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(54) **Gas feeding arrangement for gas ranges**

(57) Gas from gas inlet (5) is mixed with pressurized air generated by a motor fan (1) in a mixer (4), which is essentially separated from the burner (8), which allows a lower pressure at the gas inlet (5) and an improvement at the calorific efficiency when the fuel and combustible arrive properly mixed to the burner (8). Besides, at the

mentioned burner (8) a turbulence effect for the mix is established, that improves it and homogenizes it before the mentioned mix comes out through a unique hole placed axially at the burner (8), specifically at a ring gear (28), next to which the classical burning pilot (11) and thermo couple (12) is placed.

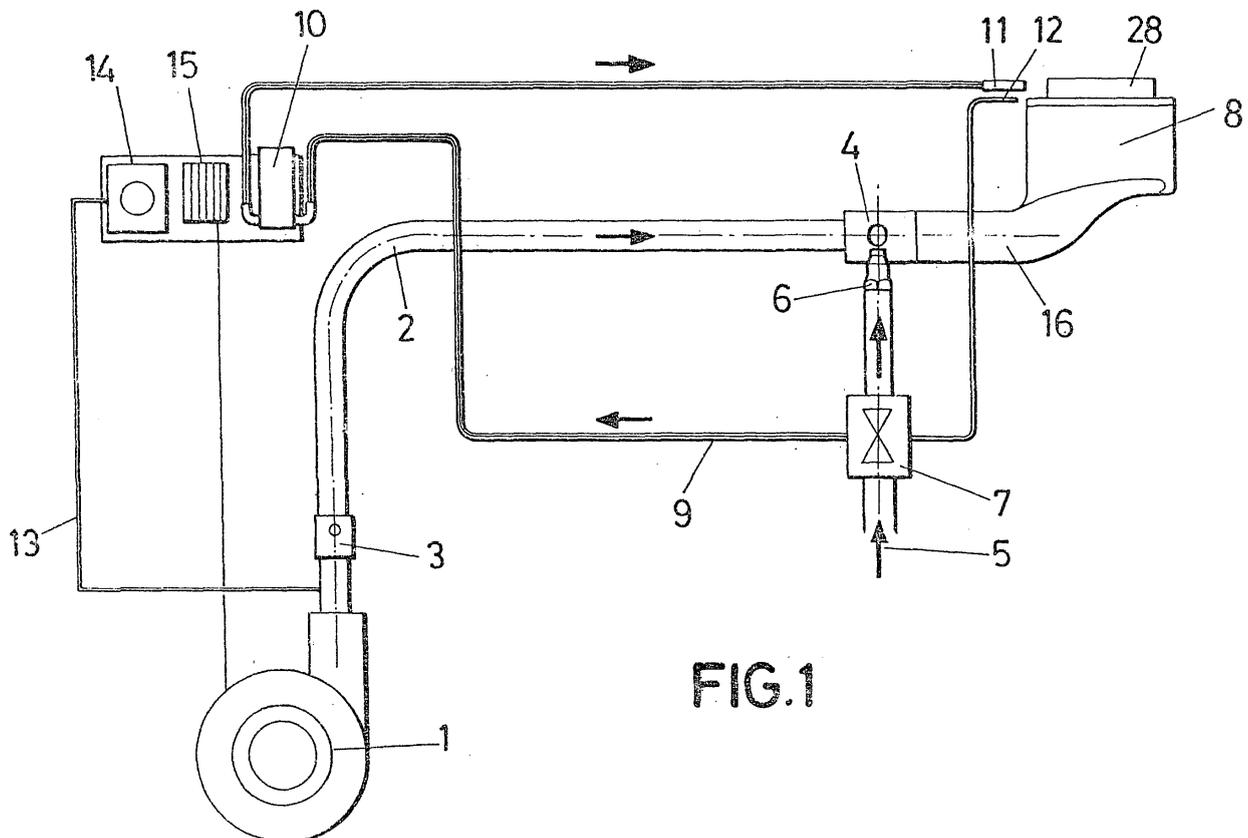


FIG.1

Description

OBJECT OF THE INVENTION

[0001] The present invention refers to a feeding group intended to supply the mix of fuel and combustible to the burner of a gas kitchen or any other similar device.

