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71 Applicant: R.A.C. S.r.l.
Via G. Galilei, 2
I-28093 Crusinallo (Novara)(IT)

72 Inventor: Bianchi, Eligio
Via dei Conti, 24
I-28093 - Crusinallo (Novara)(IT)

74 Representative: Cicogna, Franco
Ufficio Internazionale Brevetti Dott. Prof. Franco Cicogna
Via Visconti di Modrone, 14/A
I-20122 Milano(IT)

64 Heat regenerator particularly designed for fireplaces and the like.

57 Heat regenerator, particularly for fireplaces and the like, comprising a tube nest (1) to be housed in the fireplace, the lower leg (3) whereof affects the lower region of the fireplace and is telescopically coupled to a manifold (5) for conveying into the tube nest (1) the air sucked from the environment at the ground level.

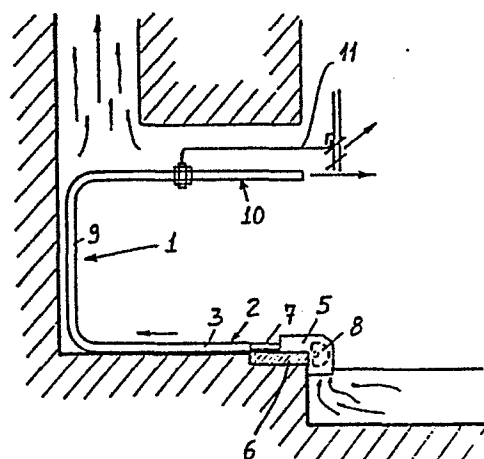


Fig. 1

The present invention relates to a heat regenerator, particularly designed for application to fireplaces and the like.

As it is known heat regenerators or heat exchangers are progressively used in fireplaces in such a way as to improve the combustion efficiency within the mentioned conventional fireplaces which, as it is well known, have usually a low thermal exchange efficiency, since it is determined only by radiation.

The prior art approaches generally provide a tube nest which is located inside the fireplace in such a way as to be substantially near to its walls and encompass the fireplace region itself.

Through the mentioned tube nest water is generally caused to circulate which, upon heating, as it is touched by the flame, acts to transport heat to radiators and the like.

With the mentioned known approaches, great constructional difficulties are involved, since it is firstly necessary to provide a heat exchanger having the shape of the fireplace and, therefore, it is necessary to employ a different shape for each type of fireplace.

Moreover the coupling to a radiator network generally involves installation problems.

Yet another drawback of the prior art approaches is that of making suitable seals at the several fittings, if the fact is considered that such fittings are frequently located at regions

contacted by the flame.

Accordingly, the task of the present invention is to overcome the thereinabove mentioned drawbacks, by providing a heat regenerator, particularly for fireplaces and the like, which is so designed as to easily and quickly fit any possible fireplace shapes, as presently commercially available, without requiring any structural or installation modifications.

Within that task, it is a main object of the present invention to provide a heat regenerator, particularly for fireplaces and the like, which affords the possibility of regenerating the heat, as produced by the fireplace, without the need of using complex installation, and able of reintroducing heated air directly into the environment.

Another object of the present invention is to provide a heat regenerator, particularly for fireplaces and the like which can automatically fit any fireplace shapes.

Yet another object of the present invention is to provide a heat regenerator which is very simple construction-wise and may be produced starting from easily available components and materials and which is very advantageous from a mere economic standpoint.

According to one aspect of the present invention the above task and objects, as well as yet other objects which will become more apparent hereinafter, are achieved by a heat regenerator,

particularly for fireplaces and the like, characterized in that it comprises a tube nest, to be housed in a fireplace and including at least a leg affecting the lower region of the fireplace and effective to be telescopically associated with an air conveying manifold for regenerating or recovering heat.

Further characteristics and advantages of the heat regenerator according to the present invention will become more apparent thereafter from the following detailed description of a preferred embodiment whereof, being illustrated by way of example and not of limitation in the accompanying drawings, where:

fig.1 is a schematic cross-sectional view illustrating a heat regenerator according to the invention, as installed in a fireplace;

fig.2 is a perspective view illustrating the mentioned heat regenerator;

fig.3 schematically illustrates a tube nest with the hot air emitting ducts arranged at the bottom;

fig.4 illustrates a tube nest with hot air emitting ducts arranged on one side;

fig.5 is a perspective view illustrating the tube nest;
and

fig.6 illustrates another embodiment of the telescopic means.

With reference to the above figures, the heat regenerator, particularly for fireplaces and the like according to the present invention comprises a tube nest, overallly indicated at the reference number 1.

The mentioned tube nest 1 consists of a plurality of tubular elements 2 which, advantageously have a substantially C-shape.

The lower leg of the tube nest 1, indicated overallly by the reference number 3, may be housed at the bottom of the fireplace proper 4.

More specifically the lower leg 3 of the tube nest 1 may be telescopically associated with a manifold 5 for conveying air.

