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(54) **A DOOR LEAF, ESPECIALLY FOR DOORS, GATES OR GARAGE GATES**

(57) A door leaf, in particular for a door, gate and garage door, in which at least one outer surface is made of a metal sheet to which a decorative strip is attached, characterized in that the outer surface (2) of the door leaf (1) made of a metal sheet is provided with shaped openings (4) and the decorative strip (3) has catches (5) to cooperate with the shaped openings (4) and is made of an elastic material.

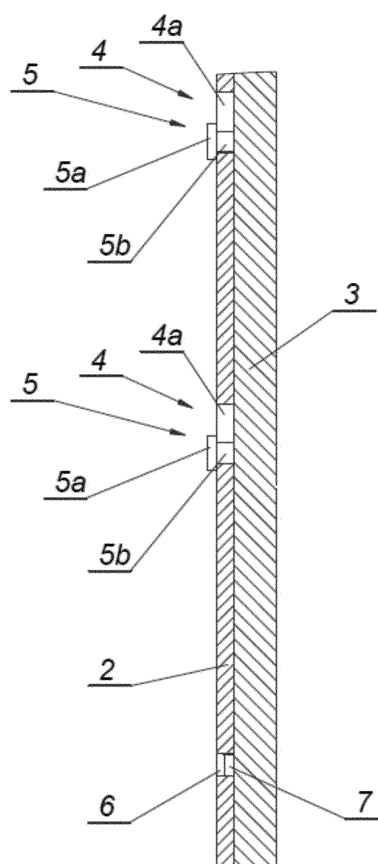


Fig. 5

Description

[0001] The invention provides a door leaf, in particular for a door, gate and garage gate, with at least one outer surface made of a metal sheet to which a decorative strip is attached. The decorative strip, usually made of metal, preferably of stainless steel, is used to decorate the door leaf made of a metal sheet.

[0002] For the purpose of decorating door leaves where at least outer surface is made of a metal sheet, decorative strips are known that have usually a form of a flat bar and are adhered to the outer surface of the door leaf. This solution however entails a risk of delamination of the decorative strip.

[0003] As shown in Fig. 1, decorative strips 3 are known for decorating a door leaf with at least one outer surface made of a metal sheet 2, and they have a form of a bar having a square or rectangular but square-like cross-section, they are provided with threaded bores 9 and are screwed to the metal sheet 2 of the door plating by means of screws 8, where the heads of the screws 8 are positioned at the internal side of the metal sheet 2 of the plating. Such solution is durable, but it entails certain difficulties during manufacturing since before assembling the door leaf plating it is necessary to screw the decorative strips 3, and then carry out the door leaf assembling process, and this makes it difficult to position such a door leaf in a flat press, since decorative strips 3 protrude over the surface of the sheet 2 of the door plating.

[0004] Known door leaves may be solid but they may also comprise varied glazing. The number of decorative strips on a door leaf may vary. Glazing and decorative strips are used to make the door fit to interiors of diverse kinds. Decorative strips may be positioned vertically, for example at both sides of a vertical glazing, or horizontally between horizontal glazing sections. Positioning of decorative strips on the surface of a door leaf may be chosen arbitrarily. Known decorative strips may have various shapes. They may extend rectilinearly, arcuately or in a fancy way. Most commonly they have a square or rectangular cross-section.

[0005] The object of the invention is to avoid the above presented difficulties during assembling of a door leaf provided with decorative strips, and to ensure a durable connection of decorative strips with the outer surface of a door leaf and thus to broaden selection of door leaves, in particular intended for a door, gate or garage door.

[0006] According to the first invention, a door leaf, in particular for a door, gate and garage gate, where at least one outer surface is made of a metal sheet to which a decorative strip is attached, is characterized in that the outer surface of the door leaf, made of a metal sheet, is provided with shaped openings and the decorative strip has catches to cooperate with shaped openings and is made of an elastic material.

[0007] Preferably, the outer surface of the door leaf has a locking opening and the decorative strip is provided with a locking pin to cooperate with the locking opening.

[0008] Also preferably, the decorative strip has a locking opening and the outer surface of the door leaf is equipped with a locking pin to cooperate with the locking opening.

[0009] Also preferably, the shaped opening has a larger portion with a width that is smaller than the one of the decorative strip, and from which a catch in a form of a shank with a head extends, where the head of the shank is a catching portion and has a shape of a circle of a diameter corresponding to the larger portion of the shaped opening, and the shank is a pin of a diameter corresponding to the width of the channel in the shaped opening of the outer surface of the door leaf.

[0010] Also preferably, the shaped opening has a rectangle-like shape of a diameter smaller than the width of the decorative strip, and the catch has a form of a hook the catching portion of which has a rectangular shape of a size corresponding to the shaped opening and extends from the shank at the right angle.

[0011] Also preferably, the shaped opening in the outer surface of the door leaf and the catches in the decorative strip are arranged along a straight line and the distances between individual shaped openings in the outer surface of the door leaf and between individual catches in the decorative strip are the same.

[0012] Preferably, the locking pin has a form of a cylinder and the locking opening has a shape of a circle, where the outer diameter of the locking pin is equal to the diameter of the locking opening.

[0013] Also preferably, the locking pin is positioned at the end of a row of decorative strip catches and the locking opening is positioned at the end of a row of shaped openings in the door leaf outer surface.

[0014] Also preferably, the locking pin is positioned between the decorative strip catches and the locking opening is correspondingly positioned between shaped openings in the door leaf outer surface.

[0015] Also preferably, the locking pin is positioned at the end of a row of shaped openings of the door leaf outer surface and the locking opening is positioned at the end of a row of decorative strip catches.

[0016] Also preferably, the locking pin is positioned between the shaped openings of the door leaf outer surface and the locking opening is correspondingly positioned between the decorative strip catches.

[0017] Also preferably, the outer surface of the door leaf is made of a steel sheet.