[0002] The purpose of the invention is to improve the calorific power of the mix, resulting in fuel saving and allowing in parallel the use of a lower gas pressure, which at the same time improves the safety characteristics of the installation, reducing the burner dimensions for the same calorific power.

BACKGROUND OF THE INVENTION

[0003] As everyone knows, gas burners usually used in kitchens and similar finish the fuel feeding tubing at a chamber equipped with a perimeter alignment of small holes, placed in a radial arrangement, through which the gas is distributed uniform and where it mixes with combustible air.

[0004] This solution involves problems consisting in the mix of gas and air is not produced in optimum conditions, therefore calorific power of the mix leaves much to be desired, affecting in a negative way the fuel efficiency.

[0005] On the other hand, these burners don't distribute ideally the heat on the base of the container, which is being heated, and the great profusion of existing holes at the burner makes it difficult to clean.

DESCRIPTION OF THE INVENTION

[0006] The fuel/combustible feeding group for gas kitchens and similar that the invention proposes resolves in a satisfactory way the above mentioned problems for the different commented issues.

[0007] For it and in a most precisely way the mentioned feeding group focuses its characteristics, one way, in the forced supply of the combustible, this means the air, by means of a blowing device as for example a motor-fan.

[0008] According to another invention characteristics the airflow mixes with the gas at a point substantially far from the burner, this means at a cold zone, far from the combustion point by means of the corresponding mixer, which improves the mix.

[0009] According to other of the invention characteristics the fuel/combustible mix circulates rotating at the cylinder zone of the burner, before reaching the combustion zone, that way turbulence in the mix is generated optimizing it and making it plainly homogeneous. In consequence, the combustion definitively improves.

[0010] According to other of the invention characteristics, the fuel-combustible mix passes from the annular chamber defined in the cylindrical zone of the burner body to an axial chamber of the burner, through a diversity of slotted holes, so this axial chamber determines one only

output hole, where the flame is produced. A stabilizing ring gear conveniently coupled to the burner cap frames the hole that fits the mouth of the burner body, which is determinant for the annular intermediate partition that separates the mentioned chambers.

[0011] The structure described is complemented by a thermal insulation cone that fits the burner body which insulates it conveniently from the other group devices and from other burners that could exist, which receives a removable collar through the top mouth for supporting the container to be heated.

[0012] Independently of the greater homogenization of the fuel/combustible mix and in consequence of the greater calorific power of the burner, the existence of a central and unique hole makes easier the exit of any sludge that may dispose in it, this means the cleaning of the burner to keep it in excellent operational conditions and the unique flame attacks the base of the container at its center, with an optimum calorific distribution upon the whole surface of the mentioned base.

[0013] Although, with the mentioned burner and due to the existence of an axial and unique output hole for the fuel/combustible mix, an only flame is produced at the bottom of the container, the mentioned flame and due to the effect of the mix turbulence diverges distinctly to the bottom of the container in many cases being desirable that this divergence is not produced and on the contrary, the fuel/combustible mix concentrates punctually on the mentioned container.

[0014] This way a burner variant performance is foreseen, materialized in a tubing of considerable length, provided with coupling means at the output of the burner. Tubing which by the other end is finished with a rising elbow provided with a bottom handhole with its corresponding cap and finished at the top in a nozzle materialized in a socket with the same diameter of the mentioned tubing and the elbow itself, which constitutes by itself the burner, incorporating at its outlet a crosspiece that acts as a mix concentrator.

DESCRIPTION OF THE DRAWINGS

[0015] To complement the description done and with the aim of helping for a better understanding of the invention characteristics, according to a preferential example of practical execution of itself, the mentioned descriptions is accompanied by a set of drawings which have illustrative but not limiter characteristics, the following has been presented:

Figure 1.- Shows a draft of a fuel/combustible feeding group for gas kitchens and similar performed according to the objective of the present invention, devoid of the thermal insulating cone and the supporting collar for the containers.

Figure 2.- Shows a detail of the lateral elevation and in section of the burner in which the cone and the

collar are incorporated.

Figure 3.- Shows a view in top perspective of the burner body.

Figure 4.- Shows a view in bottom perspective of the complementary cap of the body shown in the previous figure.

Figure 5.- Shows a view in top perspective of the cap.

