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(54) **Controlled mechanical ventilation box with changeable direction inlet ports and outlet ports**

(57) The invention relates to a controlled mechanical ventilation device with directable nozzles, formed by a controlled mechanical ventilation (CMV) unit (1), which has multiple intake openings located in an inclined position in the lower part and an air discharge outlet having

two openings directed towards the side and towards the upper part, respectively, nozzles (5) provided with an inclined face for coupling on the intake openings being arranged in said intake openings, whereas a nozzle (6) is arranged in an opening of the discharge outlet and a shutter cover (8) is arranged in the other opening.

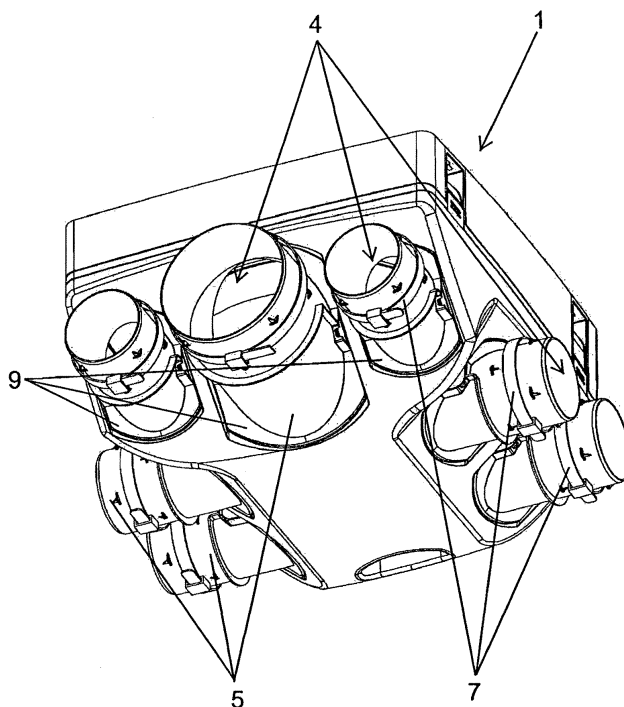


Fig. 1

Description

Field of the Invention

[0001] The present invention relates to the controlled mechanical ventilation of homes proposing a device for this purpose, with a structural configuration which improves the assembly characteristics and offers installation versatility for several installation forms.

Background of the Invention

[0002] The use of controlled mechanical ventilation (CMV) units, which are formed by a frame which has intake openings and a discharge opening, a ventilator being housed inside the unit to force the circulation of air through the ventilation installation, is known in the ventilation of single family homes.

[0003] With respect to the openings of the CMV unit, nozzles are arranged for the connection of tubular ducts for communication with the rooms to be ventilated, such as the kitchen, bathrooms and other moist areas of homes, for the purpose of extracting the air from these rooms towards the discharge opening of the CMV unit, which is established in connection, by means of a duct, with an outlet for evacuating the air from the ventilation through the roof of the building.

[0004] Conventional controlled mechanical ventilation (CMV) units incorporate nozzles of the intake and discharge openings, arranged in a fixed orientation, which conditions the assembly for the installation, making placement difficult in some cases, due to the fact that this type of device is usually arranged in false ceilings, attics, or similar locations, where the space can be limited.

Background of the Invention

[0005] According to the present invention a controlled mechanical ventilation device, developed with constructive and functional features which simplify and facilitate the practical installation tasks for the application, satisfactorily solving the drawbacks of conventional solutions for these ventilation systems, is proposed.

[0006] The device object of the invention is formed by a CMV unit, which is provided with a discharge outlet having two selective openings directed in two directions and multiple intake openings for extracting the air from the rooms to be ventilated and making it circulate to the evacuation outlet to the exterior of the building, nozzles being coupled on said intake and discharge openings, which nozzles incorporate flexible flanges integral therewith for clamping the coupling of the connection of said nozzles with the respective tubular ducts of the ventilation installation.

[0007] The nozzles of the intake openings of the device are susceptible of being directed selectively, in this case, according to the assembly arrangement required by the application site, said nozzles being able to be placed in

the assembly on the device, according to at least two arrangements of orientation at 90 degrees to one another, which allows adapting to different installation variants of the device.

[0008] To that end, said nozzles of the intake openings determine a coupling formation on the structural body of the device according to an inclined coupling face in combination with a seat around the intake openings of the structural body of the device also in an inclined position, such that said nozzles of the intake openings can be arranged in respective perpendicular positions of orientation in the assembly on the structural body of the device, according to what is required for the application installation.

[0009] The discharge openings are in turn defined in two perpendicular orientations, so that, depending on the installation required from the device, for example horizontally in a false ceiling, or vertically on a wall, the opening of one of the orientations is shut, and a nozzle is arranged in the opening of the other orientation for the connection coupling of the corresponding tubular duct towards the evacuation outlet of the air of the ventilation installation.

[0010] Therefore, the device of the invention has certainly advantageous features, acquiring its own identity and preferred nature of application with respect to conventional controlled mechanical ventilation systems in houses or single family type homes.

Description of the Drawings

[0011]

Figure 1 shows a bottom perspective view of the device of the invention, with the intake nozzles in a horizontal assembly arrangement.

Figure 2 is a bottom perspective view of the device with the intake nozzles in a vertical assembly arrangement.

Figure 3 shows a top perspective view of the device, the discharge outlet being observed with a vertical and another horizontal opening, incorporating a cover in the first one and a nozzle in the second one.

