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(54) **HEAT GENERATOR ASSEMBLY WITH A COMBUSTION CHAMBER AND A BRAZIER**

(57) The present invention relates to a heat generator assembly, such as a stove, to be supplied with two fuels if desired, for example wood and pellets.

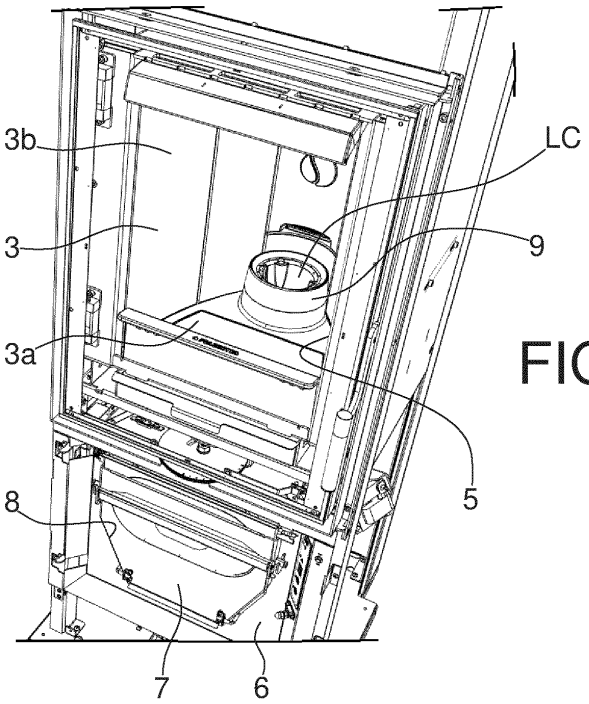

FIG. 3

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Description

TECHNICAL FIELD OF THE INVENTION

[0001] The present invention relates to a heat generator assembly, such as a stove, to be supplied with two fuels if desired, for example wood and pellets.

TECHNICAL BACKGROUND

[0002] Heat generators have been proposed that can be supplied with both wood and pellets, in which the wood is manually inserted into the combustion chamber by opening a main door, while the pellet is loaded into a tank under the combustion chamber and automatically supplied into the latter from that tank.

[0003] In particular, heat generators with pellet supply from below have also been proposed.

[0004] In this regard, according to such solutions, it is possible that the ash generated during the pellet operation of the generator can dirty or occlude the burner or fall and clog the conveying duct of the pellet, with the risk of also generating unwanted combustion in said duct.

[0005] Documents KR20110035002A, KR101564844B1, EP1327825A1, US5243963A, KR20170033653A, and WO2017090213A1 teach prior art solutions.

OBJECTS OF THE INVENTION

[0006] An object of the present invention is to provide a novel heat generator assembly or stove.

[0007] Another object of the present invention is to provide a novel heat generator, in which the air around the burner is kept substantially clean.

[0008] Another object of the present invention is to provide a novel heat generator, in which the accidental fall of ash in the conveying duct of a fuel, such as pellets, is prevented or limited.

[0009] Another object of the present invention is to provide a novel heat generator in which an efficient combustion of all the fuel supplied by a respective duct is ensured.

[0010] Another object of the present invention is to provide a novel heat generator that can be supplied with two fuels, both wood and pellets, which is safer than traditional heat generators.

[0011] Another object of the present invention is to provide a heat generator as above, which is also efficient and easy to realize.

[0012] According to one aspect of the invention a heat generator assembly according to claim 1 is provided.

[0013] The dependent claims refer to preferred and advantageous examples of embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Other characteristics and advantages of the invention will be more evident from the description of an example of embodiment of a heat generator assembly, illustrated by way of example in the accompanying drawings wherein:

- figures 1 and 2 are perspective views slightly from above and from respective sides of a generator assembly according to the present invention with its cover panels removed;
- figures 3 and 4 are perspective views of the generator assembly of figure 1 on an enlarged scale and with parts removed;
- figures 5 to 7 are enlarged scale views of the components of the generator assembly of figure 1;
- figures 8 to 13 are views of the generator assembly of figure 1 on an enlarged scale and with parts removed.

[0015] In the accompanying drawings, identical parts or components are distinguished by the same reference numerals.

EXEMPLARY EMBODIMENTS OF THE INVENTION

[0016] With reference to the accompanying figures, a heat generator assembly 1 comprising a main frame 2 defining at least one combustion chamber 3 has been illustrated.

[0017] The generator assembly 1 is advantageously arranged to be supplied, preferably during different working cycles, with at least two different fuels, for example wood and pellets.

[0018] The assembly 1 then comprises at least one closure/opening first door 4 of a main window or opening 5 for accessing the combustion chamber 3. Moreover, through the main window or opening 5 a second fuel can be placed in the combustion chamber 3 and more particularly on the upper face or fire bed 3c of the base wall 3a delimiting the same, if desired wood, for example in blocks.

[0019] In the assembly 1 means for distributing a comburent fluid are then provided, such as air, in the combustion chamber 3, which will be better discussed in the following. These distribution means can comprise suitable ducts opening into the combustion chamber 3 as well as pushing means or the like of the comburent fluid, for example one or more fans 11.

[0020] There is then provided in the assembly at least one container tank 6 of a first fuel, for example pellets, as well as at least one second closure/opening door or panel 7 of an access and loading opening 8 of the container tank 6 with the first fuel.

[0021] The generator assembly 1 is then also provided with at least one brazier 9 in the combustion chamber 3 for the combustion of a first fuel, as well as at least one supply duct or line 13 of the first fuel from the tank 6 to the brazier 9 as well as conveying means, for example automatic, such as an Archimedean screw or the like 14a, 14b, suitably actuated, of the first fuel along the sup-

ply line 13 to the brazier 9 (see in particular figures 8 and 9).

[0022] The brazier 9, as known, is provided for the positioning and combustion of the fuel(s) supplied through the supply duct 13.

[0023] The assembly further comprises at least one burner 9d at the brazier 9. Advantageously, in the brazier 9 or better at an upper combustion surface 9c thereof the flame generating end or tip of one or more burners 9d is provided or opens, clearly suitably actuated or actuatable.

[0024] Moreover, the upper combustion surface 9c of the brazier 9 is at a level which is higher than the upper face or fire bed 3c of the base wall 3a delimiting the combustion chamber 3.

[0025] If desired, the upper surface 9c is at a level or height H which is higher of about 3-40 cm, preferably 5-20 cm, if desired between 5 and 9 cm or between 6 and 8 cm with respect to the level or height of the upper face 3c of the base wall 3a.

