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(54) **TRANSPORT PALLET FOR PANE RETAINING ELEMENTS, METHOD FOR TRANSPORTING PANE RETAINING ELEMENTS, AND METHOD FOR ASSEMBLING A PANE RETAINING ELEMENT AND A WINDOWPANE**

(57) A transport pallet for pane retaining elements, the transport pallet comprising a base (10) with at least two parallel aligned longitudinal notches (11) arranged such that a pair of notches (11A, 11B) distanced from each other by a separation region (12) forms a socket (20), wherein the socket (20) is covered by a liner (30),

the liner (30) comprising a first flap (31) covering the first notch (11A) of the socket (20), a second flap (33) covering the second notch (11B) of the socket (20) and a central portion (32) which is attached to the separation region (12).

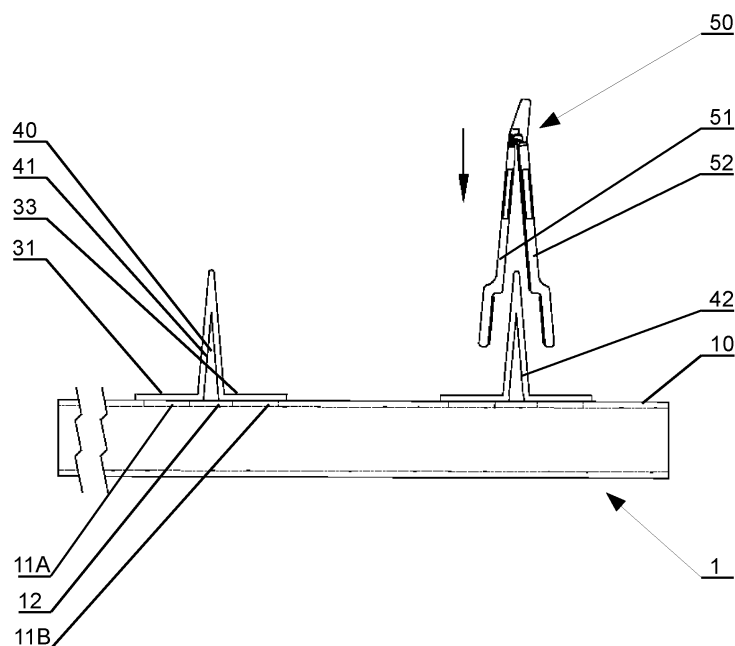


Fig. 2

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to a transport pallet for pane retaining elements and a method of transporting pane retaining elements using the transport pallet.

BACKGROUND

[0002] A typical car door construction comprises a windowpane attached to a window lifting mechanism via a retaining element. Typically, the retaining element has a form of a bracket with two arms spaced apart in order to receive the windowpane therebetween, wherein the arms may be permanently fixed to each other or may be separate and connected by a screw. The arms may be partially covered with an adhesive layer covered by a liner (to be removed before attaching the retaining element to the pane).

[0003] For a retaining element that has separate arms, the process of attaching the retaining element to the pane comprises the following steps. First: removing the liners from the adhesive layers, second: locating the pane onto the first arm, third: putting the second arm on the opposite side of the pane, fourth: screwing together the arms, thereby holding the pane between the arms, so that the arms adhere to the pane. The disadvantage of such process is that it requires performing said multiple of steps.

[0004] For a retaining element that has the arms fixed permanently together and does not have any adhesive layer deposited on the arms, the process of attaching the retaining element to the pane comprises the following steps. First: inserting the pane between the arms, and second: introducing an adhesive in a form of a liquid into the region between the arms and the pane, through the openings in the arms. The disadvantage of such process, despite a lower number of steps to be performed, is the need of introducing the glue after the pane is inserted between the arms of the retaining element, wherein the glue needs a long time to cure. During the curing time the panes have to be stored under special conditions required by the properties of the glue.

[0005] A Chinese patent application CN110195543A presents a bracket for a vehicle window glass. The bracket comprises a support part and a maintaining part in a form of two fixed arms, wherein a U groove for receiving a window glass is formed between the arms. The maintaining part is fixed to the vehicle window glass in a sleeving manner and by means of a bonding glue. Moreover, on the inner surface of the arms there are provided longitudinal vertically aligned elastic protrusions. The protrusions provide the initial positioning of the bracket on the pane with a good clamping strength. However, the bracket itself is more complicated and therefore more expensive to manufacture.

[0006] A PCT patent application WO2019115079A1

presents a retaining element for a side window of a vehicle. The retaining element comprises two fixed arms distanced from each other to receive a windowpane. The arms comprise a filling opening for introducing the adhesive between the pane and the arms in order to fix the retaining element to the pane. The contact surface of the arms comprise a plurality of channels directed towards the filling opening for distributing the adhesive.

[0007] Since the prior art processes of attaching the retaining element to the pane are complex, the retaining elements are usually attached to the windowpanes at a windowpane manufacturing facility, before the windowpanes are transported to the car door assembly facility, wherein the panes are assembled to the car door. This makes their transporting process complex, as the windowpanes with pre-attached retaining elements require complex packaging.

SUMMARY OF THE INVENTION

[0008] There is a need to provide a solution which would simplify the process of assembling the retaining element to the vehicle side windowpane, so that it could be performed at the car door assembly facility, so as to assemble the retaining element and the windowpane promptly before assembling the windowpane to the car door.

