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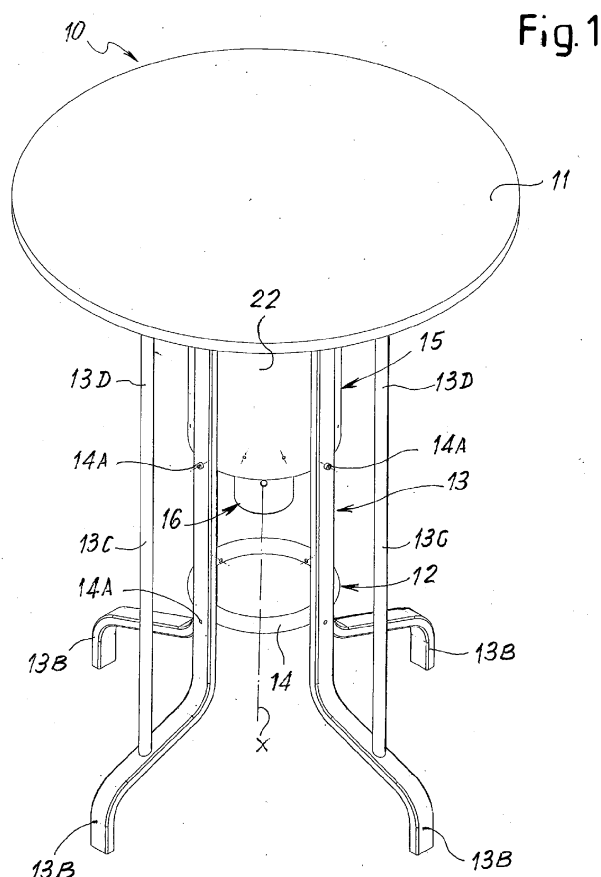
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(54) **Heating table**

(57) A heating table comprising an upper top (11), a support structure (12) for bearing said top and an autonomous heat source that can be actuated and is arranged

below said top (11), wherein said heat source is of the flame type and comprises a combustion structure (15) provided with a tank (16) for the fuel (C), both arranged below said top (11).



Description

Technical Field

[0001] The present invention relates to the production of heaters to be used, preferably although not exclusively, outdoors. More in particular, the object of the present invention is a table designed to heat the surrounding area occupied by the users.

State of the Art

[0002] As it is well known, heaters have been marketed for many years now that, arranged in outdoor areas, for instance outside of pubs or the like, allow clients to stay there in winter without feeling too much cold.

[0003] In these devices the heat source may be either an electrical source or a flame produced by means of a gas cylinder.

[0004] The gas heaters usually have a housing for the gas cylinder and a tubular central upright, inside which a pipe is arranged for supplying gas from the cylinder to a burner positioned at a greater height than the maximum clients' height, for instance at a height of 2.5 meters. In particular, the burner is arranged below a mushroom-shaped hood that conveys the air downwards, namely towards the clients' faces, preventing it from rising immediately upwards.

[0005] These devices have a few drawbacks, both of the functional and structural type, as well as in terms of safety.

[0006] The electrical devices are actually "halogen furnaces", particularly expensive in terms of consumption; moreover, they require uncomfortable electrical wirings that make difficult to position them, as they shall be factually positioned lifted off the ground, at a height and in a position where wirings do not disturb the clients.

[0007] The mushroom gas heaters are particularly bulky; furthermore, they are mostly considered very dangerous, as they use pressurized fuels without particular safe conditions.

[0008] Moreover, both gas and electrical heaters essentially allow to heat only the upper part of the clients body, i.e. the part nearest to the heat source.

Object and summary of the invention

[0009] An object of the present invention is to provide a heating device, to be used preferably outdoors, that allows to ideally and safely heat also the lower part of the clients body.

[0010] A further important object of the present invention is to provide a heating device, to be used preferably outdoors, that is structurally simple.

[0011] A further important object of the present invention is to provide a heating device, to be used preferably outdoors, that is easy and economical to use.

[0012] These and other objects are achieved through

a heating table comprising an upper top, a support structure on the ground for bearing said top and an autonomous heat source that can be actuated and is arranged below the top, wherein said heat source is of the flame type and comprises a combustion structure provided with a fuel tank, both arranged below said top.

[0013] "Heat source that can be actuated" means a heat source that shall be actuated by means of something to emit heat. A combustible fuel tank is for instance a "heat source that can be actuated" as the fuel, when actuated i.e. combusted for instance by means of a flame, produces in turn a flame generating heat. "Autonomous" means a heat source that does not need external connections to operate. An halogen furnace, that is an electrical resistance furnace, produces heat when turned on, and is therefore a heat source; but it is not an autonomous source, as it requires connection to the electric network to operate.

[0014] In some embodiments, the support structure and the combustion structure may share some elements, i.e. they may be integrated.

[0015] According to some preferred embodiments, the table according to the invention comprises reversible fixing means for fixing the tank to the combustion structure.

[0016] According to some preferred embodiments, this tank is, or comprises, a fuel cartridge. Preferably, the fuel cartridge may be inserted in the tank structure. Preferably, the fuel cartridge is of the disposable single-use type. In other embodiments, the cartridge may be recharged. According to some preferred embodiments, the combustion structure comprises a support base, to which said tank is fixed reversibly; when coupled to the base, the tank is usually open upwards to leave the flame free when the fuel is burn.

[0017] Favorably, reversible closing means may be associated with the tank for reversible closing of the upper aperture to put the flame out. The tank preferably hangs on the support base.

[0018] According to some preferred embodiments, the reversible fixing means for fixing the tank to the combustion structure comprise a bayonet coupling system.

[0019] Preferably the tank defines a container in which said fuel cartridge is housed and which is open upwards to let the combustion flame exit.

[0020] According to some embodiments, said cartridge housing container is fixed top the combustion structure. According to other embodiments, this cartridge housing container is fixed to said combustion structure through said reversible fastening means.

[0021] Favorably, in said housing container at least one air intake towards the outside, preferably defined in the lower part of said housing container and in fluid communication with the aperture through which the flame exits from the housing.

[0022] According to some embodiments key security means are advantageously provided to prevent the tank from being separated from the combustion structure and to avoid unauthorized persons accessing the fuel. Pref-

erably, with the cartridge housing container a lock or a slot for a padlock are for instance associated for example between container and structure, to avoid unauthorized persons separating or opening said container. According to particularly preferred embodiments, the fuel is flammable gel preferably of, or based on, ethanol, bioethanol, methanol or other substances, preferably containing sugar or derivatives thereof. The fuel preferably contains a repellent, for instance citronella, for mosquitoes or other insects.