[0026] More particularly, the upper surface 9c is at a level or height such as to facilitate the fall of ashes generated by the combustion on the brazier 9 of the first fuel or pellet conveyed by means of the supply line 13 on the upper face 3c of the base wall 3a of the combustion chamber 3, so as to guarantee or increase the cleanliness of the surface 9c and therefore of the action zone of the burner 9d of the generator assembly 1. Moreover, this precaution also ensures that these ashes do not fall into the supply duct 13.

[0027] The upper face or fire bed 3c of the base wall 3a can constitute the area where a second fuel, such as wood, is placed and subsequently burned or combusted.

[0028] The brazier 9 comprises at least one tubular body 9e rising partially in the combustion chamber 3 with respect to or from said base wall 3a, while the supply duct or line 13 is mounted or opens into the tubular body 9e.

[0029] The tubular body 9e then delimits a clearance or channel LC for the passage of the first fuel, such as the pellet towards the top of the brazier 9 and thereafter in the combustion chamber 3 in the form of heat emitted by combustion or ash or unburnt fuel.

[0030] If the supply duct or line 13 opens into the tubular body 9e, then it opens from the bottom up into the tubular body 9c, i.e. the first fuel conveyed into the supply duct or line 13 is dispensed in the direction from the bottom upwards into the tubular body 9e of the brazier 9.

[0031] The tubular body 9e can delimit at least one hole 9f for the passage of air, for example at a respective upper surface or end 9c, while the means for distributing a comburent fluid in the combustion chamber 3 can comprise a first distribution duct 10a (see for example figures 10 and 13) of comburent fluid or air in the tubular body 9e and from this in the combustion chamber 3 or better in the area of the combustion chamber 3 at the top of the brazier 9 and, in fact, around the burner 9d.

[0032] If desired, the tubular body 9e delimits a plurality of holes 9f for the passage of comburent fluid or air at a respective upper surface 9c. In this regard, a plurality of holes 9f can be provided along the whole annular extension of the upper surface 9c, if desired two or more pluralities of holes 9f each being aligned along a respective circumference, e.g. concentric to the longitudinal axis of the tubular body 9e.

[0033] The air or comburent fluid supplied through the holes 9f is mainly used to ignite the flame as soon as possible and once combustion has started to limit the emissions of unwanted substances as much as possible.

[0034] With reference to the non-limiting embodiment illustrated in the figures, the tubular body 9e includes an outer tubular wall 9g and an inner tubular component 9h fitted within the outer tubular wall 9g and more particularly within the upper portion thereof.

[0035] The tubular body 9e then comprises a bottom wall 9i partially closing the lower, in use, end of the outer tubular wall 9g and for example delimiting a recess 9m for fitting the supply duct or line 13 or a portion thereof.

[0036] The inner tubular component 9h can have a top wall 9n defining the top surface 9c or part thereof.

[0037] The inner tubular component 9h can have a tapered configuration from top to bottom or for example have a truncated conical upper section 9h1 with a decreasing section from top to bottom and also if desired a lower section, for example rectilinear 9h2, in which the supply line 13 or the dispensing end of a portion thereof can be fitted.

[0038] In this case, between the outer tubular wall 9g, the inner tubular component 9h and the supply line 13 or a portion thereof is defined a manifold area CZ of comburent fluid, for example air, to be conveyed towards the upper surface 9c of the brazier 9, after passing through the holes 9f.

[0039] In this regard, the manifold area CZ is in fluid communication with the first distribution duct 10a. If desired, the first distribution duct 10a opens into the manifold area CZ. Referring to the example embodiment illustrated in the figures, the first distribution duct 10a has a box-like configuration with outlet ends 10a1 mounted, e.g. welded or bolted, to a portion, e.g. lower than the outer tubular wall 9g. The outlet end 10a1 can have a curved configuration, for example between 1/8 and 1/4 of the extension of the respective lower portion of the wall 9g.

[0040] The tubular body 9e can also comprise nozzles 9p for conveying comburent fluid from the manifold area CZ to the upper surface 9c of the brazier 9. Clearly, the nozzles 9p each define a respective air passage hole 9f.

[0041] With reference to this aspect, a gap IN can be provided, defined in the inner tubular component 9h.

[0042] If desired, a plurality of nozzles 9p are provided along the whole annular extension of the upper surface 9c, if desired with two or more pluralities of nozzles 9p, each being aligned along a respective circumference, e.g. concentric to the longitudinal axis of the tubular body 9e. For example, two pluralities of nozzles 9p are provid-

ed, each opening at a respective level.

[0043] The nozzles 9p can have a vertical or inclined arrangement with respect to the vertical, for example, with an upper dispensing end of comburent fluid or air defining a respective hole 9f that is closer to the longitudinal axis of the tubular body 9e than the lower end opening into the manifold area CZ. Moreover, some nozzles 9p can be provided with one arrangement (for example vertical) and others with another arrangement (for example inclined as indicated above).

[0044] Alternatively, if the inner tubular component 9h is not hollow and thus does not define a gap IN, then the through holes 9f are delimited in the component 9h and can have a vertical or inclined arrangement as indicated above for the nozzles 9p.

[0045] With regard in detail to the configuration of the upper surface 9c, the latter can be annular in configuration and, for example, have multiple inclined sections. With reference to the non-limiting example embodiment illustrated in the figures, the upper surface 9c comprises in sequence and from the bottom upwards a first truncated conical section 9c1 or in any case with a decreasing section from top to bottom, then a second upper or intermediate section 9c2 for example horizontal or not and, if desired, a third upper section 9c3 with truncated-conical shape or in any case with a decreasing section from top to bottom.

[0046] If a third upper section 9c3 is provided, then the same can be defined by a cap component 9r of the tubular body 9, which is fitted, from above around the outer tubular wall 9g and at least in part around the inner tubular component 9h.

[0047] The holes 9f can be provided in one or more sections of the upper surface 9c, if desired in the first lower section 9c1 and the second upper or intermediate section 9c2. If provided, the nozzles 9p can then open into one or more sections of the upper surface 9c, if desired in the first lower section 9c 1 and the second upper or intermediate section 9c2.

[0048] So far as the burner 9d is concerned, it can be housed within a seat SE defined by the tubular body 9e, if desired from the inner tubular wall 9h thereof.

[0049] The flame generating tip of the burner 9d can emerge at the upper surface 9c, if desired in the first lower section 9c1 or in the second upper or intermediate section 9c2.

[0050] As for the position of the brazier 9 and the respective upper surface 9c with respect to the upper face 3c of the base wall 3a delimiting the combustion chamber 3, the brazier 9 is, in fact, fitted or positioned in a recess or cavity 3d delimited by the base wall 3a, in particular by a rear portion (with respect to the main window or opening 5) thereof.

[0051] More particularly, part of the brazier 9 is at a level higher than the base wall 3a and, if desired part at a lower level, but it is placed so that the upper surface 9c is at a level higher than the upper face or fire bed 3c of the base wall 3a delimiting the combustion chamber 3, for example about 3-40 cm, preferably 5-20 cm, if desired between 5 and 9 cm or between 6 and 8 cm.