[0009] The present invention provides a transport pallet for pane retaining elements and a method for transporting the pane retaining elements using said transport pallet, which allow to simplify the overall process of producing a car door with a windowpane. In view of the special construction of the transport pallet, the retaining elements can be easily removed from the socket of the transport pallet and once removed, they are instantly ready to be attached to the windowpane (as presented in Figs. 6E-6F), because the adhesive layers of the arms are already exposed, as the liner remains on the transport pallet. After the pane retaining element is removed from the transport pallet, the windowpane is introduced between the arms and subsequently the arms are pushed towards each other until contacting the surfaces of the windowpane. Therefore, in contrast to the prior art methods as described in the background section, no further steps concerning removal of the liner or introduction of glue between the windowpane and the retaining element are required, thereby making the process of attaching the retaining elements to the windowpane much simpler and faster. Consequently, the step of attaching the retaining elements to the windowpane may be easily conducted in the facility wherein the pane is installed in the car door. Therefore, it is no longer necessary to attach retaining elements to the windowpanes (which makes such assembly difficult to transport), and therefore the retaining elements can be transported to the car door assembly facility separately from the windowpanes. This makes the windowpanes much easier to transport, as no special packaging features must be provided to accom-

modate the retaining element on the windowpane - consequently, the panes may be arranged closer to each other, and less space is required. Moreover, the retaining elements and the windowpanes may be shipped to the car door assembly facility from distinct locations.

[0010] The object of the invention is therefore a transport pallet for pane retaining elements, the transport pallet comprising a base with at least two parallelly aligned longitudinal notches arranged such that a pair of notches distanced from each other by a separation region forms a socket. The socket is covered by a liner, wherein the liner comprises a first flap covering the first notch of the socket, a second flap covering the second notch of the socket and a central portion which is attached to the separation region.

[0011] The middle portion of the liner can be attached to the separation region by means of an adhesive.

[0012] The separation region can be flat.

[0013] The transport pallet may comprise a protrusion located on the separation region, wherein the protrusion is covered by the liner.

[0014] The invention also relates to a method for transporting pane retaining elements, the method comprising: providing a retaining element having two arms which are at least partially covered by an adhesive layer at one end on an inner surface of the arm; providing a transport pallet as described herein; inserting the retaining element to the socket such that the first arm is inserted to the first notch of the socket and the second arm is inserted to the second notch of the socket, wherein during insertion the adhesive layer of the first arm is covered by the first flap of the liner which enters into the first notch and the adhesive layer of the second arm is covered by the second flap of the liner which enters into the second notch.

[0015] The invention also relates to a method for assembling a pane retaining element and a windowpane, the method comprising: providing the transport pallet with the pane retaining element prepared as described above; removing the pane retaining element from the transport pallet, thereby exposing its adhesive layers; and attaching the pane retaining element to the windowpane.

BRIEF DESCRIPTION OF FIGURES

[0016] The device presented herein is presented by means of example embodiments on a drawing, wherein:

Fig. 1 presents a transport pallet in a first embodiment in a top view;

Fig. 2 presents a transport pallet in a second embodiment in a side view;

Fig. 3 present a retaining element;

Figs. 4A-4B present a first arm of the retaining element;

Figs. 5A-5C present a second arm of the retaining element;

Figs. 6A-6D present steps of transporting the retaining element by means of the transport pallet;

Figs. 6E-6F present steps of assembling the retaining element and a pane;

DETAILED DESCRIPTION

[0017] The description presented herein is not to be taken in a limiting sense but is made merely for the purpose of illustrating the general principles of the invention by means of detailed embodiments.

[0018] The transport pallet, shown in two embodiments on Fig. 1 and 2, has a base 10 with at least two parallelly aligned longitudinal notches 11. The notches are arranged in pairs, such notches in a pair 11A, 11B are distanced from each other by a separation region 12 that forms a socket 20. That socket 20 is covered by a liner 30, which comprises a first flap 31 covering the first notch 11A of the socket 20, a second flap 33 covering the second notch 11B of the socket 20 and a middle portion 32 which is attached to the separation region 12. The liner 30 forms an elastic strip, made for example of paper, having properties of conventional liners used for protecting an adhesive layer. Namely, the liner is does not bind with the adhesive and may be temporarily and repeatably attached to the adhesive side of the adhesive layer.

[0019] The pallet may comprise a single socket 20 for transporting a single retaining element 50, or a plurality of sockets 20 for transporting a plurality of retaining elements 50.

[0020] The middle portion 32 of the liner 30 can be attached to the separation region 12 by means of an adhesive. Thereby, the flaps 31, 33 of the liner 32 equally enter the notches 11A, 11B when the retaining element 50 is inserted into the socket and the liner 30 remains on place when the retaining element 50 is removed from the socket 20.

[0021] The sockets 20 are suitable for receiving arms 51, 52 of the retaining element 50, as shown in Figs. 3, 4A-4B, 5A-5C. In general, the retaining element 50 comprises a pair of shaped arms 51, 52 that are bent outwards at their free ends to accommodate a window frame therein. At the internal sides of these ends, adhesive layers 53, 54 are provided - for example, in a form of adhesive strips - that adhere to the windowpane once the retaining element is assembled on the windowpane. At one end the arms 51, 52 of the retaining element 50 may be connected pivotally to each other, for example by means of a hinge 56. The particulars of the retaining element are not subject of this disclosure and the transport pallet can be used to transport a variety of retaining elements 50 known in the art. The retaining element 50 may have an additional adhesive layer 55 located on one of the arms 51, 52 the protrusion 40 with the liner 34 protects said additional adhesive layer 55 when the retaining element 50 is located in the socket 20 of the transport pallet 1. The additional adhesive layer 55 enhances the fixing of the retaining element 50 to the pane 2. In particular it glues the first arm 51 and the second arm 52 together, thereby limiting the possibility of the arms 51, 52 to be

torn apart.

[0022] The dimensions of the notches 11A, 11B shall be slightly bigger than the cross-sectional dimensions of the arms 51, 52.

[0023] The transport pallet 1 may have a form of a hollow cuboid, in particular it may have a form of a box, made of for example corrugated cardboard, plastic, wood or metal, wherein the base 10 forms the upper side of the box.

