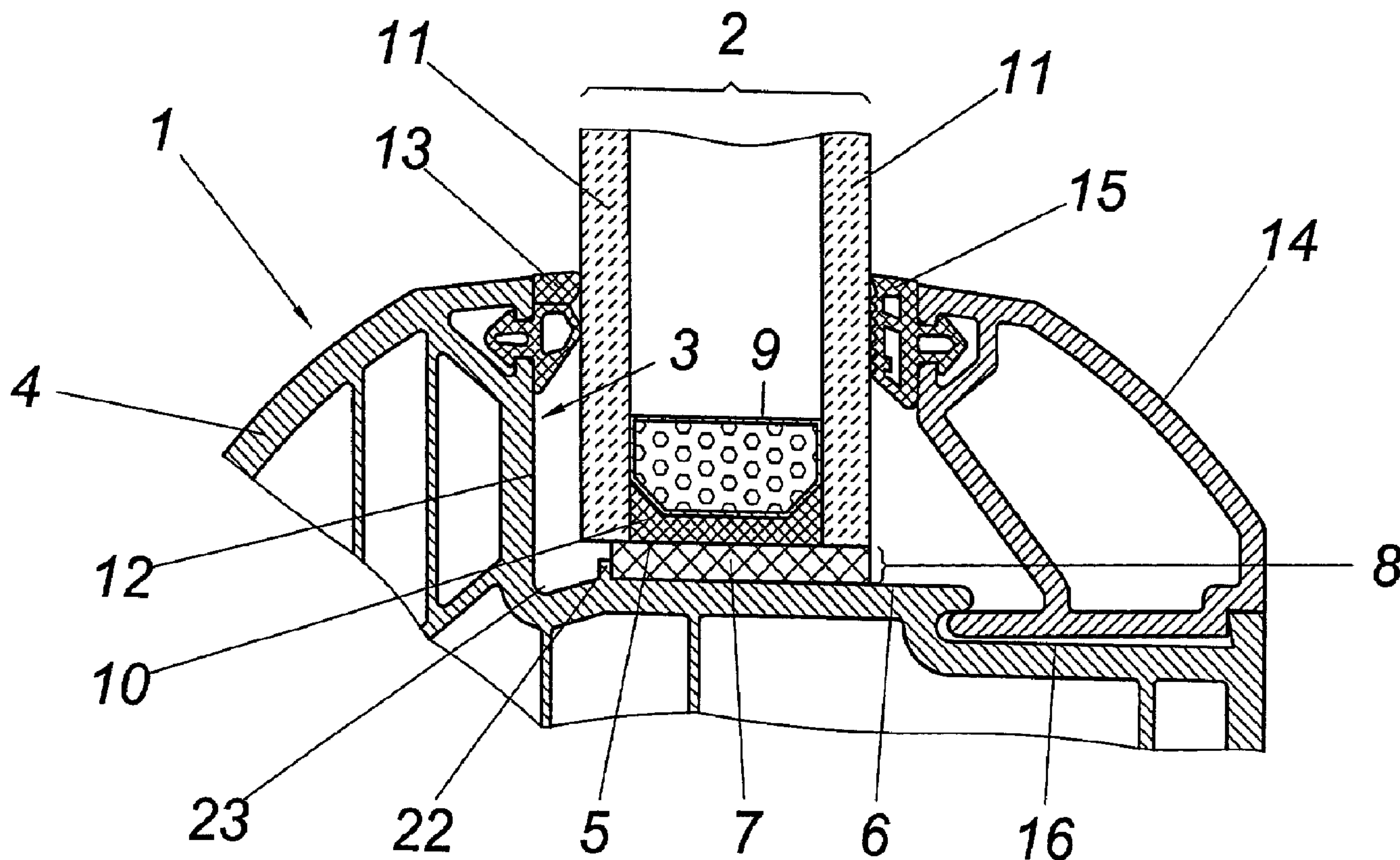




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 (72) Inventeurs/Inventors:
 KITZMULLER, CHRISTIAN, AT;
 HOCHREITER, HERBERT, AT;
 MASOCH, MAURO, CH;
 JAGER, URS, CH
 (73) Propriétaires/Owners:
 SIKA TECHNOLOGY AG, CH;
 INTERNATIONALES FENSTERNETZWERK-HOLDING
 AG, AT
 (74) Agent: FETHERSTONHAUGH & CO.