Figure 6.- Shows a view in lateral elevation and in diametrical section of the performance variant foreseen for the burner, when a flame concentration is pretended at the outlet of the burner.

Figure 7.- Shows a top plan view of the burner of figure 6.

PREFERRED EMBODIMENT OF THE INVENTION

[0016] In full view of the mentioned figures and specially of the figure 1 it can be observed how in the feeding fuel/combustible group that the invention suggests a motor fan participates (1), in which the air outlet conduction (2) an air regulator is set (3), conduction finished in a mixer (4) where the gas coming from the general intake converges with the air (5), through an injector (6) fed by a valve (7), producing the mix substantially before the air and the gas reach the burner (8), as seen in figure 1.

[0017] Gas valve (7) through a deviation (9) in which a safety electro-valve is placed (10), feeds the classical pilot (11) located next to the burner (8), at the same time the gas valve is commanded by a thermocouple (12) which as conventionally interrupts the gas flow through the valve (7) when the pilot has no flame (11), this means when by any reason the burner is off.

[0018] At the air feeding conduct (2) a sample pressure (13) is set through a pressure gage (14), which at the same time controls the safety electro-valve (10), fed as the motor fan (1) from a group of electric connections (15).

[0019] At the burner (8) as seen in figure 2, participates a body, which corresponds with the own reference (8), basically cylindrical, with a lateral and bottom neck (16) for its coupling and connection to the mixer (4). The hole or conduct define by the neck (16) attacks tangentially the inside of the body (8) as shown in figure 3, where the outlet of the fuel/combustible mix has been referenced with (17) to generate a turbulence at the inside of the mentioned body (8).

[0020] The body (8) presents the top mouth staggered, for a tongue and groove connection of the cap (18) with a wide central hole (19), which extends as a bottom neck in which two sectors (20) and (21) of different diameter are defined, being this last one destined to connect to a hole (22) at the bottom of the body (8) and counting with a threaded sector (23) for its closure with the correspond-

ing plug (24) threaded in correspondence.

[0021] At the top sector and with a greater diameter (20) than the cap neck (18) a diversity of holes is established (25), distinctly slotted, specially visible in figure 4, through which the fuel/combustible mix passes from the chamber (26) set in between the cap neck and the burner body (8), to the chamber (27) defined by the neck of the cap itself, encouraging the turbulence effect before the mix comes out by the hole (19) of the cap, which is assisted by the coupled ring gear also tongued and grooved to the mouth of the mentioned hole (19), ring gear in which outlet the mix ignition is produced, at expenses of the flame supplied by the pilot (11).

[0022] Over the burner body (8) a cone is established (29), diverging is ascent direction which acts as thermal insulating element of the burner, which outstands essentially in reference to the ring gear (28) and which counts with a radial hole (30) next to the mouth, where the pilot (11) and thermocouple (12) is placed.

[0023] Upon the cone mouth (29) the collar is connected and grooved (31) which, with a considerable diameter, constitutes the supporting media for the containers to be heated.

[0024] However, and when a flame concentration is pretended at the burner outlet, it has been foreseen that the one shown in figures 1 and 5 is substituted by the one shown in figures 6 and 7, in which a tube (16') of any appropriate material, as for example stainless steel, brass or other, which in one of its ends (32) counts with the resources for its connection to the mixer (4), adopting an horizontal arrangement, and provided on its other end with the means for an elbow connection (33), of same pitch, provided with a lower handhole (34) with its corresponding closure plug (35) for maintenance operations of the whole, with the ending branch of the mentioned elbow (33) orientated upwards and finishing in a nozzle (36) provided at the same time with connection means to the mentioned elbow (33), the nozzle with the same diameter as the tube (16') that materializes in a cylindrical socket with a constant diameter, in which outlet (37) is placed, properly liable to itself, a crosspiece (38), this means a pair of crossed arms that divide the outlet (37) for the gas in four sectors alike of the circle quadrants and in this way achieving that the fuel/combustible mix comes out through the nozzle (6) without turbulences and concentrates before reaching the bottom of the container, acting almost punctually upon it.

