

Title: Glass door leaf pivotable about an upper and a lower pivot pin

Description

- The invention relates to a glass door leaf, which is pivotable about an upper pivot pin and a lower pivot pin, with leaf profiles forming the upper and lower seals of a glass pane, and with a door closer, which is concealed in the upper leaf profile and has an actuation arm, which at the one end is connected to a pivoting axle of the door closer and, at the other end, is rotatably supported at an upper sub-construction, the pivot pins forming a swing bearing, disposed, at one end of the width of the glass door leaf, between the glass door leaf and the upper sub-construction and a lower sub-construction.
- Glass door leaves of the above mentioned species can be used as individual door panels or in combination with stationary glass panels, which laterally adjoin the glass door leaf. The additional disposition of a door closer effects, in particular under unfavourable atmospheric conditions, the desired automatic closing of the door. Glass door leaves of this species integrate with multi-leaf entrance doors, where the individual door panels are both pivotable and displaceable into a parking position by means of an upper roller rail guide.
- The invention to be explained in the following relates to the technical embodiment of a glass door leaf, which, in

relation to the associated upper or lower sub-construction, is pivotably supported only, i.e. it is intended to forgo the displaceable support in an upper guiding rail.

A device of this species is known from DE 101 57 805 A1.

5 In the prior art device, a pivotable door leaf panel integrates with a sliding wall, which panel is both displaceable and pivotable. For this purpose, the door leaf panel is suspended at a carriage, which is disposed at about half-way of the width of the door leaf panel and
10 carries the door leaf panel and has a pivoting axle for the door leaf panel. A second pivoting axle is formed through the pivot pin of a door closer. At its other end, the actuating arm connected to the pivot pin of the door closer is supported, via a rotating axle, at a pivot bearing forming
15 a component of the sub-construction. When pivoting the door leaf panel, as a result of the pivoting axle being disposed at about half-way of the width of the door leaf panel in the area of the carriage, the door leaf panel will pivot with its frontal edges delimiting the width of the door
20 leaf panel to both sides of the guiding rail, which guides the carriage. This requires provision of sufficient space on both sides of the closed initial position. Furthermore, adjoining the proper upper sub-construction, a hollow cylindrical attachment profile with a roller rail disposed
25 below the attachment profile requires a comparatively high construction height of the overall device.

DE 94 21 374 U1 relates to a pivotable sliding door consisting of displaceable door leaves, wherein the two central ones are formed as displaceable leaves and the two exterior ones as pivotable leaves, all leaves being
5 pivotable about axles disposed at the end of their widths. The leaves have an upper and a lower leaf profile respectively, clamping between them a glass pane, which profile is joined by an additional transverse beam, which is hollow cylindrical in cross-section. The transverse beam
10 serves for the concealed reception of a door closer, the actuating arm thereof being supported at the other end by means of a slide member likewise in a hollow cylindrical frame profile forming a component of a sub-construction. As the leaf profile, the transverse beam and the frame
15 profile are superposed, the prior solution assumes having sufficient room height.

It is an object of the invention, while forgoing the displaceability of the door panel, to improve a glass leaf door of the species mentioned above in so far as, with a
20 concealed disposed door closer and the use of the sliding leaf door as a double-action door, by means of a suitable disposition of the swing bearings and of the door closer in conjunction with a special embodiment of the upper sub-construction the utilization of the glass leaf door is likewise
25 possible, even if only a relatively small construction height is available.

The invention solves the given problem with the teaching according to claim 1.

According to the invention, both the upper and the lower swing bearings as well as the door closer are disposed within the respective leaf profile, the sub-construction, which receives the slide member of the door closer, being formed as a flat plate in an inexpensive and space saving way, the thickness of the plate being only determined by the reception of the slide channel.

Further advantageous embodiments of the invention are the subject matter of the dependent claims.

The invention allows for realizing a glass door leaf, which can be used as a double-action door, where just a low construction height is available, which fact is further enhanced, if the pivot pin, disposed in the lower pivot reception, engages in a bearing plate, which forms the lower sub-construction and is screwed to the floor.

As the pivot pins, forming the upper and the lower swing bearings, are each disposed in a pivot reception embedded in the upper and the lower leaf profiles, it is sufficient to clamp the glass pane between the upper and the lower leaf profiles, such that the frontal edges delimiting the width of the glass pane can be formed frameless.

In the following, the invention will be explained in more detail, reference being made to an exemplary embodiment, in which:

Figure 1: shows a vertical longitudinal section through the glass leaf door.