[0018] The object of the invention is presented in embodiments in the drawing where fig. 2 shows a door leaf with attached decorative strips that extend rectilinearly, in a front view of the door leaf, fig. 2a shows a door leaf with two attached decorative strips extending arcuately, in a front view of the door leaf, fig. 3 shows a decorative strip with catches formed as shanks with heads and a locking pin at the end of the decorative strip, in a side view, laid on a metal sheet of the outer surface of a door leaf, with shaped openings, fig. 4 shows a cross-section of a portion of a decorative strip with a locking pin at the

end, positioned with its catches formed as shanks with heads in shaped openings of a metal sheet of the outer surface of a door leaf, before it is moved to attach the decorative strip in the shaped openings, fig. 5 shows a cross-section of a portion of a decorative strip with a locking pin at its end, when attached in a metal sheet of the outer surface of a door leaf, fig. 6 shows a decorative strip with catches formed as shanks with heads, with a locking pin positioned between the catches, in a side view, laid on a metal sheet of the outer surface of a door leaf with shaped openings, fig. 7 shows a portion of a decorative strip with catches formed as hooks, in a side view, laid on a metal sheet of the outer surface of a door leaf with shaped openings, fig. 8 shows a portion of a decorative strip with catches formed as hooks, in a view from the side of the catches, fig. 9 shows exemplary shapes of shaped openings, fig. 10 shows a portion of a decorative strip with catches formed as hooks, in a side view, laid on a metal sheet of the outer surface of a door leaf with shaped openings and a locking pin, and fig. 11 shows a portion of a decorative strip with catches formed as hooks and a locking opening, in a view from the side of the catches.

[0019] The invention provides a door leaf 1, in particular for a door, gate and garage gate, where at least one outer surface 2 is made of a metal sheet to which a decorative strip 3 is attached. As shown in fig. 2 and fig. 2a, in an embodiment of the invention, a door leaf 1 has two decorative strips 3 positioned on a metal sheet of the outer surface 2 at both sides of a glazing 10 positioned in the center of a door leaf 1. Decorative panels 3 extend from the upper edge to the bottom edge of the door leaf 1. In the embodiment shown in fig. 2, decorative panels 3 extend vertically, and in the embodiment shown in fig. 2a, they are arranged arcuately. Of course, in other embodiments of the invention the number of decorative strips 2, their length and arrangement on the outer surface 2 of the door leaf 1 may be entirely different. They may extend horizontally or obliquely. They may be arranged along a straight line, arcuately or in a fancy way. This is dependent on the visual effect to be obtained so as to adjust the door leaf 1 to a specific room.

[0020] As shown in fig. 3, fig. 4, fig. 5, fig. 6, fig. 7, and fig. 8, in embodiments of the invention, an outer surface 2 of a door leaf 1, made of a metal sheet, is provided with shaped openings 4 and a decorative strip 3 has catches 5 to cooperate with the shaped openings 4. The outer surface 2 of a door leaf 1 has a locking opening 6 and the decorative strip 3 has a locking pin 7 to cooperate with the locking opening 6. The decorative strip 3 is made of an elastic material.

[0021] As shown in an embodiment of the invention in fig. 3, fig. 6, and fig. 9, a shaped opening 4 has a larger part 4a of a width that is smaller than the one of a decorative strip 3, and from which a channel 4b extends. The bigger part 4a has a circular shape. As shown in fig. 3, fig. 4, fig. 5, fig. 6, and fig. 9, a catch 5 is shaped as a shank with a head, and its catching portion 5a is a circle

of a diameter corresponding to the wider part of the shaped opening 4, and the shank 5b is a pin of a diameter corresponding to the width of the channel 4b in the shaped opening 4 of an outer surface 2 of a door leaf 1.

[0022] As shown in fig. 7 and fig. 8, in an embodiment of the invention, a shaped opening 4 has a rectangle-like shape of a width smaller than the one of a decorative strip 3, and a catch 5 is formed as a hook where its catching portion 5a has a rectangular shape of a size corresponding to the shaped opening 4 and extends from a shank 5b at the right angle.

[0023] As shown in fig. 3, fig. 6, fig. 7, and fig. 8, in embodiments of the invention, shaped openings 4 in an outer surface 2 of a door leaf 1 and catches 5 in a decorative strip 3 are arranged along a straight line and distances between individual shaped openings 4 in an outer surface 2 of a door leaf 1 and between individual catches 5 in a decorative strip 3 are the same. A locking pin 7 is formed as a cylinder and a locking opening 6 has a shape of a circle where the outer diameter of the locking pin 7 is equal to the diameter of the locking opening 6.

[0024] In an embodiment of the invention shown in fig. 3, fig. 4, and fig. 5, a locking pin 7 is positioned at the end of a row of catches 5 of a decorative strip 3 and a locking opening 6 is positioned at the end of a row of locking openings 4 in an outer surface 2 of a door leaf 1. On the other hand, in an embodiment shown in fig. 6, a locking pin 7 is positioned between catches 5 of a decorative strip 3 and a locking opening 6 is positioned between shaped openings 4 of an outer surface 2 of a door leaf 1.

[0025] In other embodiments of the invention, distances between individual shaped openings 4 in an outer surface 2 of a door leaf 1 may be different, provided that they correspond to distances between individual catches 5 in a decorative strip 3.

[0026] As shown in fig. 10 and fig. 11, in another embodiment of the invention, an outer surface 2 of a door leaf 1 is made of a metal sheet and is provided with shaped openings 4 and a decorative strip 3 has catches 5 to cooperate with shaped openings 4. The decorative strip 3 is made of an elastic material and has a locking opening 6 and the outer surface 2 of the door leaf 1 is provided with a locking pin 7 to cooperate with the locking opening 6. The shaped opening 4 has a rectangle-like shape of a width that is smaller than the one of the decorative strip 3. This causes that the shaped opening 4 is not visible after the decorative strip 3 is mounted. The catch 5 is formed as a hook where its catching portion 5a has a rectangular shape of a size corresponding to the shaped opening 4 and extends from a shank 5b at the right angle.

[0027] The shape of shaped openings 4 may be varied. Exemplary shapes of shaped openings 4 are shown in fig. 9, where in option A, the larger part 4a of the shaped opening 4 is oval, and in option B it is rectangular.

