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(54) Hanging hot air generator provided with outer combustion means

(57) The present heating plant is particularly fit to be installed in difficult places, namely, places where the performed activities involve a high risk of fire or places where there is a considerable passing of public, for instance car workshops, coach-building workshops, churches, joiner's shops, sporting clubs, entertainment circles, commercial structures, painting workshops and so on.

In general, the heating system or hot air generating plant according to the present invention comprises both an outer unit (1) and an inner unit (2), the former being the heat generating unit while the latter being the heat distributing unit of the present plant.

The outer unit (1) is provided with all those components that allow a heat generation for the hydraulic distributing plant.

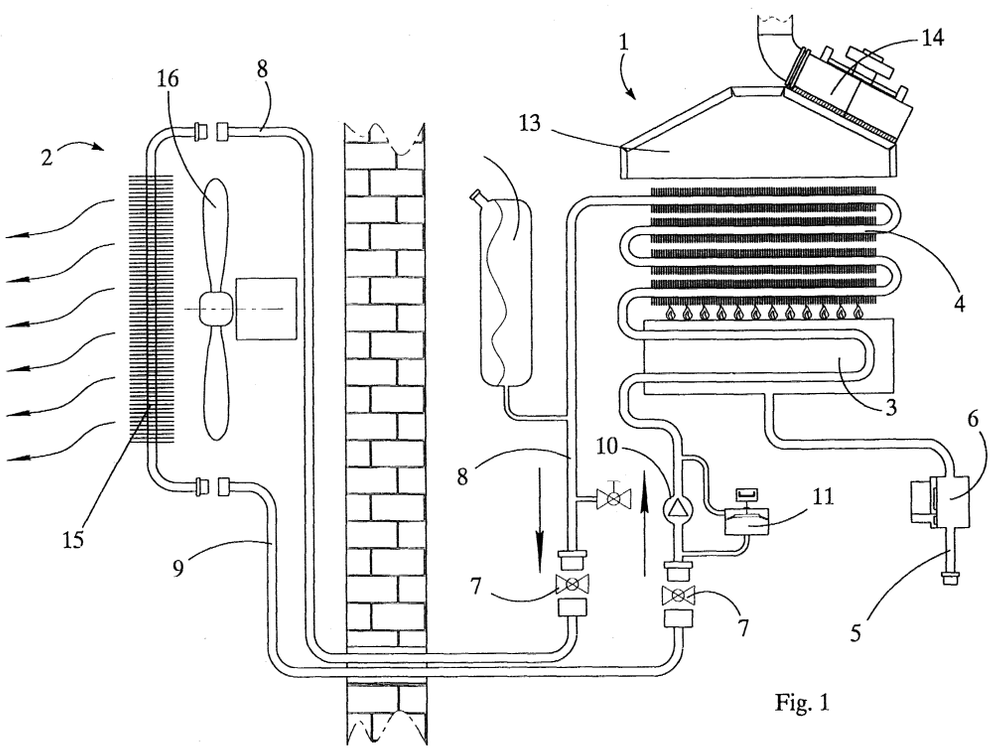

Fig. 1

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Description

[0001] The present invention refers to a hanging hot air generator provided with combustion means, all of them being arranged outside the rooms to be heated.

[0002] The present heating system is particularly fit to be installed in difficult places, namely, places where the performed activities involve a high risk of fire or places where there is a considerable passing of public, for instance car workshops, coach-building workshops, churches, joiner's shops, sporting clubs, entertainment circles, commercial structures, painting workshops and so on.

[0003] The hot air generator according to the present invention is particularly useful in the aforesaid places where the presence of combustion components as well as the presence of fuel or liquids/fluids under high pressure could be very dangerous.

[0004] In the present solution, all the operative components of the plant, namely, burner and fuel feed components thereof are arranged outside the building and therefore, there is no more risk for the inhabited places.

[0005] As is known, the heating technique is treated in several different solutions in which a heat source, either an electric source or a fuel source, supplies the necessary quantity of calories for heating the rooms either directly or indirectly.

[0006] In case the heat source is a fuel source, namely, a source consisting of a burner system fed with either gas or gas oil or kerosene or the like, it is necessary to take into account a series of measures so as to instal the heat supplier inside the room.

[0007] The aforesaid problem is very serious, especially in case of public places the dimensions of which are very big and need boilers having a high calorific capacity.

[0008] In the aforesaid cases, combustion processes in boilers fed with liquid or gaseous fuel are a potential cause of damage because there is a risk of explosions due to losses of fuel or a risk of fire due to an overheating of the boiler or a jam of the heat distributing plant.