[0024] In the first embodiment of Fig. 1, the separation region 12 is flat.

[0025] In the second embodiment of Fig. 2, the pallet further comprises a protrusion 40 located on the separation region 12, wherein the protrusion 40 is covered by the liner 30. The protrusion 40 may have a form of a plate extending perpendicularly from the base 10. The protrusion 40 may also have a form of a wedge, as shown in Fig. 2. The protrusion 40 is attached to the separation region 12, wherein the liner 30 covers sides 41, 42 of the protrusion 40 and is attached thereto, while the flaps 31, 33 of the liner cover the notches 11A, 11B. The liner 30 may also have its middle portion 32 covering the sides of the protrusion 40.

[0026] The transport pallet is useful for preparing and transporting the pane retaining elements by a method as shown in 6A-6D. The retaining elements 50 are provided in a form such that they have adhesive layers 53, 54 provided at the ends of their arms 51, 52, wherein the adhesive layers are not protected by a liner. For example, the adhesive layers can be applied promptly prior to installing the retaining elements 50 into the transport pallet. As shown in fig. 6A, the retaining element 50 is positioned with its arms 51, 52 over the socket 20 and pushed into inserted into the socket 20 such that the first arm 51 is inserted to the first notch 11A of the socket 20 and the second arm 52 is inserted to the second notch 11B of the socket 20. While inserting the retaining element 50 into the socket, as shown in fig. 6B, the adhesive layer 53 of the first arm 51 is covered by the first flap 31 of the liner 30 which enters into the first notch 11A and the adhesive layer 54 of the second arm 52 is covered by the second flap 33 of the liner 30 which enters into the second notch 11B. Thereby, once the retaining element 50 is fully inserted into the socket 20, the adhesive layers 53, 54 of its arms are protected by the liner 30 and can be transported to a car door assembly facility. Next, the retaining element can be easily installed on the windowpane simply by removing it from the transport pallet by pulling the hinged end, as shown in Fig. 6C, so that the arms 51, 52 are pulled out of the socket 20, and the liner 30 detaches from the adhesive layers 53, 54. Therefore, the retaining element is prepared for use as shown in Fig. 6D by having been simply pulled out from the transport pallet.

[0027] The retaining element 50 can be then easily installed on the windowpane 2 with its arms 51, 52 pushed apart as it is positioned over the windowpane 2, as shown in Fig. 6E, and next pushed towards the windowpane 2,

as shown in Fig. 6F.

[0028] While the invention has been described with respect to a limited number of embodiments, it will be appreciated that many variations, modifications, and other applications of the invention may be made. Therefore, the claimed invention as recited in the claims that follow is not limited to the embodiments described herein.

10 Claims

1. A transport pallet for pane retaining elements, the transport pallet comprising a base (10) with at least two parallelly aligned longitudinal notches (11) arranged such that a pair of notches (11A, 11B) distanced from each other by a separation region (12) forms a socket (20) **characterized in that** the socket (20) is covered by a liner (30), wherein the liner (30) comprises a first flap (31) covering the first notch (11A) of the socket (20), a second flap (33) covering the second notch (11B) of the socket (20) and a central portion (32) which is attached to the separation region (12).
2. The transport pallet according to claim 1, wherein the middle portion (32) of the liner (30) is attached to the separation region (12) by means of an adhesive.
3. The transport pallet according to any of previous claims, wherein the separation region (12) is flat.
4. The transport pallet according to any of claims 1 to 2, further comprising a protrusion (40) located on the separation region (12), wherein the protrusion (40) is covered by the liner (30).
5. A method for transporting pane retaining elements, the method comprising:
 - providing a retaining element (50) having two arms (51, 52) which are at least partially covered by an adhesive layer (53, 54) at one end on an inner surface of the arm (51, 52);
 - providing a transport pallet (1) according to any of claims 1-4; and
 - inserting the retaining element (50) to the socket (20) such that the first arm (51) is inserted to the first notch (11A) of the socket (20) and the second arm (52) is inserted to the second notch (11B) of the socket (20), wherein during insertion the adhesive layer (53) of the first arm (51) is covered by the first flap (31) of the liner (30) which enters into the first notch (11A) and the adhesive layer (54) of the second arm (52) is covered by the second flap (33) of the liner (30) which enters into the second notch (11B).

6. A method for assembling a pane retaining element (50) and a windowpane (2), the method comprising:

- providing the transport pallet (1) with the pane retaining element (50) prepared according to claim 5; 5
- removing the pane retaining element (50) from the transport pallet (1), thereby exposing its adhesive layers (53, 54); and
- attaching the pane retaining element (50) to the windowpane (2). 10

