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(71) Applicant: **Fakro PP Spolka Z O.O.**
33-300 Nowy Sacz (PL)

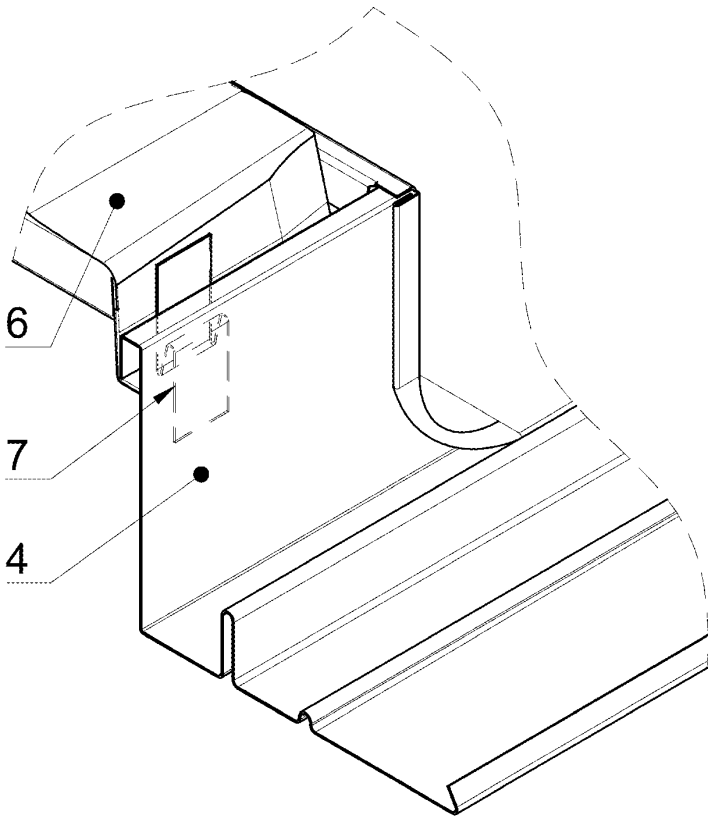
(72) Inventors:
- **Siedlarz, Jozef**
  33-333 Ptaszkowa (PL)
- **Majoch, Przemyslaw**
  33-300 Nowy Sacz (PL)

(74) Representative: **Kacperski, Andrzej**
Kancelaria Prawno-Patentowa
ul. Kupa 3/9
31-057 Krakow (PL)

(54) **Collar sealing the connection between the roofing and the roof window structure**

(57) The components (7), (8), (9) fastening the collar (1) to the structure intersecting the roof are positive components formed from flat shapes, which by bending along designated edges cause permanent connection of the collar (1) to the flashing components of the structure intersecting the roof.

Fig. 2b



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Description

[0001] The invention concerns a collar sealing the connection of the roofing to the roof window structure, secured with additional components, being fasteners.

[0002] A method of collar assembly is known from previous solutions, in which the bottom member has a plastic mass glued from the bottom, which enables the collar to be glued to the roofing, thus the tightness of the joint is ensured. The assembly of collar starts with placing the bottom member - it is secured to the window frame with small nails or screws. Next a lead apron is fitted to the shape of the roofing. The other members are installed in the order from top to bottom, and every next one partially overlaps the member below. Side members in some solutions may be multipartite, subject to the length of the structure going through the roof. Most often they are secured to window frame sides and to ridge beams. Due to the tightness requirements, auxiliary metal sheet plates are used for securing the collar to ridge beams. The component ending the assembly is the top member, which requires additional fastening. In the existing solutions it is secured directly to the window frame with nails or screws.

[0003] The mere use of nails or screws for securing the subsequent members of the collar is a disadvantage of these solutions. These fasteners, by injuring the continuity of the sealing structure, additionally expose the window structure to adverse weather conditions.

[0004] In addition, the fastening system with nails or screws is very troublesome and labour intensive when two (or more) window sets are installed next to each other. In this case not enough free space between collar members mounted subsequently next to each other is an impediment.

[0005] Also an installation method is known from previous solutions, where window frame shielding components are removed for the time of window mounting in the roof and after installing the collar they are re-installed. In other solutions shields are permanently secured to the window frame, and the collars are put under the shield after they are installed. To ensure sufficiently durable and reliable fastening, the collar must be additionally secured to the window frame or the window frame shield component. To this end either typical nails or screws, or suitably shaped fasteners may be used. However due to the reasons presented above the solution with nails/screws is in many cases troublesome and often impossible, whereas the shaped fasteners may be installed without tools. The said fasteners and their method of preparation and installation are the essence of this invention.

