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(54) **Building brick**

(57) The building brick (1) has a prismatic shape and comprises at least a first groove (13) obtained on a first horizontal surface (5 or 6) and at least a first projection

(14) obtained on a second horizontal surface (6 or 5) and at least a second projection (11) obtained on a first vertical side surface (3) and at least a second groove (12) obtained on a second vertical side surface (4).

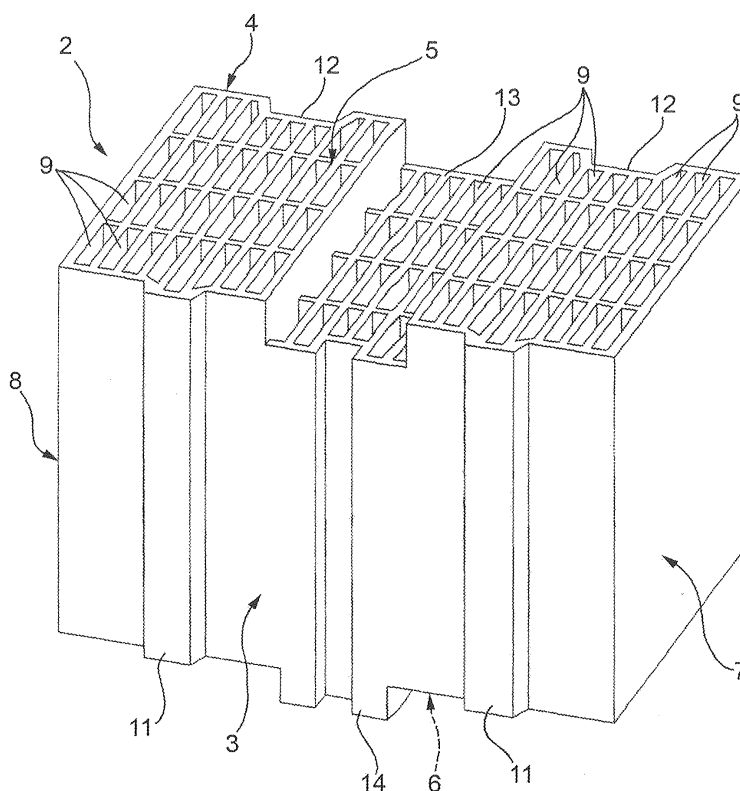


FIG.1

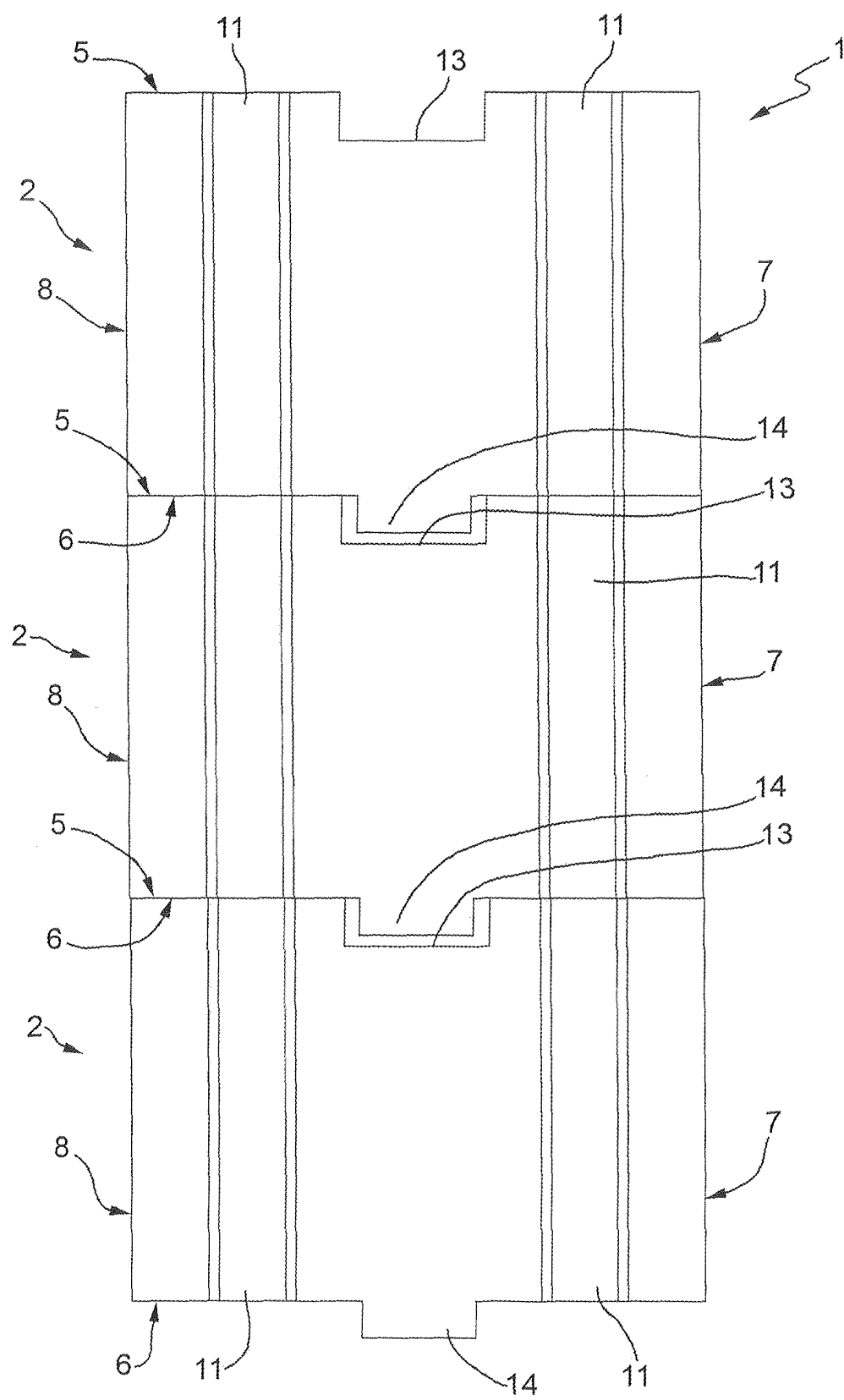


FIG.4

Description

[0001] The present invention relates to a building brick.

[0002] As is known the perimeter walls (load-bearing or non-load-bearing walls) of buildings consist of several superposed rows of building bricks made of clay, concrete or similar materials. Each building brick is provided with at least one groove on a first vertical surface and with at least one projection on a second vertical surface suitable to be housed in the groove of the adjacent building brick. Once the first row of building bricks has been laid the second row of building bricks is arranged on top of this and before the second row of building bricks is laid a layer of mortar is applied to the first row of building bricks. As is known, there is an increasing need to limit the energy requirements of buildings and for this reason efforts are made to build structures that achieve improved thermal performance.

[0003] Existing solutions aimed at achieving a good level of thermal insulation consist of building multi-layer walls with a cavity filled with a layer of insulating material or of building single-layer walls in which the building bricks are coated with an insulating material. An alternative solution currently in use consists of laying rows of rectified bricks and applying a layer of bonding agent between the rows of building bricks.

[0004] However, both of the solutions described above have some drawbacks.

[0005] In particular the horizontal joint between two superposed rows of building bricks consisting of mortar constitutes a thermal bridge and thus a negative factor in terms of thermal insulation performance. Moreover it is apparent that the production of said joints involves high costs in terms of both the product and the amount of labour required. In insulating materials are used as fillers or coatings, there is also the issue of environmental compatibility and disposal, since such insulating materials are synthetic materials. Moreover, the use of rectified bricks clearly involves high production costs, essentially in connection with the machining of the building bricks (grinding process) and the complexity of laying these.

