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(54) **Insulating panel for the outer insulation and outer drainage of subterranean walls.**

(57) The insulating panel comprises a plurality of vertically extending drainage channels (1). A connecting channel (4) extends along the upper (2) and lower (3) edge of the panel and communicates with all drainage channels (1). This allows, that vertically adjacent panels may be laterally offset to each other to such an extent, that no vertical communication between vertically adjacent drainage channels (1) exists. The draining is nevertheless secured in that the water flowing down the upper drainage channels (1) will accumulate and flow laterally along the connecting channel (4) and proceed from there further through the drainage channels (1) of the lower panel.

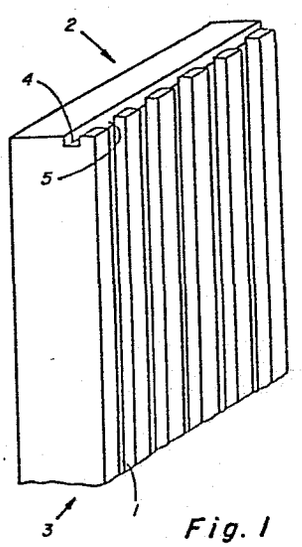

Fig. 1

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INSULATING PANEL FOR THE OUTER INSULATION AND OUTER DRAINAGE OF SUBTERRANEAN WALLS

The invention relates to an insulating panel for thermal insulation and for water drainage of subterranean, basement, building or construction walls. The panel has a plurality of drainage channels which are open on one surface of the panel and which extend from a first panel edge to a second panel edge located oppositely thereto and are open at both panel edges.

Such insulating panels are used for thermal insulation on the outer side of the wall and for water drainage of such walls. During construction the panels are placed against the wall to be protected prior to the backfilling of earth. Apart from their temperature insulating properties these panels provide for the drainage of water, specifically rain water which can flow along the drainage channels downwardly into the ground or into water collection pipes.

Such panels, each have a plurality of vertically extending grooves, such as disclosed, e.g., in German published patent application No. DE-31 13 807. The panels have a common drawback, however, in that the

vertically extending drainage grooves of the individual panels which are located vertically on top of each other may not be properly aligned during the build-up of such outer cladding of a wall. Alternatively, the vertically stacked panels may shift laterally relative to each other or may get partly clogged such that various blockages of the draining channels will occur.

An object of the invention is to provide an insulating panel of the kind metioned above, which does not feature the aforementioned drawbacks and which provides for effective drainage at all lateral relative positions of the individual panels forming the outer covering for subterranean walls.

According to the invention, the insulating panel is characterized in that a connecting channel each is located in the side surfaces of the panel extending along the first and in the second panel edge and communicating with every drainage channel and extending perpendicularly thereto.

Preferably, the insulating panel is an integral structural member and has the shape of two plate bodies located on top of each other and offset in diagonal direction relative to each other, such that every side surface of the panel ahs a step-like extent whereby adjacent panels overlap partly and guide each other. The panel surface which is provided with the drainage channels can be covered by a web-like material such that the drainage channels are covered and protected from clogging-up by soil, gravel or the like entering the channels.

The subject of the invention will be described in greater detail below upon reference to the annexed drawings, wherein:

Figure 1 is a perspective view of an upper section of an insulating panel,

Figure 2 is a perspective view of adjacent end sections of two vertically positioned panels,

Figure 3 is a section through two vertically adjacent panels illustrating one embodiment of a connecting channel,

Figure 4 is a section through an upper end part of an insulating panel showing a further embodiment of the cross-section shape of the connecting channel,

Figure 5 is a view similar to the view of Figure 4 of a further embodiment of the connecting channel,

Figure 6 is a side view of an insulating panel provided with a drainage channel covering web, and

Figure 7 is a top view of the panel illustrated in Figure 6.