[0052] With reference to the non-limiting embodiment illustrated in the figures, the base wall 3a has a substantially horizontal main section 3a1 and a secondary section 3a2 with a vertical and curved arrangement so as to wrap part of the brazier 9, in particular of the respective outer tubular wall 9g. If desired, the secondary section 3a2 is vertically aligned with the outer face of the cap component 9r. The base wall 3a can also have a third section 3a3 at the front of the frame 2 or the main window or opening 5.

[0053] Referring now in particular to the combustion chamber 3 or better to the wall of the frame 2 delimiting the same, aside from the base wall 3a and the first door or panel 4, a curved side wall or several portions of side wall suitably inclined and constrained to each other 3b are provided, extending upwards from the edges, for example side and back edges of the base wall 3a and is/are constrained to seal with the latter. This side wall or portions of side wall 3b can also wrap in contact or at a distance of 1-3 mm part of the brazier 9 or better of the outer tubular wall 9g thereof which is at a higher level than the upper face 3c of the base wall 3a.

[0054] Referring in more detail to the distribution means 10, they can also or only comprise a second distribution duct of comburent fluid, such as air 10b, and in this case the curved side wall or portions of side wall 3b delimiting the combustion chamber 3 define at least one slot or through-opening 3e in a position above the brazier 9. In such a case, the second air distribution duct 10b opens directly or after passing into a manifold area, into the slot or opening 3e so as to supply a kind of air blade above the upper combustion surface 9c of the brazier 9. With reference to this aspect, behind the side wall 3b a box-like component defining a manifold space can be arranged in the frame, the box-like component delimiting small holes 15 opening or open at the slot or opening 3e.

[0055] In this respect, the slot or opening 3e mainly has a horizontal extension. This slot or opening 3e can be at a height greater than about 1-7 cm, if desired 3-6 cm, with respect to the upper surface 9c. Alternatively, multiple slots or openings can be provided, e.g. substantially aligned along a horizontal area.

[0056] The distribution means can additionally or alternatively to the above comprise a third air distribution duct 10c opening at the inner surface of the first door 4.

[0057] The airflow thus generated serves to keep the glass or glass chamber 4a of the first door 4 clean, as well as to lower any amount of unburnt fuel, during a substantially post-combustion phase.

[0058] Advantageously, the generator assembly comprises at least one intercepting valve (not illustrated in the figures), while the distribution means of a comburent fluid comprise a main air distribution duct (not illustrated in the figures) opening into a manifold component 12 for the containment of air (see for example figure 10).

[0059] In such a case, the intercepting valve would be

placed in interception of the main duct, while the first 10a and second 10b distribution duct or first 10a and third 10c distribution duct or second 10b and third 10d distribution duct or first 10a, second 10b and third 10c distribution duct would extend from and be in fluid communication with the manifold component 12 for the containment of air. In essence, the comburent fluid would be supplied via the main distribution duct to the manifold component 12 and hence to the ducts 10a, 10b and/or 10c.

[0060] Alternatively or additionally to the above, the distribution means of a comburent fluid in the combustion chamber 3 comprise at least one duct for supplying comburent air in particular at the base wall 3a. If desired, the supply duct(s) can open into the combustion chamber 3 after passing through a special grid with slots provided at the base wall 3a.

[0061] In this regard, the distribution ducts 10a, 10b, 10c could be used for supplying comburent air in the combustion chamber 3 when the generator assembly 1 operates or is actuated by the first fuel, if desired pellets taken from the tank 6, while the comburent fluid or air supply duct could be used for supplying comburent air in the combustion chamber 3 when the generator assembly 1 operates or is actuated by the second fuel, if desired wood placed through the main window or opening 5.

[0062] If desired, the assembly 1 also comprises a control unit arranged to selectively set the operation from time to time by means of a second fuel supplied through the main window or opening 5 or by means of a first fuel taken from the tank 6. In this regard, the control unit for switching operation from that with one fuel to that with the other fuel can vary the arrangement of some valves, for example open some and close others and/or switch on/off respective pushing means.

[0063] Referring now to the supply duct or line 13 of the first fuel from the tank 6 to the brazier 9, according to the non-limiting embodiment illustrated in the figures (see for example figures 8 and 9), the generator assembly 1 can comprise a first section 13a extending from the tank or from a region next to or under the tank 6, from which the first fuel or pellet is actually unloaded, to a first intermediate level of the generator assembly 1, and then a second intermediate section 13b extending from the first intermediate level to a second intermediate level lower than the first intermediate level and finally a third section 13c extending upwards from the lower end of the second intermediate section 13b to the brazier 9 or better to the tubular body 9e thereof.

[0064] Advantageously, the supply line 13 can be arranged to convey the first fuel towards the brazier as a whole from the bottom upwards. In this regard, the first 13a and third 13c section could be used to convey the first fuel or pellet upwards, if desired with a slightly curved pattern, while the second section could be used to convey the first fuel or pellet downwards in an intermediate region of the supply line.

[0065] Among the various sections 13a, 13b, 13c suitable connecting means are clearly provided.

[0066] Moreover, a first Archimedean screw 14a in the first section 13a and a second Archimedean screw 14b in the third section 13c can provided, the Archimedean screws 14a, 14b being suitably actuated by respective motors.

[0067] In accordance with the present invention, the comburent fluid such as air is supplied through the air passage holes 9f in an area of the brazier 9 immediately downstream of the fuel conveying Archimedean screw, for example the second Archimedean screw 9b. In this regard, since there is no mechanical system provided for the upwards displacement of the pellet along the brazier 9, having to ensure the combustion of the pellet, if the precaution described above were not provided, there would be a risk that a combustion of the first fuel triggered too high would not ensure a satisfactory upward conveyance of the pellet, stopping the loading system.

[0068] The supply line 13 can then comprise a flame-arrester or thermal-cut component 13d designed to stop or limit the exchange of heat among the various components of the supply line 13 and then between the tank 6 and the brazier 9.

[0069] In this regard, in the particular case where the generator assembly 1 is actuated with two fuels, in particular wood and pellets, as is known during operation with wood, very high temperatures would be reached and therefore there would be a risk of excessively overheating the supply line 13 and the pellet tank 6, with obvious negative consequences.

[0070] This could be avoided by a thermal-cut or flame-arrester component 13d comprising for example an insulating tape, if desired made of glass fibre, and the tape could be applied around an end of a duct or section of the supply line 13.

[0071] In this regard, the supply line 13 can comprise at least one section, if desired the second section 13b having two subsequent and adjacent sections 13b1, 13b2, an end of one 13b 1 being fitted in an end of the other 13b2. In such a case, the thermal-cut or flame-arrester component 13d could be applied around the fittable end of one of these subsequent and adjacent sections or in any case between the ends of these sections which can be engaged, if desired then sealing the two engaged or constrained ends of the adjacent and subsequent sections 13b1, 13b2 by means of a special sealing component, such as silicone.