[0006] The purpose of the present invention is to produce a building brick that overcomes the drawbacks described above and that in particular can be used to build a wall with good thermal insulation properties and that is also less expensive.

[0007] According to the present invention a building brick is produced having a substantially prismatic shape **characterized in that** it comprises:

at least a first groove obtained on a first horizontal surface and at least a first projection obtained on a second horizontal surface; and

at least a second projection obtained on a first vertical side surface and at least a second groove obtained on a second vertical side surface.

[0008] In order to better understand the present inven-

tion, a non-limiting preferred embodiment thereof will now be described by way of example with the help of the figures in the accompanying drawings, in which:

- 5 - figures 1 and 2 are perspective views from different angles of a building brick produced according to the present invention;
- figure 3 is a plan view of a horizontal row of building bricks; and
- 10 - figure 4 is a partial view of a wall produced using a plurality of building bricks of figure 1.

[0009] With reference to figures 3 and 4, number 1 indicates, as a whole, a wall defined by a plurality of superposed horizontal rows of building bricks 2 made from clay, concrete or similar materials; in the accompanying drawings the building bricks 2 consist of bricks. In this embodiment the wall 1 is a single-layer wall but this does not limit the scope of the present invention. Each row consists of a plurality of building bricks 2 and is arranged on top of an underlying row.

[0010] With reference to figures 1 and 2, each building brick 2 has a substantially prismatic shape and is of the hollow type or in any case of the type provided internally with holes 9 or cavities with a vertical longitudinal axis. The building brick 2 has a vertical front surface 7, a vertical rear surface 8, a horizontal bottom surface 6, a horizontal upper surface 5, a first vertical side surface 3 and a second vertical side surface 4. The surfaces 3, 4, 7 and 8 are smooth while the surfaces 5 and 6 are provided with the openings of the cavities 9 provided in the building brick 2. The first side surface 3 is provided with two projections 11 that run along the entire height of the building brick 2 and have a cross-section with an isosceles trapezium-shaped perimeter. The second side surface 4 is provided with two grooves 12 that run along the entire height of the building brick 2 and have a cross-section with an isosceles trapezium-shaped perimeter.

[0011] In actual use the projections 11 of a building brick 2 engage the grooves 12 of the adjacent building brick 2 in the same row of building bricks 2. The space inside the groove 12 is greater than the space defined by the projection 11 so that the projection 11 is entirely inside the corresponding groove 12 and the remaining portion of the first side surface 3 of a building brick 2 is arranged closely in contact with the second side surface 4 of the adjacent building brick 2 in the same row.

[0012] The main characteristic of the present invention consists of the fact that each building brick 2 is provided with a groove 13 in the central part of its upper surface 5 and is provided with a projection 14 in the central part of its bottom surface 6 suitable to engage the groove 13 of the underlying building brick 2. Preferably the building bricks 2 of the first row are not provided with the projection 14. In figures 1 and 2 the projection 14 and the groove 13 run across the entire width of the building brick 2 and have a cross-section with a rectangular-shaped perimeter. Moreover the dimensions of the groove 13 are such

as to receive the entire projection 14 of the superposed building brick 2 and such that the remaining portion of the bottom surface 6 of a building brick 2 remains closely in contact with the upper surface 5 of the underlying building brick 2.

[0013] In use, first of all the first row of building bricks 2 is laid so that the projections 11 of a building brick 2 engage the grooves 12 of the adjacent building brick in the same row of building bricks. Then the second row of building bricks 2 is laid so that for each building brick 2 in the second row the projection 14 engages the groove 13 of the underlying building brick 2 and the projections 11 of a building brick 2 in the second row engage the grooves 12 of the adjacent building brick 2 in the same row of building bricks 2. In practice a joint is created between two adjacent building bricks 2 in the same row and a joint between two building bricks 2 arranged one on top of the other; joints that form a tight bond (thus without the definition of thermal bridges) between the surfaces of the adjacent and superposed building bricks 2. In an alternative embodiment of the wall 1 a thin layer of mortar could be applied along the groove 13 only.

