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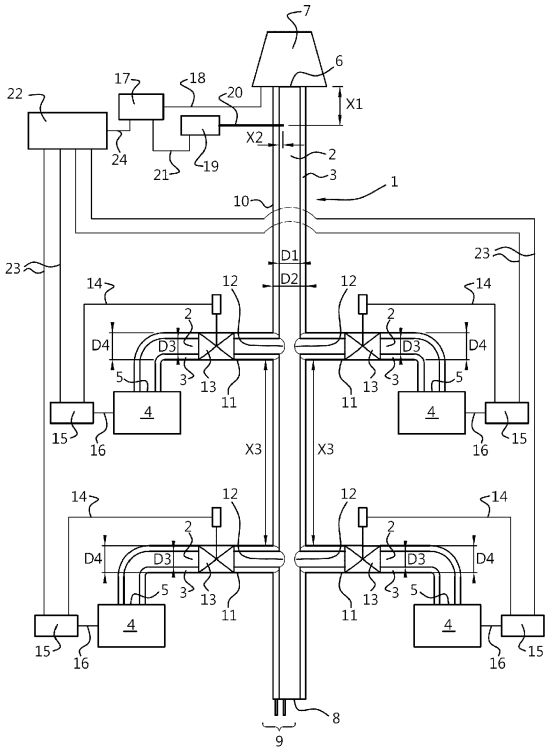
(54) **DEVICE FOR AIR SUPPLY AND FLUE GAS DRAIN FOR GAS FIREPLACES**

(57) The invention relates to an air supply and flue gas exhaust device for closed-type gas fires (4), comprising a pipe system (1) comprising at least an inner first pipe (2) for flue gas exhaust and an outer second pipe (3) for air supply, wherein the pipe system (1) on the one hand ends in one or more coupling ends (5) for coupling with said gas fires (4) and on the other hand ends in one flue end (6), wherein, in use of the device, a fan (7) for forced discharge of flue gas from the first pipe (2) is placed on said flue end (6).

The invention further relates to a method for air supply to and flue gas exhaust from one or more closed-type gas fires (4) in a building, in particular in an apartment building. In addition, the invention relates to a system comprising one or more closed-type gas fires (4) and a device for air supply and flue gas exhaust, a kit and specific uses.

Fig. 1



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Description

TECHNICAL FIELD

[0001] The invention relates to a device for air supply and flue-gas exhaust for gas fires.

PRIOR ART

[0002] In buildings with several gas heating installations, and in particular in buildings with several residential units each comprising at least one gas heating installation, for example in an apartment building, it is a challenge to control air supply to and flue gas exhaust from the plurality of gas heating installations in an efficient and safe manner.

[0003] For example, BE1024629B1 describes a combination air supply - flue gas exhaust system for a building, in particular an apartment building, comprising at least one heating installation in the form of a gas fire and a pipe system comprising at least two concentric pipes, the first inner pipe being provided for flue gas exhaust from a heating installation and the second pipe is provided for air supply to a heating installation, the pipe system comprising a third concentric pipe provided between the first and second pipe, the space between the first and the third pipe being at least partially filled with an insulating material.

[0004] BE1024629B1 has the problem that fans are arranged between pipes of the pipe system. Such a configuration makes adjustment or repair work on the fans more difficult. In addition, BE1024629B1 discloses a system where one fan has to be placed per gas fire, which necessitates a high number of fans, and a concomitant high energy consumption and labour-intensive installation, in an arrangement with several gas fires.

[0005] The present invention aims to resolve at least some of the above-mentioned problems.

SUMMARY OF THE INVENTION

[0006] In a first aspect, the invention relates to an air supply and flue gas exhaust device for closed-type gas fires, in particular for such gas fires placed in a building and more particularly placed in an apartment building, according to claim 1. Preferred embodiments of the device are set out in claims 2 to 10.

[0007] In a second aspect, the invention relates to a method for air supply to and flue gas exhaust from one or more closed-type gas fires in a building, in particular in an apartment building, according to claim 11. A preferred form of the method is set forth in claim 12.

[0008] In a third aspect, the invention relates to a system comprising one or more closed-type gas fires and a device for air supply to and flue gas exhaust from the gas fires, according to claim 13.

