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(54) **Wall vent screen**

Mauer-Lüftungsschirm

Grille de ventilation pour une paroi

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(56) References cited:
**EP-A- 0 056 173 DE-U- 20 309 741
US-A- 5 203 795**

EP 1 566 499 B1

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Description

[0001] The invention relates to a wall vent screen for a mortared wall, and the like, often a mortared outer wall of a cavity wall.

[0002] To ventilate the cavity, often a gap between two adjacent bricks in the outer wall is not filled with mortar and such a gap is designated as a weep hole. Wall vent screens, also referred to as weep hole grids, serve to cut short bugs, as for example bees, wasps and mice, which can move through these weep holes. Most of the known wall vent screens have a non-deformable structure and have to be placed during mortaring; see, for example, DE 3406931, EP 0 137 466, WO 88/08905, and NL 1005762. A disadvantage of these wall vent screens is that the bricklayer always has to carry them with him.

[0003] Moreover, there are known wall vent screens that can be mounted after mortaring the wall, into a gap between two adjacent bricks that is not filled with mortar or a gap between two adjacent bricks where the mortar is removed afterwards. In US 5,203,795, for example, a grid is described consisting of a ventilation screen of which the surface is larger than the surface of the weep hole to be covered, as well as a fastening mechanism for that grid, where a flexible wedge shaped anchor is inserted into the weep hole, onto which the grid is assembled using a screw. Correctly inserting and assembling the wedge shaped element is not easy and therefore takes time. In addition, at least one screw driver is needed to assemble the grid and the fastening mechanism.

[0004] EP 0 056 173 discloses a wall vent screen which can be put in the masonry of a building structure consisting of a flat grate plate and resilient limbs in opposite positions, the free ends of said limbs resiliently gripping on the nearby bricks in a one-brick opening of the masonry.

[0005] In US 2002/0092631 a wall vent screen is described, where the fastening mechanism comprises two resilient fingers, that can be clamped in the weep hole. Placing this latter grid is not easy, as the ventilation screen is impeding in both pressing the fingers to each other at the same time and placing these pressed fingers into the weep hole.

[0006] These two kinds of grids having ventilation screens, include several other disadvantages. They are not convenient, that is, for an individual it is unpractical to hold many of these wall vent screens. They are relatively expensive, as for its production a plurality of parts have to be connected. Because the ventilation screen has a larger surface than the surface of the weep hole to be covered, an needless large amount of material is used. In addition, the largest part of these grids is positioned in front of the weep hole, so the entire assembly does not make up a flat plane together with the brick wall. This makes these wall vent screens vulnerable and not esthetical.

[0007] The objective of the present invention is to pro-

vide a wall vent screen, which wall vent screen that does not have the disadvantages of the wall vent screens according to the art mentioned above. A further goal is to provide a method for the production of such a wall vent screen.

[0008] Therefore, the invention provides a wall vent screen according to claim 1. With "weep hole", as used herein, is meant a gap between two adjacent bricks, which gap normally is filled with, for example, cement mortar. For the goal of the invention in most cases it is a vertical rectangular gap, hereafter also referred to as "thrust weep hole". Because the wall vent screen according to the invention usually is placed in such a weep hole, it is therefore also often referred to as "thrust wall vent screen". However, it shall be apparent for a skilled person in the art that the wall vent screen according to the invention can also be placed into a horizontal gap, also referred to as "ribbon weep hole", or otherwise. With the expression "can be placed into a weep hole", as used herein, is meant that a gap between two adjacent bricks can be left open, that is, for example, not filled with cement mortar, or, for example, it can be opened later on by removing the cement mortar, to place the wall vent screen according to the present invention into the wall following mortaring, but also that the wall vent screen according to the present invention can be placed into a weep hole during mortaring.