[0014] The numerous advantages of the present invention are apparent from the above description.

[0015] In particular the building bricks 2 can be used to build a wall 1 using one single material, namely that used to make the building bricks 2. Besides reducing the costs involved, this also enables compliance with legal requirements in terms of thermal and acoustic performance, humidity, structural behaviour and resistance to fire. Moreover, there are no problems in connection with environmental compatibility or disposal (and the relative environmental and financial costs) given the absence of any synthetic materials, bonding agents or large amounts of mortar. Furthermore, the wall 1 can be built quickly (which has positive repercussions on costs) in that it is essentially an extremely simplified puzzle guided by the aforesaid joints. In practice due to the conformation of the building bricks 2 it is possible to build a wall 1 without using other materials, in a very short time and with a significant reduction in the costs of production and laying.

[0016] Lastly, it is clear that modifications and variations may be made to the building brick 2 described and illustrated herein without departing from the scope of the present invention.

[0017] In particular the perimeter of the grooves 13 and thus of the projections 14 can be of a different shape to that described and illustrated herein and moreover each building brick 2 can be provided with a plurality of grooves 13 and projections 14.

Claims

1. Building brick having a substantially prismatic shape **characterized in that** it comprises:

at least a first groove (13) obtained on a first

horizontal surface (5 or 6) and at least a first projection (14) obtained on a second horizontal surface (6 or 5); and

at least a second projection (11) obtained on a first vertical side surface (3) and at least a second groove (12) obtained on a second vertical side surface (4).

2. Building brick, according to Claim 1, **characterized in that** said first groove (13) runs across the entire width of said first horizontal surface (5 or 6).
3. Building brick, according to Claim 2, **characterized in that** said first projection (14) runs across the entire width of said second horizontal surface (6 or 5).
4. Building brick, according to any one of the preceding Claims, **characterized in that** the space inside said first groove (13) is greater than the space defined by said first projection (14).
5. Building brick, according to any one of the preceding Claims, **characterized in that** said first groove (13) and said first projection (14) have a rectangular-shaped perimeter.
6. Building brick, according to any one of the preceding Claims, **characterized in that** said first horizontal surface (5) in which said first groove (13) is obtained is an upper surface and that said second horizontal surface (6) in which said first projection (14) is obtained is the bottom surface.
7. Building brick, according to any one of the preceding Claims, **characterized in that** it is made from a choice of clay, cement or similar materials.
8. Building brick, according to Claim 7, **characterized in that** the cavities (9) open out onto said horizontal surfaces (5 and 6) and that said vertical side surfaces (3 and 4) are smooth.
9. Wall comprising a plurality of building bricks (2) distributed on several superposed horizontal rows, **characterized in that** a first joint is obtained between two superposed building bricks (2) defined by a first groove (13) obtained on a first building brick (2) and a first projection (14) obtained on the second building brick (2) and suitable to engage said groove (13) on the first building brick (2); **and in that** it comprises a second joint defined between two adjacent building bricks (2) in the same horizontal row and comprising at least a second projection (11) obtained on a first vertical side surface (3) of a first building brick (2) and at least a second groove (12) obtained on a second vertical side surface (4) of a second building brick (2) adjacent to the first.

10. Wall, according to Claim 9, **characterized in that** said first groove (13) is obtained on a horizontal upper surface (5) of said building brick (2) and that said first projection (14) is obtained on a horizontal bottom surface (6) of said building brick (2). 5
11. Wall, according to Claim 9 and/or 10, **characterized in that** said first groove (13) runs across the entire width of said horizontal upper surface (5). 10
12. Wall, according to Claim 11, **characterized in that** said first projection (14) runs across the entire width of said horizontal bottom surface (6).
13. Wall, according to any one of the Claims from 9 to 12, **characterized in that** the space inside said first groove (13) is greater than the space defined by said first projection (14). 15
14. Wall, according to any one of the Claims from 9 to 13, **characterized in that** said first groove (13) and said first projection (14) have a rectangular-shaped perimeter. 20