[0009] In a fourth aspect, the invention relates to a kit comprising one or more closed-type gas fires spatially separated from a device for air supply to and flue gas exhaust from the gas fires according to the first aspect of the invention, according to claim 14.

[0010] In a fifth aspect, the invention relates to the use of a device according to the first aspect of the invention for air supply to and flue gas exhaust from several closed-type gas fires distributed over several apartments placed in an apartment building, according to claim 15.

[0011] In a sixth aspect, the invention relates to the use of a system according to the third aspect of the invention as a heating installation in an apartment building, according to claim 16.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Fig. 1 shows a schematic representation of an air supply and flue gas exhaust device and system for closed-type gas fires, according to embodiments of the invention.

DETAILED DESCRIPTION

[0013] Quoting numerical intervals by endpoints comprises all integers, fractions and/or real numbers between the endpoints, these endpoints included.

[0014] The term 'closed-type gas fire', synonymous with a hermetic-type gas fire, refers in this document to a gas fire with a double-walled system in which fresh supply air is received via an outer pipe and flue gas is discharged through an inner pipe, i.e. is discharged to an environment. 'Flue gas' can also be understood as the combustion gases resulting from gas heating.

[0015] The term 'PID controller' in this document refers to a controller well known in process control. PID is an acronym for Proportional, Integral, Derivative. The control is based on the difference between the desired setpoint and measured value, this is called an 'error signal'. The adjustment signal is determined by three separate calculations, which are called a P-action, I-action and D-action, respectively.

[0016] In a first aspect, the invention relates to an air supply and flue gas exhaust device for closed-type gas fires, in particular for such gas fires placed in a building and more particularly placed in an apartment building, according to claim 1.

[0017] In contrast to a classical device for air supply and flue gas exhaust for gas fires which operates in overpressure for flue gas exhaust, and which therefore blows flue gas from gas fires to a flue gas exhaust duct with apparatus, the device according to the first aspect of the invention is adapted for flue gas exhaust by creating a draught in the first pipe in a flue gas downstream direction. Because a draught or a suction effect is created by the fan, only one fan is needed which is placed on said flue end, wherein this also applies in arrangements of the device in uses where several closed-type gas fires are connected to coupling ends of the device. Due to its location on said flue end, the fan is easily accessible for

maintenance or adjustment work. In addition, in use at the level of the flue end, the pipe system can protrude through a roof of a building, so that the fan is located in an outdoor environment, which limits noise nuisance from the fan and is also beneficial to health and safety. In addition, due to the need for only one fan, independent of the number of gas fires to be coupled, energy-saving is achieved and an arrangement of the device with several gas fires can be installed simply and with relatively little labour and a high time efficiency.

[0018] According to a preferred embodiment of the device according to the first aspect of the invention, the fan also comprises the following parts:

- a flue gas deflector disc for deflecting the flue gas, the flue gas deflector disc downstream of the flue gas fan and connectable to the flue gas fan; and
- a hub for connecting the flue gas fan to an end portion of a drive shaft of a motor, the hub and the end portion of the drive shaft, when connected, are both located downstream of the flue gas deflector disc.

[0019] The flue gas deflector disc keeps flue gas separate from drawn supply air and therefore it is preferable that the flue gas deflector disc is as large as possible to ensure that the supply air is directed away from the first pipe without mixing with the flue gas.

[0020] According to a preferred embodiment of the device according to the first aspect of the invention, the fan further comprises a vent disc having vent holes therein and to be arranged on a downstream side of the flue gas deflector disc and spaced therefrom to define a space between the flue gas deflector disc and the vent disc, wherein the fan blades are to be arranged in the space between the flue gas deflector disc and the vent disc, the fan blades connectable to both the flue gas deflector disc and the vent disc, and the hub connectable to the vent disc. In such a connection of the fan blades with the flue gas deflector disc and the vent disc, a turbine wheel is created which draws fresh air on the downstream side, i.e. the cold side, of the flue gas deflector disc and transports it through the vent holes into the space between the flue gas deflector disc and the vent disc, where the fan blades will push the air outwards in a radial direction and thereby provide cooling of the flue gas deflector disc and other components that come into contact with the air, in particular the drive shaft of the motor, and also provide an insulating layer of air. Thus, the flue gas deflector disc moreover prevents supply air from mixing with flue gas that is transported downstream from the first pipe via the flue end.

