(19) Europäisches Patentamt
European Patent Office
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(11) **EP 4 170 238 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
26.04.2023 Bulletin 2023/17

(21) Application number: **22202933.2**

(22) Date of filing: **21.10.2022**

(51) International Patent Classification (IPC):
F24C 3/08 *(2006.01)* ***F23D 14/02*** *(2006.01)*
F23D 14/58 *(2006.01)*

(52) Cooperative Patent Classification (CPC):
F24C 3/087; F23D 14/02; F23D 14/58; F24C 15/322

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

(30) Priority: **22.10.2021 IT 202100027188**

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(54) COOKING OVEN HEATED BY PREMIXED GAS

(57) The premixed gas firing kiln (1) comprises:
- at least one firing chamber (3);
- at least one heat assembly (4), arranged inside the firing chamber (3), adapted to heat it and comprising:
- at least one combustion chamber (6);
- at least one burner assembly (21, 22), arranged inside the combustion chamber (6) and provided with at least one burner head (20) and with feeding means (203, 205) for feeding the burner head (20) with the premixed fuel;

wherein:
- the burner head (20) comprises at least one receiving chamber (216) of the premixed fuel extending substantially centered along a direction of centering (X);
- the feeding means (203, 205) comprise at least one feeding pipe (205), connected in a fluid-operated manner to the receiving chamber (216), and extending along a direction of extension (Y) substantially transverse to the direction of centering (X), so as to introduce the premixed fuel inside the receiving chamber (216) in a turbulent manner.

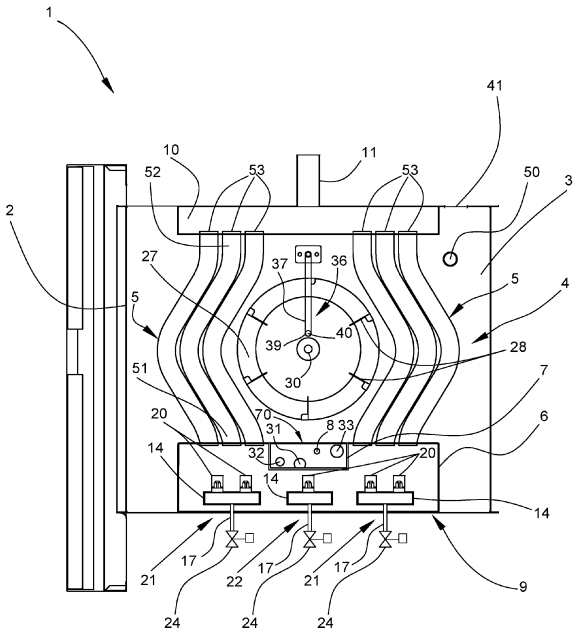

Fig. 1

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Description

Technical Field

[0001] The present invention relates to a convection kiln, for firing food with hot air and/or steam, in community, industrial and home kitchens.

Background Art

[0002] This particular category of kiln is referred to as "mixed" kilns because they provide the option of firing food by convection cooking and/or steaming.

[0003] As is well known, these kilns can use the produced steam in indirect or direct form.

[0004] In the first case, the kiln is provided with independent steam production means (water heater-boiler) which are placed outside the firing chamber, and when water is brought to the boiling point in the water heater, the steam is piped into the firing chamber of the kiln.

[0005] In the second case, steam is generated directly in the firing chamber by means of water dispensing means on the heating elements, such as electric heating elements or heat exchangers, which are heated by the smokes at temperature from gaseous fuel burners.

[0006] Specifically, the burners used by kilns of known type for heating the firing chamber make use of an inner tubular body, provided with holes for the combustible mixture to escape, and of an outer tubular body, closed on a head by a plate and provided with side holes from which the mixture used to develop a flame flows out.

[0007] Specifically, the mixture is fed into the inside of the tubular bodies along a feeding direction that substantially coincides with the axis of the same. Therefore, the direction of flame development extending from the side holes is substantially perpendicular with respect to such feeding direction of the mixture. In a third case, the kiln is provided both with independent steam production means (water heater-boiler) and with water dispensing means on the heating elements, wherein both systems operate alternately or simultaneously, depending on the firing requirements, to produce steam within the firing chamber.

[0008] In this regard, it is specified that, all convection kilns require heat sources to heat the volume of air within the firing chamber and consequently to achieve food firing.

[0009] Indirect steam production is preferred to direct steam production, as it allows firing with saturated steam at a constant temperature below 100°C, while direct steam production, having to take advantage of the heating elements of the firing chamber to spray water, produces steam defined as overheated at temperatures above 100°C. In addition, in low-temperature firing, e.g. below 70°C, in direct steam versions, the water that is dispensed to the heating elements of the firing chamber, is not completely transformed into steam and as a result there is an excessive concentration of water within the chamber itself and that adversely affects firing quality.

[0010] In the kilns of known type, the air is heated by means of the same electric heaters or heat exchangers provided with gaseous fuel burners, usually natural gas or liquefied petroleum gas (LPG).

[0011] A fan, around which heat exchangers or heating elements are wrapped, moves the air in the chamber in a way that promotes uniform firing.

[0012] Most kilns of the known type using electricity to produce heat employ circular heating elements formed by several branches in the shape of concentric circles a few millimeters apart from each other.

[0013] The use of electrically powered circular heating elements makes it possible to occupy relatively small spaces with respect to the total size of a firing chamber. Such kilns of known type have the main drawback related to the high electrical power consumption at the expense of energy savings.

[0014] In addition, in a professional kitchen there is a considerable increase in the electrical power committed and consequently the cost of electrical systems.

[0015] By using electricity during direct steaming, moreover, the useful surface area to spray water is very small and thus the production of large amounts of steam in a short time is not promoted.

[0016] In this case, the heating elements cool down when they are hit by water and the quality of steam is thus affected.

[0017] Known kilns using exchangers fed by gaseous fuel burners employ three types of burners:

- atmospheric, wherein the comburent air is naturally drawn in through a mixer exploiting the Venturi effect;
- premixed blown, with or without metal fiber, wherein the comburent air is produced by a fan and forcibly mixed in a mixer upstream of the burner;
- non-premixed blown, wherein the combustible fluid is drawn from a related duct without mixing it with the comburent fluid and wherein the union between the combustible fluid and the comburent fluid occurs at the time of flame formation.

[0018] It is well known that burners of blown type are preferable to atmospheric burners because of their better thermal efficiency, resulting in lower fuel consumption and avoiding unnecessary heat loss.

[0019] In addition, blown burners can achieve much higher heat outputs and are safer than atmospheric ones with respect to the danger of carbon monoxide poisoning.

