(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 874 094 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
28.10.1998 Bulletin 1998/44

(51) Int Cl.[6]: **E04B 1/70**

(21) Application number: **98303227.7**

(22) Date of filing: **27.04.1998**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **26.04.1997 GB 9708488**

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(54) Wall drying insert

(57) The present invention relates to a shaped wall insert for use as a means for the prevention of damp in walls. A substantially horizontal hole (4) is drilled in a wall (5) and a porous plastic or ceramic insert s placed in the hole (4). The insert is adapted to fit within the hole (4) and has an upper interface surface which slopes downwards towards the open end of the hole (4). Moisture in the wall (5) is attracted to the insert, and air passing from outside the wall to a position within the hole (4) absorbs moisture, thereby cooling and increasing in density. The air subsequently descends, coming into contact with the inclined interface surface of the insert, along which it travels, subsequently exiting through the hole (4) at the external face of the wall.

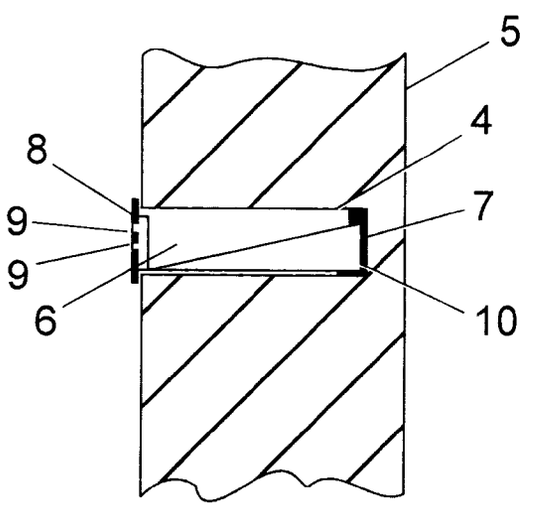

Fig. 3

EP 0 874 094 A2

Description

The present invention relates to a shaped wall insert. In particular, the present invention relates to a shaped wall insert for use as a means for the prevention of damp in walls.

The use of shaped wall inserts for such a purpose is already known. The inserts provide a means of attracting and subsequently expelling moisture from within walls, and typically require the drilling of a locating hole, such as in UK Patent No 2241729, wherein an inclined hole is drilled in a wall and a tubular ceramic insert is subsequently inserted into the hole. Other shaped inserts are shown in UK Patent No 251807, wherein inserts which are triangular or substantially triangular in cross-section and which have a cylindrical passage therethrough are inserted into an inclined hole in a wall.

There are certain disadvantages to these known methods of installing inserts and the apparatus therein. One such disadvantage is that an inclined hole is required for the location of the wall insert. This causes difficulties with regard to the drilling of the hole, the preparation for installation of the insert and the subsequent installation of the insert. Particularly, the drilling of an inclined hole and installation of the insert requires specialist equipment, and often problems occur relating to the positioning or operation of such equipment prior to and during the drilling of the hole and the subsequent insert installation. It is also required that the insert be retained within the hole utilising fixing means such as a mortar or grout. This is, at least in part, a result of the inclined nature of the hole, which is provided to ensure correct airflow within the hole thus enabling evaporation of moisture from the wall in which the insert is positioned.

Accordingly, it is an object of the invention to provide a wall insert which addresses the above disadvantages.

According to the present invention, there is provided a wall insert, the insert having an interface surface providing an interface between the insert and circulating air in a hole in a wall, wherein the insert is shaped in cross-section to co-operate with the hole such that when the insert is located in the hole the interface surface of the insert inclines progressively upwardly toward the inner most end of the hole.

Preferably the insert is constructed of a porous ceramic or plastic material which has moisture attracting properties. The insert may have capillaries extending through it to draw moisture to the interface surface, where it can evaporate and be carried out of the hole as water vapour.

Preferably the hole is circular and drilled substantially horizontally in the wall. Typically the hole is 50mm or less in diameter, preferably about 25 mm in diameter. Preferably the hole extends up to 95% of the way through the thickness of a wall. Where the wall is a 100mm cavity wall leaf the hole will extend for approximately 90 or 95 mm depth, giving a typical fall on the interface surface of 1 in 4. However this fall may be shallower (up to 1 in 10 or more) in the case of a solid wall having a greater thickness.

The insert is preferably wedge shaped and may have a flat interface upper surface and a rounded lower portion which accords with the hole in the wall. Alternatively, the insert may be tubular, having a hole therethrough which may be adapted to receive an aforesaid interface surface or may incorporate an aforesaid interface therein.

The insert may be fixedly retained within the hole by a suitable fixing means. The fixing means may be a porous, time-setting mortar or grout material.

Preferably the hole in the wall passes through at least a portion of the wall such that the hole has one open end at the external face of the wall and is closed at the innermost end.

