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(54) **Wall duct with a collar counteracting recirculation**

Mauerdurchführung mit Rand zur Verhinderung der Rezirkulation

Traversée de mur avec collier empêchant la recirculation

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EP 0 979 973 B1

Description

[0001] The invention relates to a wall duct, comprising a first pipe element for discharging flue gases, and a second pipe element for supplying air, which second pipe element surrounds the first pipe element along at least part of the length of the latter, an end of the first pipe element forming a discharge aperture, and an end of the second pipe element being provided with a seal through which the first pipe element projects, wherein on its periphery the second pipe element is provided with supply apertures, and wherein the second pipe element is provided with a collar extending from the seal in the longitudinal direction of said second pipe element. Such a wall duct is known from Dutch Patent 183106.

[0002] Such wall ducts are used combined with combustion installations, such as heating boilers and the like. By means of such a wall duct it is possible both to supply outside air to the installation and to discharge flue gases which have been produced from the installation. However, in the case of such a combined duct the problem occurs that waste gases can mix with the outside air and be conveyed back to the installation. For many kinds of installations such recirculation of the flue gases is undesirable. The extent to which recirculation occurs is dependent upon many factors, such as the flow rate of the waste gases, the wind direction and the wind force.

[0003] In Dutch Patent Specification 183106, a wall duct is described with a relatively large collar, which extends far beyond the end of the first pipe element. This large collar has the disadvantage that it produces a relatively great internal resistance. This can place a load upon both the wall duct and the installation behind it. Moreover, such a collar is relatively heavy.

[0004] Further, in the case of this known wall duct the free outflow of the flue gases is impeded by a conical member which is retained by the collar and is positioned in line with the first pipe element. In order to permit an outflow of flue gases, the collar has to be provided with holes.

[0005] One object of the invention is to eliminate the abovementioned and other disadvantages of the prior art and to provide a wall duct which prevents recirculation without increasing the internal resistance.

[0006] Another object of the invention is to provide a wall duct which is relatively light and of a simple design.

[0007] To that end, a wall duct of the type mentioned in the preamble is characterized in that, for purposes of forming the discharge aperture, the end of the first pipe element is substantially open, and in that the collar does not extend beyond the discharge aperture.

[0008] By providing the wall duct with such a relatively short collar, it is ensured that the wind resistance is decreased considerably, while the weight of the wall duct is reduced; yet good protection against recirculation is obtained.

[0009] The invention is based on the insight that even

with a relatively short collar recirculation can be prevented effectively.

[0010] The wall duct according to the invention is preferably designed in such a way that the collar is provided with an opening for discharging flue gases. By making an opening in the collar, flue gases are prevented from collecting inside the collar and curling around the collar at undesirable points.

[0011] Recirculation can further be prevented by designing the wall duct in such a way that the second pipe element is provided with supply apertures only on part of its periphery.

[0012] The wall duct according to the invention is preferably designed in such a way that the supply apertures are disposed on the side of the second pipe element facing away from the opening. This ensures that the flue gases leaving the collar by way of the opening cannot enter the supply apertures.

[0013] The wall duct according to the invention is advantageously designed in such a way that the first pipe element is disposed eccentrically in the second pipe element, in such a way that the discharge aperture is situated asymmetrically in the seal. In this way, not only are rainwater and condensation discharged to one side of the wall duct, but it is also possible to position the discharge aperture asymmetrically in such a way that said discharge aperture is situated near the opening. Hereby, the distance which the flue gases travel from the discharge aperture to the opening is shortened.

[0014] It is noted that a wall duct in which the end of the first pipe element is fully open, for purposes of forming the discharge aperture, is known per se from EP-A-0.317.031. However, no collar is present in this known wall duct.

[0015] It is further noted that a wall duct with a relatively short collar is known per se from JP-62-190320. However, in this known wall duct the end of the first pipe element is not open, but sealed by a conical member, and the wall of the first pipe element is provided with holes for forming a discharge aperture.

[0016] The invention will be explained in greater detail below with reference to the drawing.

Fig. 1 shows, in partial cross section, a wall duct according to the present invention;

Fig. 2 shows, in front view, the wall duct of fig. 1.

Fig. 3 shows, in top view, a collar according to the invention.

[0017] The wall duct 1 shown only by way of example in fig. 1 extends between an outside A and an inside B of a wall M. On the inside B, the wall duct can be connected to an installation not shown, such as a heating boiler. The end of the wall duct 1 situated on the outside A is in the open air.