[0021] Preferably, the flue end is located perpendicular to a substrate, for instance any floor of a building. From this point of view, the pipe system at the level of the flue end resembles a chimney. The fan and its fan blades are preferably made of aluminium, for example cast aluminium. Preferably, the fan can be hinged open for maintenance and inspection.

[0022] Diameters of the concentric pipes depend on the number of closed-type gas fires to be connected and their capacity. According to a preferred embodiment of the device according to the first aspect of the invention, diameters of the second pipe and of the first pipe of the pipe system are in a ratio of 1.2:1 to 1.8:1, more preferably of 1.35:1 to 1.65:1 and even more preferably from 1.45:1 to 1.6:1. Concentric pipes with such a ratio between their diameters allow a highly efficient air supply to (via the outer second pipe) and flue gas exhaust from (via the inner first pipe) gas fires. Via such ratios specific diameter dimensions can be determined which allow a plurality of closed-type gas fires to be connected to a device according to the first aspect of the invention.

[0023] The device according to the first aspect of the invention discharges flue gas from gas fires coupled to the device by a suction effect or flue draught resulting from a low pressure or low pressure level in the inner first pipe caused in use by the fan. Because the closed-type gas fires are hermetically sealed, in turn a suction effect is created in the outer pipe that supplies air for combustion from an environment. This is preferably electronically controlled and secured in accordance with applicable standards. For example, a pressure in the pipes, preferably in the inner first pipe, can switch on a pressure switch of a pressure control system and control electronics, for example a dial scale can allow an installer to read the pressure and a frequency controller can be provided to control the speed of a motor of the fan so that it can be adapted to the device.

[0024] The pipe system is preferably designed as two stainless steel pipes around each other. Other types of metal such as aluminium or galvanised steel are also possible.

[0025] Preferably, the fan is continuously controlled to a set pressure level in order to ensure a constant flue draught in the inner first pipe.

[0026] Preferred embodiments of the device are set out in claims 2 to 10.

[0027] The preferred embodiment of the device as described in claim 2 offers the advantage that a necessary net useful air supply section and flue gas exhaust section is guaranteed by the intermediate arrangement of the fan attachment. Preferably, the first end of the fan attachment is dimensioned such that it slides into the first pipe in a form-fitting manner at the flue end. After all, it is important that the fan connects airtight to the pipe system so that it cannot draw false air.

[0028] A temperature class of at least T250, as described in the preferred embodiment of the device as described in claim 3, can be seen as a necessary material requirement for the concentric pipes, since temperature measurements in the inner first pipe show that temperatures can reach 245°C. Preferably, the concentric pipes are also CE certified. Use of such a temperature class is important as it meets obligations imposed by, among others, the following official standards: NBN EN 1856-1: metal flue gas ducts; and NBN EN 14989-2: flue gas ex-

hausts and air inlets for closed combustion appliances.

[0029] The preferred embodiment of the device as described in claim 4 offers the effect that the low pressure caused by the fan in the first pipe can be controlled and preferably kept at a certain pressure level or at a pressure level within a limited range. According to a preferred embodiment of the device according to the first aspect of the invention, the pressure control system is a PID controller. The pressure control system and preferably the PID controller serves as a self-regulating system for setting a rotational speed of the fan so that a constant low pressure level in the inner first pipe can be guaranteed at all times. This regulation of the pressure level also depends on the number of gas fires coupled to the device. This pressure level is preferably set at a pressure level between 40 and 75 Pa, more preferably between 45 to 70 Pa, and still more preferably between 46 to 68 Pa.

[0030] The preferred embodiment of the apparatus as set forth in claim 5 has the effect that the pressure measuring instrument by means of the pressure sensor allows to determine a current pressure level within the inner first pipe of the pipe system and to monitor the pressure level so that the pressure control system can correct when required to maintain the pressure level at a desired level.

