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## DESCRIPTION

**[0001]** This invention relates to siding profiles for wall covering, in particular in buildings, characterised by a design enabling the elimination of discontinuities between the profiles. Profiles constructed according to the invention is particularly applicable in "multi-strip" profiles.

**[0002]** Siding profiles are widely used as wall cladding. Longitudinal profile joints are generally made with overlaps, whereas lateral joints are made using various connectors. There are different types of connectors for connecting two short edges of siding profiles. Connectors are usually made of a different material than the profiles. The joints using connectors is clearly visible on the wall.

**[0003]** There is also a method of joining siding profiles that involves stripping one end of the profile of its external layer and part of the core, while the other end is stripped of its internal core layer, so that an overlapped joint is created. In the case of large temperature differences, such profile joints result in discontinuities in the decorative surface of the profiles caused by shrinkage in low temperature. Such joint does not provide stability required in some cases for proper operation of the cladding.

**[0004]** There is also a solution wherein at one end there is a catch and a groove formed by removing part of the front surface of the profile, while the other end includes an opposite catch and groove created by removing the internal part of the profile. The catches are located across the whole width of the profile, and their joint creates five crevices on the lower and upper edges of the profiles, hindering the aesthetics and increasing water penetration. In order to connect two profiles, one end of the profile is slid onto the other, using a downwards vertical motion. The profile has to be positioned in the air exactly parallel to the installed profiles, as it is otherwise impossible to slide the catch of one profile into the groove in the other. In the case of longer profiles, this requires 2 people.

**[0005]** The German description DE102006024184 discloses joining flooring plates based on tongue-and-groove lock principle, where the plate edges are additionally equipped with milled projections and receiving sockets. Joining of two plates using this type of lock is realised by inserting the tongue into the groove and subsequently shifting the joining plates relative to each other in order to cause that the projections snap into the corresponding receiving sockets, creating a durable and firm connection and the combined plates will be able to create one uniform plane. It should be noted here that the action of inserting the tongue into the groove, due to the construction of this lock must be carried out at an angle, ie. the inserted flooring plate must be in the course of this operation slightly raised at the side opposite to the joined edge; one, uniform plane with the preceding flooring plate can only be achieved after the projections have been locked into the receiving sockets. The use of this type of lock to connect siding panels along the short edge would be very difficult or even impossible to install. Because of the considerable length of siding panels (up to several meters) and the nature of the lock located on the longer of the sides, the action of joining must take place almost

simultaneously on both edges - short and long.

**[0006]** In patent application WO2008/122479 a "tongue and groove" joint of two panels has been disclosed. A characteristic feature of this solution is the location of the tongue and the groove and their division into segments. In order to join two panels, the tongue of one panel is slid into a gap between the grooves, moved in the direction perpendicular to the panel axis and slid into the groove. Both the tongue and the groove are located symmetrically between both surfaces of the panel, and the tongue has a projection of a circular cross-section at the end, whereas the groove has a carving corresponding to the protrusion of the tongue. The symmetrical location of the tongue between both panel surfaces limits the application of the solution solely to panels made of a solid material. In the case of foamed materials, such location of the tongue may lead to its destruction as the narrowing between the projection and the body is of a low durability.

**[0007]** Patent application EP13461529.3 (not published) discloses profiles having appropriately shaped transversal catches at both ends consisting of a projection and a groove, wherein the catch comprises the entire width of the profile. Such a solution cannot be used in "multi-strip" profiles.

**[0008]** The aim of the invention was to develop two-strip profiles that would allow simple and aesthetic joining of the shorter edges of profiles.

**[0009]** By properly designing the profiles, a method of joining was developed that allows for their aesthetic joining.

**[0010]** This invention relates to two-strip siding profiles according to independent claim 1 that contain a core made of a solid, foamed or laminated and optionally an outer front face. The outer layer is made of a hard material, especially PVC, and covers the entire front surface of the profile, as well as the lower and upper longitudinal edge of the profile and serves a dual purpose, namely to protect the core from damage and provide a decorative finish. The invention also specifies profiles, in which the core does not have a front face or is covered with a layer of paint or other thin decorative element. In the following description, this type of profile is treated on par with profiles having a front face layer.

**[0011]** A two-strip profile means a profile which includes at least two strips, separated by an inter-strip belt. A single strip is a basic decorative part of the profile, while the inter-strip belt means a groove between strips, whose shape usually reflects the longitudinal view of the joint between two profiles. The belt may also be protruding against the surface of the strips. The profiles have a shape resembling a rectangle, with the upper strip has a recess along the whole length, whose bottom constitutes an assembly belt with known construction, as well as a sub-assembly belt in a form of a longitudinal groove or protrusion. Between the assembly belt and the upper edge of the profile is a catching flange. The face layer may or may not cover the flange. The inside of the lower strip, its lower part along its whole length, includes a longitudinal catch, being L-shaped. It consists of the longitudinal catch and a base of the catch, that

connects the longitudinal catch with the core of the profile. The longitudinal catch is located at a distance from the bottom edge of the profile which is equal to the difference between the nominal width of the profile and the covering width. Provided this rule is observed, this distance is different in each profile size. The longitudinal catch is used to create an overlapped joint between two adjacent profiles, whereas the connection is realised through inserting the catching flange of one profile into the longitudinal catch of the other profile. Between the strips is an inter-strip belt, whose external shape usually reflects the longitudinal section of the joint between two profiles. On the outside, the part below the belt includes a longitudinal support protrusion, usually reflecting the shape of the assembly belt. This protrusion is used to stabilise the position of the profile.

**[0012]** The invention encompasses correct formation of the ending of extruded profiles to enable joining the short edges of two-strip siding profiles.

**[0013]** In the first aspect, the invention is a profile having transversal catches at the ends consisting of a projection and a groove. The groove has a depth of not less than 5% and not more than 95% of profile thickness. Regardless of the overall thickness of the profile, its thickness in the location of the groove (A) cannot be smaller than 1 mm. Preferably, the groove has a depth of 50 to 80% of profile thickness, most preferably from 50 to 75%. The projection of the catch has a thickness (B) of 90 to 5% of profile thickness. Regardless of the overall thickness of the profile, the projection cannot be thinner than 2 mm, preferably from 80 to 30%, most preferably from 80 to 50% of profile thickness. Furthermore, the thickness of the profile at the place of the groove (A) and the thickness of the projection (B) must fulfil the condition described by formula 1.

$$B - A \geq 1\text{mm} \quad (1)$$

**[0014]** The transversal catches at both ends have different but mutually compatible construction and form a stable connection after they are installed, with the profile thickness at the groove ( $A_1$ ,  $A_2$ ) and the thickness of the projections ( $B_1$ ,  $B_2$ ) meeting the condition described by formulas 2 and 3.

$$A_1 + B_2 = C \quad (2)$$

$$A_2 + B_1 = C \quad (3)$$

where C is not less than 95% and not more than 100% of profile thickness.

**[0015]** Where  $A_1$  i  $B_1$  apply to one end of the profile and  $A_2$  i  $B_2$  apply to the opposite end

**[0016]** At one end, the transversal catches are on the inside of the profile and extend beyond the main body of the profile, and their projections are directed towards the face of the profile, and their length is different for the two strips. The projection is directed toward the face of the profile, while the groove is located between the tongue and the core. On the upper strip, the length of the catch is not greater than the width of the strip between the sub-assembly belt and the internal protrusion of the inter-strip belt, minus the width of the longitudinal catch. On the

lower strip, the length of the transversal catch is not greater than the width of the strip between the inter-strip belt and the internal edge of the base of the longitudinal catch, minus the width of the longitudinal catch. The width of the longitudinal catch means the distance between the inner edge of the base of the longitudinal catch and the lower edge of the catch.

