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(54) Flue hood and gas water heating appliance including the same

(57) The present invention discloses a flue hood including a shell and a movable baffle. The shell has a gas intake port, a gas exhaust port, and a flue gas channel in communication with the gas intake port and the gas exhaust port. The movable baffle is movably disposed in the flue gas channel to change an opening size in a cross section of the flue gas channel. By employing a movable baffle in the flue gas channel, when there is incoming external winds and/or rains, the movable baffle is able to restrict the opening size in the cross section of the flue gas channel thereby resisting the winds and/or rains, on the other side, when there is exhaust of flue gas, the movable baffle can be pushed by the gas flow to enlarge the opening size in the cross section of the flue gas channel to allow the flue gas to be discharged out smoothly.

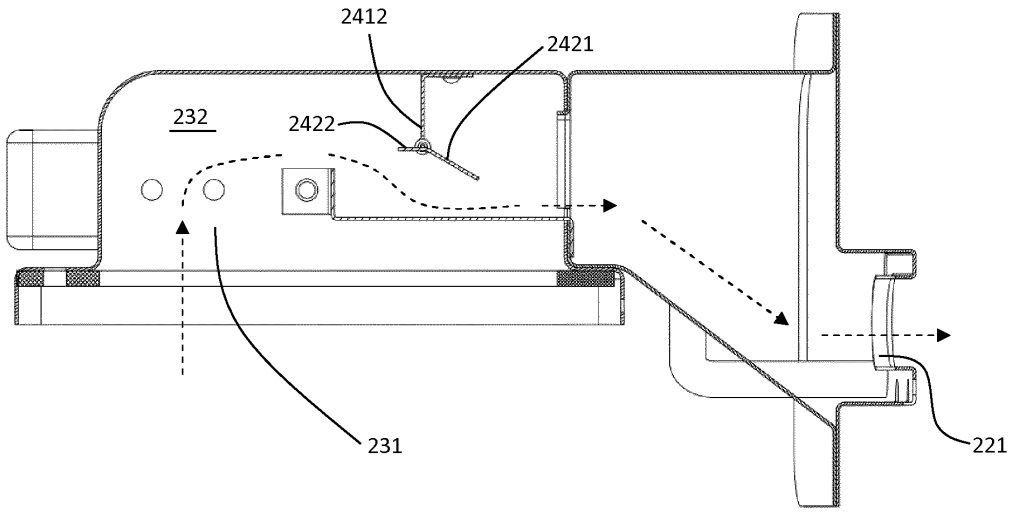

Fig. 6B

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a flue hood for collecting flue gas and discharging it outdoors, also relates to a gas water heating appliance including the flue hood.

BACKGROUND OF THE INVENTION

[0002] Gas water heating appliances generally includes gas water heaters and gas boilers. A typical gas water heater can provide sanitary hot water for domestic usage, such as use in the kitchen, laundry, and bath. The water heater may include a gas burner for combustion of a gas-air mixture, heat exchanger coils for heating water as it flow therethrough, and hydraulic pipes connected with external plumbling for supplying hot water. A typical gas boiler is operable to heat water which is pumped around a boiler circuit. The boiler circuit is typically connected, via suitable valves to space heaters, such as radiators or under floor heating loop, so that the heat output from the boiler can be used for central heating purposes.

[0003] The gas water heating appliances can be installed indoors with combustion flue gas being discharged outdoors through flue pipes. However, due to the gas combustion is done inside of dwellings, the security risk may be raised in case that gas leak of the appliance happens. In order to avoid this problem, some of the gas water heating appliances are developed to be installed outdoors. As shown in a Chinese Utility Model CN2438051Y, a gas water heater is installed outdoors, so that it is able to be separated with users and will not occupy the indoor space.

[0004] Nevertheless, outdoor gas water heating appliances often suffer from invasion of winds and rains, and once the winds or rains enter the appliances through the flue hoods, the combustion is inevitably affected. The aforementioned Chinese utility model also discloses an improved flue hood. Such flue hood has a winding flue gas channel and some tongue plates retained in the channel, by this configuration, some of winds and/or rains can be prevented from entering the appliances.

[0005] The tongue plates standing in the flue gas channel are used to resist rains and winds, however, in order to ensure the exhaust of the flue gas, relatively large gaps are defined between the tongue plates, and these gaps can allow a certain amount of winds and rains to enter the appliances, on the other side, the tongue plates may hinder the exhaust of the flue gas to some extent.

SUMMARY OF THE INVENTION

[0006] It is an object of present invention to provide a flue hood adapted for outdoor gas water heating appliances, wherein, the flue hood is able to effectively resist winds and rains, and in the mean time, to ensure a smooth exhaust of the flue gas; also, provide a gas water heating appliance employing such flue hood.

[0007] According to one aspect of the present invention there is provided a flue hood including a shell and a movable baffle. The shell has a gas intake port, a gas exhaust port, and a flue gas channel in communication with the gas intake port and the gas exhaust port. The movable baffle is movably disposed in the flue gas channel to change an opening size in a cross section of the flue gas channel.

[0008] Preferably, the movable baffle is pivotable on a pivot disposed in the flue gas channel.

[0009] Preferably, the movable baffle has a first position and a second position; when the movable baffle is located at the first position, the flue gas channel has a smallest opening size in the cross section; when the movable baffle is located at the second position, the flue gas channel has a larger opening size in the cross section.

[0010] Preferably, the movable baffle further has a third position, and the first position is between the second and the third positions; when the movable baffle is located at the third position, the opening size in the cross section is larger than that as the movable baffle is located at the first position but smaller than that as the movable baffle is located at the second position.

[0011] Preferably, the opening size in the cross section is defined by a gap between bottom of the movable baffle and a bottom wall of the flue gas channel.

[0012] Preferably, the flue hood further includes a fixed plate engageable with the movable baffle to control the opening size in the cross section.

[0013] Preferably, the movable baffle has a vertical portion and a bending portion bending from the vertical portion.

[0014] Preferably, when the movable baffle is located at the first position, the vertical portion of the movable baffle is flush with an upright section of the fixed plate, and the bending portion of the movable baffle and the upright section of the fixed plate forms an angel with respect to each other; when the movable baffle is located at the second position, each of the vertical portion and the bending portion forms an angle with respect to the upright section of the fixed plate; when the movable baffle is located at the third position, the bending portion of the movable baffle abuts against the upright section of the fixed plate, and the vertical portion of the movable baffle and the upright section of the fixed plate forms an angel with respect to each other.

[0015] Preferably, the flue gas channel has a bottom wall extending between the gas exhaust port and the gas intake port, and at least a part of the bottom wall extends obliquely upwardly from the gas exhaust port.

[0016] According to another aspect of the present invention there is provided a gas water heating appliance including a housing, a burner, a heat exchanger, and a flue hood as described above. The burner is disposed in the housing to generate heat. The heat exchanger is

adapted for absorbing the heat and transferring the heat to water passing therethrough. The flue hood is adapted for receiving flue gas generated by the burner and discharging it outdoors, and the flue hood is disposed in the housing with the gas exhaust port being exposed outside of the housing.

[0017] By employing a movable baffle in the flue gas channel, when there is incoming external winds and/or rains, the movable baffle is able to restrict the opening size in the cross section of the flue gas channel thereby resisting the winds and/or rains, on the other side, when there is exhaust of flue gas, the movable baffle can be pushed by the gas flow to enlarge the opening size in the cross section of the flue gas channel to allow the flue gas to be discharged out smoothly.