[0009] In the aforesaid cases, it is absolutely necessary to comply with the safety rules in force. However, these rules often are very complex and difficult to be put in practice and therefore, it occurs that only the fundamental rules are in general respected while the secondary rules are usually disregarded. In this way, risks are involved and the danger is undervalued.

[0010] The aim of the present invention is to carry out a plant which can solve both the aforesaid problems and other subsequent problems radically through a hanging hot air generator which comprises a heat source which is not arranged inside the room any more; on the contrary, the heat source is arranged outside the room by following some practical measures that make this realization possible.

[0011] Although this solution idea is not completely new in the present field, it has been duly studied and developed so as to obtain an ideal solution as regards the construction, this ideal solution being the object of the present invention.

[0012] Any of the aforesaid aims and advantages is reached according to the present invention through a hanging hot air generator which is provided with outer combustion means and an inner distribution unit which distributes the heat through a hydraulic plant which is heated through an outer unit which comprises a fuel boiler and feed components thereof, characterized in that all the components of the plant for the heat generation and the control of the hydraulic circuit are arranged in the outer unit while the inner diffuser includes only the canalization of the overheated fluid and the distribution components thereof, such distribution components being fan components or the like.

[0013] Further features and details of the present invention will be better understood from the following description with reference to the accompanying drawing wherein:

- Figure 1 shows a schematic view of a hanging hot air generator according to the present invention on the whole;
- Figure 2 shows a schematic view of a possible application of the plant to a building wall, the generating unit being arranged in the outside while the distributing unit being arranged in the inside in respect of the building wall, respectively.

[0014] With reference to the accompanying drawing, the heating plant or hot air generating plant according to the present invention consists essentially of an outer unit 1 and an inner unit 2 which comprise the heat generating components and the heat distributing components of this plant, respectively. From the drawing it is evident that the outer unit 1 comprises all the components which are necessary to generate heat for the hydraulic distribution plant.

[0015] More precisely, the outer unit 1 is provided with a burner 3 which is placed near a coil 4 of a primary exchanger which makes part of a hydraulic plant which is fed through a gas source 5 or a source feeding another suited fuel, the gas or fuel being delivered through a valve 6.

[0016] As said, the coil 4 is included in the hydraulic plant which is provided also with two interception valves 7 which are placed on a feed duct 8 and a return duct 9, respectively and a circulator 10 which is placed near a flow adjuster 11.

[0017] A hydraulic air vessel 12 is provided along the feed duct 8. Like the other components, the vessel 12 is included in the outer unit.

[0018] The exhaust fumes generated by the combustion process in the burner 3 are collected in a cowl 13 provided with an aspirator 14. The aspirator 14 discharges the exhaust fumes to the outside.

[0019] The so-described plant heats the fluid which

reaches the inner unit 2 through the feed duct 8. Then, the fluid returns to the unit 1 through the return duct 9.

[0020] The inner unit 2 is provided only with a conventional split including a coil 15 and a ventilation element 16 placed in the rear part thereof.

[0021] The so-obtained plant is very effective and above all, it is very safe, which is important because this plant is intended for a use in particular places where the performed activities involve a high risk of fire o places where many people are present.

[0022] As an advantage, a plurality of inner units can be installed in order to heat very big rooms.

[0023] As it can be seen, all the dangerous components such as the fuel feeding components, the discharging components and the safety components controlling the pressure are arranged out of the heated rooms.

[0024] In this way, it is avoided that escapes of gas or fume propagate inside the inhabited places or rooms.

[0025] The installation of the so-described plant is very simple and can be accomplished without a special skill or a special care and needs no specific preparation. It is sufficient to make a hole in an outer wall to permit the feed and return ducts to pass through it.

[0026] The present heating plant is carried out by utilizing an electric current-tap and a gas or fuel feeding source for generating the burner flames.

[0027] Another advantage consists in the fact that each apparatus is completely self-contained and therefore, it is possible to obtain plants of any size with considerable energy saving.

[0028] A skilled technician of this field could modify the present plant for the generation of heat in the rooms to be heated and obtain solutions that are to be considered as included in the scope of protection of the present invention that results from the following claims.

Claims

1. Hanging hot air generator provided with outer combustion means and an inner distribution unit (2) which distributes the heat through a hydraulic plant which is heated through an outer unit (1) which comprises a fuel boiler and feed components thereof, **characterized in that** all the plant components for the heat generation and the control of the hydraulic circuit are arranged in the outer unit (1) while the inner diffuser (2) includes only the canalization of the overheated fluid and the distribution components thereof, such distribution components being provided with a fan element or the like.

