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(54) Heat recuperator with extractable exchanger unit

(57) The heat recuperator comprises an exchanger unit (3) housed inside a casing (1) provided with openings (2) for the intake and the output of flows of air subject to heat exchange. The casing (1) has an opening (6) with removable cover (7) and the heat exchanger unit (3) is coupled to the casing (1) by means of sliding guides (5) that allow its extraction through said opening (6).

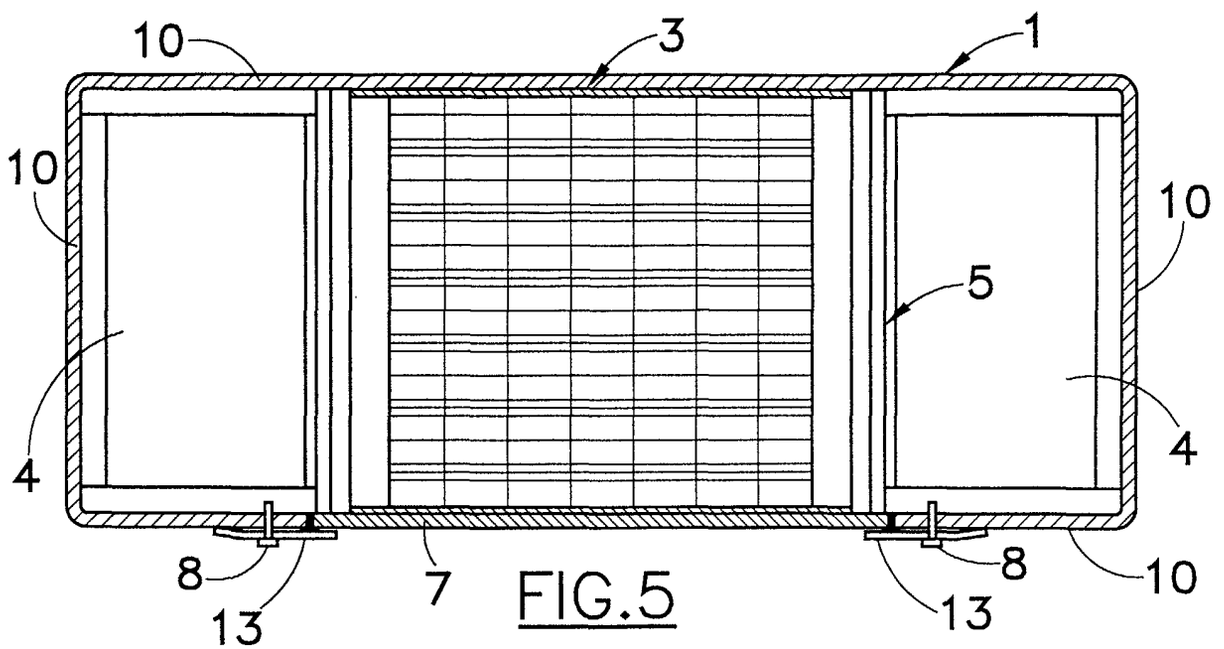

FIG.5

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Description

[0001] The present invention concerns a heat recuperator provided with extractable heat exchanger unit for operations of maintenance and possible substitution of the same unit.

[0002] By the term "heat recuperator" a heat exchanger unit for buildings is meant in which two flows of air exchange heat between each other through the walls that separate them (plates, pipes, etc.) or other intermediate elements provided with thermal capacity.

[0003] The fundamental part of a heat recuperator is evidently the heat exchanger unit, that is placed inside a containing casing provided with openings for the intake and the output of the air flows.

[0004] With the use the exchanger unit gets dirty and more in general deteriorate, so that it becomes necessary to dismantle the device in order to have access to the same unit and to carry out its maintenance or even its substitution.

[0005] This operation is usually long and complex and it requires the intervention of skilled personnel.

[0006] Object of the present invention is to provide a heat recuperator provided with heat exchanger unit that is easily and quickly extractable from the casing that contains it.

[0007] According to the invention such object has been attained with a heat recuperator comprising an exchanger unit housed inside a casing provided with openings for the intake and the output of air flows that are subject to heat exchange, characterised in that said casing has an opening with removable cover and said heat exchanger unit is coupled to said casing by means of sliding guides that allow its extraction through said opening.

[0008] In this way, without having to disassemble the whole device but simply by removing a cover, it is possible to accede to the exchanger unit so as to make it slide along its guides and to extract it from its casing.