[0023] In some examples of embodiment the combustion structure comprises an inner jacket surrounding the flame area and extending towards the lower part of said top. This combustion structure advantageously comprises a further jacket (produced in one or more parts) externally surrounding the inner jacket and extending towards the lower part of said top; between said inner jacket and said outer jacket a chamber is defined, having at least one aperture towards the outer environment for hot air escape. The outer jacket may be produced for example in a single tubular piece, or in more pieces, for instance annular pieces arranged over one another or pieces with annulus-shaped cross section arranged adjacent to one another to form a tubular body (for example, they may be fixed or inserted between the table legs, for example inserted in appropriate vertical guides associated with the legs).

[0024] The outer jacket and /or the inner jacket have preferably an end upper edge at least partially spaced from said top to define an aperture for said chamber towards the outer environment.

[0025] The inner jacket has preferably holes through its thickness.

[0026] The outer jacket has preferably holes through its thickness, communicating with the outer environment. In other embodiments the inner jacket may be without holes.

[0027] According to preferred embodiments, the inner jacket and/or the outer jacket are made of substantially transparent or translucent material, i.e. a material allowing you to see through it.

[0028] Preferably, the support structure comprises at least two uprights fixed transversally to at least one common annular spacer, to which the tank support base and said inner jacket are fixed; said inner jacket is arranged inside the annular area defined by said spacer.

[0029] Advantageously, according to some embodiments, inside (or above) the inner jacket a transverse partition is arranged, closing (or covering) at the top this inner jacket, in a gas-tight manner or not, in order to control the flame height and make the heat distribution uniform. This partition is preferably fixed to one said annular spacer (or it may be directly fixed to the leg, for example by means of screws). The partition may be also a body acting as support or guide for the inner jacket.

[0030] According to some embodiments, a thermal insulation disk is put over the plan area occupied by the jackets and into contact with the lower part of the top, to

avoid the excessive heating thereof.

[0031] Favorably, according to some embodiments a chimney is provided, designed to convey at least part of the hot air from the inside of the inner jacket towards an area arranged above said top. This chimney preferably comprises a tube passing through said top and provided with a first mouth open towards said jacket and one or more second mouths obtained on the side periphery of the tube. This chimney preferably forms, at one end, the fastening for a beach umbrella or other accessories, such as an ashtray. This chimney is preferably fixed passing, with an own lower part, through a partition arranged in (or above) said jacket for containing the flame.

[0032] According to another aspect, the invention also relates to a system and/or a method for heating a table according to one or more of the preferred embodiments described above or combinations thereof; this system and/or method comprises the steps of arranging a fuel cartridge inside an housing container and of fastening said container to said combustion structure in a reversible manner; said fuel may be ignited before or after said step of reversible fastening to said structure.

Brief description of the drawings

[0033] Further characteristics and advantages of the invention will be more apparent from the description of some preferred, although not exclusive, embodiments, illustrated by way of non limiting example in the attached tables of drawings, wherein:

figure 1 is a 3/4 perspective view from the top of a table according to the invention;

figure 2 is a 3/4 perspective view from the bottom of the table of figure 1;

figure 3 is an axial front sectional view of the table of the previous figures;

figure 4 is an enlargement of a detail of figure 3;

figure 5 is an exploded axonometric view of the cartridge housing container of the table of the previous figures;

figure 6 is a sectional view according to the line VI-VI of figure 5 of a portion of the container with the cartridge;

figure 7 is a view of the fuel cartridge according to the plane VII-VII of figure 5;

figure 8 is a front axial sectional view of a portion of a variant of the table according to the invention illustrated in the previous figures;

figure 9 is a front axial sectional view of a further variant of the tables according to the invention illustrated in the previous figures;

figure 10 is an enlargement of a detail of figure 9;

figure 11 is an alternative embodiment of the method for fixing the assembly legs-inner jacket-partition.

Detailed description of an embodiment of the invention

[0034] With reference to the previously listed figures, a heating table according to the present invention is indicated as a whole with number 10; it comprises an upper top 11, that in this example is circular in shape, and a support structure on the ground 12 for bearing the top 11.

[0035] This support structure 12 comprises, in this example, four uprights 13, adequately shaped, having upper end portions 13A horizontally folded or shaped to define the support (and fastening) for the top 11, lower end portions 13B, folded or shaped to define feet for resting on the ground, and rectilinear central portions 13C, preferably arranged symmetrically with respect to the table central axis X. A stiffening strut or further upright 13D is preferably provided between the upper and lower end portions 13A and 13B of a respective upright.

[0036] The uprights 13 are fixed to common annular spacers 14, that in this example are three in number and have round shape, essentially toroidal bodies. In other embodiments these spacers may be in greater or lower number and have different shape.

[0037] These spacers 14 surround the table central axis X, and are preferably coaxial with it. In this example these spacers 14 are fixed to the rectilinear central parts 13C of the uprights 13 through threaded elements 14A.

[0038] According to the invention, the table 10 is provided with an autonomous heat source that can be actuated; this source is arranged below the top 11, is of the flame type, and comprises a combustion structure 15 provided with a fuel tank 16. Both the combustion structure 15 and the tank 16 are arranged below the top 11.

[0039] Reversible fixing means are preferably provided for fixing the tank 16 to the combustion structure 15 (or to other structure, if necessary), better described below and substantially allowing to remove the tank 16, when it is empty, and to mount it again after having recharged it.

[0040] According to a preferred embodiment, the tank 16 is provided with a cartridge 16A of fuel C that must be replaced each time the fuel is exhausted. Opportunely, according to a preferred example, this cartridge 16A is of the disposable single-use type. In other embodiments this cartridge may be filled again and re-used.

[0041] Preferably, the fuel is ethanol or ethanol-based (or also bioethanol, methanol or other fuels), and may contain a repellent, for instance citronella, for mosquitoes or other insects. Advantageously, the fuel is preferably a gel, thus significantly decreasing the risk of fuel leakages from the cartridge in case the table is accidentally hit. In other embodiments the fuel may be liquid. In this case means associated with the tank may be provided for preventing, or at least limiting, liquid leakages in case the table accidentally overturns.

[0042] In other embodiments, in case of liquid fuel again, a material may be provided for absorbing the liquid, for instance a fiber material like synthetic wool, a sponge or the like. In some embodiments, in case of liquid

fuel again, a burner is associated with the tank. In other less advantageous embodiments fuel cartridges may be provided in the form of small disposable gas cylinders (in this case a burner is required), or cartridges filled with solid or semi-solid fuel.

