem Radiator angebracht werden kann, ohne den Radiator oder eine Fensterbank zu entfernen.

Revendications

1. Système de ventilation à monter entre un mur et un radiateur (5), monté sur un mur pour améliorer la ventilation en intérieur, ledit système guidant un flux d'air entrant derrière le radiateur (5) pour chauffer et répartir le flux d'air, le système de ventialtion comprenant une première partie (1) et une deuxième partie (2), les parties (1, 2) étant reliées par un conduit (3), la première partie (1) étant destinée à être montée sur le mur, de manière à recevoir de l'air par une ou plusieurs ouvertures de ventilation, et à guider le flux d'air vers le conduit (3), le conduit (3) guidant le flux d'air de la première partie (1) vers la deuxième partie (2), et la deuxième partie (2) étant destinée à guider le flux d'air vers l'extérieur en direction du radiateur (5), **caractérisé en ce que** le conduit (3) est un conduit souple, constitué d'un matériau souple sélectionné à partir d'un groupe comprenant le textile, le caoutchouc, le tissu caoutchouté, un film ou une matière fibreuse, de façon à ce que le conduit soit souple au point de permettre le montage du système de ventilation derrière le radiateur, sans avoir à démonter ni le radiateur, ni un rebord de fenêtre.

2. Système de ventilation selon la revendication 1, **caractérisé en ce que** la deuxième partie (2) comprend au moins une ouverture d'évacuation (4) pour évacuer le flux d'air vers le radiateur (5).

3. Système de ventilation selon la revendication 1 ou 2, **caractérisé en ce que** l'ouverture d'évacuation (4) est conçue pour guider le flux d'air le long de la surface du radiateur (5).

4. Système de ventilation selon l'une quelconque des revendications précédentes, **caractérisé en ce que** l'ouverture d'évacuation (4) est conçue pour guider le flux d'air le long du côté arrière du radiateur (5).

5. Système de ventilation selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la deuxième partie (2) est supportée par le conduit (3) et peut être agencée entre le radiateur (5) et le mur.

6. Système de ventilation selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le conduit (3) est supporté par la première partie (1) et peut être agencé entre le radiateur (5) et le mur.

7. Système de ventilation selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le conduit souple (3) est constitué d'un matériau substantiellement étanche à l'air.

8. Système de ventilation selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le conduit (3) présente une section transversale allongée.

9. Système de ventilation selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le conduit (3) et la deuxième partie (2) comprend une unité intégrale.

10. Système de ventilation selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la première partie (1) comprend un boîtier à filtre, pour filtrer ledit flux d'air.

11. Système de ventilation selon l'une quelconque des revendications précédentes, **caractérisé en ce que** le boîtier à filtre (1) possède un panneau à filtre (6) permettant de remplacer le filtre (10).

12. Série de pièces pour produire un système de ventilation destiné à être monté entre un mur et un radiateur (5), monté sur un mur pour améliorer la ventilation en intérieur, ledit système guidant un flux d'air entrant derrière le radiateur (5), pour chauffer et répartir le flux d'air, ladite série de pièces comprenant une première partie (1), une deuxième partie (2) et

un conduit (3), ledit conduit (3) étant conçu pour relier la première partie (1) et la deuxième partie (2), la première partie (1) étant destinée à être montée sur le mur, de manière à couvrir une ou plusieurs ouvertures de ventilation, et à guider le flux d'air vers le conduit (3), le conduit (3) guidant le flux d'air de la première partie (1) vers la deuxième partie (2), et la deuxième partie (2) étant destinée à guider le flux d'air vers l'extérieur en direction du radiateur (5), le conduit étant un conduit souple, constitué d'un matériau souple sélectionné à partir d'un groupe groupe comprenant le textile, le caoutchouc, le tissu caoutchouté, un film ou une matière fibreuse, de façon à ce que le conduit soit souple au point de permettre le montage du système de ventilation derrière le radiateur, sans avoir à démonter ni le radiateur, ni un rebord de fenêtre.

