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(54) Device for regulating the stream of air in a ventilation apparatus

(57) The invention relates to a provision for regulating the flow of air in a ventilation device (1) with a regulating valve (6) disposed in a through-flow duct (13) of the ventilation device (1) which regulates the flow of air through the ventilation device (1) between a maximum through-flow opening and a minimum through-flow opening and which is hingingly suspended from a suspension spindle (8) extending according to the length of the regulating valve (6) and ventilation device (1), whereby the suspension spindle (8) for the regulating valve (6) is provided essentially centrally in relation to walls of the through-flow duct running parallel to the suspension spindle (8) and that the regulating valve (6) is so made that in the position for a minimum through-flow opening this actually connects with the walls of the through-flow duct.
The invention furthermore relates to a ventilation regulating valve (6) destined to be part of such a regulating valve provision, and a ventilation device equipped with such a regulating valve provision.

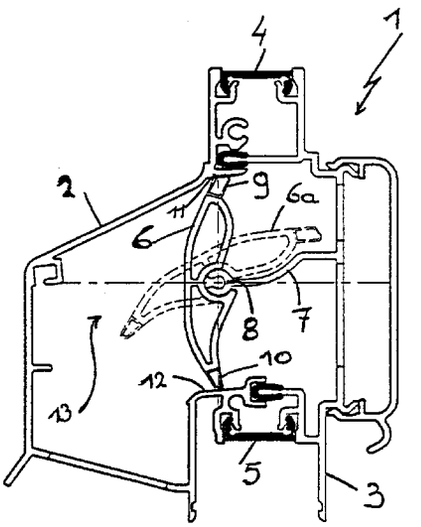

Fig. 1

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Description

[0001] The invention relates to provisions for regulating the flow of air in ventilation devices such as ventilation grilles which are among others used for providing or preventing ventilation between the inside and the outside of a building. Such ventilation devices are for example installed below or above a framework or window.

[0002] The invention relates more specifically to ventilation devices with a regulating valve disposed orientationally in a through-flow duct of the ventilation device, with which the flow of air through the ventilation device can be regulated between a maximum through-flow opening and a minimum through-flow opening.

[0003] With devices of this type which are know from the state-of-the-art, the regulating valve is generally hinging suspended via pins which are provided on the extremities of the regulating valve. Because of the fact that with these devices the regulating valve is only supported at the extremities the weight distribution in relation to the supporting points is far from ideal, and malfunctions regularly occur with its operation.

[0004] On the other hand the Belgian patent 1008728 describes a device with a regulating valve which is hingingly suspended from a suspension spindle extending in longitudinal direction along the edge of the regulating valve. Disadvantages are also linked to this suspension because neither here is the centre of gravity of the regulating valve optimally provided in relation to the hinge pin.

[0005] The object of this invention is to remedy the disadvantages of the known ventilation devices by providing a more suitable suspension for the cut-off valve for regulating the flow of air.

[0006] For this purpose the invention provides an improved provision for regulating the flow of air in a ventilation device in which the flow of air is regulated by means of a regulating valve which is disposed in a through-flow duct of the ventilation device and regulates the flow of air through the ventilation device between a maximum through-flow opening and a minimum through-flow opening, and which is hingingly suspended from a suspension spindle extending according to the length of the regulating valve and ventilation device, whereby the suspension spindle for the regulating valve is provided essentially centrally in relation to walls of the through-flow duct running parallel to the suspension spindle and the regulating valve is so made that in the position for a minimum through-flow opening this actually connects with the walls of the through-flow duct.

[0007] According to a further characteristic of the invention the regulating valve is preferably made of a synthetic material section.

Specifically the regulating valve can very suitably be made of hard PVC.

[0008] According to another preferred characteristic of the invention the regulating valve is provided with strips of an elastic material along the edges which are destined to connect with the walls of the through-flow duct. That elastic material can very suitably consist of soft PUG (such as for example PVC of the Shore A70 type, or PVC with a medium rubbery flexible consistency).

