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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.1 7(H))
- of inventorship (Rule 4.17(iv))

[Continued on next page]

(54) **Title:** A PRODUCT TO PROVIDE HEAT INSULATION ON THE OUTER SIDINGS OF THE BUILDINGS AND A MOUNTING METHOD THEREOF

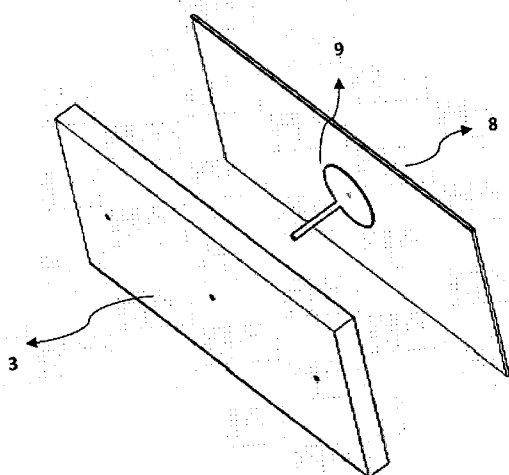


Figure 7

(57) **Abstract:** The present invention relates to a product to be used on the outer sidings of the buildings, providing heat insulation, possible to be applied without profile and providing a tile-covered facade as its apparent front surface is tile (8). The product according to the present invention basically comprises an insulation material (2), surrounding wall (1) and tile (8), and while the insulation material (2) and the surrounding wall (1) go out of the production line as one single structure; the tile is mounted on the said structure by means of both adhering method and mechanically by using auxiliary connection elements. Within the present invention, the structure composed of insulation material and the surrounding wall is mounted on the mounting surface (7) both mechanically and by means of adhering method. It is possible within the present invention that the tile (8) located on the outer front surface of the product be made of ceramic or any other material appropriate for outer siding or plastic, wooden, glass, metal, aluminum, aluminum composite, granite, natural stone, marble, laminate, vinyl, pressed brick, flake board or composite materials.



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DESCRIPTION

**A PRODUCT TO PROVIDE HEAT INSULATION ON THE OUTER SIDINGS OF THE BUILDINGS
AND A MOUNTING METHOD THEREOF****5 Subject of the Invention**

The present invention relates to a product to be used on the outer sidings of the buildings, providing heat insulation, possible to be applied without profile and providing a tile-covered facade as its apparent front surface is tile.

Present State of the Art

10 In the embodiments according to the state of the art, when the similar siding materials are used in the building facades, curtain walls are created by using ceramic plate, aluminum plate derivatives or other siding materials by means of profiled mounting method on condition that the gap that the profile has created will be covered with a heat insulation material or curtain walls are created by means of providing exterior thermal sheathing by
15 using heat insulation material, plaster, last layer covering plaster and external wall paint and at the same time heat insulation is provided.

As it wastes time to obtain the materials to be used for insulation in the embodiments according to the state of art one by one and to mount them during the application in the building site, it also causes some quality problems and additional costs along with some
20 functional loss.

Description of the Figures

Figure 1: Insulation material and surrounding wall

Figure 2: The view of the 3 holes created on the surrounding wall and on insulation material

Figure 3: The montage of the insulation material and the surrounding wall onto the surface

25 **Figure 4:** The mechanical montage of the insulation material and the surrounding wall onto the surface by means of wallplugs

Figure 5: The view of the one-piece structure consisting of insulation material and surrounding wall when they are mounted onto the surface

Figure 6: The montage of the tile onto the insulation material and surrounding wall

Figure 7: The view of the male part of the clamp connection on the tile

5 **Figure 8:** The view of the tile montage on the insulation material and surrounding wall and the view of the female part of the clamp connection

Figure 9: The top view of the male part of the clamp connection located on the tile

Description of the References:

- 1: Surrounding wall
- 10 2: Insulation material
- 3: One-piece (monolithic) structure consisting of the insulation material and wall
- 4: The holes positioned on the insulation material and surrounding wall into which the wall plugs go on
- 5: The hole into which the female part of the clamp connection is mounted on the surface of
15 the insulation material and surrounding wall, wherein the male part of the clamp positioned on the tile go into the said female part
- 6: Wall plugs
- 7: The surface onto which the product is mounted
- 8: Tile
- 20 9: Male part of the clamp connection
- 10: Female part of the clamp connection
- 11: The connection joints of the one-piece structure consisting of insulation material and surrounding wall

Description of the Invention

The present invention relates to a product to be used on the outer sidings of the buildings, providing heat insulation, possible to be applied without profile and providing a tile-covered facade as its apparent front surface is tile.