Figure 4 is a perspective view like the previous one, with the discharge openings in reverse arrangement. Figures 5 to 8 show schemes of the operation modes of the device depending on the different positions of the nozzles in the intake and discharge openings.

Figure 9 is a detailed perspective view of the intake openings of the device.

Figure 10 is an exploded perspective view of the nozzle of the previous figure in relation to a coupling tubular duct.

Figure 11 shows a perspective view of the assembly of the previous figure assembled.

Detailed Description of the Invention

[0012] The object of the invention relates to a controlled mechanical ventilation device for use in single family homes or the like, of the type comprising a controlled mechanical ventilation (CMV) unit (1) from which tubular ducts (2) for connection with the enclosed areas or rooms to be ventilated are established, as well as a connection for conducting the air of the ventilation to an evacuation outlet through the roof of the building.

[0013] Figure 1 shows an embodiment of the CMV unit (1) according to the object of the invention, which is provided with a discharge outlet having two openings (3) directed in two directions and multiple intake openings (4), respective nozzles (5 and 6) being coupled on said openings (3 and 4) for the coupling of the corresponding ducts (2) in the application installation.

[0014] Said nozzles (5 and 6) have flanges (7) integral therewith, as is shown in Figure 9, for clamping with said flanges (7) the coupling of these nozzles (5 and 6) with the respective tubular ducts (2) in the application installation of the device, according to what is observed in Figures 10 and 11. In relation to the purpose for which they are intended, the mentioned flanges (7) are provided structurally formed with an elastomeric material, for the purpose of reducing the vibrations produced in the operation of the ventilation device.

[0015] As is observed in Figures 1 and 2, the nozzles (5) which are arranged in the intake openings (4) are susceptible of being placed in two different arrangements of orientation at 90 degrees, so that the air inlet through the mentioned intake openings (4) can be established from a lower position or from a side of the device.

[0016] To that end, said nozzles (5) of the intake openings (4) have a coupling formation (9) defined with an inclined face for the coupling on the structural body of the CMV unit (1), whereas in relation to the openings (4) said body of the CMV unit (1) determines a seat also inclined, such that, by means of the combination of the inclinations of the coupling formation (9) of the nozzles (5) and of the seat of the coupling with respect to the openings (4) of the structural body of the CMV unit (1), the mentioned nozzles (5) can be placed in a vertical orientation or in a horizontal orientation.

[0017] The openings (3) of the discharge outlet are defined where appropriate according to two perpendicular directions, towards the side and towards the upper part, in the structural body of the CMV unit (1), thereby the air outlet of the device can be established on the side or on the upper part, a nozzle (6) being incorporated in each case on the opening (3) of the direction of interest and shutting the other opening (3) by means of a cover (8), as is observed in Figures 3 and 4.

[0018] This device of the invention therefore allows arranging the air inlets and outlets in the CMV unit (1) according to the convenient orientation in each case for the assembly of the application installation, thus enabling a very advantageous adaptation depending on the circum-

stances of each case, to facilitate the assembly of the application installation, the nozzles (5) being arranged on the intake openings (4), in the vertical position or in the horizontal position, or in combinations of both positions, i.e., with the nozzles (5) of openings (4) in the vertical position and the others in the horizontal position, and at the same time the air outlet can be established on the side or on the upper part of the body of the CMV unit (1), as well as in a combination of any of these air outlet arrangements, with any of the combinations of position of the nozzles (5) in the intake openings (4).

[0019] The arrangement of the nozzles (5) on the openings (4) of the structural body of the CMV unit (1), with the possibility of variable orientation, can be also determined with other solutions of the assembly coupling, for example with a coupling in the form of ball-and-socket joint, without the concept being altered by it.

Claims

1. A controlled mechanical ventilation device with directable nozzles, of the type formed by a controlled mechanical ventilation (CMV) unit (1) provided with air intake openings (4) and an air discharge opening (3), with respect to which respective nozzles (5 and 6) are arranged for the connection of tubular ducts (2) for circulating the air through the ventilation installation, **characterized in that** the nozzles (5 and 6) incorporate flanges (7) integral therewith for clamping the coupling of said nozzles (5 and 6) with the respective tubular ducts (2), the CMV unit (1) being provided with a discharge outlet having two openings (3) directed towards the side and towards the upper part, respectively, and multiple intake openings (4) which are directed according to an inclined direction in the lower part.
2. The controlled mechanical ventilation device with directable nozzles according to claim 1, **characterized in that** a nozzle (6) is arranged on one of the openings (3) of the discharge outlet for coupling to a tubular duct (2) for circulating air through the ventilation installation, a shutter cover (8) being arranged on the other opening (3) of said discharge outlet, with the possibility of alternating the nozzle (6) and the cover (8) in both openings (3) to establish the discharge outlet in the desired direction.
3. The controlled mechanical ventilation device with directable nozzles according to claim 1, **characterized in that** the nozzles (5) which are arranged on the intake openings (4) have a coupling formation (9) defined with an inclined face, by means of which the placement of said nozzles (5) is possible in two perpendicular positions with respect to the mentioned intake openings (4).