2. Hanging hot air generator as claimed in claim 1, **characterized in that** more precisely, the outer unit (1) is provided with a burner (3) which is placed near a coil (4) of a primary exchanger which makes part of a hydraulic plant which is fed through a gas source (5) or a source feeding another suited fuel, the gas or fuel being delivered through a valve (6).

3. Hanging hot air generator as claimed in the foregoing claims, **characterized in that** the said coil (4) is included in the hydraulic distributing plant which is provided also with two interception valves (7) which are placed on a feed duct (8) and a return duct (9), respectively and a circulator (10) which is placed near a flow adjuster (11).

4. Hanging hot air generator as claimed in the foregoing claims, **characterized in that** a hydraulic air vessel (12) is provided along the feed duct (8) of the hydraulic circuit, which vessel is included in the outer unit together with the other described components.

5. Hanging hot air generator as claimed in the foregoing claims, **characterized in that** the inner unit (2) is provided only with a conventional split including a coil (15) and a ventilation element (16) or the like, place in the rear part.

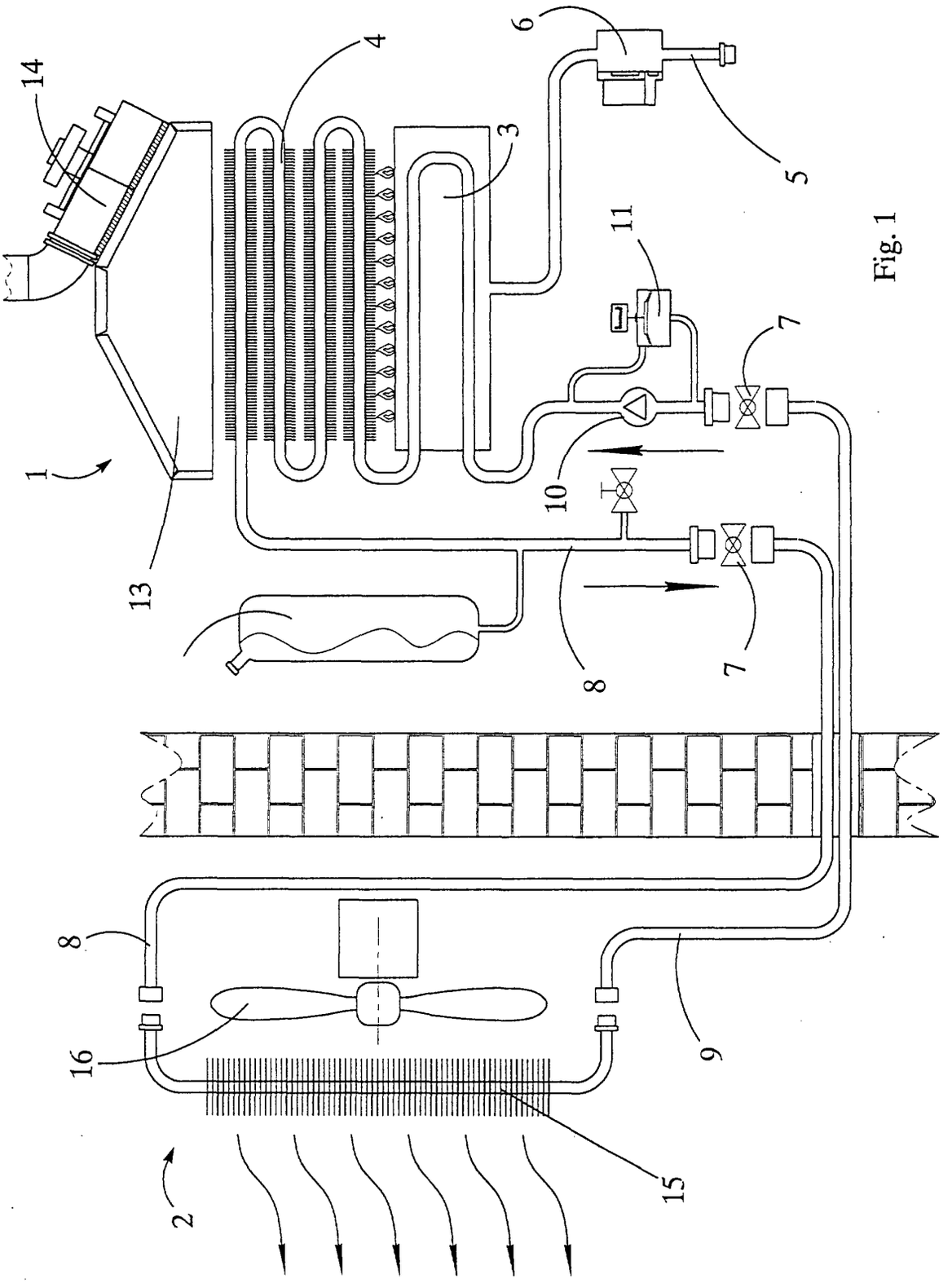

Fig. 1

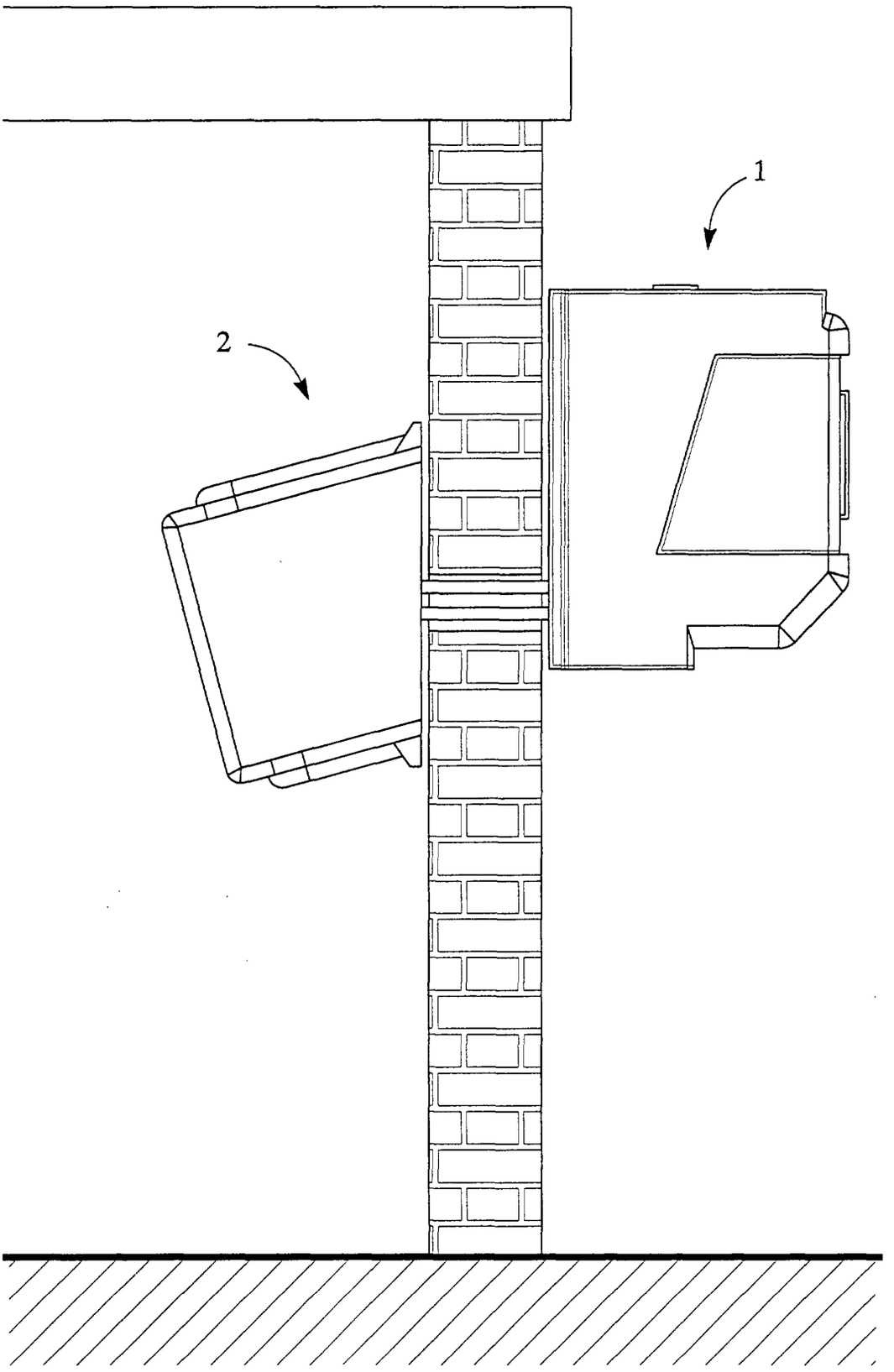

Fig. 2