[0018] The foregoing has outlined rather broadly the features and technical advantages of the present invention in order that the detailed description of the invention that follows may be better understood. Additional features and advantages of the invention will be described hereinafter which form the subject of the claims of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] For a more complete understanding of the present invention, and the advantages thereof, reference is now made to the following descriptions taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a planar view showing a gas water heating appliance in accordance with an embodiment of the present invention;

Fig. 2 is an perspective view showing the appliance of Fig. 1 with a front plate being removed;

Fig. 3 is a planar view showing the appliance of Fig. 1 with a side plate being removed;

Fig. 4 is a perspective view showing a flue hood in accordance with an embodiment of the present invention;

Fig. 5 is a front view showing the flue hood of Fig. 4;

Figs. 6A to 6C are cross sectional views taken along line A-A of Fig. 5, wherein Figs. 6A, 6B, 6C respectively show a first position, a second position, and a third position of a movable baffle of the flue hood.

Fig. 7 is a perspective view showing a rain shield of the appliance of Fig. 1;

Fig. 8 is a top view of the rain shield of Fig. 7;

Fig. 9 is a side view of the rain shield of Fig. 7;

Fig. 10 is similar to Fig. 5, which shows a flue hood in accordance with another embodiment of the present invention;

Fig. 11 is similar to Fig. 6A, which is a cross sectional view of the flue hood of Fig. 10.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0020] Reference will now be made to the drawing figures to describe the preferred embodiments of the present invention in detail. However, the embodiments can not be used to restrict the present invention. Changes such as structure, method and function obviously made to those of ordinary skill in the art are also protected by the present invention.

[0021] Gas water heaters and gas boilers could be fired with combustible gas, such as natural gas, city gas, liquefied petroleum gas, methane, etc., thereby supplying hot water and/or heating living space for domestic sanitary usage and heating purpose. The embodiments to be described below take a gas water heater as an example, however, the present invention is not limited to this, and it can also be applied on gas boilers

[0022] First referring to Figs. 1 to 3, a gas water heating appliance 1 in accordance with one embodiment of present invention is adapted to be mounted outdoors, which includes a housing 10, a flue hood 20, a heat exchanger 107, a burner 104, an air supply fan 105, an air pressure switch 30, and an inlet tube 101, an outlet tube 102, a gas supply pipe 103 extending out of the housing 10.

[0023] The housing 10 may be composed of a number of plates, such as a front plate 11, a back plate, a top plate, a bottom plate 12, and a pair of side plates. In this embodiment, the back plate and the bottom plate 12 are integrally formed in a first piece, and the front plate 11, the top plate, the pair of side plates are integrally formed in a second piece. In course of assembling the appliance, the components can be first mounted on the first piece, then the second piece is mounted on the first piece to complete the assembling. In this way, the assembling can be more simple. When the appliance is installed on a wall, the back plate faces the wall, and an air inlet is provided in the plates different from the back plate. The air inlet can be defined in the front plate 11, the side plate, or even in the bottom plate 12, and in this embodiment, the air inlet 111 is defined at a lower portion of the front plate 11.

[0024] The burner 104 has a casing and a number of burner blades (not shown) arranged side by side in the casing. Each burner blade generally defines therein a gas-air mixture passage for mixing fuel gas supplied from the gas supply pipe 103 and combustion air supplied by the air supply fan 105, and delivering the gas-air mixture to top thereof for being ignited and burning. As the configuration and arrangement of the burner blades are well

known in the art, a detailed description is omitted for purpose of brevity and simplicity.

[0025] The heat exchanger 107 is placed above the burner 104. The heat exchanger 107 may include multiple heat absorbing fins and a heat absorbing pipe passing through the multiple heat absorbing fins. The heat absorbing pipe is connected with an upstream water supply channel and a downstream hot water delivering channel. Water passing through the inlet tube 101 and the upstream water supply channel is then heated in the heat exchanger 107 by heat interchanging with combustion exhaust gas of the burner 104. Heated hot water is fed to the downstream hot water delivering channel and further passes through the outlet tube 102 for domestic sanitary use, such as drinking, showering, or bathing.

[0026] In this embodiment, the air supply Fan 105 is provided below the burner 104, which is operated to supply outside air to the burner 104 as combustion air, also, force the flue gas to flow into the flue hood 20 and further to be discharged outdoors.

[0027] The flue hood 20 is mounted upon the heat exchanger 107 for collecting the combustion gas containing carbon monoxide and nitric oxides and expelling it outdoors. With reference to Fig. 4, Fig. 5, and Figs. 6A to 6C, the flue hood 20 has a shell, in this embodiment, along the exhaust direction of the flue gas, the shell sequently includes a back part 23, a front part 21, and a projection part 22 projected from the front part 21. When the flue hood 20 is mounted in the housing 10, the projection part 22 is exposed outside of the housing 10.

[0028] The back part 23 is retained on top of the heat exchanger 107, and its bottom is opened to define a gas intake port 231. The projection part 22 defines a gas exhaust port 221 at a front end thereof, and a number of drainage holes 222 are defined at the bottom of the front end. The flue hood 20 defines therein a flue gas channel 232 between the gas intake port 231 and the gas exhaust port 221. The front part 21 has a bottom wall extending between the gas intake port 223 and the gas exhaust port 221, and at least a part of the bottom wall extends obliquely upwardly from the gas exhaust port 201, which is able to hinder external winds and rains entering the appliance through the gas exhaust port 221 to some extent. Even if external rains pass through the gas exhaust port 221 and enter the flue hood, the oblique bottom wall can guide the rains downstream and flow out via drainage holes 222.

[0029] A movable baffle 242 is provided in the flue gas channel 232 for the purpose of changing an opening size in a cross section of the flue gas channel. In this embodiment, the movable baffle 242 is pivotably disposed in the back part 23, which includes a vertical portion 2421 and a bending portion 2422 bending from a top of the vertical portion 2421. A fixed plate 241 is mounted in the flue gas channel 232. The fixed plate 241 has a horizontal section 2411 fixedly mounted on a top wall of the flue gas channel 232 by means of soldering or riveting, and a upright section 2412 perpendicular to the horizontal section 2411 providing a pivot 243 at a distal end thereof. The pivot 243 is connected to the movable baffle 242 at a junction of the vertical portion 2421 and the bending portion 2422, so that the movable baffle 242 is pivotable on this pivot 243.

[0030] In this embodiment, the movable baffle 242 is engaged with the fixed plate 241 to change the opening size in the cross section of the flue gas channel 232. The fixed plate 241 and the movable baffle 242 together occupy the cross section of the flue gas channel 232 where they are located. To ensure the movable baffle is able to move smoothly, there may exist clearance between the lateral sides of the fixed plate 241 and the movable baffle 242 and side walls of the flue gas channel 232, and the clearance distance can be equal or less than 1 mm. In course of a pivotal movement of the movable baffle 242, a gap exists between the bottom of the movable baffle 242 and the bottom wall of the flue gas channel 232, and this gap can define the opening in the cross section of the flue gas channel 232.

[0031] Figs. 6A-6C show the movable baffle 242 is located in a first position, a second position, and a third position respectively. As shown in Fig. 6A, when there is no exhaust of flue gas, and no incoming of external winds and/or rains, the movable baffle 242 is located at a first position where it is in a suspending state. At this time, the vertical portion 2421 of the movable baffle is flush with the upright section 2412 of the fixed plate, and the bending portion 2422 of the movable baffle and the upright section 2412 of the fixed plate forms an angel with respect to each other. In the first position, the opening in the cross section of the flue gas channel 232 has the smallest size, and the bottom of the movable baffle 242 just contacts the bottom wall of the flue gas channel 232. Preferably, in this position, there exists a first gap between the bottom of the movable baffle 242 and the bottom wall of the flue gas channel 232, and the distance d1 of the first gap is around 1.2mm. In this way, once external rains splash on the movable baffle 242 in the cold weather, the rains can drip on bottom wall of the flue gas channel 232 and drain out, otherwise, a frozen might be formed between the bottom of the movable baffle 242 and the bottom wall of the flue gas channel 232 and cause a blockage of the flue gas channel 232.

