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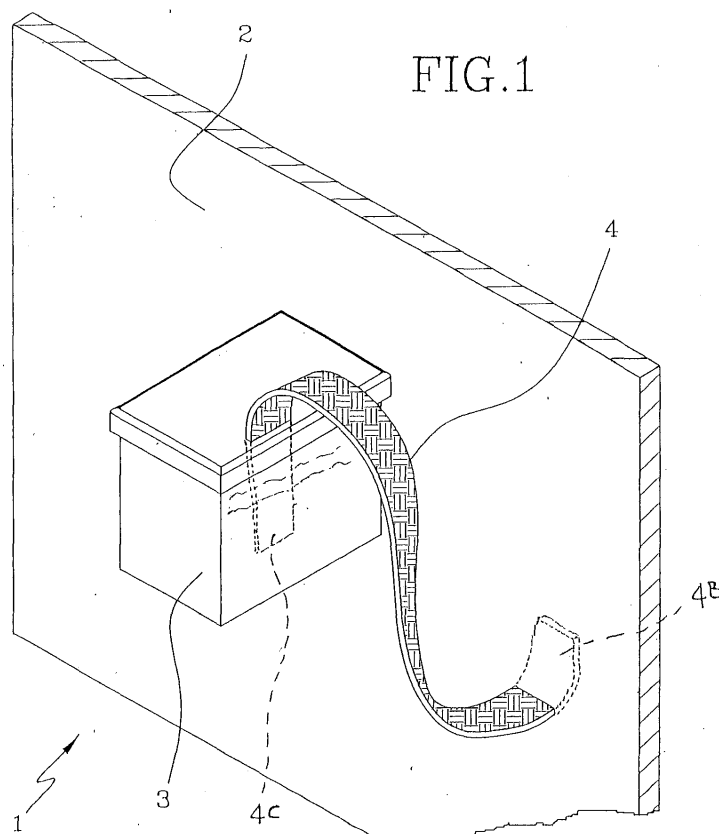
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(54) **Arrangement for regulating the room humidity**

(57) It is disclosed a humidity regulator apparatus in rooms of buildings having walls or other elements such as pillars, stoves, etc. at least partly made of a clayey material (2) or at all events a material such as the crude earth material that is suitable to absorb water and re-

lease it into the concerned environment. The apparatus comprises water supplying means (3) for moistening the clayey material, and means (4) for controlled-conveyance to the clayey material of the water fed by said supplying means (3).



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Description

[0001] The present invention relates to a humidity regulator apparatus in rooms of buildings.

[0002] It is known that rooms of buildings to be used as habitations or at all events to be designed to house persons and/or materials that are particularly sensitive to the moisture degree of the air contained in said rooms can be equipped with true conditioning apparatus or merely with air humidifiers to be used in winter combined with the heating plants and/or or with dehumidifiers to be used in summer to reduce sultriness.

[0003] However in particular the above mentioned humidifiers, in addition to having sometimes rather expensive costs for installation and management, are not generally able, above all in rooms maintained to high temperature in winter periods, to reduce the air dryness and to bring the relative air moisture to percentage values acceptable to the human beings, usually about 50%, that are also judged as indispensable for a correct conservation of furniture, wooden structures and coverings, such as parquets and the like.

[0004] It is also known that the walls of a building can be made or plastered with clayey materials or crude earth materials that not only offer particular aesthetic natural solutions, but also offer advantageous properties due both to their full compatibility with the living organisms and suitability to neutralise odours and noxious substances, and to their capability of absorbing or releasing humidity also in important amounts without being submitted to structural alterations or losing their characteristics.

[0005] It is to be pointed out at all events that the beneficial suitability to adjustment of the humidity rates performed by clayey materials finds a limitation above all in the presence of very dry air over extended periods because under these circumstances said clayey materials completely dry and are no longer able to return water to the environmental air in which they are inserted.

[0006] Under this situation the technical task underlying the present invention is to conceive a humidity regulator apparatus capable of substantially obviating the limits of the above mentioned known apparatus and of the walls or other structural elements made up of or coated with clayey materials or crude earth materials at least partly.

[0007] Within the scope of this technical task it is an important aim of the invention to devise a humidity regulator apparatus in rooms of buildings enabling suitable relative humidity rates to be maintained above all in winter periods when the air has a tendency to remain particularly dry due to the heating action of radiators, stoves and the like.