[0031] The preferred embodiment of the device as described in claim 6 offers the advantage that optimal pressure measurements can be performed with such a placement, after which the pressure control system can optimally adjust the draught caused by the fan. To achieve this effect, more preferably the pressure sensor in use of the device is placed between 0.7 and 1.3 m, even more preferably between 0.8 and 1.2 m and still more preferably between 0.9 and 1.1 m below the fan in the inner first pipe, and more preferably the portion of the pressure sensor located in the inner first pipe is between 2 and 8 mm, more preferably between 3 and 7 mm and even more preferably between 4 and 6 mm long.

[0032] When the device is used, all gas fires connected to the device are connected to each other via the pipe system. To block air flows in a gas fire when not in use, a respective concentric flue gas valve, as described in claim 7, can be moved from an open position to a closed position. In this way, gas fires are closed off from the pipe system when not in operation. However, the gas fires can still give off their heat accumulatively to a space in which they are placed. This accumulative effect that occurs when the flue gas valve is closed is a great advantage and testifies to a very efficient use of energy. The concentric flue gas valves are preferably motorised and are preferably configured to be activated and deactivated by a respective gas fire. In an embodiment, when a gas fire is switched off, the associated flue gas valve will remain open for a specific period of time, for instance 15 to 25 minutes, for ventilating the heat from flue gas in the inner pipe.

[0033] The preferred embodiment of the device as described in claim 8 has the effect of enabling electrical communication between flue gas valve and gas fire. Preferably, the device further comprises communication modules, which communication modules can be placed between said electric gas fire-flue gas valve connections and said gas fires and are placed in use of the device. The communication modules function to transmit instructions from a gas fire controller as instructions for a concentric flue gas valve via an electric gas fire-flue gas valve connection. In this way, instructions can be passed on from a gas fire, if it is not in use or if it malfunctions, to locally close the gas fire from the pipe system with the relevant concentric flue gas valve. This can be optimally combined with a closed gas fire that is equipped with an electric furnace control that is configured to monitor the position of the flue gas valve. With further preference, a concentric flue gas valve is provided with a motor, in which motor there is a status contact, whereby the furnace control can continuously monitor the position of the flue gas valve. If the flue gas valve is not in the correct position, the gas fire cannot start up, or the gas fire will be switched off.

[0034] The preferred embodiment of the device as described in claim 9 has the effect that the central switch cabinet forms an interface between the connected gas fires and the fan, since the fan is connected to the pressure control system in use of the device. In an embodiment, from the moment a first closed-type gas fire wants to start up, the central switch cabinet will start the fan via the pressure control system. A gas fire can preferably also be released by the central switch cabinet when the pressure level in the first pipe is correct. In this way, all closed-type gas fires in use coupled to the device can always react in the same way, regardless of how many gas fires are in operation simultaneously. After all, the bi-directional communication between the gas fires and the fan via the pressure control system ensures continuous monitoring of the system.

[0035] According to a preferred embodiment of the device according to the first aspect of the invention, the device further comprises one or more communication modules, wherein in use of the device a communication module is arranged in each case in connection with each closed-type gas fire, and wherein the central switch cabinet is in connection with each closed-type gas fire through a connection with each communication module. The communication modules function to optimally enable electrical communication between the gas fires and the central switch cabinet.

[0036] The preferred embodiment of the device as described in claim 10 has the effect of avoiding the accumulation of condensate in the piping system.

[0037] In a second aspect, the invention relates to a method for air supply to and flue gas exhaust from one or more closed-type gas fires in a building, in particular in an apartment building, according to claim 11.

[0038] For the technical effects and advantages and/or preferred embodiments of the features of the method according to the second aspect of the invention, reference is made to the above-described embodiments of the de-

vice according to the first aspect of the invention in which corresponding features are described and which are also applicable to the method according to the second aspect of the invention.

With further preference, in the method according to the second aspect of the invention, the fan device in the first pipe exerts a pressure at a pressure level of from 45 to 70 Pa, and more preferably from 46 to 68 Pa. Said pressure levels are ideal for the discharge of flue gas from one or more gas fires through the pipe system of the device.

[0039] A preferred form of the method is set forth in claim 12. Accordingly, all technical embodiments and positive features of a method according to the second aspect of the invention are combined with those of a device according to the first aspect of the invention.

[0040] In a third aspect, the invention relates to a system comprising one or more closed-type gas fires and a device for air supply to and flue gas exhaust from the gas fires, according to claim 13.