[0018] The wall duct 1 comprises a first pipe element 2 (inner pipe) for discharging flue gases from B to A, and a second pipe element 3 (outer pipe) for supplying air

from A to B. In this case the first pipe element 2 is situated along the greater part of its length inside the second pipe element 3. At A, the end of the inner pipe 2 is open and forms a discharge aperture 4. In the embodiment shown, the inner pipe 2 is bevelled at this end, as will be explained in greater detail later. In the embodiment shown, a grille 10 is provided in the inner pipe 2 near the discharge aperture 4. The grille 10 prevents leaves, birds and the like from being able to enter the inner pipe 2.

[0019] The outer pipe 3 is sealed by a cover 5 on this side of the wall duct 1. The inner pipe 2 extends through the cover 5 and is supported by it. In order to make the supply of air possible in the outer or supply pipe 3, supply apertures 6 are provided along at least part of the periphery of said supply pipe.

[0020] A collar 8 is fitted on the outer pipe 3, in order to prevent flue gases leaving the discharge aperture 4 from being able to enter the outer pipe 3 through the supply apertures 6, and in this way being able to reach the installation (not shown) (recirculation). In the embodiment shown, the outer pipe 3 projects into the collar 8, but the collar 8 could also be formed integrally with the outer pipe 3.

[0021] Although it is possible for the collar 8 to be given such dimensions that it extends in the longitudinal direction of the outer pipe 3 beyond the discharge aperture 4, this has various disadvantages. First, it requires more material and makes the wall duct heavier. Secondly, the resistance of the wall duct 1 to incoming wind is increased considerably. According to the invention, the collar 8 is now dimensioned in such a way that it does not extend beyond the discharge aperture 4. In other words, the discharge pipe 2 projects beyond the collar 8, so that the discharge aperture 4 is situated outside the space determined by the collar 8. In the embodiment shown, in which the inner pipe 2 is bevelled in order to form a discharge aperture 4 which also extends some distance in the longitudinal direction of the wall duct, there is no overlap between the collar 8 and the discharge aperture 4. The actual length along which the collar 8 extends is, of course, dependent upon the dimensioning of the wall duct, but it is preferably between 1 and 5 cm, for example approximately 3 cm.

[0022] As will be explained later with reference to figure 3, an opening 9 is provided on the top side of the collar 8. The opening 9 makes it possible for flue gases present in the space enclosed by the collar to leave said space without going into the vicinity of the supply apertures 6.

[0023] Although it is possible to provide supply apertures 6 around the entire periphery of the outer pipe 3, said supply apertures are preferably provided only along part of the periphery. In the example shown, the supply apertures 6 are present solely on the underside of the outer pipe 3, in other words, the side facing away from the opening 9 in the collar 8. In this way it is also ensured that flue gases passing through the opening 9 are pre-

vented from entering the supply apertures 6.

[0024] As shown in figure 1, the inner pipe 2 is disposed eccentrically relative to the outer pipe 3. Although in the example shown the inner pipe 2 on the side B of a wall M is coaxial relative to the outer pipe 3, the axes of said pipes 2, 3 form a small angle relative to each other, with the result that at A the inner pipe 2 lies asymmetrically inside the outer pipe 3. An asymmetrical aperture for the inner pipe 2 to be passed through is therefore provided in the cover 5. Owing to this asymmetrical arrangement, the discharge aperture 4 is situated on the top side of the wall duct, i.e. in the vicinity of the opening 9 in the collar 8 and at a distance from the supply apertures 6 in the outer pipe 3. This asymmetrical arrangement therefore contributes to the prevention of recirculation.

[0025] The bevelling of the inner pipe 2 in the manner shown in figure 1 is provided in order to be able to compensate for wind blowing from below when the wall duct 1 is disposed in a horizontal arrangement: both the supply apertures 6 and the discharge aperture 4 will catch wind, so that the relative pressure at the installation will be influenced only slightly. Of course, it is possible to omit this bevelling or to carry it out in another way.

[0026] The front view of the wall duct 1 shown in figure 2 shows the inner pipe 2, the cover 5 and the collar 8, which is fitted on the inner pipe (3 in figure 1). The grille 10 is fitted in the inner pipe 2 at the discharge aperture 4. It is clear that the discharge aperture 4 is situated in the vicinity of the opening 9 in the collar 8 (see figure 3).