[0028] As shown in fig. 10 and fig. 11, in an embodiment of the invention, shaped openings 4 of an outer

surface 2 of a door leaf 1 and catches 5 in a decorative strip 3 are arranged along a straight line, and distances between individual shaped openings 4 in the outer surface 2 of the door leaf 1 and between individual catches 5 in the decorative strip 3 are the same. A locking pin 7 is formed as a cylinder and a locking opening 6 has a circular shape where the outer diameter of the locking pin 7 is equal to the diameter of the locking opening 6. The locking pin 7 is positioned at the end of a row of shaped openings 4 of the outer surface 2 of the door leaf 1 and the locking opening 6 is positioned at the end of a row of catches 5 of the decorative strip 3. Of course, in another embodiment of the invention the locking pin 7 may be positioned between the shaped openings 4 in the outer surface 2 of the door leaf 1 and the locking opening 6 is then positioned correspondingly between the catches 5 of the decorative strip 3.

[0029] In embodiments of the invention, an outer surface 2 of a door leaf 1 is made of a steel sheet. It is clear that in other embodiments of the invention another metal sheet may be used for this purpose, for example a copper or aluminum sheet.

[0030] In embodiments of the invention, a decorative strip 3 has a rectangular cross-section but it is clear that in other embodiments of the invention the cross-section of the decorative strip may have another shape, such as for example a semicircular, triangular, trapezoidal or fancy shape.

[0031] The shape of shaped openings 4 also may be varied, different from the exemplary shapes shown in embodiments of the invention. Exemplary shapes of shaped openings 4 are shown in fig. 9, where in option A the larger part 4a of the shaped opening 4 is oval, and in option B it is rectangular.

[0032] In the invention, catches 5 are stably connected to a decorative strip 3 in a manner known from the prior art. Shanks 5b of the catches 5 may be glued into blind openings drilled in the decorative strip 3 or they may be glued directly to the surface of the decorative strip 3. They may be welded or thermally integrated with it. They may be also screwed into threaded holes in the decorative strip 3. Similarly, a locking pin 7 is attached in a known manner. The locking pin 7 may be seated on the decorative strip 3 or on an outer surface 2 of a door leaf 1.

[0033] In the invention, catches 5 cooperate with shaped openings 4 in an outer surface 2 of a door leaf 1. After catching portions 5a of the catches 5 are inserted into shaped openings 4 a locking pin 7 does not align with a locking opening 6. A decorative strip 3 needs to be deformed slightly. Its position after deformation is shown by a broken line in fig. 3, fig. 6, and in fig. 10. Then the decorative strip 3 has to be moved along the shaped catches 4. The movement direction is shown with an arrow marked with K in fig. 3, fig. 4, fig. 6, fig 7, and in fig. 10. After the catches 5 are moved to the end of the shaped openings 4, the locking pin 7 snaps into the locking opening 6. This construction of catches 5 and shaped openings 4 as well as locking pin 7 and locking opening 6

ensures durability of the connection of the decorative strip 3 to the outer surface 2 of the door leaf 1. Disengagement is possible only with the use of a considerable force.

[0034] This kind of attachment enables secure attachment of a decorative strip 3 to a finished door leaf 1, after it is mounted and assembled in the production process and all the necessary technology steps are completed, as a final operation.

[0035] It is clear that in other embodiments of the invention, a decorative strip 3 may have only catches 5 and an outer surface 2 of a door leaf 1 has only shaped openings 4 so as to enable secure attachment of the decorative strip 3 in the door leaf 1. Connection via a locking pin 7 and a locking opening 6 becomes needless, when the catches 5 and shaped openings 4 are produced precisely enough and this allows to obtain, upon seating the catches 5 in the shaped openings 4, a secure attachment of the decorative strip 3 to the outer surface 2 of the door leaf 1. In order to obtain enhanced durability of such connection, before the catches 5 become seated in the shaped openings 4 glue may be applied on the catches 5 to additionally connect the decorative strip 3 to the outer surface 2 of the door leaf 1.

[0036] It will be clear that this invention is not to be limited to the embodiments shown and that numerous modifications/combinations thereof are possible within the scope of the patent claims and without going beyond the scope of the inventive idea.

Claims

1. A door leaf, in particular for a door, gate or garage door, where at least one outer surface is made of a metal sheet to which a decorative strip is attached, **characterized in that** the outer surface (2) of the door leaf (1), made of a metal sheet, is provided with shaped openings (4), and the decorative strip (3) has catches (5) to cooperate with the shaped openings (4) and is made of an elastic material.
2. A door leaf according to claim 1 **characterized in that** the outer surface (2) of the door leaf (1) has a locking opening (6) and the decorative strip (3) is provided with a locking pin (7) to cooperate with the locking opening (6).
3. A door leaf according to claim 1 **characterized in that** the decorative strip (3) has a locking opening (6) and the outer surface (2) of the door leaf (1) is provided with a locking pin (7) to cooperate with the locking opening (6).
4. A door leaf according to claim 1 **characterized in that** the shaped opening (4) has a larger part (4a) with a width that is smaller than the one of the decorative strip (3), from which part a channel (4b) ra-

dially extends, and the catch (5) is formed as a shank with a head, where the head is its catching portion (5a) and is formed as a circle of a diameter corresponding to the larger part (4a) of the shaped opening (4) and the shank (5b) is a pin of a diameter corresponding to the width of the channel (4b) in the shaped opening (4) of the outer surface (2) of the door leaf (1).