**[0017]** At the other end of the profile, the transversal catch is directed towards the internal side of the profile and its length is equal to the width of individual strips. A groove-shaped catch is located on the internal surface of the profile, with a projection between the groove and the outer edge of the profile. The width of this projection is not greater than the width of a compatible groove at the other end of the profile.

**[0018]** At the end where the transversal catches are located on the internal side of the profile, the face surface, or the external surface of the profile in profiles without a face surface, is shorter than the core by the width of the longitudinal catch. The transversal catch comprises from 0.6% to 30% of the length of the profile, but not less than 6 mm and no more than 200 mm, whereas the width of the projection is no more than 50% of the width of the transversal catch and no less than 3 mm. At the end where the projections are directed towards the internal side of the profile, the projection is as wide as the groove at the other end, while the projection at the other end may be narrower than the width of its corresponding groove. Preferably, both projections are as wide as the grooves compatible with them on the opposite ends.

**[0019]** Another variant of, the invention is a profile having transversal catches at the ends consisting of a projection and a groove. The groove has a depth of not less than 5% and not more than 95% of profile thickness. Regardless of the overall thickness of the profile, its thickness in the location of the groove (A) cannot be smaller than 1 mm. Preferably, the groove has a depth of 50 to 80% of profile thickness, most preferably from 50 to 75%. The projection has a thickness (B) of 90 to 5% of profile thickness. Regardless of the overall thickness of the profile, the projection cannot be thinner than 2 mm, preferably from 80 to 30%, most preferably from 80 to 50% of profile thickness. Furthermore, profile thickness where the groove is located (A) and projection thickness (B) have to meet the condition described by formula 1.

$$B - A \geq 1 \text{ mm} \quad (1)$$

**[0020]** The transversal catches at both ends have different but mutually compatible construction and form a stable connection after they are installed, with the profile thickness at the groove ( $A_1$ ,  $A_2$ ) and the thickness of the projections ( $B_1$ ,  $B_2$ ) meeting the condition described by formulas 2 and 3.

$$A_1 + B_2 = C \quad (2)$$

$$A_2 + B_1 = C \quad (3)$$

where C is not less than 95% and not more than 100% of profile thickness.

**[0021]** Where  $A_1$  i  $B_1$  apply to one end of the profile and  $A_2$  i  $B_2$  apply to the opposite end.

**[0022]** At one end, the transversal catches are on the inside of the profile and extend beyond the main body of the profile, and their projections are directed towards the face of the profile, and their length is different for the two strips. The projection is directed toward the face of the profile, while the groove is located between the projection and the core.

**[0023]** On the upper strip, the length of the transversal catch is not greater than the width of the strip between the sub-assembly belt and the internal protrusion of the inter-strip belt, minus the width of the longitudinal catch. On the lower strip, the length of the catch is not greater than the width of the strip between the inter-strip belt and the internal edge of the base of the longitudinal catch, minus the width of the longitudinal catch. The width of the longitudinal catch means the distance between the inner edge of the base of the longitudinal catch and the lower edge of the longitudinal catch.

**[0024]** The projections at both catches at this end are no longer than half of a given transversal catch, but they can be divided into several sections, with gaps corresponding to the width of catch sections between them. The length of individual sections of projections in the transversal catch is no greater than 50% of the length of the transversal catch in the case of single transversal catch and no smaller than 30% of the length of a transversal catch. The projections in transversal catches in this variant of the invention are divided into sections. The length of a single section of projection is not smaller than 3 mm. Preferably, the projection is divided into at least two sections, with the overall length of projections being not smaller than 40% and not greater than 50% of the profile width.

**[0025]** At the other end of the profile, the transversal catch is directed towards the internal side of the profile and its length is equal to the width of individual strips. A groove-shaped catch is located on the internal surface of the profile, with a projection between the groove and the outer edge of the profile. The width of this projection is not greater than the width of a compatible groove at the other end of the profile. The projections of both transversal catches at this end are no longer than half of the length of a given transversal catch, but they can be divided into several sections, with gaps corresponding to the width of catch sections between them. The length of individual sections of projections in the transversal catch is no greater than 50% of the length of the transversal catch in the case of single transversal catch and no smaller than 30% of the length of the transversal catch. The projections in transversal catches in this variant of the invention are divided into sections. The length of a single section of projection is not smaller than 3 mm. Preferably, the projection is divided into at least two sections, with the overall length of projections being not smaller than 40% and not greater than 50% of the profile width.

**[0026]** The transversal catches on both ends are compatible with each other, so that during assembly, when they are positioned with a vertical offset equal to the length of a single section of projection, the sections of projection in one profile correspond to the gaps in projection in the other profile, and after assembly the projections on one profile interlock with the projections on the other.

**[0027]** At the end where the transversal catches are located on the internal side of the profile, the face surface, or the external surface of the profile in profiles without a face surface, is shorter than the core by the width of the longitudinal catch. The transversal catch comprises from 0.6% to 30% of the length of the profile, but not less than 6 mm and not more than 200 mm, whereas the width of the projection is no more than 50% of the width of the transversal catch and no less than 3 mm. At the end where the projections are directed towards the internal side of the profile, the projection is as wide as the groove at the other end, while the projection at the other end may be narrower than the width of its corresponding groove. Preferably, both projections are as wide as the grooves compatible with them on the opposite ends.

**[0028]** Details of the invention are shown and explained in the drawings, which illustrate all variants and types of the invention but are merely examples of embodiments. All the embodiments shown in figures 1 to 15 are shown in one version of symmetry, however the invention also relates to the inverted symmetrical profiles i.e. elements shown in these figures on the left may be on the right, and accordingly the elements shown on the right can be on the left. Figures showing only a portion of a profile also apply to the cases when a given type of ending is in an opposite position.

The individual figures in the drawing are:

Figure 1 is a profile view of the invention in its first aspect,

Figure 2 is a profile view of figure 1 in a view from the inside,

Figure 3 is the relationship between the lengths of the transversal catches at both ends of the profile,

Figure 4 is the view of transversal catches on one end of the profile,

Figure 5 is a cross-section of the transversal catches in plane A according to figure 1,

Figure 6 is a cross-section of the transversal catch in plane B according to figure 2,

Figure 7 is a system of two profiles prior to assembly, viewed from the inside

Figure 8 is a joint between two profiles in a view from the inside,

Figure 9 is a cross section through a joint between two profiles,

Figure 10 is a profile view of the invention in the embodiment of the second aspect of the invention,

Figure 11 is a profile view according to figure 10 in a view from the inside,

Figure 12 is the relationship between the lengths of the transversal catches at both ends of the profile,

Figure 13 is a cross-section of the transversal catch in plane C according to figure 10,

Figure 14 is a cross-section of the transversal catch in plane D according to figure 11,

Figure 15 is a cross section through a joint between two profiles,

**[0029]** Figure 1 shows a view of the profile according to the invention in its first aspect. Profile (1) according to the invention comprises a core (2), whose upper part over the entire length includes a groove (3), the bottom of which is an assembly belt (4). A catching flange (5) is located between the assembly belt and (4) and the upper edge of the profile. Along the whole length of the bottom part of the profile is a longitudinal catch (6), in which the flange of the adjacent profile snaps when installed. The inner side of the profile (1) includes a longitudinal support protrusion (7) corresponding in shape to the assembly belt (4) and used for stabilising the profile on the substrate. Below the assembly belt, the profile has a sub-assembly belt (8) in a form of a longitudinal groove. More or less halfway through the width of the profile, there is an inter-strip belt (9), with a shape corresponding to the sub-assembly belt (8). The inter-strip belt divides the surface of the profile into two parts, forming two strips (10,10'). The core (2) is covered by the face layer (11) on the outside. At one end (12) the profile (1) has two transversal catches (13, 14) projecting beyond the main body of the profile (1). Both catches (13, 14) have corresponding shapes and consist of projections (15,16) and grooves (17,18), wherein the lower catch (13) is shorter than the upper catch (14).