[0032] As indicated by arrows shown in Fig. 6B, when there is an exhaust of flue gas, or there are both an exhaust of flue gas and an incoming of external winds and the flue gas is stronger than the external winds, the movable baffle 242 is pushed to the second position by the gas flow. In this position, each of the vertical portion 2421 and the bending portion 2422 forms an angle with respect to the upright section 2412 of the fixed plate, and a second gap is defined between the bottom of the movable baffle 242 and the bottom wall of the flue gas channel 232. The second gap has a gap distance d2 which is larger than the first gap distance d1, in other words, at this position, the opening in the cross section of the flue gas channel 232 is larger than that in the first position, and the size

of the second gap distance depends on the force exerted by the gas flow.

[0033] As indicated by arrows shown in Fig. 6C, when there is an incoming of external winds, or there are both an exhaust of flue gas and an incoming of external winds and the external winds is stronger than the flue gas, the movable baffle 242 is pushed to the third position by the external winds. The third position and the second position are located at opposite sides of the first position. At the third position, a third gap is defined between the bottom of the movable baffle 242 and the bottom wall of the flue gas channel 232. In most cases, the third gap has a gap distance d3 which is larger than the first gap distance d1 but smaller than the second gap distance d2, in other words, in this position, the opening in the cross section of the flue gas channel 232 is larger than that in the first position but smaller than in the second position, and the size of the third gap distance depends on the force exerted by the external winds. The embodiment of Fig. 6C shows a largest size of the third gap distance, at this time, the bending portion 2422 of the movable baffle abuts against the upright section 2412 of the fixed plate, and the vertical portion 2421 of the movable baffle and the upright section 2412 of the fixed plate forms an angel with respect to each other. In this way, even there exists both an exhaust of flue gas and an incoming of external winds and the external winds is stronger than the gas flow, the flue gas is still able to be discharged out through the third gap.

[0034] As the embodiments shown above, when there is incoming external winds and/or rains, the movable baffle is able to engage with the fixed plate to restrict the opening size in the cross section of the flue gas channel thereby resisting the winds and/or rains, on the other side, when there is exhaust of flue gas, the movable baffle can be pushed by the gas flow to enlarge the opening size in the cross section of the flue gas channel to allow the flue gas to be discharged out smoothly. In addition, since the movable baffle employs a bending portion, even the incoming winds and discharged flue gas both exist and the winds is stronger than the gas flow, the opening in the cross section of the flue gas channel still has a small size to ensure the flue gas can be discharged out. It would be apparent to those skilled in the art that, the bending portion of the movable baffle can be omitted, and in such case, the movable baffle does not have the third position. Moreover, the movement of the movable baffle is not restricted to a pivotal motion, it can move along a linear direction in other embodiments. For example, the movable baffle can be disposed on the oblique part 221 of the bottom wall of the flue gas channel 232, and the opening in the cross section is defined by a top of the movable baffle and the top wall of the flue gas channel 232, whose size can be adjusted by a linear motion of the movable baffle on the oblique part 221 of the bottom wall.

[0035] Refer back to Fig. 2, an air pressure switch 30 is mounted in the housing 10, and it has a negative pressure port 301 and a positive pressure port 302. The negative pressure port 301 is connected to the air supply fan 105 via a first tube 31 for sensing the negative pressure generated by the fan 105, and the positive pressure port 302 is connected to the atmosphere through a second tube 32. In the state of art, when adverse winds enter the appliance via the gas exhaust port 221 of the flue hood 20, the pressure switch 30 will sense the negative pressure changes caused by speed changes of the fan 405, which may result in a shut-off of the appliance. However, in this invention, since the pressure exerted by the adverse winds can also be detected at the positive pressure port 302, the pressure change at the negative pressure port 301 is counterbalanced by the pressure change at the positive port 302, therefore, the air pressure switch 30 would not be affected by adverse winds, and the misoperation to the appliance caused by adverse winds can be avoided.

[0036] With reference to Figs. 4, 5, and 6A to 6C, in order to ensure the pressure detected at the positive pressure port 301 is as close as possible to the pressure exerted by adverse winds, a first air intake hole 223 is provided adjacent to the gas exhaust port 221, and the second tube 32 is connected between the first air intake hole 223 and the positive pressure port 301. By this means, the adverse winds passing through the gas exhaust port 221 can reach the positive pressure port 301 via the first air intake hole 223 and the second tube 32. In a preferred embodiment, the first air intake hole 223 is defined in a front end of the projection part 22 of the flue hood 20.

[0037] In the embodiments aforementioned, as rains invade the flue hood 20 via the gas exhaust port 221, the rains can flow into the second tube 32 through the first air intake hole 223 and reach the positive pressure port 302, which may cause a damage the air pressure switch if the rains contact electronic parts. Figs. 10 and 11 illustrate a further embodiment, a second air intake hole 224 is provided adjacent to the gas exhaust port 221, preferably, the air intake hole 224 is defined in the front end of the projection part 22, and it is located above the first air intake hole 223. The second tube 32 includes a connection tube section 322 connected between the first and the second air intake holes 223, 224, and an extension tube section 323 is connected between the connection tube section 322 and the positive pressure port 302 of the air pressure switch. Wherein, the connection tube section 322 is U shaped, and the extension tube section 323 is at least partly located above the second air intake hole 224.

[0038] In this way, when external rains enter the connection tube section 322 through the first air intake hole 223 and/or the second air intake hole 224, the rains will not enter the extension tube section 323 because the extension tube section 323 is at least partly located above the second air intake hole 224, then the rains drain out through the first air intake hole 223. When external winds enter the connection tube part 322 through the first hole 223 and the second hole 224, the two flow of winds con-

verge and enter the extension tube part 323. Referring to Fig. 4, in a preferred embodiment, a venting hole 321 is provided in the extension tube section 323, in order to make the positive pressure port 302 to communicate with the atmosphere in case the first and the second air intake holes 223, 224 are jammed. Of course, in other embodiments, the first and the second air intake holes 223, 224 can be replaced by the venting hole 321 to establish air connection between the positive pressure port 302 and the atmosphere.

[0039] Referring again to Fig. 2, in conjunction with Fig. 7 to Fig. 9, a rain shield 40 is provided in the housing 10 and adjacent to the air inlet 111 to prevent rains from entering inside of the appliance. The rain shield 40 includes a main panel 41, a top panel 411, a bottom panel 412, and a pair of side panels 42, 43.

[0040] The main panel 41 faces to the air inlet 111. The top panel 411 is bended from top of the front panel 41, and extends obliquely downwardly toward the air inlet 111. The bottom panel 412 is perpendicularly bended from bottom of the main panel 41 and extends toward the air inlet 111 as well. The pair of side panels 42, 43 is perpendicularly bended from opposite sides of the main panel 41 and extends away from the air inlet 111. At least one of the side plates is provided with a number of openings, and in a preferred embodiment, both of the side panels 42, 43 has the openings 421, 431. By this means, rains splashed into the appliance via the air inlet 111 can be resisted mainly by the main panel 41, and the openings 421, 431 defined in the side panels allow air to come inside of the appliance for combustion purpose.