5. A door leaf according to claim 1 **characterized in that** the shaped opening (4) has a rectangle-like shape of a width that is smaller than the one of the decorative strip (3), and the catch (5) is formed as a hook the catching part (5a) of which has a rectangular shape of a size corresponding to the shaped opening (4) and extends from the shank (5b) at the right angle. 10
6. A door leaf according to claim 1 **characterized in that** shaped openings (4) in the outer surface (2) of the door leaf (1) and the catches (5) in the decorative strip (3) are arranged along a straight line and distances between individual shaped openings (4) in the outer surface (2) of the door leaf (1) and between individual catches (5) in the decorative strip (3) are the same. 20 25
7. A door leaf according to claims 2 or 3 **characterized in that** the locking pin (7) is shaped as a cylinder and the locking opening (6) has a circular shape, where the outer diameter of the locking pin (7) is equal to the diameter of the locking opening (6). 30
8. A door leaf according to claim 2 **characterized in that** locking pin (7) is positioned at the end of a row of catches (5) of the decorative strip (3) and the locking opening (6) is positioned at the end of a row of shaped openings (4) in the outer surface (2) of the door leaf (1). 35 40
9. A door leaf according to claim 2 **characterized in that** the locking pin (7) is positioned between the catches (5) of the decorative strip (3) and the locking opening (6) is positioned correspondingly between the shaped openings (4) in the outer surface (2) of the door leaf (1). 45
10. A door leaf according to claim 3 **characterized in that** the locking pin (7) is positioned at the end of a row of shaped openings (4) of the outer surface (2) of the door leaf (1) and the locking opening (6) is positioned at the end of a row of catches (5) of the decorative strip (3). 50
11. A door leaf according to claim 3 **characterized in that** the locking pin (7) is positioned between shaped openings (4) in the outer surface (2) of the door leaf (1) and the locking opening (6) is correspondingly 55

positioned between catches (5) of the decorative strip (3).

12. A door leaf according to claim 1 **characterized in that** the outer surface (2) of the door leaf (1) is made of a steel sheet.

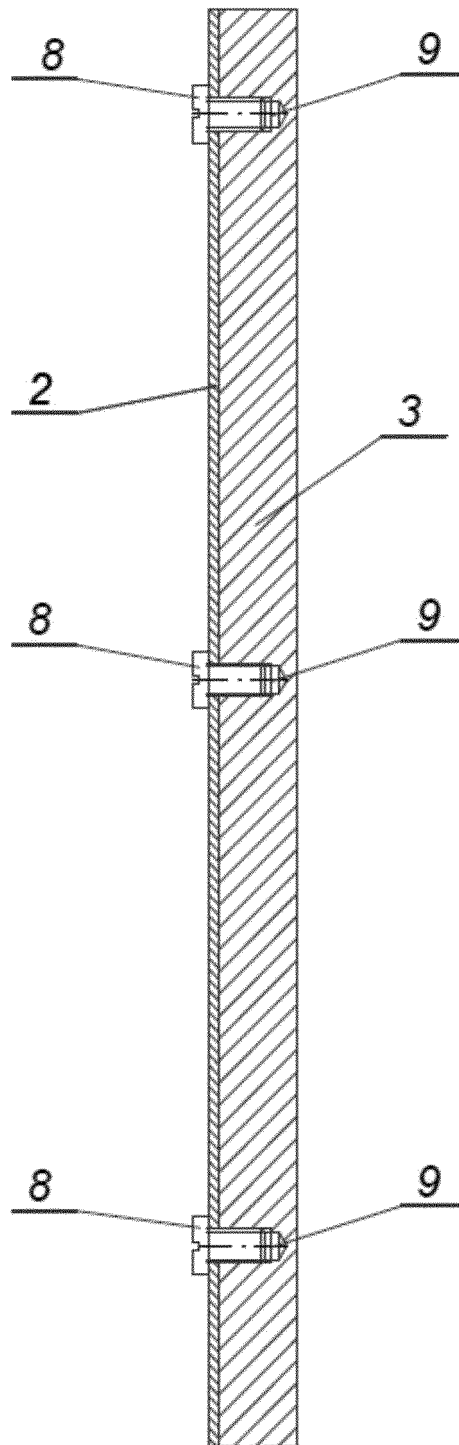


Fig. 1 [prior art]