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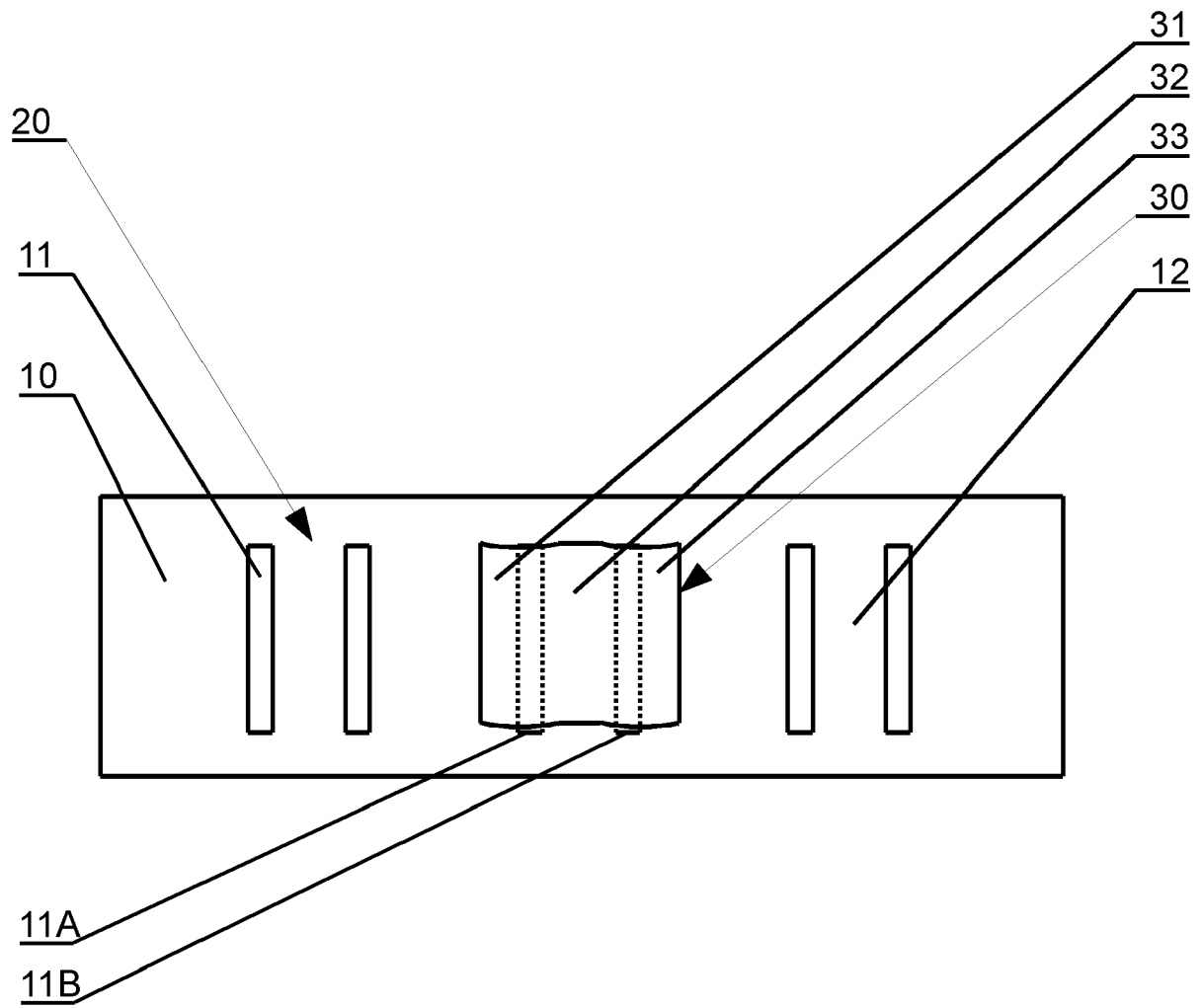