**[0030]** Figure 2 shows a view of the profile (1) in the view from the inside. At the end (19) the profile (1) has two internal transversal catches (20,21) in the form of grooves (22, 23) and projections (24,25). The transversal catch (20) on the bottom strip (10) comprises a section between the lower edge of the inter-strip belt (9) and the edge of the longitudinal catch (6), while the transversal catch (21) on the upper strip (10') comprises a section between the lower edge of the sub-assembly belt (8) and the upper edge of the support protrusion (7).

**[0031]** Figure 3 shows the relationship between the lengths of transversal catches at both ends (12, 19), wherein the positioning of projections (15,16) on the inner side of the profile is shown in dashed lines, as they are not visible in this view. Transversal catches (13, 14) at the end (12) projecting beyond the main body of the profile (1) are shorter than the catches compatible with them (20, 21) on the other end of the profile (19) by the width of the longitudinal catch (6).

**[0032]** Figure 4 shows a view of transversal catches (13,14) at the end (12). Projections (15, 16) of the transversal catches (13, 14) have a height of not more than  $\frac{2}{3}$  of the thickness of the profile (1).

**[0033]** Figure 5 is a cross-section of the transversal catch (13) of profile (1) in plane A according to figure 1. Projection (15) has a width equal to the width of the groove (17). In this embodiment, the transversal catch (13) has a thickness corresponding to about  $\frac{2}{3}$  of the thickness of the core (2) with face layer (26).

**[0034]** Figure 6 is a cross-section of the transversal catch (21) of the profile in plane B according to figure 2. Projection (25) has a width equal to the width of the groove (23). In this embodiment, the transversal catch (21) has a thickness corresponding to about 2/3 of the thickness of the core (2) with face layer (26).

**[0035]** Figure 7 is a system of two profiles (1,1') prior to assembly, viewed from the inside. Profile (1) is placed next to the other profile (1') at a distance equal to the width of longitudinal catch (6) in such a way that the projections (15',16') of the catches (13',14') are located opposite the grooves (22,23) of the second profile (1). Then, after the profile is moved down, the joint is stabilised by the longitudinal catch (6) catching onto the flange of the profile installed in previous row.

**[0036]** Figure 8 is a joint between two profiles (1,1') in a view from the inside.

**[0037]** Figure 9 is a cross section through a joint between two profiles (1,1').

**[0038]** Figure 10 is a view of a profile according to the invention in the embodiment of the second aspect of the invention. Profile (1) according to the invention comprises a core (2), whose upper part over the entire length includes a groove (3), the bottom of which is an assembly belt (4). A catching flange (5) is located between the assembly belt and (4) and the upper edge of the profile. Along the whole length of the bottom part of the profile is a longitudinal catch (6), in which the flange of the adjacent profile snaps when installed. The inner side of the profile (1) includes a longitudinal support protrusion (7) corresponding in shape to the assembly belt (4) and used for stabilising the profile on the substrate. Below the assembly belt, the profile has a sub-assembly belt (8) in a form of a longitudinal groove. More or less halfway through the width of the profile, there is an inter-strip belt (9), with a shape corresponding to the sub-assembly belt (8). The inter-strip belt divides the surface of the profile into two parts, forming two strips (10,10'). The core (2) is coated with a face layer (11). At one end (30) the profile (1) has two transversal catches (31,32) projecting beyond the main body of the profile (1). Both transversal catches (31,32) have corresponding shapes and consist of projections (33,34) and grooves (35,36), wherein the lower catch (31) is shorter than the upper catch (32). The projections (35,36) are divided into sections (35-35', 36-36') with gaps between them (37,38) having a width corresponding to the length of a single projection (35, 36). For clarity, figure 10 shows only some of the sections of the projections (35, 36) and gaps (37, 38).

**[0039]** Figure 11 is a view from the inside of the profile of the second end (39) of the profile (1) in the embodiment of the second aspect of the invention. Profile (1) at the end (39) has two transversal catches (40, 41) having projections (42, 43) separated from the core (2) by grooves (44,45). The transversal catch (40) on the bottom strip (10) comprises a section between the lower edge of the inter-strip belt (9) and the edge of the longitudinal catch (6), while the transversal catch (41) on the upper strip (10') comprises a section between the lower edge of the sub-assembly belt (8) and the upper edge of the support protrusion (7). The projections (42,43) are divided into sections (42-42', 43-43') with gaps between them (46,47)

having a width corresponding to the length of a single projection (42, 43). The length of a single section of the projection (42,43) at one end (39) of the profile (1) corresponds to the length of a single gap (37, 38) between sections of the projection (35, 36) at the other end of the profile (1). For clarity, figure 11 shows only some of the sections of the projections (42, 43) and gaps (46, 47).

**[0040]** Figure 12 shows the relationship between the lengths of transversal catches at both ends (30,39), wherein the positioning of projections (35,36) of transversal catches (31,32) on the inner side of the profile (1) is shown in dashed lines, as they are not visible in this view. Transversal catches (31, 32) at the end (30) projecting beyond the main body of the profile are shorter than the catches compatible with them (40,41) on the other end of the profile (39) by the width of the longitudinal catch (6).

**[0041]** Figure 13 is a cross-section of the transversal catch (32) of the profile (1) in plane C according to figure 10. Projection (36) has a width equal to the width of the groove (34). In this embodiment, the transversal catch (32) has a thickness corresponding to about 2/3 of the thickness of the core (2) with face layer (26).

**[0042]** Figure 14 is a cross-section of the transversal catch (41) of the profile (1) in plane D according to figure 11. Projection (43) has a width equal to the width of the groove (45). In this embodiment, the transversal catch (41) has a thickness corresponding to about 2/3 of the thickness of the core (2) with face layer (26).

**[0043]** Figure 15 is a cross section through a joint between two profiles (1,1').

## REFERENCES CITED IN THE DESCRIPTION

### Cited references

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### Patent documents cited in the description

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- EP13461529 [0007]

**PATENTKRAV**

1. Beklædningsprofil (1) med to lister, som er udformet til beklædning af vægge, især på bygninger,

5 hvilken profil (1) omfatter

- en kerne fremstillet af et massivt, opskummet eller lamineret materiale og et ydre overfladelag eller et dekorativt lag eller et lag maling eller et andet tyndt dekorativt element, der tjener som sådant, samt

10 - midler til tilslutning og fastgørelse i form af forskellige, indbyrdes kompatible ender formet som tværgående paler (13, 14, 20, 21) med fremspring (15, 16, 24, 25, 35, 36, 42, 43) og fordybninger (17, 18, 22, 23, 33, 34, 44, 45, 46, 47), hvor de tværgående paler (13, 14) i den ene ende strækker sig ud over profilens (1) hovedlegeme og er rettet mod profilens overfladelag (11), og i den anden ende er de tværgående paler (20, 21) vendt i den modsatte retning af overfladelaget (11), hvilken

15 profil (1) yderligere omfatter

- en øvre og en nedre liste (10, 10') adskilt af et mellemlistebælte (9), hvor mellemlistebæltet (9) er en fordybning og opdeler overfladen af profilen (1), der danner de to lister (10, 10'), hvor langs hele profilens længde,

20 - indersiden af den nedre del af den nedre liste (10) omfatter en langsgående L-formet pal (6) bestående af den langsgående pal og en bund af palen, hvor bunden forbinder den langsgående pal med profilens kerne, og

- den øvre del af den øvre liste (10') omfatter en fordybning (3), hvis bund er et samlebælte (4) og et undersamlebælte (8) med en form, der svarer til mellemlistebæltet (9), og

25 - den nedre del af den øvre liste (10') omfatter på indersiden et langsgående støttefremspring (7), der i form svarer til samlebæltet (4),

- hvor de tværgående paler (13, 20) på den nedre liste (10) ikke er længere end bredden af listen (10) mellem mellemlistebæltet (9) og den indre kant af bunden af den langsgående pal (6) minus bredden af den langsgående pal (6), og

30 - de tværgående paler (14, 21) på den øvre liste (10') ikke er længere end bredden af den øvre liste (10') mellem undersamlebæltet (8) og den indre kant af mellemlistebæltet (9) minus bredden af det langsgående støttefremspring (7), og

35 hvor hver enkelt tværgående pal (13, 14, 20, 21) desuden omfatter fra 0,6% til 30% af profilens (1) længde, men ikke mindre end 6 mm og ikke mere end 200 mm, og hvor

fremspringene (15, 16, 24, 25) udgør ikke mere end 50% af bredden af palen (13, 14, 20, 21), men ikke mindre end 3 mm.