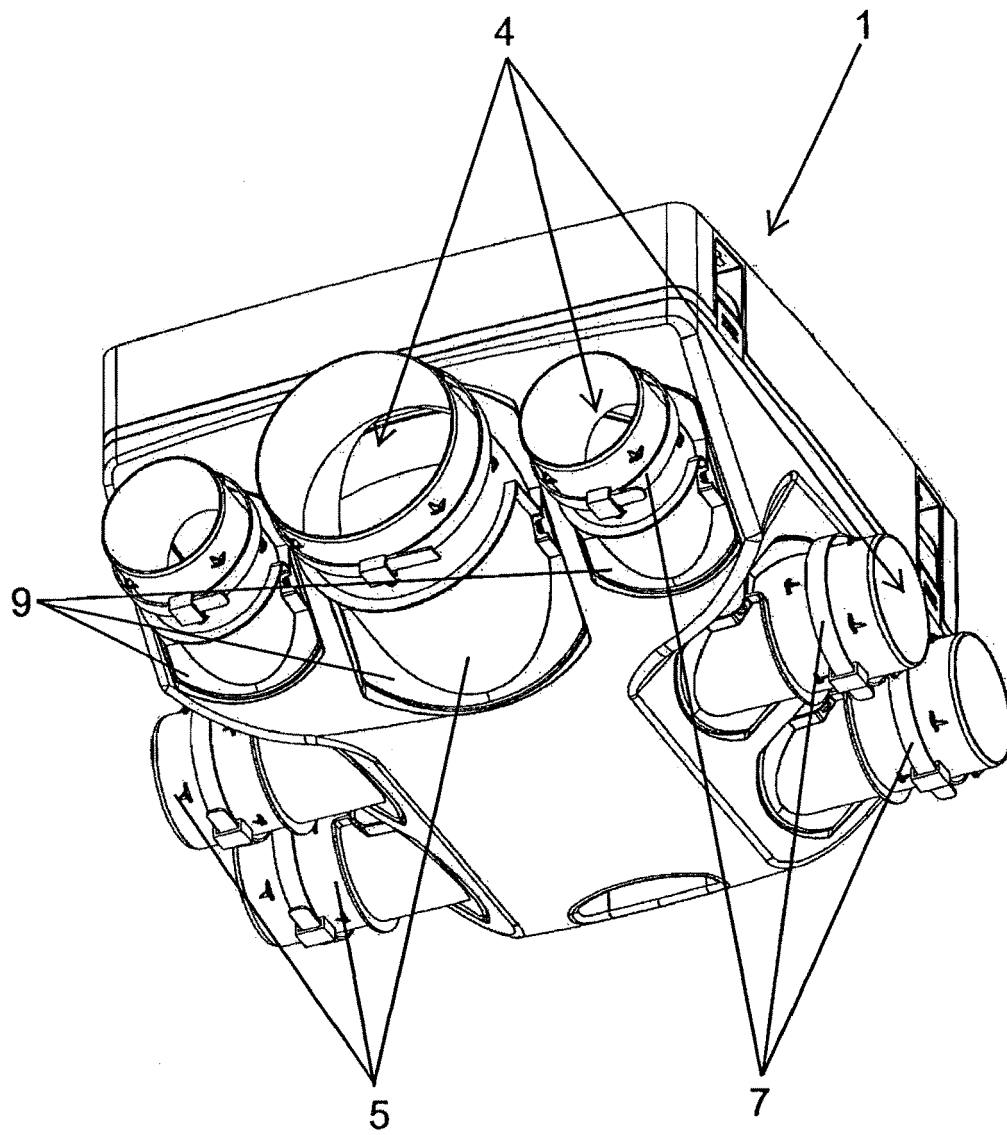


Fig. 1

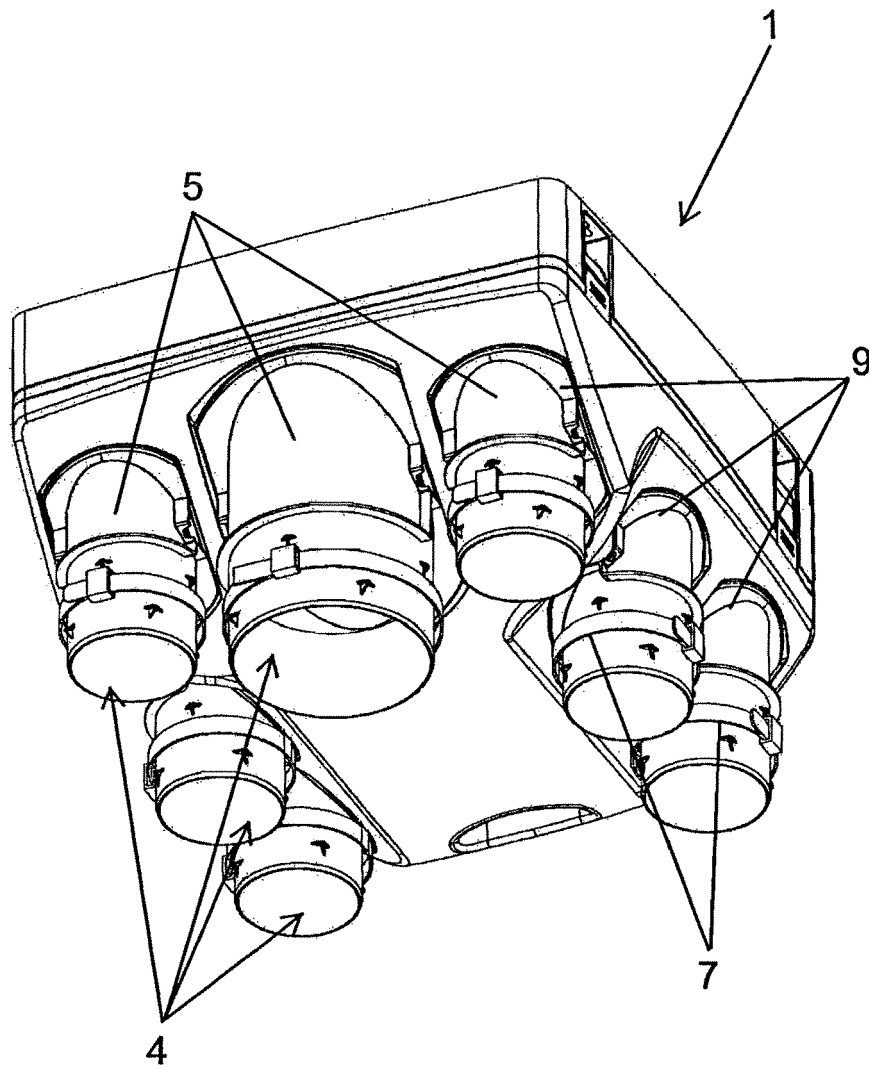


