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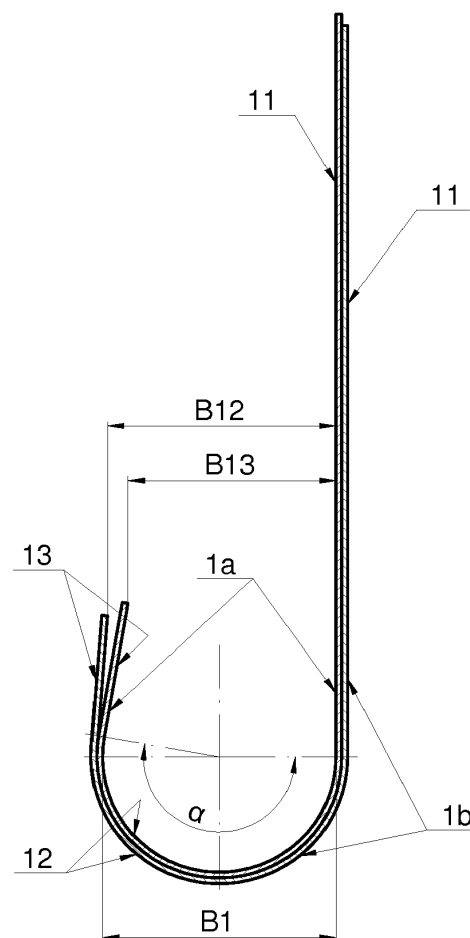
(71) Applicant: **FAKRO PP Sp. z o.o.**  
**33-300 Nowy Sacz (PL)**

(72) Inventor: **Kalicinski, Miroslaw**  
**33-389 Jazowsko (PL)**

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(54) **TELESCOPIC GUTTER, ESPECIALLY FOR ROOF WINDOWS**

(57) The telescopic gutter is made up of thin-walled segments (**1a**, **1b**) made of a pliable material which have identical dimensions in diagonal cross-section. One of the segments (**1a**) is placed in the other segment (**1b**) on a section where they are connected as a result of which they are elastically deformed and thus form a pressure-fit connection. The gutter is installed in the roof structure beneath its covering, above the roof window. It drains away water flowing down the vapour-open roofing membrane.



**Fig.2**

## Description

**[0001]** The subject of the present utility model is a telescopic gutter for removal of water flowing down along the roof over its inner roof covering elements, such as roofing membrane, particularly in the direction of the roof window.

**[0002] State of the art.** Roof windows, due to the location of their installation, as well as the opening in the roof designed for them, require protection against rain-water or water from melting snow, including run-off from higher roof sections, this protection being ensured by means of sealed flashings, usually supplied by a window manufacturer. Also required is protection against water flowing over inner roof covering elements, for example, vapour-open roofing membrane, which is due to condensation on the upper surface of the said roofing membrane. Used for this purpose is a gutter divided into at least two parts so that it can be easily transported in joint packaging with flashing elements. This is because these gutters are usually longer than the flashing elements, thus if they were not divided, they would require larger packaging. From patent description PL 201773 B1 a waterspout gutter is known, composed of two segments with different cross-section profiles, so that one segment can be fitted into the other. This gutter has at least one U-shaped fixing element located in the interior of the waterspout gutter's drainage channel.

**[0003] THE ESSENCE OF THE SOLUTION.** A telescopic gutter, intended especially for roof windows, comprising at least two segments connected together by one fitting into the other, is characterized in that the gutter's segments are thin-walled and made of a pliable material and have identical cross-section dimensions. Each of these segments comprises at least a flat mounting plate, and a drainage channel. The distance between the end points of the drainage channel and the mounting plate is shorter than the inner width of the drainage channel. The gutter is installed in the roof above roof windows and is designed to drain, beyond the area of the opening in the roof for these windows, water flowing toward the window from the upper parts of a sloping roof. In particular, the gutter is designed to remove water vapour condensate flowing down the vapour-open roofing membrane located under the roof's outer covering.