Claims

1. Fuel/combustible feeding group for gas kitchens and similar, **characterized** cause in itself participates an air generator, materialized for example in a motor fan (1), which through the corresponding conduction (2) supplies air to a mixer (4) in which a gas injector (6) merges, assisted by its corresponding gas valve (11) so that the fuel/combustible mix is performed at

- a point significantly far from the burner (8-36).
2. Fuel/combustible feeding group for gas kitchens and similar, according to claim 1, **characterized by** the mentioned burner is constituted by a cylindrical body (8), extended at a lower and lateral neck (16) for its connection at the mixer outlet (4), the mentioned body closing at the top (8) by means of a cap (18) provided with a wide central hole (19) from which emerges to the inside of the burner body (8) a neck in which two cylindrical sectors of different diameter are defined (20) and (21), from which the bottom one (21) and smaller diameter is closed by means of a cap (24) the neck generating an annular chamber (26) enveloping of itself, in which the connection neck discharges to the mixer (4) and an internal chamber (27) defined by the neck itself (20-21) to which the fuel/combustible mix has access through a diversity of holes (25) placed at the top sector (20) of greater diameter. 5
 3. Fuel/combustible feeding group for gas kitchens and similar, according to previous claims, **characterized by** the connection neck (16) of the burner body (8) with the mixer (4), discharges in the inside of the chamber (26) through a tangential outlet (17) which generates a turbulence effect in the mentioned chamber to improve the fuel/combustible mix. 10
 4. Fuel/combustible feeding group for gas kitchens and similar, according to previous claims, **characterized by** the communication holes (25) in between annular chamber (26) and axial chamber (27) are distinctly sloped to generate also a turbulence effect inside the mentioned chamber (27). 15
 5. Fuel/combustible feeding group for gas kitchens and similar, according to previous claims **characterized** because at the outlet (19) hole of the chamber (27) defined by the cap (18) connects tongued and grooved a ring gear (28) which constitutes the only outlet hole for the fuel/combustible mix, above the one that is produced by the combustion of itself in one only flame. 20
 6. Fuel/combustible feeding group for gas kitchens and similar, according to previous claims, **characterized** because to the burner body (8) a thermal insulation cone (29) is connected distinctly diverging in ascendant direction, determinant of a wide top mouth which is over elevated referred to the ring gear (28) and distinctly separated from it to which a collar (31) for the support of the container to be heated, being the mentioned cone (29) provided with a radial conduct (30), next to its mouth, in which the burning pilot (11) and the thermocouple (12) are located, next to the outlet hole of the ring gear (28). 25
 7. Fuel/combustible feeding group for gas kitchens and similar, according to claim 1, **characterized** because the air feeding tube (2) counts with a pressure gage (14), which controls a safety electro-valve (10), which at the same time controls the classic burning pilot (11). 30
 8. Fuel/combustible feeding group for gas kitchens and similar, according to claims 1, 6 and 7, **characterized** because the burner (36) materializes in a cylindrical tube (16'), of remarkable length, provided at one of its ends (32) with connection means to the mixer (4) and by its other end receives an elbow (33) which determines for the tube (1) routing an inflection orthogonal and ascendant, finishing the mentioned elbow (33) in a nozzle (36), part of the burner itself, materialized at the same time in a cylindrical socket of constant diameter and matching with the one of original tube (16') and incorporating at the mentioned nozzle (36) at its mouth a crosspiece that divides the mouth in four circular sectors alike. 35
 9. Fuel/combustible feeding group for gas kitchens and similar, according to claim 8, **characterized** because at the bottom of the mentioned elbow a hand-hole is established with its corresponding plug for burner maintenance. 40