(54) Titre : BATTANT DE FENETRE OU DE PORTE
 (54) Title: WING FOR A WINDOW OR A DOOR



(57) Abrégé/Abstract:

A sash for a window or door comprises a profile frame (1) that forms a rebate (3). Said rebate accommodates an insulating glazing (2), has a peripheral surface (6) that surrounds the insulating glazing (2) on the face, and has a rebate surface (12) that overlaps the edge of the insulating glazing (2). The sash also comprises an adhesive layer (7), which fixes the insulating glazing (2) inside the rebate (3) and which fills, at least in peripheral areas, a peripheral gap (8) between the faces (5) of the insulating glazing (2) and

(57) **Abrégé(suite)/Abstract(continued):**

the peripheral surface (6) of the rebate that are situated opposite these faces (5). In order to make it possible to exchange the insulating glazing, the invention provides that a limiting element (22), which runs in the peripheral direction and which is provided for the adhesive layer (7), is placed in the area of a covering pane (11) of the insulating glazing (2), said covering pane facing the rebate surface (12), at a distance from the rebate surface (12).

ABSTRACT OF THE DISCLOSURE

A wing for a window or a door is provided with a profile frame (1), which forms a rabbet (3) receiving an insulating glass component (2) and has a perimeter surface (6) that surrounds the insulating glass component (2) on the end side thereof and a rabbet surface (12) that extends beyond the edge of the insulating glass component (2), and with an adhesive layer (7) for securing the insulating glass component (2) within the rabbet (3), said adhesive layer filling, at least in perimeter areas, a perimeter slot (8) between the end surfaces (5) of the insulating glass component (2) and the perimeter surface (6) of the rabbet (3) located opposite said end surfaces (5). To permit replacement of the insulating glass component, it is suggested that, in the region of a cover pane (11) of the insulating glass component (2) that faces the rabbet surface (12), a perimeter boundary ridge (22) for confining the adhesive layer (7) be provided at a distance from the front of the rabbet surface (12).

(Fig. 1)

WING FOR A WINDOW OR A DOOR

1. Field of the invention

The invention relates to a wing for a window or a door with a profile frame, which forms a rabbet receiving an insulating glass component and has a perimeter surface that surrounds the insulating glass component on the end side thereof and a rabbet surface that extends beyond the edge of the insulating glass component, and with an adhesive layer for securing the insulating glass component within the rabbet, said adhesive layer filling, at least in perimeter areas, a perimeter slot between the end surfaces of the insulating glass component and the perimeter surface of the rabbet located opposite said end surfaces.

2. Description of the Prior Art

To simplify the installation of an insulating glass component, it is known (EP 1 070 824 A2) to bond the insulating glass component into a rabbet of the profile frame. For this purpose, a stripe of adhesive is applied along the rabbet surface of the perimeter frame rabbet, which is parallel to the insulating glass component, prior to inserting the insulating glass component into the rabbet. During insertion, the insulating glass component is therefore pressed against the perimeter stripe of adhesive which performs the function of joining together the insulating glass component and the profile frame. The disadvantage of this known construction however is that the load resulting from the insulating glass component is only to be carried away onto the profile frame through the ridge of the rabbet that extends beyond the insulating glass component. Moreover, the inner pane only is supported by the frame, the outer pane however not, said outer pane being carried by the inner pane through the edge connection between inner pane and outer pane, which involves the risk that the outer panes will sag on one side because of the perimeter slot provided between the end surfaces of the insulating

glass component and the perimeter surfaces of the rabbet which are oriented parallel to said end surfaces.

To permit easy fixation of a laminated glass in a profile frame of an explosion proof window, it is known (EP 1 004 740 A2) to bond the laminated glass inserted into a frame rabbet using a layer of adhesive that fills the perimeter slot between the laminated glass and the rabbet. In order for the adhesive layer to be confined to the end surface areas of the laminated glass, a profile bar that defines the adhesive layer can be bonded in the transition area between the perimeter surface of the rabbet and the adjacent rabbet surface overlapping the edge of the laminated glass. Even if the adhesive layer is cut through, this profile bar impairs the replacement of the laminated glass because there remains, above the profile bar, a bonding bridge to the profile frame. Moreover, the profile bar makes it more difficult to remove the humidity entering between the laminated glass and the frame profile, leaving the adhesive layer exposed to the adverse effect of humidity.

Although it is known (DE 41 42 151 A1), for the purpose of exchanging an insulating glass component that has been secured by bonding, to provide for an auxiliary frame that is removably secured to the wing of the window and carries the insulating glass component, this very auxiliary frame complicates the construction. Furthermore, the auxiliary frame, which is secured to the insulating glass component through an adhesive layer, cannot be removed from the insulating glass component.

SUMMARY OF THE INVENTION

It is therefore the object of the invention to improve, using simple means, a wing of a window or a door of the type mentioned herein above that retains the advantages of the known bonding connection between the insulating glass component and the profile frame, more specifically in regard to assembly, without presenting the disadvantages, above all with respect to the exchangeability of the insulating glass component.