**[0004]** In the first embodiment the drainage channel of the telescopic gutter has in its diagonal cross-section a shape of an arc, particularly that of a circular arc, with a central angle greater than the straight angle. Preferably, the central angle of this arc is from 185 to 200 degrees, particularly 190 degrees. An extension of the drainage channel's arc-shaped cross-section is an external section of this drainage channel located in a plane tangent to the arc-shaped drainage channel, at the end point of its arc. As a result, the free end of the outer segment is closer to the mounting plate than the transition point from the arc into its final segment.

**[0005]** In the second embodiment the drainage chan-

nel has in its diagonal cross-section a shape of a polygon, comprising at least three segments. Preferably, there should be a greater number of polygonal segments, which ensures that the shape of the diagonal cross-section approaches a shape of an arc. At least the last of these segments is positioned so that the free edge of this segment of the channel is closer to the mounting plate than the connection of this segment to the adjacent segment of the drainage channel.

**[0006]** In both embodiments of the telescopic gutter, at least those segments that are located as outermost on the roof have a set of openings for fasteners securing the gutter to the rafters of the roof truss, these openings being located in the fixing plates, close to at least one end of the segment. In the two-segment gutters, this set of openings can only be on those ends of segments that form the ends of the gutter in its assembled state. In the three-segment gutters, the middle segment does need not to have openings for fasteners. Preferably, the sets of openings for fasteners securing the gutter to the rafters of the roof truss are provided at both ends of each of the telescopic gutter's segments. This makes it possible to standardize the production, transport and storage of telescopic gutter segments.

**[0007] An advantageous result** of using this utility model, ensuing from an identical diagonal cross-section of the individual telescopic gutter segments, is that it facilitates and reduces the cost of manufacturing the gutters, as both segments can be bent using the same instrumentation. Moreover, press-fit connections between segments of the telescopic gutter, due to their identical cross-sections, make it possible to eliminate the locking element located inside the gutter, as known from patent description PL 201773 B1. Thereby removed from the interior of the gutter is an element that could be an obstacle to the free flow of water, and so where various debris would accumulate.

**[0008] Invention embodiments.** The telescopic gutter according to the utility model is illustrated in the following in the drawing whose figures present the following:

Fig. 1 - A gutter with a drainage channel with an arc-shaped cross-section, consisting of two segments - in an axonometric view.

Fig. 2 - The connection of two segments of the gutter with an arc-shaped drainage channel - in cross-section.

Fig. 3 - The connection of two segments of the gutter with a polygonal drainage channel - in cross-section.

Fig. 4 - The use of a two-segment gutter above a single roof window - as seen from the direction perpendicular to the roof.

Fig. 5 - Attachment of a telescopic gutter to rafters - in cross-section with vertical surface parallel to the

rafters.

Fig. 6 - The use of a three-segment gutter above a set of two roof windows - as seen from the direction perpendicular to the roof.

**[0009] Example 1.** The telescopic gutter **1** (Figs. **1** and **2** in the drawing) consists of two identical segments **1a** and **1b**, each of which, bent from thin, pliable sheet metal, has the same cross-section along its entire length. In the free state of segments not joined together, the cross-section of both the segments is also identical. Each of the segments has a flat mounting plate **11** and a drainage channel **12** bent into the shape of a circular arc. The central angle of the drainage channel's **12** circular arc is larger than the straight angle and in the present embodiment amounts to 190 degrees. An extension of the arc-shaped cross-section of the drainage channel **12** is the outer segment **13**, located in a plane tangent to the arc-shaped drainage channel **12**, at the end point of its curve. The distance **B12** between the end points of the arc-shaped cross-section of the drainage channel **12** and the flat mounting plate **11**, and likewise the distance **B13** between the free end of the outer segment **13** and the mounting plate **11**, is smaller than the inner width **B1** of the drainage channel **12**.

