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(54) **BUILDING WITH A ROOF WITH A FIRE-RESISTANT LAYER**

(57) In a roof 1 of a building, a fire-resistant roof construction 3 is present above a fire wall 5. The roof 1 contains insulation layers 1b and 3b on which a roof covering 9 is present. The roof covering 9 is made of flammable material such as bitumen, PVC or EPDM. To make the spread of fire more difficult and to slow down the spread of fire, a fire-resistant layer 11 is present on the roof cov-

ering 9 at the location of the entire fire-resistant roof construction 3 and at the location of strips 15 of the roof 1 adjacent to the fire-resistant roof construction 3. This fire-resistant layer 11 consists of panels that are mainly made of magnesium oxide and are attached to the roof covering 9, for example by gluing, sealants or screws.

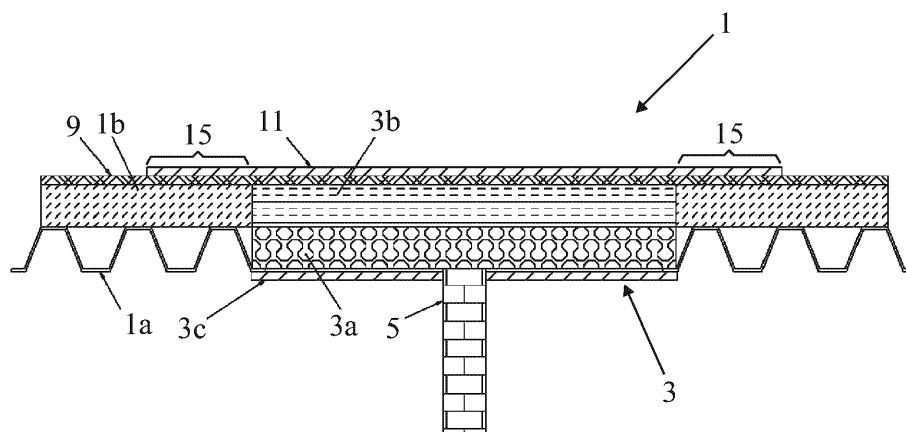


FIG. 1

Description

Technical field of the invention

[0001] The invention relates to a building provided with a roof, in particular a flat roof, on which insulation and/or a roof covering is present that contains flammable material.

Background of the invention

[0002] A building according to the preamble of claim 1 is known from DE 16 09 947 A1. The flammable material used in known roof coverings is usually bitumen, PVC or EPDM and EPS (tempex), PIR or PUR is often used as insulation. Insurance companies prefer not to have roofs that contain roofing and/or insulation made of flammable materials because of the fire hazard and therefore major damage in the event of fire.

Summary of the invention

[0003] It is an object of the present invention to provide a building with a roof of the type described in the introduction where the damage in the event of fire is less than in buildings with the known roofs. To this end, the building according to the invention is characterized in that a fire-resistant layer is present on the roof covering, which comprises panels that are mainly made of magnesium oxide. Fire tests have shown that fire spreads much less quickly on roofs where magnesium oxide-containing panels are present on the roof covering than on roofs without the presence of these panels. This greatly reduces damage in the event of fire.

[0004] Magnesium oxide panels are known per se, but it has never been thought of applying them as an extra layer on top of (existing) roofs to reduce the risk of fire. The magnesium oxide-containing panels are certified with fire class A1 and are water resistant.

[0005] It is noted that US 2021/277653 A1 discloses a roof on which there is insulation and a roof covering that contains flammable material. A fire-resistant layer is also present which comprises panels that are mainly made of magnesium oxide. However, this fire-resistant layer is present under the flammable roof covering.

[0006] Preferably, the fire-resistant layer consists entirely of panels consisting essentially of magnesium oxide, so that the fire resistance is even better. The fire-resistant layer is preferably glued, cemented or screwed to the roof covering.

[0007] An embodiment of the building according to the invention is characterized in that the building comprises a fire wall on which a fire-resistant roof construction is present which extends in the roof on both sides of the fire wall over a distance from the fire wall, whereby the roof covering is present on the fire-resistant roof construction and the adjacent parts of the roof, and where the fire-resistant layer is present on the roof covering at

the location of the entire fire-resistant roof construction and at the location of strips of the roof adjacent to the fire-resistant roof construction.

[0008] In well-known buildings, concrete tiles are placed on the fire-resistant roof structure to slow down the fire. The concrete tiles are often placed on bitumen supports. So between the underside of the tiles and the roof covering there is usually a space of 3-5mm where there is air and air can flow through, which will fuel a fire.

[0009] In the event of fire, the fire-resistant layer on the roof covering will prevent fire from spreading from one part of the building to the other part of the building. The fire-resistant layer above the fire wall is preferably at least five meters wide. An additional advantage compared to the use of concrete tiles is that the fire-resistant layer is many times lighter in weight and can be glued directly to the roof covering without adjustments to the roof structure.