The objective of the invention is accomplished by providing, at a distance from the front of the rabbet surface, in the region of a cover pane of the insulating glass component that faces the rabbet surface, a perimeter boundary ridge for confining the adhesive layer.

The boundary ridge not only permits to locally confine the adhesive layer to the end surface area of the insulating glass component, but also to provide advantageous conditions for replacing the insulating glass component because the adhesive layer may be cut through as far as the boundary ridge without risk of damage to the profile frame, since the boundary ridge is disposed a distance from the front of the rabbet surface overlapping the edge of the insulating glass component and may thus be damaged without impairing the frame. The boundary ridge may be assigned to the insulating glass component or to the profile frame. In both cases, the boundary ridge is allowed to unrestrictedly perform its functions.

With the boundary ridge ending at a distance from the front of the insulating glass component or of the perimeter surface of the rabbet, the existing allowance not only makes it more easy to insert the insulating glass component into the frame rabbet but also facilitates replacement of the insulating glass component when the need arises because the adhesive layer can be cut through throughout its extent without residual bonding bridges in the region of the allowance provided between the securing ridge and the insulating glass component or the perimeter surface of the rabbet. The size of the possible allowance depends on the flow behavior of the not yet cured adhesive as it is being introduced into the perimeter slot provided between the insulating glass component and the perimeter surface of the rabbet, though. Another possibility to completely separate the adhesive layer consists in severing the boundary ridge together with the adhesive layer, which requires the boundary ridge to be designed accordingly.

The free spacing between the boundary ridge and the rabbet surface overlapping the edge of the insulating glass component constitutes an advantageous drain for humidity at worst entering this region. To assist in removing humidity alongside

the frame legs, the perimeter surface of the rabbet may form a recessed groove on the side of the boundary ridge that faces the rabbet surface.

To manufacture a wing in accordance with the invention, the insulating glass component is at first inserted into the rabbet of the profile frame and then the perimeter slot provided between the end surfaces of the insulating glass component and the perimeter rabbet surface located opposite said end surfaces is filled up to the boundary ridge, at least in perimeter areas, with an elastic adhesive. After the adhesive layer that fills the perimeter slot has been cured, the wing may be fully loaded. If the adhesive is injected into the perimeter slot around the entire perimeter, a sealed connection is established between the profile frame and the insulating glass component around the perimeter without additional provisions being required. The adhesive may hereby be injected or forced under pressure, into the perimeter slot. If the adhesive were applied prior to inserting the insulating glass component, there would be a risk of shearing it off during jointing, with the resulting connection not providing a material positive connection.

The adhesive layer in the perimeter slot provided between the insulating glass component and the rabbet of the profile frame that surrounds the insulating glass component is intended to provide good support for the individual panes of the insulating glass component relative to the profile frame. This may be advantageously ensured if the perimeter slot is filled with adhesive to a depth corresponding to the thickness of the insulating glass component so that the width of the thus obtained stripe of adhesive corresponds to the overall thickness of the insulating glass component. The adhesive must be sufficiently elastic so as to be capable of undergoing tensile stresses generated by different thermal expansion coefficients between the bonded materials without impairing the bonding connection.

A hot melt adhesive is preferably utilized. Such a hot melt-type adhesive may be processed when hot and is capable of fixing the insulating glass component in the profile frame as a result of the increase in viscosity during the cooling stage so that the wing may undergo further processing shortly after the adhesive has been

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applied. If, in addition, said adhesive is capable of thermoplastic deformation, it is ensured that, when the wing is caused to move, the bonding connection remains intact and the adhesive will not peel off the frame profile as this could be the case with crystalline thermoplastic adhesives. It has been found out that, with the
5 adhesive bond hardening within about 30 seconds to two hours after the hot melt adhesive has cooled down, the needs of window and door construction can be well met. The use of a reactive adhesive constitutes another possibility. It has been found that two-component adhesives, more specifically polyurethane-based, epoxide-based or (meth)acrylate-based ones, are particularly suited. Such type
10 reactive adhesives allow for fast hardening in conjunction with strong manipulability.

To be suited, the adhesive has to exhibit a certain stability and an appropriate viscosity. It is hereby to be taken into account that the adhesive is to be applied to a sufficient coating thickness on the one side and that the force
15 needed to process the adhesive under pressure is not too large on the other side.