5 2. Profil ifølge krav 1, kendetegnet ved, at fremspringene (35, 36, 42, 43) er opdelt i sektioner, hvor sektioner af fremspring (35, 36, 42, 43) er adskilt af mellemrum (37, 38, 46, 47 ...), der har samme længde som sektionerne af fremspring (35, 36, 42, 43) i tværgående paler (31, 32, 40, 41).

10 3. Profil ifølge krav 2, kendetegnet ved, at en enkel sektion af fremspringet (35, 36, 42, 43) ikke er kortere end 3 mm.

15 4. Profil ifølge krav 1 eller 2, kendetegnet ved, at en enkelt fordybning (33, 34, 44, 45) har en dybde på ikke mindre end 5% og ikke mere end 95% af tykkelsen af profilen (1), hvor tykkelsen af profilen (1) ved fordybningen (33, 34, 44, 45) uanset tykkelsen af profilen (1) ikke er mindre end 1 mm.

5. Profil ifølge krav 4, kendetegnet ved, at fordybningen (33, 34, 44, 45) har en dybde på 50 til 80% af tykkelsen af profilen (1).

20 6. Profil ifølge krav 5, kendetegnet ved, at fordybningen (33, 34, 44, 45) har en dybde på 50 til 75% af tykkelsen af profilen (1).

25 7. Profil ifølge krav 2 eller 3 eller 4 eller 5 eller 6, kendetegnet ved, at fremspringet af palen (31, 32, 40, 41) har en tykkelse på 5% til 90% af tykkelsen af profilen 1, og tykkelsen af profilen 1 ved fordybningen (33, 34, 44, 45) (A) og tykkelsen af fremspringet (35, 36, 42, 43) (B) desuden skal opfylde en formel for  $B - A > 1$  mm, hvor tykkelsen af fremspringet (35, 36, 42, 43) uanset tykkelsen af profilen (1) ikke er mindre end 2 mm.

30 8. Profil ifølge krav 7, kendetegnet ved, at fremspringet (35, 36, 42, 43) har en tykkelse, der fortrinsvis svarer til fra 30% til 80% af tykkelsen af profilen 1.

9. Profil ifølge krav 8, kendetegnet ved, at fremspringet (35, 36, 42, 43) har en tykkelse, der fortrinsvis svarer til fra 50 til 80% af tykkelsen af profilen (1).