Fig. 2

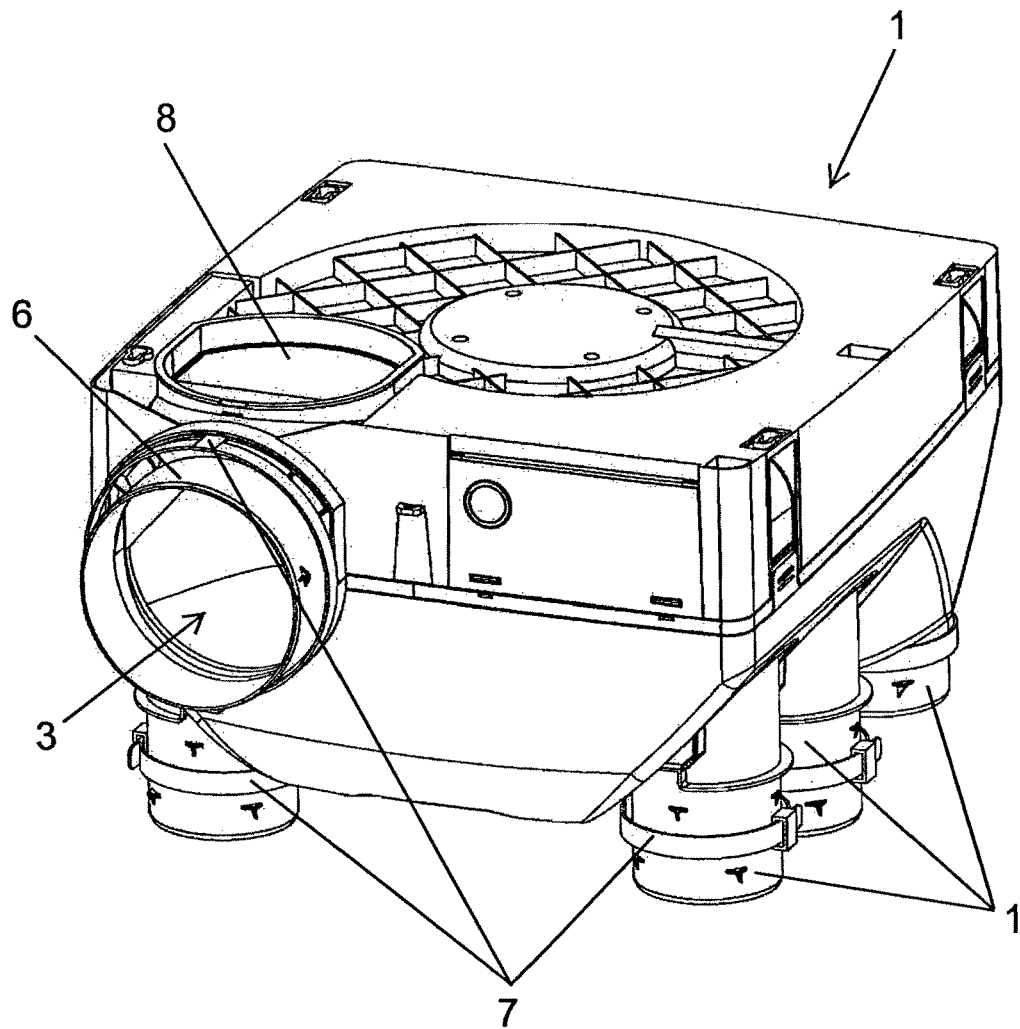


Fig.3

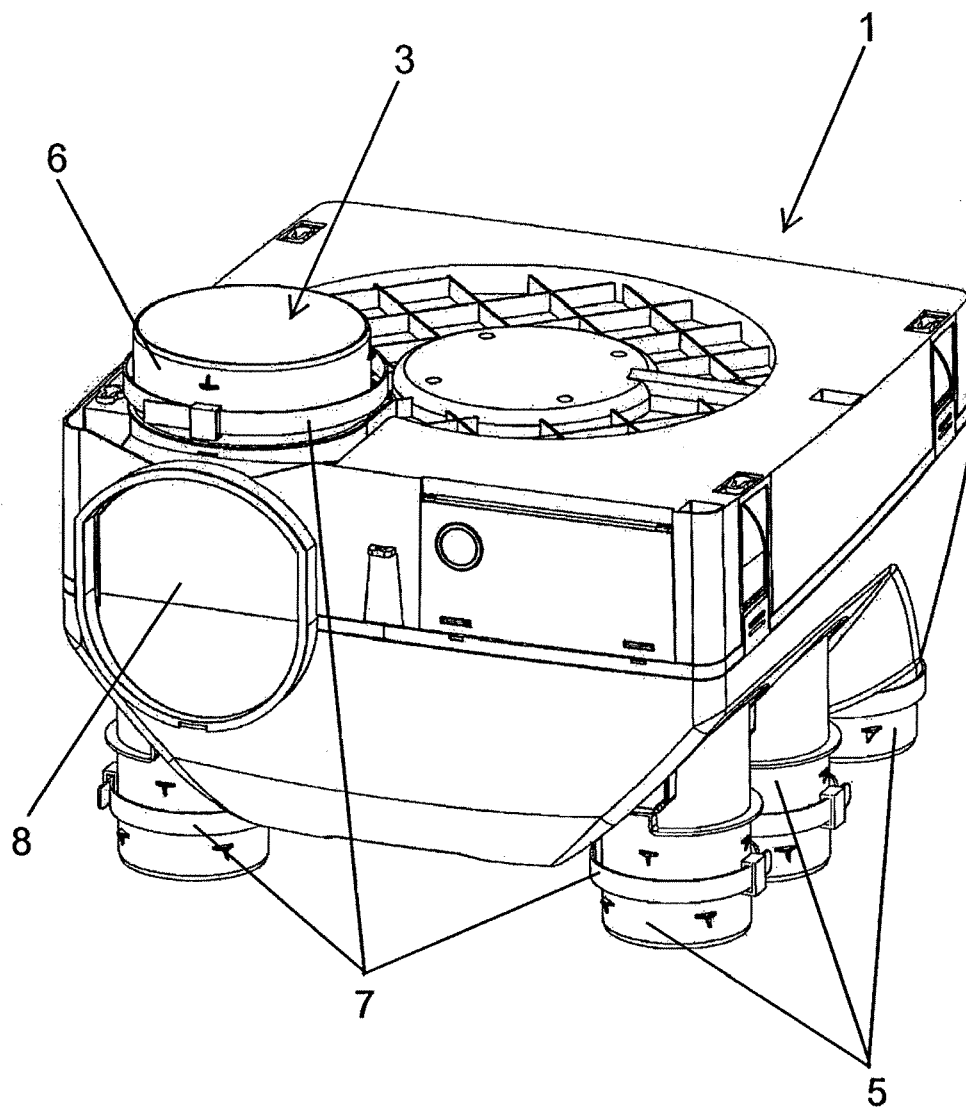