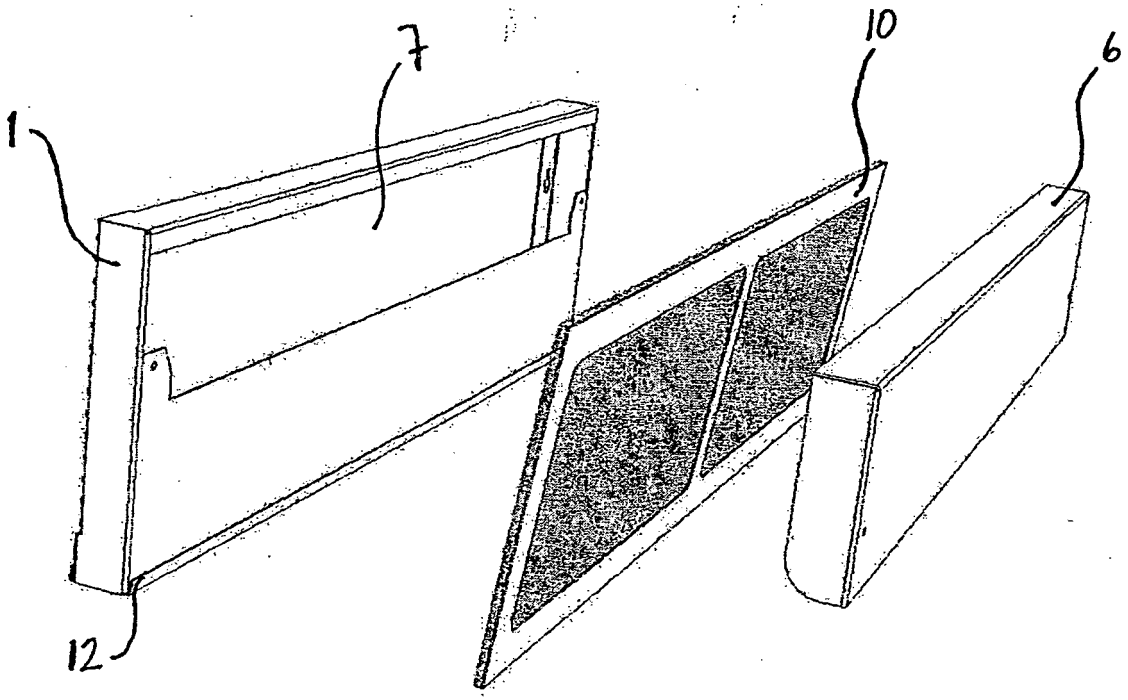


Fig. 1

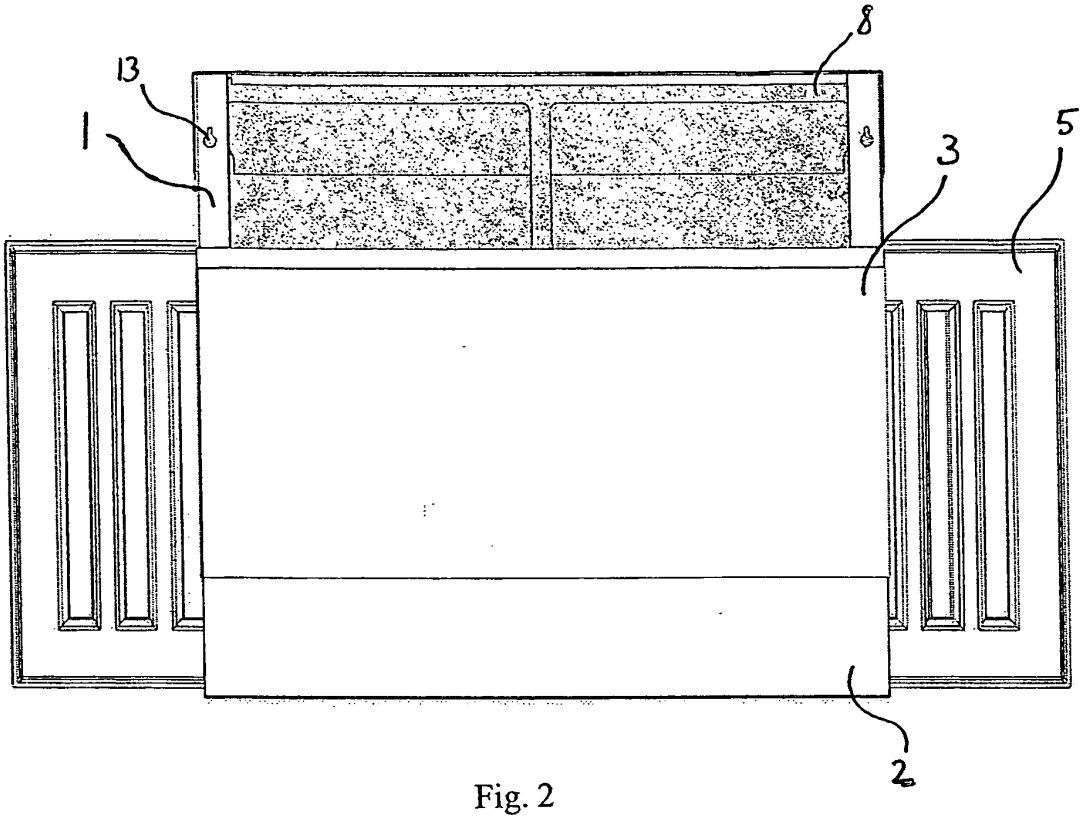


Fig. 2