[0009] Therefore it is possible to comfortably carry out the cleaning of the exchanger unit with any suitable mean and then to insert it again into the casing, or to replace it with a new one, finally putting the removed cover back in its place.

[0010] An embodiment of the recuperator according to the invention is illustrated in a non-limiting way in the enclosed drawings, in which:

Figure 1 shows the heat recuperator in perspective bottom view;

Figure 2 shows the heat recuperator with removed cover in bottom plan;

Figure 3 shows the magnified detail of a sliding guide by which the exchanger unit is coupled inside the casing that contains it;

Figure 4 shows the magnified detail of a locking point of the cover on the casing containing the exchanger unit;

Figure 5 shows the heat recuperator as sectioned according to the line V-V in Figure 2 with exchanger unit inserted in its casing and cover fastened to the same casing;

Figure 6 shows a section view similar to the one in Figure 5 but with removed cover and exchanger unit extracted from the casing.

[0011] In the drawings there is shown a heat recuperator comprising an external casing 1 with parallelepiped box-like shape, provided with insulated walls 10 and with openings 2 for the intake and the output of flows of air destined to exchange heat between themselves, and a heat exchanger unit 3 housed inside the casing 1 so as to be touched by the aforesaid flows of air.

[0012] From the sides walls of the casing 1, as it can be seen in Figure 2, four fixed partitions 4 extend toward the inside with which the heat exchanger unit 3, also having parallelepiped shape but at 45° as regards the casing 1, is slidingly coupled by means of sliding guides 5 that allow its extraction through an opening 6, shaped and oriented like the exchanger unit 3, once removed a removable cover 7, thermally insulated, fastened to the casing by means of small compression plates 13 and fastening screws 8 with interposition of a perimetral packing 9, that has a section substantially shaped as an umbrella with a rigid part 15 and a deformable soft part 16 (Figure 4).

[0013] The magnified detail of one of the sliding guides 5 is illustrated in Figure 3, where it can be seen as consisting of a channelling 10 made as a single piece with one edge of the exchanger unit 3 and bearing with its cross projections 11 a pair of synthetic material packings 12, for instance brush seals, that co-operate with the end of a partition 4, that is inserted in the same channelling.

[0014] During the normal period of operation of the heat recuperator the exchanger unit 3 is positioned inside the casing 1 and the cover 7 is fastened to the same casing in order to close the opening 6 with the packing 9 tightly.

[0015] Two flows of air incoming and then outgoing through the openings 2 exchange heat between themselves inside the exchanger unit 3, the one giving out or removing heat to the other one and vice versa.

[0016] In order to carry out the maintenance and the possible substitution of the exchanger unit 3 it is sufficient to remove the cover 7 by unscrewing the screws 8 and thus loosening the small plates 13 and then to slide the exchanger unit 3 along the guides 5 until it is extracted through the opening 6.

[0017] Once the maintenance or the possible substitution of the exchanger unit 3 has been carried out, the latter is inserted again inside the casing 1, still taking advantage of the opening 6 and the guides 5, and finally the cover 7 is put back in its position and fastened to the casing 1 while being careful to verify that the perimetral packing 9 is correctly positioned so as to guarantee the

perfect tightness between casing 1 and cover 7.

Claims

1. Heat recuperator comprising an exchanger unit (3) housed inside a casing (1) provided with openings (2) for the intake and the output of flows of air subject to heat exchange, **characterised in that** said casing (1) has an opening (6) with removable cover (7) and said heat exchanger unit (3) is coupled to said casing (1) by means of sliding guides (5) that allow its extraction through said opening (6).

2. Heat recuperator according to claim 1, **characterised in that** said sliding guides are made up of guiding channellings (10) in which the ends of partitions (4) extending radially inside said casing (1) are inserted.

3. Heat recuperator according to the claim 1, **characterised in that** said cover (7) is thermally insulated and fastened to said casing (1) with interposition of a perimetral tight packing (9).