The insert may be provided with a cap shaped to fit the open end of the hole. Alternatively, the cap may be provided as a separate component. The cap may be fixedly retained by suitable fixing means. The fixing means may be a porous, time-setting mortar or grout material. Preferably the cap has at least one hole therethrough to enable passage of air into the hole in the wall.

According to a second aspect of the invention there is also provided a method of removing moisture from a wall comprising the steps of forming a substantially horizontal hole and placing therein a wall insert according to the first aspect of the invention.

According to a third aspect of the invention there is also provided a wall comprising a plurality of building elements, the wall having a plurality of substantially horizontal holes formed therein, each of said holes containing a wall insert according to the first aspect of the invention.

Embodiments of the invention will now be described, by way of example only, with reference to the following drawings, of which:

Fig. 1 is an isometric view of one embodiment of the invention;

Fig. 2 is an isometric view of a second embodiment of the invention;

Fig. 3 is a cross-sectional side view of the embodiment of Fig. 1 installed within a wall; and

Fig. 4 is an isometric view of a third alternative embodiment of the invention.

Referring to Figs. 1 and Fig. 3, a ceramic or plastic insert is shown generally at 1 which has an inclined interface surface 2 and a shaped portion 3 which is designed to co-operate with a hole 4 in a wall 5. Firstly, the hole 4 is drilled in the wall 5 at the position where the insert 1 is required. This hole 4 is circular in cross-section, and is drilled substantially horizontally into the wall 5 from the external face. The hole 4 does not pass right through the wall 5, but extends through a large portion of its cross-section. The insert 1 is then located within

the hole 4 such that the interface surface 2 inclines progressively upwardly from the open end 6 of the hole 4 towards the closed end 7 of the hole 4.

The hole 4 has an end cap generally shown at 8 which has holes 9 therethrough for the passage of air from a position outwith the wall 5 to a position within the hole 4.

Moisture in the wall 5 is attracted to the insert 1. In this way, air passing from a position outwith the wall 5 to a position within the hole 4, via the holes 9 in the end cap 8, absorbs moisture, thereby cooling and increasing in density. The air subsequently descends, coming into contact with the inclined interface surface 2 of the insert 1 along which it travels, subsequently exiting through the holes 9 in the end cap 8.

If it is desired, the insert 1 is fixedly retained within the hole 4 using a suitable porous mortar or grout material 10, wherein the mortar or grout 10 is inserted into the hole 4 prior to locating the ceramic insert 1, such that the insert 1 becomes retained on hardening of the time-setting mortar or grout 10.

Referring to Fig. 2 there is shown an insert 1a which functions in the same way as insert 1, shown in Fig. 1. However the interface surface 2a is dished to form a channel along which moisture collecting on the interface surface can migrate under gravity towards the open end 6 of the hole 4. The shaped portion 3a is similarly designed to co-operate with the internal surface of the hole 4 in the wall 5.

Referring now to Fig. 4, a tubular insert is generally shown at 11 which has an outside casing 12 which is circular in cross-section and which has a passage 13 therethrough. An inclined interface surface 14 is provided in the passage 13 through the insert 11 which inclines progressively upwardly towards the distal end of the insert 11, as seen in Fig. 3. The inclined interface surface 14 may be formed integrally, for example by moulding, with the outside casing 12. Alternatively the inclined interface surface may be formed on a separate insert piece which has a lower shaped portion 15 which co-operates with the cylindrical inner surface of the outside casing 12 in the insert 11.

The insert 11 is inserted into a hole 4 in a wall 5 in a similar way to the insert of Fig. 1, such that the interface surface 14 of the insert 11 is oriented in the same way as in Fig. 2. If desired, the insert 11 is fixedly retained in the same way as the insert 1 of Fig. 1, utilising a suitable mortar or grout.

Evaporation occurs in the same way as described with reference to Fig. 1 and Fig. 3.

Modifications and improvements may be made to the foregoing within the scope of the invention. In particular it is possible to use other materials which have the ability to attract and draw moisture to the interface surface. The perforated cap may be formed integrally with the insert. The shape if the insert is not limited to the shapes shown in the drawings, but any shape which fits securely in a hole and has an inclined upper surface may be adopted.

Claims

1. A wall insert having an interface surface providing an interface between the insert and circulating air in a hole in a wall, wherein the insert is shaped in cross-section to co-operate with the hole such that when the insert is located in the hole the interface surface of the insert inclines progressively upwardly toward the inner most end of the hole.

2. A wall insert according to Claim 1, characterised in that the insert is constructed of a porous material having capillary properties.

3. A wall insert according to Claim 1 or 2, characterised in that the insert is substantially wedge shaped and has a sloping interface upper surface and a rounded lower surface having a diameter corresponding to that of the hole in the wall.

4. A wall insert according to Claim 1 or 2, characterised in that the insert is substantially tubular and has a non-uniform hole extending therethrough, the hole being bounded on the upper side by a substantially cylindrical surface and on the lower side by a sloping interface surface.