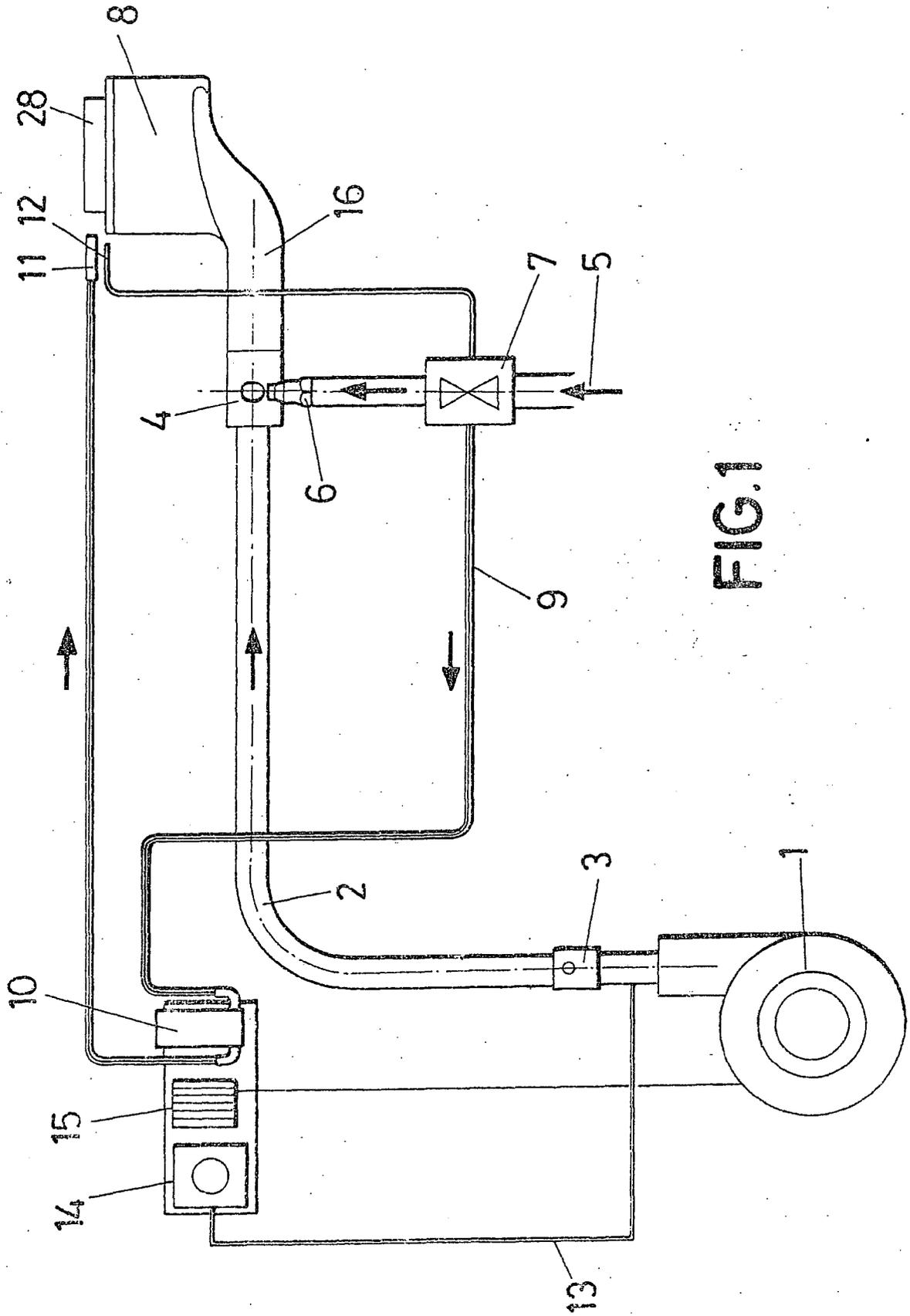


FIG.1

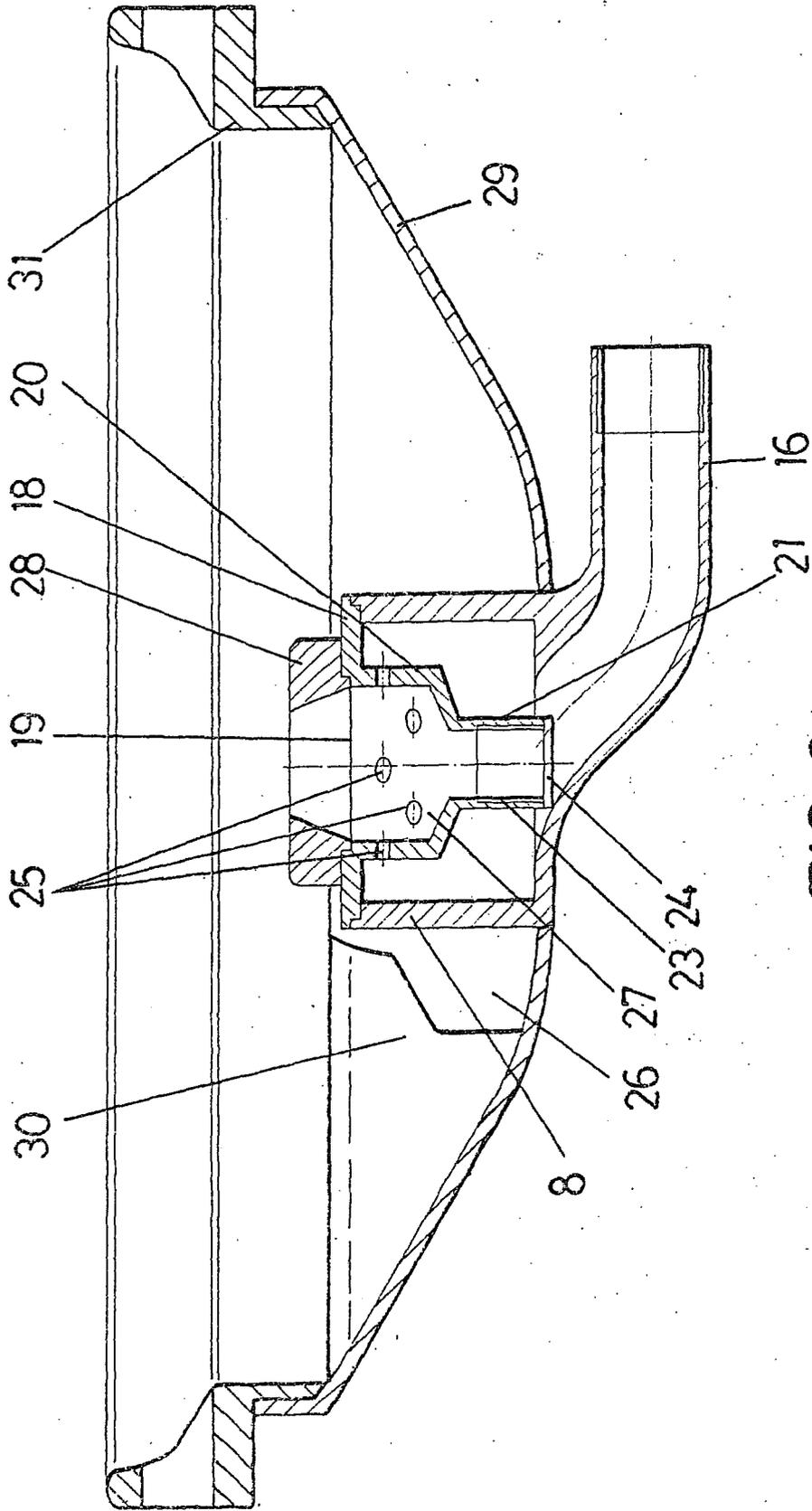