[0043] In the described example, the tank 16 defines a container 16B in which the fuel cartridge 16A is housed and which is open upwards to let the combustion flame exit. The set container 16B - cartridge 16A is fixed to the combustion structure in a reversible manner, as better explained below. In other embodiments the tank 16 may be comprised of the only cartridge, fixed to the combustion structure (or to another structure) in a reversible manner without the need for a housing container. In other embodiments the housing container may be fixed to the combustion structure and the cartridge may be inserted into it, or fixed in a reversible manner to it.

[0044] Key security means, not shown in the figures, may be provided to prevent the tank from being separated from the combustion structure and to avoid unauthorized persons accessing the fuel. For example, when provided, with the cartridge housing container a lock or a slot for a padlock may be for instance associated, for example between container and structure, to avoid the removal of the container through rotation (or other movement) or the opening of the container door (in case the container is fixed to the structure and the cartridge is inserted into it through a door).

[0045] The combustion structure 15 comprises for instance a support base 17, to which the tank 16 is fixed in a reversible manner, for instance hung by this support base.

[0046] In this example the support base 17 is a plate fixed to an intermediate spacer 14, for instance screwed to it. In the middle of this plate 17 a through hole 17A is provided. The tank 16 is hung by this plate by the reversible fixing means. In this example, the housing container 16B of the cartridge 16A is hung by the plate.

[0047] The reversible fixing means for fixing the tank to the structure 15 preferably provide a bayonet coupling system 18, namely a system for joining together two bodies by inserting a part of the first body inside a respective cavity or groove of the second body, then rotating or translating said first body so as to bring the respective body part in an area defined in the second body undercut with respect to the direction of insertion or separation of the two bodies.

[0048] In the described example the container 16B housing the cartridge 16A is essentially a glass-shaped body, inside which the cartridge 16A is inserted (see in particular figures 5, 6, and 7). In this case, the bayonet system provides, for the tank 16, tabs 18A exiting from the upper edge of the container 16B and an abutment flange 18B below said tabs, and, for the plate 17, recesses (not shown in the figures) complementary to the tabs 18A, obtained on the edge of the through hole 17A, so that during coupling the tabs 18A pass through these recesses until the flange 18B abuts against the plate 17,

and then the container rotates bringing the tabs resting on the plate, thus allowing the container 18B to be hung by.

[0049] In more detail, the tank of this embodiment therefore comprises the container 16B, shaped like a glass and provided with an aperture 19A upwards, and the fuel cartridge 16A, housed inside the container 16B. In this example the glass-shaped body is substantially cylindrical; obviously, other shapes are also possible in other embodiments. In this example the cartridge is a glass-shaped body too, and contains the fuel C. This cartridge is open upwards, at the aperture 19A of the container, to allow the flame exiting from the cartridge and thus from the tank. The space occupied by the flame and the space immediately above is also called flame area and is indicated with F. In this example this flame area F is essentially the area above the tank aperture 19A.

[0050] In the container 16B an air intake 19B is provided, such as a hole preferably defined on the bottom of the container. This air intake 19B is in fluid communication with the aperture 19A through which the flame exits the container, and fresh air flows therefore towards the flame area. This fluid communication is obtained for example through an interspace 19C defined between the cartridge 16A and the inner walls of the container 16B. Essentially, the cartridge has a lower width than the inner width of the container 16B and is raised with respect to its bottom. Advantageously, rises 16A' are provided on the base of the cartridge 16A allowing to keep the cartridge lifted from the bottom of the container 16B. Adequately, indents 16B' are preferably also provided projecting from the inner walls of the container 16B and abutting against the cartridge to keep it in position so that it cannot move. Rises and lateral ensures the interspace and therefore the air circulation. Primarily, air circulation is necessary for combustion, and secondarily is useful to keep the temperature of the fuel cartridge case low.

[0051] In other embodiments one or more air intakes may be provided through the plate 17 or, anyway, in correspondence of the flame area.

[0052] With the tank 16B reversible closing means are associated for reversible closing of the upper aperture 19A to put the flame out. These means provide for instance a guillotine door 20A sliding in a slot 20B that is parallel to the plane of the same aperture and is obtained on the wall of the container 16B at a greater height than that of the upper end of the cartridge 16A. The door 20A substantially slides in the slot 20B and closes the aperture 19A, thus damping the flame down.

[0053] Preferably, the combustion structure 12 also comprises an inner jacket 21 surrounding the flame area F and extending towards the lower part of the top 11. In this example the inner jacket 21 is for instance a tubular body, preferably of cylindrical shape, extending substantially vertically from the proximity of the plate 17 towards the top 11. In this embodiment this inner jacket is advantageously fixed to the same screws 14A of the spacer 14

to which the plate 17 is fixed.

[0054] Favorably, in this example the inner jacket 21 has holes 21A through its thickness. Other embodiments may lack these holes. Preferably, the combustion structure 12 further comprises a further jacket 22 that surrounds the inner jacket 21 and is essentially formed by a tubular body preferably of cylindrical shape; in this way an annular chamber 23 is defined between the two jackets, having preferably apertures 23A and 23B towards the outer environment for the exit of the hot air. The outer jacket has for instance an end upper edge spaced from the top 11, thus defining an annular aperture 23A towards the outer environment of the chamber 23. Moreover, the outer jacket 22 preferably has small holes 23B through its thickness, defining apertures towards the outer environment.

[0055] The outer jacket 22 is preferably fixed between two annular spacers 14 and the rectilinear segments 13C of the uprights 13.

[0056] The outer jacket may be produced in a single tubular piece (as in the attached drawings), or in more pieces, for instance annular pieces arranged over one another or pieces with annulus-shaped cross section arranged adjacent to one another to form a tubular body (they may be for instance fixed or inserted between the table legs, for example inserted in adequate vertical guides associated with the legs).

[0057] Preferably the end upper edge of the inner jacket 21 is at a lower height than the upper edge of the outer jacket 22, i.e. the inner jacket is more spaced from the top 11 than the outer jacket.

[0058] Opportunely, both the outer jacket and the inner jacket are made of materials allowing you to see through them, for instance transparent or translucent materials, such as glass, polycarbonate, Perspex or the like, or also of net or grid structures. Obviously, in other embodiments the outer jacket or the inner jacket or both of them may be opaque.

[0059] One function of the inner jacket 21 is to convey the flame heat upwards and create an effect of both thermal radiation and convection, whilst one function of the outer jacket is to prevent clients from touching the high-temperature inner jacket.

[0060] Figure 8 shows a variant of the table described above. The main difference between them is the presence of a transverse partition 24 closing or covering at the top the inner jacket 21, in a gas-tight manner or not, in order to control the flame height and make the heat distribution uniform. This partition 24 preferably covers the jacket, as there are for instance holes through its thickness, not shown in the figures, and/or lateral space between it and the jacket for fumes and heat going upwards.