5. A wall insert according to any preceding Claim, characterised in that the interface surface is formed with a channel adapted to carry moisture collecting on said interface surface towards the exterior of the wall.

6. A wall insert according to any preceding Claim, characterised by a cap shaped to fit the open end of the hole and having at least one hole therethrough to enable passage of air into the hole in the wall.

7. A wall insert according to any preceding Claim, characterised in that the insert is of porous ceramic or porous plastic material.

8. A method of reducing damp in a wall comprising forming a hole in the wall and positioning an insert according to any preceding claim in said hole.

9. A method according to Claim 8 wherein the hole is circular and is formed by drilling substantially horizontally in the wall.

10. A method according to Claim 8 or 9 wherein the hole in the wall extends through a portion of the wall such that the hole has one open end at the external face of the wall and is closed at the innermost end of the

hole.

11. A method according to Claim 10 wherein the hole extends through at least 90% of the thickness of the wall.

12. A wall comprising a plurality of building elements, the wall having a plurality of substantially horizontal holes formed therein, each of said holes containing a wall insert according to any one of Claims 1 to 7.

13. A wall according to Claim 12, characterised in that the wall comprises a plurality of bricks, each brick having one of said plurality of substantially horizontal holes formed therein.

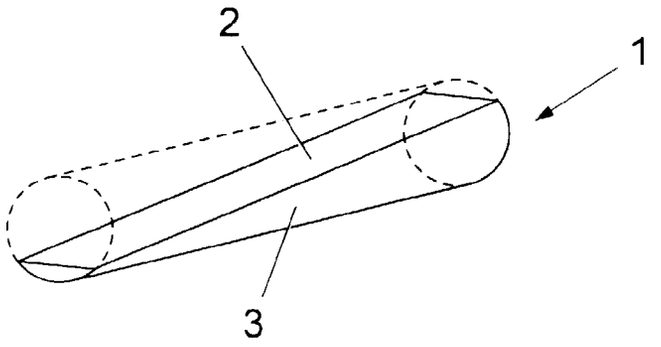

Fig. 1

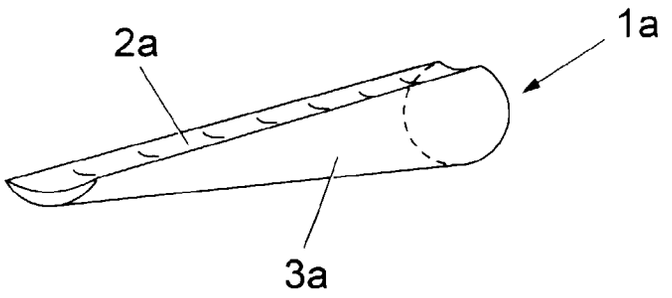

Fig. 2

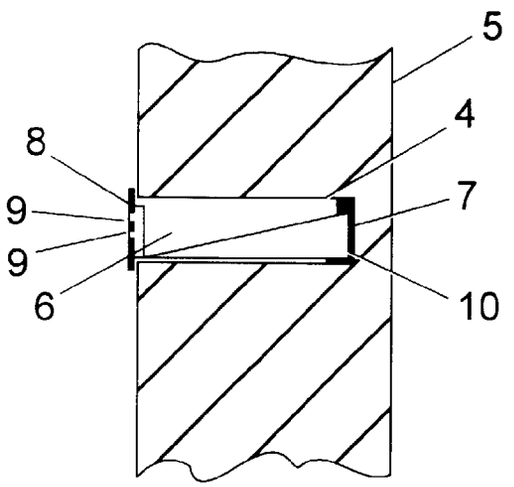

Fig. 3

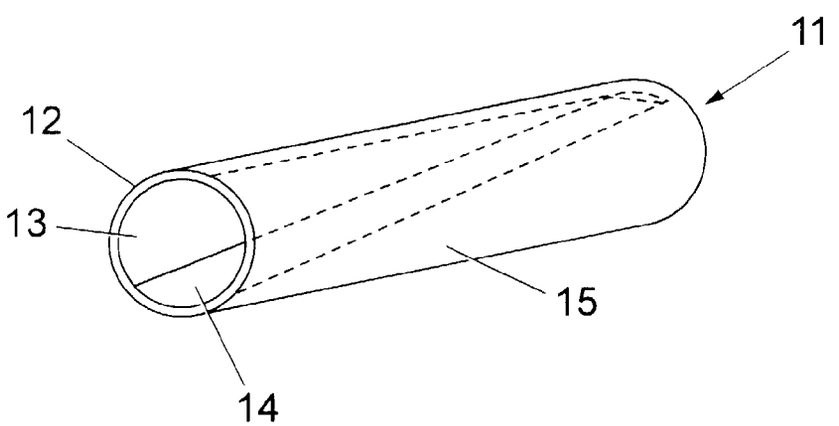

Fig. 4