

Title: Door with a rotatably supported door leaf**Description**

The present invention relates to a door with a rotatably supported door leaf, which is operable by means of a floor spring disposed underneath the door, the door leaf being
5 formed with at least two parallel glass panes, with a surrounding spacer between the glass panes and with a support element disposed within the door leaf between the glass panes.

10 Although such doors are very well known, their conception with regard to the swing bearing is not yet fully developed.

Therefore, it is an object of the present invention to improve a door of the above explained species especially with regard to the swing bearing thereof and to improve the
15 ease of operation.

This problem is solved for a door with a rotatably supported door leaf, which is operable by means of a floor spring disposed underneath the door in the floor, the door leaf being formed with at least two parallel glass panes, with a
20 surrounding spacer between the glass panes and with a support element disposed, at least partially in the edge area of the door leaf, between the glass panes, in that the support element located between the glass panes is connectable to a carrier bearing on the outside of one of
25 the glass panes, which carrier is engageable with a drive

shaft of the floor spring, said shaft being located outside the plane of the door, and with an upper bearing support.

This arrangement does not only result in an aesthetically pleasing swing bearing of the door, but also in an improved
5 construction thereof.

Advantageous embodiments of the inventive door will result from the dependent claims.

According to an advantageous further development, another support element is disposed in the upper area of
10 the door leaf between the glass panes, which is connectable to a carrier, which also bears on the outside of the same glass pane and is engageable with a shaft of an upper supporting part, said shaft being likewise located outside the plane of the door. Thus, the door leaf is
15 supported substantially in the same way in the upper and in the lower areas, such as to be able to use identical components. Multiplicity of parts and production cost are thus reduced.

The conception of the carrier is particularly simplified, if,
20 according to a preferred embodiment, the latter consists of two elements which are combined to form an angle section. This construction can be used either only for the lower or only for the upper or for both carriers as well.

Connecting the two elements is very easily realized, if the
25 two elements are connected to each other via screws.

However, it is also possible to form the carrier integrally as a casting.

Preferably, the angle section has a vertical and a horizontal leg, the vertical leg bearing on the outside of the glass pane and the horizontal leg terminating with the bottom edge or the top edge of the door. This results in a reliable and precise swing bearing of the door.

According to an advantageous embodiment, the screws, connecting the two elements of the carrier, are screwed from the side of the vertical leg into the horizontal leg. As a result of this conception, the screw heads are oriented to the outside of the corresponding glass pane and therefore they are not eye-catching, because they are concealed.

Connecting the vertical leg of the carrier to the support element is preferably realized via screws, which are accessible from the outside, such that adjustments can be done once mounting is complete.

For visual reasons, the screws are covered by a cover cap such as to be concealed from an observer.

In order to achieve a sealing as tight as possible at the bottom of the door, according to an advantageous further development, a door gasket is disposed at the bottom edge of the door between the two glass panes.

According to a preferred embodiment, this door gasket consists of an nearly heart-shaped sealing body, an

extension thereof pointing upwards and engaging in a holding rail, and the two flanks thereof being provided with one sealing lip each, extending vertically from the flank.

In order to guarantee a stable positioning of the sealing
5 body, according to an advantageous embodiment, the extension has undercuts at the lateral sides thereof for engaging in the holding rail, which is substantially C-shaped in cross-section. Upon closing the door, the door gasket is automatically pushed out from the space between
10 the glass panes, in order to achieve a sealing in the closed position of the door.

Further details, characteristics and advantages of the invention will become apparent from the following description of preferred exemplary embodiments, reference
15 being made to the figures, in which

Figure 1: shows a longitudinal section through a lower area of an inventive door;

Figure 2: shows a cross-section through a lower area of an inventive door;

20 Figure 3: shows a longitudinal section through an upper area of an inventive door according to a first embodiment;

Figure 4: shows a longitudinal section through an upper area of an inventive door according to
25 a second embodiment, and

Figure 5: shows a longitudinal section through an upper area of an inventive door according to a third embodiment.