[0020] All burners are properly connected to a heat exchanger within the firing chamber, where a fan promotes heat exchange.

[0021] Mixed kilns of known type are offered with at least two independent heat assemblies, one to heat the firing chamber and the other separate to generate steam.

[0022] To produce indirect steam, mixed kilns use water heaters and boiler steam generators which are separate from the firing chamber heating system and pro-

vided with further heating elements placed inside a container, into which a certain amount of water is fed, which, when brought to a boiling point, generates steam.

[0023] Gaseous fuel-supplied steam generators are provided with burners that, by means of combustion smokes flowing inside exchangers, bring water to a boiling point to generate steam.

[0024] In the case of electrically powered steam generators, on the other hand, there are electric heating elements immersed in the container into which the water used to generate steam is fed.

[0025] Kilns are also known to use the combustion smokes from the burner that heats the firing chamber exchanger to heat a further exchanger located inside the boiler to produce steam.

[0026] This type of kiln does however have some drawbacks.

[0027] A first drawback is related to the poor modulation and stability range of the flame generated by the burner used in the kilns of known type.

[0028] In addition, the burner geometry employed by the kilns of known type results in premixed fuel combustion characterized by excessive CO (carbon monoxide) and NOx (nitrogen monoxide and dioxide) emissions.

[0029] Again, the burner employed by the kilns of known type is particularly noisy during the operation thereof.

[0030] In addition, the burner employed by the kilns of known type has particularly high manufacturing costs also due to the manufacture of the inner tubular body and the relevant coupling to the outer tubular body.

[0031] Additionally, the burner employed by the kilns of known type is particularly prone to variation in the rate of fuel inflow and/or of flame propagation, which can cause inconvenient phenomena such as "backfiring" and/or "flame lift-off'. Moreover, the temperature unevenness on the surface of the burners employed by the kilns of known type forms micro-cracks that, as a result of the intense work cycles, gradually widen to cause real mechanical cracks in the burner with the real risk of explosion due to "backfiring".

[0032] Other drawbacks of the kilns of known type relate to the fact of not providing a burner to carry out only low-temperature steaming, as well as long times for steam production and the consequent impairment of thermal efficiency and firing quality.

[0033] This is compounded by the great complexity and high implementation costs due to the use of kilns employing two separate heat exchange assemblies with their control and regulation devices, as well as systems that allow the deflection of combustion products from the heat exchange assembly, used to heat the firing chamber, to the one used inside the boiler to produce steam.

[0034] Therefore, in order to reduce the complexity and number of devices used in gasfired mixed kilns, kilns are offered that use a burner provided with a single flame to heat the firing chamber, while a boiler using electric heating elements immersed in water is used to produce steam, with high electrical power consumption at the expense of energy savings and maintenance costs.

Description of the Invention

[0035] The main aim of the present invention is to devise a firing kiln that employs burner heads adapted to generate flames that can be selectively managed, with a wide modulation range and low and stable emissions at all operating powers. Another object of the present invention is to devise a firing kiln that allows the flame to be easily modulated and to ensure the stability thereof.

[0036] A further object of the present invention is to devise a firing kiln that allows combustion of the premixed fuel characterized by reduced CO (carbon monoxide) and NOx (nitrogen monoxide and dioxide) emissions.

[0037] An additional object of the present invention is to devise a firing kiln that is particularly quiet during its operation compared to the kilns of known type.

[0038] Still a further object of the present invention is to devise a firing kiln that simplifies the mechanical structure of the burner and makes it less prone to breakage and/or malfunction.

[0039] An additional object of the present invention is to devise a firing kiln that is less susceptible to variation in the rate of fuel inflow and/or flame propagation than the kilns of known type.

[0040] One object of the present invention is to devise a firing kiln that allows, selectively or in combination thereof, convection firing and steaming.

[0041] One object of the present invention is to devise a firing kiln that allows producing steam both directly and indirectly.

[0042] An additional object of the present invention is to devise a firing kiln with small overall dimensions.

[0043] Another object of the present invention is to devise a firing kiln which allows reducing energy consumption and maximizing the production output of the kiln itself, while reducing its environmental impact compared with kilns of known type.

[0044] Another object of the present invention is to devise a firing kiln which allows the mentioned drawbacks of the prior art to be overcome within the framework of a simple, rational, easy and effective to use as well as inexpensive solution. The aforementioned objects are achieved by this firing kiln having the characteristics of claim 1.

Brief Description of the Drawings

[0045] Other characteristics and advantages of the present invention will become more apparent from the description of a preferred, but not exclusive, embodiment of a firing kiln, illustrated by way of an indicative, yet non-limiting example, in the attached tables of drawings in which:

Figure 1 is a sectional view of the firing kiln according

to the invention;
Figure 2 is a side view of the firing kiln according to the invention;
Figure 3 is a top sectional view of the firing kiln according to the invention;
Figure 4 is a perspective view of a detail of the heat assembly of the firing kiln according to the invention.
Figure 5 is a sectional view of the firing kiln combustion head according to the invention.
Figure 6 is a perspective view of the firing kiln combustion head according to the invention.

Embodiments of the Invention

[0046] The premixed gas firing kiln 1 comprises:

- at least one firing chamber 3 defining at least one access opening 2 for the insertion and/or extraction of at least one product to be fired into/from the same firing chamber;
- at least one heat assembly 4, arranged inside said firing chamber 3, adapted to heat it and comprising:
  - at least one combustion chamber 6 inside which combustion of at least one premixed fuel takes place;
  - at least one burner assembly 21, 22, arranged inside said combustion chamber 6 and provided with at least one burner head 20 operable to develop, starting from the fuel, at least one flame adapted to heat said firing chamber 3 and with feeding means 203, 205 for feeding the burner head 20 with the premixed fuel.

[0047] Specifically, the burner head 20 comprises at least one receiving chamber 216 of the premixed fuel extending substantially centered along a direction of centering X.

[0048] In addition, the feeding means 200 comprise at least one feeding pipe 205, connected in a fluid-operated manner to the receiving chamber 216, and extending along a direction of extension Y substantially transverse to the direction of centering X, so as to introduce the premixed fuel inside the receiving chamber 216 in a turbulent manner.

[0049] Advantageously, the inclined arrangement of the feeding pipe 205 is adapted to impart to the premixed fuel a special swirling/spiral motion, with controlled turbulence, directed to optimize the course of the combustion process. Conveniently, the inclined arrangement of the feeding pipe 205 is adapted to impart to the premixed fuel a special swirling/spiral motion, with controlled turbulence, directed to optimize the course of the combustion process by reducing CO and NOx emissions.