[0041] A number of rain resisting tabs 422, 432 are provided near the openings 421, 431 on the side panels 42, 43. Each rain resisting tab 422, 432 has an inclined portion 4221, 4321 extending obliquely from one edge of the opening 421, 431, and a parallel portion 4222, 4322 extending from the inclined portion and in parallel with the side panels 42, 43. This configuration is able to further avoid the rains splashing into the appliance.

[0042] The rain shield 40 is mounted in the housing 10 by its bottom panel 412 being connected to the bottom plate 12 through screw means. The bottom panel 412 of the rain shield 40 defines a number of drain ports 4121 therein, and the bottom plate 12 of the housing 10 is provided with a number of drain slots 122 corresponding to the drain ports 4121. In this way, the rains resisted by the main panel 41 can drain out of the appliance through the drain ports 4121 and the drain slots 122. In addition, the bottom plate 12 is provided with a step 121 located adjacent to a mounting position of the rain shield 40 on the bottom plate 12, and this step can act as an obstruction to prevent the rains resisted by the main panel 41 from entering at the mounting position.

[0043] It is to be understood, however, that even though numerous, characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosed is illustrative only, and changes may be made in detail, especially in matters of number, shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broadest general meaning of the terms in which the appended claims are expressed.

Claims

1. A flue hood (20) comprising:

   a shell having a gas intake port (231), a gas exhaust port (221), and a flue gas channel (232) in communication with the gas intake port and the gas exhaust port; and
   a movable baffle (242) movably disposed in the flue gas channel (232) to change an opening size in a cross section of the flue gas channel.

2. A flue hood according to claim 1, wherein said movable baffle (242) is pivotable on a pivot (243) disposed in the flue gas channel.

3. A flue hood according to claims 1 or 2, wherein said movable baffle (242) has a first position and a second position; when the movable baffle is located at the first position, the flue gas channel has a smallest opening size in the cross section; when the movable baffle is located at the second position, the flue gas channel has a larger opening size in the cross section.

4. A flue hood according to claim 3, wherein said movable baffle (242) further has a third position, and the first position is between the second and the third positions; when the movable baffle is located at the third position, the opening size in the cross section is larger than that as the movable baffle is located at the first position but smaller than that as the movable baffle is located at the second position.

5. A flue hood according to claim 1, wherein said opening size in the cross section is defined by a gap between bottom of the movable baffle and a bottom wall of the flue gas channel.

6. A flue hood according to claim 4, further comprising a fixed plate (241) engageable with the movable baffle to control the opening size in the cross section.

7. A flue hood according to claim 6, wherein said movable baffle has a vertical portion (2421) and a bending portion (2422) bending from the vertical portion.

8. A flue hood according to claim 7, wherein when the movable baffle is located at the first position, the vertical portion (2421) of the movable baffle is flush with an upright section (2412) of the fixed plate, and the

bending portion (2422) of the movable baffle and the upright section (2412) of the fixed plate forms an angel with respect to each other; when the movable baffle is located at the second position, each of the vertical portion (2421) and the bending portion (2422) forms an angle with respect to the upright section (2412) of the fixed plate; when the movable baffle is located at the third position, the bending portion (2422) of the movable baffle abuts against the upright section (2412) of the fixed plate, and the vertical portion (2421) of the movable baffle and the upright section (2412) of the fixed plate forms an angel with respect to each other.

9. A flue hood according to claim 1, wherein said flue gas channel has a bottom wall extending between the gas exhaust port (221) and the gas intake port (231), and at least a part of the bottom wall extends obliquely upwardly from the gas exhaust port.

10. A gas water heating appliance (1) comprising:

a housing (10);
a burner (104) disposed in the housing to generate heat;
a heat exchanger (107) for absorbing the heat and transferring the heat to water passing therethrough; and
a flue hood (20) according to any of the preceding claims for receiving flue gas generated by the burner and discharging it outdoors, said flue hood being disposed in the housing with the gas exhaust port (221) being exposed outside of the housing.