In accordance with an aspect of the invention, there is provided a wing for a window or a door with a profile frame, which forms a rabbet receiving an insulating glass component and has a perimeter surface that surrounds the insulating glass component on the end side thereof and a rabbet surface that
20 extends beyond the edge of the insulating glass component, and with an adhesive layer for securing the insulating glass component within the rabbet, said adhesive layer filling, at least in perimeter areas, a perimeter slot between end surfaces of the insulating glass component and the perimeter surface of the rabbet located opposite said end surfaces, wherein there is provided, at a distance from the front
25 of the rabbet surface, in the region of a cover pane of the insulating glass component that faces the rabbet surface, a perimeter boundary ridge for confining the adhesive layer:

In accordance with another aspect of the invention, there is provided a method for manufacturing a wing for a window or a door according to the
30 previous paragraph wherein the insulating glass component being inserted into

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the rabbet of the horizontally positioned profile frame and being fastened therein by bonding, wherein the insulating glass component is first inserted into the rabbet of the profile frame and that the perimeter slot between the end surfaces of the insulating glass component and the perimeter surface of the rabbet located
5 opposite said end surfaces is next filled with an elastic adhesive, at least in perimeter areas, as far as the boundary ridge.

BRIEF DESCRIPTION OF THE DRAWING

The subject matter of the invention is shown by way of example in the drawing wherein

10 FIG. 1 is a detail view of a wing for a window or a door in accordance with the invention showing the cross-section of a frame leg,

FIG. 2 is a view of a design variant corresponding to the illustration shown Fig. 1 and

15 FIGS. 3 through 5 are schematic top views of a line for manufacturing wings in accordance with the invention in various work positions.

DESCRIPTION OF THE PREFERRED EMBODIMENT

A wing of a window or a door in accordance with the invention consists of a profile frame 1 and of an insulating glass component 2 that is inserted in a perimeter rabbet 3 of the profile frame 1. To this purpose, the
20 rabbets 3 of the frame legs 4

form a perimeter surface 6 that is located opposite the end surfaces 5 of the insulating glass component 2 and that encloses the insulating glass component 2. An adhesive layer 7, which fills the perimeter slot 8 provided between the end surfaces 5 of the insulating glass component 2 and the perimeter surface 6 of the rabbet 3, serves to secure the insulating glass component 2 in the rabbet 3. As the adhesive layer 7 has a width that is adapted to the thickness of the insulating glass component 2, the cover panes 11 of the insulating glass component 2, which are joined together through a spacer profile 9 and a seal 10, are supported individually relative to the frame legs 4, which permits to advantageously divert the load from the insulating glass component 2 onto the frame legs 4. The bonding achieved in this way has the advantage that the stiffness of the insulating glass component 2 may be used without restriction to confer stability to the wing.

From the Figs. 1 and 2 it can be seen that the rabbet 3 of the profiles of the frame legs 4 forms a rabbet surface 12 that overlaps the edge of the insulating glass component 2; however, as opposed to conventional wings, this rabbet surface 12 does not serve to secure the insulating glass component 2, but is only intended to cover the perimeter edge of the insulating glass component 2, with a seal 13 that fits said edge in the region of the rabbet surface 12 being provided. On the opposite inner side of the insulating glass component 2, the edge thereof is covered by a covering profile 14 and a seal 15 retained in the covering profile 14, said seal in turn only accomplishing sealing functions and playing no part in retaining the insulating glass component 2. Therefore, the covering profile 14 only needs to be snapped into a groove 16 of the frame leg 4.

To manufacture a wing in accordance with the invention, the profile frame 1, which is formed by the assembled frame legs 4, is positioned onto an assembly table 17 so that the insulating glass component 2 may be inserted into the rabbet 3 intended to receive it using a hoisting device 18. Said hoisting device 18 is comprised of a lifting device 20 provided with suction cups 19 in order to align the received insulating glass component 2 relative to the profile frame 1 on the assembly table 17 and to insert it into the profile frame 1 using a swivel arm 21. The perimeter slot 8 (Fig. 4) that remains between the inserted insulating glass

component 2 and the rabbet 3 of the profile frame 1 may now be filled with an adhesive, said adhesive being injected or forced under pressure into the perimeter slot 8. To prevent the adhesive introduced into the perimeter slot 8 from flowing out of the perimeter slot 8 toward the ridge 12 of the frame legs, said slot is closed by a boundary ridge 22 provided in the region of the outer cover pane 11, said boundary ridge freely extending, according to Fig. 1, beyond the perimeter surface 6 of rabbet 3 at a distance from the rabbet surface 12. As a result, the perimeter slot 8 is only filled with adhesive to a depth that corresponds to the thickness of the insulating glass component 2 in order to make sure the desired bonding connection between the end surfaces 5 of the insulating glass component 2 and the frame legs 4 is achieved. After the adhesive introduced into the perimeter slot 8 has been cured by cooling or reactivity, the assembled wing may be lifted through the insulating glass component 2 from the assembly table 18 using the hoisting device 18 and may be moved to possible further processing stations. The manipulability of the wing is not dependent on the chemical curing of the adhesive, which may occur later.