5 The present invention ends the requirement that different materials are mounted one by one after having been obtained for providing insulation for the buildings. Therefore building heat insulation is provided by means of only one single product. Moreover although it is mounted without using profile, an outer siding having a longer physical life than that of a building generally is made possible as the apparent outer siding is made of ceramic or other
10 materials that can be used on outer sidings of the buildings.

The product according to the present invention comprises three main parts as insulation material (2), surrounding wall (1) and tile (8); wherein the insulation material (2) and the surrounding wall (1) are formed as one single part (3) in other words they have a monolithic structure, and then the tile (8) is mounted onto the front surface of this monolithic structure
15 (3), that is the uncovered surface of the insulation material (2), and therefore the visible front surface of the product becomes the tile.

The insulation material (2) is surrounded with the surrounding wall (1) in a way that one of its surfaces will be uncovered. Three holes (4,5) are created on the monolithic structure (3) formed in this way as shown in Figure 2, and these holes pierce both the surrounding wall
20 and the insulation material. The holes on the right and left edges (4) are the holes through which the wall plugs (6) pass in order to enable the one-piece structure (3) composed of insulation material (2) and surrounding wall (1) to be mounted onto the mounting surface (7) or to the wall (7), while the other hole (5) in the middle is the hole which enables the tile (8) to be mounted onto the wall/surface (7) and also onto the front surface of the monolithic
25 structure (3) composed of insulation material and surrounding wall. The insulation material (2) in the product is polyurethane foam, and also possible to be XPS. The used surrounding wall is reinforced concrete, and within the present invention it is possible for it to be made of a different material that will be suitable to be used.

The male part (9) of the clamp connection is stucked onto the rear surface of the tile (8) to be
30 mounted onto the one-piece structure (3) during the mounting process (Figure 7). The male

part (9) of the clamp connection is mounted onto the rear surface of the tile in a way that it will be located in the center of the surface in alignment with the hole (5) located in the middle on the structure (3) composed of insulation material (2) and surrounding wall (1) and will get into the female part (10) mounted into the hole (5). The part called as the clamp connection is composed of a female part (10), the inner surface of which is serrated (indented) and which is considered as a housing that the male part (9) gets into; and a male part (9) having a surface in accordance with that of the female part. During the packing process, the male part (9) mounted onto the rear surface of the tile is made to pass through the middle hole (5) on the structure consisting of surrounding wall and insulation material and therefore transferred to the location where it will be mounted.

A cement-based adhesive is applied onto the rear surface of the monolithic structure (3) composed of the surrounding wall (1) and insulation material (2), which is unpacked for the mounting process, and after binding a gauge on the mounting surface (7), the structure is mounted on the surface (7) by being adhered from its rear surface. Then, the wall surface/mounting surface (7) is pierced from the holes (4) located on the right and left of the product, and the monolithic structure (3) is mechanically mounted onto the surface (7) by means of wall plugs (6). Therefore the monolithic structure (3) consisting of insulation material and the surrounding wall is mounted onto the surface (7) both by adhering method and mechanically by using wall plugs. By repeating the said process, the unpacked monolithic (one-piece) structures are mounted onto the mounting surface. Before the tile (8) is mounted onto the monolithic one-piece structure (3), as it is shown in Figure 5, a chemical insulation material is applied onto the connection joints (11) of the one-piece structures (3) composed of insulation material and surrounding wall mounted on the surface. The wall surface (7) is pierced from the hole (5) previously made in the center of the monolithic (one-piece) structure (3), and the female part (10) of the clamp is fitted onto the wall/mounting surface (7), wherein the inner surface of the said female part is serrated (indented) and the male part (9) of the clamp connection located on the rear surface of the tile gets into it (10). A polyurethane-based adhesive is applied without any interruption only through the short edges of the rear surface of the tile (8) and through the short edges of the front surface of the surrounding wall in the monolithic structure (3) consisting of insulation material and surrounding wall. The male clamp connection part (9) on the rear surface of the tile (8) is located on the one-piece structure (3) in a way that it will get into the female part