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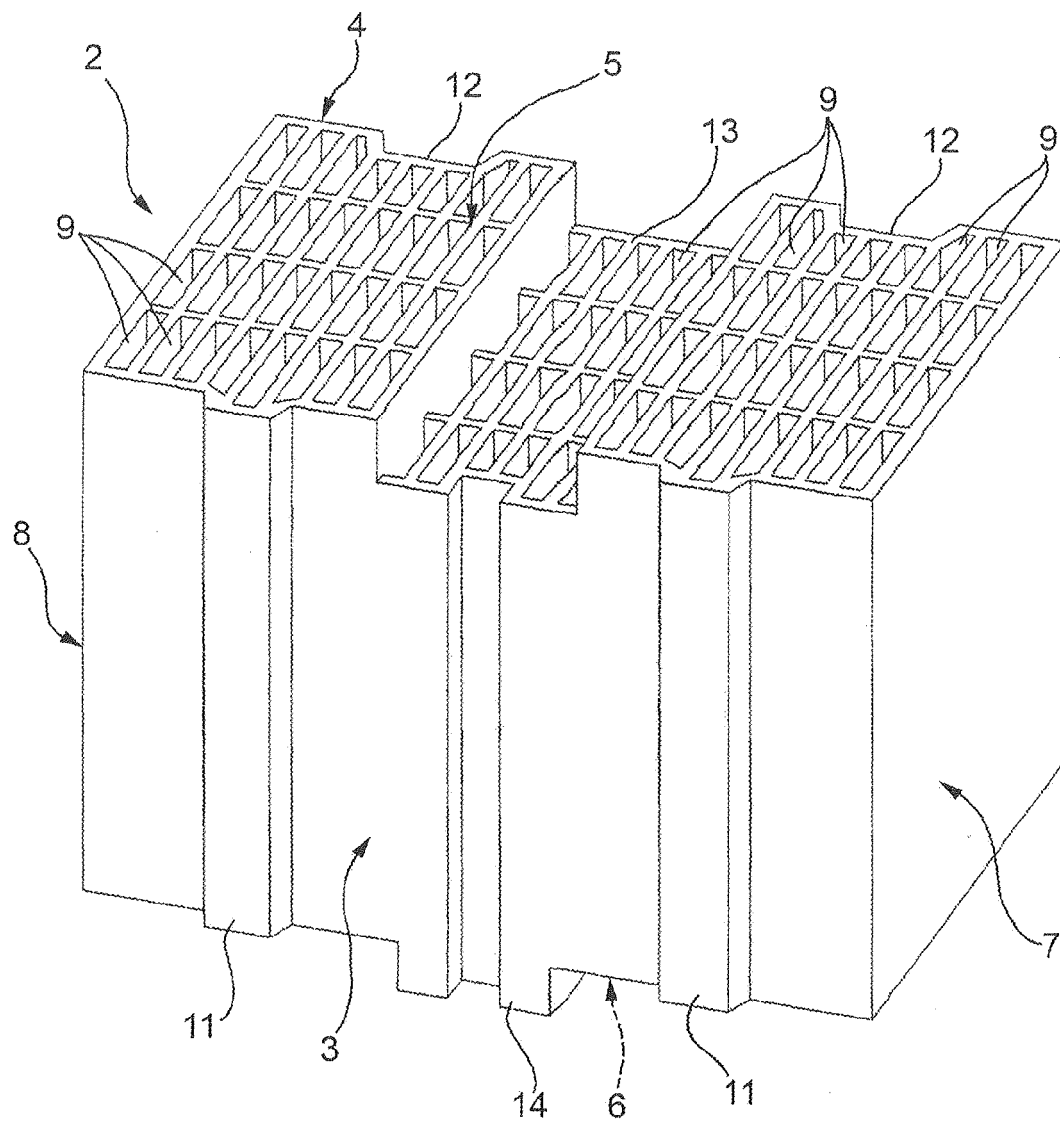