[0050] Usefully, the swirling/spiral motion of the flame promotes the adherence of the same, to the burner head 20, thus avoiding the phenomenon of "flame lift-off'. Mixing between combustible fluid and comburent fluid is achieved, upstream of the burner head 20, by means of a suitable mixer of known type, preferably of the Venturi type, not shown in the figures.

[0051] Advantageously, the heat assembly 4 comprises:

- combustion heating means 9 which comprise the combustion chamber 6;
- steam heating means 70, provided with at least one evaporation chamber 7 of at least one working liquid for the production of steam adapted to heat the firing chamber 3.

[0052] In the preferred embodiment of the kiln 1, the heat assembly 4 comprises heat exchange means 5 provided with at least one conveying body 53 connected in a fluid-operated manner to the combustion chamber 6 to convey the combustion smoke through the firing chamber 3, and made of a thermally conductive material to transmit the heat of the combustion smoke to the firing chamber 3. In addition, the kiln 1 comprises dispensing means 36, arranged inside the firing chamber 3 and adapted to pour water onto the conveying body 53, so as to produce direct steam for the firing inside the firing chamber itself. Advantageously, the dispensing means 36 comprise an outlet opening 40 adapted to pour water onto the heat exchange means 5 to generate steam in direct form as well. The water dispensing means 36 may operate alternately or simultaneously, depending on firing requirements, with the steam production system generated by the steam heating means 70. In addition, the dispensing means 36 are of the type of a pipe 37 having a first end 38 for supplying water and a second end 39 provided with the outlet opening 40, through which water is conveyed at the heat exchange means 5 thus generating steam in a direct form.

[0053] Usefully, heat exchange means 5 are arranged inside the firing chamber 3 alongside at least one fan 27 that generates convective motion and keeps air moving during firing.

[0054] Preferably, the lower end 51 of the conveying body 53 feeds into the combustion chamber 6 and the upper end 52 is connected to a collector 10 collecting the combustion products, generated by the combustion heating means 9.

[0055] Preferably, the conveying body 53 is a tubular body.

[0056] An alternative embodiment cannot be ruled out wherein the firing chamber 3 comprises coupling means arranged at the connection between the combustion heating means 9 and the heat exchange means 5.

[0057] The possibility cannot be ruled out of connecting a duct 11, connected to the collector 10, to an impeller for the forced extraction of combustion smokes flowing in the heat exchange means 5, so as to increase heating uniformity and consequently thermal efficiency.

[0058] Advantageously, the heat exchange means 5 comprise a plurality of conveying bodies 53 which sub-

stantially surround, at least partly, the fan 27.

[0059] An electric motor 29 operatively connected to the fan 27, by means of the shaft 30, provides for the rotation of the fan itself around an axis of rotation, the motor 29 being arranged outside the firing chamber 3.

[0060] The fan 27 adapted to heat the atmosphere of the firing chamber 3 and to keep the air moving within the firing chamber itself can preferably rotate clockwise or counterclockwise.

[0061] The steam heating means 70 comprise a working liquid supply duct 8 for steam production, a working liquid discharge duct 31, level control means 32 of the working liquid, and a duct 33 which conveys the steam into the firing chamber 3 through the opening 50. The duct 33 is provided with a probe 34 that detects humidity and temperature and sends an electrical signal, to a logic unit, of known type and which operatively controls the kiln, so as to maintain steam production stable and constant.

[0062] The level control means 32 operate in conjunction with valve means 35 that intercept the working liquid supply duct 8 and can be connected to the water mains.

[0063] The working fluid is preferably water.

[0064] Conveniently, the heat assembly 4 comprises at least one of:

- at least one combustion burner assembly 21 operable to develop at least one flame adapted to produce the combustion smoke; and
- at least one evaporation burner assembly 22 operable to develop at least one flame adapted to heat the evaporation chamber 7 to produce the steam, and comprising:
  each burner assembly 21, 22 comprising:
  - at least one burner head 20, placed inside the combustion chamber 6 and adapted to generate the flame;
  - at least one collector body 14, operatively connected to the burner head 20 and adapted to house the premixed fuel to feed the flame.

[0065] In this way, the evaporation burner assembly 22 provides for the heating of the evaporation chamber 7.

[0066] Usefully, the collector bodies 14 are arranged inside the combustion chamber 6.

[0067] The heads 20 generate flames arranged vertically on the same axis as the heat exchange means 5. The heads 20 of the burner assemblies 21 generate the combustion smokes flowing through the heat exchange means 5 which, by convective motion generated by the fan 27, heat the firing chamber 3.

[0068] The combustion smokes of the burner assemblies 21, 22, are evacuated from the heat exchange means 5 and the exhaust collector 10 by means of the duct 11. Means of ignition and flame presence detection of known type are arranged in the proximity of the burner heads 20 so as to ignite the flames and detect the presence thereof.

[0069] Advantageously, the burner head 20 of the evaporation burner assembly 22 is placed in the proximity of the evaporation chamber 7, so as to allow the flame to evaporate the working liquid.

[0070] This form of heating of the evaporation chamber 7, directly with the temperature of the flame, allows steam to be produced substantially instantaneously for the benefit of energy saving and thermal efficiency of the kiln. In addition, in this way, there is no need for accumulation and pre-heating forms of the working liquid used for evaporation.

[0071] Appropriately, the burner head 20 of the evaporation burner assembly 22 is spaced away from the evaporation chamber 7.

[0072] Advantageously, the kiln 1 comprises inlet means 17 connected to one or more of the collector elements 14 in a fluid-operated manner to supply the latter with premixed fuel.

[0073] In particular, the inlet means 17 are configured to adjust the inflow of premixed fuel supplied to each of the collector elements 14. Preferably, the inlet means 17 are configured to adjust the inflow of premixed fuel supplied to each of the collector elements 14 in a selective manner.

[0074] Conveniently, the kiln 1 comprises control means 24 configured to operate one or more of the burner assemblies 21, 22.

[0075] Preferably, the control means 24 are configured to operate one or more of the burner assemblies 21, 22 in a selective manner.

[0076] Preferably, the control means 24 are configured to adjust the output of the combustion heating means 9 and the operation of the burner assemblies 21, 22 by appropriately choking the premixed fuel flow rates.

[0077] During a steaming process, the burner assemblies 21 will remain off, while the evaporation burner assembly 22 will be on and the flame generated by at least one burner head 20 will heat the working fluid of the evaporation chamber 7.

[0078] It should be noted that the evaporation burner assembly 22, adapted to heat the evaporation chamber 7, is provided with at least one head 20 that generates the heat necessary to transform the working liquid into steam, without generating a deviation of temperature of the firing chamber 3 and the temperature set-point set by the user during steaming. This is made possible by the fact that the evaporation burner assembly 22 provides for the heating of the evaporation chamber 7 directly with the flame temperature and is configured so that the output can be modulated. Thus steam will be generated substantially instantaneously and the flame at low operating powers will remain on for small intervals of time.