[0008] Another important aim of the invention is to devise a humidity regulator apparatus based on use of natural and non-polluting materials which is able to ensure full bio-compatibility of the rooms in which it is set.

[0009] The technical task mentioned and the aims

specified are substantially achieved by a humidity regulator apparatus in rooms of buildings, one said room having walls or other elements such as stoves, columns, panels, pillars, at least partly consisting of crude earth or other suitable material, characterised in that it comprises water supplying means designed to moisten said material and means for controlled conveyance to the material of the water fed by said supplying means.

[0010] Description of two preferred but not exclusive embodiments of an apparatus in accordance with the invention are now given by way of non-limiting examples and depicted in the accompanying drawings, in which:

- Fig. 1 diagrammatically shows a first embodiment of the apparatus in accordance with the invention; and
- Fig. 2 diagrammatically shows a second embodiment of the apparatus in accordance with the invention.

[0011] With reference to the drawings, the apparatus in accordance with the invention is generally identified by reference numeral 1.

[0012] It can be advantageously carried out in rooms of buildings having walls at least partly consisting of a material capable of absorbing and releasing humidity without suffering from structural decay, such as clayey or clay-based materials that can be used as coatings or plaster for said walls.

[0013] In addition, the apparatus can be also used either through exploitation of surfaces of columns or pillars coated with the same materials adapted to absorb and release humidity (clay-based or clay-containing materials, crude earth materials, clayey crude earth or silty crude earth materials or others), or through exploitation of surfaces of other elements such as stoves or the like.

[0014] Obviously the invention can be also carried out in the presence of rooms fully made of said bio-compatible materials having the mentioned properties of absorbing/releasing humidity from and to the air.

[0015] Said apparatus comprises means 3 for supplying the water designed to moisten the clayey material 2 and means 4 for controlled conveyance of the water fed by said supplying means 3.

[0016] By way of example only, in a first embodiment of the apparatus in accordance with the invention and diagrammatically shown in Fig. 1, the water supplying means 3 can consist of one or more containers external to the wall in which storage of the water itself is possible by connection with suitable pipelines or directly through pouring off from other vessels.

[0017] In this first embodiment the means 4 for controlled conveyance of the water to the clayey material 2 can be obtained from simple elements adapted to cause water flow by capillary attraction, such as strips of suitable textile material or other similar materials.

[0018] Obviously, it will be also possible to use suitable tubular elements adapted to convey the water from

the container, located on or in an upper part of the clayey wall, to a lower region thereof.

[0019] In the example shown in Fig. 1 provision is made for use of one or more strips of fibrous material that have a first end 4c plunged in the water held in the container 3 and the other end 4b incorporated into the wall to be humidified.

[0020] In this connection it is to be pointed out that the crude earth material easily lends itself to operations of inserting such elements without requiring finishing interventions by qualified persons for digging the housing of the strips and then partly incorporating them into the wall.

[0021] In a second embodiment diagrammatically shown in Fig. 2 the controlled-conveyance means 4 for the water is advantageously obtained by use of at least one panel of the same type as, or a type similar to those already known and utilised in wall heating. Said panel has a pipe, a pipe coil 4a for example, incorporated thereinto and in communication with the clayey material 2 through a plurality of small apertures.

[0022] In the last-mentioned embodiment the water supplying means 3 consists of feeding ducts in which the water flow running therethrough can be suitably controlled or programmed by the user depending on requirements.

[0023] In other words, by intervening on a simple command, a predetermined amount of water is caused to be poured out into the wall and therefore to be released therefrom to the environment to be humidified.

[0024] Still alternatively, the controlled-conveyance means 4 can comprise a valve or similar device capable of selectively enabling passage of water from the water supplying means 3 to the material susceptible of absorbing humidity.

[0025] It will be therefore possible to use a panel made of a material capable of absorbing water (by capillary attraction, for example) and releasing it to the concerned environment without suffering from structural decay, which panel is directly and partly plunged in a water-holding container (that will at the same time act as a water supplying means 3 and a controlled-conveyance means 4). It is the panel itself that will absorb and release water in a controlled manner.

[0026] The invention achieves important advantages.

[0027] In fact, first of all, the apparatus in accordance with the invention enables achievement of a healthy and comfortable humidity level in every type of room and under any situation, in particular in the presence of heating elements that by themselves would tend to bring the air to very reduced humidity rates, which humidity level is particularly suitable to the presence of humans and useful also for a correct conservation of wooden artefacts.