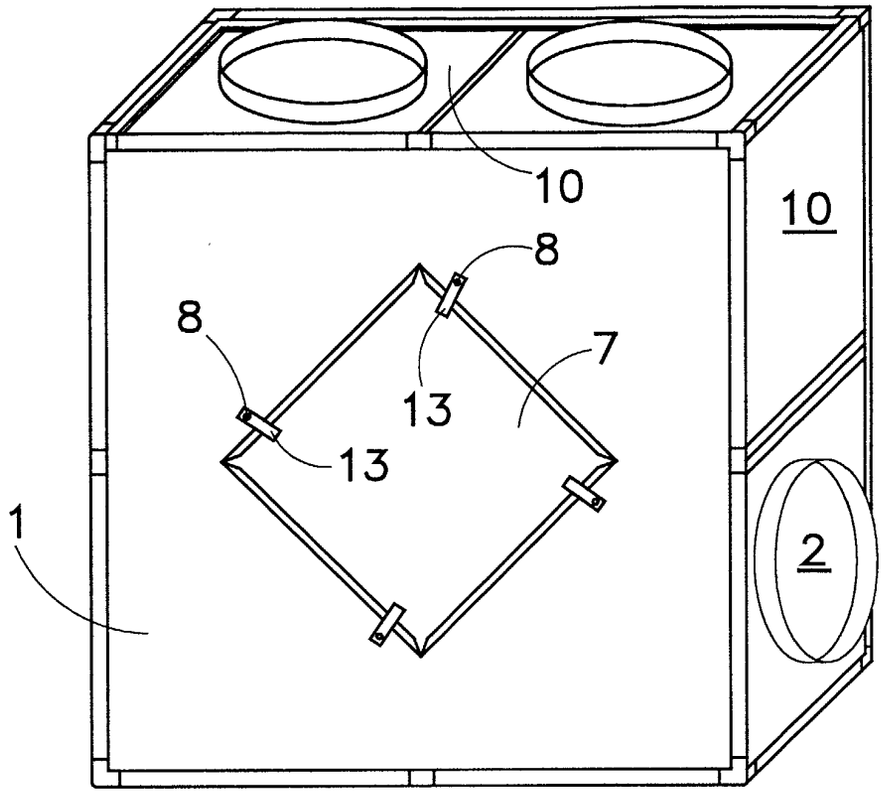

FIG.1

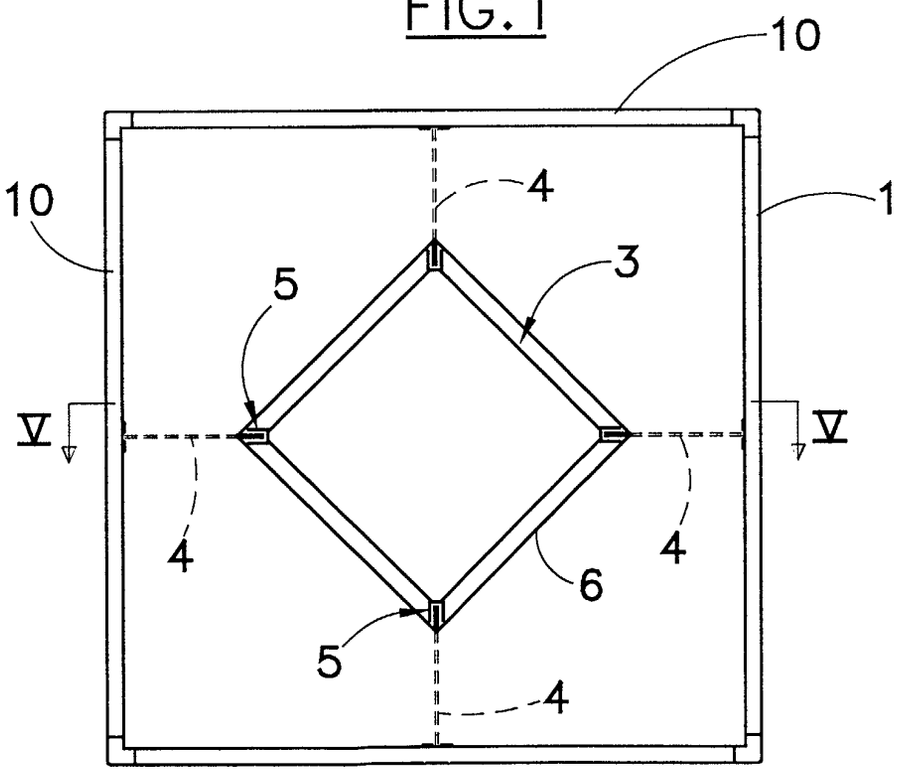

FIG.2