[0010] Insurance companies do not want solar panels on flat roofs if the roof covering and/or roof insulation contains flammable materials such as bitumen, PVC, EPDM, EPS (tempex), PIR, PUR. In order to be able to use solar panels on such roofs, a further embodiment of the building according to the invention is characterized in that the fire-resistant layer is present between the roof covering and the solar panels. The solar panels are preferably mounted directly on the fire-resistant layer or are mounted on the fire-resistant layer via a supporting structure.

Brief description of the drawings

[0011] The invention will be further elucidated below on the basis of drawings. These drawings show an embodiment of the building according to the present invention. In the drawings:

Figure 1 shows a part of the roof of a first embodiment of the building according to the invention at the location of a fire wall;

Figure 2 shows a part of the roof of a second embodiment of the building according to the invention with solar panels directly on the roof covering; and Figure 3 shows part of the roof of a third embodiment of the building according to the invention with a supporting structure for solar panels on the roof covering.

Detailed description of the drawings

[0012] Figure 1 shows part of the roof 1 of a building according to the invention at the location of a fire wall 5. A fire-resistant roof construction 3 is present above the fire wall and integrated into the roof. The fire-resistant roof construction 3 extends from the fire wall 5 into the roof 1 on either side. The roof 1 is constructed from profiled supporting plates 1a with an insulation layer 1b on top. The fire-resistant roof construction 3 resting on the

fire wall 5 is composed of different insulation layers 3a and 3b with a cover plate 3c at the bottom.

[0013] The insulation layer 1b is made of a flammable material such as EPS (tempex). The insulation layers 3a and 3b are made of fire-resistant material to postpone or delay the spread of fire to the other side of the fire wall in the event of a fire on one side of the fire wall. On the insulation layers 1b and 3b there is a roof covering 9 made of flammable material such as bitumen, PVC or EPDM. To further make spreading of fire more difficult and delay the spread of fire, a fire-resistant layer 11 is present on the roof covering 9 at the location of the entire fire-resistant roof construction 3 and at the location of strips 15 of the roof 1 adjacent to the fire-resistant roof construction 3. This fire-resistant layer 11 consists of panels that are mainly made of magnesium oxide and are attached to the roof covering 9, for example by gluing, sealants or screws.

[0014] Figure 2 shows part of the roof 21 of a second embodiment of the building according to the invention. Solar panels 23 are present on this roof 21. To greatly reduce the risk of fire, a fire-resistant layer 25 is present between the roof covering 27 and the solar panels 23.

[0015] Figure 3 shows part of the roof of a third embodiment of the building according to the invention. On this roof 31 there are supporting structures 32 on which solar panels 33 are located. In order to greatly reduce the fire hazard on this roof, the supporting structures 21 are mounted on a fire-resistant layer 35 and this fire-resistant layer 35 is applied to the roof covering 37. The thickness of the fire-resistant layer can, for example, vary from 1 to 50 mm.

[0016] Although the present invention is elucidated above on the basis of the given drawings, it should be noted that this invention is not limited whatsoever to the embodiments shown in the drawings. The invention also extends to all embodiments deviating from the embodiments shown in the drawings within the scope of the invention defined by the appended claims.

Claims

1. Building equipped with a roof (1), in particular a flat roof, on which insulation (7) and/or a roof covering (9; 27; 37) is present that contains flammable material, **characterized in that** a fire-resistant layer (11; 25; 35) is present on the roof covering (9; 27; 37), which fire-resistant layer (11; 25; 35) comprises panels that are mainly made of magnesium oxide.
2. Building according to claim 1, **characterized in that** the fire-resistant layer (11; 25; 35) consists of panels consisting essentially of magnesium oxide.
3. Building according to claim 1 or 2, **characterized in that** the fire-resistant layer (11; 25; 35) is glued, cemented or screwed to the roof covering (9; 27; 37).

4. Building according to claim 1, 2 or 3, **characterized in that** the building comprises a fire wall (5) on which a fire-resistant roof construction (3) is present which extends in the roof (1) on both sides of the fire wall over a distance from the fire wall (5), whereby the roof covering (9; 27; 37) is present on the fire-resistant roof construction (3) and the adjacent parts of the roof (1), and where the fire-resistant layer (11; 25; 35) is present on the roof covering (9; 27; 37) at the location of the entire fire-resistant roof construction (3) and at the location of strips (15) of the roof (1) adjacent to the fire-resistant roof construction (3).

5. Building according to any of the preceding claims, **characterized in that** the building is provided with solar panels (23; 33) present on the roof covering (27; 37), wherein the fire-resistant layer (25; 35) is present between the roof covering (27; 37) and the solar panels (23; 33).

6. Building according to claim 5, **characterized in that** the solar panels (23; 33) are mounted directly on the fire-resistant layer (25) or are mounted on the fire-resistant layer (35) via a supporting structure (32).