Fig. 4

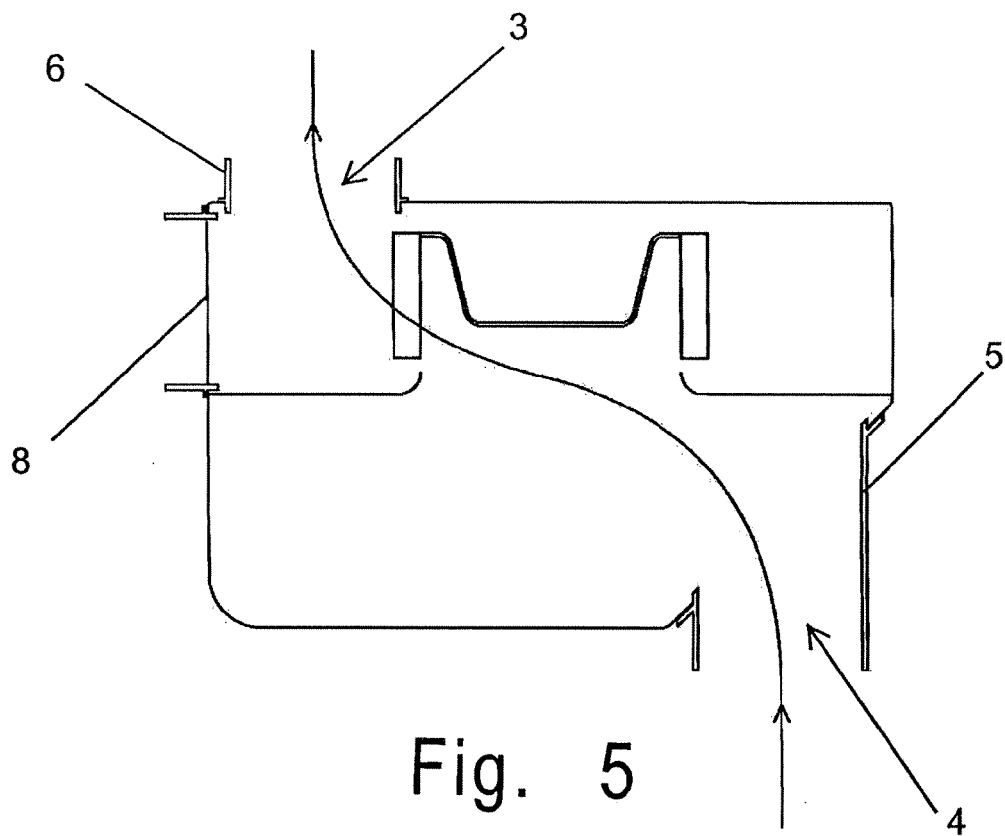


Fig. 5

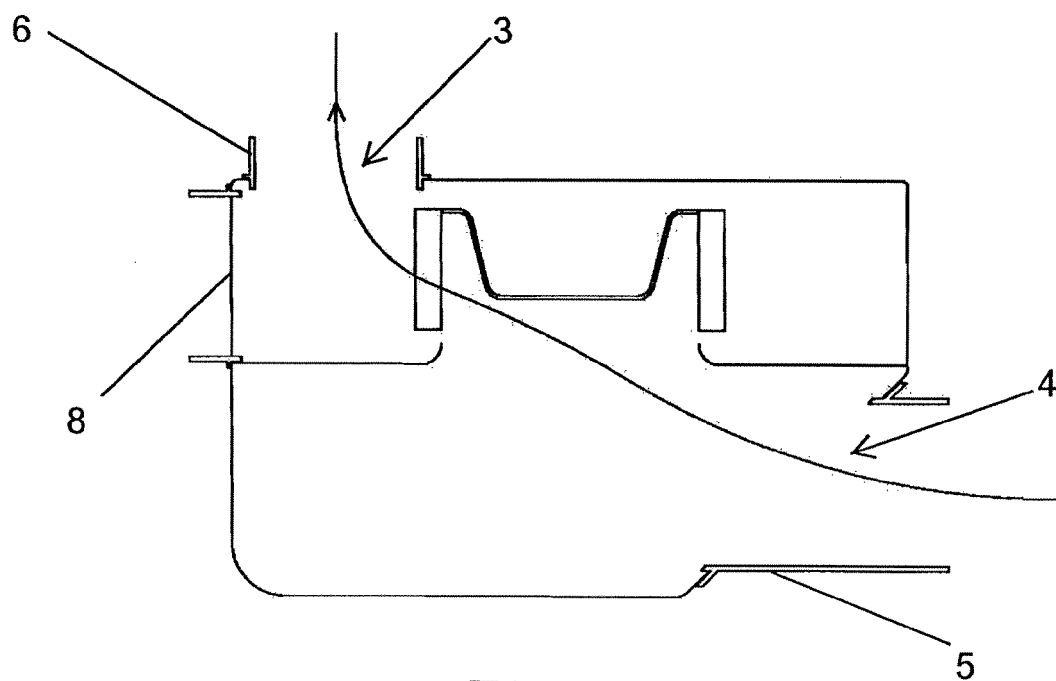