The insulation panel of which an upper end portion is shown in Figure 1 can be fabricated of any kind of suitable material, such as an extruded plastics material, a foamed plastics material or a mortar-bound material. In the preferred embodiment, the insulating

plate is made of an extruded polystyrene foam. One main surface of the panel is provided with vertically extending parallel drainage channels 1, which extend along the entire vertical length of the panel. A connecting channel 4 is formed in the top side surface 2 of the panel. A similar connecting channel 4 is provided at the bottom side surface 3, such as is shown, for example, in Figures 2 and 3. The connecting channel 4 extends in a direction perpendicular to the drainage channels 1 and is offset relative to the drainage channels 1 in the direction of the panel thickness. As can be seen from Figures 1, 2 and 3, the drainage channels 1 partly intersect the connecting channel 4 such that the outer side wall of the connecting channel 4 has a plurality of openings 5, each of which forms a passageway communicating the connecting channel 4 with the drainage channels 1.

In Figure 2 there are shown two insulating panels stacked vertically on top of each other. The panels are laterally offset relative to each other such that their individual drainage channels 1 are not aligned with each other. This no longer poses a problem regarding the drainage of water, because the water draining down the drainage channels 1 of the upper panel enters into a connecting channel 4, flows horizontally along this connecting channel 4 until reaching the next drainage channel 1 of the lower panel through which it can flow freely further down. Such lateral off-set installation of adjoining insulating panels may also be made on purpose such that during back-filling of the earth, for example, only the individual drainage channels 1 of the uppermost panel may be filled with debris (e.g., soil, gravel, and the like) because the path for such debris to the lower panel is securely blocked by such off-set arrangement.

Referring to Figure 3 there is shown a preferred cross-sectional shape of a connecting channel 4, which in this case has a rectangular cross-section. In order to promote the drainage of water running along a connecting channel 4, the bottom 6 of the connecting channel 4 may extend obliquely towards the drainage channels, as illustrated in Figure 4. Obviously, a large variety of cross-sectional shapes of the connecting channels 4 is possible, one further semi-circular shape is illustrated in Figure 5.

Attention is now drawn to Figure 6. The insulating panel of the embodiment shown is an integral body having stepped side walls. It basically has the shape of two panel bodies 7 and 8 located on top of each other such that they are offset in a lateral direction relative to each other. This will not only result in a mutual guiding of adjacent panels, but also prevent foreign bodies, for instance small-sized bodies of backfill, to enter between the two panels.

The panel surface in which the drainage channels 1 are located is optionally covered by a web-like material 11, such that the drainage channels 1 are protected from the incursion of foreign materials into the channels which may block the flow of water along the channels. This covering web 11 may be of any kind of material as long as it is water permeable. According to Figures 6 and 7 this covering web or porous sheet projects over two adjacent sides 7, 9 of the panel, such that the covering webs 11 of two adjoining panels overlap each other. The advantage of this embodiment is that an imperfect alignment of neighboring or adjacent, respectively, panels cannot

have any detrimental effect regarding the entry of foreign particles. This overlapping design on the one hand of the edges and on the other hand of the covering webs can also allow for an at least temporary locking of adjacent panels during installation by any kind of a sharp pointed object.

Claims:

1. Insulating panel for the thermal insulation and water drainage on the exterior side of subterranean walls, said panel having a plurality of open drainage channels (1) provided on one surface of the panel and extending from a first edge to a second edge located oppositely thereto and are open at both panel edges, characterized by a connecting channel (4) located in the side surfaces (2,3) of the panel and extending along the first and the second panel edge and communicating with every drainage channel (1) and extending perpendicular thereto.

2. Insulating panel of Claim 1, characterized in that each connecting channel (4) is offset in the direction on the panel thickness relative to the drainage channels (1) and comprises in a side wall a plurality of openings (5) each forming a passageway to every drainage channel (1).

3. Insulating panel of Claim 1, characterized in that at least one of the connecting channels (4) has a generally rectilinear cross-sectional shape.

4. Insulating panel of Claim 1, characterized in that at least one of the connecting channels (4)

comprises a bottom extending in a direction obliquely towards the drainage channels (1).