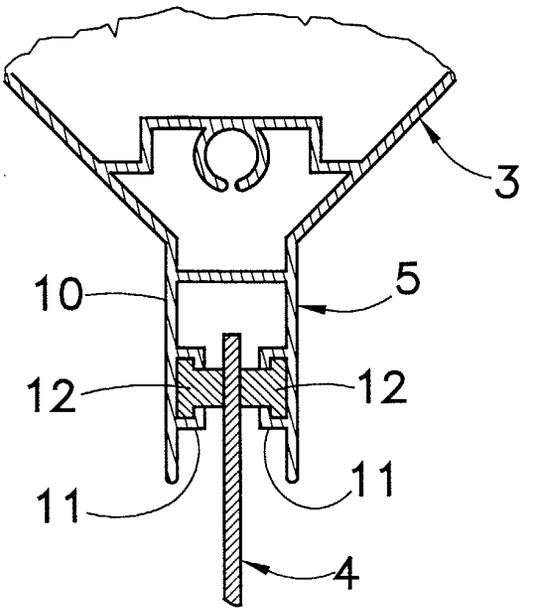

FIG.3

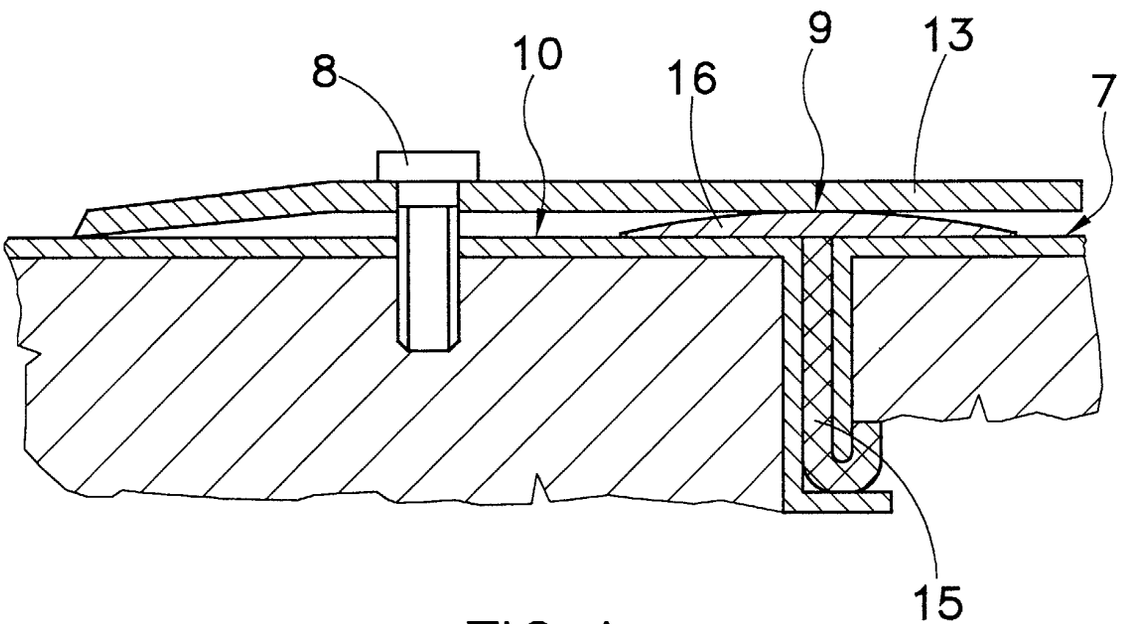

FIG.4