Fig. 6

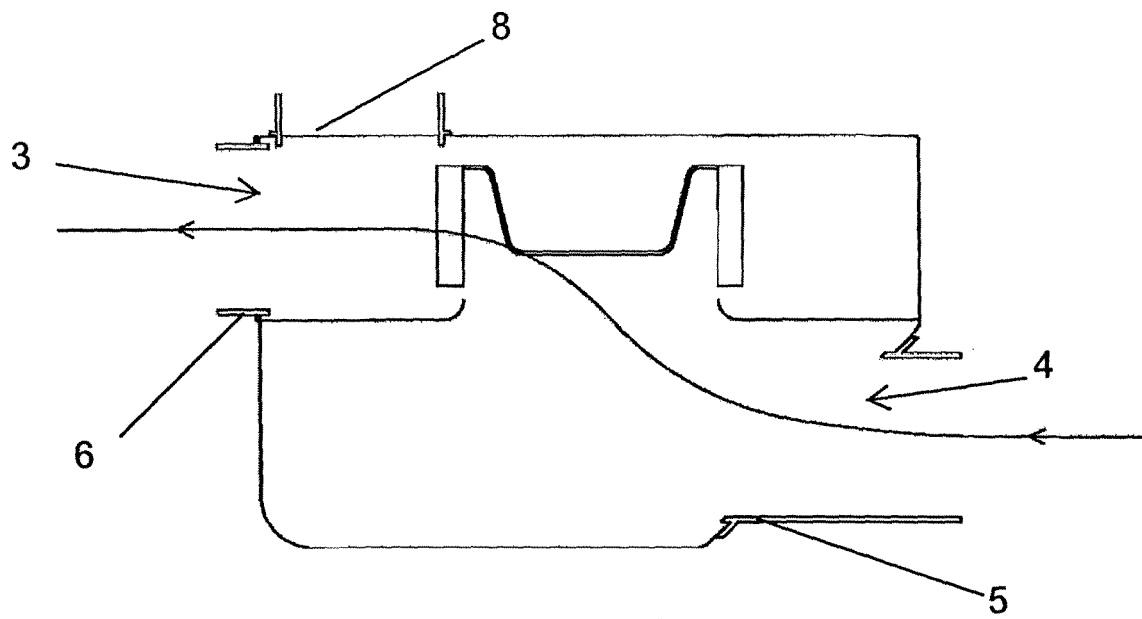


Fig. 7