FIG.1

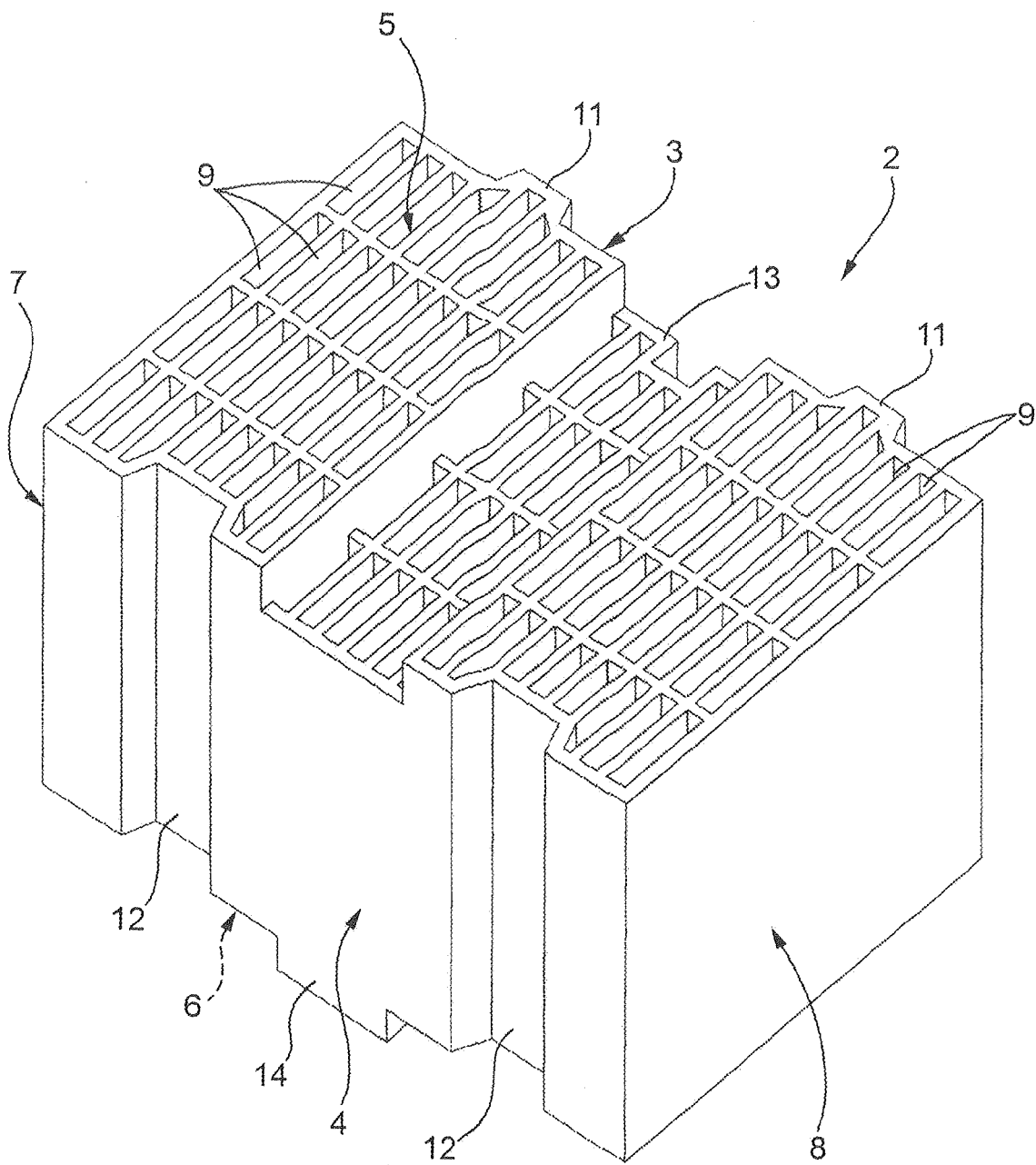