## DRAWINGS

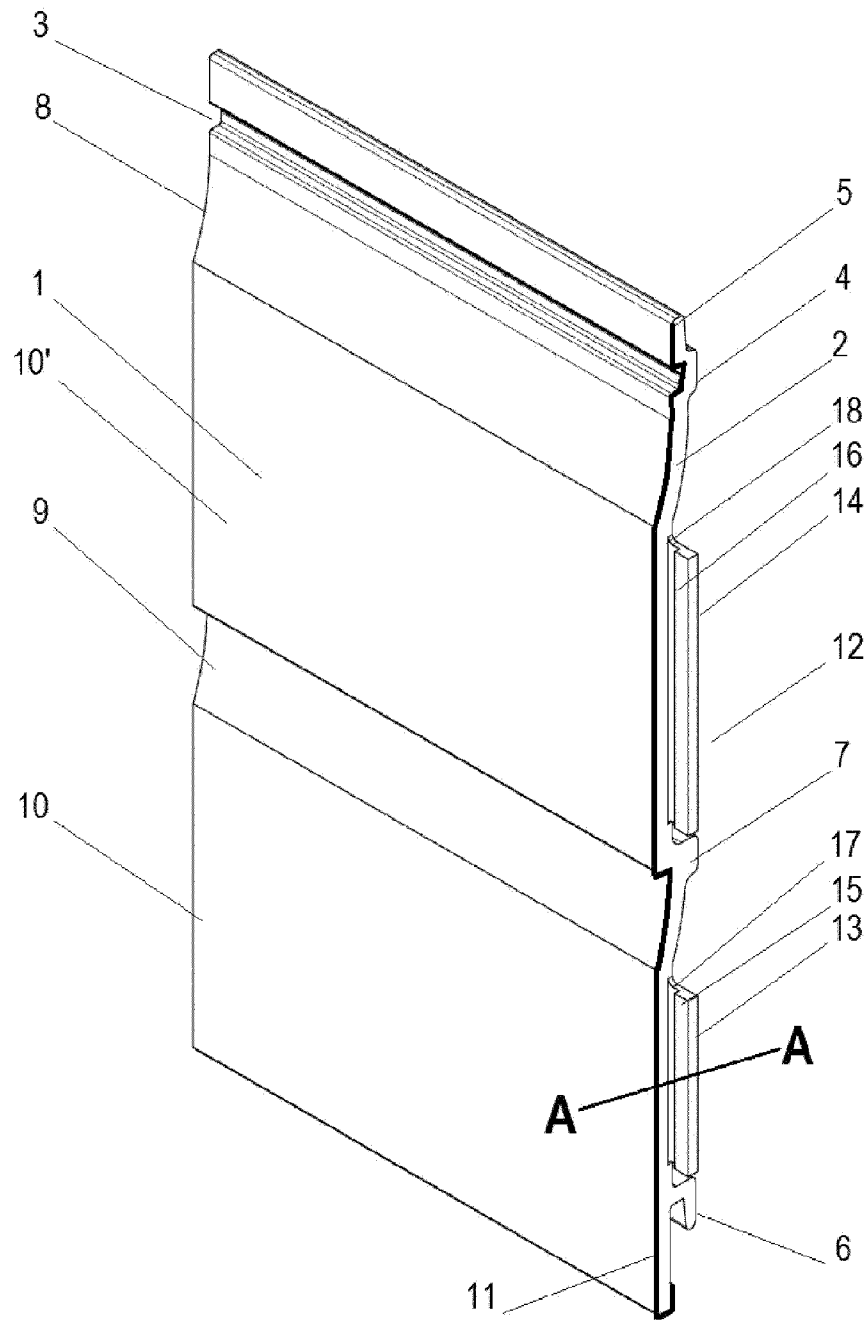


Fig.1

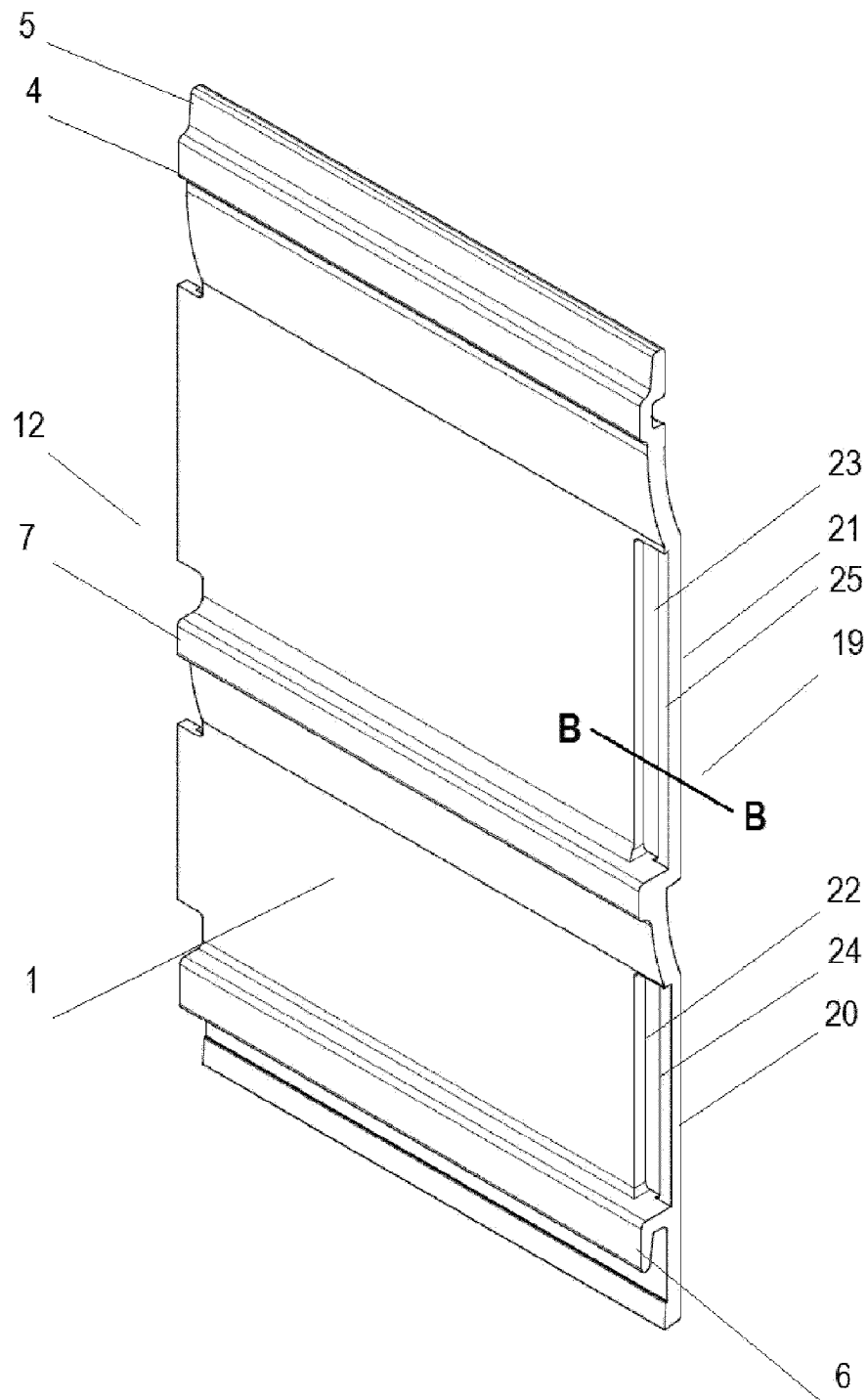


Fig.2

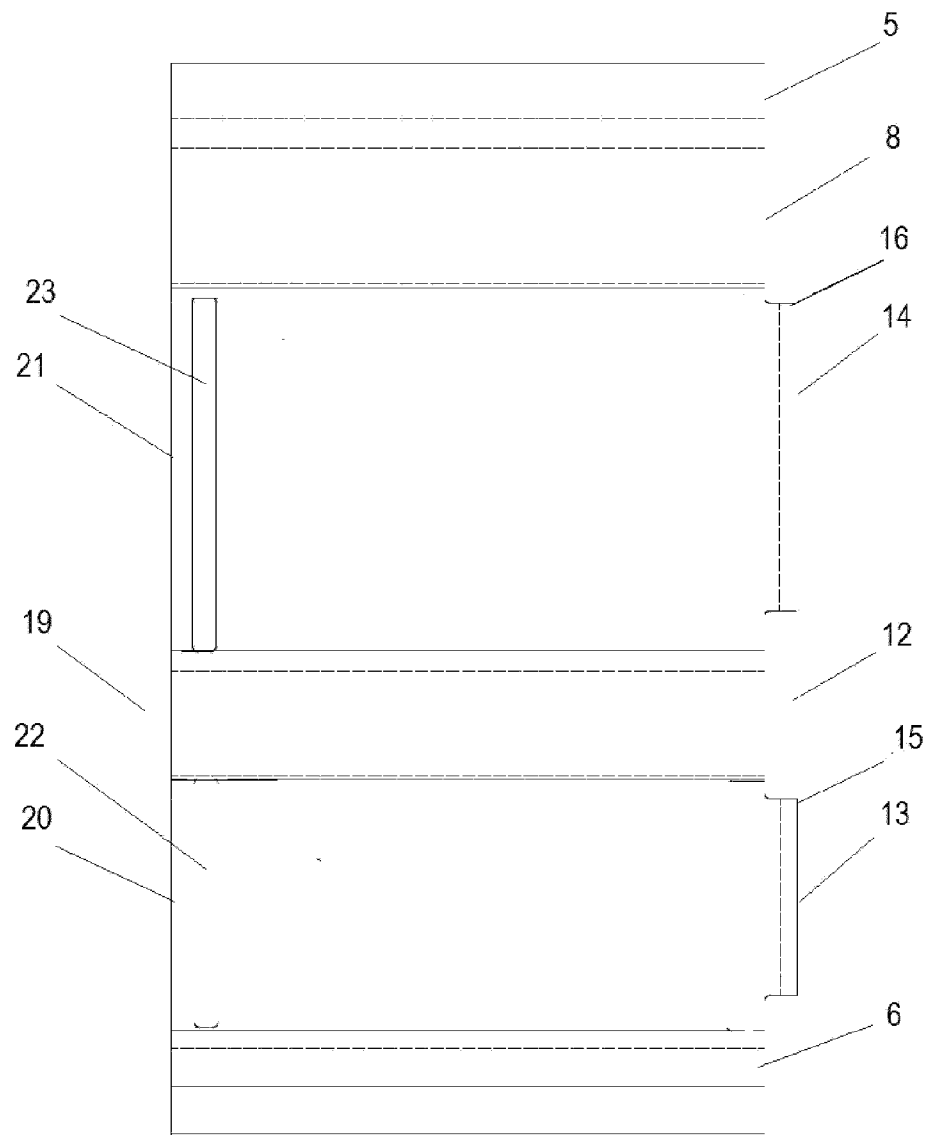


Fig.3

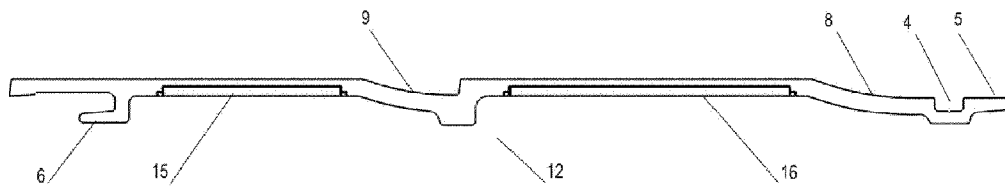


