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(54) Method for insulating cavity walls, and insulating plate for practising the method

(57) A method and insulating plate for insulating walls and the like having a surface with projecting unevennesses, suitable in particular for insulating cavity walls of buildings, wherein a hybrid insulating plate is arranged against the surface having unevennesses, which hybrid insulating plate comprises a stiff base layer (11) of insulating material and an at least locally compressible layer (12) of insulating material provided on the base layer (11), and the insulating plate is pressed and secured, through the locally compressible layer (12), against the uneven surface, such that the compressible layer (12) at least partly envelops the unevennesses (5).

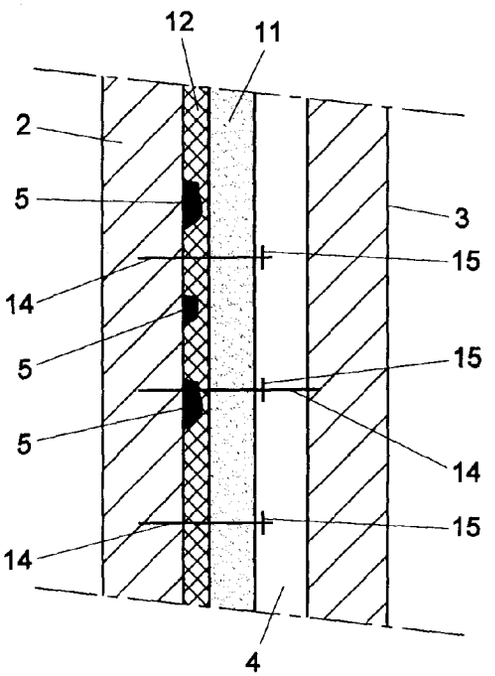

Fig. 3

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Description

[0001] This invention relates to a method for insulating walls and the like having a surface with projecting unevennesses, suitable in particular for insulating cavity walls of buildings, and to an insulating plate for practising the method.

[0002] It is known to thermally insulate cavity walls of buildings, such as dwelling houses, offices, et cetera, by providing insulating material in the cavity. The insulating material can consist, for instance, of rock wool surfaces, or of polystyrene granules or the like. A drawback of this method is that the cavity is filled up entirely, so that the ventilation of the cavity is very strongly impeded. This drawback does not arise if plates of glass wool or rock wool are used, which are secured in the cavity against the inner leaf of the cavity wall by means of special ties and/or by means of the conventional wall ties. A drawback of the use of such insulating plates is that the coherence of the material diminishes in the course of time and that the insulating material has a tendency to sag downwards in the cavity. As a result, the insulating action decreases strongly.

[0003] The risk of sagging would hardly exist, if at all, if rigid foam plates of insulating material, such as, for instance, polystyrene, polyurethane, or the like, were used. Moreover, such foam plates can provide a higher insulating value (R-value). However, a problem forming an obstacle to the application of foam plates for cavity wall insulation is the fact that the outer surface of an inner leaf of the cavity wall, in particular a brickwork cavity wall, is often very uneven due to lumps of cement, excess mortar and the like. Due to such unevennesses, rigid foam plates cannot be arranged flat against the surface to be insulated. As a result, an air gap is formed between the insulating plates and the inner leaf of the cavity wall, and adjacent insulating plates do not properly adjoin each other. Also, as a result, thermal bridges may be formed, which is undesirable.

[0004] Accordingly, there is a need for a method and an insulating plate, respectively, which obviate the above-indicated drawbacks. The object of the invention is to meet the need outlined. To that end, according to the invention, a method of the above-described kind is characterized in that a hybrid insulating plate is arranged against the surface having unevennesses, which hybrid insulating plate comprises a stiff base layer of insulating material and an at least locally compressible layer of insulating material, provided on the base layer, and the insulating plate is pressed and secured, through the locally compressible layer thereof, against the uneven surface, such that the compressible layer at least partly envelops the unevennesses. An insulating plate suitable in particular for insulating walls and the like with a surface having projecting unevennesses is characterized, according to the invention, by a stiff base layer of insulating material, which base layer is provided with a layer of at least locally compressible insulating material.

[0005] Hereinafter, the invention will be further described with reference to the accompanying drawings of an exemplary embodiment.

Fig. 1 schematically shows in section an example of a part of a cavity wall having therein a rigid insulating plate;
Fig. 2 schematically shows in cross section an example of an insulating plate according to the invention;
Fig. 3 schematically shows in cross section a part of a cavity wall, in which an insulating plate according to the invention is arranged; and
Fig. 4 shows a variant of Fig. 2.