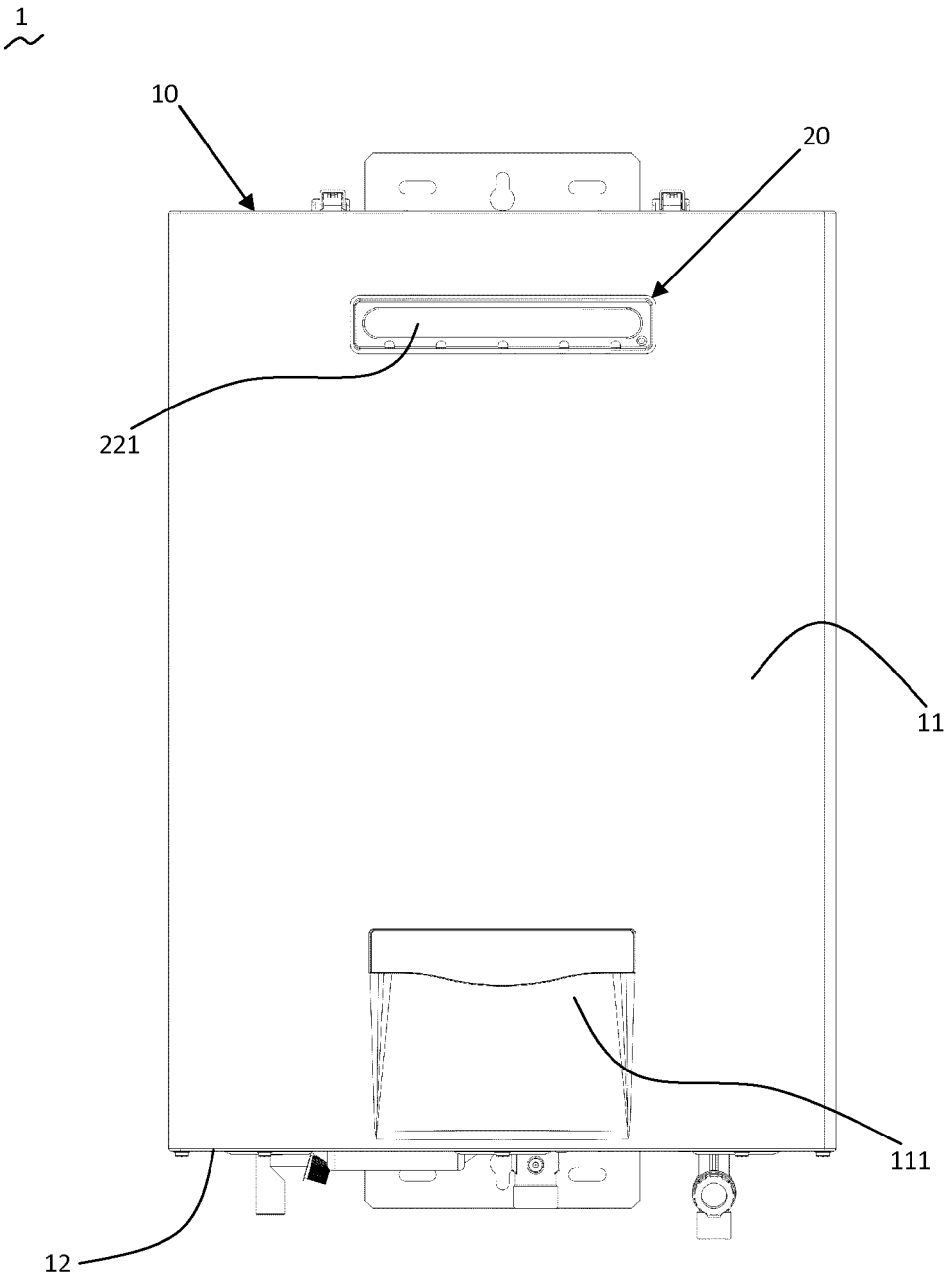


Fig. 1

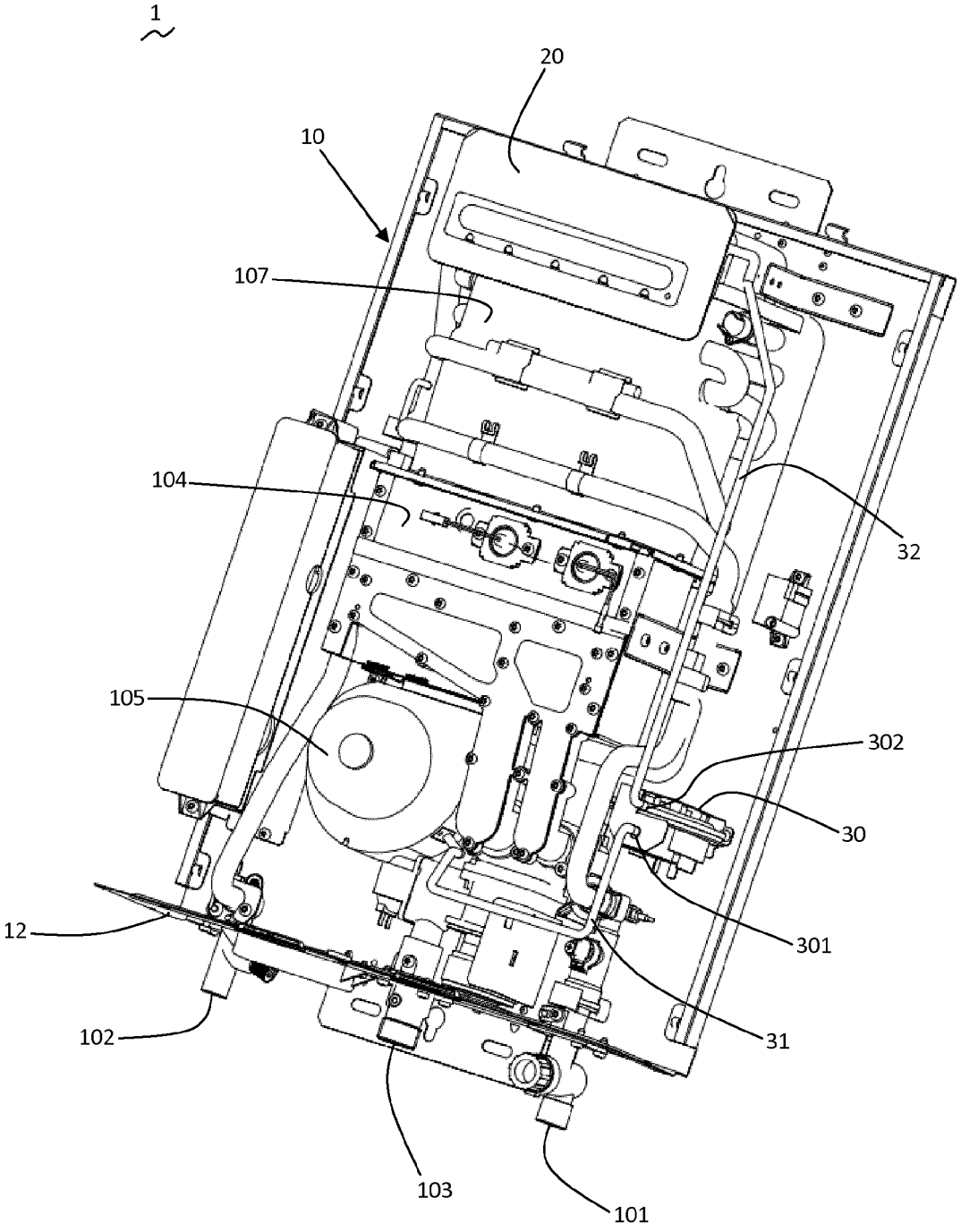


Fig. 2

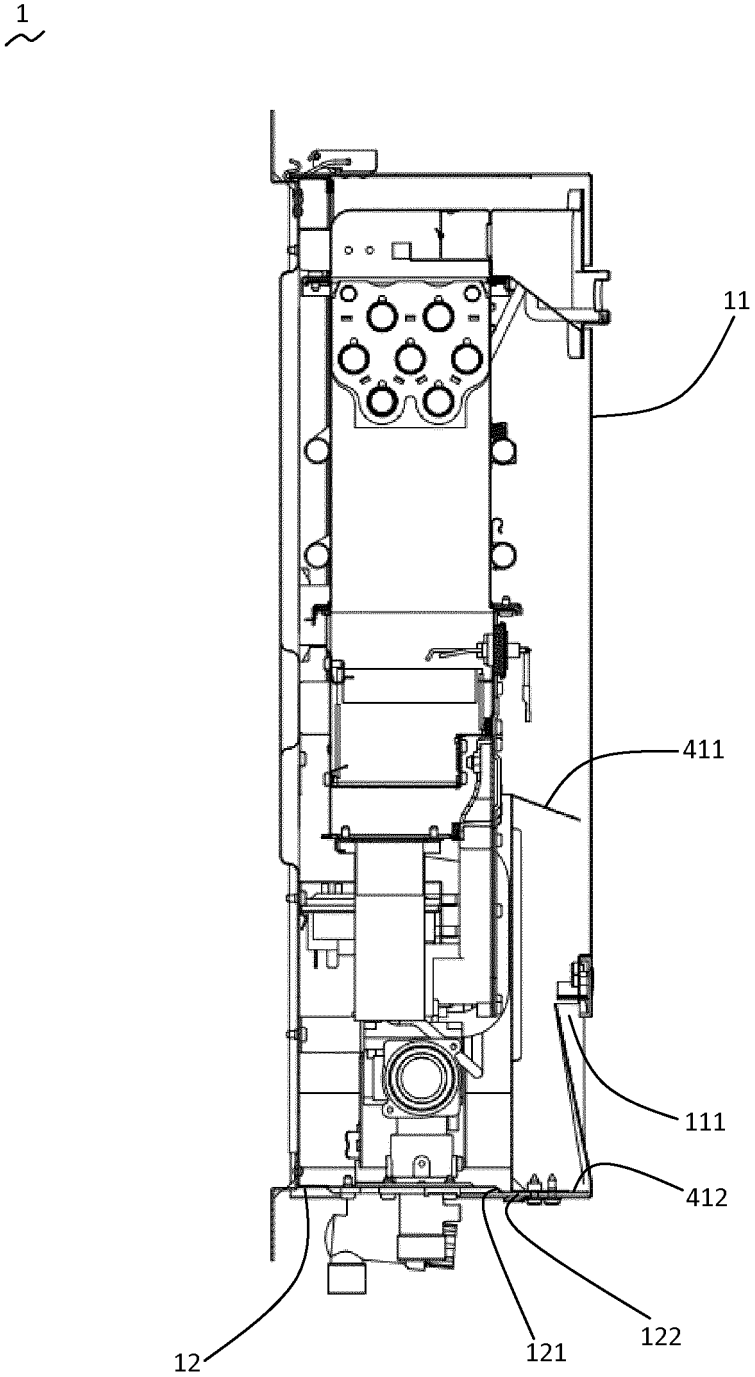


Fig. 3

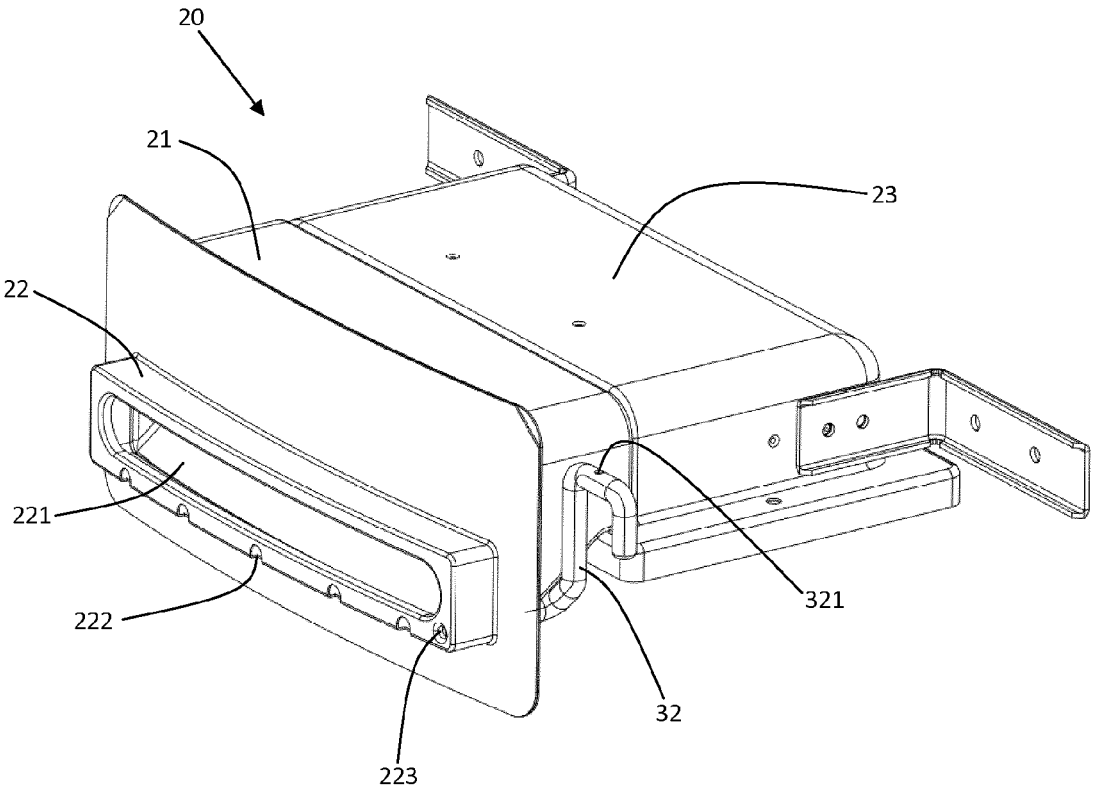


Fig. 4