FIG. 2

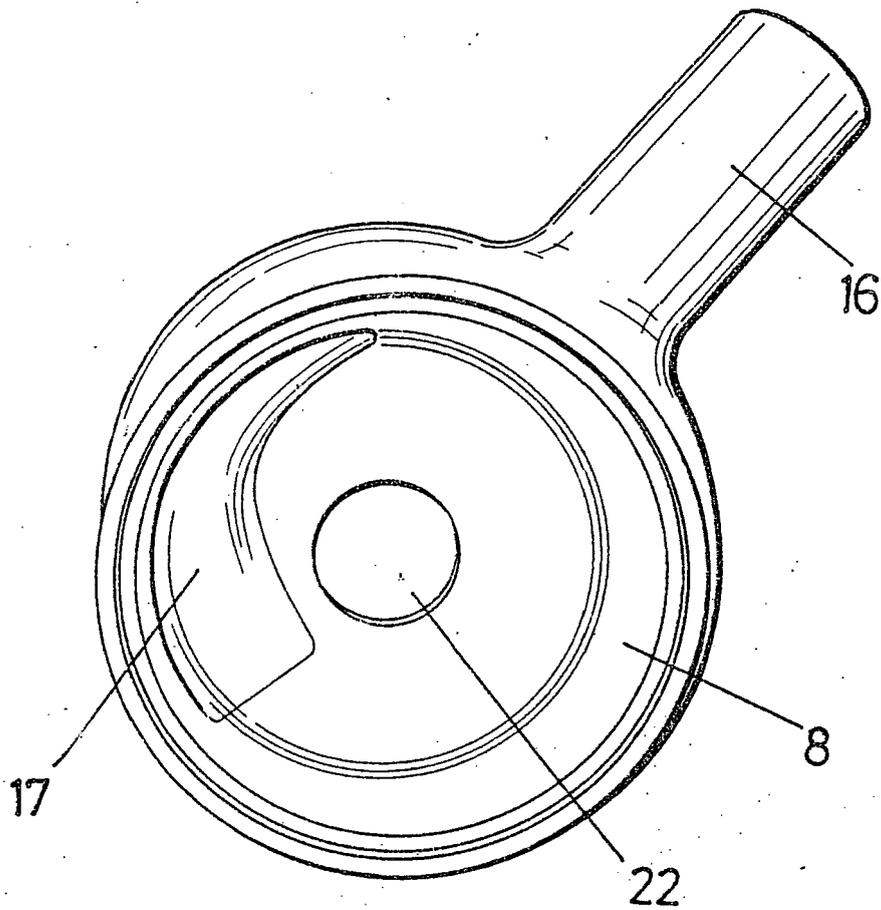


FIG. 3