[0041] In a fourth aspect, the invention relates to a kit comprising one or more closed-type gas fires spatially separated from a device for air supply to and flue gas exhaust from the gas fires according to the first aspect of the invention, according to claim 14. 'Spatially separated' means that the parts of the kit exist next to each other in an unconnected state. By purchasing a kit, a property developer and/or an installer of gas heating installations can, if desired, orient and/or configure in advance, the initially separate device and one or more gas fires before putting them together as desired. This ensures a user-friendly positioning of a gas heating installation comprising a device according to the first aspect of the invention and one or more closed-type gas fires. If, on the other hand, such a gas heating installation were to be supplied already installed and coupled for a construction or renovation project, there would be a significant risk that existing connections would have to be revised to make it fit in a building or apartment, resulting in loss of time and unnecessary costs and effort.

[0042] In a fifth aspect, the invention relates to the use of a device according to the first aspect of the invention for air supply to and flue gas exhaust from several closed-type gas fires distributed over several apartments placed in an apartment building, according to claim 15.

[0043] In a sixth aspect, the invention relates to the use of a system according to the third aspect of the invention as a heating installation in an apartment building, according to claim 16.

[0044] In what follows, the invention is described by means of a non-limiting figure illustrating the invention, and which is not intended to or should not be construed as limiting the scope of the invention.

DETAILED DESCRIPTION OF THE DRAWINGS

[0045] Fig. 1 shows a schematic representation of an air supply and flue gas exhaust device and system for closed-type gas fires, in particular for such gas fires placed in a building and more particularly placed in an apartment building, according to embodiments of the invention. The device comprises the elements as shown in Fig. 1 excluding the closed-type gas fires 4. The system comprises all elements as shown in Fig. 1, i.e. including the closed-type gas fires 4. For advantages and technical effects of elements described below in the detailed description of the drawings, reference is made to the advantages and technical effects of corresponding elements described above in the detailed description.

[0046] The device as shown in Fig. 1 comprises a pipe system 1 with two concentric pipes 2, 3 among which an inner first pipe 2 and an outer second pipe 3, the first pipe 2 being provided for flue gas exhaust from the shown closed-type gas fires 4 and the second pipe being provided for air supply to said gas fires 4. Fresh supply air is herein introduced into the gas fire 4 at a bottom side of a combustion chamber of a gas fire 4 (not shown in Fig. 1). The concentric pipes 2, 3 are circular as standard. However, it goes without saying that other shapes, such as, for example, square, hexagonal, polygonal, elliptical or other shapes are also within the scope of this invention. The concentric pipes 2, 3 are dimensioned with suitable diameters D1, D2, D3, D4. The concentric pipes 2, 3 of the pipe system 1 are made of a material with a temperature class of at least T250. Fig. 1 shows a device according to the first aspect of the invention in use, i.e. in the embodiment of Fig. 1, a plurality of closed-type gas fires 4 are coupled to the device, thus forming a system according to the third aspect of the invention. The pipe system 1 shown ends on the one hand in several coupling ends 5 which are coupled to said gas fires 4 and on the other hand ends in one flue end 6 which is provided for air intake from and flue gas exhaust to an environment. In practice, an environment can be understood as an outdoor environment outside a building or apartment building, for instance the outdoor environment in the vicinity of and outside a roof of such a building.

[0047] A hollow two-ended fan attachment (not shown in Fig. 1) dimensioned at a first end to slide into the first pipe 2 at the flue end 6 is slid into the first pipe 2 with this first end. A second end opposite the first end is dimensioned to connect to a fan 7 and is connected thereto in Fig. 1. Thus, the fan 7 is placed on said flue end 6. The fan 7 is configured for forced discharge of flue gas from the first pipe 2. This flue gas is formed by gas combustion in the gas fires 4. For example, the fan 7 is a vertically or horizontally discharging fan made of aluminium, designed for vertically or horizontally discharging the flue gas. Such a fan is moreover provided with a centrifugal fan made of cast aluminium. Such a fan can be hinged open for maintenance and inspection. In addition to the coupling ends 5 and the flue end 6, the pipe system 1 also comprises a lower end 8, which lower end 8 is provided facing away from the fan 7 and opposite the flue end 6. The device further comprises a condensate drain 9 which comprises two discharge pipes, each with two

open discharge pipe ends, of which a first and a second of said discharge pipes at the lower end 8 are partly placed in the inner 2 and outer pipe 3 of the pipe system 1, respectively, with each one of the discharge pipe ends placed in the respective pipe.