[0006] The objective of the invention is to implement a collar connecting a building structure intersecting the roof, in particular a roof window, to the roofing, which thanks to the solution of securing the collar to the flashing of the roof window with additional fasteners, other than nails or screws, is easy and effective in installation.

[0007] A distinctive feature of the invention are fasteners securing the collar to the window frame, which are mounted by suitable bending along the designated edges. These components may be either separate components suitably prefabricated from a rectangular strip of metal sheet, or suitably shaped integral parts of the window frame flashing in the form of straight strips or the L-shape.

[0008] The advantage of this solution is its simplicity and elimination of fasteners injuring the tightness from the collar securing set. It is particularly suitable in the case of sets with two or more windows next to each other, where mounting of collars between windows to the window frames, due to a short distance between them is difficult if not impossible. Also a substantial streamlining of activities necessary to correct installation of subsequent components of the collar by elimination of fasteners and tools needed for installation of these components, and thus a considerable saving of time and labour is a substantial advantage. An unquestionable advantage of the solution presented is the possibility of multiple assembly and dismantling of collar components when necessary.

[0009] The solution according to the invention is shown in embodiment examples in the drawings, where fig.1 shows a known collar, fig. 2a -2d - a collar with a separate fastener, fig. 3a - 3d a collar with a fastener being its integral part, fig. 4a - 4d - a collar with an L-shaped fastener.

[0010] Fig 1. presents the known collar 1, usually comprising four main components: the bottom member 2, two symmetrically located along the roof slope side members 3 and the top member 4. The applied member names result from their situation on an inclined flat roof slope understood customarily.

[0011] The collar 1 according to the invention is presented in the first embodiment example as in the drawings fig. 2a, fig. 2b, fig. 2c and fig. 2d, where the top collar member 4 is secured to the window frame shield 6 with a separate fastener 7, advantageously made of the same material as the collar members, which before the installation has the shape of a vertically flattened Z-letter, as in the drawing fig. 2a.

[0012] The *a* side length is selected so that after bending it along the collar 4 ridge profile, as shown subsequently in drawings fig. 2c and fig. 2d, the length of the allowance enables it to be easily bent without any tools.

[0013] The c side length is selected so that while bent along the window frame shield 6 ridge profile, as shown in drawing fig. 2c, the length of the allowance enables it to be easily bent without any tools.

[0014] The length b of the fastener side is shorter than the length of the edge d of the top collar member, by a value that enables the fastener 7 to be freely put into the space between the edges of the window frame shield 6 and the collar top component 4, as shown in drawings fig. 2b, fig. 2c and fig. 2d.

[0015] The collar 1 according to the invention presented in the second embodiment example as in the drawings

fig. 3a, fig. 3b and fig. 3c, where the collar top member 4 is secured to the window frame shield member 6 with a fastener 8, which is an integral part of the window frame. The fastener, advantageously made of the same material as the window frame members, which before the collar installation has the shape of a flat strip 8 with sides *a*' and *b*', which is shown in fig. 3a. The location of a trapezoidal shape with sides *c*' and *d*' in the collar is determined by the position of the strip 8 so as to ensure the possibility of easy bending of the strip by hand around the side c' of the collar top component, fig. 3b. The trapezoidal, advantageously symmetrical shape with an obtuse angle between the sides c' and d' of not less than 91° facilitates positioning of the fastener 8 against the collar top member 4. The strip width, side b', is contained within the limits between the length of the side c' and the length of the base of the trapezoidal cut-out parallel to the side c'. The strip width is advantageously equal or slightly longer than the length of the side c'. On one hand it ensures sufficient strength, rigidity and durability of the joint, on the other hand it enables it to be easily bent by hand at the side c'. The condition of the joint after completing the assembly is shown in drawings fig. 3c and fig. 3d.