(10) in the center of the monolithic structure composed of the insulation material and surrounding wall, and the tile (8) is pushed until the male part (9) is fitted totally into the female part (10) without leaving any space, and therefore the parts are locked up. Because of the inner surface structure of the female part and the surface structure of the male part, the tile (8) is provided to be locked on the structure (3) composed of surrounding wall and insulation material and on the wall surface, and therefore it is prevented from removing. Therefore the tile (8) is mounted on the surface of the monolithic structure (3) composed of surrounding wall and insulation material and on the wall surface both mechanically and by being adhered from its short edges. As the tile (8) in the product is mounted from one point and from the center, until the polyurethane-based adhesive becomes effective, the circular movement of the tile (8) is possible and the joint adjustment can be made by means of the said circular movement of the tile (8). After the joint adjustment is made by means of this movement of the tile (8), the mounting process is completed.

It is possible within the present invention that the tile (8) located on the outer front surface of the product be made of ceramic or any other material appropriate for outer siding or plastic, wooden, glass, metal, aluminium, aluminium composite, granite, natural stone, marble, laminate, vinyl, pressed brick, flakeboard or composite materials, and also it is possible to use these materials within the present invention.

CLAIMS

1. A product developed for providing a tile-covered curtain wall and heat insulation on the outer sidings of the buildings, comprising;
 - 5 • tile (8) on the outer front surface
 - the male part (9) of the clamp connection element which is located in the center of the tile rear surface and stucked so as to be in alignment with the hole (5) in the middle part of the one-piece (monolithic) structure (3) consisting of insulation material and surrounding wall
 - 10 • insulation material (2) located inside the surrounding wall and on the rear surface of the tile
 - surrounding wall (1) surrounding the insulation material

2. The product according to Claim 1, characterized in that the insulation material (2) and
15 the surrounding wall (1) has a one-piece (monolithic) structure (3).

3. The product according to any one of the preceding claims, comprising at least three
 holes (4, 5) piercing both the insulation material and the surrounding wall on the
20 surface of the monolithic (one-piece) structure (3) composed of insulation material
 (2) and surrounding wall (1), the visible front surface of which is the insulation
 material.

4. A method for mounting the product according to any one of the preceding claims,
25 comprising the following steps;
 - applying a cement-based adhesive on the rear surface of the monolithic
 structure (3) composed of surrounding wall and insulation material, and
 sticking that structure from its rear surface onto the wall surface (7) or the
 mounting surface (7)
 - 30 • piercing the surface (7) onto which the product has been mounted or the
 wall surface (7) through the holes (4) located on the right and left edges of
 the monolithic structure composed of surrounding wall and the insulation

material and mounting the monolithic structure (3) mechanically onto the surface (7) by means of wall plugs (6) through the said holes

- 5 • applying chemical material on the connection joints of the monolithic (one-piece) structures (3) consisting of insulation material and surrounding wall mounted onto the surface (7) that the mounting process takes place

- 10 • piercing the surface (7) onto which the product has been mounted, through the hole (5) located in the center of the monolithic structure (3) consisting of wall and insulation material mounted onto the surface

- 15 • fitting the female part (10) onto the surface (7) that the male part (9) of the clamp connection which has been previously adhered on the tile rear part gets into by passing through the hole (5) in the middle of the surrounding wall and insulation material

- 20 • applying polyurethane-based adhesive all along the two short edges on the surrounding wall surface or the tile rear surface in the monolithic structure (3) composed of surrounding wall and the insulation material

- 25 • locating the clamp connection element at the rear part of the tile (8) to the surface of the insulation material on the structure (3) composed of insulation material and the surrounding wall in a way that the male part (9) will fit into the female part (10) on the surface

- 30 • adhering the tile on the one-piece (monolithic) structure (3) from its short edges and locking the tile (8) on the one-piece (monolithic) structure (3) and the on wall surface in a way that it cannot be removed from both of the surfaces when it is drawn back with the movement of the male part (9) inside the female part (10) the inner surface of which is serrated until the parts (9, 10) are locked up.