**[0010]** Gutter segments **1a** and **1b** are connected to each other by placing the drainage channel **12** of segment **1a** in the interior of drainage channel **12** of segment **1b**. Then, segments **1a** and **1b** are deformed within the extent of their elasticity, as a result of which, on that section **L** where the segments overlap each other they form a pressure-fit connection. A side effect of the deformation of the pliable segments is that the free ends of the outer sections **13** of both segments slightly protrude from each other, but this does not produce any significant effects in the functioning of the telescopic gutter. The length of section **L** and the overlap of segments **1a**, **1b** are selected according to the spacing of the rafters of the truss roof between which the roof window is mounted.

**[0011]** Each of the segments **1a**, **1b** of the telescopic gutter has a set of drilled openings **14** in the upper part of its mounting plate **11**, near its ends, for the screws or nails securing the telescopic gutter to the rafters of the truss roof. In Figure **1** of the drawing, the openings in segment **1b** are visible only at one end, and the view of the second set of openings is obstructed by segment **1a**. The openings **14**, which are found in the set of the two segments **1a** and **1b** located in the centre of the length of the telescopic gutter **1** are not used to attach this set of telescopic gutter; the openings indicated are included at both ends of the segment in order to avoid having to make separate right and left versions of these segments.

**[0012] Example 2.** The telescopic gutter consists of two identical segments **2a** and **2b**, each of which, bent from thin pliable sheet metal, has the same cross-section along its entire length. In their free state where the segments are not joined together, the cross-section of both

segments is also identical. Each segment has a flat mounting plate **21** and a drainage channel **22** bent in a polygonal shape composed of seven sections (Fig. 3 of the drawing). The last section **23** of the polygon forming the drainage channel **22** is so positioned so that the free edge of this section is closer to the mounting plate **21** than the connection of this section with the adjoining section **24** of the drainage channel, which is to say the distance **B23** between the free end of the external section **23** and the mounting plate **11** is smaller than the inner width **B2** of the drainage channel **22**.

**[0013]** Gutter segments **2a** and **2b** are connected to each other by fitting the drainage channel **22** of segment **2a** inside the drainage channel **22** of segment **2b**. Then the pliable segments **2a** and **2b** are elastically deformed, as a result of which on the section where the segments overlap each other they form a pressure-fit connection as in the first embodiment of the utility model.

**[0014]** Each of the segments of the telescopic gutter, in the upper part of its mounting plate, near its ends, has a set of drilled openings for screws or nails for securing the telescopic gutter to the rafters in the roof structure, just as in the first embodiment of the utility model.

**[0015]** The telescopic gutter is mounted (in accordance with Figs. 4 and 5 of the drawing) in a roof, whose support structure is composed of rafters **3** on which vapour-open roofing membrane **4** (omitted in Fig. 4) is located. Battens **31** are mounted along the rafters **3**, on the vapour-open roofing membrane **4**, and on these battens horizontal laths **32** are mounted transversely to the rafters **3**. The roof's outer shell, in particular roof tiles, is laid on these laths. Thanks to the battens **31** there are ventilation gaps between the vapour-open roofing membrane **4** and the laths **32**. The telescopic gutter **1** is placed in the roof above the roof window **5** along with its sealing flashing **51**. The telescopic gutter is placed directly on the rafters **3**, and for this purpose the battens **31** have gaps left in the areas where the telescopic gutter is to be located. A cut is made in the vapour-open roofing membrane **4** through which the mounting plate **11** for the telescopic gutter is inserted beneath this roofing membrane, thus ensuring runoff of water from the vapour-open roofing membrane **4** to the drainage channel **12** of the telescopic gutter. To ensure proper runoff of water in the drainage channel **12**, the telescopic gutter **1** is mounted at an incline relative to the laths **32**, while segment **1a**, located in the connection of the two sections inside the drainage channel **12** of segment **1b**, is positioned in the roof at a point higher than segment **1b**. The ends of the telescopic gutter **1** composed of the sections **1a** and **1b** extend beyond the rafters **3** - and particularly important, the lower end of segment **1b** must protrude beyond the rafter **3**, which prevents water leaking onto the rafter **3**. The telescopic gutter **1** is secured to the rafters **3** by means of nails **15** passing through the openings **14** in the mounting plates **11** of each of the segments **1a**, **1b**.