[0027] Figure 3 shows a top view of the collar 8. An opening 9 is provided in the collar 8 for the throughput of waste gases. In the embodiment in figure 3, the opening 9 is of an approximately triangular shape, but other shapes, such as semi-circular, are also possible. It is also possible to replace the opening 9 by a drilled hole, or to provide several openings and/or discharge holes.

[0028] Apart from the opening 9, holes 11 for fitting screws are present. The opening 9 also makes it possible to fix the cover 5 on the inner pipe 2 by means of a screw or bolt.

[0029] It will be clear that the embodiments shown in the figures are given only by way of example and that many modifications are possible without going beyond the scope of the invention.

Claims

1. Wall duct (1), comprising a first pipe element (2) for discharging flue gases, and a second pipe element (3) for supplying air, which second pipe element (3) surrounds the first pipe element (2) along at least part of the length of the latter, an end of the first pipe element (2) forming a discharge aperture (4), and an end of the second pipe element (3) being provided with a seal (5) through which the first pipe element (2) projects, wherein on its periphery the sec-

ond pipe element (3) is provided with supply apertures (6), and wherein the second pipe element (3) is provided with a collar (8) extending from the seal (5) in the longitudinal direction of said second pipe element, **characterized in that**, for purposes of forming the discharge aperture (4), the end of the first pipe element (2) is substantially open, and **in that** the collar (8) does not extend beyond the discharge aperture (4).

2. Wall duct according to claim 1, **characterized in that** the collar (8) is provided with an opening (9) for discharging flue gases.

3. Wall duct according to claims 1 and 2, **characterized in that** the second pipe element (3) is provided with supply apertures (6) only on part of its periphery.

4. Wall duct according to claims 2 and 3, **characterized in that** the supply apertures (6) are provided on the side of the second pipe element (3) facing away from the opening (9).

5. Wall duct according to one of the preceding claims, **characterized in that** the first pipe element (2) is disposed eccentrically in the second pipe element (3), in such a way that the discharge aperture (4) is situated asymmetrically in the seal (5).

6. Wall duct according to claims 2 and 5, **characterized in that** the discharge aperture (4) is positioned asymmetrically in such a way that said discharge aperture is situated near the opening (9).

7. Wall duct according to one of the preceding claims, **characterized in that** the first pipe element (2) is bevelled at the side of the discharge aperture (4).

8. Wall duct according to one of the preceding claims, **characterized in that** a grille (10) is provided in the first pipe element (2), in the vicinity of the discharge aperture (4).

Patentansprüche

1. Wanddurchführung (1) mit einem ersten Rohrelement (2) zum Abführen von Rauchgasen, und einem zweiten Rohrelement (3) zum Einspeisen von Luft, welches zweite Rohrelement das erste Rohrelement (2) längs mindestens eines Teils des letzteren umgibt, wobei ein Ende des ersten Rohrelementes (2) eine Abgabeöffnung (4) bildet, und wobei ein Ende des zweiten Rohrelementes (3) mit einer Dichtung (5) versehen ist, durch die das erste Rohrelement (2) vorsteht, wobei das zweite Rohrelement (3) an seinem Umfang mit Zuführöffnungen

(6) versehen ist, und wobei das zweite Rohrelement (3) mit einem Bund (8) versehen ist, der sich von der Dichtung (5) in Längsrichtung des zweiten Rohrelementes erstreckt, **dadurch gekennzeichnet, dass** zum Zweck der Ausbildung der Abgabeöffnung (4) das Ende des ersten Rohrelementes (2) im wesentlichen offen ist, und dass der Bund (8) sich nicht über die Abgabeöffnung (4) hinaus erstreckt.

2. Wanddurchlass nach Anspruch 1, **dadurch gekennzeichnet, dass** der Bund (8) mit einer Öffnung (9) zur Abführen von Rauchgasen versehen ist.

3. Wanddurchlass nach Ansprüchen 1 und 2, **dadurch gekennzeichnet, dass** das zweite Rohrelement (3) mit Zuführöffnungen (6) nur an einem Teil seines Umfanges versehen ist.

4. Wanddurchlass nach Ansprüchen 2 und 3, **dadurch gekennzeichnet, dass** die Zuführöffnungen (6) auf der Seite des zweiten Rohrelementes (3) vorgesehen sind, das von der Öffnung (9) abgewandt ist.