[0072] Regarding in detail the main window or opening 5, it is defined by the frame 2, in particular on a face, if desired on a front face of the generator assembly 1. The main window or opening 5 can have a configuration, for example rectangular, square, circular, or other.

[0073] Referring instead to the frame 2, it can have a framing portion delimiting the main window or opening 5.

[0074] The first door 4 is constrained, for example pivoted to the frame 2, if desired around an axis, in use, vertical. More particularly, the first door 4 can be pivoted at one of its edges to the frame 2, in particular at a corner,

if desired in the front thereof.

[0075] The first door 4, as already indicated above, can have a glass or a glass chamber 4a fitted into the main body of the door 4, designed to allow inspection of the combustion chamber 3. If desired, the first door 4 is also equipped with an opening handle OH.

[0076] The container tank 6 can instead be delimited by the frame 2 or better by walls of the frame 2 or it can be realized separately and then inserted into the main frame 2 and constrained or bolted thereto.

[0077] The container tank 6 can be in the position below or above the combustion chamber 3. In particular, according to the embodiment illustrated in the figures, the tank 6 is below or in the lower position of the combustion chamber 3.

[0078] According to such an embodiment, the second door 7 is constrained under the first door 4.

[0079] The second door 7 is constrained to the frame 2, for example hinged, if desired around an axis, in use, horizontal.

[0080] Advantageously, a duct or chimney 16 is provided for conveying the gases or exhaust fumes or combustion from the combustion chamber 3 outwards or to a specific discharge zone, as well as any refractory arranged behind and/or on the sides of the combustion chamber 3, if desired constituting the curved side wall or the portions of side wall 3b.

[0081] Preferably, the generator assembly 1 comprises locking/unlocking means of both the first door 4 and the second door 7, the locking/unlocking means are movable or switchable between a first operating position, in which the first door 4 is locked and the second door 7 is unlocked and a second operating position, in which the first door 4 is unlocked and the second door 7 is locked.

[0082] The assembly 1 can then comprise at least one position sensor designed to detect whether the first door 4 and/or the second door 7 is open or closed.

[0083] Of course, the assembly also comprises one or more drive motors of the various components, such as fans, Archimedean screws, etc.

[0084] The assembly can then be equipped with one or more exhaust gas temperature probes, based on the values of which the control unit can decide to switch the operation of the stove from wood to pellet, suitably actuating the valves and/or pushing means for the operation of the distribution means, the conveying means and/or the locking/unlocking means, if provided, and automatically loading the pellet from the tank 6 to the combustion chamber 3.

[0085] As will be ascertained, with a generator assembly according to the present invention, the pellet or first fuel brazier is at a greater or higher level than the base wall or fire bed where, if desired, the second fuel, such as wood, can be burned. This ensures the constant cleanliness of the pellet burner.

[0086] Moreover, in the event that the generator assembly can be supplied with two fuels, this expedient will result in a physical separation between the areas where the first fuel (pellet) and the second fuel (wood) are combusted.

[0087] This feature also ensures that any unburnt fuel of the first fuel, when additional first fuel, such as pellet pieces, is supplied, if desired upwards, these slide onto the base wall or fire bed of the first fuel, so that these unburnt fuels containing carbon are burned when the generator assembly is supplied with wood and actuated according to the respective mode of operation.

[0088] Modifications and variants of the invention are possible within the scope of protection defined by the claims.

[0089] For example, fuels other than wood and pellets could also be provided.

Claims

1. Heat generator assembly comprising a main frame (2) defining at least one combustion chamber (3), at least one closure/opening first door (4) of a main window or opening (5) for accessing said at least one combustion chamber (3), means for distributing comburent air in said at least one combustion chamber (3), at least one container tank (6) of a first fuel, at least one brazier (9) in said at least one combustion chamber (3) for the combustion of a first fuel, at least one burner (9d) at said at least one brazier (9), at least one supply duct or line (13) of said first fuel from said at least one tank (6) to said at least one brazier (9), as well as conveying means (14a, 14b) of said first fuel along said at least one duct supply or line (13) up to said at least one brazier (9), the upper combustion surface (9c) of said at least one brazier (9) being at a level which is higher than the upper face or fire bed (3c) of the base wall (3a) defining said at least one combustion chamber (3),

   said at least one brazier (9) comprising at least one tubular body (9e) rising partially in the combustion chamber (3) with respect to or from said base wall (3a), and wherein said supply duct or line (13) is mounted or opens into said at least one tubular body (9e),

   wherein through the main window or opening (5) a second fuel can be placed in said at least one combustion chamber (3) and wherein said means for distributing comburent air in said at least one combustion chamber comprise at least one duct for supplying comburent air at the base wall (3a).

2. Generator assembly according to claim 1, wherein said upper surface (9c) of said at least one brazier (9) is at a level or height (H) which is higher of about 3-40 cm with respect to the level or height of said upper face (3c) of said base wall (3a).

3. Generator assembly according to claim 2, wherein said upper surface (9c) of said at least one brazier (9) is at a level or height (H) which is higher of about 5-20 cm with respect to the level or height of said upper face (3c) of said base wall (3a).

4. Generator assembly according to any one of the preceding claims, wherein said upper surface (9c) is at a level or height such as to facilitate the fall of ashes generated by the combustion of said first fuel being conveyed by means of the supply line (13), on the upper face (3c) of the base wall (3a) of the combustion chamber (3), so as to guarantee or increase the cleanliness of the upper surface (9c) of said at least one brazier and therefore of the operating area of said at least one burner (9d).

5. Generator assembly according to any one of the preceding claims, wherein said tubular body (9e) delimits a clearance or channel (LC) for the passage of the first fuel towards the top of said at least one brazier (9).

6. Generator assembly according to claim 5, wherein said at least one tubular body (9e) delimits at least one hole (9f) for the passage of air, while the means for distributing a comburent fluid comprise a first distribution duct (10a) of the comburent fluid in said tubular body (9e) and from this in the area of the combustion chamber (3) at the top of the brazier (9) and around said at least one burner (9d).

7. Generator assembly according to any one of the preceding claims, wherein said means for distributing comprise a second distribution duct (10b) of the comburent air, and wherein the curve side wall or the portions of the side wall (3b) delimiting the combustion chamber (3) define at least one slot or through opening (3e) in a position above the brazier (9), said at least one second distribution duct (10b) opening directly or after passing into a manifold area into said at least one slot or opening (3e), so as to supply a kind of air blade above said upper surface (9c) of combustion of said at least one brazier (9).