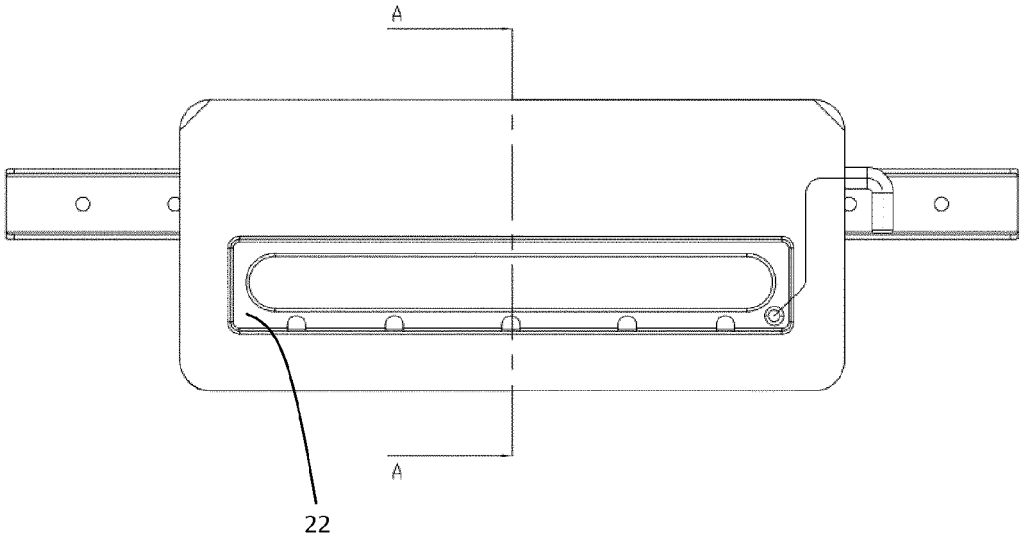
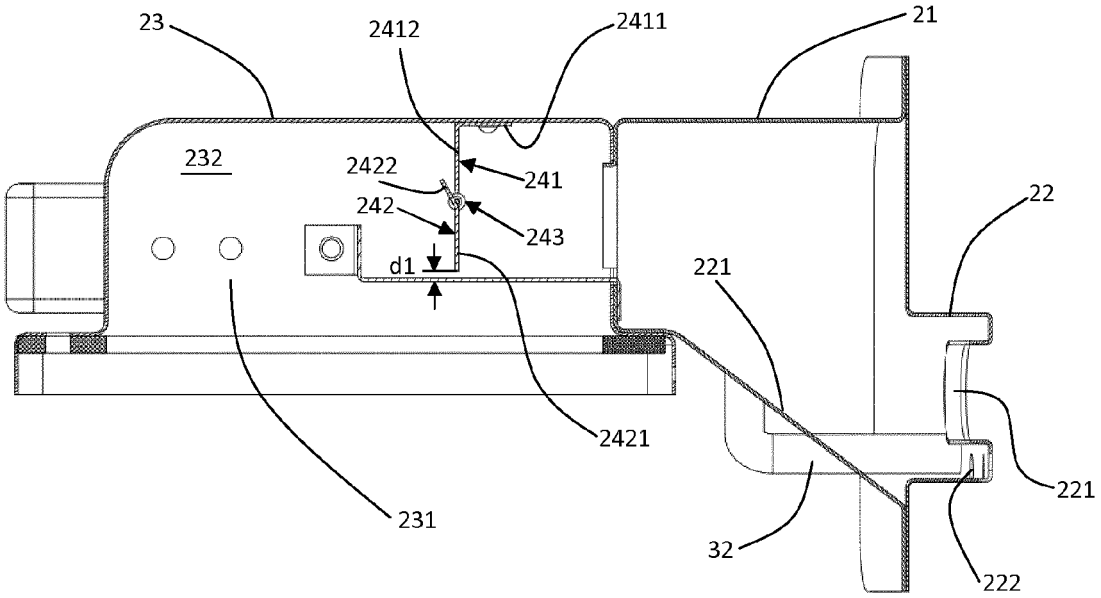


Fig. 5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2412
2411
21
232
2422
241
242
243
d1
22
221
2421
221
231
32
222