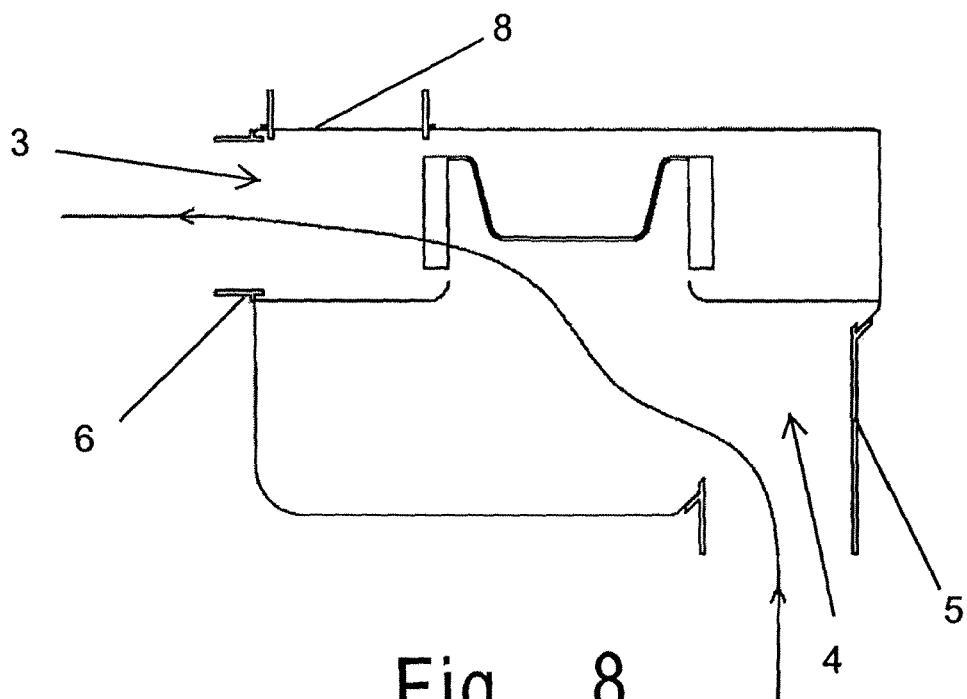


Fig. 8

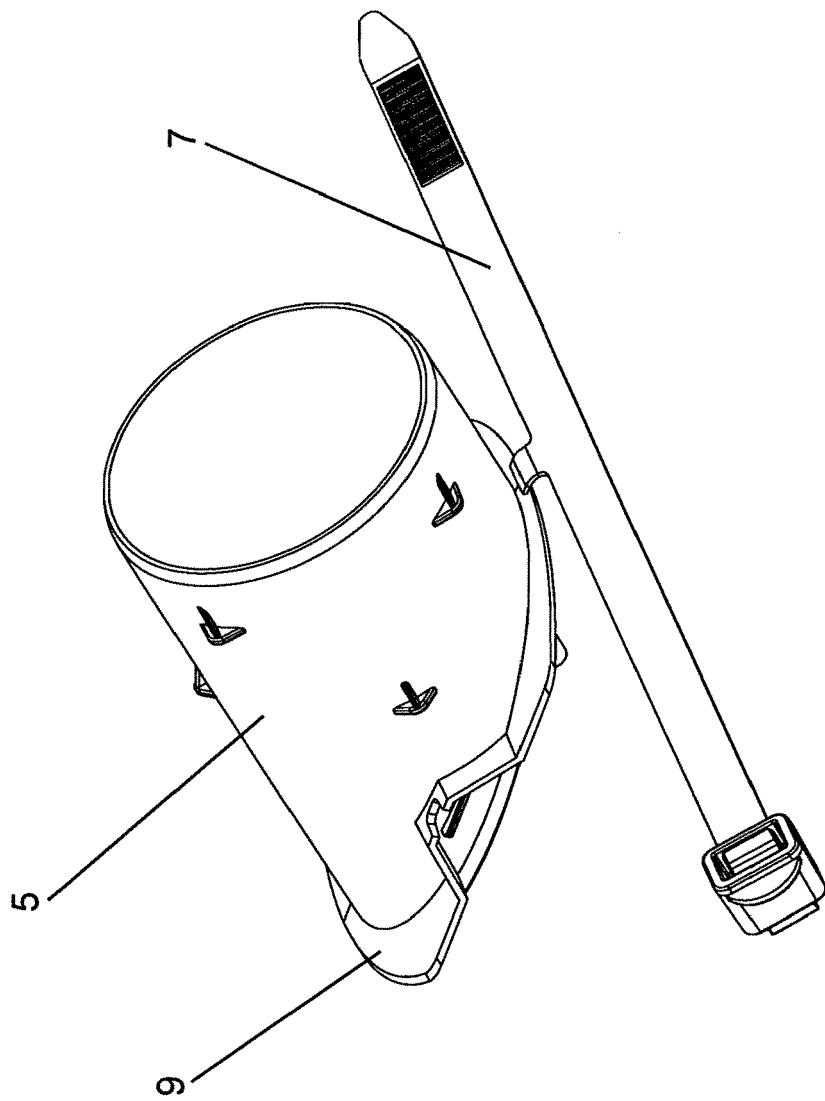


Fig. 9