[0061] In this example the partition is fixed to the annular spacer 14 arranged in higher position. In other embodiments the partition may be fixed directly to the legs, for instance above the inner jacket, by means of pins, screws, or similar connections. Figure 11 shows a system

for connecting the partition 24 directly to the legs 13, wherein the inner jacket is firmly held in apposite insertion ap-pendixes 24' projecting from the partition downwards (the outer jacket is not shown in this figure). According to some embodiments, a thermal insulation disk 25 (indicated in figure 8) may be provided, put over the plan area occupied by the jackets and into contact with the lower part of the top 11, to avoid the excessive heating of this latter.

[0062] Figures 9 and 10 show a further embodiment of the table, wherein a chimney 25 is provided to convey at least part of the hot air from the inside of the inner jacket 21 towards an area above the top 11.

[0063] More in particular, the chimney 25 comprises a tube or sleeve 26 passing through a hole in the top 11. This tube 26 is provided with a first lower mouth 26A towards the inner jacket 21 and with a plurality of second mouths 26B on the tube periphery, preferably at a greater axial height than the height of the top (in other embodiments holes may be provided on the sleeve at a lower height than the top).

[0064] This chimney 25 preferably forms, at its upper end, the fastening for a beach umbrella 27 (or other accessories, such as an ashtray). The pole 27A of the beach umbrella is essentially fixed to the upper end 26C of the tube 26 in an opportune manner. In this example the chimney 25 is fixed to the partition 24 in correspondence of a through hole 24A thereof, the partition being preferably fixed to the upper annular spacer 14. In other embodiments the chimney may be directly fastened to the legs by means of screws, pins or similar connections, with or without partition and annular spacer. The examples described above refer to a "low" table, i.e. a table to be used with traditional chairs. however, the invention may be also applied to "high" tables, i.e. tables people use standing or sitting onto bar stools.

[0065] The invention also relates to a method or system for heating a table as that described above, providing for arranging a fuel cartridge 16A inside a housing container 16B and for fixing the container 16B to the combustion structure 12 in a reversible manner; according to the method, the fuel may be ignited before or after said step of fixing the container 16B to the structure 12 in a reversible manner. The fuel may be ignited for instance by putting a flame into direct contact with it. If the fuel is ignited after the container 16B has been fixed to the structure 12, ignition may occur for instance by inserting a flame body in an opportune passage, not shown in the figures, obtained on the container 16B or on the structure 12.

[0066] It is clearly apparent that the invention as illustrated above achieves the objects described above, as it allows simple, safe and economical heating.

[0067] It is understood that what illustrated above purely represents possible non-limiting embodiments of the invention, which may vary in forms and arrangements without departing from the scope of the concept on which the invention is based. Any reference numbers in the

appended claims are provided for the sole purpose of facilitating the reading thereof in the light of the description hereinbefore and the accompanying drawings and do not in any way limit the scope of protection of the present invention.

Claims

1. A heating table comprising an upper top (11), a support structure (12) on the ground for bearing said top and an autonomous heat source that can be actuated and is arranged below said top (11), wherein said heat source is of the flame type and comprises a combustion structure (15) provided with a tank (16) for the fuel (C), both arranged below said top (11).
2. Table according to claim 1, comprising reversible fixing means for fixing said tank (16) to said combustion structure (15).
3. Table according to claim 2, wherein said tank (16) is, or comprises, a fuel cartridge (16A).
4. Table according to claim 3, wherein said fuel cartridge (16A) is of the disposable single-use type.
5. Table according to claim 3 or 4, wherein said combustion structure (15) comprises a support base (17), to which said tank (16) is fixed in a reversible manner, said tank (16), when coupled to said support base (17), being usually open upwards through an upper aperture (19A) to leave the flame free when the fuel burns; said tank (16) being hung by said support base.
6. Table according to claim 5, wherein means (20A) for reversible closing of the upper aperture (19A) are associated with said tank (16) to put the flame out.
7. Table according to one or more of claims 2 to 6, wherein said tank (16) defines a container (16B) for housing said fuel cartridge (16A) open upwards to let the combustion flame exit.
8. Table according to claim 7, wherein at least one air intake (19B) towards the outside is provided in said housing (16B), obtained preferably in the lower part of said housing (16B), in fluid communication with the aperture (19A) through which the flame exits said housing (16B).
9. Table according to one or more of the previous claims, wherein said fuel (C) is flammable gel, preferably a gel of, or based on, one of the following: ethanol, bioethanol, methanol; said fuel preferably comprising a repellent for mosquitoes or other insects.

10. Table according to one or more of the previous claims, wherein said combustion structure (15) comprises an inner jacket (21) produced in one or more parts, surrounding the flame area (F) and extending towards the lower part of said top (11); said inner jacket (21) preferably presenting holes through its thickness. 5
11. Table according to claim 10, comprising a further jacket (22), produced in one or more parts, externally surrounding said inner jacket (21), extending towards the lower part of said top, between said inner jacket and said outer jacket a chamber (23) being defined, having at least one aperture (23A) towards the outer environment for hot air escape; said outer jacket (22) having preferably an end upper edge at least partially spaced from said top to define an aperture for said chamber (23) towards the outer environment; said inner jacket preferably having an end upper edge at least partially spaced from said top (11) to define an aperture towards said chamber (23); said outer further jacket (22) preferably having holes through its thickness, communicating with the outer environment. 10
15
20
25
12. Table according to claim 10 or 11, wherein said inner jacket is made of substantially transparent or translucent material, i.e. a material allowing you to see through it. 30
13. Table according to claim 11 or 12, wherein said outer jacket is made of substantially transparent or translucent material, i.e. a material allowing you to see through it. 35
14. Table according to claim 11, 12, or 13, wherein inside or above said inner jacket (21) a transverse partition (24) is provided, covering or closing at the top said inner jacket (21), in a gas-tight manner or not, in order to control the flame height and make the heat distribution uniform; said partition being preferably fixed to one said annular spacer; preferably some space being provided on said partition and/or between said partition and said inner jacket for fumes passage upwards. 40
45
15. Table according to at least claims 5 and 10, wherein said support structure comprises at least two uprights fixed transversally to at least one common annular spacer, to which said support base for said tank is fixed and with which said inner jacket is connected; said inner jacket being arranged inside the annular area defined by said spacer; said outer jacket being preferably fixed between said annular spacer and said at least two uprights. 50
55