The boundary ridge needs not be assigned to the frame legs 4. As can be seen from Fig. 2, a boundary ridge 22 that is mounted to the cover pane 11 neighboring the rabbet surface 12 also meets the requirements placed thereon with regard to the local confinement of the adhesive layer 7 to the area of the end surfaces 5 of the insulating glass component 2, this providing the advantage that the adhesive layer 7 may be severed later on, either in the region of the slot remaining between the boundary ridge 22 and the insulating glass component (Fig. 1) or the perimeter surface 6 (Fig. 2) resp., or in the region of the boundary ridge 22, which, in this case, must also be cut through.

According to Fig. 1, the perimeter surface 6 between the boundary ridge 22 and the rabbet surface 12 may form a recessed groove 23 through which humidity possibly entering between the seal 13 and the insulating glass component 2 may be advantageously drained so that the adhesive layer 7 needs not be disadvantageously affected by humidity.

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CLAIMS:

1. A wing for a window or a door with a profile frame, which forms a rabbet receiving an insulating glass component and has a perimeter surface that surrounds the insulating glass component on the end side thereof and a rabbet surface that extends beyond the edge of the insulating glass component, and with an adhesive layer for securing the insulating glass component within the rabbet, said adhesive layer filling, at least in perimeter areas, a perimeter slot between end surfaces of the insulating glass component and the perimeter surface of the rabbet located opposite said end surfaces, wherein there is provided, at a distance from the front of the rabbet surface, in the region of a cover pane of the insulating glass component that faces the rabbet surface, a perimeter boundary ridge for confining the adhesive layer.
2. The wing according to claim 1, wherein the boundary ridge is provided on the insulating glass component.
3. The wing according to claim 1, wherein the boundary ridge protrudes upward from the perimeter surface of the rabbet.
4. The wing according to any one of claims 1 through 3, wherein the boundary ridge ends at a distance from the front of the insulating glass component or the perimeter surface of the rabbet.
5. The wing according to any one of claims 1 through 4, wherein the boundary ridge is severable.
6. The wing according to any one of claims 1 through 5, wherein the perimeter surface of the rabbet forms a recessed groove on the side of the boundary ridge that faces the rabbet surface.
7. A method of manufacturing a wing for a window or a door according to claim 1, the insulating glass component being inserted into the rabbet of the horizontally positioned profile frame and being fastened therein by bonding, wherein the insulating glass component is first inserted into the rabbet of the profile frame and that the perimeter slot between the end surfaces of the insulating

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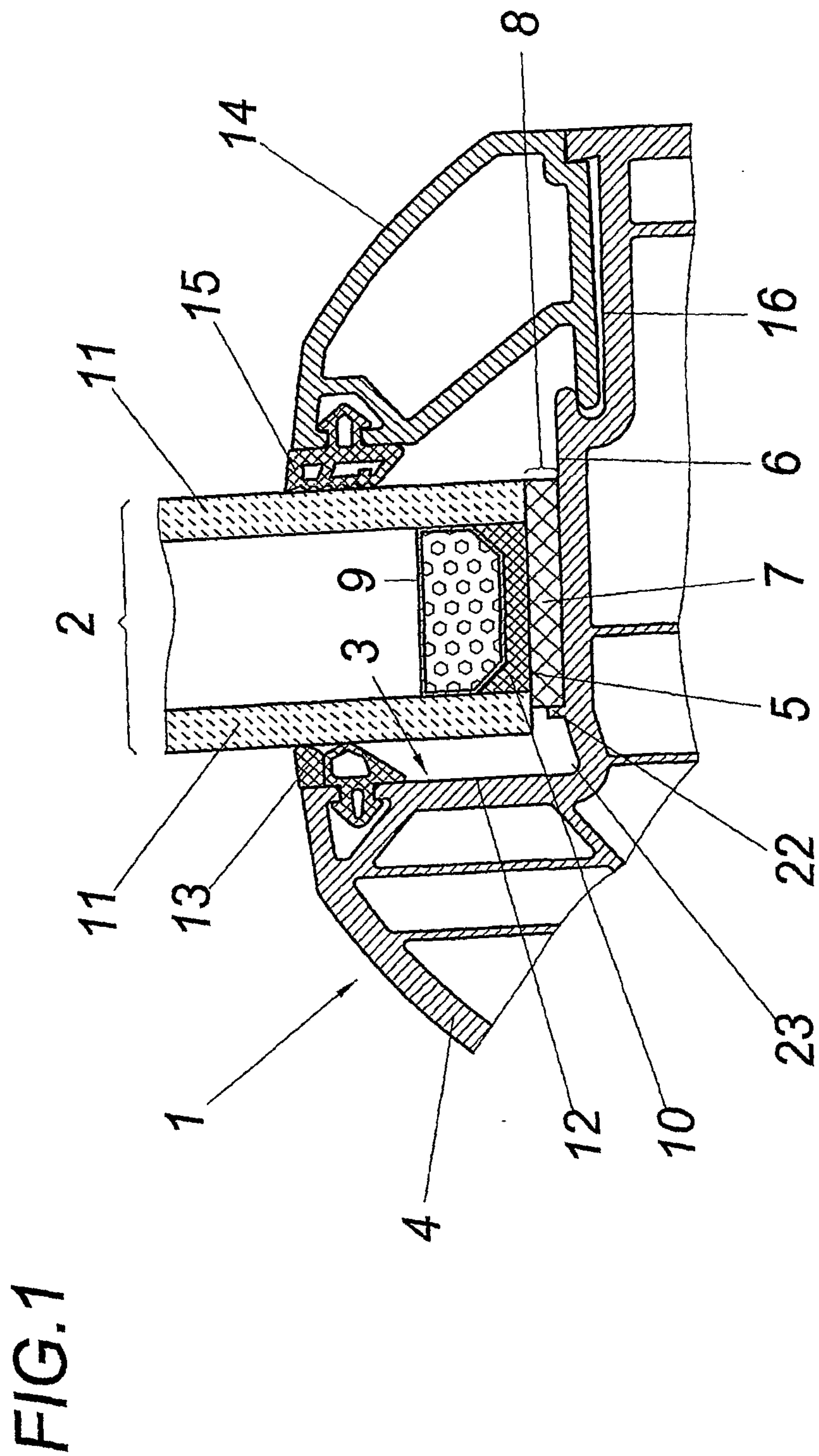
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glass component and the perimeter surface of the rabbet located opposite said end surfaces is next filled with an elastic adhesive, at least in perimeter areas, as far as the boundary ridge.

