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(54) SOLAR PANEL, IN PARTICULAR TILE

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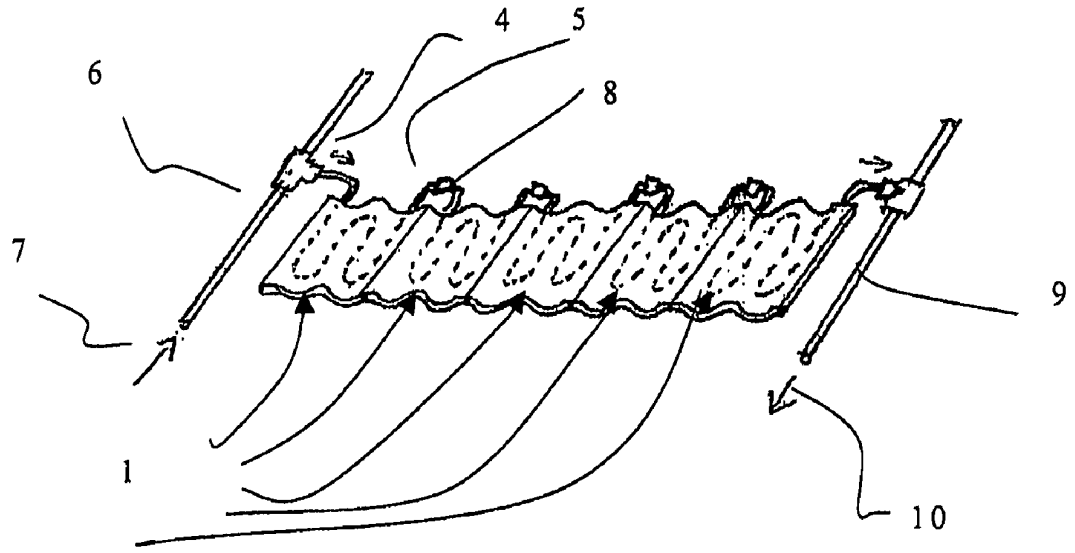
(57) **ABSTRACT**

A solar panel, particularly a tile, comprising solar energy absorbing material, at least one conduit in contact with the absorbing material and heat transport fluid passing through the conduits is described. The conduits are incorporated in the absorbing material according to the invention.



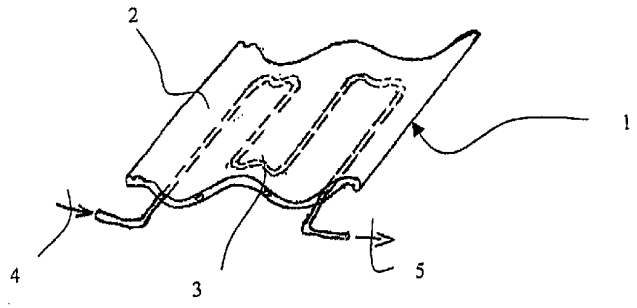


Fig. 3

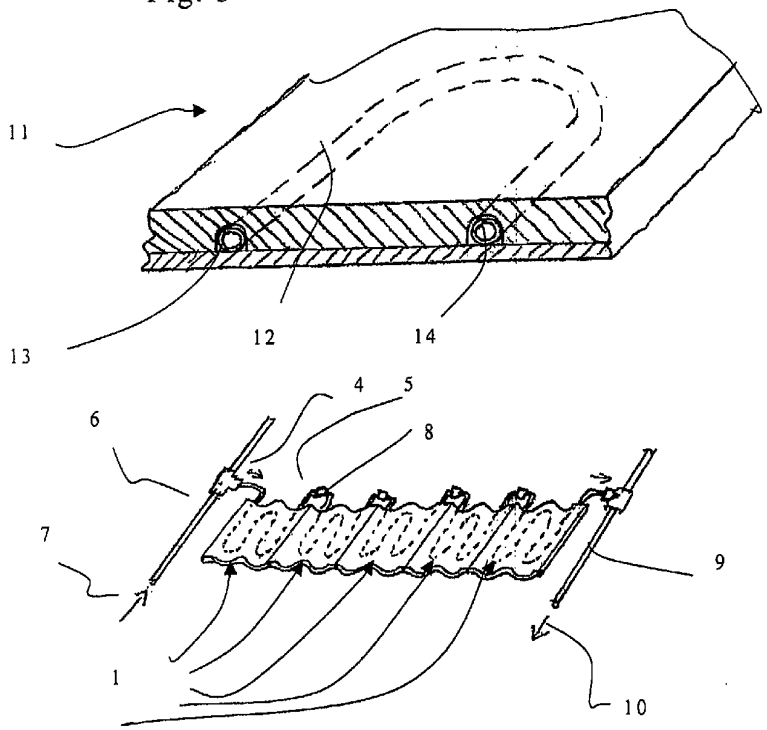


Fig. 2

SOLAR PANEL, IN PARTICULAR TILE

[0001] The present invention relates to a solar panel, particularly a tile according to the identifying section of claim **1**.