[0079] According to the invention, the heat assembly 4 comprises at least two combustion burner assemblies 21 and at least one evaporation burner assembly 22 positioned between the two combustion burner assemblies 21.

[0080] It cannot be ruled out that the firing chamber 3 comprise a baffle element that divides the firing chamber itself into a heat exchange area and a firing area within which, by means of the same, hot air and/or steam are distributed more evenly.

[0081] It cannot, however, be ruled out that the firing chamber 3 comprise at least one upper opening 41, arranged at the upper wall of the firing chamber itself for the evacuation of excess vapors during firing, and a lower opening 42, arranged at the lower wall of the firing chamber itself for the discharge of condensate or water used for washing.

[0082] Conveniently, the burner head 20 comprises:

- at least one head body 206 on which the receiving chamber 216 is made;
- at least one inlet body 204 on which the feeding pipe 205 is made. Specifically, the head body 206 and the inlet body 204 are coupled in a removable manner to each other to connect the feeding pipe 205 to the receiving chamber 216 in a fluid-operated manner.

[0083] Usefully, the inlet body 204 comprises an abutment edge 208, which is arranged to stop against the inner surface of the head body 206 when the inlet body 204 and the head body 206 are coupled together.

[0084] Advantageously, the inlet body 204 is arranged so that the feeding pipe 205 faces one end of the receiving chamber 216.

[0085] Preferably, the receiving chamber 216 comprises a flared mouth 207, arranged substantially at one end of the receiving chamber 216 opposite the end onto which the inlet body 204 faces, and through which the flame propagates outwards from the receiving chamber itself. In more detail, the receiving chamber 216 has conformation such that it open wide in the direction of flame spread and propagation, that is, towards the flared mouth 207.

[0086] Appropriately, the feeding means 200 comprise at least one feeding channel 203, connected in a fluid-operated manner to the receiving chamber 216, and extending along a direction of development Z substantially transverse to the direction of centering X, so as to introduce the premixed fuel inside the receiving chamber 216.

[0087] Specifically, the feeding channel 203 is separate from the feeding pipe 205.

[0088] In addition, the inlet body 200 comprises at least a first inlet body 204 on which the feeding pipe 205 is made and at least a second inlet body 202 on which the feeding channel 203 is made.

[0089] The first inlet body 204 preferably has a ring conformation centered substantially along the axis of centering X.

[0090] Preferably, the second inlet body 202 has a substantially elongated conformation and extends substantially along the direction of centering X. Specifically, the first inlet body 204 surrounds the second inlet body 202, by surrounding it in a ring pattern.

[0091] It cannot, however, be ruled out that the second inlet body 202 have a ring conformation centered substantially along the axis of centering X.

[0092] It cannot, however, be ruled out that the first inlet body 204 have a substantially elongated conformation and extends substantially along the direction of centering X.

[0093] Conveniently, the feeding pipe 205 is arranged at a different distance from the axis of centering X with respect to the distance between the latter and the feeding channel 203.

[0094] The aforementioned distance allows the premixed fuel dispensed by the feeding channel 203 to join the swirling flow of the premixed fuel dispensed by the feeding pipe 205.

[0095] In particular, the swirling motion of the premixed fuel dispensed by the feeding pipe 205 creates a kind of vacuum at the feeding channel 203. In fact, the feeding pipe 205 and the feeding channel 203 are spaced suitably apart from each other so that the feeding channel 203 is located at this vacuum.

[0096] This expedient promotes the flame attachment (avoiding lift-off) and allows the flow of premixed fuel coming from the feeding channel 203 to join the swirling flow of the premixed fuel dispensed by the feeding pipe and thus to participate evenly in the flame development which is generated by the burner head 20. Appropriately, the feeding means 200 comprise a common channel 210, connected to the feeding pipe 205 and to the feeding channel 203 in a fluid-operated manner and adapted to introduce the premixed fuel inside the latter. According to the invention, the feeding means 200 comprise a plurality of feeding pipes 205 arranged substantially parallel to each other. Advantageously, the feeding means 200 comprise a plurality of feeding channels 203 arranged substantially parallel to each other.

[0097] Usefully, the feeding pipes 205 are arranged in a circular pattern around the axis of centering X.

[0098] Appropriately, the feeding channels 203 are arranged in a circular pattern around the axis of centering X.

[0099] Conveniently, the feeding pipe 205 defines at least one feeding opening 225 of the premixed fuel inside the receiving chamber.

[0100] Advantageously, the feeding channel 203 defines at least one feeding port 223 of the premixed fuel inside the receiving chamber.

[0101] Usefully, the feeding opening 225 is arranged along the direction of centering X at a different height from the height of the feeding port 223.

[0102] According to the invention, the first inlet body 204 and the second inlet body 202 are made in a single body piece.

[0103] It has in practice been ascertained that the described invention achieves the intended objects.

[0104] In particular, the fact is emphasized that the burner head enables the generation of flames that can be selectively managed, with a wide modulation range and low and stable emissions at all operating powers.

[0105] In addition, the burner head allows the flame to be easily modulated and ensures the stability thereof.

[0106] In addition, the burner head enables the combustion of the premixed fuel with reduced CO (carbon monoxide) and NOx (nitrogen monoxide and dioxide) emissions.

[0107] Again, the burner head allows for a reduction in the operating noise of the kiln. Additionally, the mechanical structure of the burner head is particularly simple, making it very resistant to breakage and/or malfunction.

[0108] In addition, the burner head makes the firing kiln less susceptible to variation in the rate of fuel inflow and/or flame propagation than the kilns of known type. In addition, the burner head allows manufacturing a firing kiln that allows, selectively or in combination thereof, convection firing and steaming.

[0109] Again, the burner head allows, selectively or in combination thereof, convection firing and steaming.

[0110] In addition, the burner head, in combination with the steam heating means and the dispensing means, allows indirect and direct steam production. Additionally, the burner head in combination with the mutual arrangement of the combustion chamber and of the evaporation chamber allows reducing the kiln overall dimensions.

[0111] In addition, the burner head makes it possible to reduce energy consumption and to maximize the production output of the firing kiln, thus reducing the environmental impact compared with gas appliances of known type.