[0009] In a particularly suitable embodiment of the invention the suspension spindle which extends essentially according to the entire length of the regulating valve and/or ventilation device is provided on a section that is a component part of the ventilation device. The suspension spindle is preferably part of such a section.

[0010] The invention further also encompasses the ventilation regulating valve as such, destined to be used in a ventilation device with a regulating valve provision as described above, whereby that regulating valve is provided to be suspended essentially centrally in relation to walls of the through-flow duct running parallel to the suspension spindle and in the position for a minimum through-flow opening actually to connect with the walls of the through-flow duct.

[0011] The invention finally also encompasses a ventilation device destined to be installed in a wall, partition or window frame, comprising an air through-flow duct between one and the other side of the aforementioned wall, partition or window frame, whereby that air through-flow duct is equipped with a regulating valve provision such as described above.

[0012] The invention is illustrated on the basis of the attached drawings and further explained in greater detail, with reference to figures 1 and 2, in the following specification of one specific embodiment of the invention.

[0013] In these figures:

Figure 1 shows a cross-section of one specific embodiment of a ventilation grille with a regulating valve provision according to the invention, which is described in detail below;

Figure 2 shows a view in perspective of practically the same embodiment of the invention as in figure 1 (only very slight variants in relation to the embodiment according to figure 1).

The ventilation device or ventilation grilles (1) shown in figures 1 and 2 for a framework construction comprises the following parts:

- An outer section (2) to be disposed towards the outside of a building and an inner section (3) to be disposed towards the inside of the building; between these sections (2) and (3) a window-pane is installed by means of a rubber joint more specifically in the case of metal (aluminium) frameworks thermal interrupts (4) and (5) are furthermore provided.
- A movable regulating or cut-off valve (6) for complete or partial sealing of the air through-flow duct of the ventilation device (1).

- A moulding (7) provided on the inner section (3) which runs in the longitudinal direction of the ventilation device (1) and which on its edge is provided as a spindle-shaped moulding (8) from which the regulating valve (6) is hingingly suspended.
  The regulating valve (6) is manually movable and can be placed in open position (5a) or in closed position (5), or in an intermediate position. The valve itself consists of a section of stiff material, such as aluminium or hard PVC. Along its edge strips (9), (10) of an elastic material are provided so that the edge of the regulating valve, in the position of the regulating valve (6) for a minimum through-flow opening, actually connects (in other words tightly) with the walls (11), (12) of the air through-flow duct (13).
  The suspension spindle (8) for the regulating valve is essentially central in relation to walls (11), (12) of the through-flow duct (13) running parallel thereto.
  In closed position because of this the regulating valve connects better with the walls of the air through-flow duct and in fact over the entire length of the regulating valve, owing to this central suspension according to the entire length of the valve. This indeed ensures a better and more secure support of the regulating valve.

[0014] While the invention has been explained above in detail with reference to one specific type of ventilation grille as illustrated in figures 1 and 2, it is emphasised that the invention is in no way restricted to that specific embodiment, and that innumerable changes and embodiments known to experts can be applied without departing from the scope of the invention specified in the above text and the attached claims.

Claims

1. Provision for regulating the flow of air in a ventilation device with a regulating valve disposed in a through-flow duct of the ventilation device which regulates the flow of air through the ventilation device between a maximum through-flow opening and a minimum through-flow opening and which is hingingly suspended from a suspension spindle extending according to the length of the regulating valve and ventilation device, **characterized in that** the suspension spindle for the regulating valve is provided essentially centrally in relation to walls of the through-flow duct running parallel to the suspension spindle.

2. Regulating valve provision according to claim 1, **characterized in that** the regulating valve is so made that in the position for a minimum through-flow opening this actually connects with the walls of the through-flow duct.

3. Regulating valve provision according to claims 1 or 2, **characterized in that** the regulating valve is made of a synthetic material section.

4. Regulating valve provision according to one of the preceding claims, **characterized in that** the regulating valve is provided with strips of an elastic material along the edges which are destined to connect with the walls of the through-flow duct.