Substantially, the door consists of two glass panes 1, 2
5 which are parallel to each other and between which a spacer 3 is inserted. A support element 4 is inserted between the two glass panes 1, 2, in the area of the swing bearing of the door. This support element 4 is connected to one respective carrier 5, which is formed as an angle
10 section with a vertical leg 5a and a horizontal leg 5b. The vertical leg 5a is screwed to the horizontal leg 5b via screws 6, which are screwed from the vertical leg 5a into the horizontal leg 5b, such that, in the mounted state, the screw heads point towards the glass pane 1 for instance
15 (see Figure 1) and therefore are not visible from the outside.

The vertical leg 5a bears on the outside of the glass pane 1 and, via screws 7, is screwed to the support element 4, which is disposed between the two glass panes 1, 2, the
20 screws 7 passing through bores 18 in the glass pane 1. The thread of the screws 7 is provided with a glass protection—22. The horizontal leg 5b substantially terminates with the bottom edge of the door (compare Figure 2) and is in contact with a drive shaft of a floor
25 spring 8, said shaft being located outside the plane of the door.

The screws 7, connecting the vertical leg 5a to the support element 4, are screwed into the support element 4 from the outside (compare Figure 1) and thus they are visible from the outside. In order to avoid this, a cover cap 9 covers the
5 screws 7.

As can be seen particularly in Figure 2, a door gasket 10 is inserted between the two glass panes 1, 2 at the bottom edge of the door. This door gasket 10 consists of an nearly heart-shaped sealing body, which has an extension 10a
10 pointing upwards and engaging in a holding rail 11. At both its flanks the door gasket 10 is provided with one sealing lip 10b respectively extending vertically from the flank. Furthermore, the extension 10a has undercuts 10c at its lateral sides for engagement with the holding rail 11, which
15 is substantially C-shaped in cross-section.

Three embodiments of the inventive door are shown in Figure 3 to 5, which illustrate the upper connection of the door to a swing bearing.

The upper connection of the door to the swing bearing is
20 substantially designed in the same way as the lower connection, but obviously there is no floor spring in the upper area. Depending on the local circumstances, a special bearing element is employed instead.

According to Figure 3, the door is supported at a door post
25 12 in the upper area. A bearing support 14, which projects from the door post 12 and forms, together with the

horizontal leg 5b of the carrier 5, the upper swing bearing for the door, is screwed to this door post 12, for example by means of a screw 13.

According to Figure 4, the door is supported at a steel door frame 15 in the upper area. The bearing support 14, which projects from the steel door frame 15 and forms, together with the horizontal leg 5b of the carrier 5, the swing bearing for the door, is supported at this steel door frame 15. In this case, the bearing support 14 is attached to the steel door frame 15 via holding bolts 16 inserted into the steel door frame 15, the bolt heads being provided with a peripheral groove 16a, in which a clamping screw 17, disposed at the bearing support 14, is engageable for releasing or fastening the bearing support 14.

According to Figure 5, the door is retained in the upper area at a glass wall (overpanel), the structure thereof being identical to the door and consequently consisting of two glass panes 1, 2, a spacer 3 located therebetween, and a support element 4 for supporting a carrier 19. As shown in Figure 5, the conception of the swing bearing in the upper area of the door and in the lower area of the glass wall is substantially the same; however, one of the two cooperating horizontal legs 5b has a swing shaft and the other one has a reception for the swing shaft.

As is particularly well illustrated in Figure 5, the support elements 4 are not disposed over the entire width of the

door, but are only disposed in the area of the swing bearings.

In the exemplary embodiments, the door is rebated, such that for example the glass pane 2 is smaller than the glass
5 pane 1. The surrounding border areas of the door leaf and of the overpanel as well are closed with a terminal profile 21.