8. The method of claim 7, wherein the adhesive is injected or forced
5 under pressure into the perimeter slot.
9. The method according to claim 7 or 8, wherein a hot melt adhesive is employed as an elastic adhesive.
10. The method according to claim 7 or 8, wherein a reactive adhesive is employed as an elastic adhesive.
- 10 11. The method according to claim 10, wherein the reactive adhesive is selected from one of a polyurethane-based, epoxide-based and (meth)acrylate-based two-component adhesive.

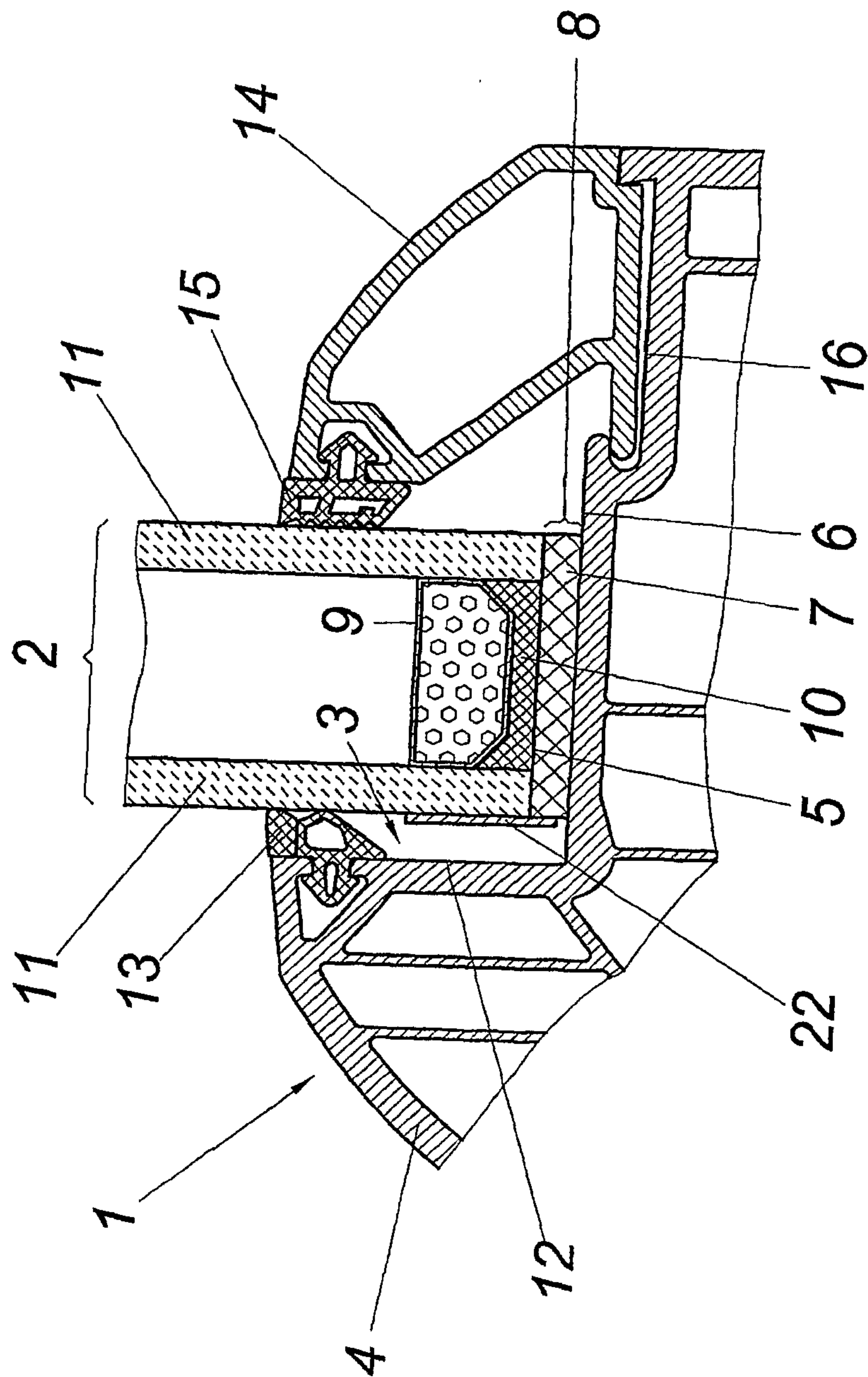
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FIG.2