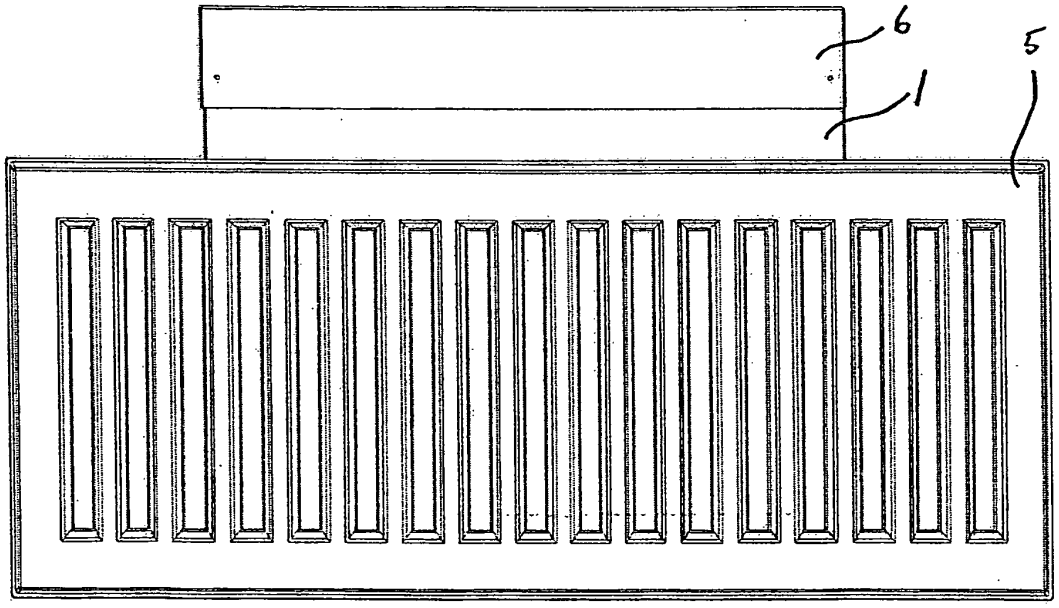


Fig. 3

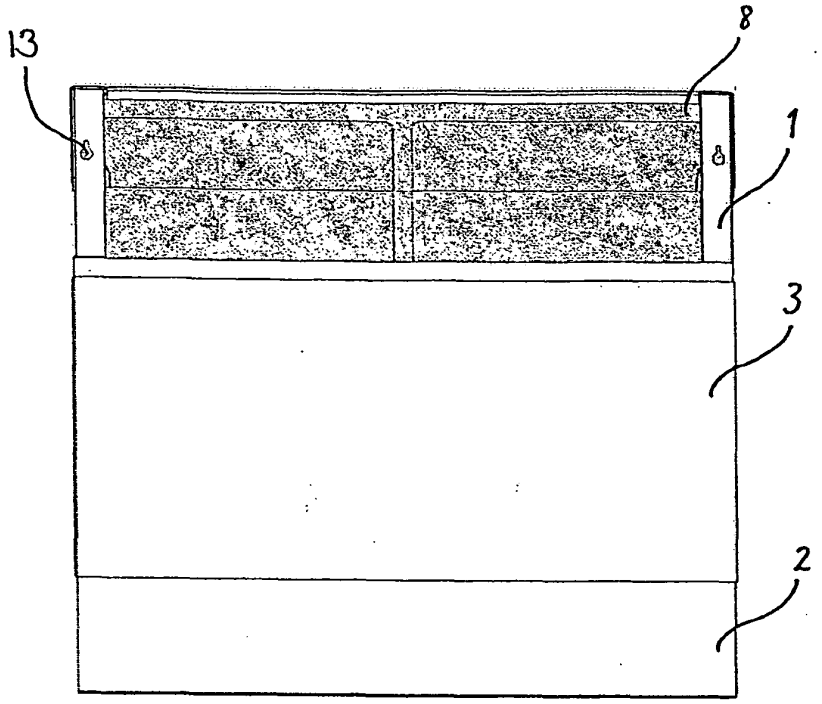


Fig. 4

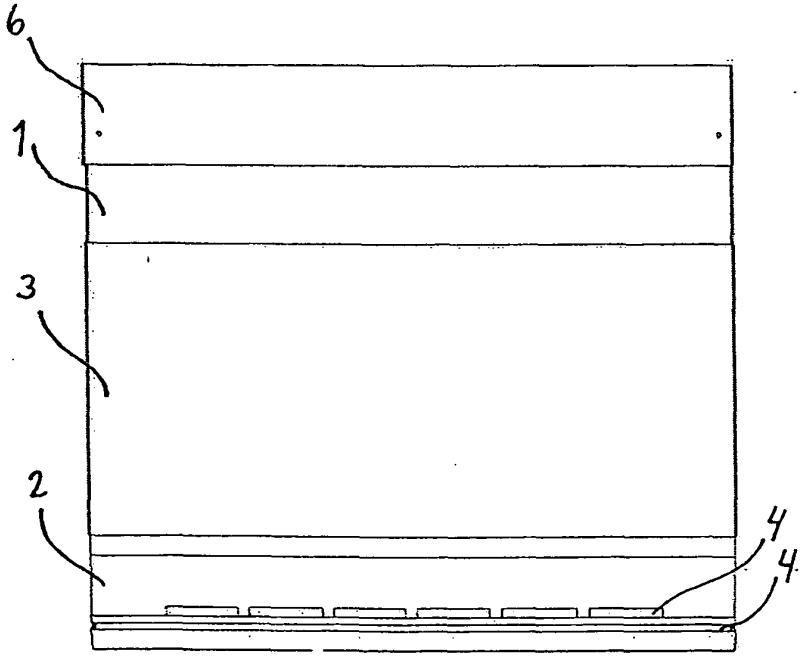