As it is shown, the air conveying duct is of cranked shape in such a way that it may be coupled to the bottom step 6 provided on the front of the fireplace.

From the manifold 5 rectilinear portions 7 extend which are telescopically inserted into the ducts 2, at the lower leg 3.

It should be noted that the manifold 5 is provided for sucking air at the ground level of the environment.

In order to convey and suck air, there is provided, inside the manifold 5, a fan 8 which is supplied by a power supply (not shown).

The tube nest 1 is moreover provided with a vertically extending leg 9, coupled to the lower or bottom leg 3 and connected to an air emitting duct 10 which may directly lead to the environment to introduce air into the latter, said

air being heated as it is caused to forcibly pass through the tube nest 1 which, during the operation of the fireplace is contacted by the flame.

As it is shown in fig.3, it is possible to provide a tube nest 20 having portions for emitting hot air, which portions are indicated at 21.

The latter are arranged at the bottom and laterally, with respect to the lower leg 3 which is coupled to the manifold.

The coupling between the lower leg 3 and the ducts 21, arranged at the bottom, is carried out by U-shaped fittings 22 lying in a vertical plane and arranged at the bottom of the fireplace.

In the embodiment of fig.4 there is illustrated a tube nest, indicated at 30, which is provided with side air emitting ducts, indicated overallly at 31, which are coupled to vertically extending fittings 32, also extending or depending from the lower leg 3.

According to the embodiment illustrated in fig.6, the lower or bottom leg 3 of the tube nest is rigidly coupled to a single manifold 40 of flattened and elongated shape thereto there is telescopically coupled a mating shape connector 41 rigidly extending from the manifold 5.

This embodiment provides the advantage of greatly simplifying all of the couplings, by replacing the plurality of telescopic couplings of the tubes with a single telescopic element.

From the above disclosure, it should be

apparent that the heat regenerator in particular for fireplaces and the like according to the present invention may be installed in a very quick and simple way, since it is possible to simply arrange the tube nest in the proper position, inside the fireplace and then connect said tube nest, through the mentioned telescopic coupling, with the manifold 5.

The latter will forcibly introduce, owing to the provision of the fan 8, the air which is heated inside the tube nest and which is conveyed to the environment, thereby improving substantially the thermal exchange efficiency.

If it is desired, it is possible to connect to the emitting ducts baffle members 11, effective to convey hot air to the desired regions to be heated.

From the above disclosure it should be noted that the invention fully achieves the intended task and objects.

In particular it is to be pointed out the great construction and assembling simplicity of the device which, by exploiting for the thermal exchange a forced conveying of air, does not require any complex fittings or sealing members, the device consisting essentially of a number of suitably bent tubular elements.

In practicing the invention the used materials, provided that they are compatible with the intended use, as well as the shape and size, may be any according to needs.

C L A I M S

- 1- A heat regenerator, particularly for fireplaces and the like, characterized in that it comprises a tube nest (1), to be housed in a fireplace and including at least a leg (3) affecting the lower region of the fireplace and effective to be telescopically associated with an air conveying manifold (5) for regenerating heat.
- 2- A heat regenerator, particularly for fireplaces and the like, characterized in that said tube nest (1) is provided with a vertically extending portion (9) starting from said lower leg (3) and communicating with ducts (10) for emitting hot air into the environment.
- 3- A heat regenerator, particularly for fireplaces and the like, according to claim 1, characterized in that said air conveying manifold (5) is provided, in its inside, with a fan (8) for sucking air from the bottom of the environment and forcibly introducing it into said tube nest (1).
- 4- A heat regenerator, particularly for fireplaces and the like, according to claim 1, characterized in that said air conveying manifold (5) is of cranked configuration in order to be coupled to the bottom step (6) of said fireplace.
- 5- A heat regenerator, particularly for fireplaces and the like, according to claim 2, characterized in that said ducts (10) for emitting hot air from said tube nest (1) may be arranged at the top, at the bottom and on one side of said fireplace.

6- A heat regenerator, particularly for fireplaces and the like, according to claim 1, characterized in that said air conveying duct (5) is arranged at the front, on a corner of the fireplace and is provided with coaxial ducts (7) for coupling the air inlet ducts.

7- A heat regenerator, particularly for fireplaces and the like, according to claim 1, characterized in that it comprises a conveyor (40) rigid with said lower leg (3) of said tube nest (1), said conveyor being effective to be telescopically inserted into a connector of mating shape (41) extending from said air conveying manifold (5).

8- A heat regenerator, particularly for fireplaces and the like, according to claim 1, characterized in that it comprises air baffles for orienting the hot air at the output of said air emitting ducts (10).