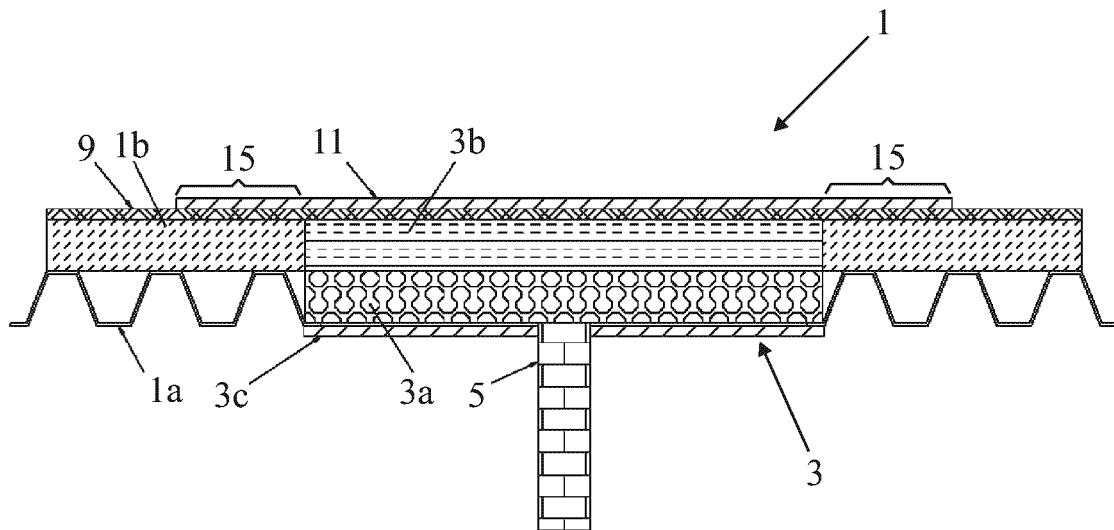


FIG. 1

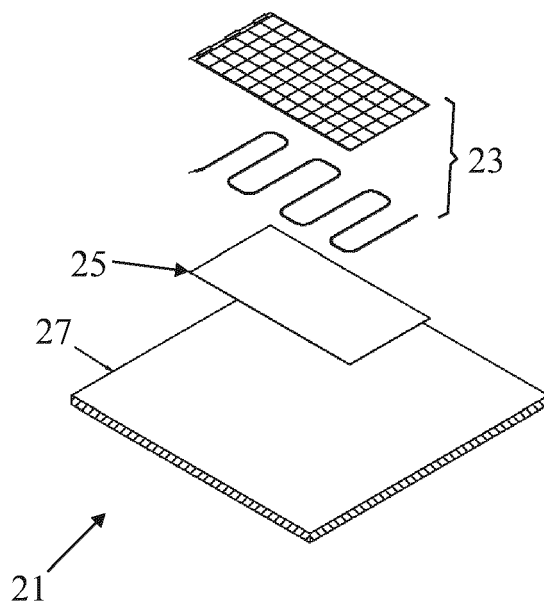


FIG. 2

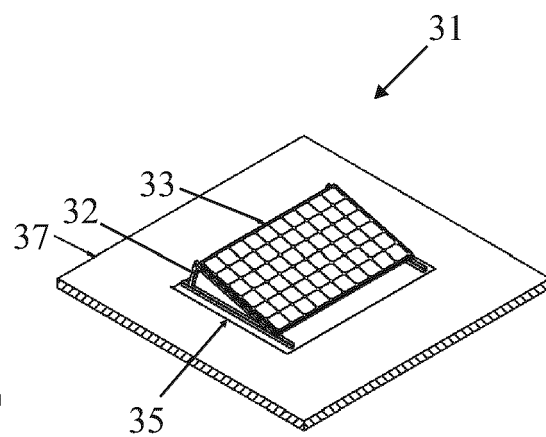


FIG. 3



EUROPEAN SEARCH REPORT

Application Number

EP 23 20 7715

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EPO FORM 1503 03.82 (P04C01)

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A	DE 16 09 947 A1 (DOW CHEMICAL CO) 25 June 1970 (1970-06-25) * figures 1,2 * * last paragraph; page 3 * * end of page 7 * -----	1-6	INV. E04D13/16 E04D11/02 E04D3/02 E04D3/18 E04D13/00
A	US 2021/277653 A1 (POSPISIL FRANK [US] ET AL) 9 September 2021 (2021-09-09) * paragraph [0020]; figure 6 * -----	1-6	
A	US 9 605 433 B2 (JOHNS MANVILLE [US]) 28 March 2017 (2017-03-28) * figure 1 * -----	1-6	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04D H02S F24S
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 28 February 2024	Examiner Tran, Kim Lien
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ON EUROPEAN PATENT APPLICATION NO.**

EP 23 20 7715

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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28-02-2024

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