List of reference numerals

	1	glass pane
	2	glass pane
	3	spacer
5	4	support element
	5	carrier
	5a	vertical leg
	5b	horizontal leg
	6	screws
10	7	screws
	8	floor spring
	9	cover cap
	10	door gasket
	10a	extension
15	10b	sealing lip
	10c	undercut
	11	holding rail
	12	door post
	13	screw
20	14	bearing support
	15	steel door frame
	16	holding bolt
	16a	groove
	17	clamping screw
25	18	bores
	19	carrier
	20	overpanel

- 21 terminal profile
- 22 glass protection

Patent claims

1. A door with a rotatably supported door leaf, which is operable by means of a floor spring (8) disposed underneath the door in the floor, the door leaf being formed with at least two parallel glass panes (1, 2), with a surrounding spacer (3) between the glass panes (1, 2) and with a support element (4) disposed at least partially in the lower area of the door leaf between the glass panes (1, 2), the support element (4) being connectable to a carrier (5) bearing on the outside of one of the glass panes (1, 2), which carrier is engageable with a drive shaft of the floor spring (8), which shaft is located outside the plane of the door, and in that, in the upper area of the door leaf between the glass panes (1, 2), another support element (4) is disposed, which is connectable to a carrier (5) bearing on the outside of one of the glass panes (1, 2), which carrier is engageable with a shaft of an upper bearing support (14), said shaft being located outside the plane of the door, characterized in that the angle section has a vertical leg (5a) and a horizontal leg (5b), the vertical leg (5a) bearing on one of the outsides of the glass panes (1, 2) and the horizontal leg (5b) terminating with the bottom edge or the top edge of the door.
2. A door according to patent claim 1, characterized in that the carrier (5) consists of two elements (5a, 5b).
3. A door according to one of the preceding patent claims, characterized in that the two elements (5a, 5b) are combined and connected to each other via screws (6) to form an angle section.
4. A door according to one of the preceding patent claims, characterized in that the screws (6) are screwed into the horizontal leg (5b) from the contact side of the glass panes (1, 2) at the vertical leg (5a).

5. A door according to one of the preceding patent claims, characterized in that the carrier (5) is screwed to the support element (4) via screws (7) that are accessible from the outside, the screws (7) passing through bores (18) in the glass pane (1) and being provided with a glass protection (22) in the bores.
6. A door according to one of the preceding patent claims, characterized in that the screws (7) and the leg (5a) are covered by an exchangeable cover cap (9).
7. A door according to one of the preceding patent claims, characterized in that a door gasket (10) is disposed at the bottom edge of the door between the two glass panes (1, 2).
8. A door according to one of the preceding patent claims, characterized in that the door gasket (10) consists of an almost heart-shaped sealing body, which has an extension (10a) pointing upwards and engaging in a holding rail (11), and at both its flanks has one sealing lip (10b) respectively extending vertically from the flank.
9. A door according to one of the preceding patent claims, characterized in that the extension (10a) has undercuts (10c) at its lateral surfaces for engaging in the holding rail (11), which is substantially C-shaped in cross-section.
10. A door according to one of the preceding patent claims, characterized in that, with the door being closed, the gasket is automatically pushed against the floor.
11. A door according to one of the preceding patent claims, characterized in that the bearing support (14) can be fastened at a frame (15) or at a door post (12) or at a carrier (19).

12. A door according to one of the preceding patent claims, characterized in that the carrier (19) and the carrier (5) are formed in the same way.
13. A door according to one of the preceding patent claims, characterized in that a stationary overpanel (20) is disposed above the pivotable door leaf, which overpanel consists of two glass panes (1, 2) as well spaced apart by spacers (3), and which in the lower border area has a support element (4) to which the vertical leg (5a) of the carrier (19) is screwed via screws (7).
14. A door according to one of the preceding patent claims, characterized in that the glass pane (2) is smaller than the glass pane (1).
15. A door according to one of the preceding patent claims, characterized in that the border areas of the door leaf and of the overpanel (20) are closed in the passage area by a terminal profile (21).