[0009] The advantage of such a wall vent screen is that, also following mortaring, it is able to be placed into a wall, in a gap between two adjacent bricks that is not filled with mortar or a gap that is made open. Due to the resilience of the bending area the wall vent screen, by using external force, for example by means of the fingers of an individual, can be deformed and therefore be placed into a weep hole, where, after taking away the relevant strength, the form of the wall vent screen adapts to the dimensions of the weep hole. Therefore, the exact dimensions of the weep hole are not of considerable interest, and thus it is possible to place a wall vent screen according to the invention on a suitable moment, which moment is not dependent on the moment of mortaring the wall. Because the wall vent screen, at least for the largest part, can be placed into a weep whole, it is more esthetical than the wall vent screens according to the art that can be placed after mortaring the brick wall, as the visible part of the present wall vent screen, when it is placed into a weep hole, has the same size as the visible part of the weep hole and because the wall vent screen is able to form, and usually forms, a flat surface together with the mortared wall. In the last case the present wall vent screen also is less vulnerable.

[0010] If the bending area of the wall vent screen according to the invention closes the opening of the weep hole completely, the bending area has to comprise one or more apertures, which apertures have to have such dimensions that these are sufficiently large for ventilation and sufficiently small to stop troublesome animals, like insects and mice. The apertures can for example be

round or rectangular and can be arranged randomly or in a pattern.

[0011] In a non-claimed embodiment of the wall vent screen, the resilient bending area connects a first wall and a second wall in such a way, preferably they are both mainly flat, that the first wall and the second wall are positioned such that they are facing each other. The advantage hereof is, that not only the bending area can be deformed but that in addition, due to the deformation, also the position of the two walls of the wall vent screen with respect to each other, can be changed. Therefore, due to the resilience of the bending area, the two walls can adjust for the dimensions of the weep hole, therefore the anchoring in the weep hole is strengthened.

[0012] Preferably, the bending area comprises oblong, substantial parallel apertures that go in the direction from the first wall to the second wall. The advantage of this kind of apertures is that the grid according to the invention can be deformed in the bending area resiliently and easily. Met "deformed resiliently", as used herein, is meant that the material can be bend by external force and after taking away the external force subsequently returns again largely in its original position, c.q. will return. This is not only easy in the case of bending the parts by producing such a wall vent screen, but also in the case of placing the grid into a weep hole. If preferred, the mentioned apertures can also support ventilation.

[0013] In another non-claimed embodiment of the wall vent screen, the wall vent screen comprises a first flange and a second flange, which are connected to the first wall and the second wall, respectively, that are positioned in front of the resilient bending area, that is, that the flanges are facing each other, and at least one of the flanges, and preferably both flanges, comprise apertures for ventilation. The advantage of the flanges is that they can close the weep hole for troublesome animals and that its apertures support sufficient ventilation. Because the flanges are connected to the two walls, the position of the flanges is dependent on the position of the two walls, which results in that, in addition to the walls, also the flanges adjust to the sizes of the weep hole.

[0014] In another preferred embodiment of the wall vent screen according to the invention, the distance from the bending area to a first joining area, that connects the first wall to the first flange, is larger than the distance of the bending area to a second joining area, that connects the second wall to the second flange, and both flanges comprise a plurality of oblong, mainly parallel notches, that are perpendicular with respect to the respective joining area's, where the apertures that are created by the notches of the first flange, and the apertures that are created by the notches of the second flange, overlap.

[0015] The advantage of such a preferred embodiment is, that by pressing the walls to each other, the two flanges partly overlies without limiting the ventilation. The flanges can be formed such, that by maximally pressing the device, the apertures of the two flanges overlap each other

for the largest part.

[0016] The first wall and the second wall preferably comprise resistance offering elements, as for example ledges, barbed hooks and lock lips so that it is possible to place the wall vent screen even more tightly in the gap.

[0017] The present invention also provides a method for producing a wall vent screen according to the present invention, as defined above, comprising making apertures in a sheet-like material, cutting the sheet-like material resulting in at least one part, where each part can form a wall vent screen, and bending the part resiliently. An important advantage of such a method is that it is simple and cost effective, especially for small or intermediate scale production. In addition, the height of the wall vent screen can easily be adjusted by adjusting the intersecting line. However, the wall vent screen according to the present invention can also be produced by injection molding. This is especially advantageously in large scale production. The wall vent screen can be made of each indiscriminately flexible material, both of metal and of plastic or of other flexible materials, that are known by a skilled person. Preferably, the grid is made of flexible metal, like stainless steel, aluminum or messing. Specifically, the grid is produced out of one sheet of stainless steel, for example RVS 304. A proper thickness of the sheet, for example, is in the range of 0,4-0,8 mm and preferably is about 0,6 mm. The grid preferably is produced out of one piece.

