A condensing heat exchanger boiler comprising a gas inlet (1); a nozzle housing (2) with air inlet cooling holes (3); a combustion nozzle (4) with a flashback preventing insertion of porous material (5); an induced draft exhaust gas ventilator (9) located at the outlet of combustion gases; an insertion (6) made of the heat-resistant material inside which combustion occurs and which is placed inside the space formed by the spiral condensing heat exchanger (7) and transmits the heat created by the combustion of gas with higher temperature than the temperature of the insertion 6 to the heat exchanger spiral (8).
CONDENSATION BOILER FOR HYDROGEN/OXYGEN HIGH TEMPERATURE FLAMES

Technology area

This invention relates to the technical adjustment of heat exchanger, in particular for the boiler to produce heat and hot water.

Present condition of technology

Currently, the majority of boilers for production of heat and hot water is provided with a condensing heat exchanger, which is composed of a ventilator at the inlet to the combustion chamber of heat exchanger, which mix the ratio of gas and atmospheric air, followed by a perforated pipe where the mixture of gas and air is burned using this perforated pipe in the condensing heat exchanger, when the flame is burning just above the perforated tube and it heats the spiral of condensing heat exchanger. Thanks to the ventilator at the inlet there is a forced exhaust of combustion gases from the heat exchanger. The disadvantage of this technical solution is the fact that the transition to the combustion of mixture with a higher temperature, especially the mixture of gas composed of hydrogen and oxygen, leads to the rapid wear of the spiral and perforated tube in the condensing heat exchanger and thus also to the deterioration of the whole heat exchanger and therefore also of the boiler. Another disadvantage is that such mixtures cannot be burnt by the help of perforated pipe, due to its high explosiveness.

Principle of technical solution

The above deficiencies largely solves structural adjustment of heat exchanger for the combustion of gases with a higher combustion temperature, when the gas burns from the nozzle, which is equipped with a porous material for preventing the reverse flame whip, preferably made of sintered bronze, and it heats the insertion made of heat-resistant material in the combustion chamber of the condensing heat exchanger, where this insertion transfers the heat to the tube spiral of the condensing heat exchanger. The forced exhaust of combustion gases of this condensing heat exchanger is solved in this technical solution by a ventilator at the outlet of combustion gases. Another advantage is the longer time of the heat
transfer thanks to the warmed insertion made of heat-resistant lining material and its slow cooling.

List of pictures on the drawings

The invention will be further shown by a drawing, where Figure 1 shows a schematic arrangement of a heat exchanger according to this solution.

Example of technical solution conduct

A heat exchanger according to this technical solution consists of gas inlet I, the nozzle housing 2, in which the cooling holes 3 of the nozzle are placed, combustion nozzles 4, which includes an insertion of porous material 5, then the insertion 6 made of the heat-resistant material , which is placed in the combustion chamber of the heat exchanger 7 and which transmits the heat created by the combustion of gas with higher temperature to the spiral 8 where the heating medium, such as water, circulates. This also protects the spiral against any damage. The exhaust of the combustion gases is solved by a ventilator 9 located at the outlet of combustion gases.

Industrial efficiency
This technical solution is applicable for all boilers with condensing heat exchanger.
Claims for protection

1. The technical adjustment of heat exchanger for the combustion of gases with a higher combustion temperature, characterized in that it consists of the nozzle (4) for combustion of gas with higher combustion temperature containing the insertion made of porous material (5) for preventing the reverse flame whip and heat-resistant insertion (6) designed to transfer heat into the spiral (8) of the exchanger.

2. The technical adjustment of heat exchanger for the combustion of gases with a higher combustion temperature according to the claim 1, characterized in that the exhaust of the combustion gases is solved by a ventilator (9) located at the outlet of combustion gases.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

INV. F23D14/02 F23D14/32 F23D14/82 F23L17/00 F24H1/43
F24H8/Q0

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
F23D F24H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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"Z" document member of the same patent family

Date of the actual completion of the international search 30 August 2013

Date of mailing of the international search report 10/09/2013

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