**[0016]** The telescopic gutter can also be composed of three segments **1a**, **1b**, **1c** - creating a common gutter

for a set of two roof windows **5**, positioned next to each other (Fig. 6 on the drawing), this being equipped with a common set of sealing flashings **52**. The three-segment gutter is supported on three rafters **3**, on each of which gaps are left in the battens **31**, while this kind of gutter is attached only to the end rafters **3**.

truss are provided at both ends of each of the segments **(1 a, 1 b)** of the gutter.

## Claims

### 1. A telescopic gutter for roof window comprising

- at least two segments **(1a, 1b, 1c, 2a, 2b)**, connected together by one fitting into the other, each of which comprises at least a flat mounting plate **(11, 21)**, and a drainage channel **(12, 22)**, **characterized in that** the segments **(1a, 1b, 1c, 2a, 2b)** of this telescopic gutter are thin-walled and made of a pliable material and have identical dimensions in diagonal cross-section, while the distance between the end points of the drainage channel's cross-section **(B12, B13, B23)** and the mounting plate **(11, 21)** is shorter than the inner width **(B1, B2)** of the drainage channel **(12, 22)**.

### 2. The telescopic gutter according to claim 1, **characterized in that** the cross-section of the drainage channel **(12)** is arc-shaped with a centre angle ( $\alpha$ ) larger than the straight angle, preferably from 185 to 200 degrees, particularly 190 degrees.

### 3. The telescopic gutter according to claim 2, **characterized in that** the extension of the arc-shaped cross-section of the drainage channel **(12)** is an outer section **(13)**, located in a plane tangent to the arc-shaped drainage channel at the end point of its curve.

### 4. The telescopic gutter according to claim 1, **characterized in that** the cross-section of the drainage channel **(22)** is polygonal, comprising at least three sections and at least the last of these is positioned so that the free edge of this section **(23)** is closer to the mounting plate **(21)** than the connection of this section with its adjacent section **(24)** of the drainage channel.

### 5. The telescopic gutter according to claims 1, 2 or 3, or 4 **characterized in that** at least those segments that are located as outermost on the roof, in their mounting plates **(11)** near at least one end of the segment, comprises a set of openings **(14)** for fasteners **(15)** securing the telescopic gutter **(1)** to the rafters **(3)** of the roof truss.

### 6. The telescopic gutter according to claim 5, **characterized in that** the sets of openings **(14)** for fasteners **(15)** securing the gutter to the rafters **(3)** of the roof