[0028] Furthermore, the apparatus being the object of the invention has a quite independent operation and adjusting action because humidity exchange between the crude earth material and the concerned environment will be greater or smaller depending on the air dryness or

humidity, for a natural balance.

[0029] An environment with a correct humidity is recommended by physicians above all in rooms assigned to children to obviate some types of problems to the respiratory tract.

[0030] The apparatus being the object of the invention, in some more elementary forms thereof, can be also a creative and amusement element, in addition to being healthy.

[0031] It will be finally recognised that the apparatus in accordance with the invention allows an important energy saving as compared with the apparatus of the known art and in addition the installation costs are very reduced. In fact it exploits the properties of absorbing/releasing humidity of the material forming the wall and also exploits the surface sizes to increase efficiency of the adjusting action.

Claims

1. A humidity regulator apparatus in rooms of buildings, one said room having elements at least partly made up of or coated with a material capable of absorbing humidity and releasing it into the concerned environment without suffering from structural decay, **characterised in that** it comprises:

- water supplying means (3) designed to moisten said material; and
- means (4) for controlled conveyance to the material, of the water fed by said supplying means (3).

2. An apparatus as claimed in claim 1, **characterised in that** said elements at least partly made up of or coated with a material capable of absorbing humidity and releasing it into the concerned environment without suffering from structural decay are walls, columns, pillars, panels, stoves or other components or movable or immovable accessories that are adapted to allow an absorbing/releasing function.

3. A process for humidity regulation in rooms of buildings comprising the following steps:

- setting an element at least partly made up of/coated with a suitable material capable of absorbing humidity and releasing it into the concerned environment without suffering from structural decay, such as a crude earth material;
- setting water supplying means (3) designed to moisten said material;
- supplying water to the material through controlled-conveyance means (4) to moisten it under conditions of environmental dryness.

4. Use of water supplying means (3) and means (4) for controlled conveyance of the water fed by the supplying means (3), to moisten walls or other elements made of clayey material or a material adapted to absorb and release humidity without suffering from structural decay and to adjust moisture in rooms of buildings. 5

5. A humidity regulator apparatus in rooms of buildings as claimed in claim 1, one said room having walls at least partly made of clayey material (2), **characterised in that** it comprises: 10
 - water supplying means (3) designed to moisten said clayey material, and 15
 - means (4) for controlled conveyance to the clayey material of the water fed by said supplying means (3).

6. An apparatus as claimed in claim 5, **characterised in that** said water supplying means consists of at least one container in which storage of said water is possible. 20