5. Wanddurchlass nach einem der vorausgehenden Ansprüche, **dadurch gekennzeichnet, dass** das erste Rohrelement (2) exzentrisch in dem zweiten Rohrelement (3) so angeordnet ist, dass die Abgabeöffnung (4) asymmetrisch in der Dichtung (5) positioniert ist.

6. Wanddurchlass nach Ansprüchen 2 und 5, **dadurch gekennzeichnet, dass** die Abgabeöffnung (4) asymmetrisch in solcher Weise positioniert ist, dass die Abgabeöffnung in der Nähe der Öffnung (9) angeordnet ist.

7. Wanddurchlass nach einem der vorausgehenden Ansprüche, **dadurch gekennzeichnet, dass** das erste Rohrelement (2) an der Seite der Abgabeöffnung (4) abgeschrägt ist.

8. Wanddurchlass nach einem der vorausgehenden Ansprüche, **dadurch gekennzeichnet, dass** ein Gitter (10) im ersten Rohrelement (2) in der Nähe der Abgabeöffnung (4) vorgesehen ist.

Revendications

1. Traversée de mur (1), comprenant un premier élément de conduite (2) destiné à l'évacuation de fumées, et un second élément de conduite (3) destiné à l'approvisionnement en air, lequel second élément de conduite (3) entoure le premier élément de conduite (2) sur au moins une partie de la longueur de ce dernier, une extrémité du premier élément de

conduite (2) formant une bouche d'évacuation (4), et une extrémité du second élément de conduite (3) comprenant un bouchon (5) à travers lequel le premier élément de conduite (2) fait saillie, dans lequel sur sa périphérie le second élément de conduite (3) est muni de bouches d'approvisionnement (6), et dans lequel le second élément de conduite (3) est muni d'un collier (8) s'étendant depuis le bouchon (5) dans la direction longitudinale dudit second élément de conduite, **caractérise en ce que**, dans le but de former la bouche d'évacuation (4), l'extrémité du premier élément de conduite (2) est largement ouverte, et **en ce que** le collier (8) ne s'étend pas au-delà de la bouche d'évacuation (4).

2. Traversée de mur selon la revendication 1, **caractérisée en ce que** le collier (8) est muni d'une ouverture (9) destinée à l'évacuation des fumées. 15
3. Traversée de mur selon les revendications 1 et 2, **caractérisée en ce que** le second élément de conduite (3) est muni de bouches d'approvisionnement (6) seulement sur une partie de sa périphérie. 20
4. Traversée de mur selon les revendications 2 et 3, **caractérisée en ce que** les bouches d'approvisionnement (6) se situent sur le côté du second élément de conduite (3) opposé à l'ouverture (9). 25
5. Traversée de mur selon l'une des revendications précédentes, **caractérisée en ce que** le premier élément de conduite (2) est excentré dans le second élément de conduite (3), de telle façon que la bouche d'évacuation (4) est positionnée de manière asymétrique dans le bouchon (5). 30 35
6. Traversée de mur selon les revendications 2 et 5, **caractérisée en ce que** la bouche d'évacuation (4) est positionnée de manière asymétrique de telle sorte que ladite bouche d'évacuation est située près de l'ouverture (9). 40
7. Traversée de mur selon l'une des revendications précédentes, **caractérisée en ce que** le premier élément de conduite (2) est biseauté du côté de la bouche d'évacuation (4). 45
8. Traversée de mur selon l'une des revendications précédentes, **caractérisée en ce que** une grille (10) est disposée dans le premier élément de conduite (2), aux environs de la bouche d'évacuation (4). 50