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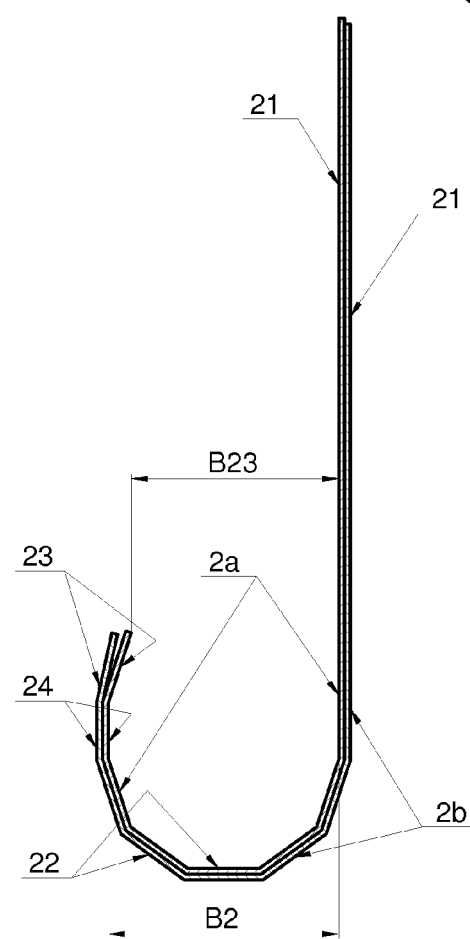
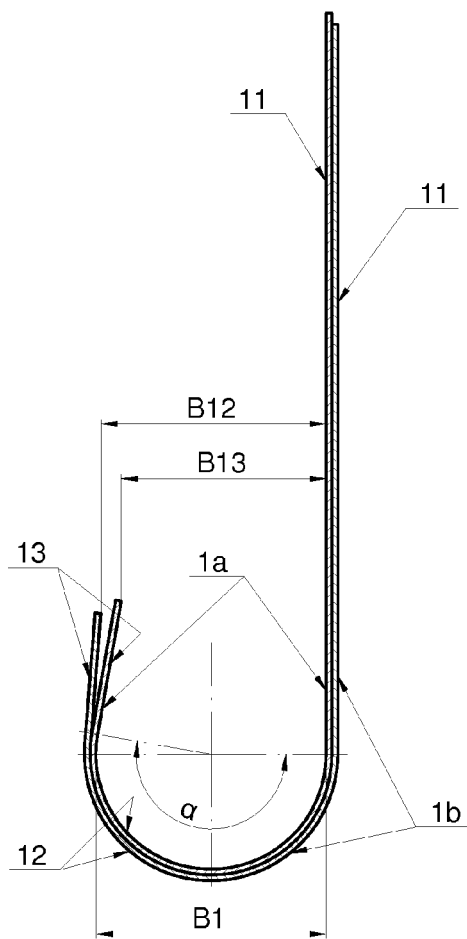