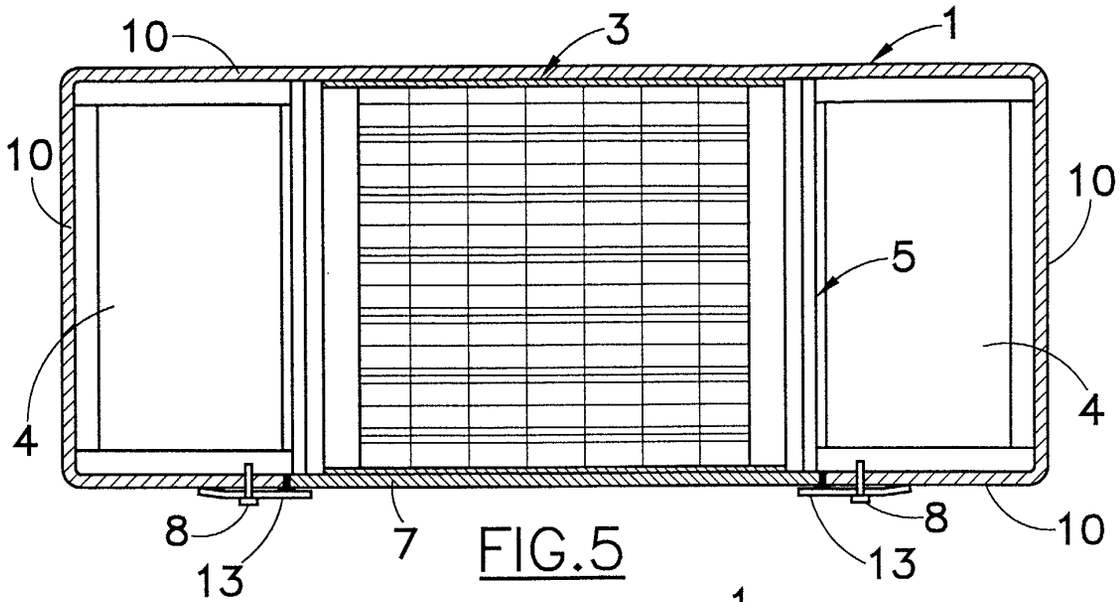

FIG.5

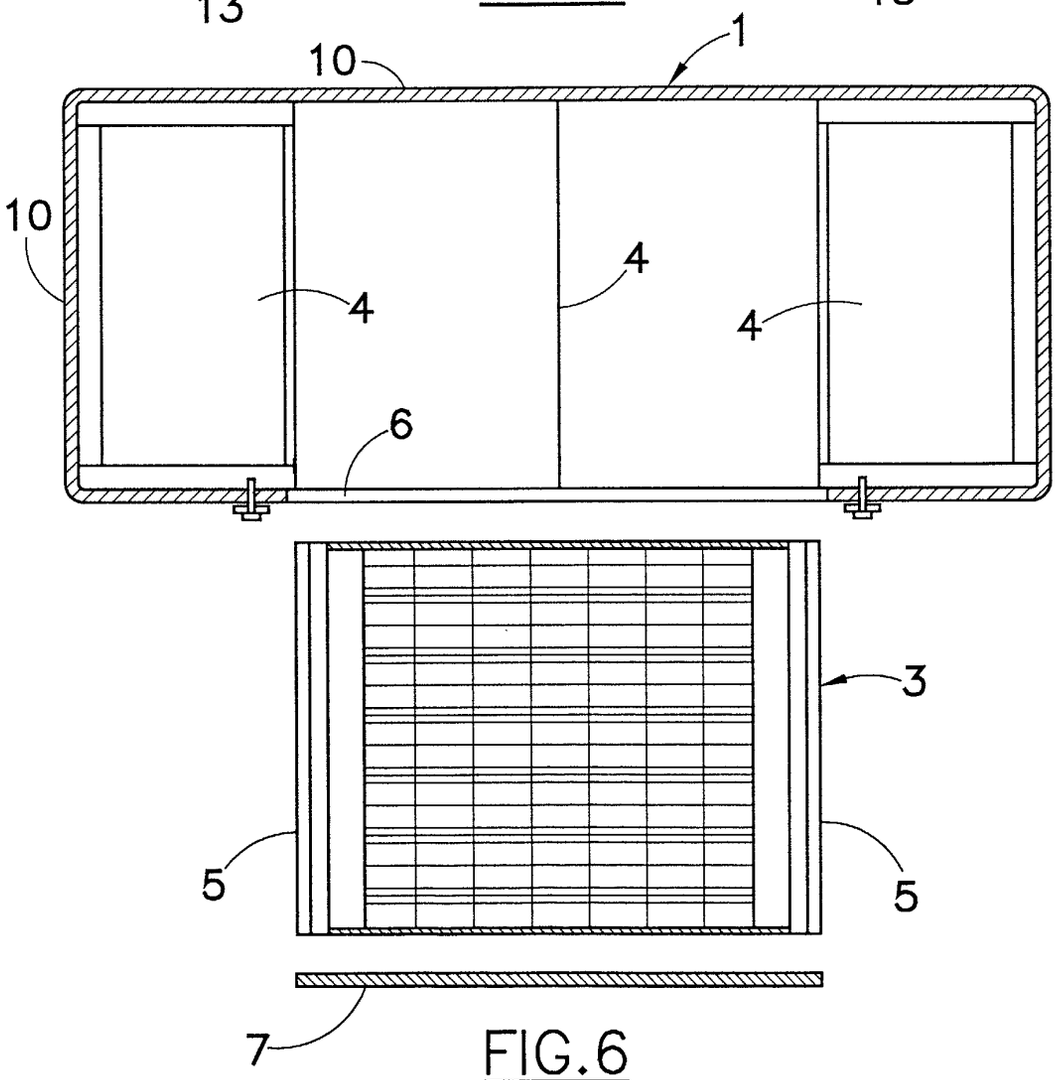

FIG.6