8. Generator assembly according to any one of the preceding claims, wherein said means for distributing a comburent air in said at least one combustion chamber comprise a third distribution duct (10c) of air opening at the inner surface of the first door (4).

9. Generator assembly according to any one of claims 6 to 8, comprising at least one intercepting valve, wherein said means for distributing a comburent air comprise a main distribution duct for distributing air opening into a manifold component for the containment of air (12), said at least one intercepting valve being placed in interception of said main duct, and wherein said first (10a) and said second (10b) distribution duct or said first (10a) and said third (10c) distribution duct or said second (10b) and said third (10c) distribution duct or said first (10a), said second (10b) and said third (10c) distribution duct extend from and are in fluid communication with said manifold component (12) for the containment of air.

10. Generator assembly according to any one of the preceding claim, comprising a control unit arranged to selectively set the operation by means of a second fuel supplied through the main window (5) or by means of a first fuel taken from the tank (6).

11. Generator assembly according to any one of the preceding claims, wherein said at least one supply duct or line (13) comprises a first section (13a) extending from the tank (6) or from a region next to or under the tank (6) up to a first intermediate level of the generator assembly (1), and then a second intermediate section (13b) extending from the first intermediate level to a second intermediate level lower than the first intermediate level and finally a third section (13c) extending upwards from the lower end of the second intermediate section (13b) to the brazier (9).

12. Generator assembly according to claim 11, wherein said conveying means (14a, 14b) comprise a first (14a) and a second (14b) Archimedean screw and wherein said first Archimedean screw (14a) is provided in the first section (13a), while said second Archimedean screw (14b) is provided in the third section (13c).

13. Generator assembly according to any one of the preceding claims, wherein said supply line (13) comprises a flame-arrester or thermal-cut component (13d) designed to stop or limit the exchange of heat among the various components of the supply line (13) and then between the tank (6) and the brazier (9).

14. Generator assembly according to claim 13, wherein said thermal-cut or flame arrester component (13d) comprises an insulating tape, optionally made of glass fibre, and wherein said supply line (13) comprises at least one segment having two subsequent and adjacent sections (13b1, 13b2), an end of one (13b1) being fitted in an end of the other (13b2), and wherein the thermal-cut or flame arrester component (13d) is applied around the fittable end of one of these subsequent and adjacent sections or in any case between the ends which can be engaged of these portions (13b1, 13b2).

15. Generator assembly according to any one of the preceding claims, wherein said supply line (13) is arranged to convey said first fuel towards said at least

one brazier (9) as a whole from the bottom upwards.