Claims

1. Premixed gas firing kiln (1), comprising:

- at least one firing chamber (3) defining at least one access opening (2) for the insertion and/or extraction of at least one product to be fired into/from the same firing chamber;
- at least one heat assembly (4), arranged inside said firing chamber (3), adapted to heat it and comprising:
  - at least one combustion chamber (6) inside which combustion of at least one premixed fuel takes place;
  - at least one burner assembly (21, 22), arranged inside said combustion chamber (6) and provided with at least one burner head (20) operable to develop, starting from the fuel, at least one flame adapted to heat said firing chamber (3) and with feeding means (203, 205) for feeding said burner head (20) with the premixed fuel;

characterized by the fact that:

- said burner head (20) comprises at least one receiving chamber (216) of the premixed fuel extending substantially centered along a direction of centering (X);
- said feeding means (203, 205) comprise at least one feeding pipe (205), connected in a fluid-operated manner to said receiving chamber (216), and extending along a direction of extension (Y) substantially transverse to said direction of centering (X), so as to introduce the premixed fuel inside said receiving chamber (216) in a turbulent manner.

2. Kiln (1) according to claim 1, **characterized by** the fact that said burner head (20) comprises:

- at least one head body (206) on which said receiving chamber (216) is made;
- at least one inlet body (200) on which said feeding pipe (205) is made;

said head body (206) and said inlet body (200) being coupled in a removable manner to each other to connect said feeding pipe (205) to said receiving chamber (216) in a fluid-operated manner.

3. Kiln (1) according to one or more of the preceding claims, **characterized by** the fact that:

- said feeding means (203, 205) comprise at least one feeding channel (203), connected in a fluid-operated manner to said receiving chamber (216), and extending along a direction of development (Z) substantially transverse to said direction of centering (X), so as to introduce the premixed fuel inside said receiving chamber (216), said at least one feeding channel being separate from said feeding pipe (205);
- said inlet body (200) comprises at least a first inlet body (204) on which said feeding pipe (205) is made and at least a second inlet body (202) on which said feeding channel (203) is made.

4. Kiln (1) according to one or more of the preceding claims, **characterized by** the fact that said feeding pipe (205) is arranged at a different distance from said axis of centering (X) with respect to the distance between the latter and said feeding channel (203).

5. Kiln (1) according to one or more of the preceding claims, **characterized by** the fact that said feeding means (203, 205) comprise a common channel (210), connected to said feeding pipe (205) and to said feeding channel (203) in a fluid-operated manner and adapted to introduce the premixed fuel inside the latter.

6. Kiln (1) according to one or more of the preceding claims, **characterized by** the fact that said feeding

means (203, 205) comprise a plurality of feeding pipes (205) arranged substantially parallel to each other.

7. Kiln (1) according to one or more of the preceding claims, **characterized by** the fact that said feeding means (203, 205) comprise a plurality of feeding channels (203) arranged substantially parallel to each other.

8. Kiln (1) according to one or more of the preceding claims, **characterized by** the fact that:

- said feeding pipes (205) are arranged in a circular pattern around said axis of centering (X);
- said feeding channels (203) are arranged in a circular pattern around said axis of centering (X).

9. Kiln (1) according to one or more of the preceding claims, **characterized by** the fact that:

- said feeding pipe (205) defines at least one feeding opening (225) of the premixed fuel inside said receiving chamber;
- said feeding channel (203) defines at least one feeding port (223) of the premixed fuel inside said receiving chamber;
- said feeding opening (225) is arranged along said direction of centering (X) at a different height from the height of said feeding port (223).

10. Kiln (1) according to one or more of the preceding claims, **characterized by** the fact that said first inlet body (204) and said second inlet body (202) are made in a single body piece.

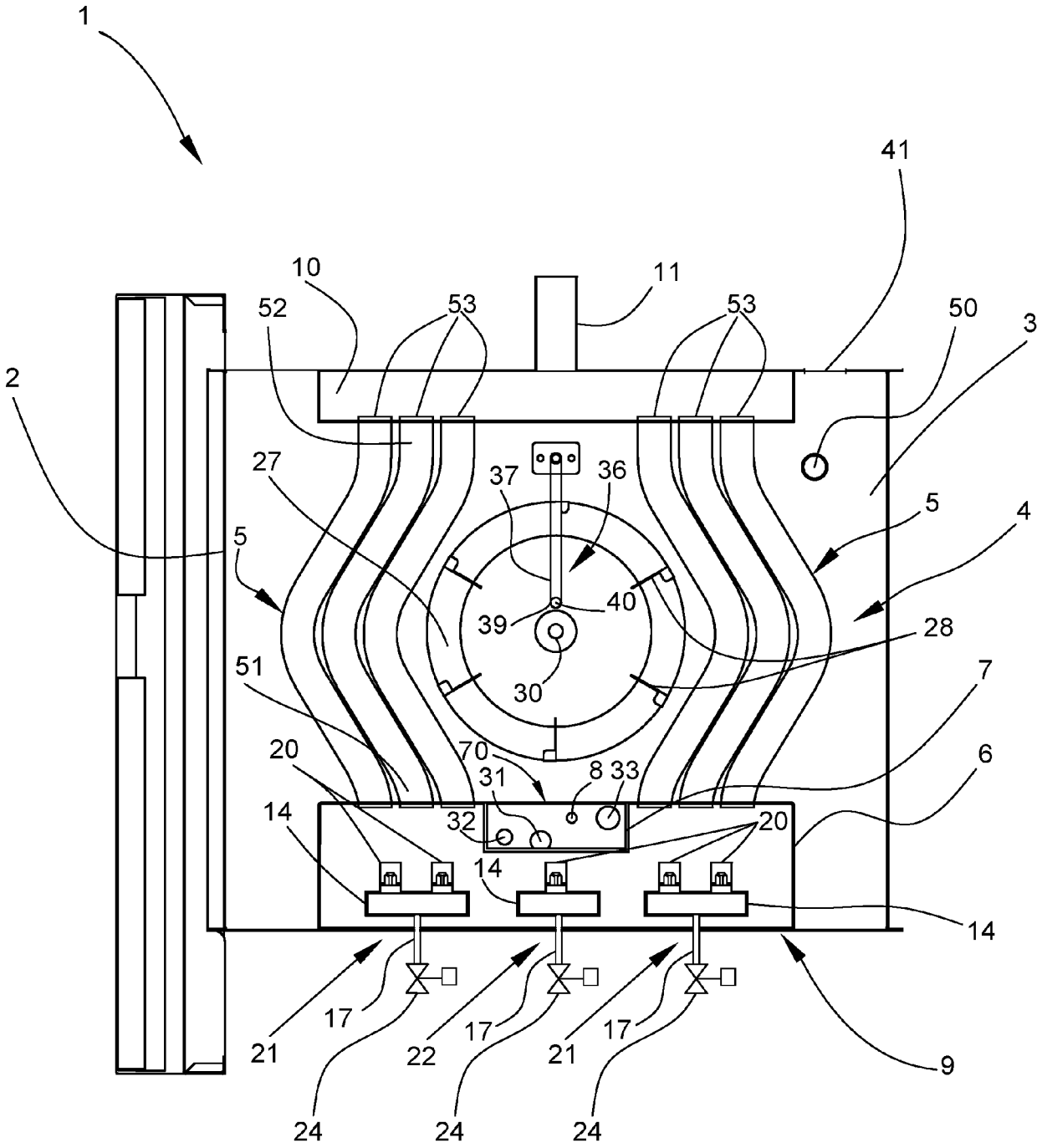
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Fig. 1