5. Regulating valve provision according to one of the preceding claims, **characterized in that** the suspension spindle extending essentially according to the entire length of the regulating valve and/or ventilation device is provided on a section that is a component part of the ventilation device.

6. Regulating valve provision according to one of the preceding claims, **characterized in that** the suspension spindle extending essentially according to the entire length of the regulating valve and/or ventilation device is part of a section that is a component part of the ventilation device.

7. Ventilation regulating valve provided for being hingingly suspended in a ventilation device on a suspension spindle extending according to the length of the regulating valve in order to regulate the flow of air in a ventilation device between a maximum through-flow opening and a minimum through-flow opening, **characterized in that** the regulating valve is provided to be suspended essentially centrally in relation to walls of the through-flow duct running parallel to the suspension spindle and in the position for a minimum through-flow opening actually to connect with the walls of the through-flow duct.

8. Ventilation regulating valve according to claim 7, **characterized in that** this is made of synthetic material section.

9. Ventilation regulating valve according to one of the preceding claims 7 and 8, **characterized in that** this is provided with strips of an elastic material along the edges which are destined to connect with the walls of the through-flow duct.

10. Ventilation device destined to be provided in a wall, partition or window frame, comprising an air through-flow duct between one and the other side of the aforementioned wall, partition or window frame, **characterized in that** aforementioned air through-flow duct is equipped with a regulating valve provision according to one of the claims 1-5.