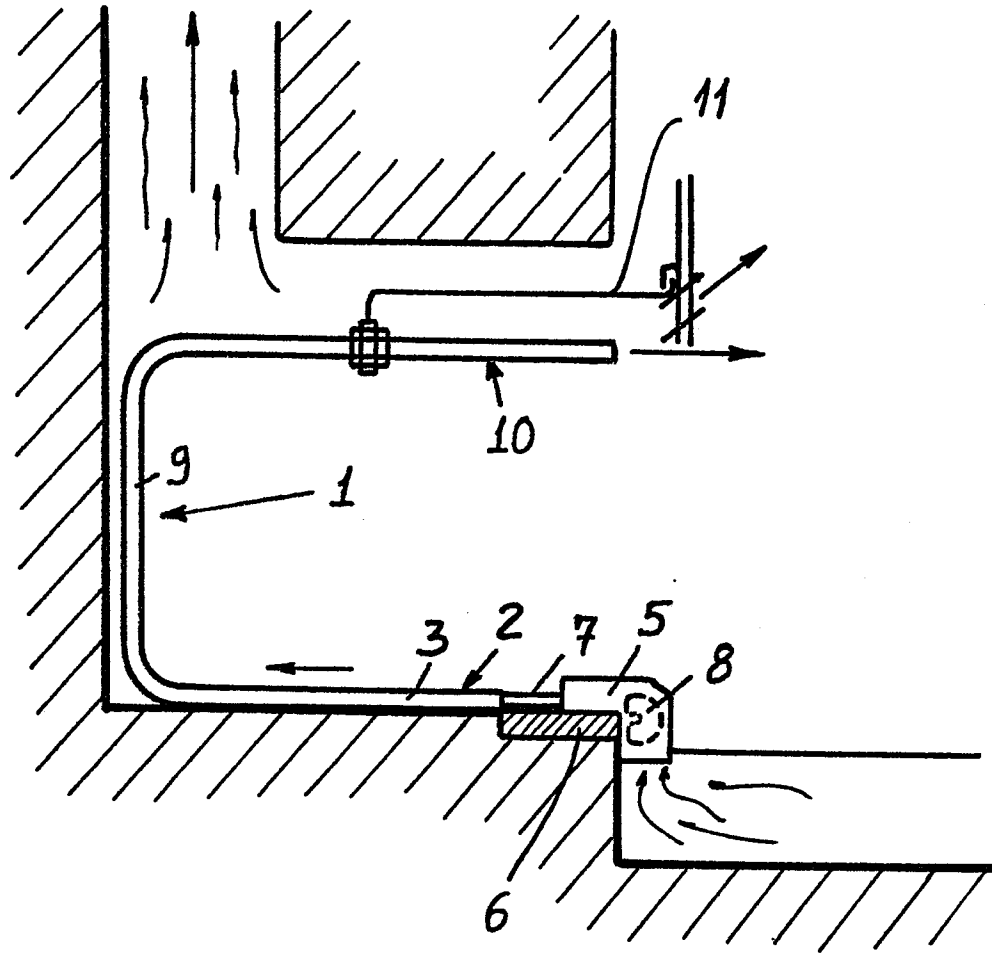


FIG. 1

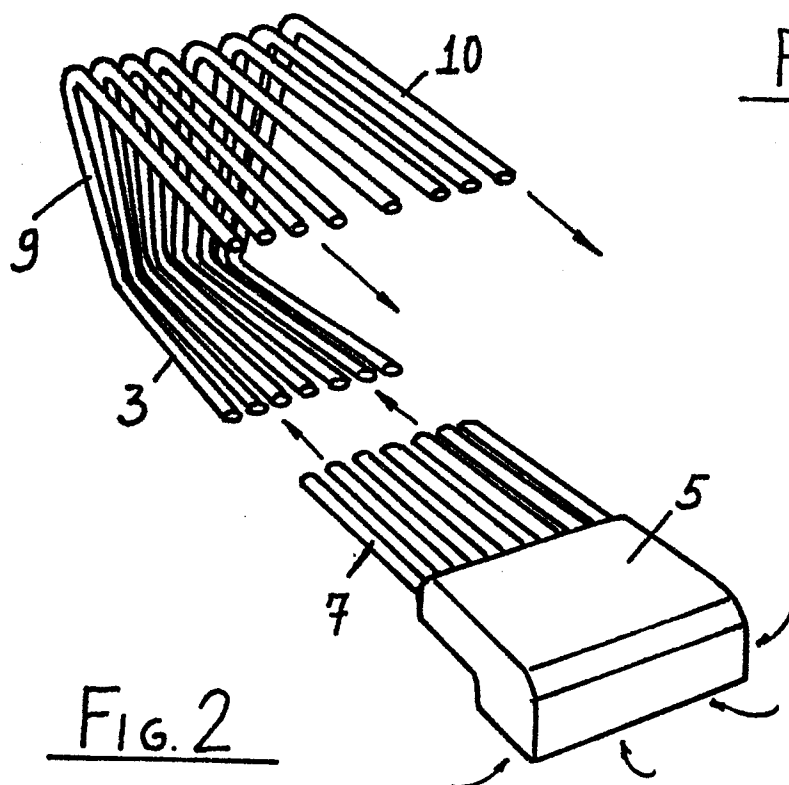


FIG. 2