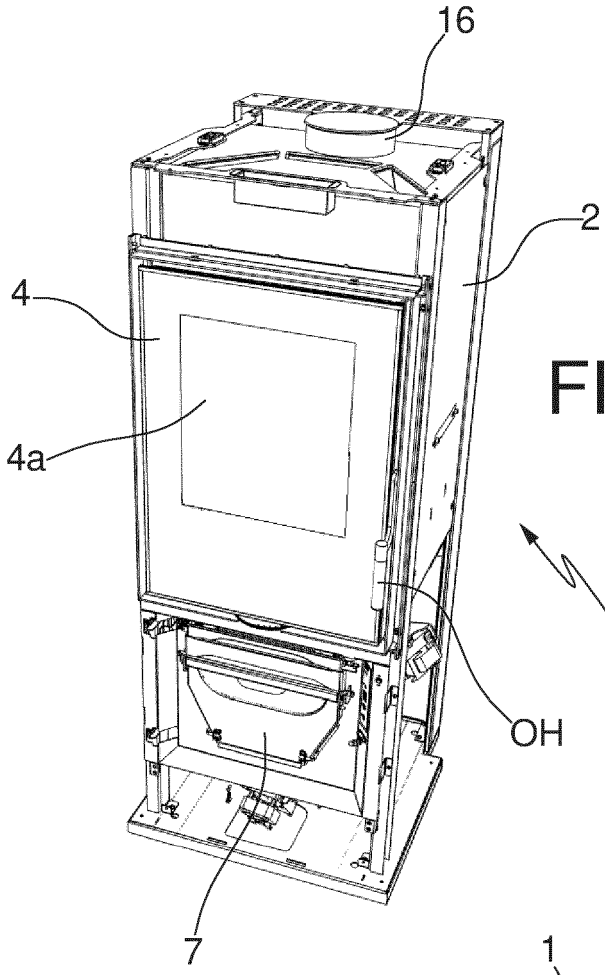


FIG. 1

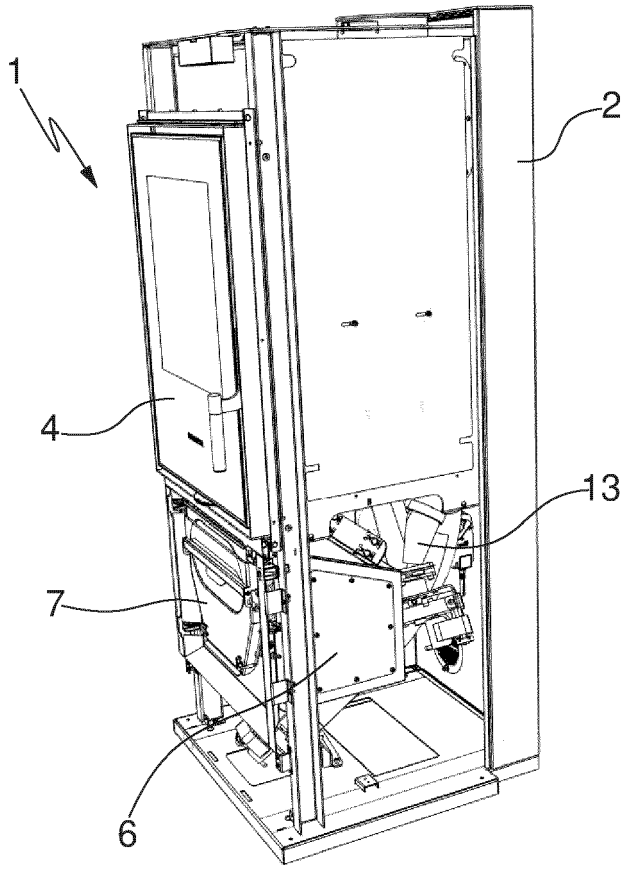


FIG. 2

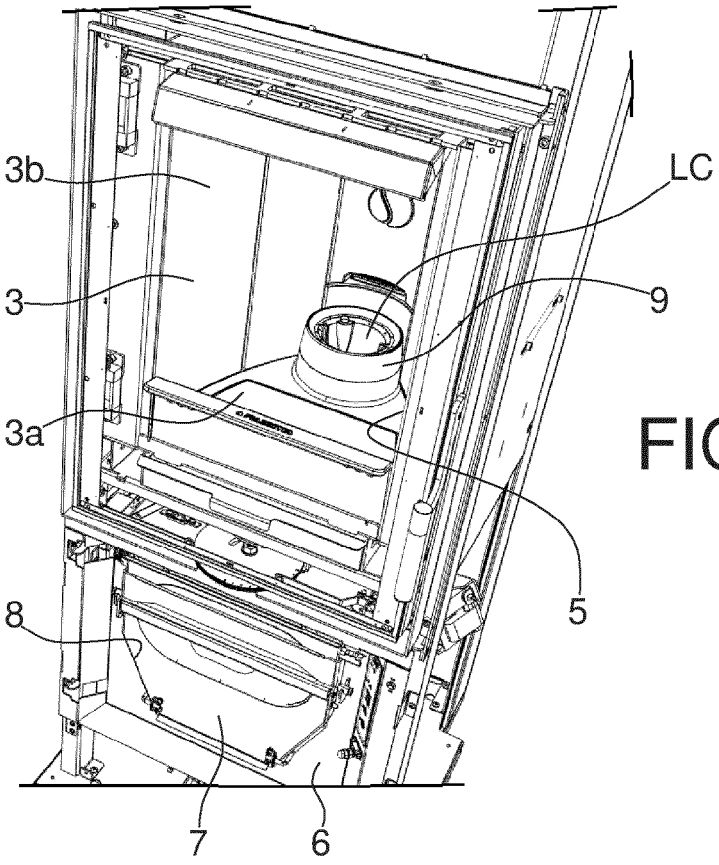


FIG. 3

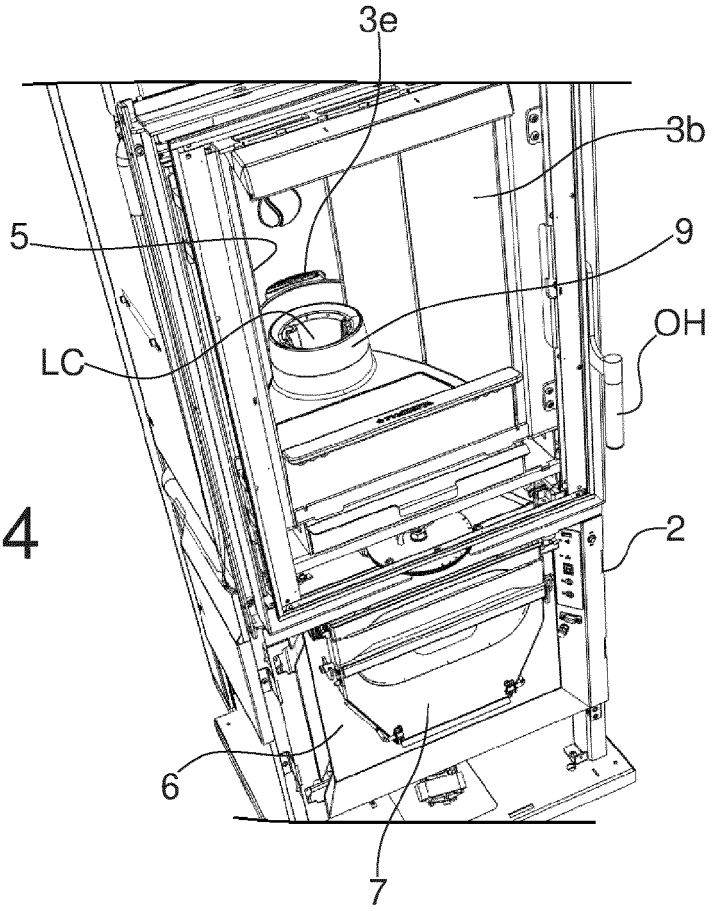


FIG. 4

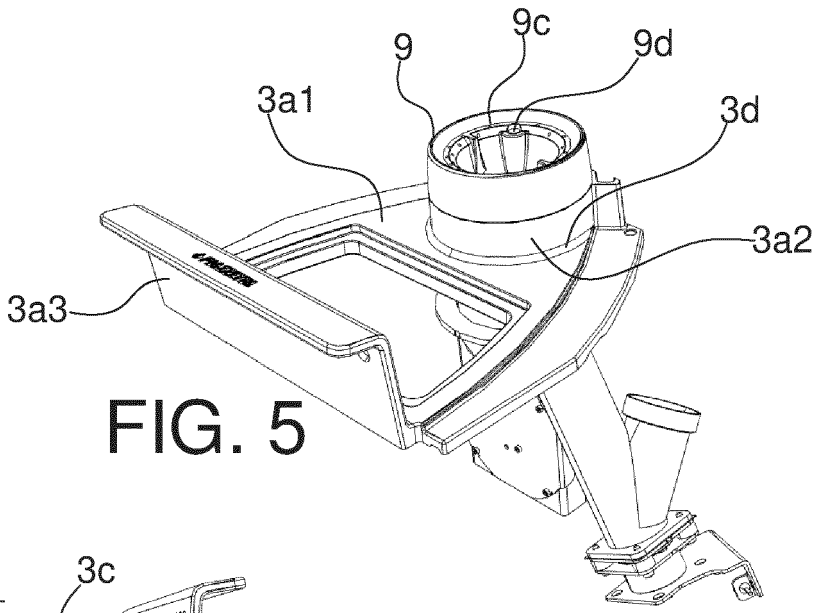


FIG. 5

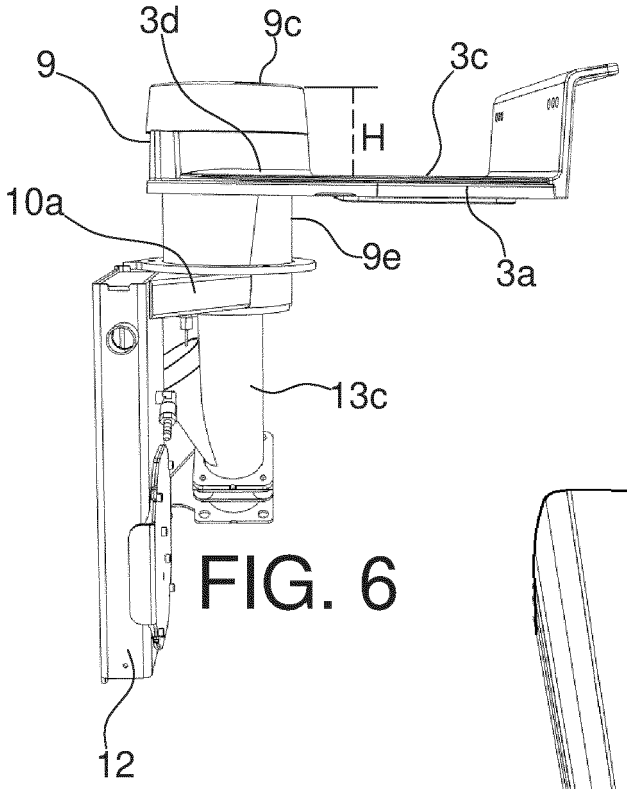


FIG. 6

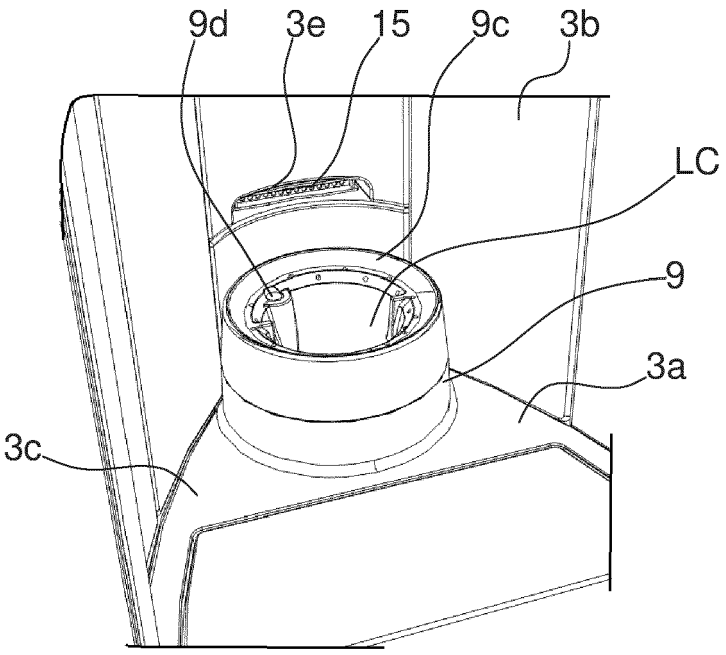


FIG. 7

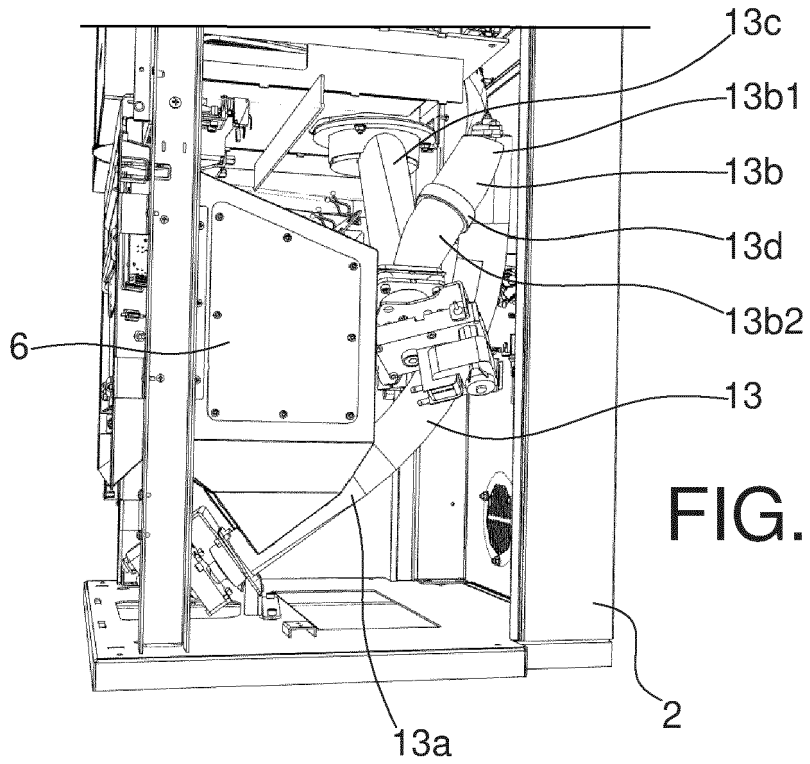