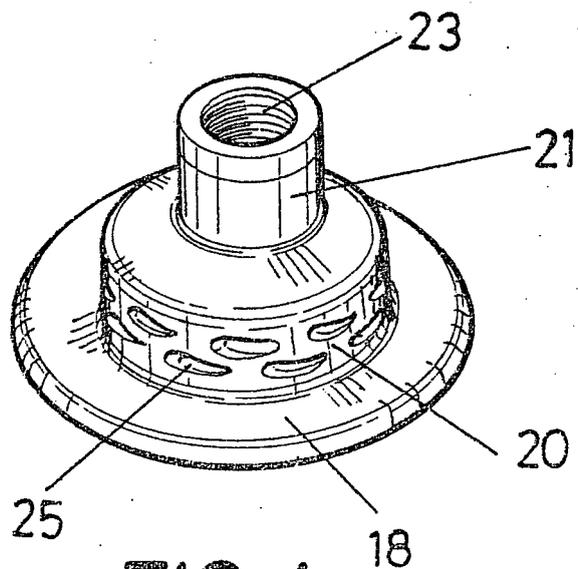


FIG. 4

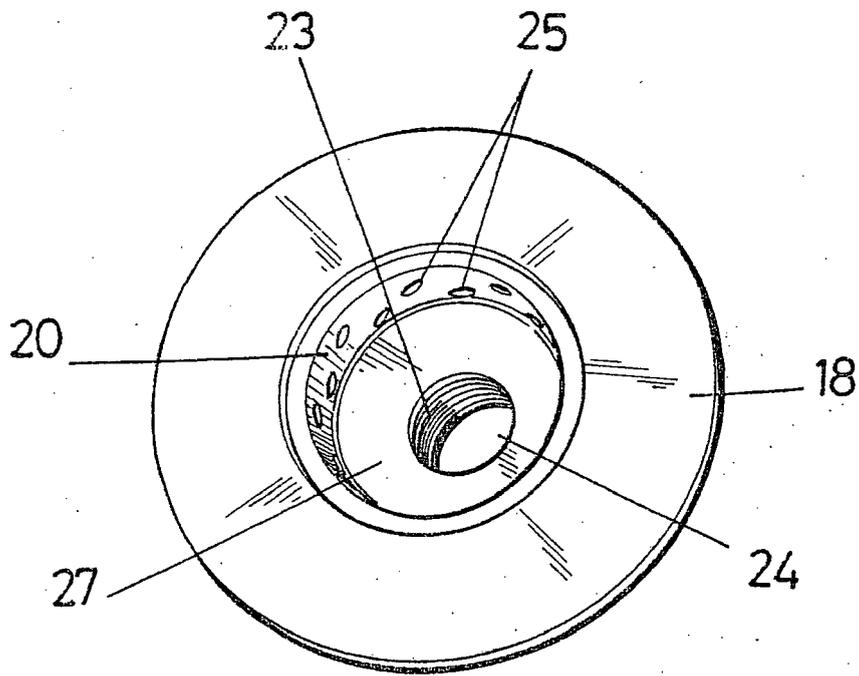


FIG.5