Fig.4

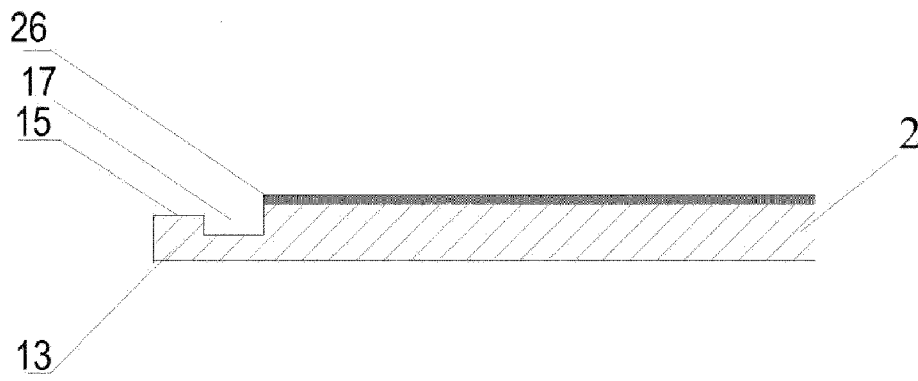


Fig.5

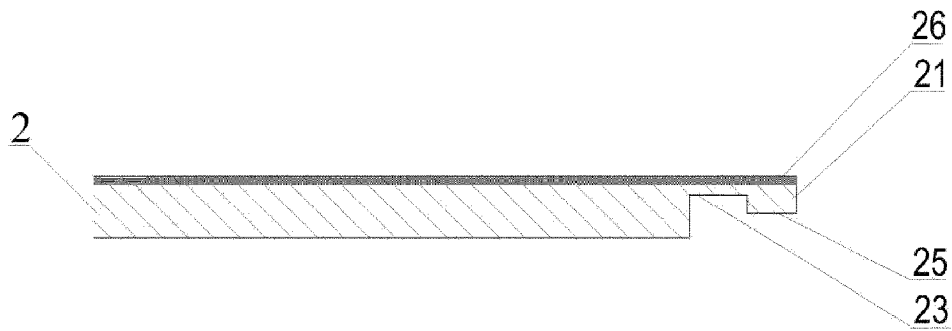


Fig.6

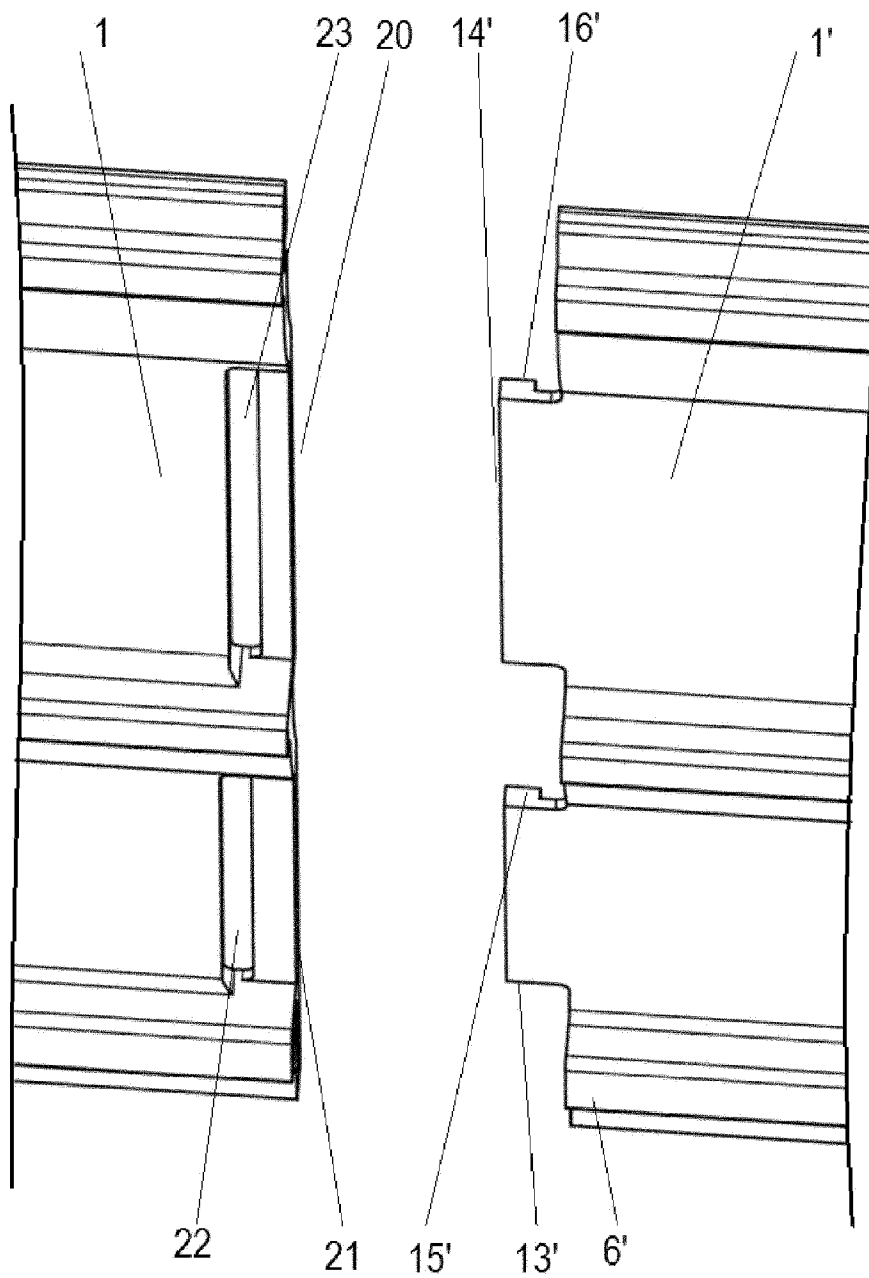


Fig.7