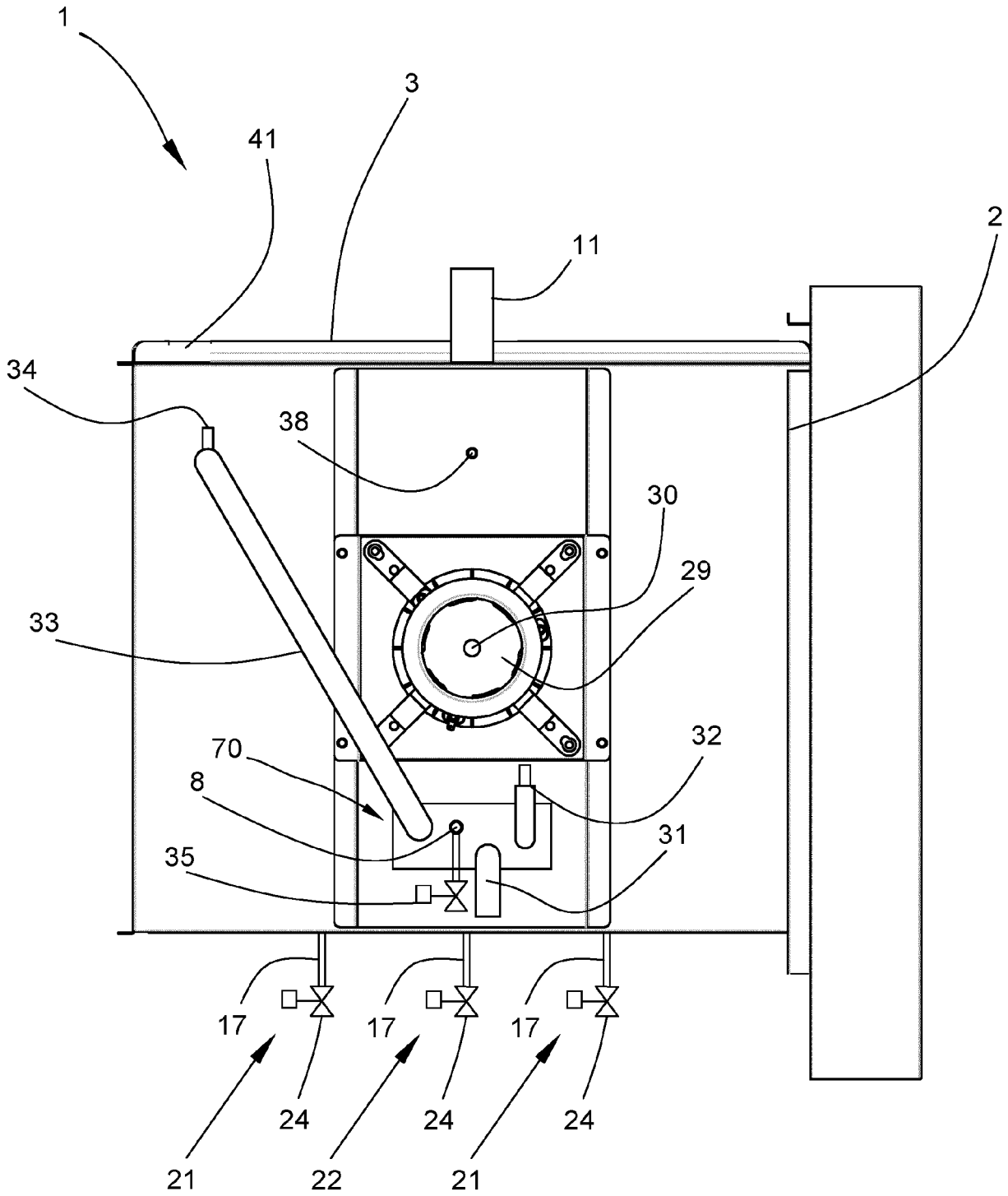

Fig. 2

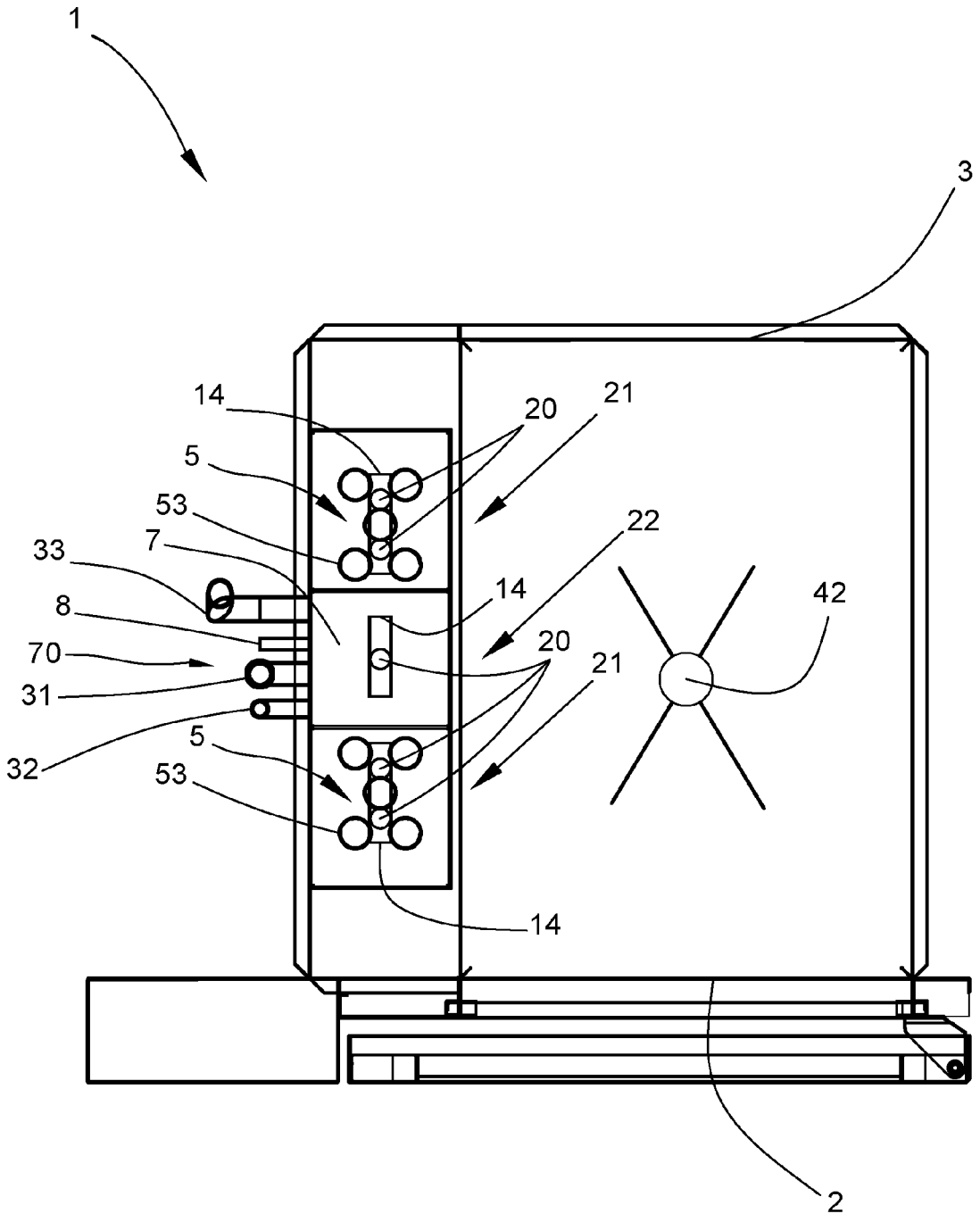

Fig. 3

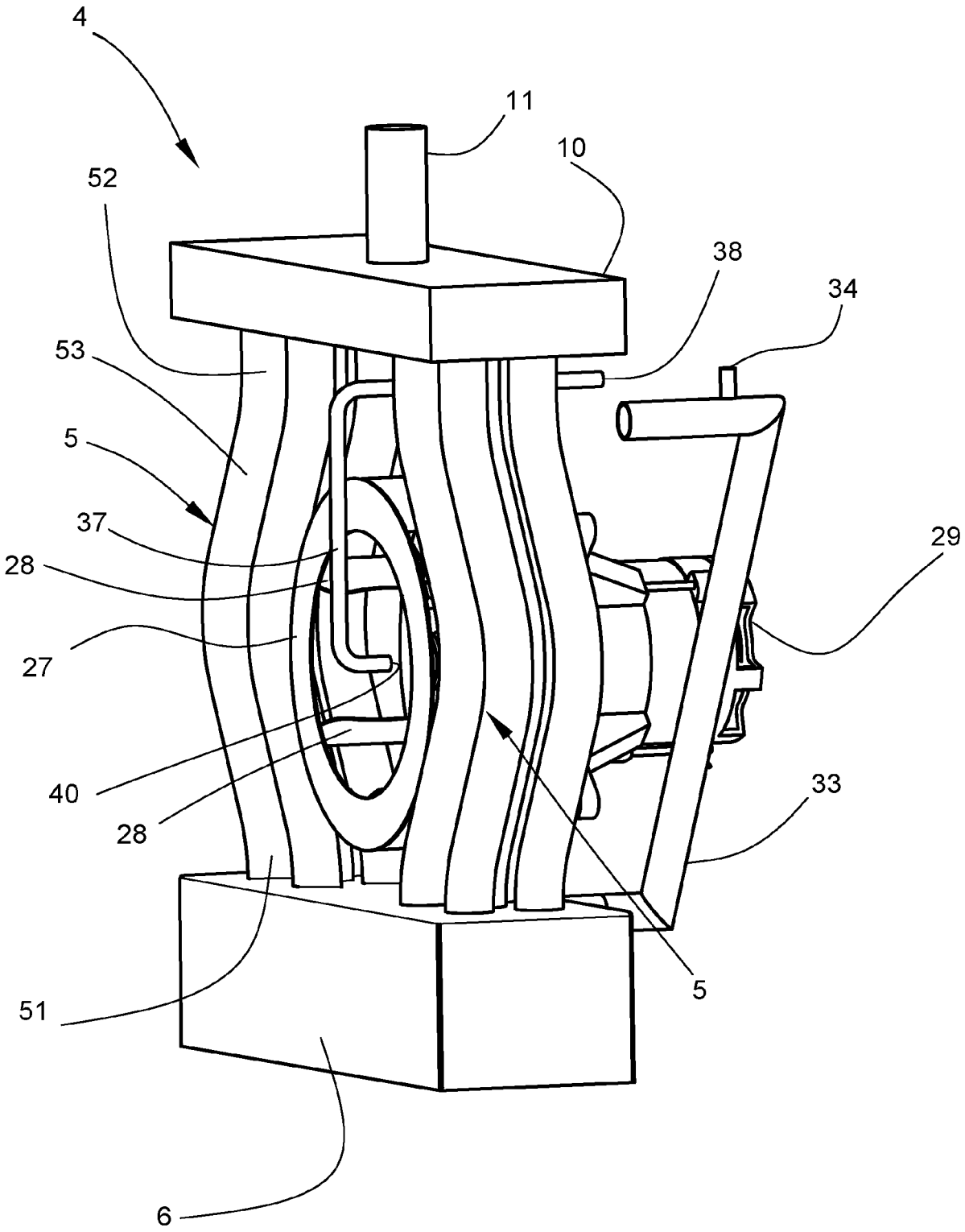