Fig. 1

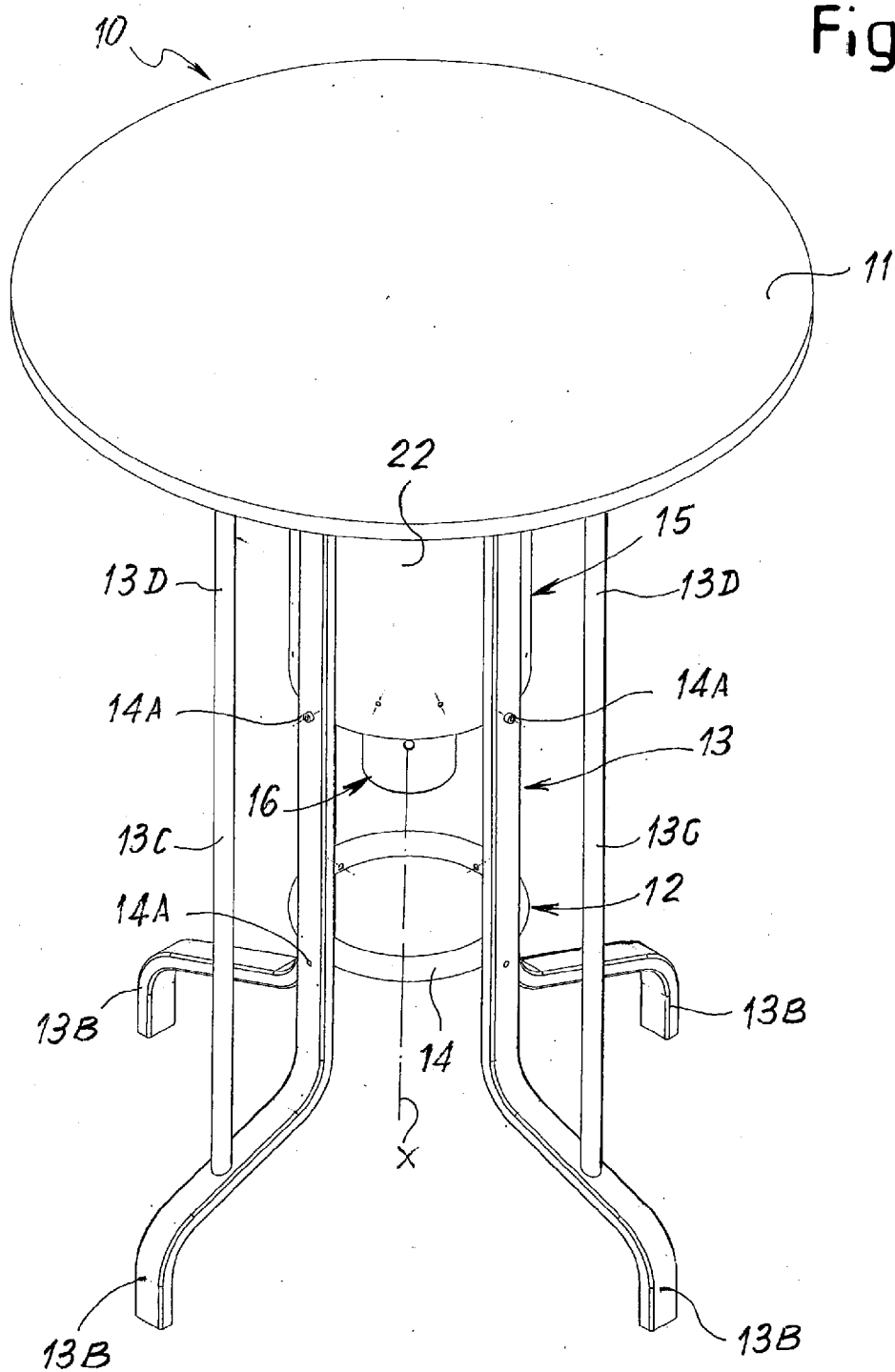


Fig. 3