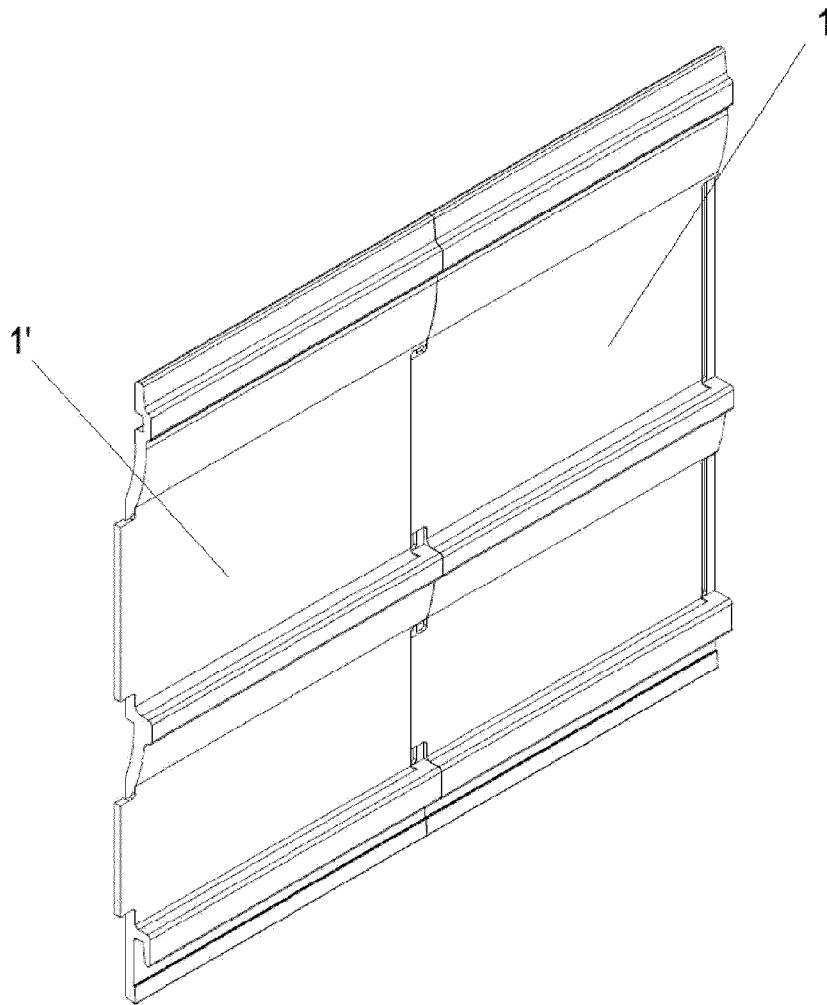


Fig.8

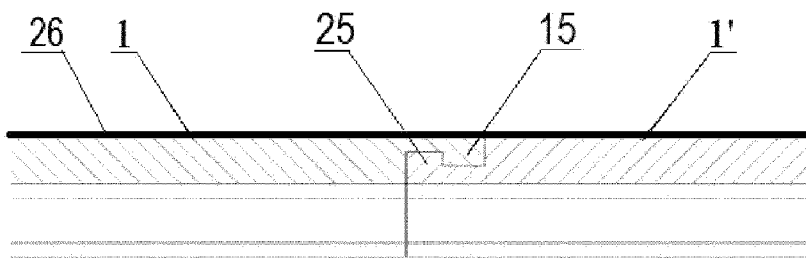


Fig.9

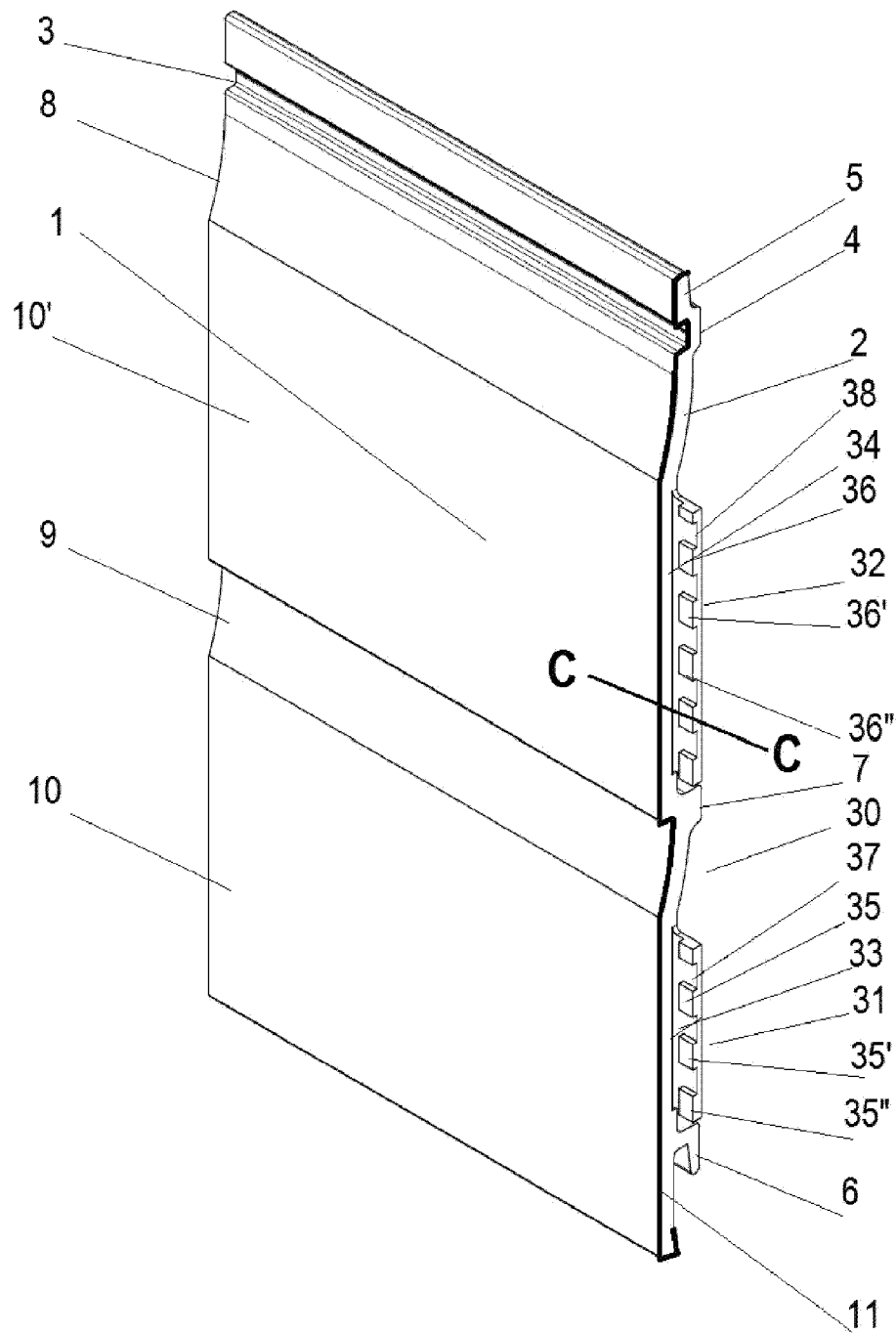


Fig.10

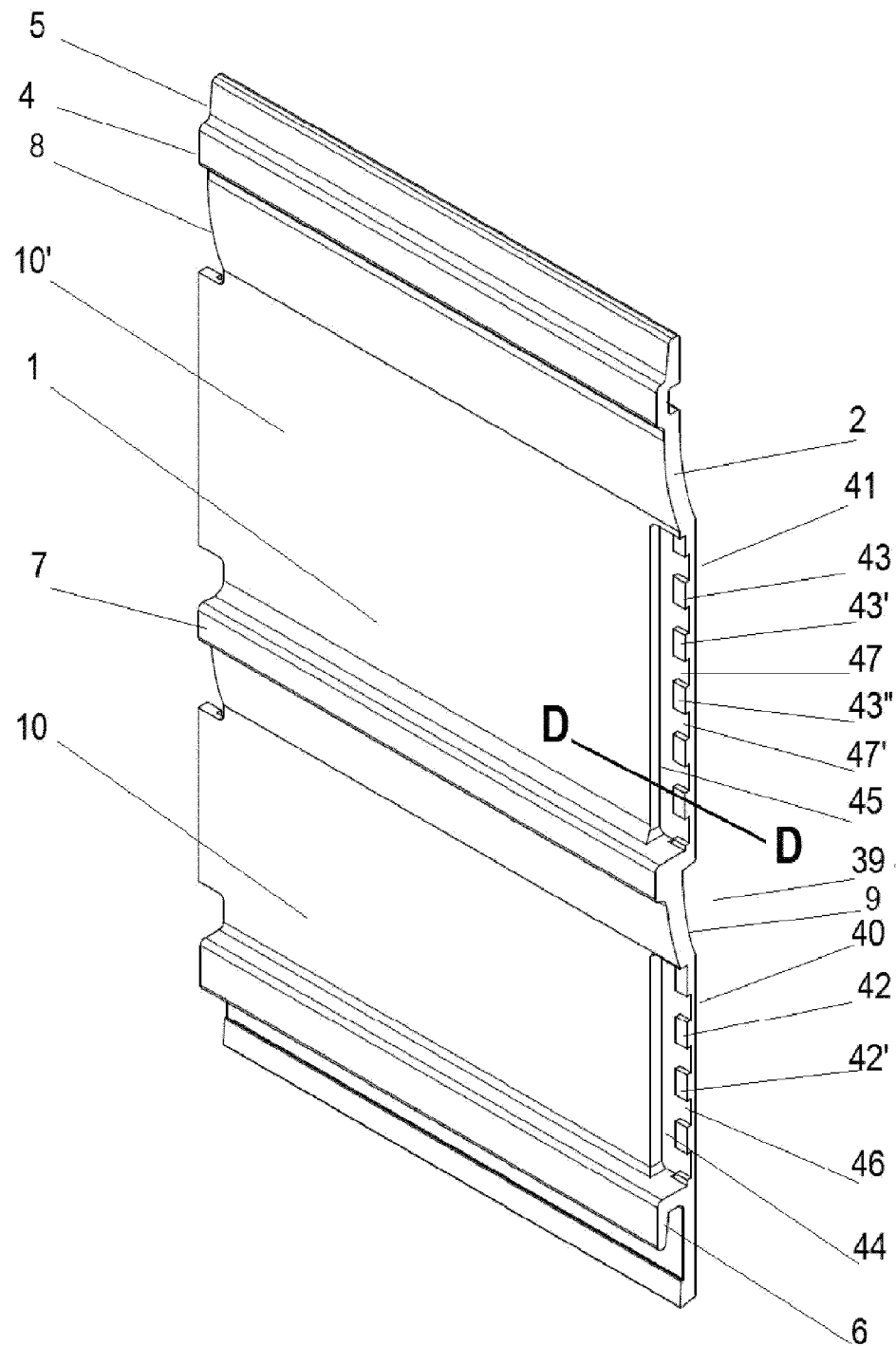


Fig.11