Fig. 4

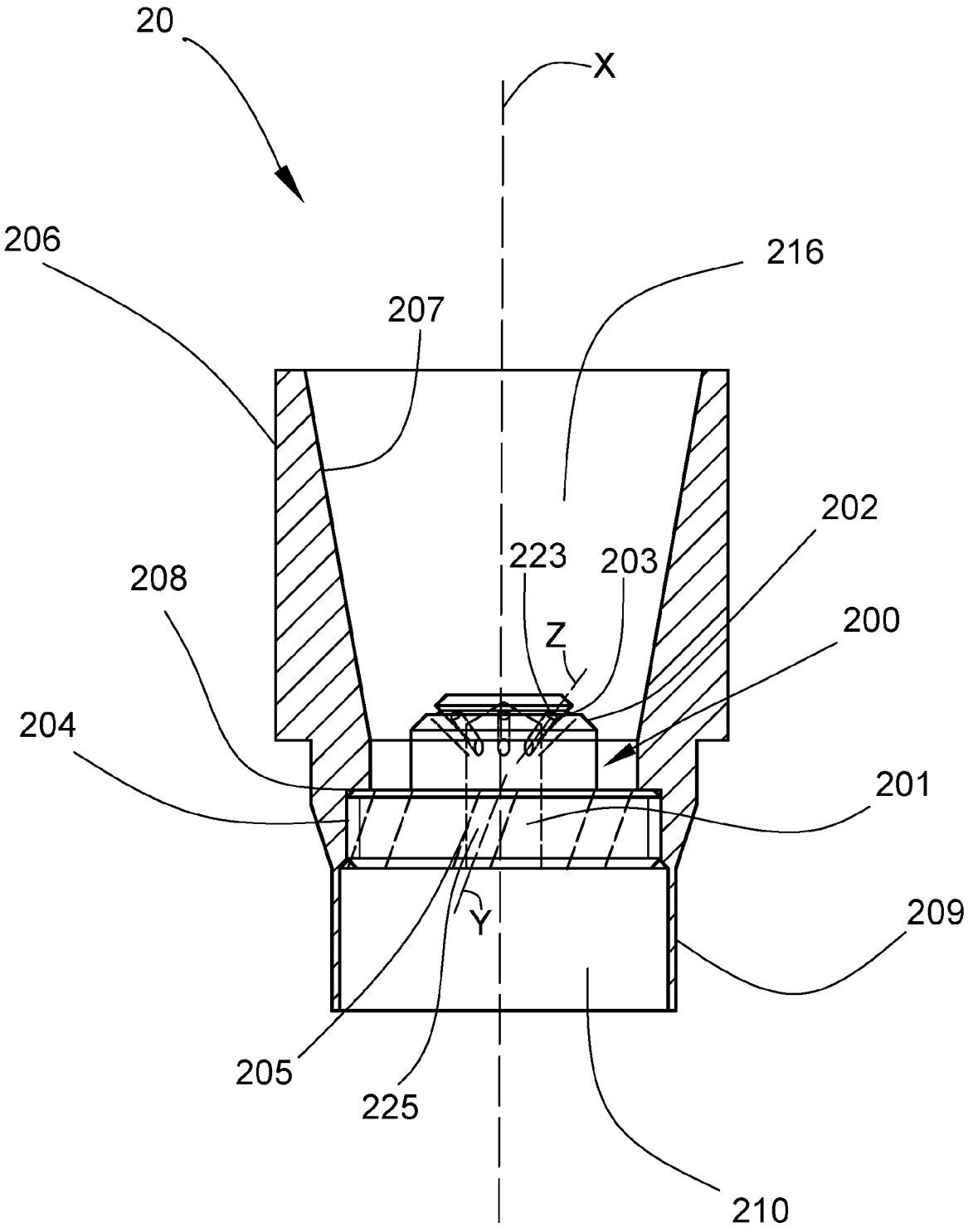

Fig. 5

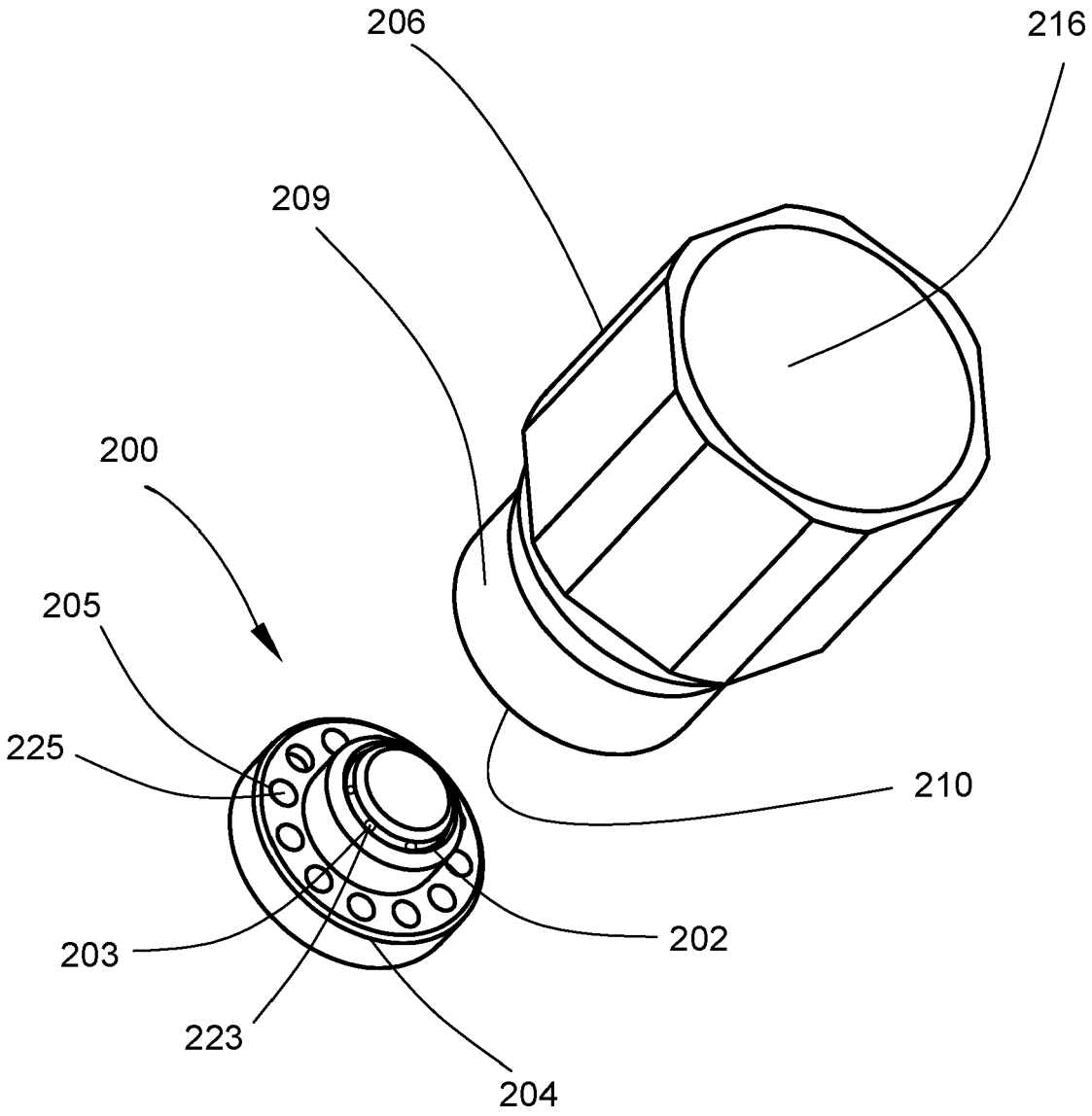

Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	7 February 2023	Adant, Vincent

CATEGORY OF CITED DOCUMENTS

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