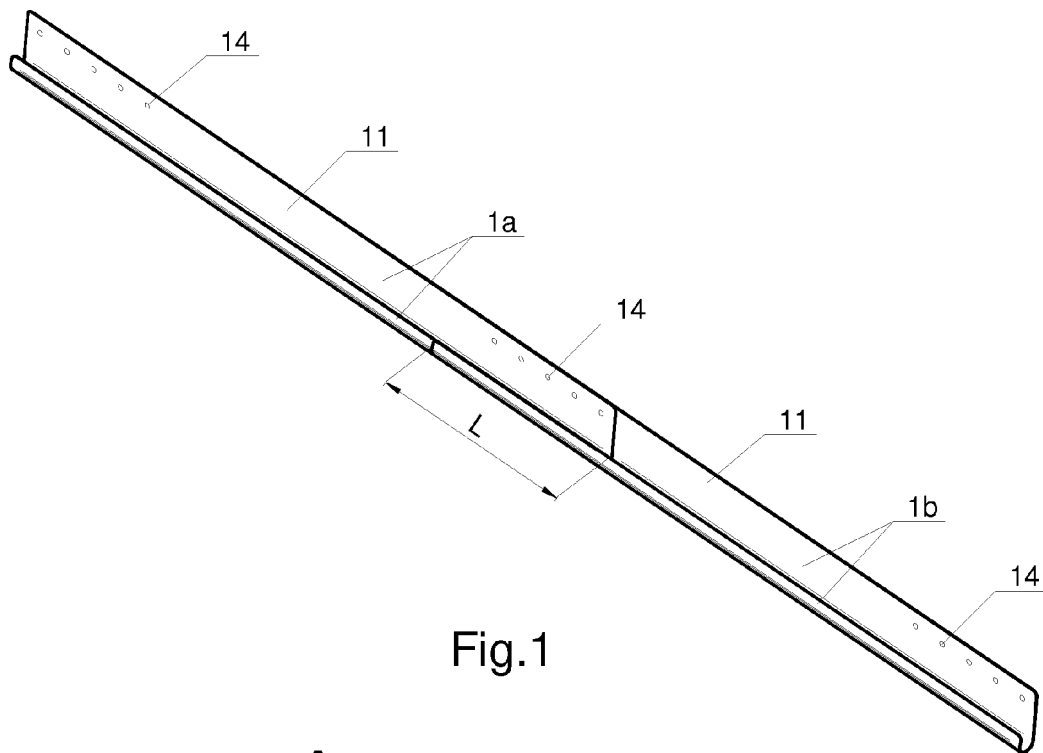
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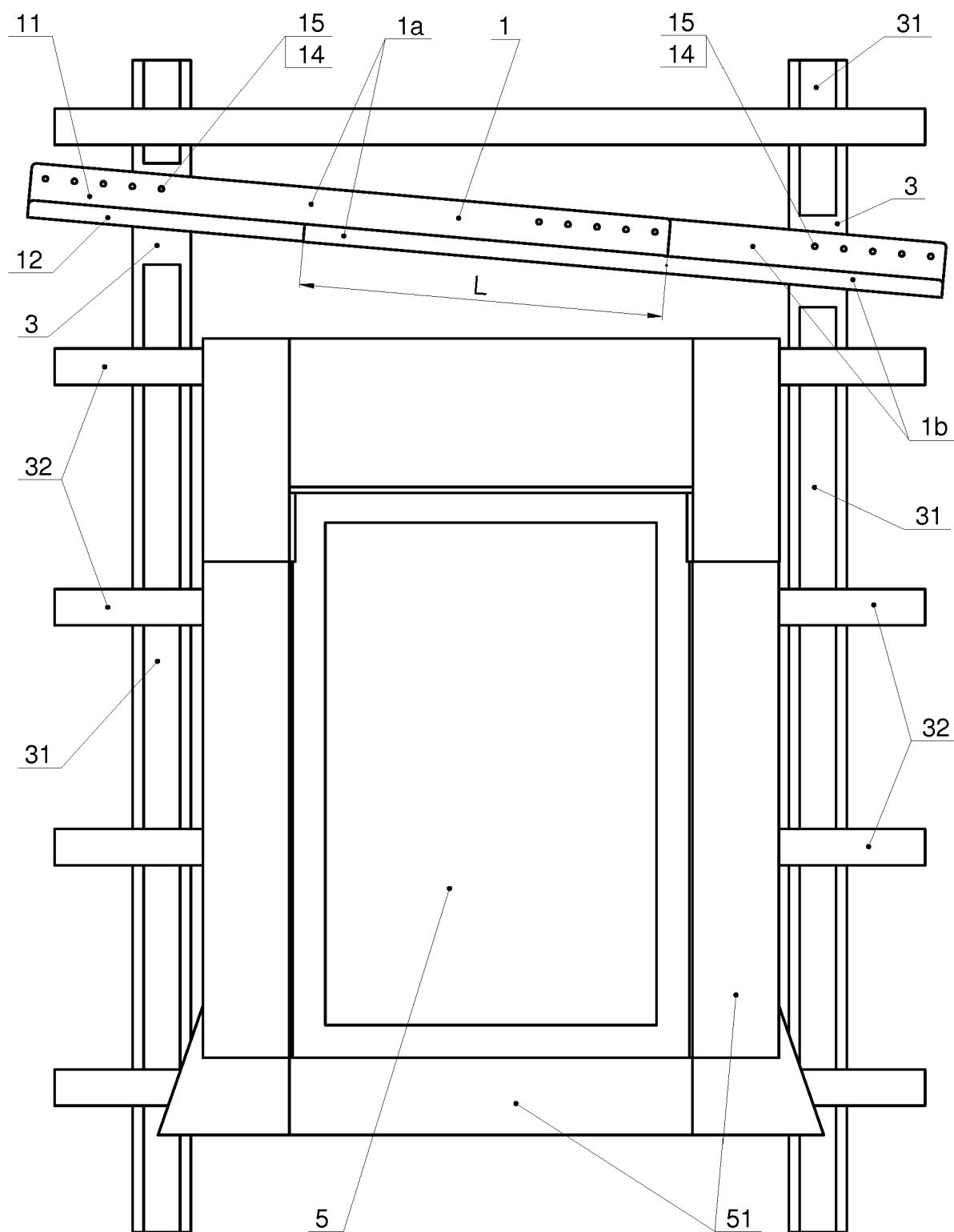