[0016] The collar 1 according to the invention presented in the third embodiment example as in the drawings fig. 4a, fig. 4b, fig. 4c and fig. 4d, where the collar top member 4 is secured to the window frame shield member 6 with a fastener 9, being its integral part, advantageously made of the same material as the window frame shield members, which before the installation has the shape similar to the L-letter, as in the drawing fig. 4a. The length of the side *a"* ensures that it can be easily bent by hand around the *d"* side of the collar top member 4, presented in fig. 4b. The state of the joint after performing this activity is shown in fig. 4c. The length of the side *b"* is selected so that after performing the operation as in fig. 4c, a material allowance is left for making the second bend around the side determined by the top ridge of the collar 4. The state of the joint after making this bend is shown in fig. 4d. This securing system ensures full stiffening of the collar and window frame shield connection and complete blockade of the movement of the collar against the window frame.

Claims

1. Collar sealing the connection of the roofing to the roof window structure, comprising members connected together with a lap joint, made of a permanently deformable material, with a shape of the roof window frame, **characterised in that** the components (7), (8), (9) fastening the collar (1) to the structure intersecting the roof are positive components formed from flat shapes, which by bending along set sides cause a permanent joint of the collar (1) to the flashing components of the structure intersecting the roof.

2. Collar as claimed in claim 1, **characterized in that** the collar (1) fasteners (7) are independent positive components, formed from a flat shape according to the set edges.

3. Collar as claimed in claim 1, **characterized in that** the collar (1) fasteners (8), (9) are flat positive components, permanently connected to the structure intersecting the roof, which after bending along the set edges cause fastening of the collar (1) structural members.

4. Collar as claimed in claim 2, **characterized in that** the collar (1) fasteners (7) are formed from a flat rectangular shape by bending along the edges rectangular to the longer side of the shape.

5. Collar as claimed in claim 4, **characterized in that** the collar (1) fasteners (7) are positive components, with at least one acute angle between the surfaces going through the bending edges.

6. Collar as claimed in claim 5, **characterized in that** the collar (1) fasteners (7) are positive components with a Z-letter shape, with two opposite acute angles between the surfaces intersecting along the edge.

7. Collar as claimed in claim 3, **characterized in that** the collar (1) fasteners (8) are flat rectangular units with the longer side parallel to the longitudinal edge of the collar (1).

8. Collar as claimed in claim 3, **characterized in that** the component positioning the fastener (8) in the collar (1) is a trapezoidal shape with obtuse angles between the internal side of the shape and its sides.

9. Collar as claimed in claim 3, **characterized in that** the collar (1) fasteners (9) are flat units shaped like the L-letter with one leg permanently joint to the flashing of the structure intersecting the roof.