[0048] The pipe system 1 as shown in Fig. 1 is divided into a central pipe 10 and four pipe branches 11 of the central pipe 10 at the level of branch points 12 of the latter. These pipe branches 11 allow the pipe system 1 to reach the four gas fires 4. Away from the branch points 12, the pipe branches 11 deflect so as to be coupled on top of the gas fires 4 in an efficient manner. This overlying arrangement of the pipe branches 11 is very suitable for receiving flue gas from the gas fires since it is well known that flue gas rises. In the vicinity of each coupling end 5, and in particular in each pipe branch 11, a concentric flue gas valve 13 is placed. More in particular, such a concentric flue gas valve 13 is placed close to a relevant branch point 12. By means of such a concentric flue gas valve 13, flue gas exhaust and air supply in the pipe system 1 can be closed off separately in each pipe branch 11, so that each gas fire 4 can be locally closed off separately in a reversible manner from the rest of the pipe system 1. When a gas fire 4 is not in use or malfunctions, for example, such a concentric flue gas valve 13 can move from an open position to a closed position. At the level of the flue gas valves 13, in an open position of the flue gas valves 13, a closed off flow of flue gas in the first pipe 2 on the one hand and supplied air in the second pipe 3 on the other hand is ensured. The image in Fig. 1 could give the impression that there would be no first pipe 2 locally at the level of the flue gas valves 13, which is not the case, however. The first pipe 2 is indeed always present, but this is not visible due to the simplified schematic representation of the flue gas valves 13. The device shown in Fig. 1 further shows one or more electric gas fire-flue gas valve connections 14, which are each placed separately between a gas fire 4 coupled to a coupling end 5 on the one hand and the concentric flue gas valve 13 located in the vicinity of the relevant coupling end 5 on the other hand. In particular, the electric gas fire-flue gas valve connections 14 each reach the respective gas fires 4 via an intermediate communication module 15, which communication module 15 is connected to a gas fire 4 via a cable 16. The communication module 15 functions to transmit instructions from a gas fire controller 4 as instructions for a concentric flue gas valve 13 via an electric gas fire-flue gas valve connection 14. For instance, when a gas fire 4 is not in use or if it malfunctions, instructions can be passed on to move a relevant concentric flue gas valve 13 from an open position to a closed position.

[0049] Preferably, the pipe branches 11 are spaced X3 from each other along the length of the central pipe 10 such that this distance X3 is related to the outer second pipe 3's diameter in a ratio of 5:1 to 16:1, more preferably from 6:1 to 15:1 and even more preferably from 7:1 to 13.5:1. Such proportions are ideally suited to being able to reach gas fires 4 by means of pipe branches 11, which are located on different adjoining floors of a building, for instance an apartment building. Similarly, in Fig. 1 it can be seen that the pipe branches 11 laterally relative to the central pipe 10 are arranged two by two, which arrangement is an example which is ideal for allowing coupling over two adjacent floors of an apartment building with two gas fires per floor. For example, each gas fire in use can be assigned to one apartment per floor.

[0050] The device further comprises a PID controller as a pressure control system 17 for providing a constant low pressure in the first pipe 2, which pressure control system 17 is connected to the fan 7 via a pressure control system communication cable 18. The device further comprises a digital pressure measuring instrument 19 with a pressure sensor 20 which is placed with one end in the inner first pipe 2, which pressure measuring instrument 19 is connected to the pressure control system 17 via a shielded cable 21. The pressure sensor 20 is placed at a distance X1 from 0.9 to 1.1 m below the fan 7 in the inner first pipe 2, with a portion X1 of the pressure sensor 20 located in the inner first pipe 2 being between 4 and 6 mm long.

[0051] The device further comprises a central switch cabinet 22 which is connected via switch cabinet-gas fire communication cables 23 to each of the communication modules 15 of the gas fires 4 and which is connected to the pressure control system 17 via a switch cabinet -pressure control system communication cable 24. As such, the central switch cabinet 22 can ideally serve as an interface between the connected gas fires 4 and the fan 7.