Fig. 1

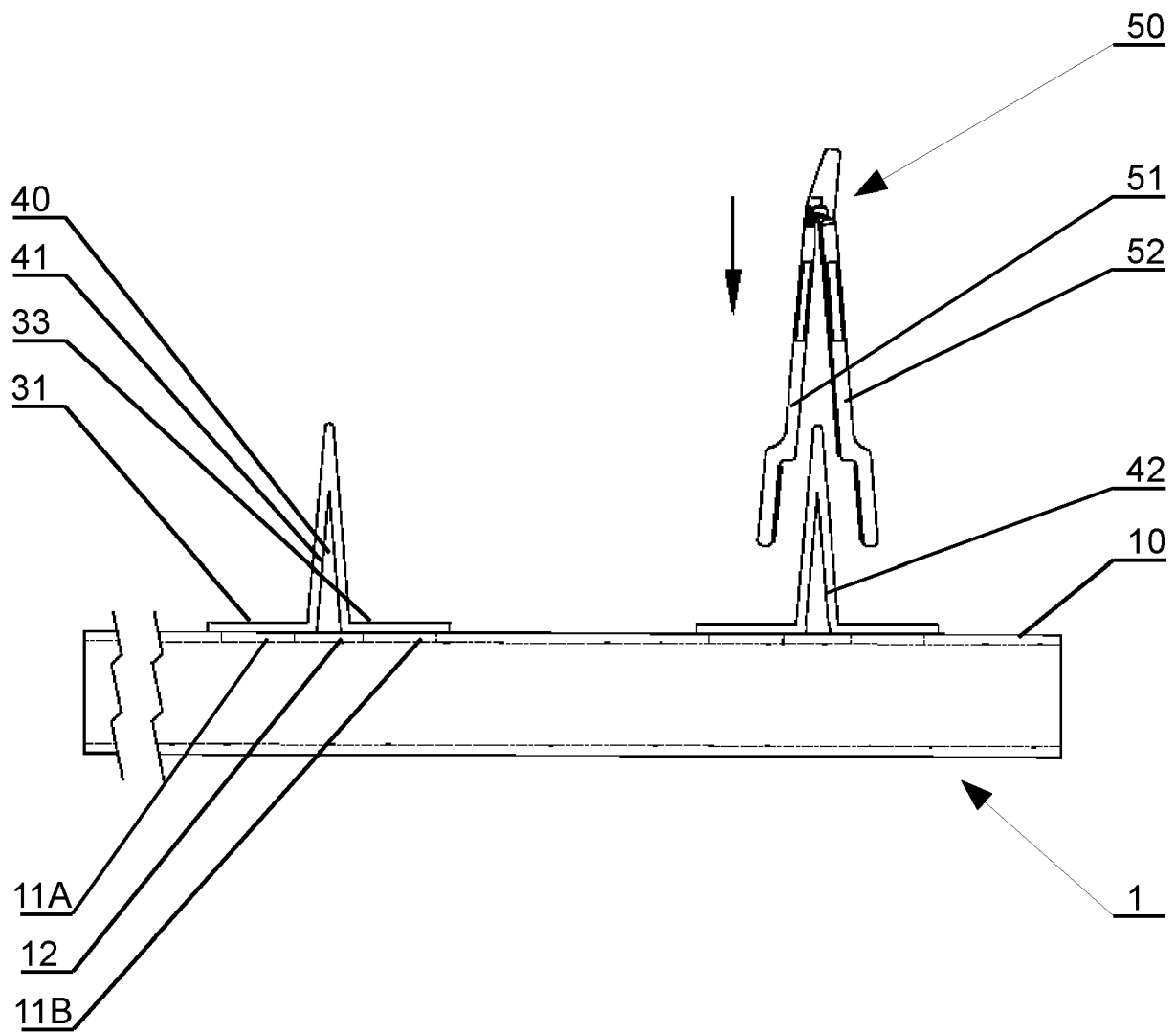


Fig. 2

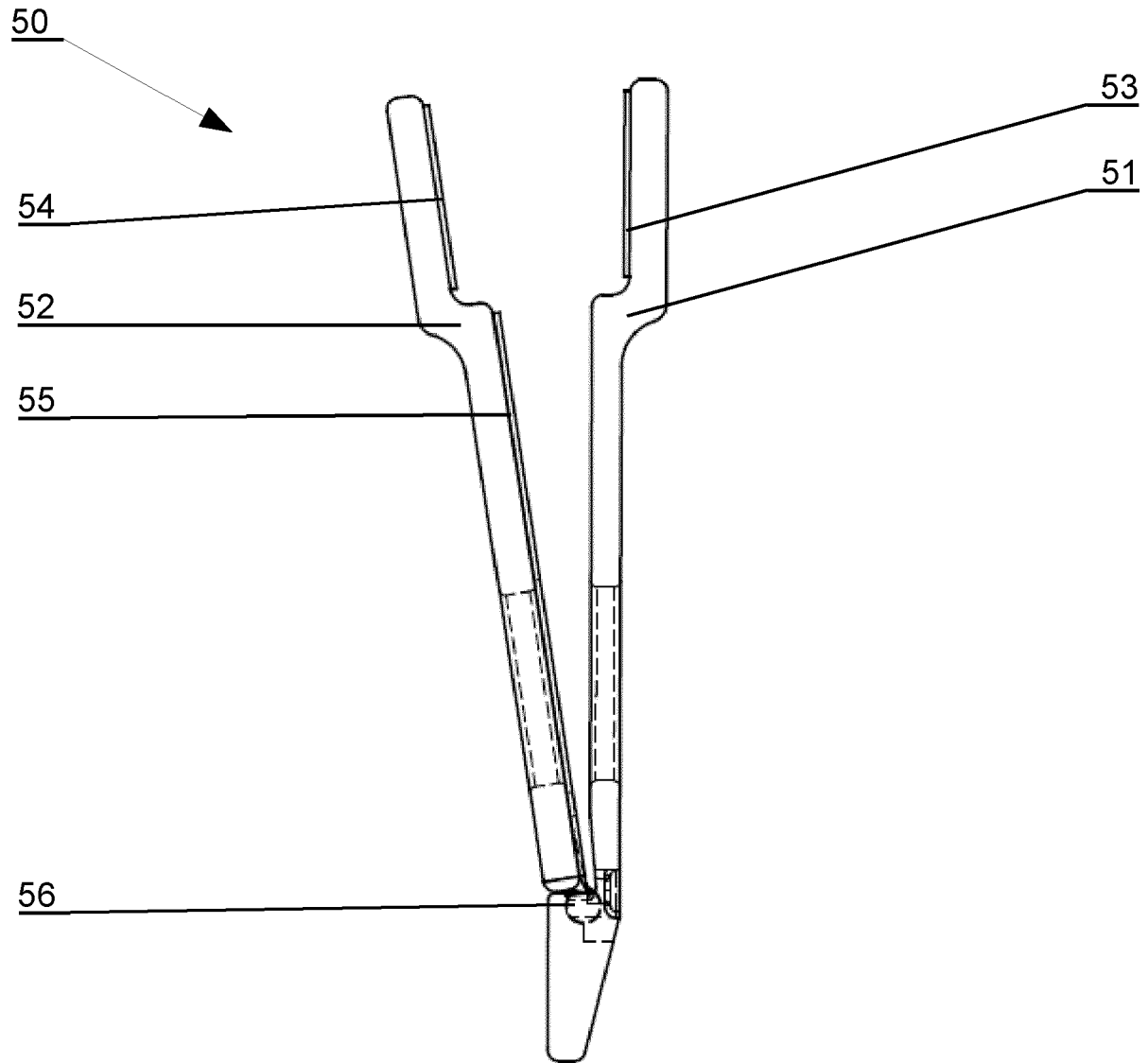


Fig. 3

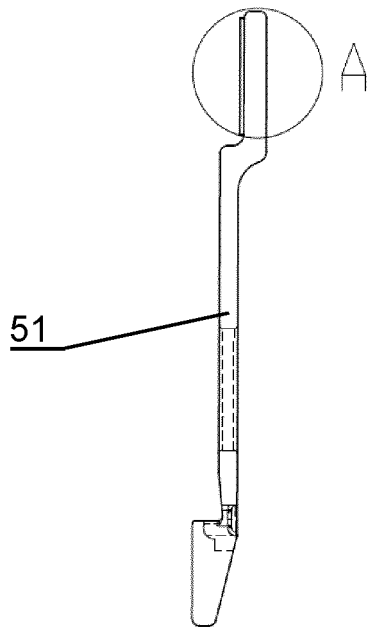


Fig. 4A

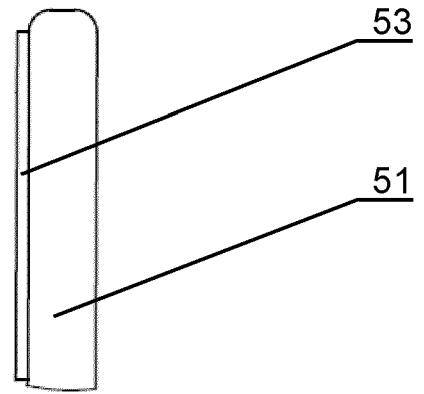


Fig. 4B

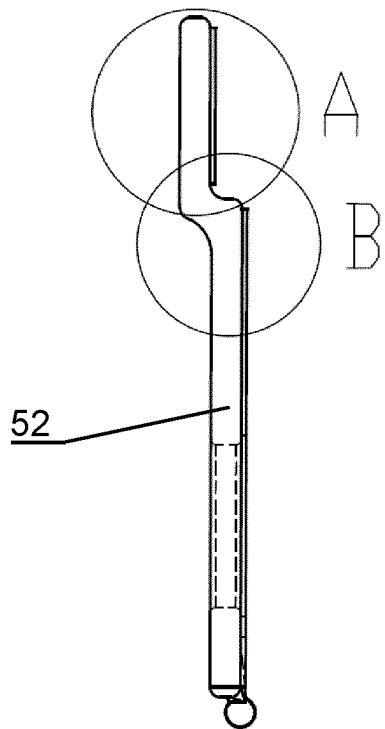


Fig. 5A