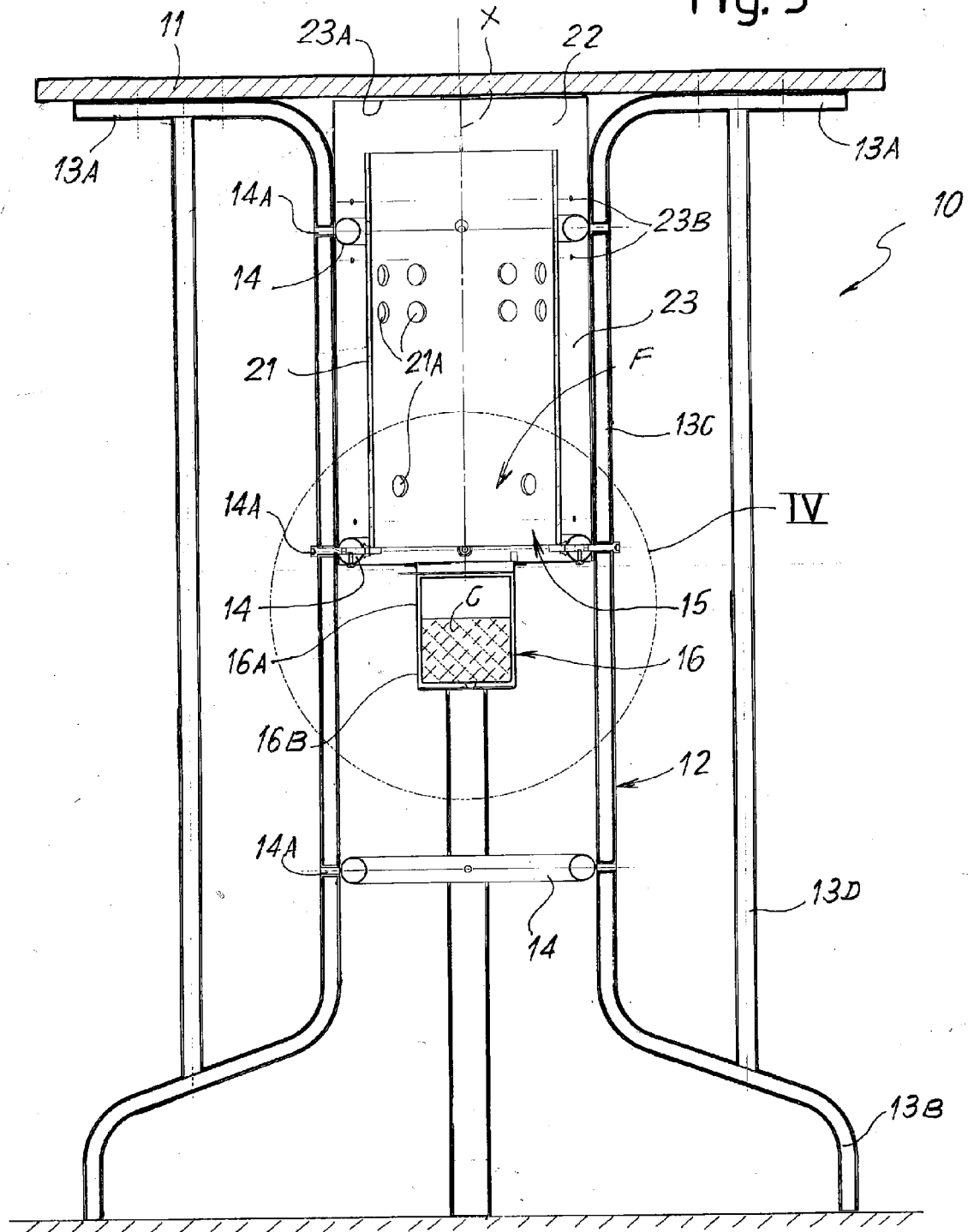
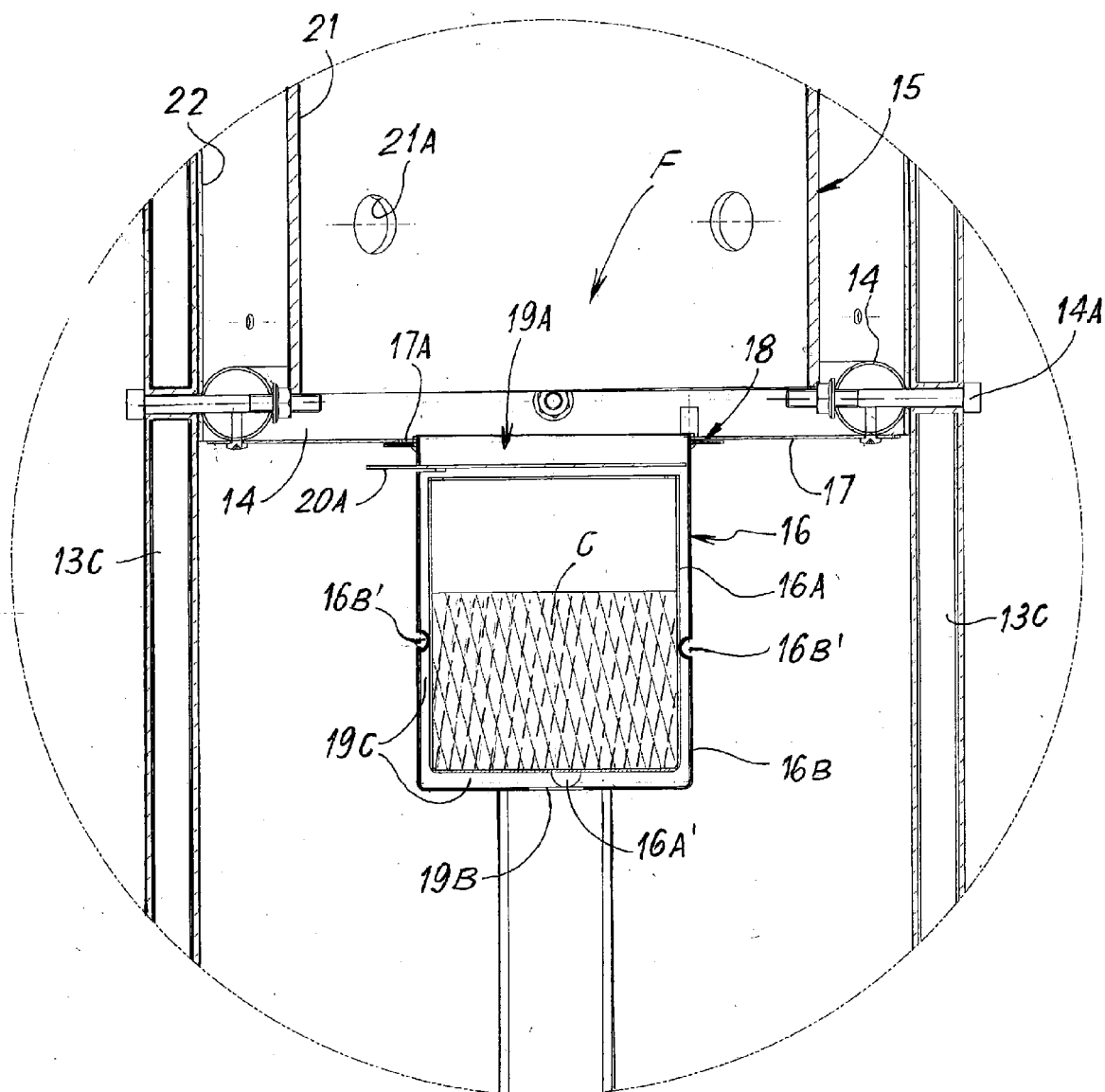