FIG.2

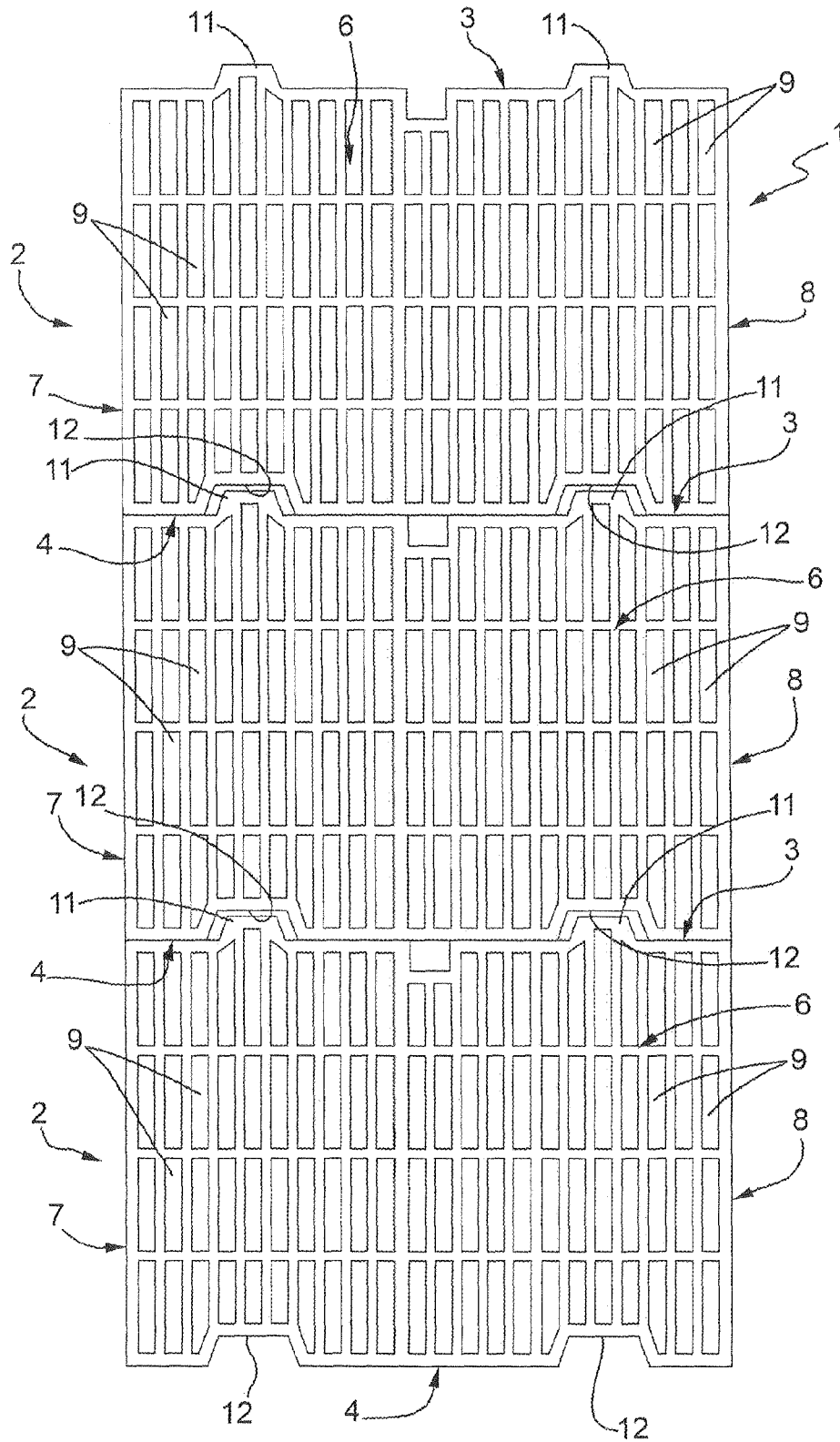