[0018] Hereafter the invention is further explained in the light of the enclosed figures, wherein:

Figure 1 shows a perspective view of a preferred embodiment of a wall vent screen according to the invention.

Figure 2 shows a sheet-like material with apertures for producing of a wall vent screen according to the invention.

[0019] Figure 1 shows a wall vent screen (1) with a first substantial flat wall (2) and a second substantial flat wall (3); a resilient bending area (6) and apertures (8) for ventilation; a first flange (9) and a second flange (10), that both comprise apertures (12). In these embodiment the distance (A) from the bending area (6) to a first joining area (13), that connects the first wall (2) to the first flange (9), is larger than the distance (B) from the bending area (6) to a second joining area (14), that connects the second wall (3) to the second flange (10).

Figure 2 shows sheet-like material (16) with apertures (15) to produce a wall vent screen (1) according to the present invention. The straight lines (18 and 19) represent the intersecting lines. Shown is that a intersecting line (18) crosses a row apertures to form the notches of the flanges. The intersecting lines that transverse the row apertures (19) determine the height of the wall vent screen. Also the part (17) is shown, that can be formed to one wall vent screen (1) according to the present invention.

[0020] The requested rights are established by the following claims.

Claims

1. A wall vent screen (1) for inserting entirely or almost entirely into a weep hole, comprising a substantially flat first wall (2) and a substantially flat second wall (3), where said first and said second wall at one outer end are interconnected and spaced by means of a resilient bending area (6), **characterized in that** the first wall (2) at the other outer end is connected to a first flange (9), and the second wall (3) at the other outer end is connected to a second flange (10), the first and second flanges (9,10) being connected to the first and second wall (2,3) such that said flanges are positioned in front of the resilient bending area (6), and the first flange (9) and the second flange (10) being designed such that they together form a grid.
2. A wall vent screen according to claim 1, wherein the first flange (9) and the second flange (10) are substantially perpendicular with respect to the first wall (2) and the second wall (3), respectively, and are facing each other.
3. A wall vent screen according to claim 1 or claim 2, **characterized in that** the bending area (6) has oblong, substantial parallel apertures (8).
4. A wall vent screen according to any one of claims 1-3, **characterized in that**
 - the distance (A) from the bending area (6) to a first joining area (13), that connects the first wall (2) to the first flange (9), is larger than the distance (B) from the bending area (6) to a second joining area (14), that connects the second wall (3) to the second flange (10);
 - both flanges (9, 10) comprise a plurality of oblong mainly parallel notches, that are perpendicular with respect to the respective joining area's (13, 14), and
 - the apertures that are created by the notches of the first flange (9) and the apertures that are created by the notches of the second flange (10), overlap.
5. A wall vent screen according to any one of the claims 1-4, **characterized in that** the first wall (2) and the second wall (3) comprise resistance offering elements, as for example ledges, barbed hooks and lock lips.
6. A wall vent screen according to any one of claims 1-5, **characterized in that** this is produced out of

one piece.

7. A method for producing a wall vent screen as defined in any one of claims 1-6, comprising:

- making apertures (15) in a sheet-like material (16);
- cutting the sheet-like material resulting in at least one part (17), where each part (17) can form one wall vent screen (1), and
- bending of said part (17) resiliently.