Fig. 4



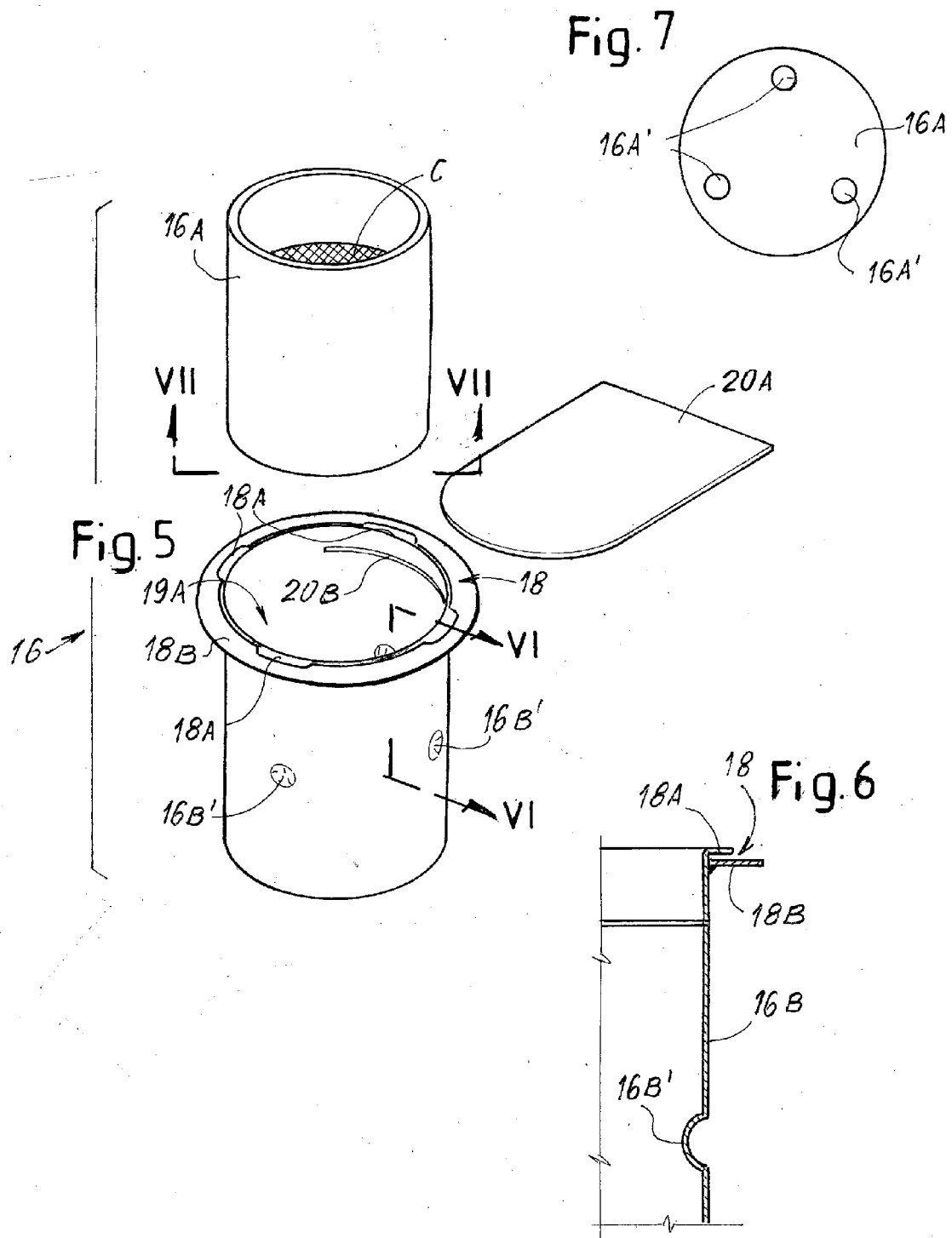
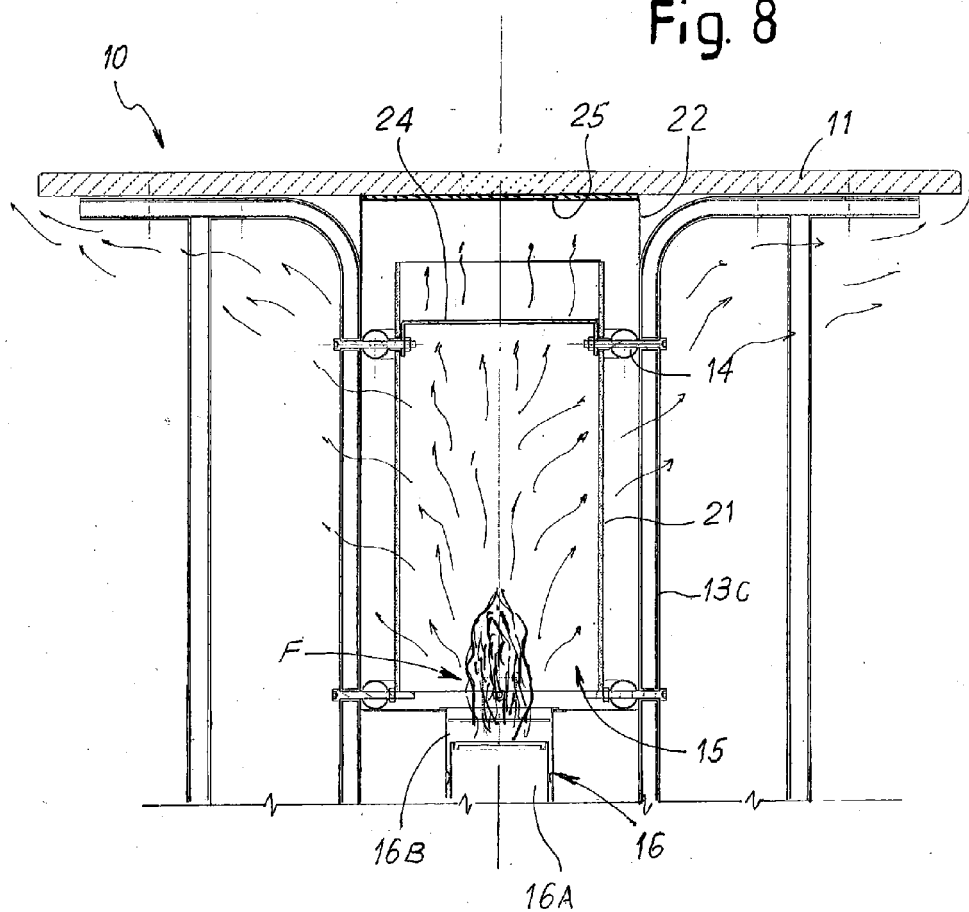