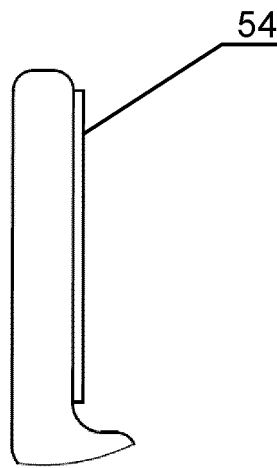


Fig. 5B

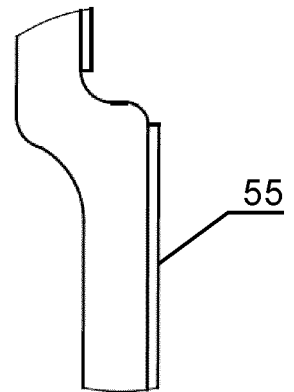


Fig. 5C

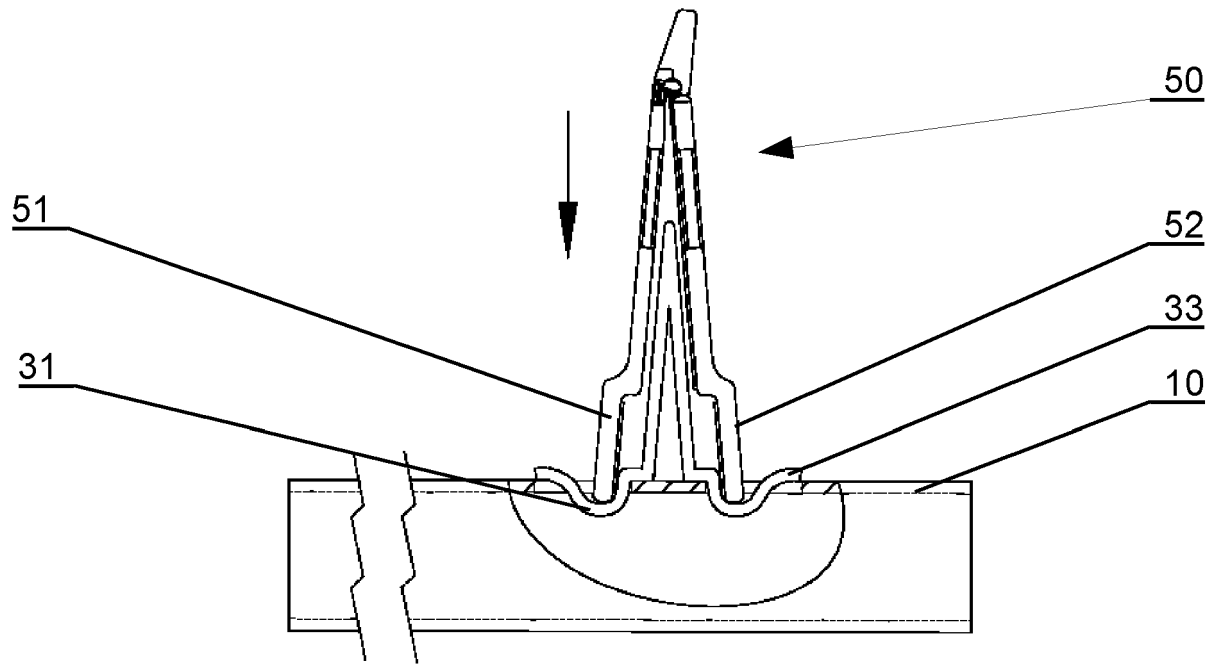


Fig. 6A

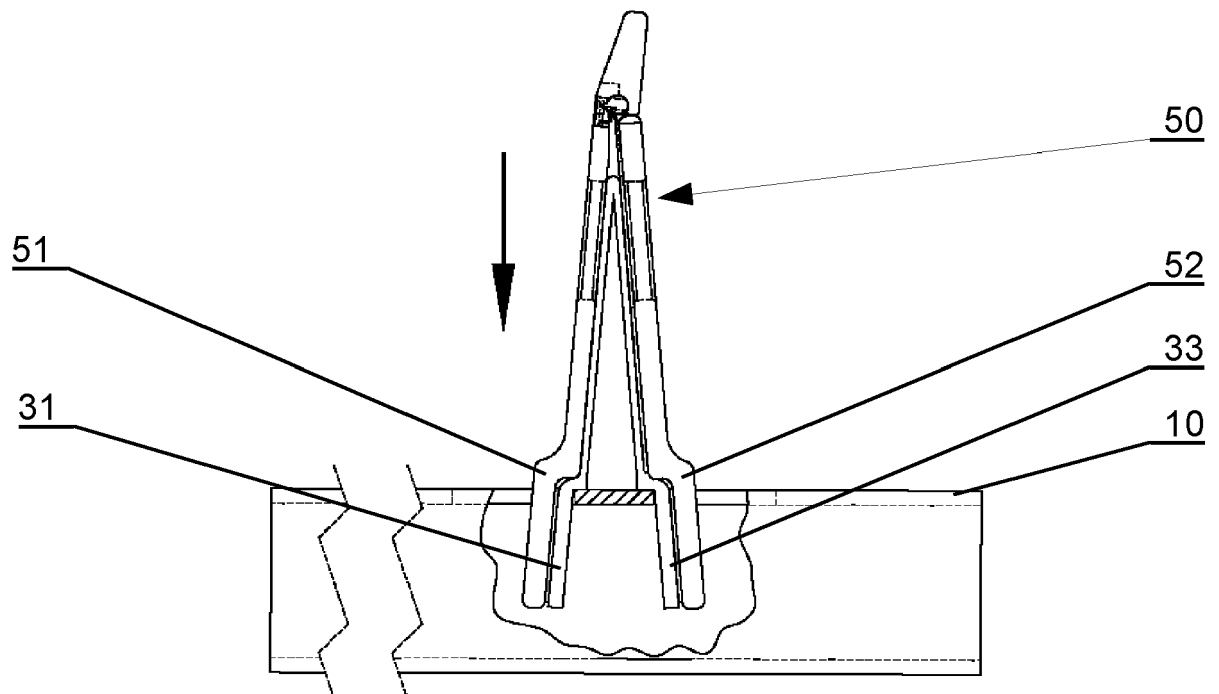


Fig. 6B

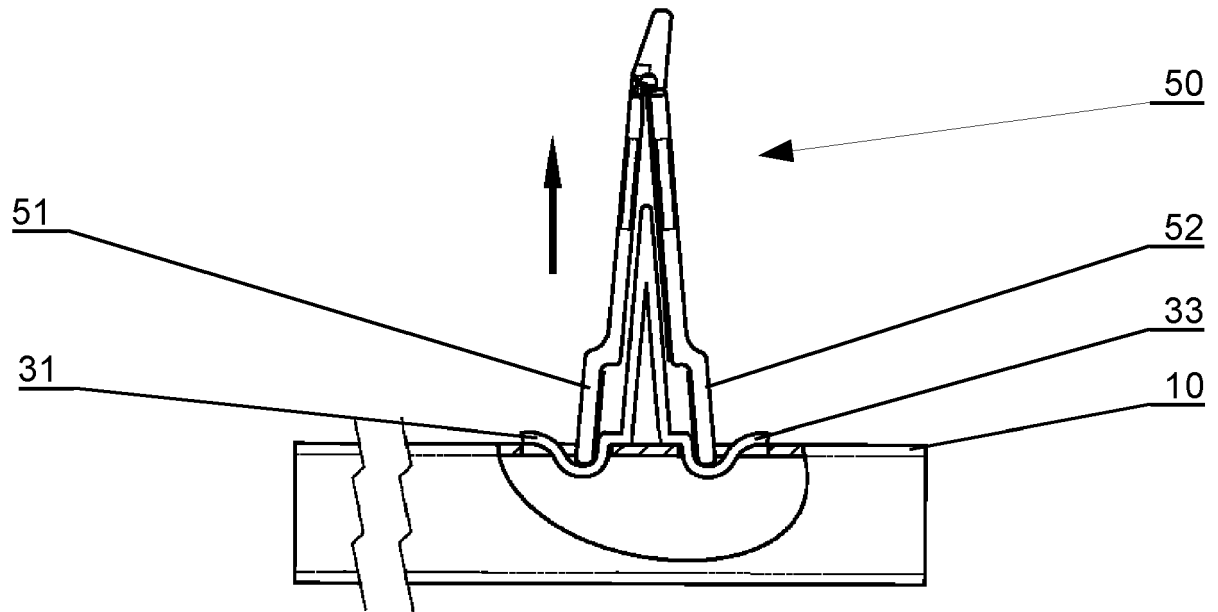


Fig. 6C

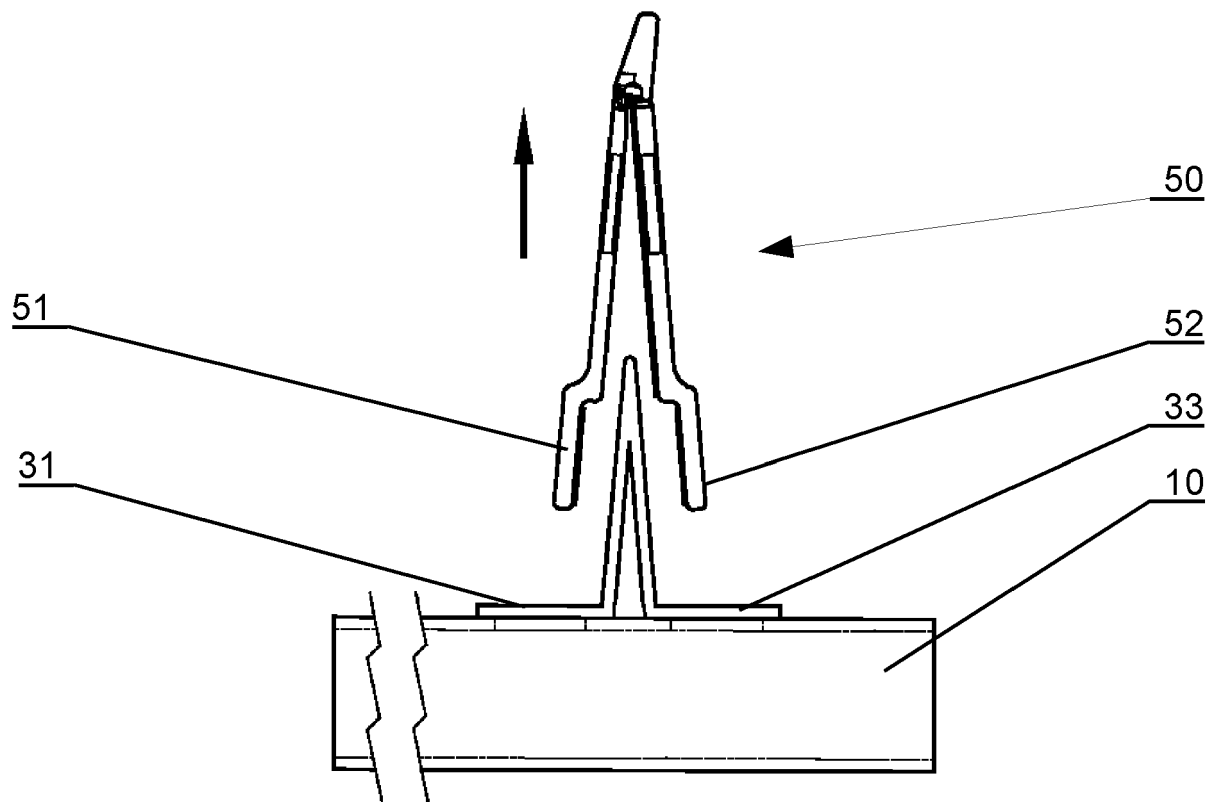