Patentansprüche

1. Mauer-Lüftungsschirm (1) zum vollständigen oder fast vollständigen Einsetzen in ein Lüftungsloch, umfassend eine im Wesentlichen flache erste Wand (2) und eine im Wesentlichen flache zweite Wand (3), wobei die erste und die zweite Wand an einem Außenende miteinander verbunden sind und mittels eines elastischen Biege-Bereichs (6) voneinander beabstandet sind, **dadurch gekennzeichnet, dass** die erste Wand (2) an einem Außenende mit einem ersten Bund (9) verbunden ist und die zweite Wand (3) an einem Außenende mit einem zweiten Bund (10) verbunden ist, wobei der erste und der zweite Bund (9, 10) mit der ersten und der zweiten Wand (2, 3) derart verbunden sind, dass die Bünde vor dem elastischen Biege-Bereich (6) angeordnet sind und der erste Bund (9) und der zweite Bund (10) so ausgebildet sind, dass sie zusammen ein Raster bilden.
2. Mauer-Lüftungsschirm nach Anspruch 1, worin der erste Bund und der zweite Bund im Wesentlichen senkrecht in Bezug auf die erste Wand bzw. die zweite Wand sind und einander gegenüberliegen.
3. Mauer-Lüftungsschirm nach Anspruch 1 oder Anspruch 2, **dadurch gekennzeichnet, dass** der Biege-Bereich (6) längliche, im Wesentlichen parallele Öffnungen (8) aufweist.
4. Mauer-Lüftungsschirm nach irgendeinem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass**
 - die Entfernung (A) von dem Biege-Bereich (6) zu einem ersten Verbindungs-Bereich (13), der die erste Wand (2) mit dem ersten Bund (9) verbindet, größer ist als die Entfernung (B) von dem Biege-Bereich (6) zu einem zweiten Verbindungs-Bereich (14), der die zweite Wand (3) mit dem zweiten Bund (10) verbindet;
 - beide Bünde (9, 10) eine Mehrzahl länglicher, hauptsächlich paralleler Einschnitte umfassen, die senkrecht in Bezug auf die jeweiligen Verbindungs-Bereiche (13, 14) sind; und

- die Öffnungen, die von den Einschnitten des ersten Bundes (9) gebildet werden, und die Öffnungen, die von den Einschnitten des zweiten Bundes (10) gebildet werden, überlappen.
5. Mauer-Lüftungsschirm nach irgendeinem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** die erste Wand (2) und die zweite Wand (3) Widerstand bietende Elemente umfassen, wie beispielsweise Verstärkungsrippen, Widerhaken und Sperr-Ränder.
6. Mauer-Lüftungsschirm nach irgendeinem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** er aus einem Stück hergestellt ist.
7. Verfahren zur Herstellung eines Mauer-Lüftungsschirms, wie er in irgendeinem der Ansprüche 1 bis 6 definiert ist, umfassend
- ein Herstellen von Öffnungen (15) in einem Platten-artigen Material (16);
 - ein Schneiden des Platten-artigen Materials, was zu wenigstens einem Teil (17) führt, wobei jedes Teil (17) einen Mauer-Lüftungsschirm (1) bilden kann; und
 - ein elastisches Biegen des Teils (17).
- Revendications**
1. Grille de ventilation pour mur (1) à insérer entièrement ou presque entièrement dans une chantepleure, comprenant une première paroi substantiellement plane (2) et une seconde paroi substantiellement plane (3), dans lequel la première et la seconde paroi sont interconnectées à une extrémité extérieure et espacées au moyen d'une zone résiliente incurvée (6), **caractérisée en ce que** la première paroi (2) à l'autre extrémité extérieure est connectée à une première bride (9), et la seconde paroi (3) à l'autre extrémité extérieure est connectée à une seconde bride (10), les première et seconde brides (9, 10) étant connectées aux première et seconde parois (2, 3) de telle sorte que les brides sont positionnées en face de la zone résiliente incurvée (6), et la première bride (9) et la seconde bride (10) étant conçues de telle sorte qu'ensemble, elles forment une grille.
2. Grille de ventilation pour mur selon la revendication 1, dans laquelle la première bride (9) et la seconde bride (10) sont substantiellement perpendiculaires par rapport à la première paroi (2) et la seconde paroi (3), respectivement, et sont face à face.
3. Grille de ventilation pour mur selon la revendication 1 ou la revendication 2, **caractérisée en ce que** la zone incurvée (6) présente des ouvertures oblongues, substantiellement parallèles (8).
4. Grille de ventilation pour mur selon l'une quelconque des revendications 1 à 3, **caractérisée en ce que**
- la distance (A) entre la zone incurvée (6) et une première zone de liaison (13), qui connecte la première paroi (2) à la première bride (9), est plus grande que la distance (B) entre la zone incurvée (6) et une seconde zone de liaison (14), qui connecte la seconde paroi (3) et la seconde bride (10),
 - les deux brides (9, 10) comprennent une pluralité d'entailles oblongues essentiellement parallèles, qui sont perpendiculaires par rapport aux zones de liaison respectives (13, 14), et
 - les ouvertures qui sont créées par les entailles de la première bride (9) et les ouvertures qui sont créées par les entailles de la seconde bride (10) se chevauchent.
5. Grille de ventilation pour mur selon l'une quelconque des revendications 1 à 4, **caractérisée en ce que** la première paroi (2) et la seconde paroi (3) comprennent des éléments offrant de la résistance, comme par exemple des traverses, des crochets barbelés et des lèvres de verrouillage.
6. Grille de ventilation pour mur selon l'une quelconque des revendications 1 à 5, **caractérisée en ce qu'elle** est fabriquée à partir d'un seul bloc.
7. Procédé de fabrication d'une grille de ventilation pour mur selon l'une quelconque des revendications 1 à 6, comprenant les étapes consistant à :
- pratiquer des ouvertures (15) dans un matériau en feuille (16),
 - découper le matériau en feuille en au moins une partie (17), chaque partie (17) pouvant former une grille de ventilation pour mur (1), et
 - incurver la partie (17) de façon résiliente.