Fig. 8



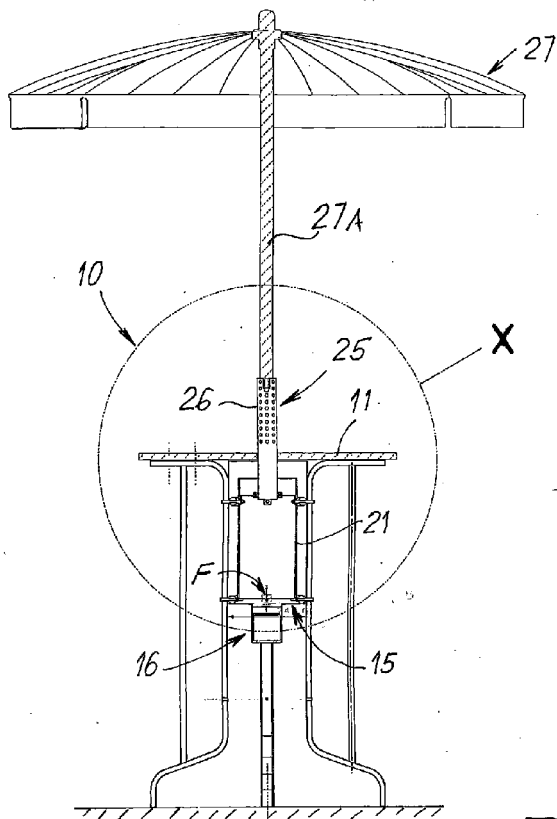


Fig. 9

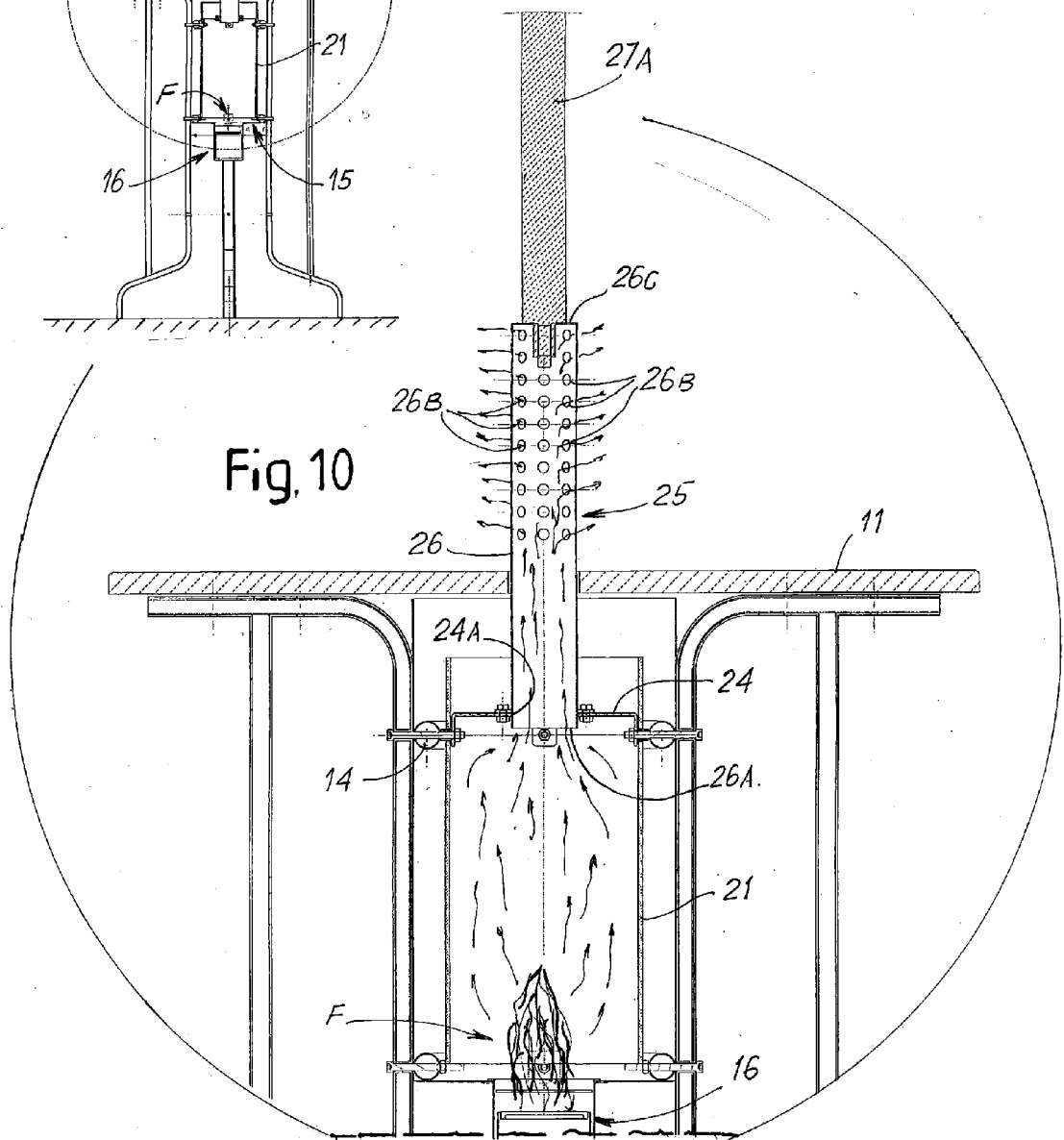
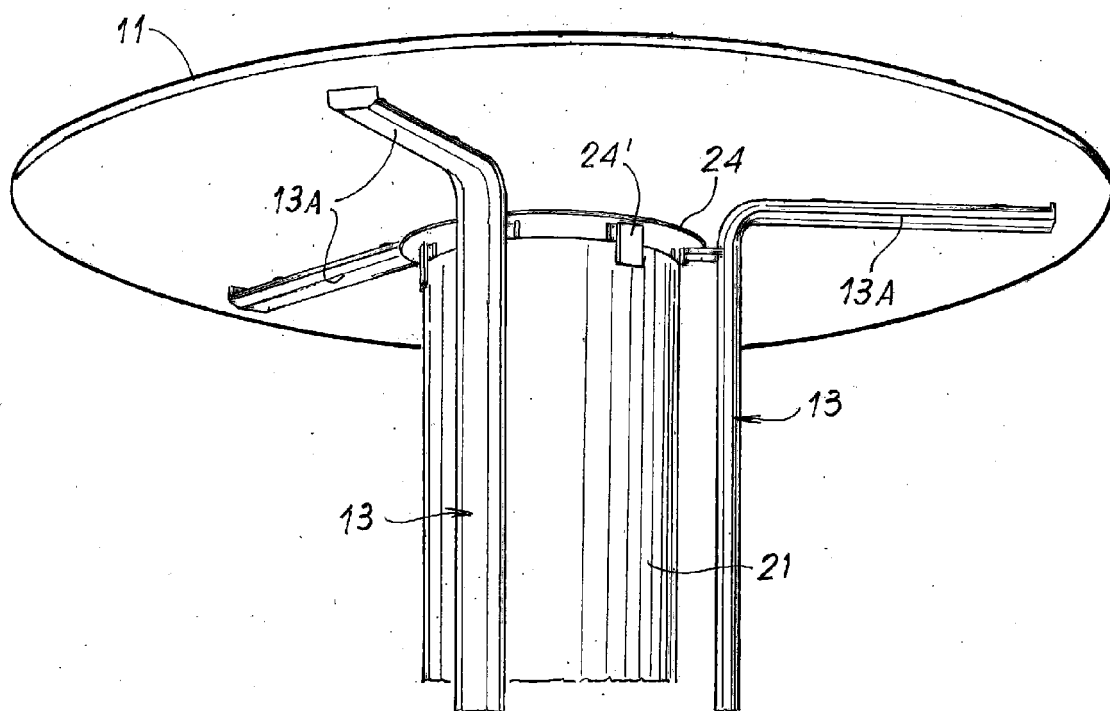


Fig. 10

Fig. 11





EUROPEAN SEARCH REPORT

Application Number
EP 13 16 8553

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	* column 10, line 20 - column 10, line 42; figure 11 *	6,9-15	
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 31 July 2013	Examiner Dartis, Daniel
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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