Fig.4

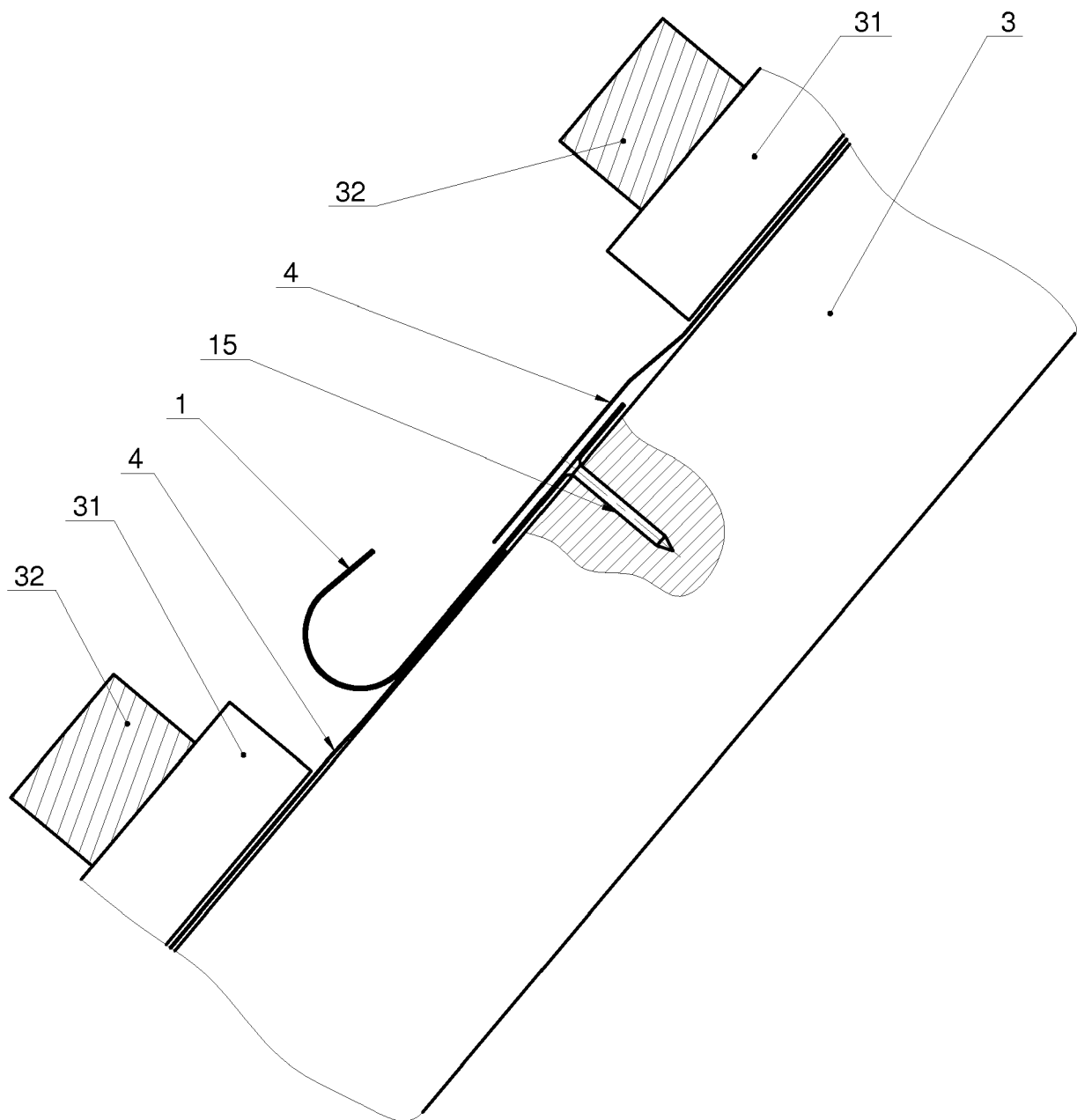


Fig.5

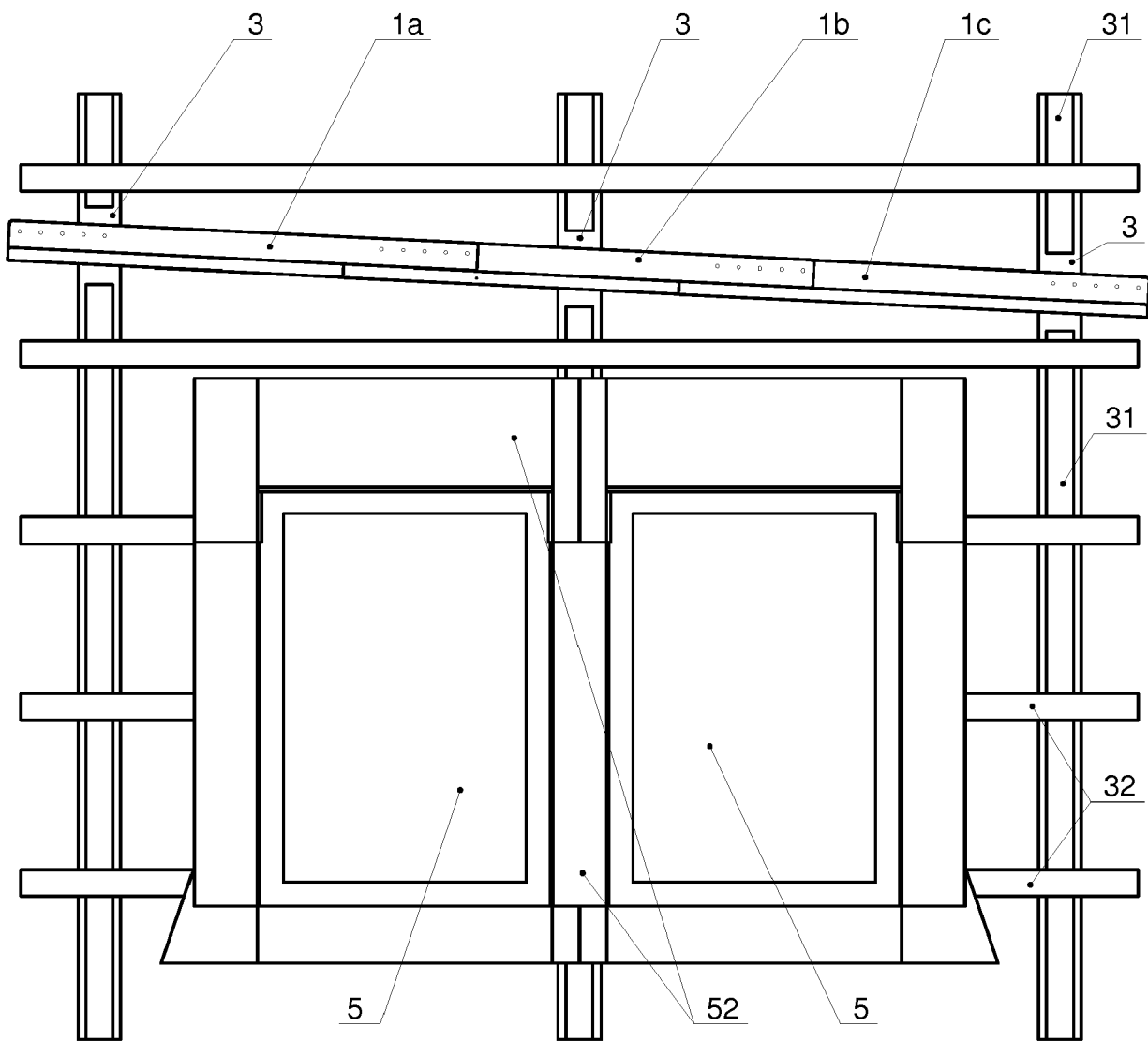


Fig.6





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