Claims

1. A device for air supply and flue gas exhaust for closed-type gas fires (4), in particular, for such gas fires (4) placed in a building and more particularly placed in an apartment building, comprising a pipe system (1) comprising at least two concentric pipes (2, 3) among which an inner first pipe (2) and an outer second pipe (3), the first pipe (2) being provided for flue gas exhaust from one or more closed-type gas fires (4) and the second pipe (3) is provided for air supply to said gas fires (4), and wherein the device comprises a fan (7) for forced discharge of flue gas from the first pipe (2), **characterised in that** the pipe system (1) on the one hand ends in one or more coupling ends (5) which are provided for coupling with one or more of said gas fires (4) and on the other hand ends in one flue end (6) which is provided for air intake from and flue gas exhaust to an environment, the fan (7) comprising a motor-driven flue gas fan comprising fan blades rotatable about a drive shaft for creating a draught in the first pipe (2) in a flue gas downstream direction, and wherein, in use of the device, the fan (7) is placed on said flue end (6).

2. The device according to claim 1, wherein the device further comprises a hollow two-ended fan attachment dimensioned at a first end to slide into the first pipe (2) at the flue end (6) and dimensioned at an opposite second end to be connected to the fan (7), and wherein, in use, the fan attachment is slid into the flue end (6) at the first end and is coupled to the fan (7) at the second end.

3. The device according to claim 1 or 2, wherein the concentric pipes (2, 3) are made of a material with a temperature class of at least T250.

4. A device according to any of claims 1 to 3, wherein the device further comprises a pressure control system (17) which in use of the device is connected to the fan (7).

5. The device according to claim 4, the device further comprising a pressure measuring instrument (19) having a pressure sensor (20) disposed in use of the device with one end in the inner first pipe (2), said pressure measuring instrument (19) in use of the device connected to the pressure control system (17).

6. The device according to claim 5, wherein the pressure sensor (20) in use of the device is placed between 0.1 and 2.5 m below the fan (7) in the inner first pipe (2), and wherein a portion of the pressure sensor (20) located in the inner first pipe (2) is between 0.5 and 20 mm long.

7. The device according to any of claims 1 to 6, wherein the device further comprises one or more concentric flue gas valves (13) suitable for locally closing off flue gas exhaust and air supply in the pipe system (1) in a reversible manner, wherein, in use, in the vicinity of each coupling end (5) a concentric flue gas valve (13) is placed in the concentric pipes (2, 3).

8. The device according to claim 7, wherein the device further comprises one or more electric gas fire-flue gas valve connections (14), which in use can each be placed separately between a closed-type gas fire (4) coupled to a coupling end (5) and the concentric flue gas valve (13) which is located in the vicinity of the respective coupling end (5).

9. The device according to any of claims 1 to 8, wherein the device further comprises a central switch cabinet (22), which central switch cabinet (22) is connected in use to the pressure control system (6) and is individually connected to the one or more closed-type gas fires (4) which in use are connected to the one or more coupling ends (5).

10. The device according to any of claims 1 to 9, wherein the pipe system (1) is provided with a lower end (8) in addition to the coupling ends (5) and the flue end (6), which lower end (8) is provided facing away from the fan (7) and opposite the flue end (6), and wherein the device comprises a condensate drain (9) which comprises two discharge pipes, each with two open discharge pipe ends, of which, in use of the device, a first and a second of said discharge pipes at the level of the lower end (8) are partly placed in the inner (2) and outer pipe (3), respectively, of the pipe system (1), with each one of the discharge pipe ends placed in the respective pipe (2, 3).

11. Method for air supply to and flue gas exhaust from one or more closed-type gas fires (4) in a building, in particular in an apartment building, wherein flue gas from the gas fires (4) is collected in an inner first concentric pipe (2) of a pipe system (1) and is discharged via the first pipe (2), and wherein air supply to the gas fires (4) takes place by means of a second outer concentric pipe (3) which is part of said pipe system (1), wherein the discharge of flue gas through the first pipe (2) is supported by a draught in a flue gas downstream direction exerted by a fan (7) placed on the pipe system (1) downstream of the flue gas downstream direction, **characterised in that** the fan (7) exerts a pressure in the first pipe (2) with a pressure level of 40 to 75 Pa.