Fig. 6D

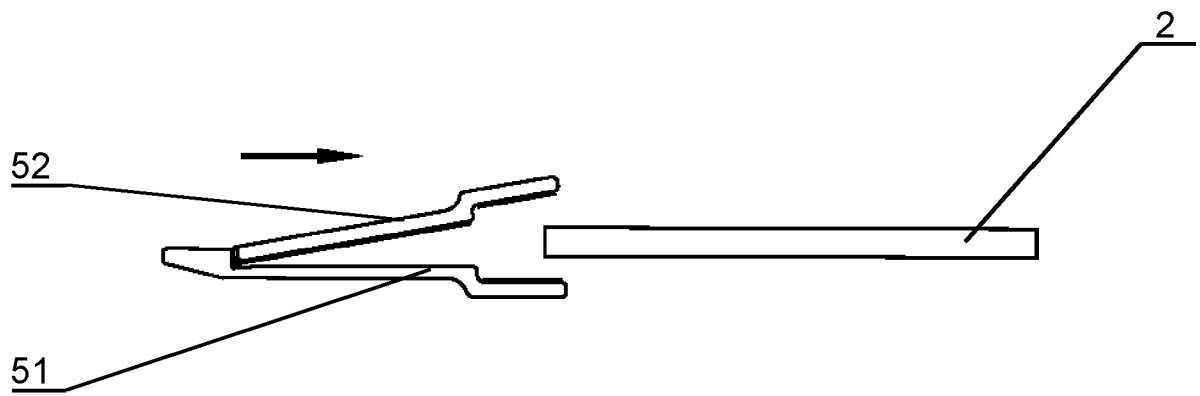


Fig. 6E

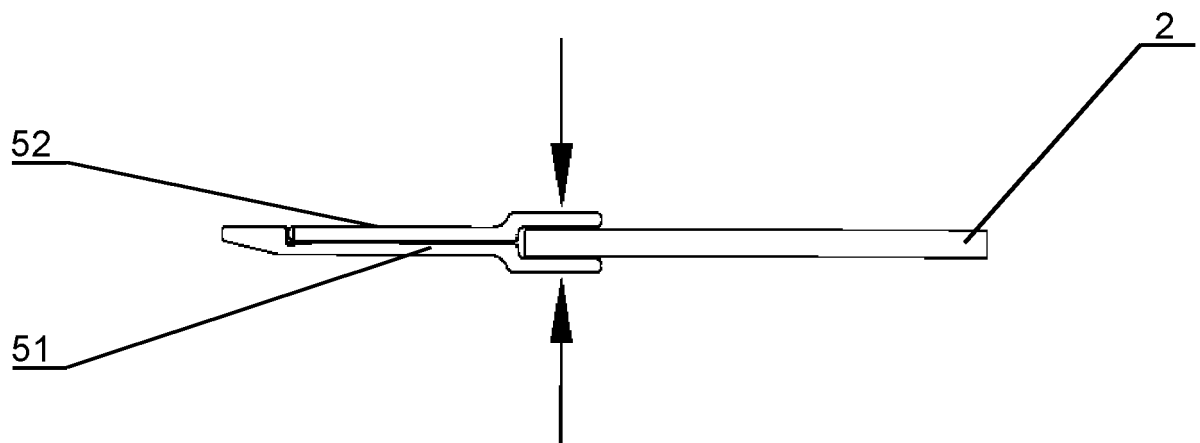


Fig. 6F



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Application Number

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The present search report has been drawn up for all claims			

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EPO FORM 1503 03.82 (P04C01)

Place of search

Munich

Date of completion of the search

20 June 2022

Examiner

Fitterer, Johann

CATEGORY OF CITED DOCUMENTS

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