5. The method according to Claim 4, characterized in that the tile (8) is mounted on the monolithic structure (3) composed of surrounding wall and insulation material by means of both adhering method and mechanically by engaging and locking the clamp connection elements, which are the male part (9) and the female part (10) the inner surface of which is serrated (indented).
- 5
6. The method according to Claim 4, characterized in that the structure (3) composed of surrounding wall and the insulation material is mounted onto the mounting surface (7) both by means of adhering method and mechanically by using/fixing wall plugs (6) through the holes (4) made on the surface (7).
- 10
7. The method according to Claim 4, characterized in that the tile (8) is mounted from only one point on its center in a way that the circular movement and joint adjustment of the tile are possible.
- 15
8. The tile according to preceding claims, characterized in that the tile (8) is ceramic.
9. The tile according to preceding claims, characterized in that the tile (8) is made of plastic, wooden, glass, metal, aluminum, aluminum composite, granite, natural stone, marble, laminate, vinyl, pressed brick, flake board or composite materials or another material appropriate for the outer siding.
- 20

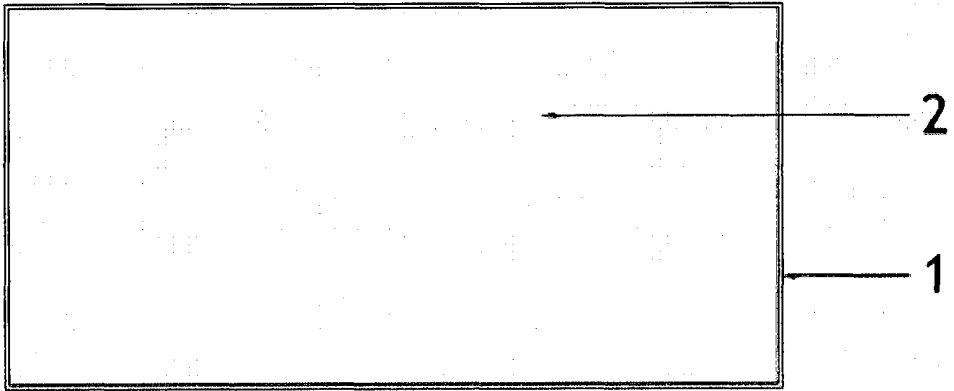


Figure 1

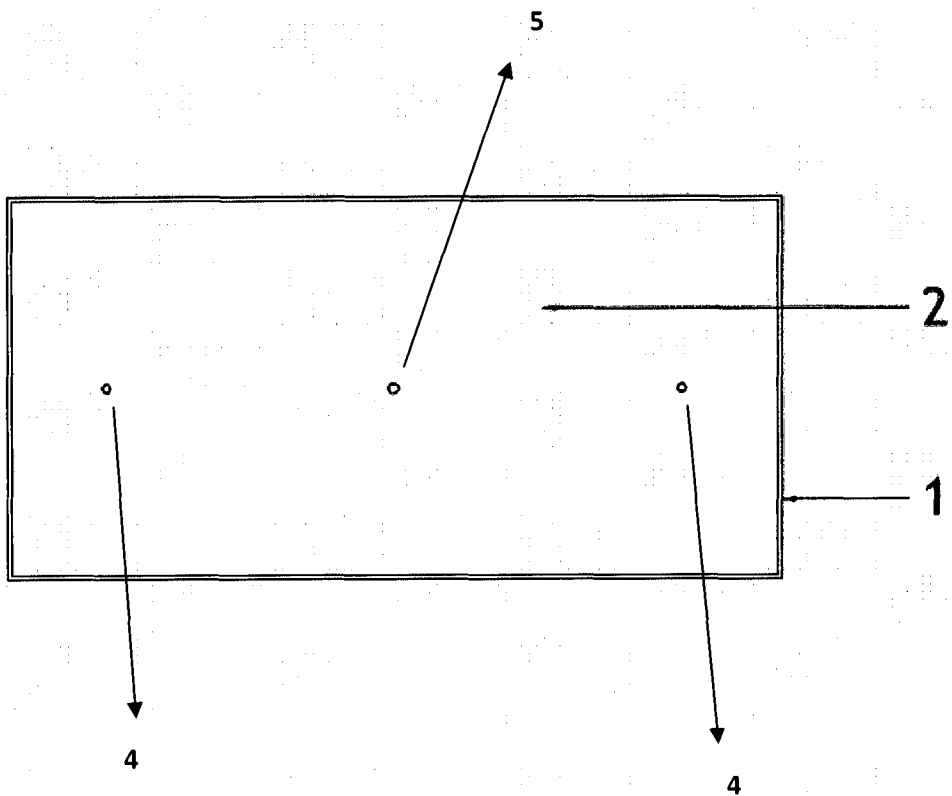


Figure 2

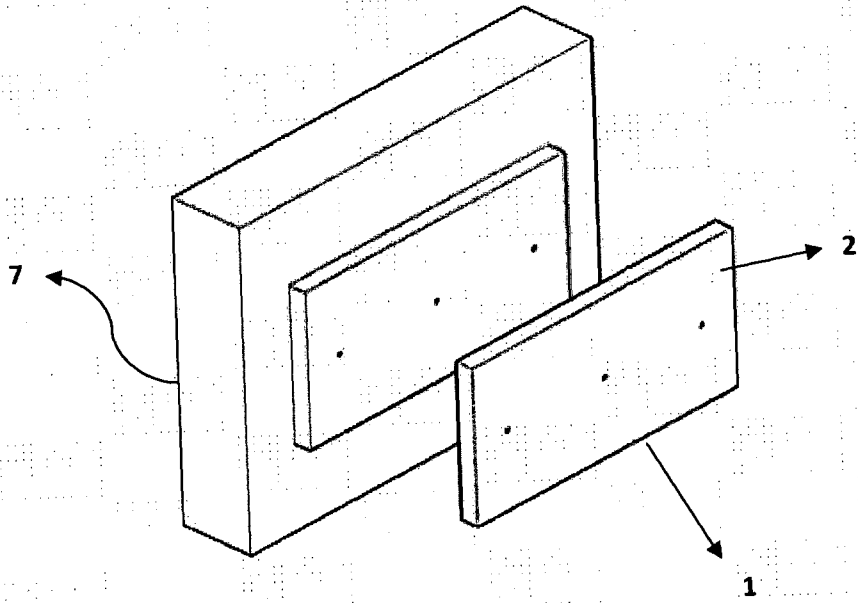


Figure 3

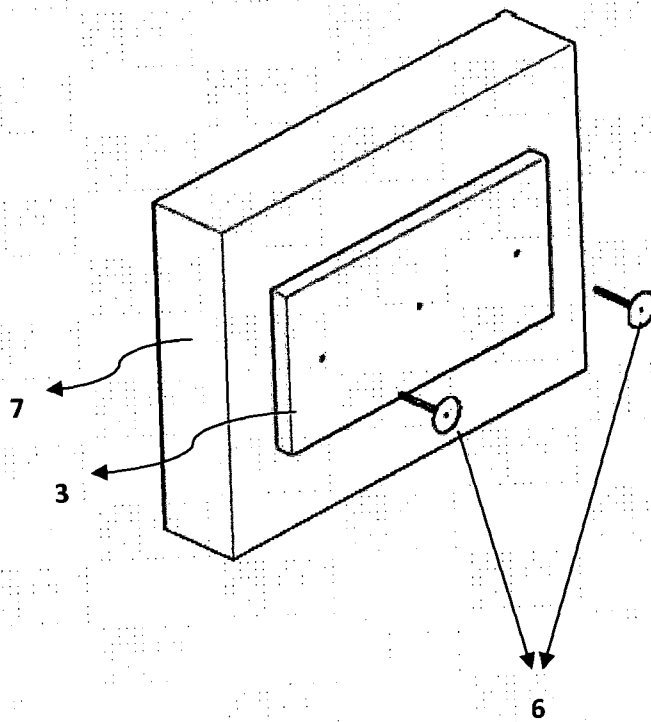


Figure 4

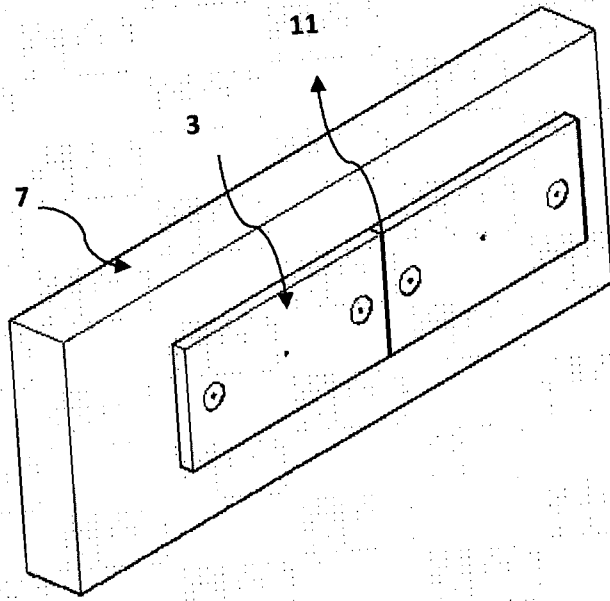


Figure 5

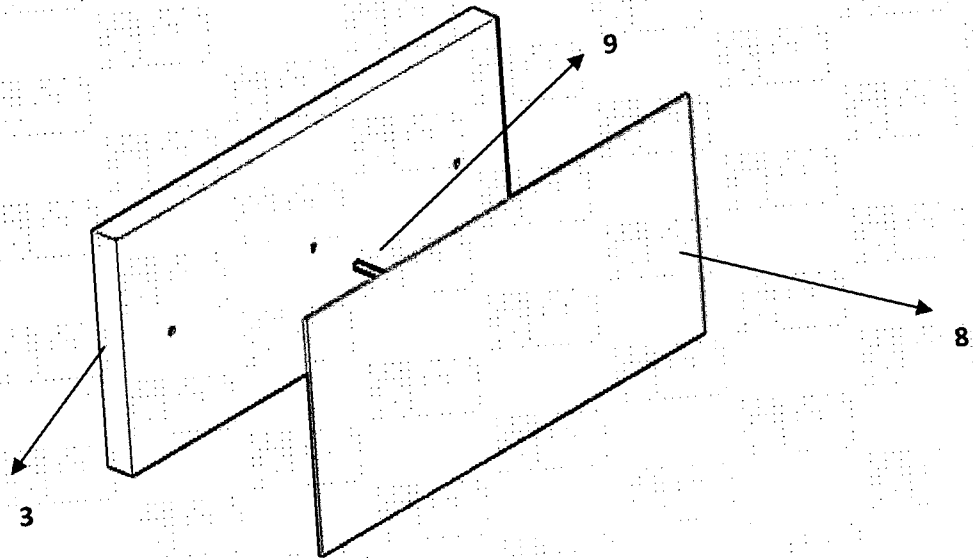


Figure 6

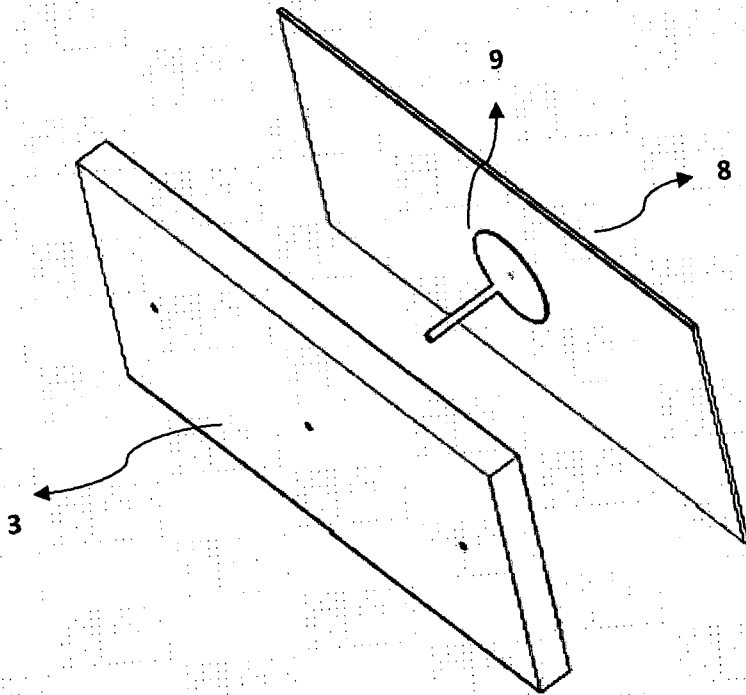