Fig. 1

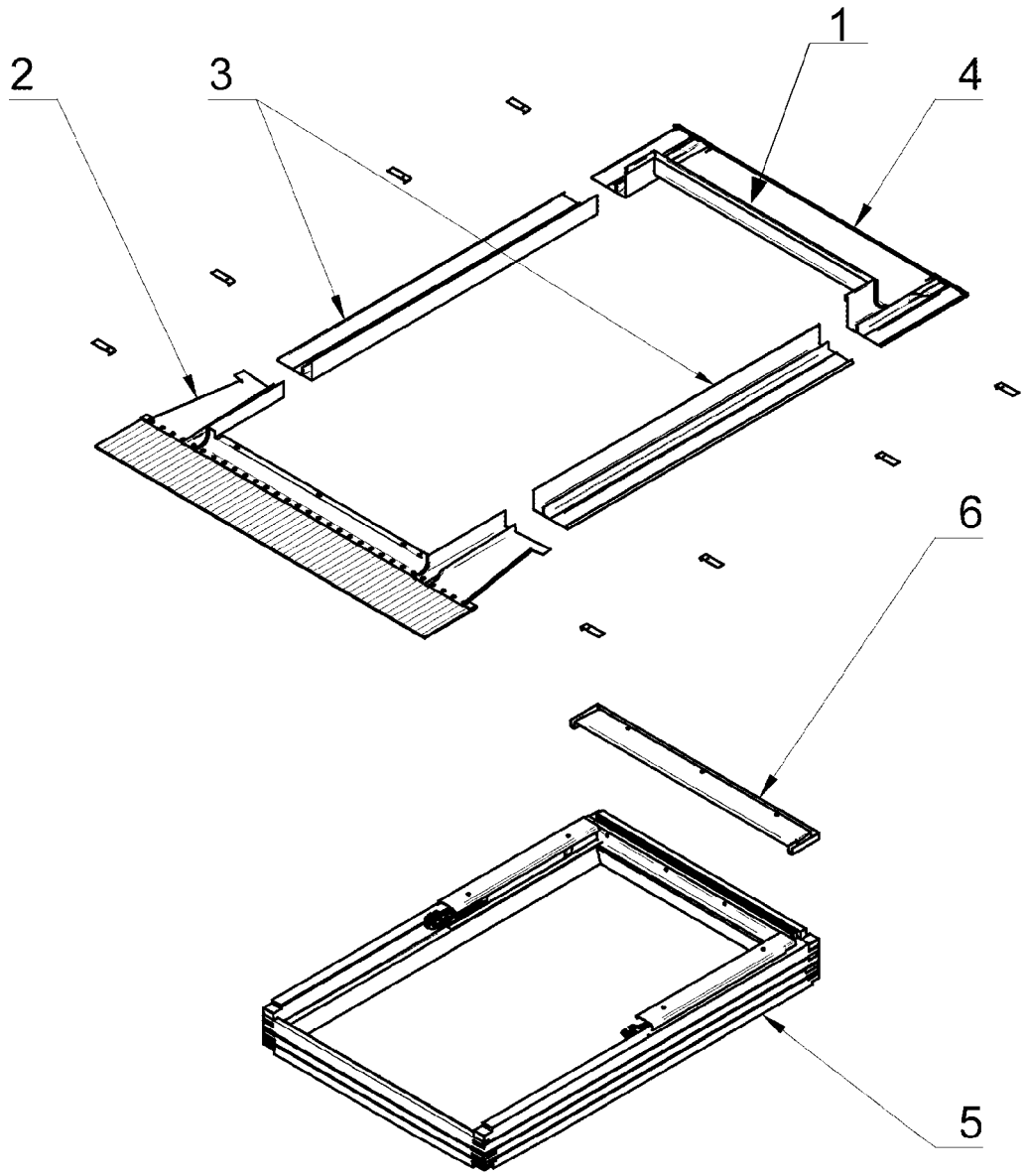

Fig. 2a

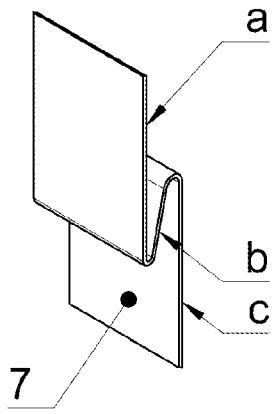

Fig. 2b

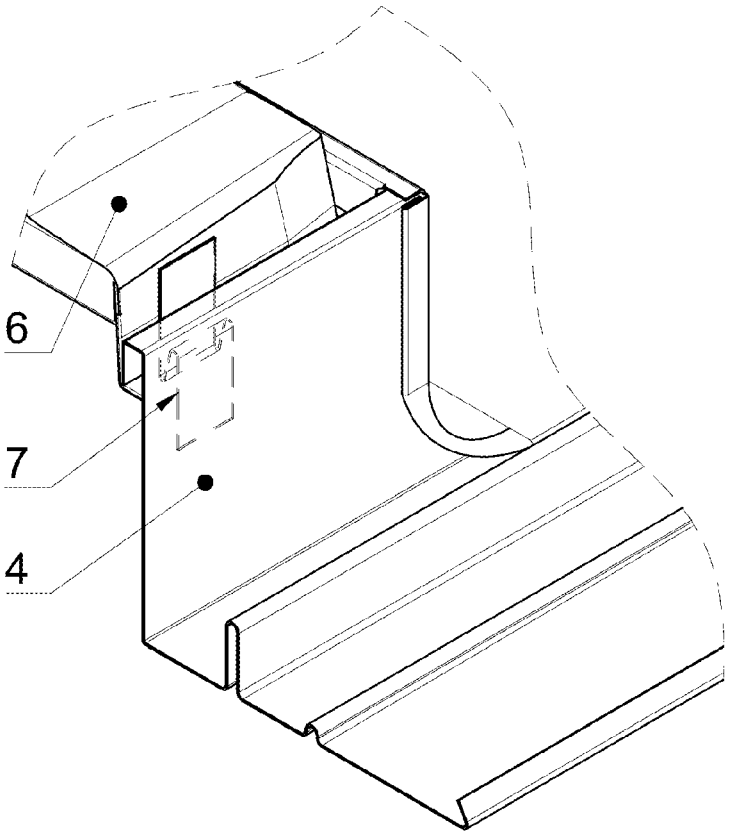

Fig. 2c

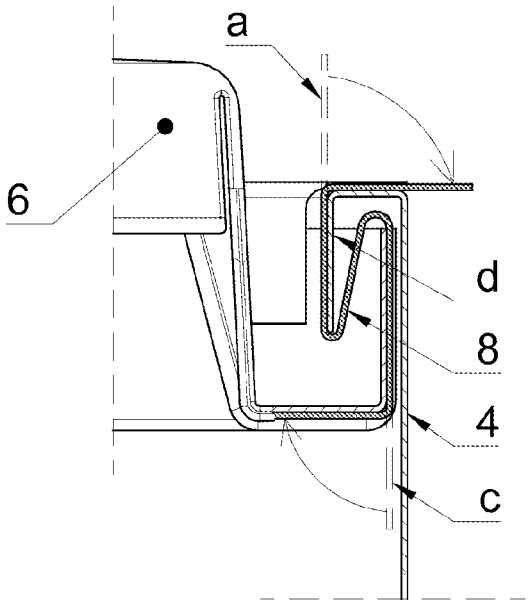