5. Insulating panel of Claim 1, characterized in that it is an integral structural member and has the shape of two plate bodies (7,8) located on top of one another and offset in a diagonal direction relative to each other such that every side surface of the panel has a step-like portion whereby adjacent panels overlap partly and guide each other.

6. Insulating panel of Claim 1, characterized in that the panel surface comprising the drainage channels (1) is covered by a web-like material (11) such that the drainage channels (1) are covered.

7. Insulating panel of Claim 6, characterized in that the web-like covering material (11) is formed by a foil.

8. Insulating panel of Claim 6, characterized in that the web-like covering material (11) is formed by a water-penetrable material web.

9. Insulating panel of Claim 6, characterized in that the web-like material (11) projects at two neighboring sides (3,9) of the panel such that the covering webs (11) of adjacently located insulating panels overlap.

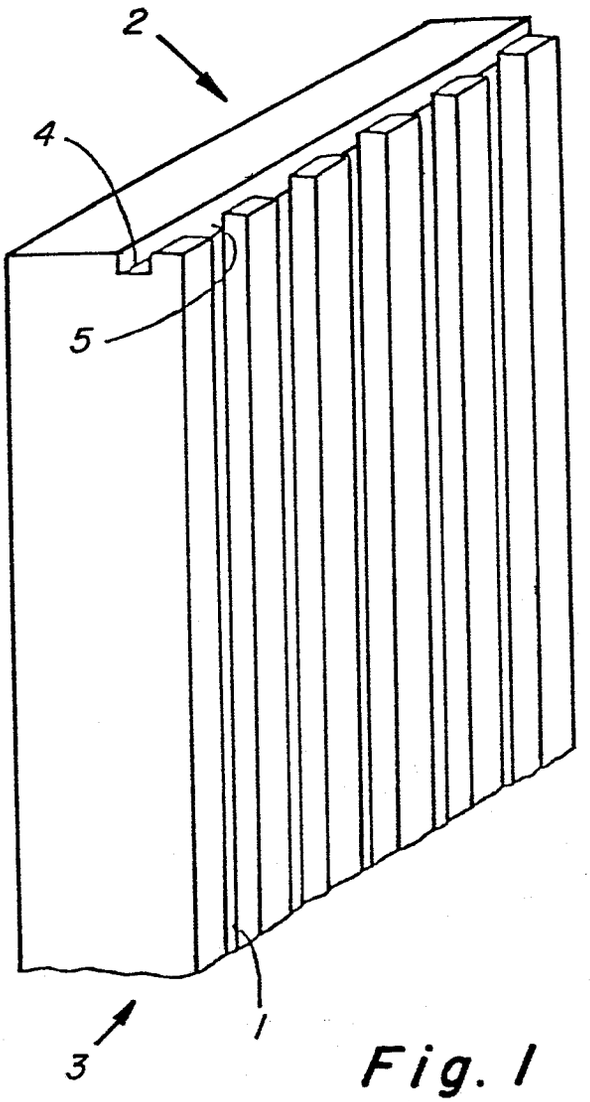

Fig. 1

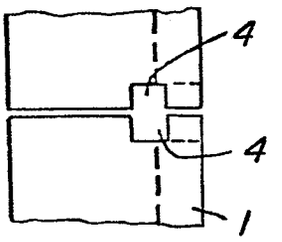

Fig. 3

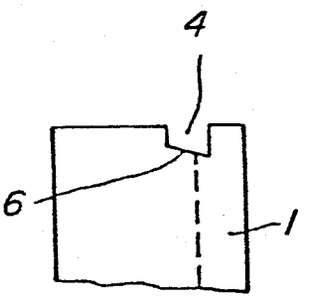

Fig. 4

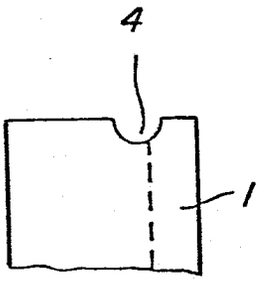

Fig. 5

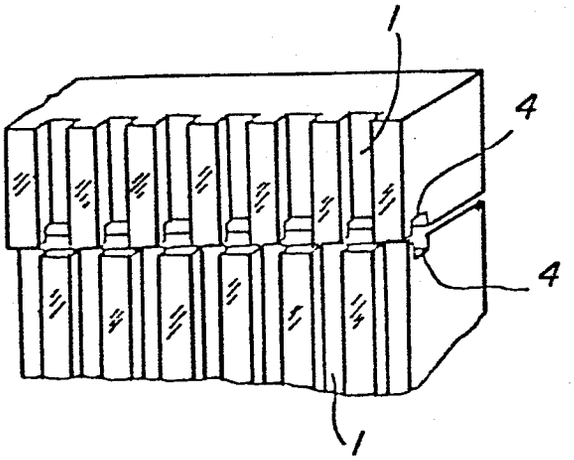

Fig. 2

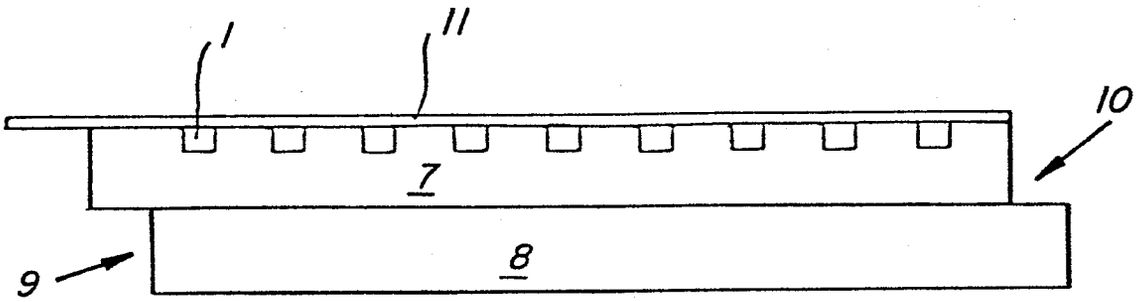

Fig.6

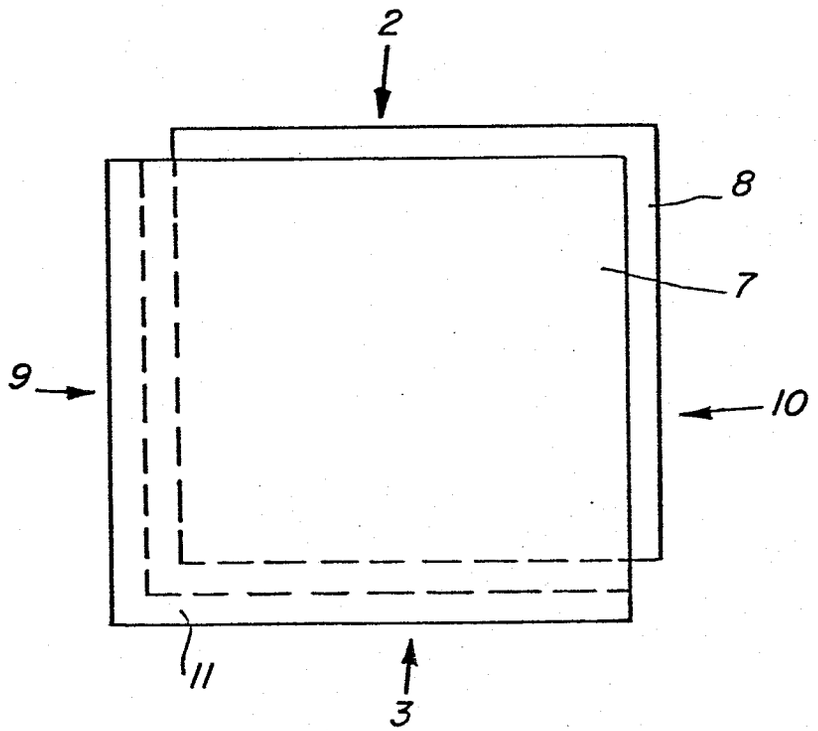

Fig.7