12. The method according to claim 11, wherein the discharge of flue gas from one or more closed-type gas fires (4) is carried out with a device according to any of claims 1 to 10.

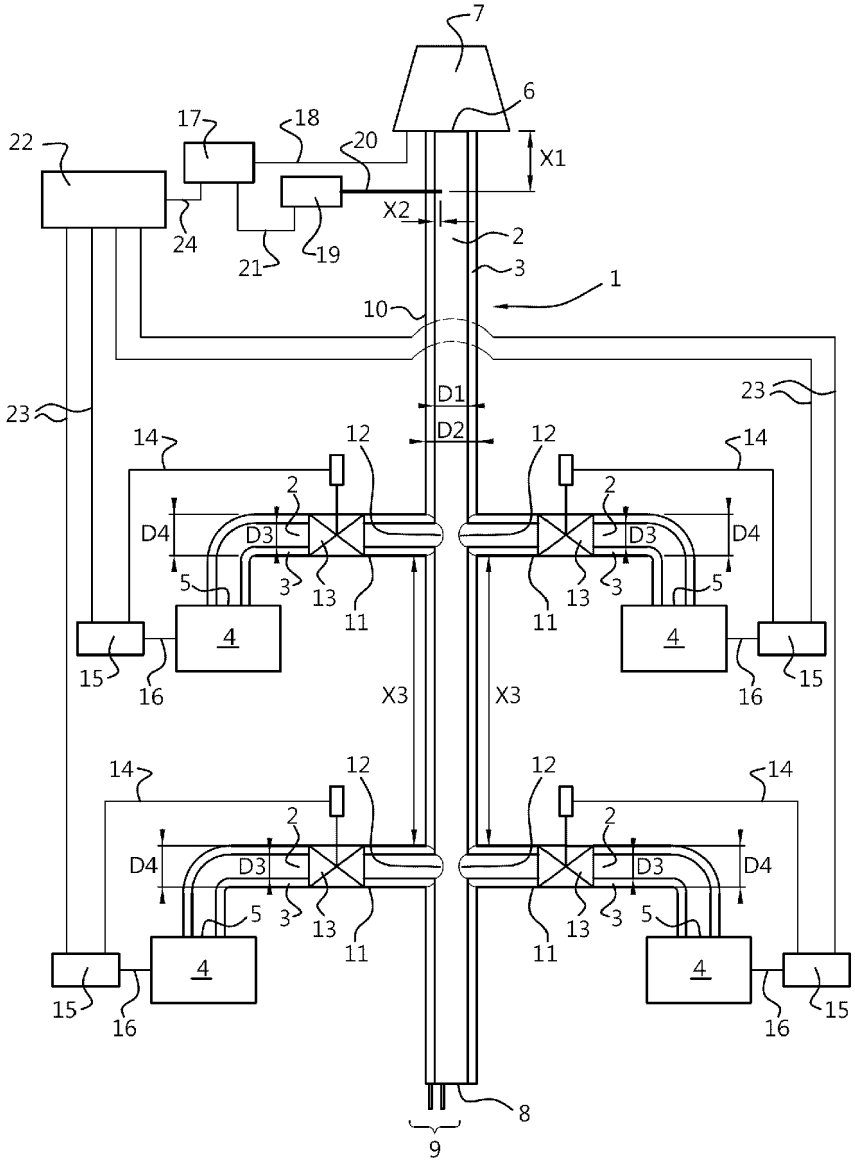
13. System comprising one or more closed-type gas fires (4) coupled to a device for air supply to and flue gas exhaust from the gas fires (4), **characterised in that** the device is a device according to any of claims 1 to 10.

14. Kit comprising one or more closed-type gas fires (4) spatially separated from a device for air supply to and flue gas exhaust from the gas fires (4) according to any of claims 1 to 10.

15. Use of a device according to any of claims 1 to 10 for air supply to and flue gas exhaust from a plurality of closed-type gas fires (4) distributed over a plurality of apartments placed in an apartment building.

16. Use of a system according to claim 13 as a heating installation in an apartment building.

Fig. 1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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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