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FIG.3

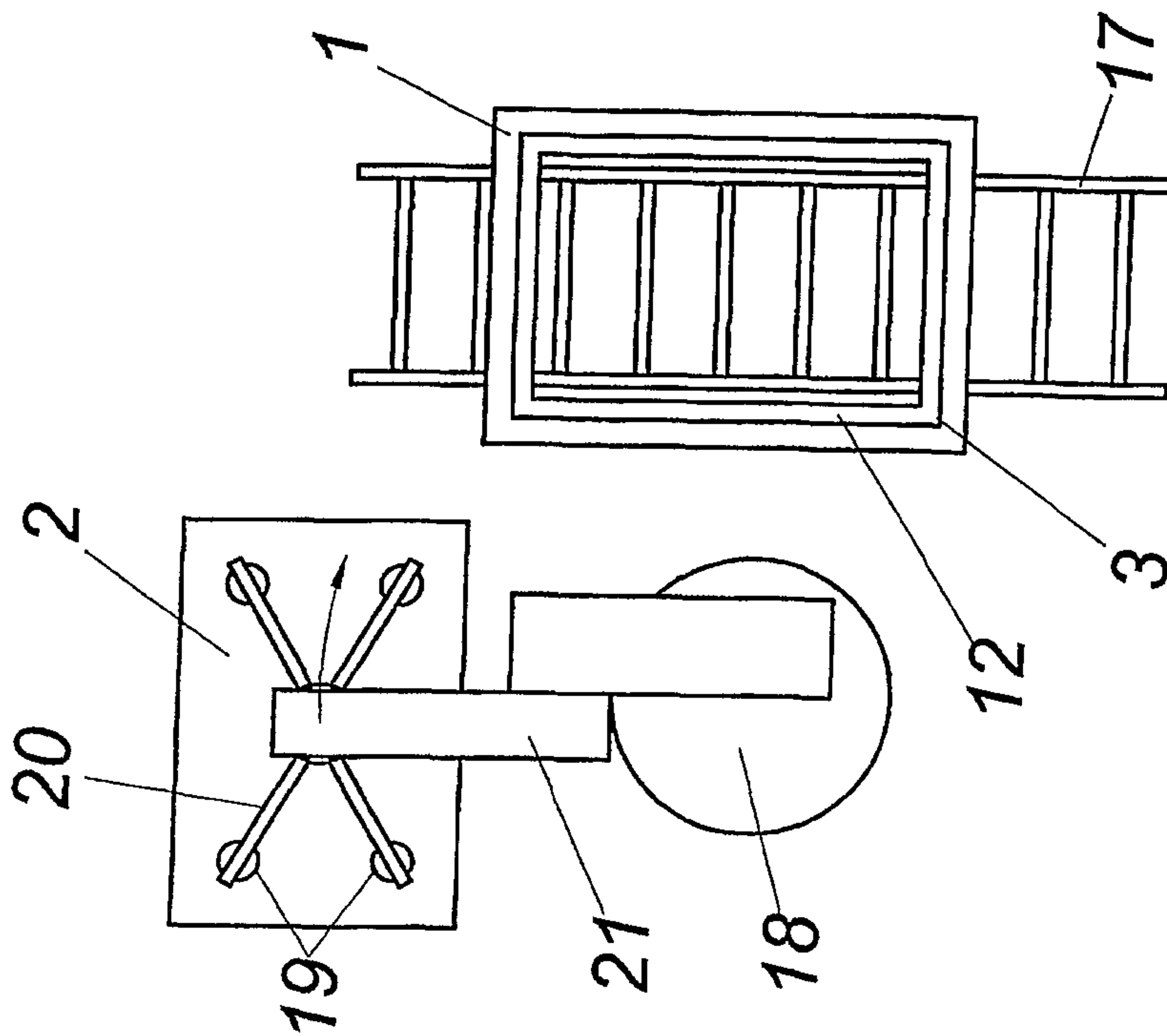


FIG.4

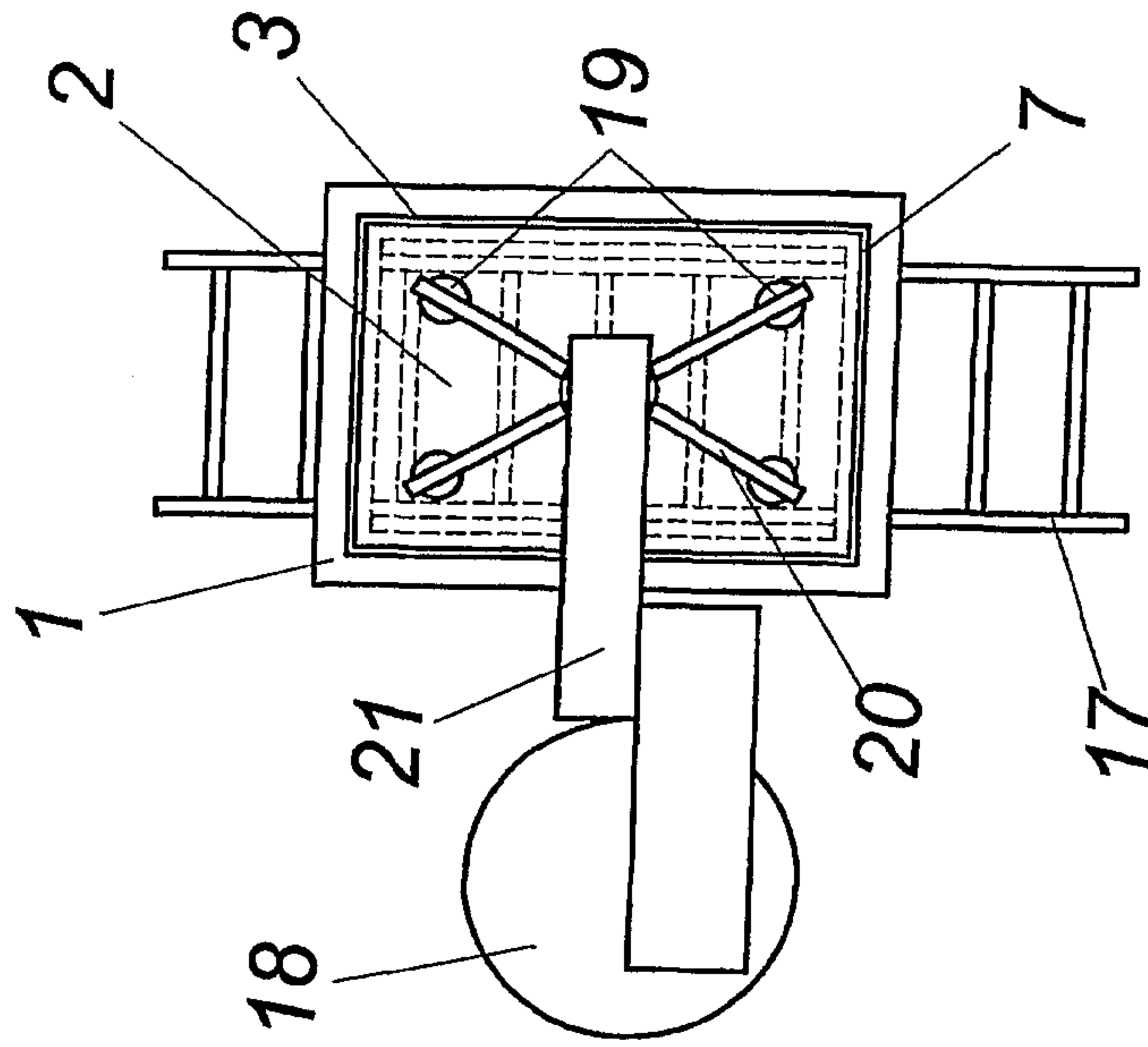


FIG. 5