Fig. 2d

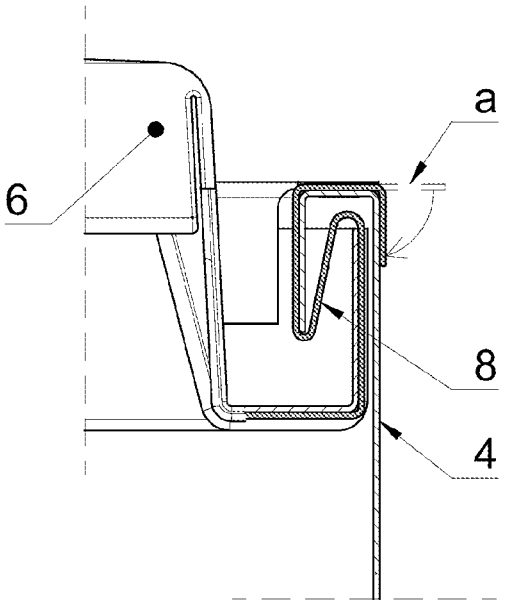

Fig. 3a

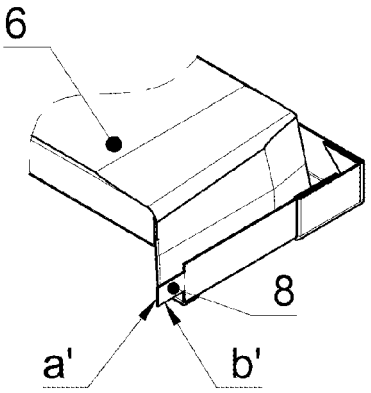

Fig. 3b

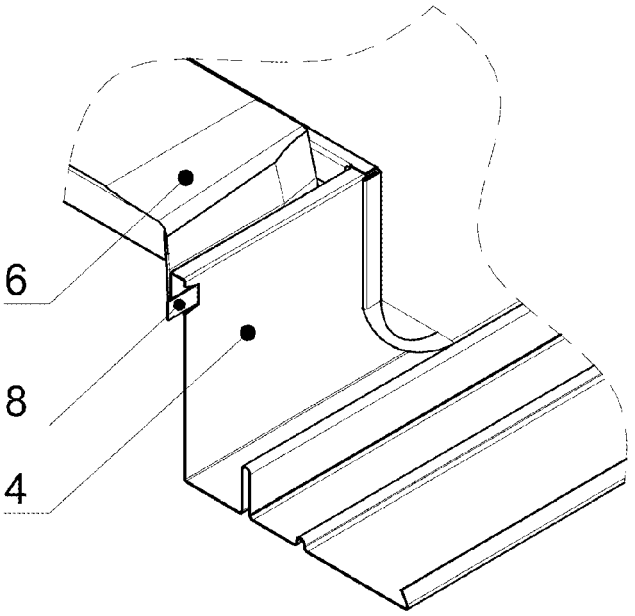

Fig. 3c

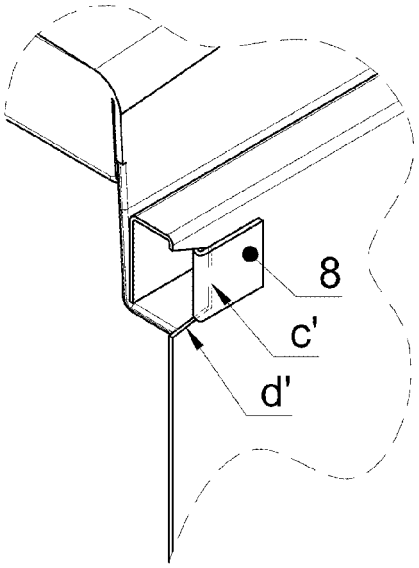

Fig. 3d