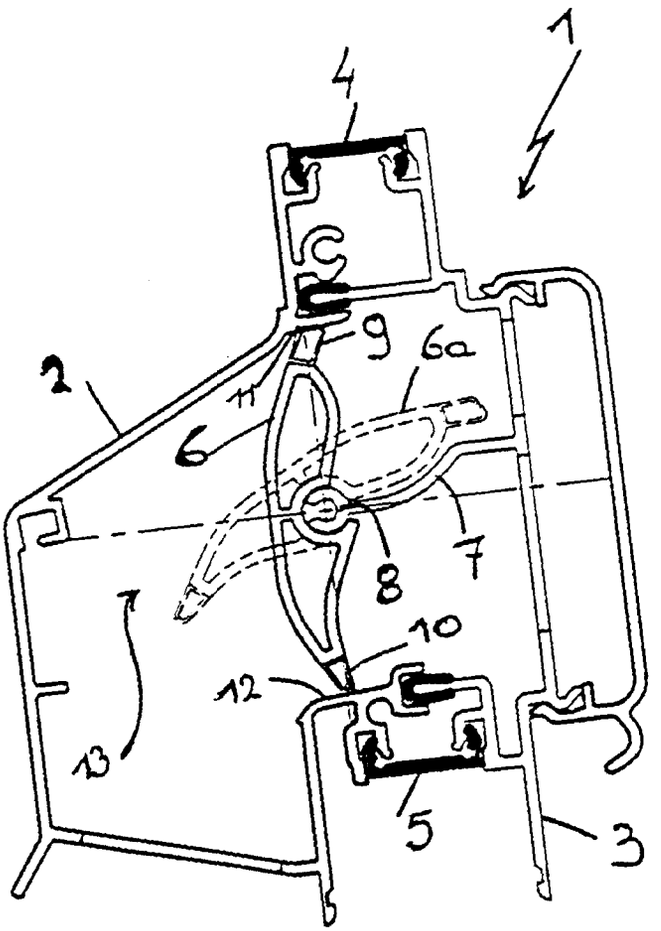

Fig. 1

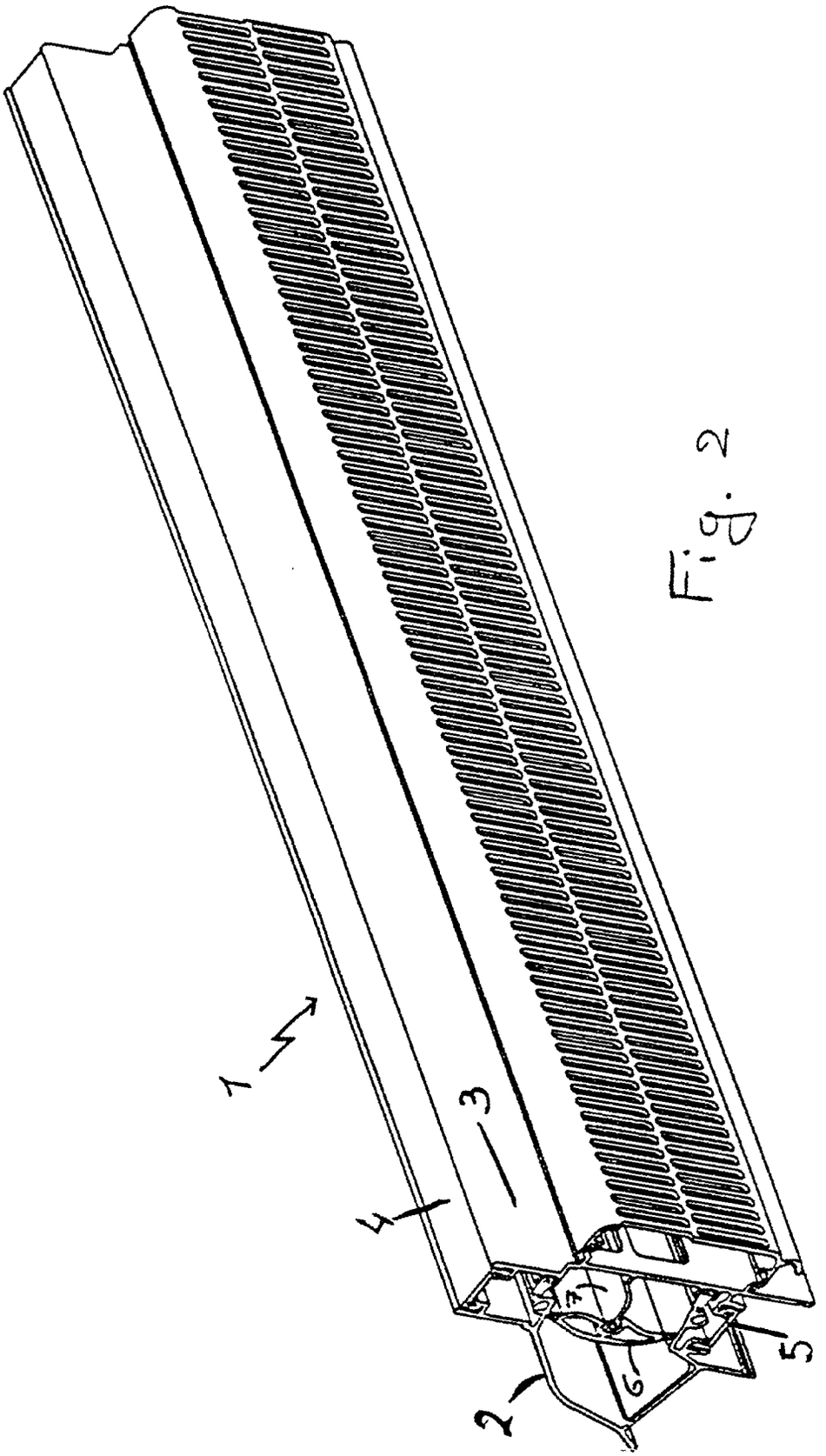

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 98 20 3288

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A,D	BE 1 008 728 A (RENSON N V) 2 July 1996 * claim 1; figures *	1,2,7	F24F13/14 F24F13/18
A	GB 2 127 144 A (MONARCH ALUMINIUM) 4 April 1984 * claims 1,3-5; figure *	1,2,7	
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TECHNICAL FIELDS SEARCHED (Int.Cl.6)
F24F E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 January 1999	Gonzalez-Granda, C

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 98 20 3288

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82