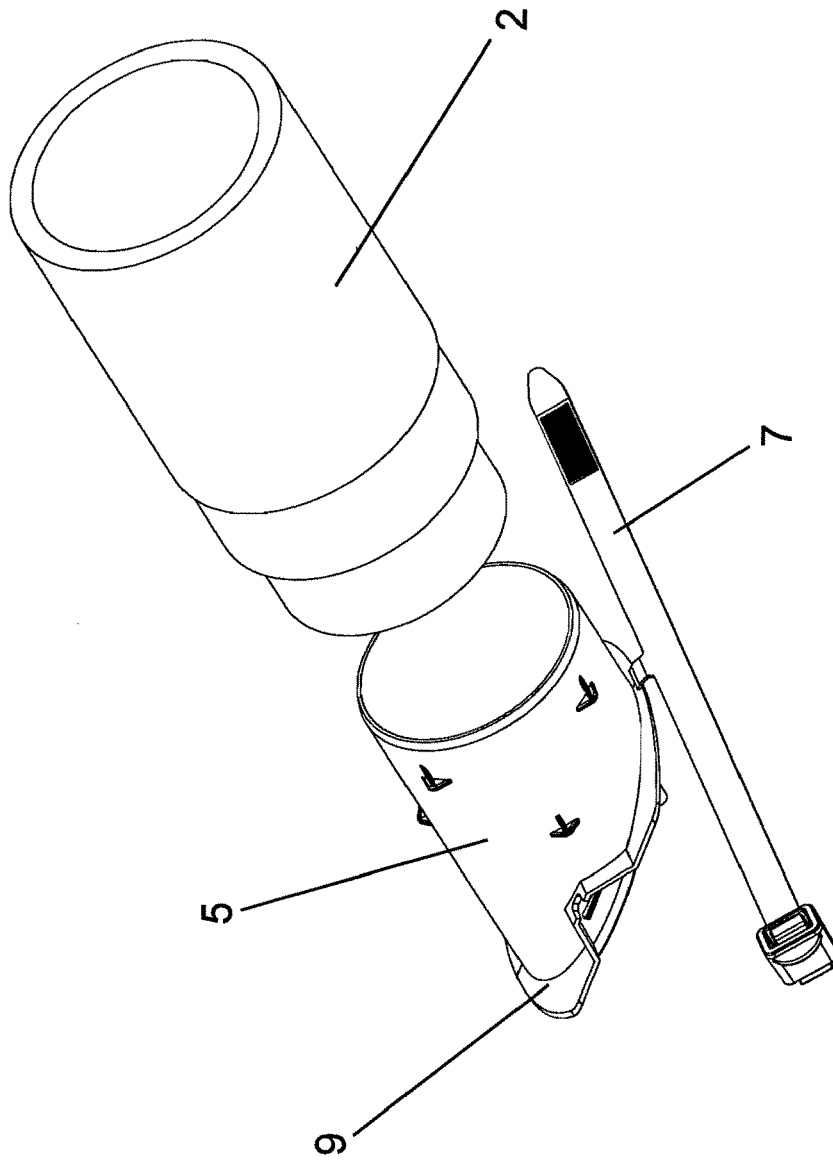


Fig. 10

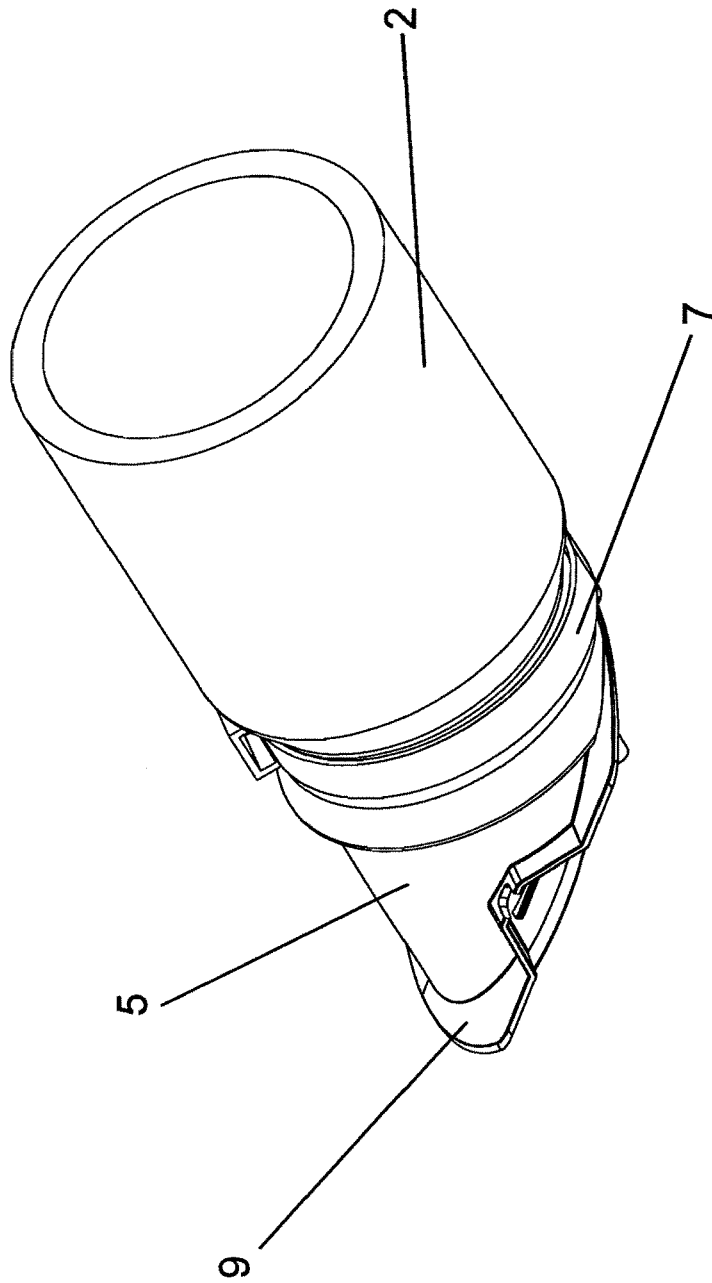


Fig. 11