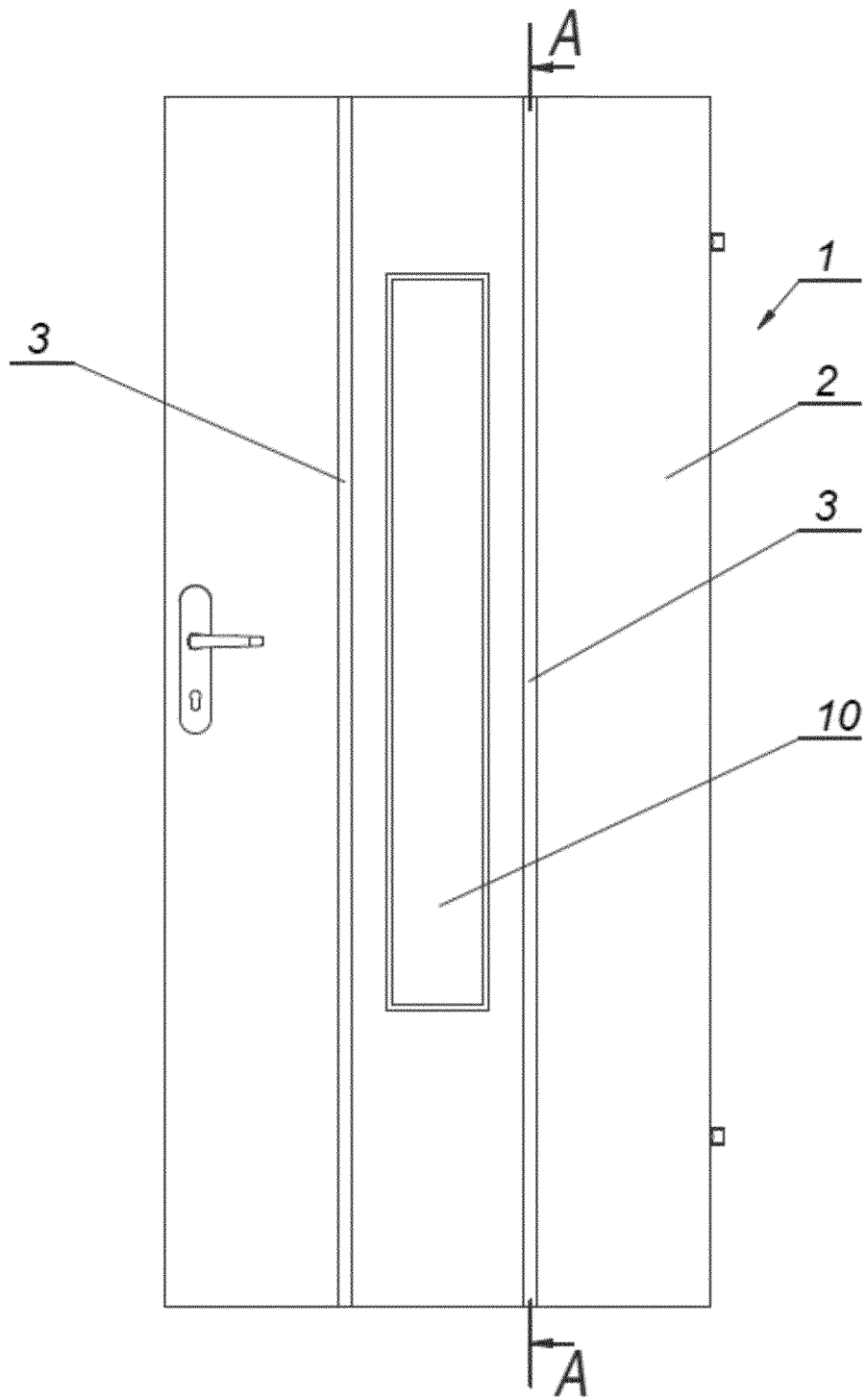


Fig. 2

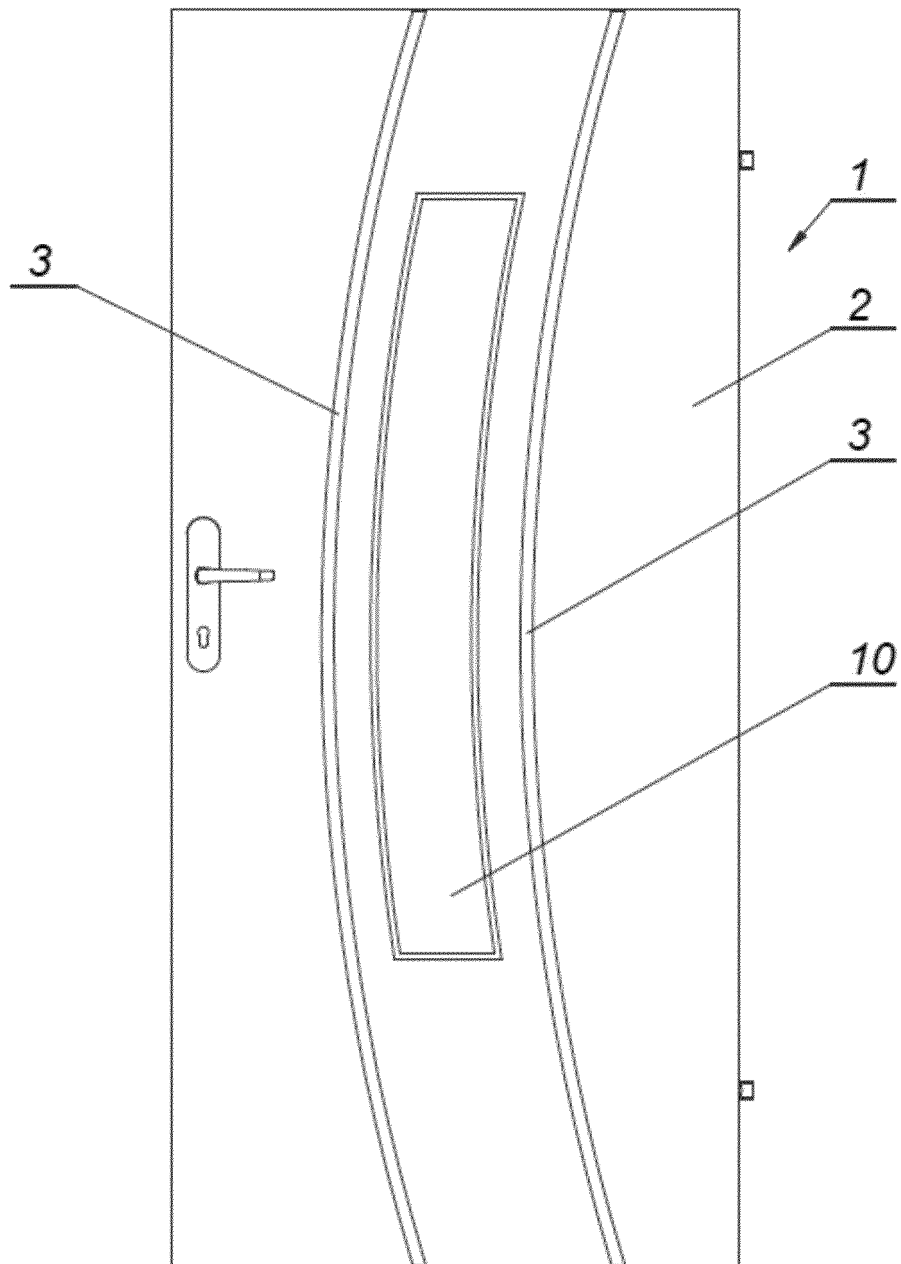


Fig. 2a

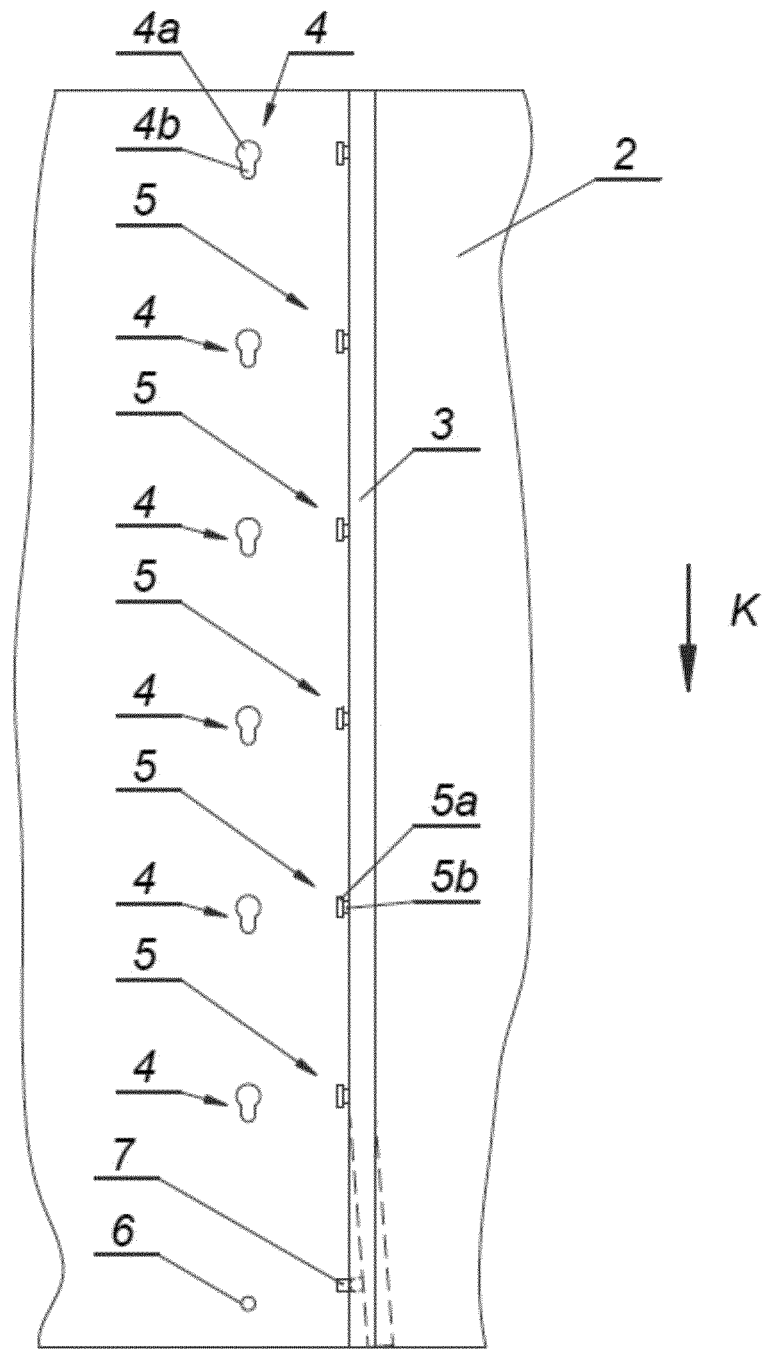


Fig. 3

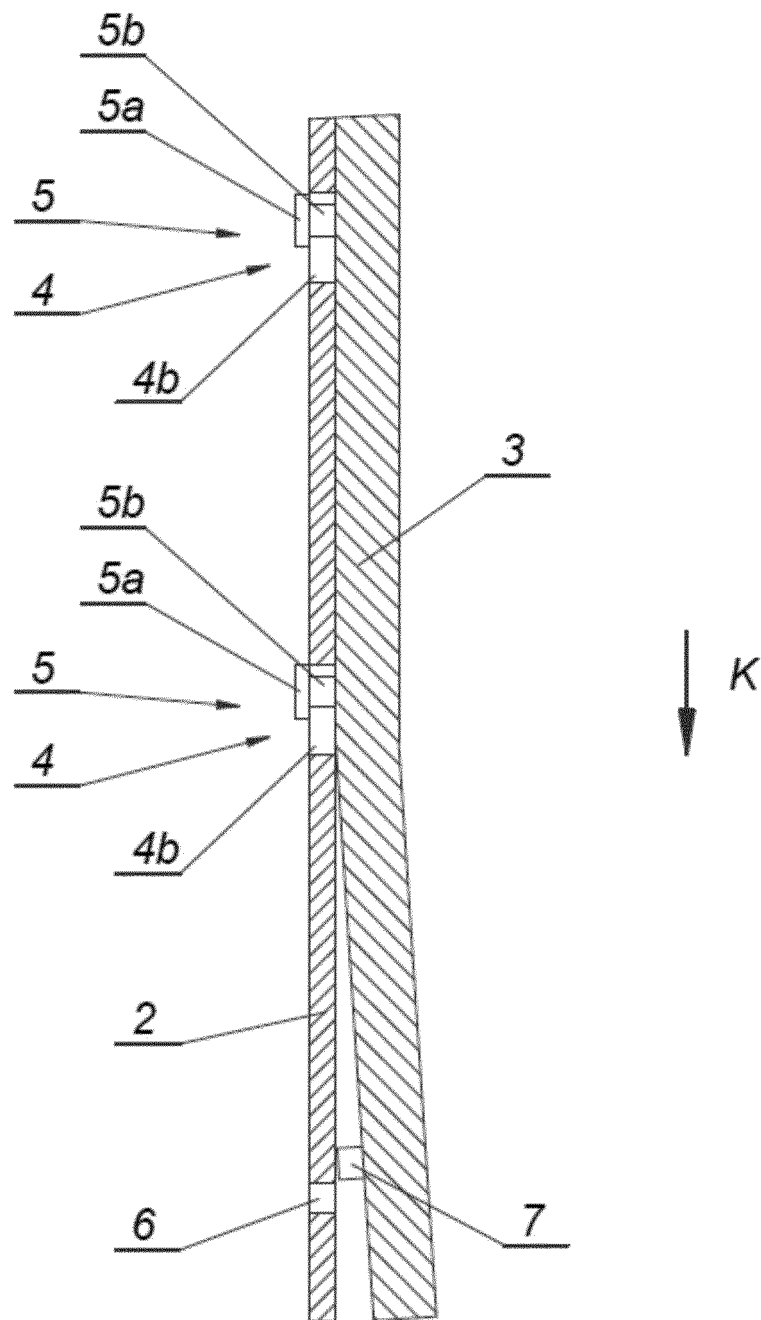


Fig. 4