FIG. 8

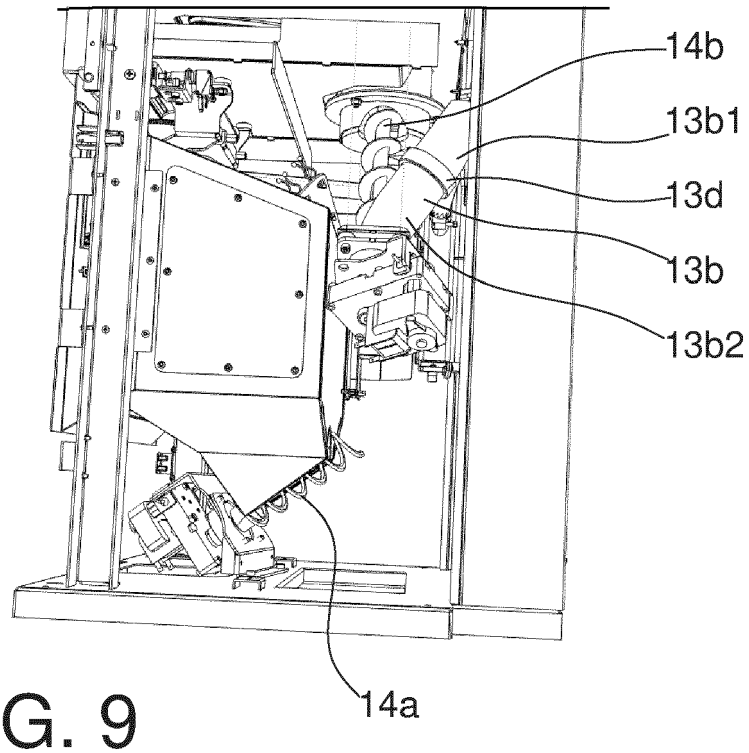


FIG. 9

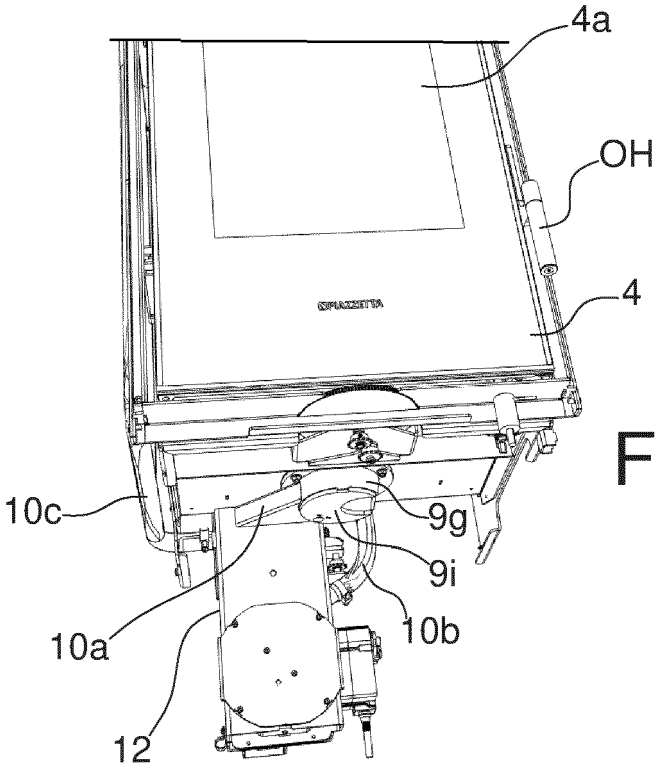


FIG. 10

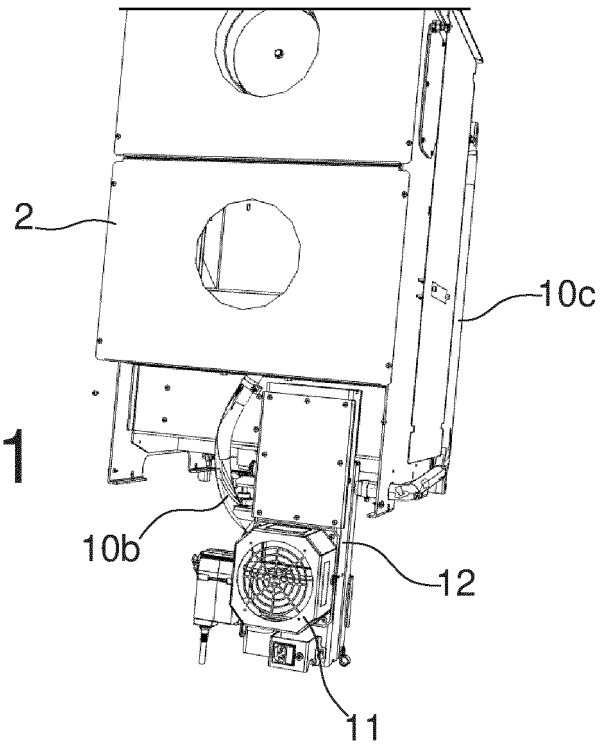
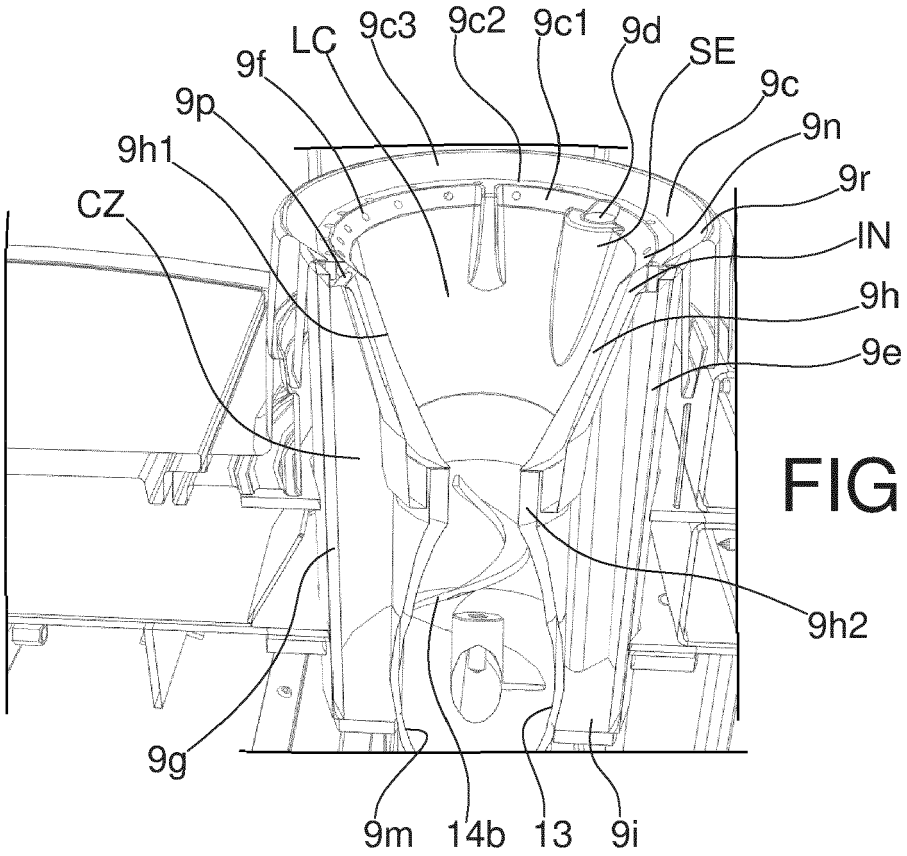


FIG. 11


LC
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9c2
9c1
9d
SE
9c
9n
9r
IN
9h
9e
9f
9p
9h1
CZ
9h2
9g
9m
14b
13
9i

FIG. 12

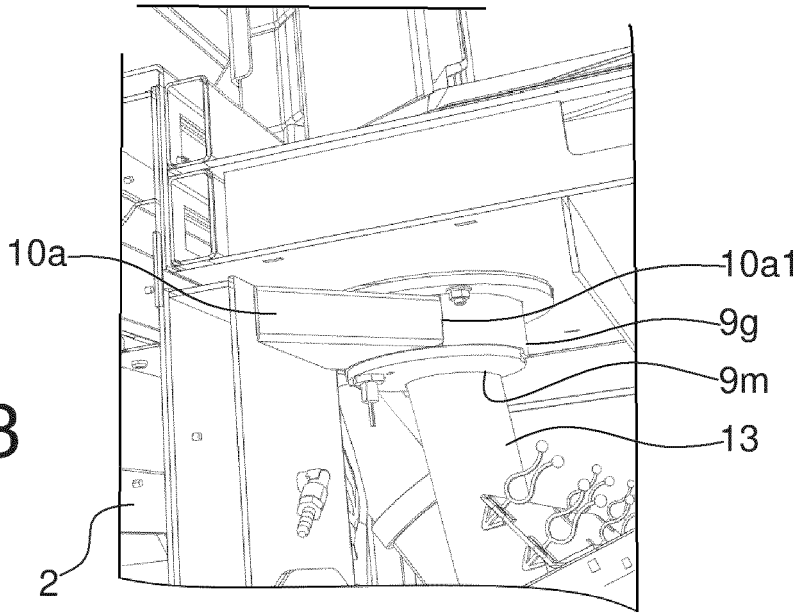
10a
10a1
9g
9m
13
2

FIG. 13

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EUROPEAN SEARCH REPORT

Application Number
EP 23 15 3002

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F24B
F23B
F23K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	6 April 2023	Verdoodt, Luk

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06-04-2023

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