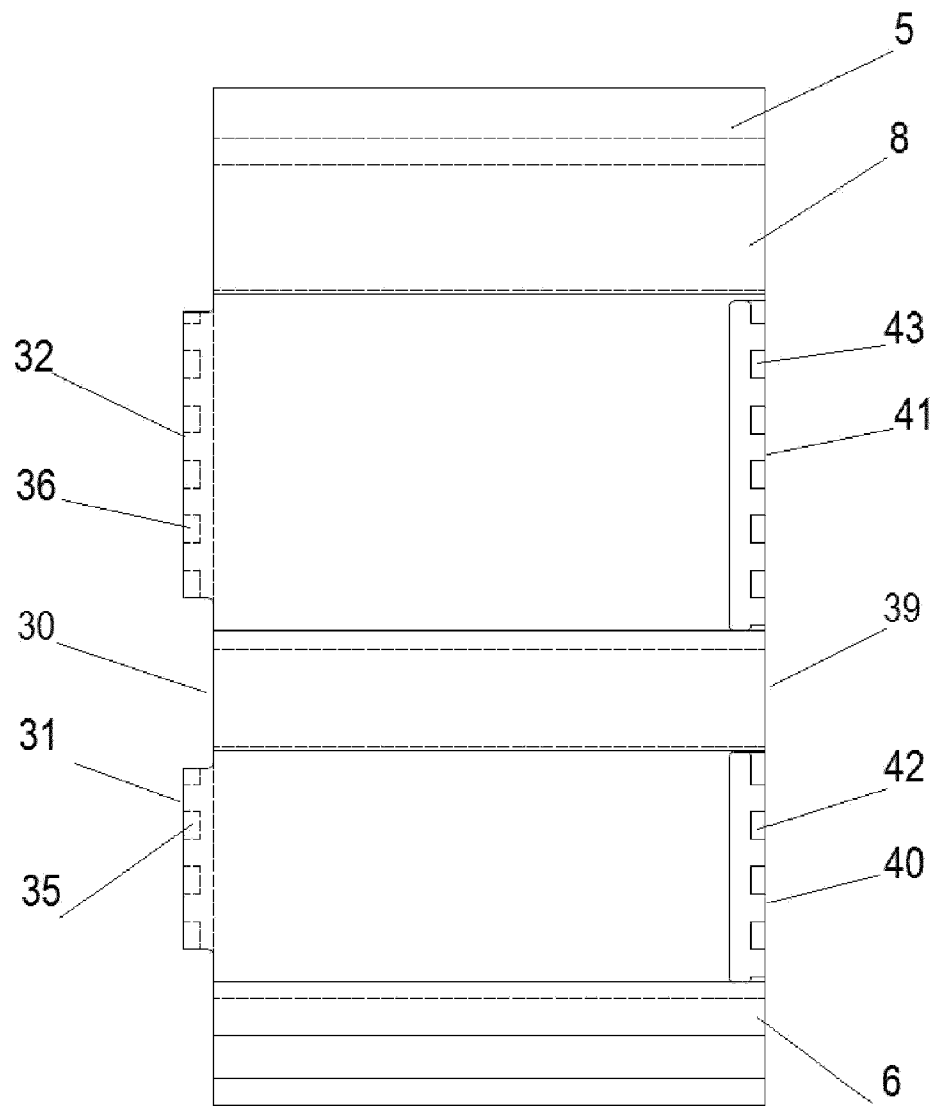


Fig.12

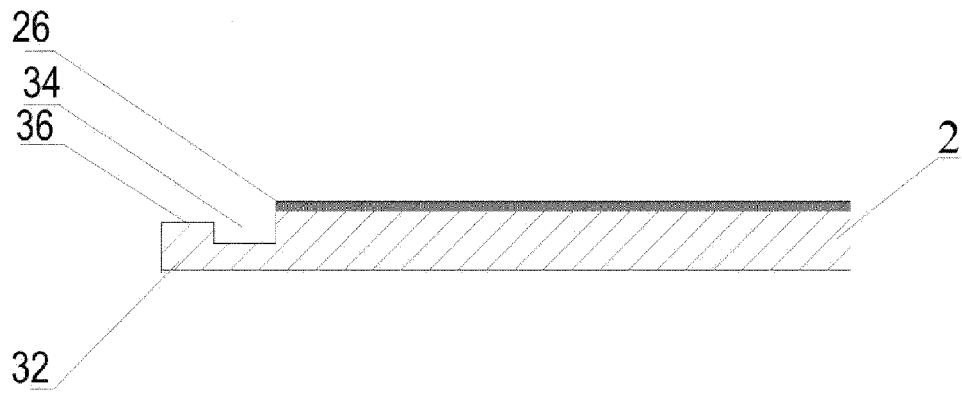


Fig.13

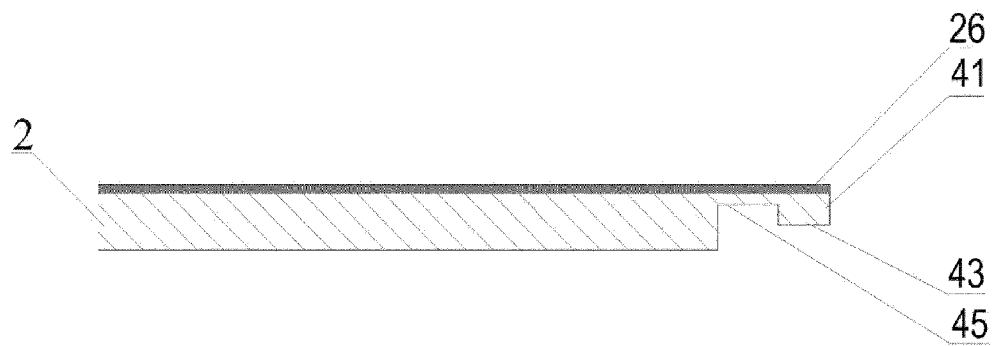


Fig.14

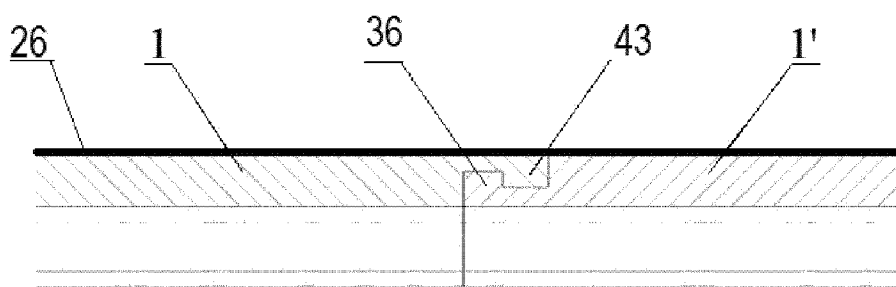


Fig.15