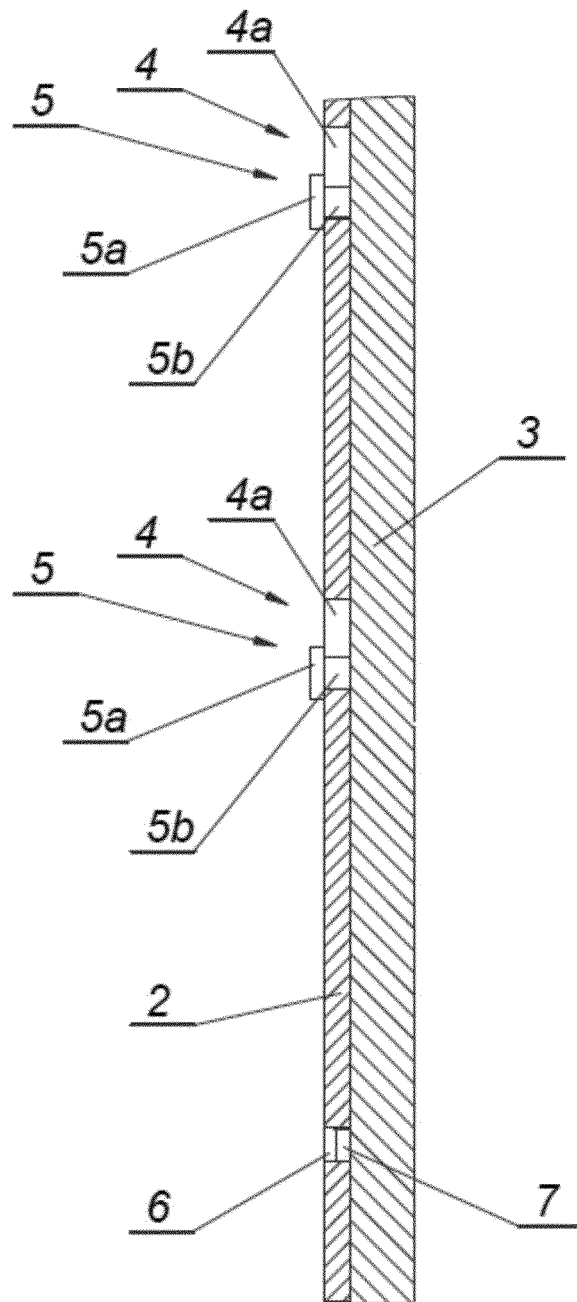


Fig. 5

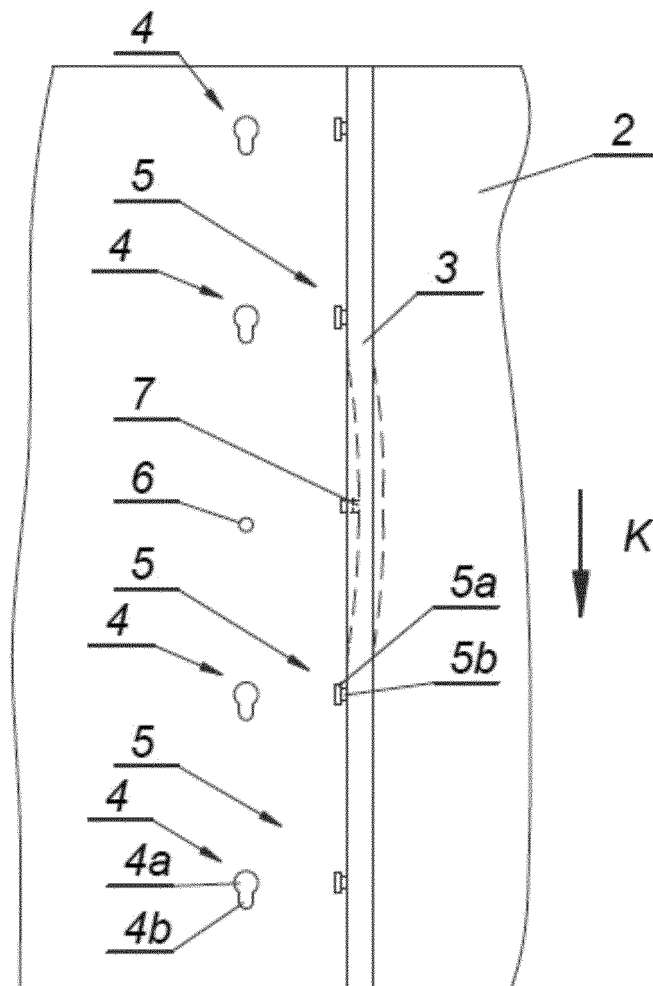


Fig. 6

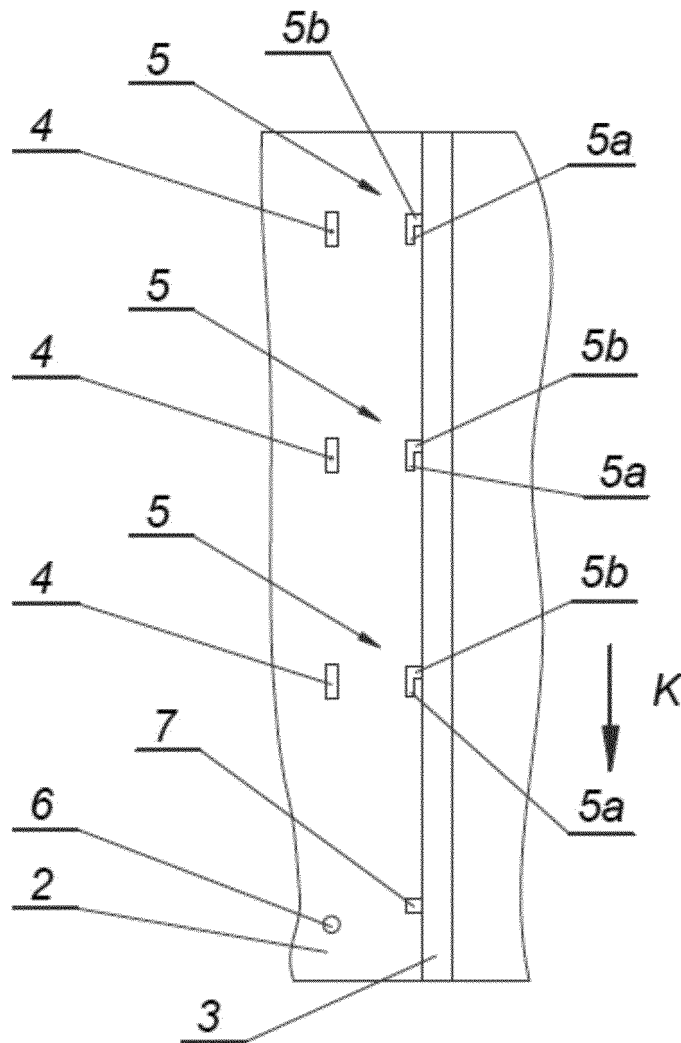


Fig. 7

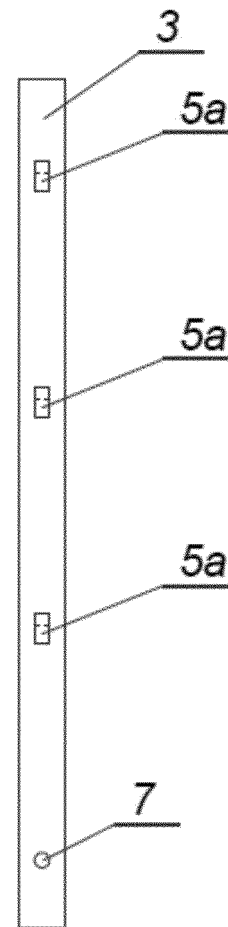


Fig. 8

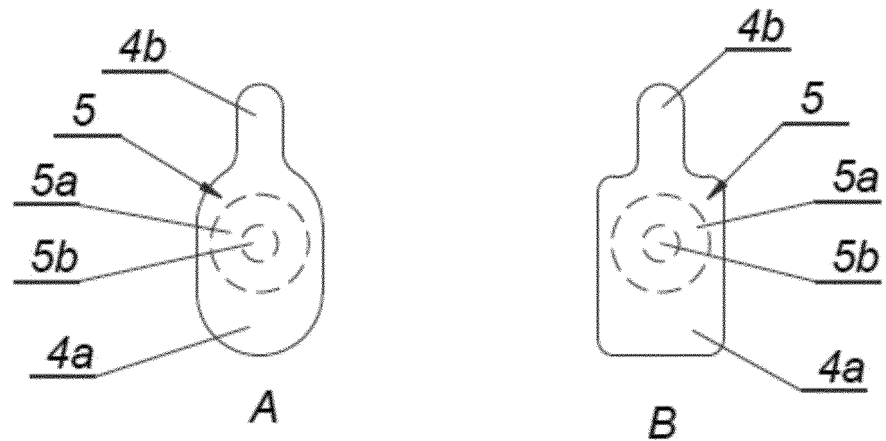