FIG.3

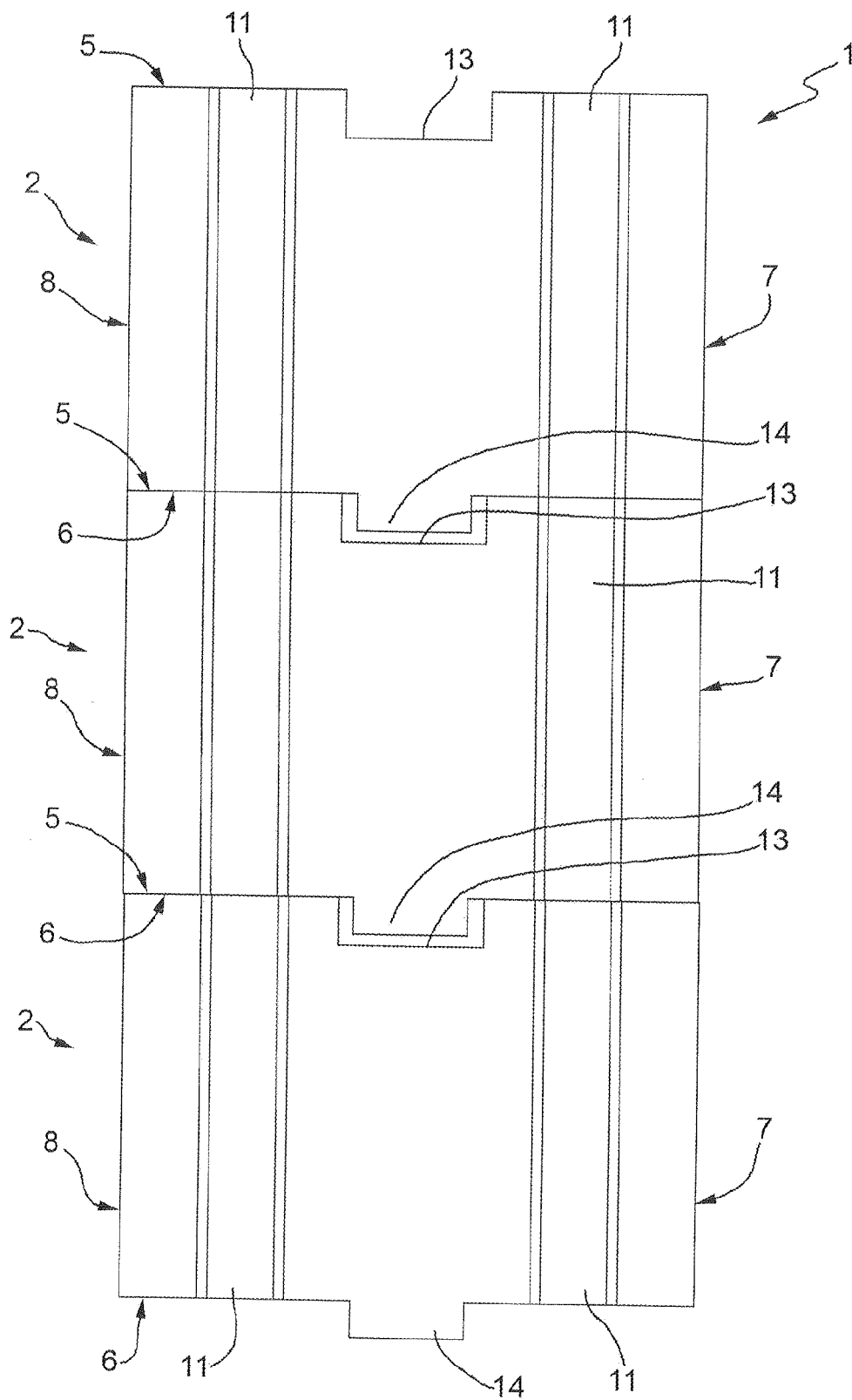


FIG.4