[0002] Solar panels of the known type are formed by conduits that are crossed by a convection heater, for example water, for the heat exchange between water and an absorbing material exposed to the solar rays. The absorbing material could be a further storage liquid or the conduit itself could be formed by a material absorbing the solar rays well.

[0003] These solar panels can be used alone and must be mounted on other structures; therefore they only have the task of retrieving energy from solar rays.

[0004] The solar panels of the known type are therefore very expensive, since their structure and arrangement are destined only for heat transmission.

[0005] The object of the present invention is therefore to overcome the drawbacks of solar panels of the known type and to offer a solar panel that can be incorporated within a structure such as a building, in such a way that it is at the same time a component of the latter.

[0006] This object is achieved by a solar panel, particularly a tile, with the characteristics featured in claim **1**. Incorporating in a tile a conduit for a convection heater, the tile material serves as an absorber for the solar rays and the solar panel hence becomes a tile satisfying two different functions: the function of the thermal energy unit and the function of covering a building.

[0007] Surprisingly, it has been found that fruit material, particularly apples, can be used as material, as described for example in the application for the Italian patent no. BZ 2006 A 000 044.

[0008] Further details and characteristics of the solar panel, particularly a tile, will become clear from the claims and the following description of a preferred embodiment, represented in the appended drawing in which:

[0009] FIG. **1** is a schematic perspective view of a panel, particularly of a tile according to the invention,

[0010] FIG. **2** is a schematic perspective view of an arrangement with a plurality of tiles according to FIG. **1**, and

[0011] FIG. **3** is a close-up in schematic perspective view of an element connecting two tiles next to each other.

[0012] As represented in the Figures, reference number **1** indicates a tile for example of the known type for covering roofs. Tile **1** comprises solar energy absorbing material and at least one conduit **2** incorporated in a coil arrangement in the tile **1** itself in such a way that the conduit is in contact with the absorbing material. Conduit **2** in a coil arrangement **3** presents a supply **4** of heat transport fluid and a delivery **5** at the tile output.

[0013] As shown in FIG. **2** a plurality of tiles **1** are next to each other. The first tile **1** is connected with an inlet manifold **6** equipped with an inlet **7** in order to supply a plurality of rows of tiles **1** one after another. Each tile is connected to the following one through its delivery **5** with the supply **4** of the tile next to it through for example a connecting element **8**, while the last tile of the row enters an outlet manifold **9** equipped with an outlet **10**.

[0014] The deliveries **5** of the tile rows are connected with the outlet manifold **9** in order to supply power to a user facility, such as a hot water tank.

[0015] The connecting element could be also formed by a tile as shown in FIG. **3**, where a tile **11** presents a length of conduit **12** whose inlet **13** is connected with the delivery of tiles **1** and whose outlet **14** is connected with the supply **4** of a nearby tile.

[0016] The absorbing material of the solar panel, i.e. the tile according to the invention, is conveniently formed by minced fruits, for example apples deriving above all from the fruit processing industry waste.

[0017] Further embodiments and characteristics are possible without departing from the scope of the present application. Hence, the conduits, for example, might be formed either by separate pipes which are drowned in the absorbing material or may be obtained directly from the material.

1. Solar panel, particularly tile, comprising solar energy absorbing material, at least one conduit in contact with the absorbing material and a heat transport fluid passing through the conduits, characterised in that the conduits are incorporated in the absorbing material.

2. Solar panel according to claim **1**, characterised in that the conduits consist of pipes drowned in the absorbing material.

3. Solar panel according to claim **1**, characterised in that the conduits are obtained directly from the absorbing material.

4. Solar panel according to the previous claims, characterised in that the absorbing material consists of fruits, particularly of minced apples.

5. Solar panel according to the previous claims, characterised in that it forms a tile.

6. Solar panel according to the previous claims, characterised in that the solar panels are next to each other to form rows, two panels next to each other being connected between each other through a connecting element, the first and the last panels of the rows being connected respectively with an inlet manifold and an outlet manifold connecting a plurality of rows of solar panels adjacent to each other.

7. Solar panel according to the previous claims, characterised in that two panels next to each other present, the first an output which is connected with the input of an inversion conduit of another panel, and the last having an output which is connected with the input of the panel next to it.

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