Figure 2: shows the section according to line II-II in Figure 1.

5 Figure 3: shows a perspective enlarged illustration of the lower swing bearing.

Figure 4: shows the door support strip in a perspective illustration enlarged in relation to Figure 1.

Figure 5

10 and 6: show the upper leaf profile or the lower leaf profile in a perspective illustration.

Figure 7: shows, in a perspective illustration in relation to Figure 4 and as an exploded view, the door support strip including the slide channel.

15 According to Figure 1, a glass door leaf 1 is formed as a double-action door 2, a glass pane 5 being clamped between an upper leaf profile 3 and a lower leaf profile 4. A pivot pin 6 forming an upper swing bearing 8 is disposed in the upper leaf profile 3 and a pivot pin 7 forming a lower swing bearing 9 is disposed in the lower leaf profile 4. The pivot pins 6 and 7 are respectively supported in an upper pivot reception 16 or in a lower pivot reception 17 and thus form the upper swing bearing 8 or the lower swing bearing 9. As can be seen, the swing bearings 8 and 9 are embedded in the upper leaf profile 3 or in the lower leaf profile 4 respectively. The upper pivot pin 6 engages in a

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door support strip 18 forming an upper sub-construction 12; the lower pivot pin 7 engages in a support plate 23, which is screwed to the floor 23 and forms a lower sub-construction 15.

- 5 A door closer 10 is concealed in the upper leaf profile 3, the actuating arm 14 thereof being connected to a pivoting axle 11 of the door closer 10. As can be seen particularly in Figure 7, an opening 19 delimited on the front side is provided in the plate-shaped door support strip 18, which
10 forms the upper sub-construction 12 and is connected to the ceiling 13 via screw connections 26, into which opening a slide channel 20 will be inserted by means of further screw connections 27. A slide member 21, disposed at the free end of the actuating arm 14, is forcibly guided in the
15 slide channel 20.

As the upper or lower leaf profiles 3 and 4, illustrated in Figures 5 and 6, reliably clamp the glass pane 5, the frontal edges 24 and 25 of the glass pane 5, as depicted in Figure 1, delimiting the width B of the double-action door 2, can be
20 formed frameless.

List of reference numerals

	1	glass door leaf
	2	double-action door
	3	upper leaf profile
5	4	lower leaf profile
	5	glass pane
	6	upper pivot pin
	7	lower pivot pin
	8	upper swing bearing
10	9	lower swing bearing
	10	door closer
	11	pivoting axle
	12	upper sub-construction
	13	ceiling
15	14	actuating arm
	15	lower sub-construction
	16	upper pivot reception
	17	lower pivot reception
	18	door support strip
20	19	opening
	20	slide channel
	21	slide member
	22	floor
	23	support plate
25	24	frontal edge
	25	frontal edge
	26	screw connection
	27	screw connection
	B	width of the glass door leaf

Patent claims

1. A glass door leaf, which is pivotable about an upper pivot pin and a lower pivot pin, with leaf profiles forming the upper and lower seal of a glass pane,
5 and with a door closer, which is concealed in the upper leaf profile and has an actuation arm, which at the one end, is connected to a pivoting axle of the door closer and, at the other end, is rotatably supported at an upper sub-construction, the pivot
10 pins forming a swing bearing, disposed at one end of the width of the glass door leaf, between the glass door leaf and the upper sub-construction and a lower sub-construction, characterized in that the glass door leaf (1) is formed as a double-action door (2), in that
15 the pivot pins (6, 7) forming the swing bearings (8, 9) are each disposed in a pivot reception (16, 17) embedded in the upper leaf profile (3) and in the lower leaf profile (4), and in that the upper sub-construction (12) consists of a plate-shaped door support strip (18) screwed to a ceiling (13) into which
20 the upper pivot pin (6) engages, and in that the door support strip (18) has an opening (19) delimited on the front side, in which a slide channel (20) is releasably embedded, wherein a slide member (21),
25 which is rotatably connected to the actuating arm (14), is forcibly guided.

2. A glass door leaf according to claim 1, characterized in that the pivot pin (7) disposed in the lower pivot reception (17) engages in a support plate (23), which is screwed to a floor (22) and forms the lower sub-
5 construction (15).
3. A glass door leaf according to claim 1 and 2, characterized in that the frontal edges (24, 25) delimiting the width (B) of the glass pane (5) are formed frameless.
- 10 4. A glass door leaf according to any of the preceding claims, characterized in that the door support strip (18) extends over the entire width of the glass leaf door (1).