[0006] Fig. 1 schematically shows in cross section a part of a cavity wall 1 having an inner leaf 2, an outer leaf 3, and a cavity 4 located between the cavity leaves. The surfaces of the cavity leaves facing the cavity mostly do not have a smooth finish and often exhibit considerable unevennesses formed by, for instance, cement masses which have bulged from joints, lumps of cement, falling mortar, et cetera, as is schematically indicated by way of example at 5.

[0007] In Fig. 1, for the sake of completeness, a few hard insulating plates 6, 7, 8 are shown, which have been arranged against the inner leaf. It can be seen that the plates 6, 7, 8, as a result of the unevennesses 5, cannot be fitted flat against the leaf surface, nor do they properly abut against each other anymore. As a result, outside air can circulate between the inner leaf and the insulating plates, so that the desired insulating effect is considerably reduced.

[0008] Fig. 2 schematically shows in section an example of an insulating plate 10 according to the invention. The insulating plate shown comprises a stiff base plate 11, which can consist of foamed insulating material, such as, for instance, polyurethane foam. However, the base plate can also consist of a different relatively stiff insulating material, such as, for instance, compressed insulating wool. A plate of compressed rock wool, for instance, depending on the compression, is difficult to compress and will not conformably adapt to unevennesses. On the base plate 11, on one side thereof, there is provided a layer 12 of mineral insulating wool, for instance glass wool or rock wool. The layer of insulating wool is of a compression such that the layer can conform to the usual roughnesses, as shown in Fig. 3. When glass wool is used, for instance, a compression may have been applied, such that the weight of the glass wool is in the order of about 18 kg/m^3. Other values, however, are also possible, as long as a sufficient ability to accommodate unevennesses is obtained.

[0009] A practical hybrid insulating plate for cavity wall insulation according to the invention can consist, for instance, of a base plate of polyurethane of a thickness of, for instance, from 55 to 65 mm, having attached

to one side thereof a glass wool plate of a weight in the order of, for instance, about 18 kg/m^3. The other side of the polyurethane plate can be provided with a coating 13 including a suitable moisture-proof material, such as, for instance, polyethylene film, glass fibre layer or the like.

[0010] The insulating wool plate 12 can be secured to the base plate 11 in any manner suitable for the purpose, for instance by glueing. A proper adhesion is obtained if the base plate is formed by foaming it directly onto the ready insulating wool layer. Particularly polyurethane has a very strongly adhesive character for a short period during foaming, which can be utilized advantageously in this way.

[0011] Advantageously, prior to foaming of the foam layer, a membrane can be applied to the relevant surface of the insulating wool. The foam then adheres to the insulating wool via openings in the membrane, yielding a properly coherent hybrid insulating plate. The membrane, however, makes it possible, after removing the insulating material, for instance when the building in question is being demolished, to separate the foam layer and the wool layer from each other, so that the waste materials can each be separately processed in the most favorable manner.

[0012] Such a membrane or perforated film is schematically shown at 17 in Fig. 4.

[0013] The hybrid insulating plate according to the invention can be conventionally secured with ties 14 and hold-down clips 15, as indicated schematically in Fig. 3. If desired, the ties, or a number of them, can advantageously serve as wall ties at the same time. Further, the hybrid insulating plates can be provided with circumferential grooves. This may be, for instance, a tongue and groove system, but the use of round grooves, such as used in casement doors, or rebates, is also possible. The grooves provide for a proper joint between adjacent plates. When pre-arranged (wall) ties are used, advantageous use can be made of plates with rebates.

[0014] It is noted that after the foregoing, various modifications are possible. Thus, if desired, a vapor-retarding layer of preferably supple material could be provided on the insulating wool.

[0015] Further, the invention can also be practised for insulating surfaces, whether smooth or uneven, other than the outer surface of an inner leaf of a cavity wall. After the foregoing, these and similar modifications will readily occur to those skilled in the art.

Claims

1. A method for insulating walls and the like having a surface with projecting unevennesses, suitable in particular for insulating cavity walls of buildings, **characterized in that** a hybrid insulating plate is arranged against the surface having unevennesses, which hybrid insulating plate comprises a stiff base layer of insulating material and an at least locally compressible layer of insulating material provided on the base layer, and the insulating plate is pressed and secured, through the locally compressible layer, against the uneven surface, such that the compressible layer at least partly envelops the unevennesses.

2. An insulating plate, suitable in particular for insulating a surface having projecting unevennesses, **characterized** by a stiff base layer of a first insulating material, which base layer is provided with a layer of an at least locally compressible second insulating material.

3. An insulating plate according to claim 2, **characterized in that** the base layer, on the side remote from the compressible layer, is provided with a coating including a moisture-proof material.

4. An insulating plate according to claim 3, **characterized in that** the coating comprises a polyethylene film.

5. An insulating plate according to claim 3, **characterized in that** the coating comprises a glass fibre layer.

6. An insulating plate according to any one of claims 2-5, **characterized in that** the compressible layer is provided with a vapor-retarding layer.