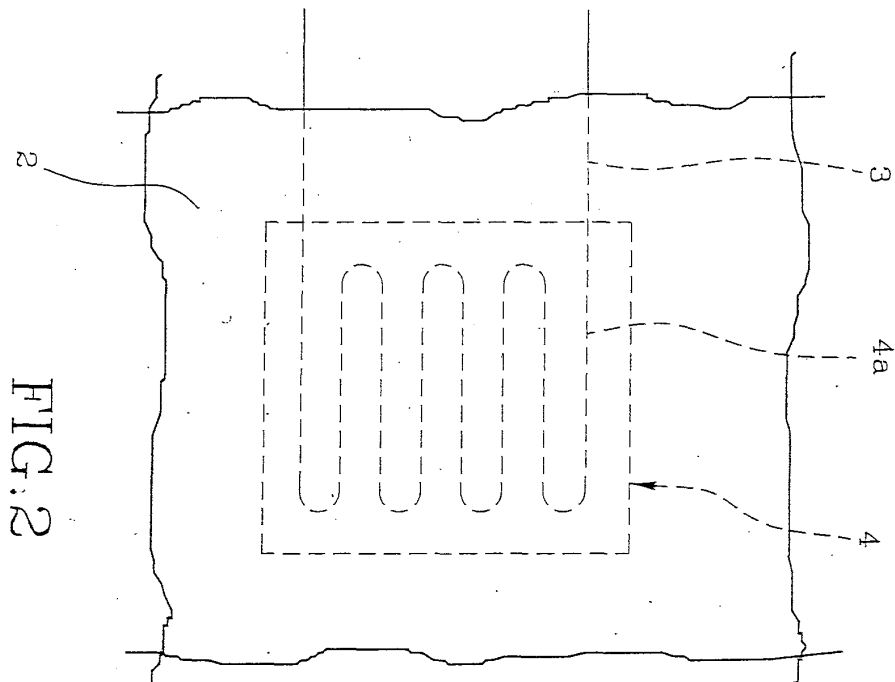
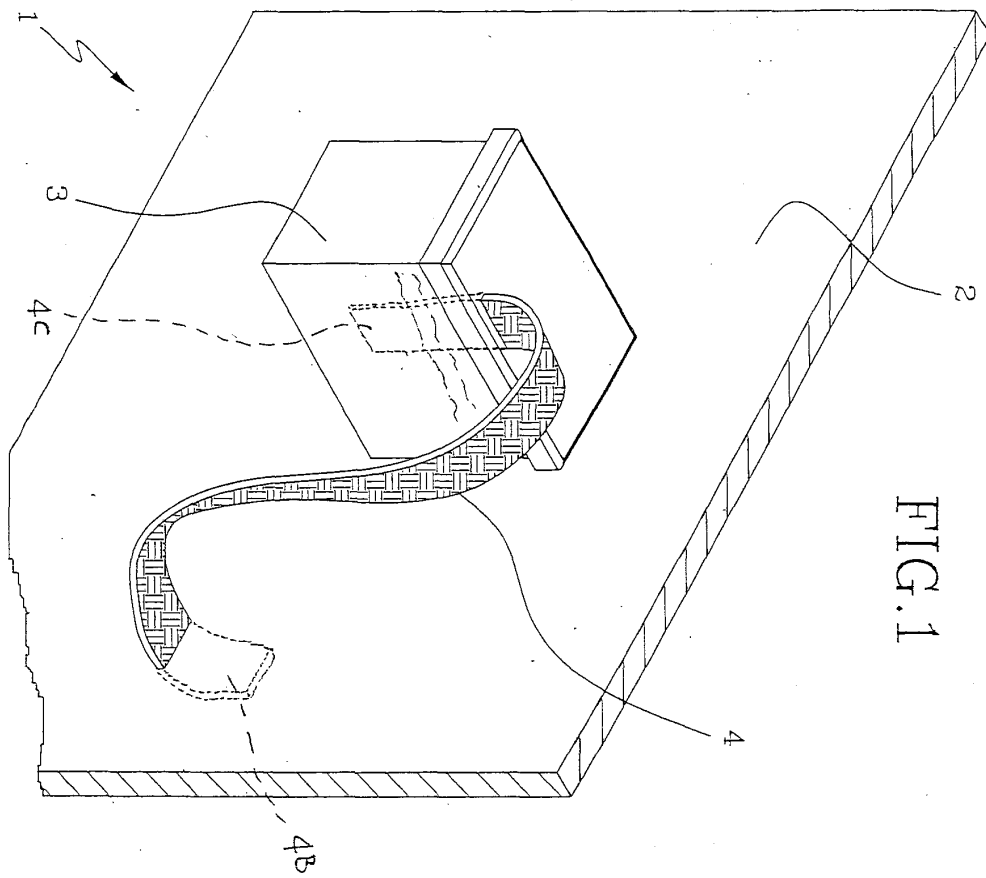
7. An apparatus as claimed in claim 6, **characterised in that** said means (4) for controlled conveyance of the water from said container to the clayey material (2) consists of at least one element adapted to enable water flowing by capillary attraction. 25
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8. An apparatus as claimed in claim 6, **characterised in that** the element adapted to enable water flowing by capillary attraction has a first end located within the container carrying the water and a second end plunged in the wall of clayey material. 35

9. An apparatus as claimed in claim 6, **characterised in that** said means (4) for water conveyance from said container to the clayey material (2) consists of at least one tubular element suitable to enable water flowing. 40

10. An apparatus as claimed in claim 5, **characterised in that** said means (4) for controlled conveyance of the water to the clayey material (2) consists of at least one panel inserted into a wall of the room. 45

11. An apparatus as claimed in claim 10, **characterised in that** the room wall has at least one pipe coil incorporated therein and in communication with said clayey material (2) by a plurality of apertures, and **in that** said water supplying means (3) comprises ducts for feeding said panel. 50
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EUROPEAN SEARCH REPORT

Application Number
EP 05 10 5002

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Place of search Munich		Date of completion of the search 22 September 2005	Examiner Valenza, D
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03/02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 05 10 5002

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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