Fig. 9

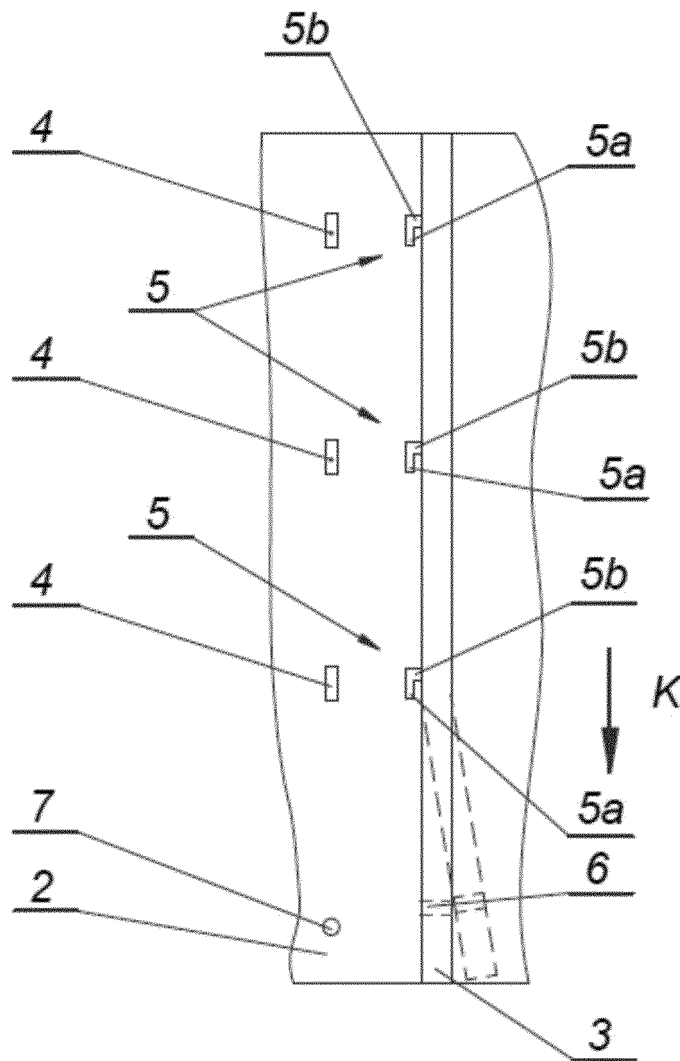


Fig. 10

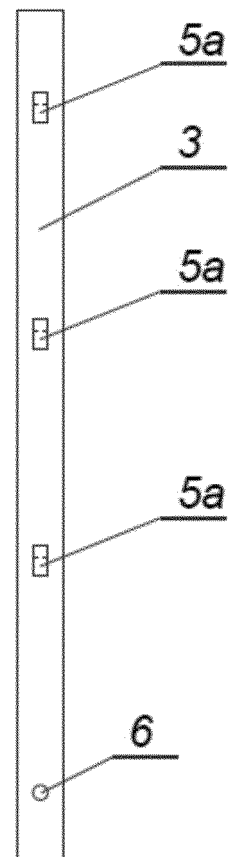


Fig. 11



EUROPEAN SEARCH REPORT

Application Number
EP 17 19 0118

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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 November 2017	Examiner Cobusneanu, D
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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