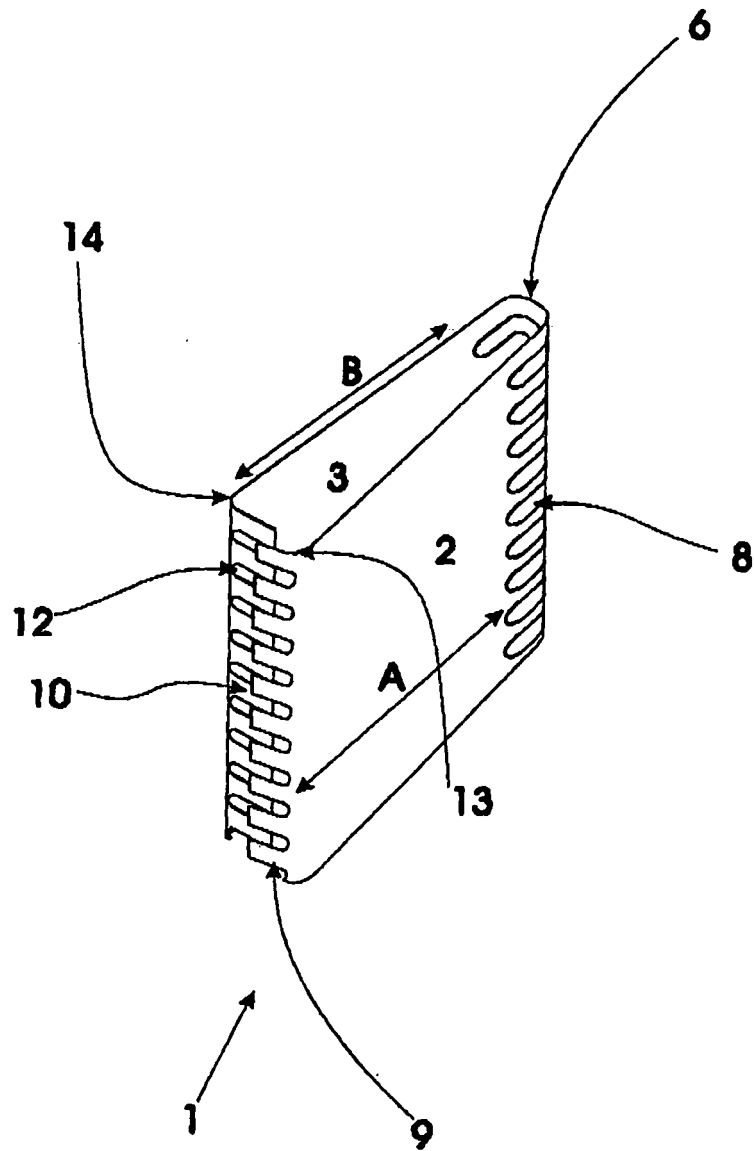


Fig. 1

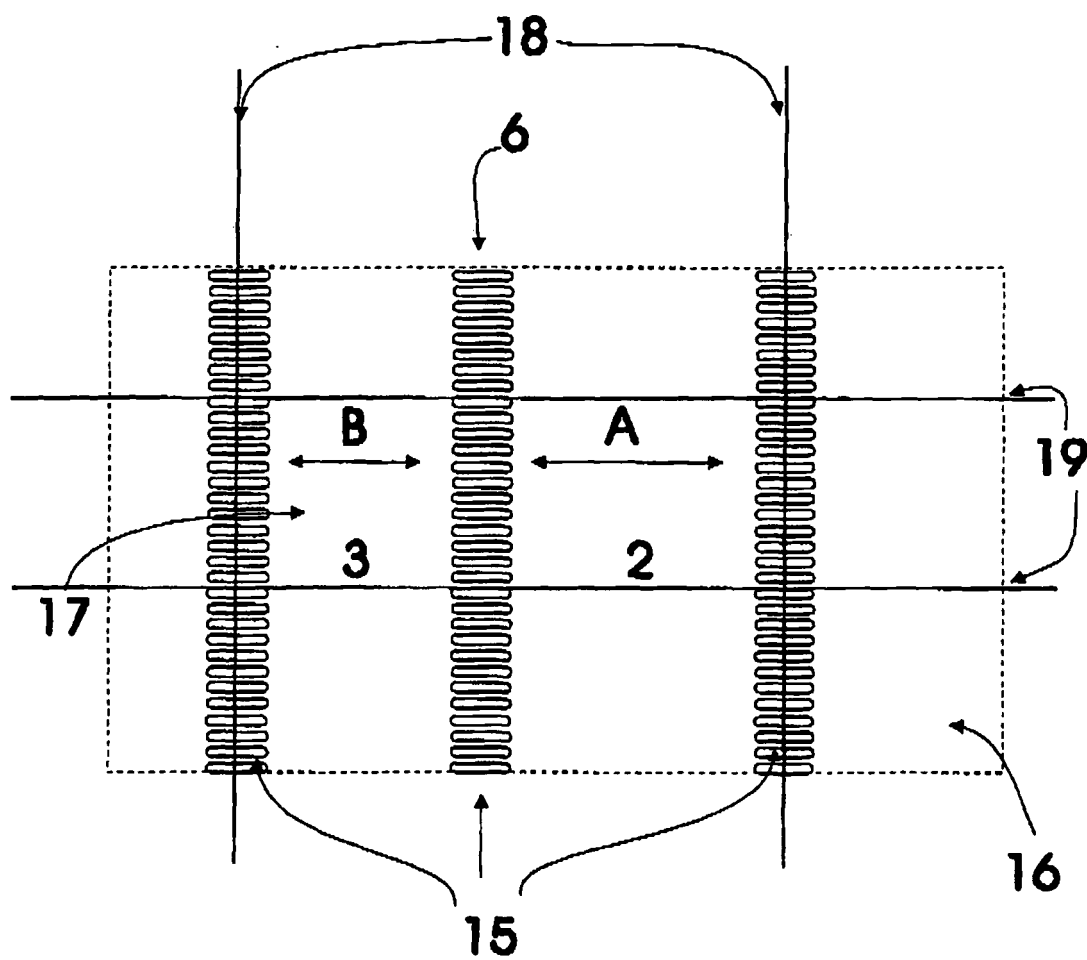


Fig. 2

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 3406931 [0002]
- EP 0137466 A [0002]
- WO 8808905 A [0002]
- NL 1005762 [0002]
- US 5203795 A [0003]
- EP 0056173 A [0004]
- US 20020092631 A [0005]