7. An insulating plate according to any one of claims 2-6, **characterized in that** the compressible layer comprises glass wool or rock wool having a low compression.

8. An insulating plate according to any one of claims 2-7, **characterized in that** the base layer is formed from polyurethane foam.

9. An insulating plate according to any one of claims 2-8, **characterized in that** the base layer and the compressible layer are attached to each other in that the base layer is formed onto the compressible layer by foaming.

10. An insulating plate according to any one of claims 1-9, **characterized in that** between the base layer and the compressible layer a membrane is provided.

11. An insulating plate according to any one of claims 1-7, 9 or 10, **characterized in that** the base layer is formed from insulating wool having a high compression.

12. An insulating plate according to any one of claims 2-9, **characterized in that** the insulating plates are provided with suitable circumferential grooves.

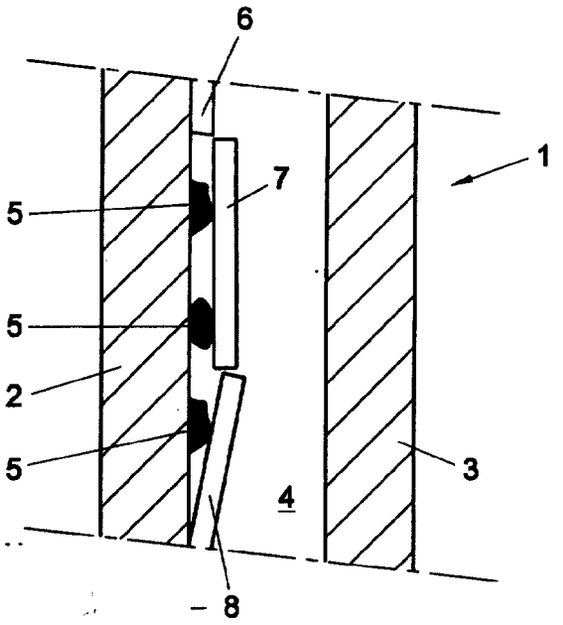

Fig. 1

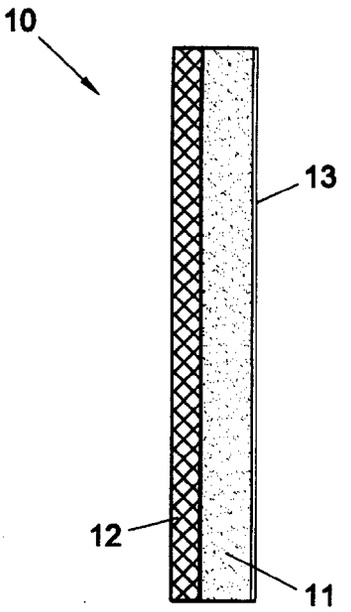

Fig. 2

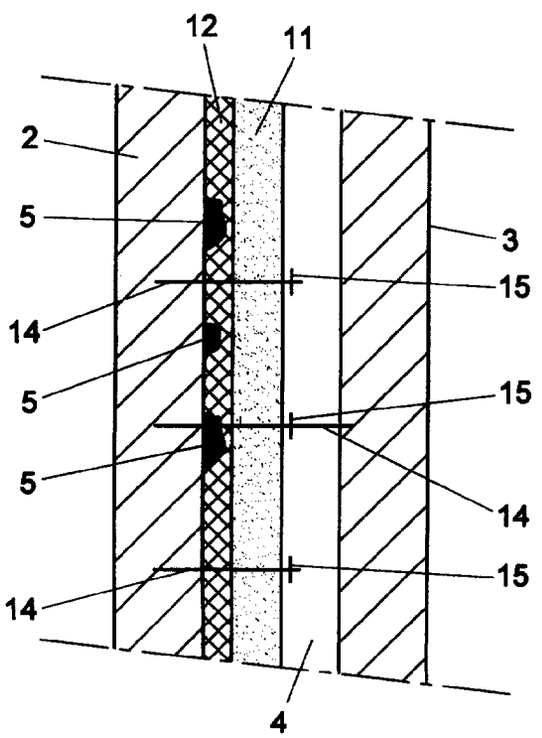

Fig. 3

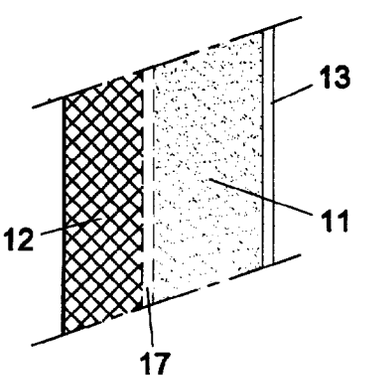

Fig. 4