Fig. 5

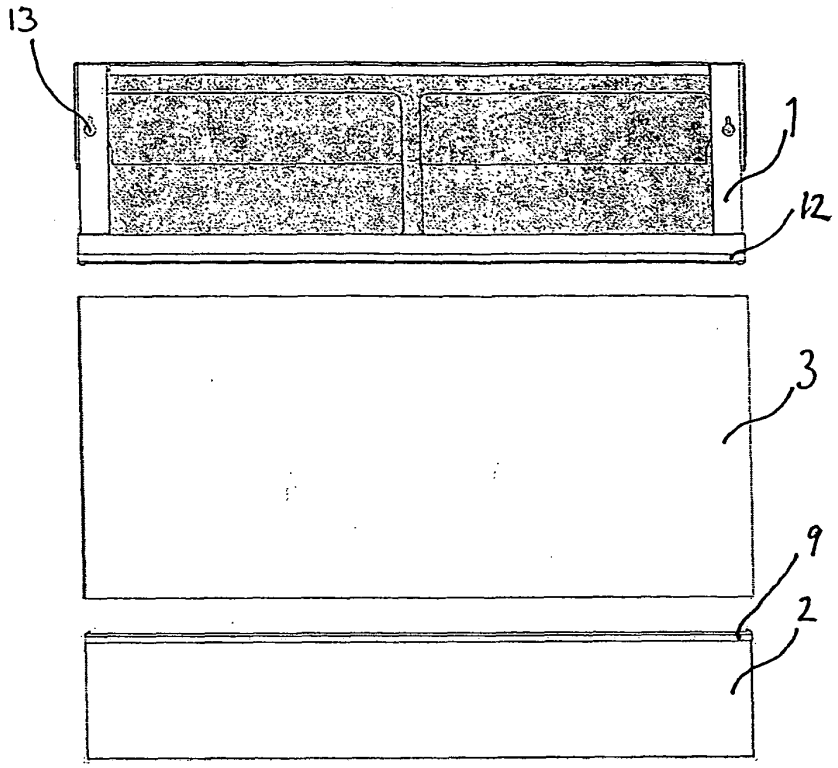
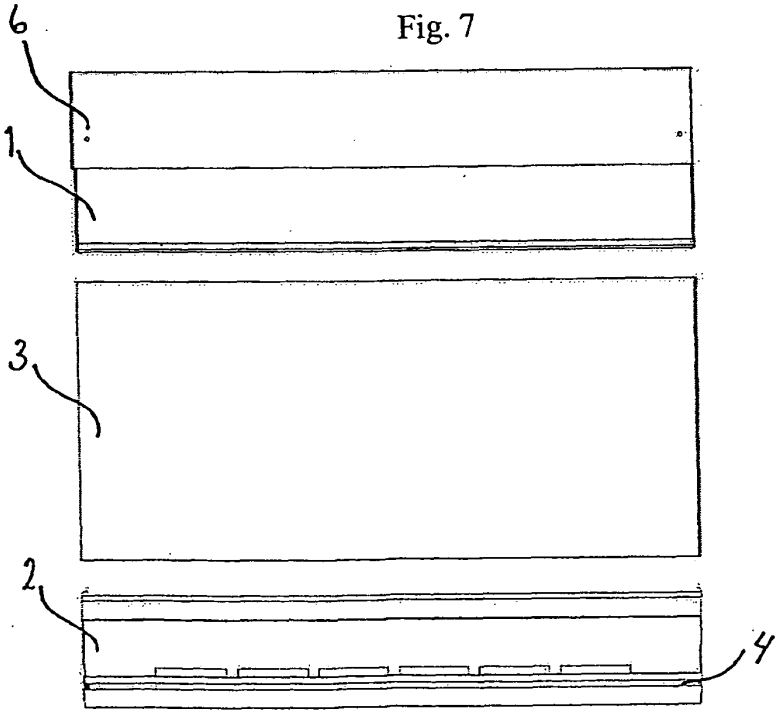