Figure 7

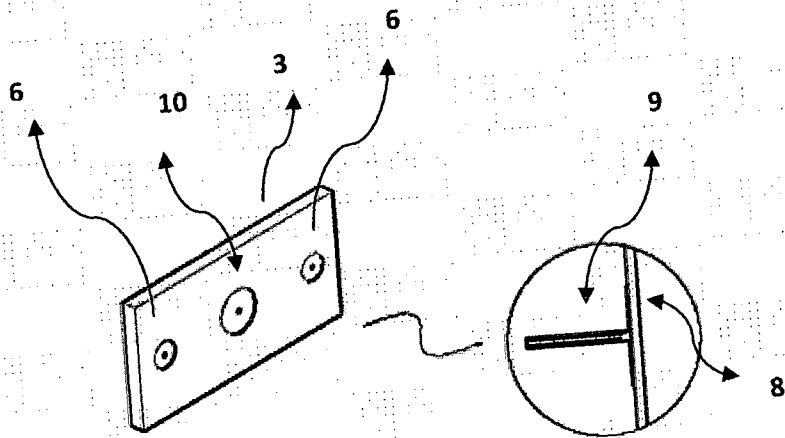


Figure 8

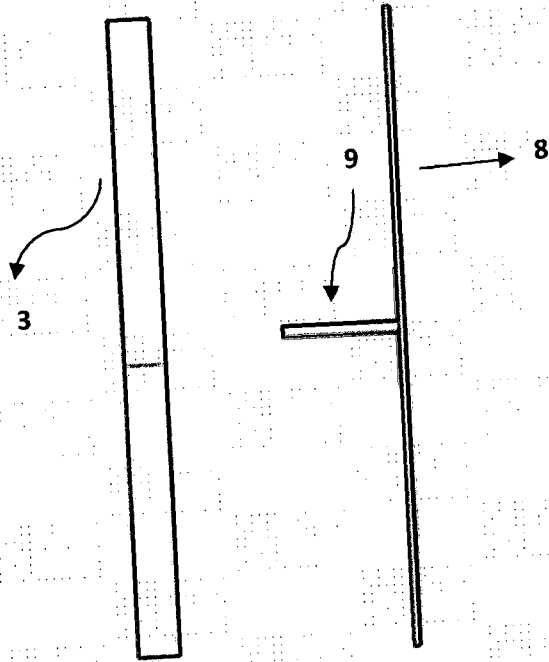


Figure 9

INTERNATIONAL SEARCH REPORT

International application No
PCT/TR2012/000046

A. CLASSIFICATION OF SUBJECT MATTER
 INV. E04B1/76 E04F13/08 E04F13/14
 ADD.
 According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
 Minimum documentation searched (classification system followed by classification symbols)
 E04B E04F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 197 37 894 AI (GEFINEX JACKON GMBH [DE]) 4 March 1999 (1999-03-04) col umn 2, lines 28-68; figures 1,4 -----	1-7
A	KR 200 414 099 YI (YONG-JIN AN) 17 April 2006 (2006-04-17) figures 1,2 -----	1-7
X	GB 2 221 931 A (WALKER BRIAN) 21 February 1990 (1990-02-21) page 3, paragraph 5; figures 1,2 -----	8,9
X	US 5 553 455 A (CRAIG HAROLD M [US] ET AL) 10 September 1996 (1996-09-10) claim 1; figure 3 -----	8,9

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents :
 "A" document defining the general state of the art which is not considered to be of particular relevance
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 "&" document member of the same patent family

Date of the actual completion of the international search 4 July 2012	Date of mailing of the international search report 13/07/2012
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Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Rosborough , John
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/TR2012/000046

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19737894	A 1	04-03-1999	NONE

KR 200414099	Y 1	17-04-2006	NONE

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