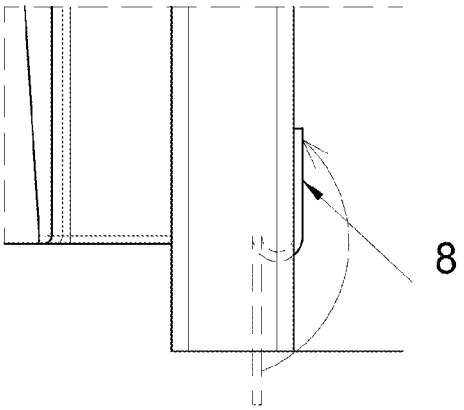

Fig. 4a

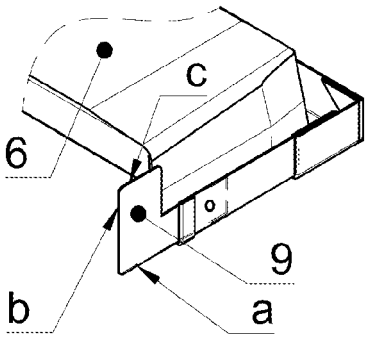

Fig. 4b

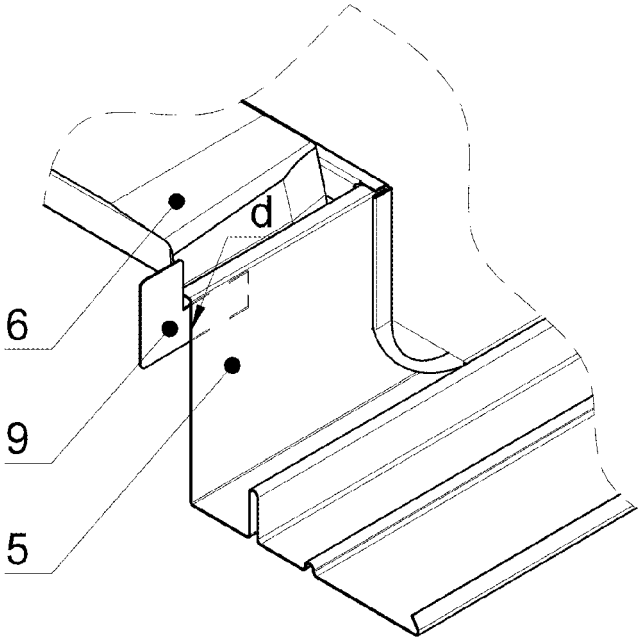

Fig. 4c

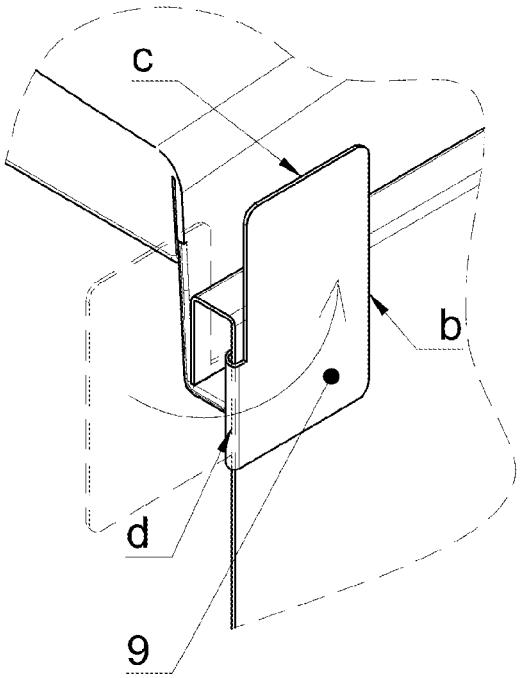

Fig. 4d