Fig. 6

Fig. 7



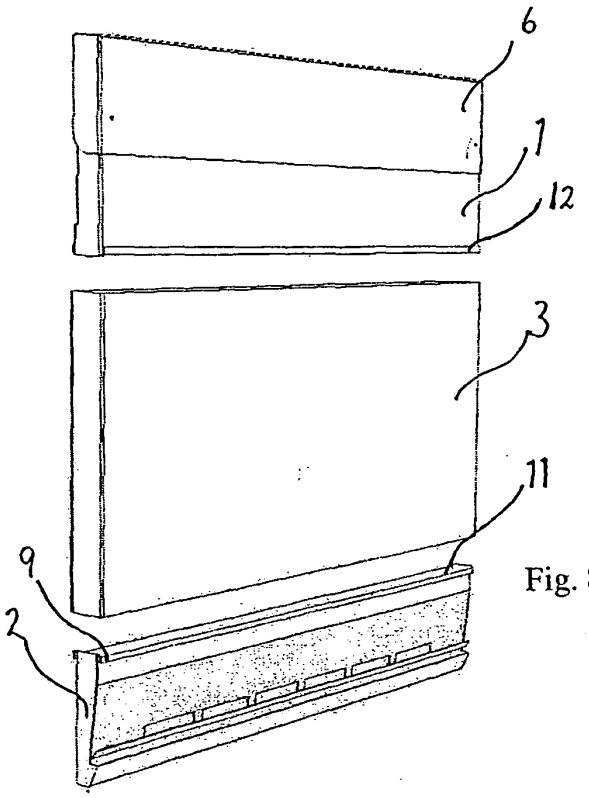


Fig. 8

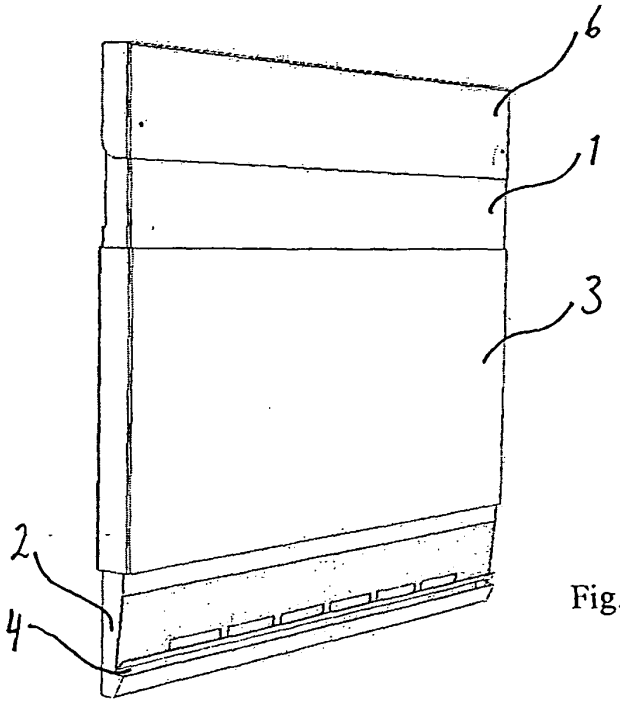


Fig. 9

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- DE 20218457 **[0004]**