Fig. 6A

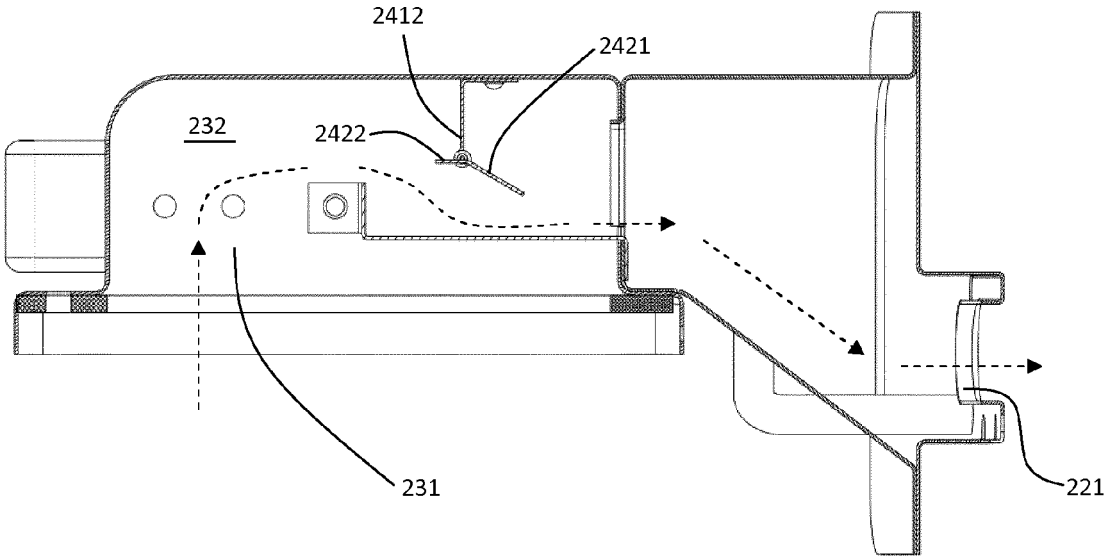
2412
2421
232
2422
231
221

Fig. 6B

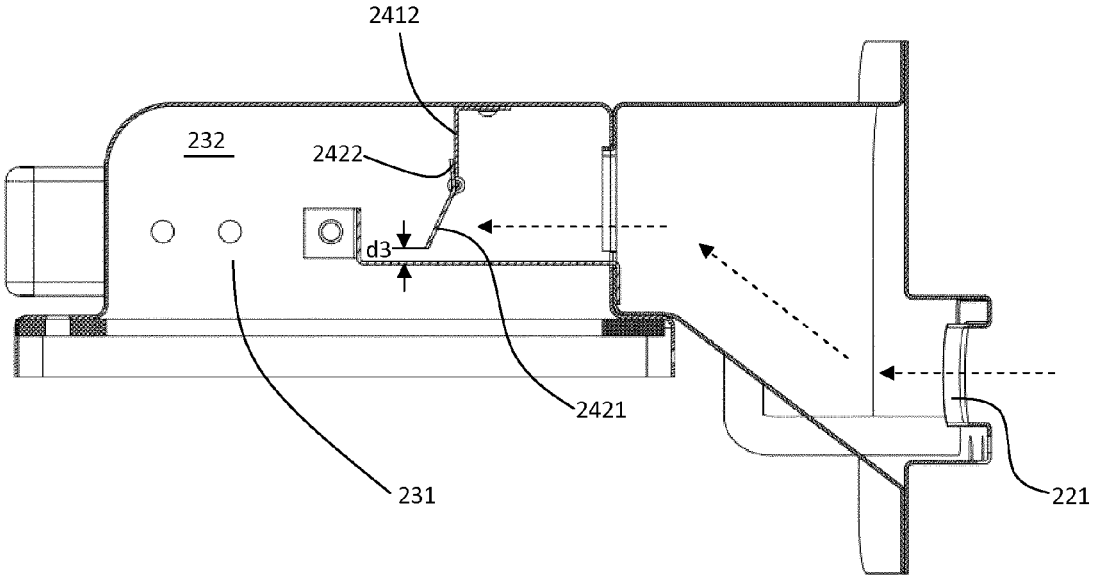

Fig. 6C

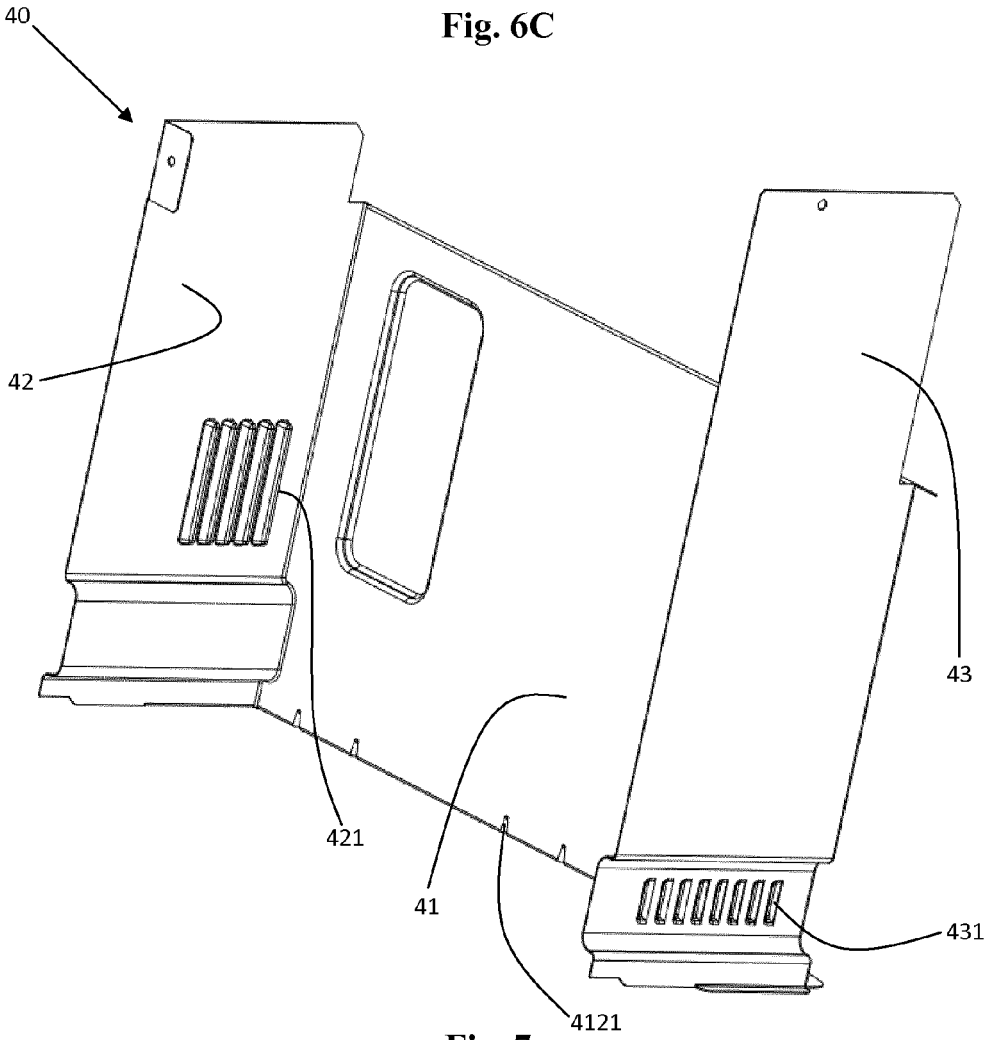

Fig. 7

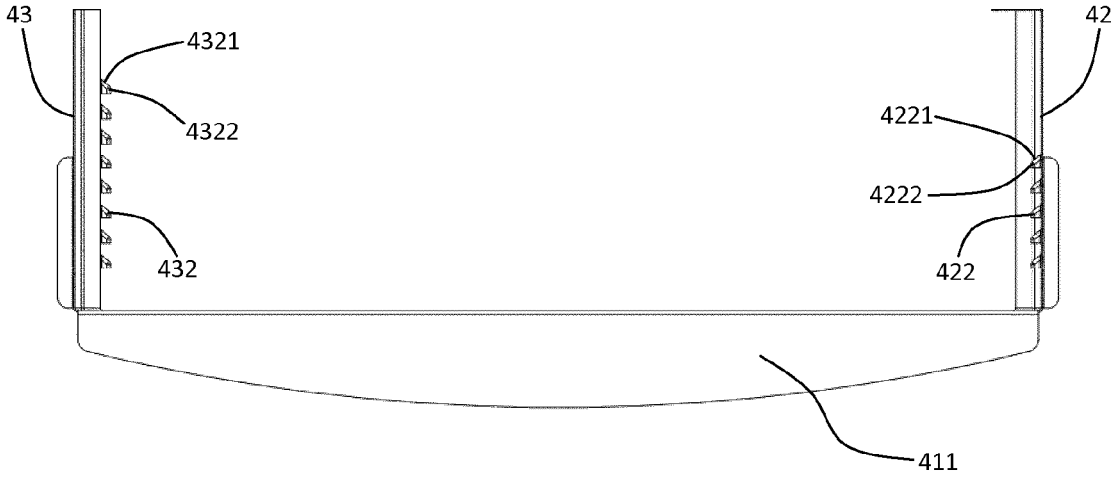

Fig. 8

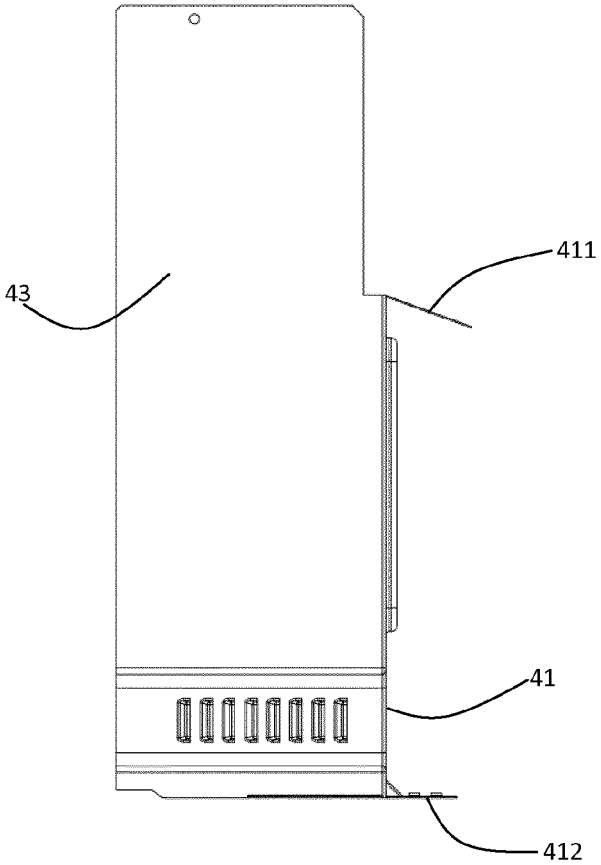

Fig. 9

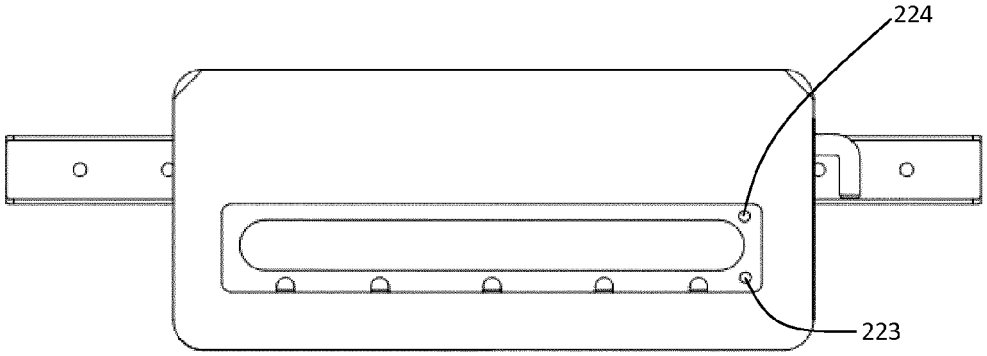

Fig. 10

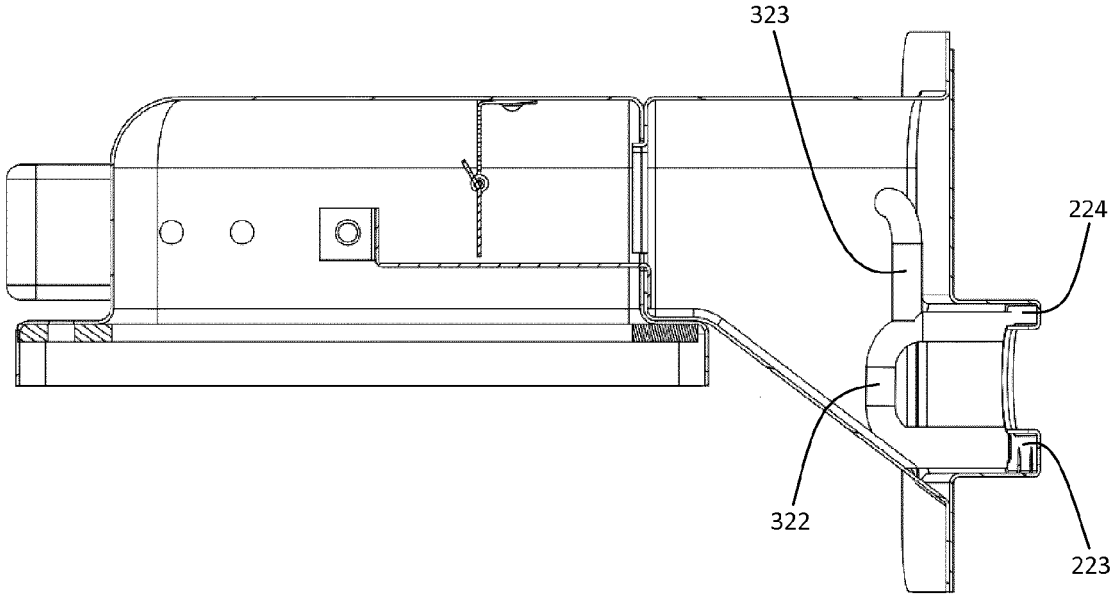

Fig. 11

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EUROPEAN SEARCH REPORT

Application Number
EP 14 19 2047

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X Y	EP 0 400 757 A2 (REMEHA FABRIEKEN BV [NL]) 5 December 1990 (1990-12-05) * column 2, line 45 - column 4, line 23 * * figures 1-5 * -----	1-4,6-8, 10 5,9	INV. F23L11/00 F23L13/02 F23M9/00
X	US 5 239 947 A (SCHIMMEYER WERNER K [US]) 31 August 1993 (1993-08-31) * column 2, line 61 - column 5, line 37 * * figures 1-5 * -----	1-3,10	
X	GB 2 499 976 A (JONES WILLIAM CHARLES KYLE [GB]) 11 September 2013 (2013-09-11) * page 3, line 27 - page 6, line 24 * * figures 1-3 * -----	1-3	
Y	DE 20 2006 010099 U1 (VAILLANT GMBH [DE]) 7 September 2006 (2006-09-07) * page 2, paragraph 15 - page 3, paragraph 20 * * figures 1,3,4,6 * -----	5,9	

TECHNICAL FIELDS SEARCHED (IPC)

F23L
F23M

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	18 December 2014	Gavriliu, Costin

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18-12-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0400757 A2	05-12-1990	DE 69011218 D1	08-09-1994
		DE 69011218 T2	08-12-1994
		EP 0400757 A2	05-12-1990
		NL 8901363 A	17-12-1990
US 5239947 A	31-08-1993	NONE	
GB 2499976 A	11-09-2013	NONE	
DE 202006010099 U1	07-09-2006	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- CN 2438051 Y **[0003]**