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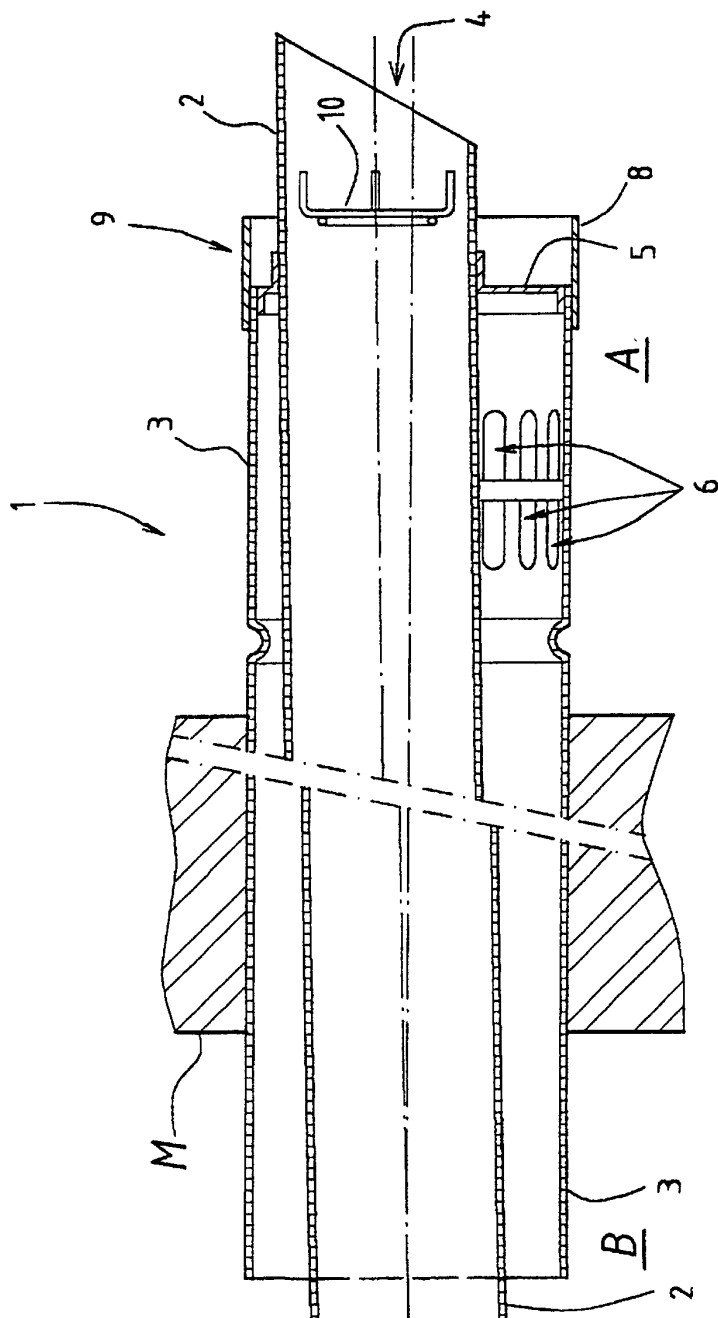


FIG. 1.

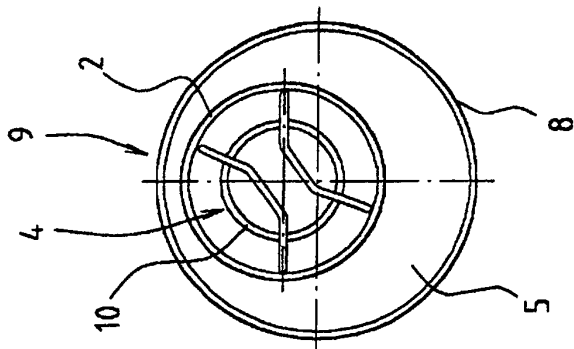


FIG. 2.

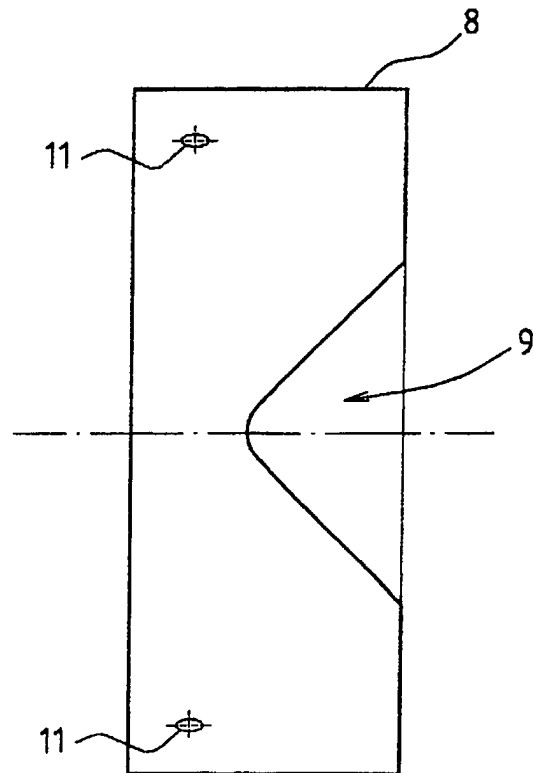


FIG. 3.