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Drainage gutter

The present invention relates to a drainage gutter according to the preamble of claim 1.

Such drainage gutters, known for example from DE 10 2005 007 210 A1, are used for the intake and discharge of surface water, e.g. rainwater, especially directly in installations on house facades.

Such drainage gutters serve to drain off surface water close to the building, which would seep away along the outer wall of a building without the installation of such drainage gutters, leading to damage to the facade of the building.

The problem is that with conventional drainage gutters in the installation area of the drainage gutters with the outer wall of the building, water can be retained due to capillary forces, which over time can lead to the above-mentioned damage to the outer wall of the building and/or the drainage gutter.

For the above mentioned DE 10 2005 007 210 A1, spacers are used to distance the drainage gutter from the outer wall of the building, which increases the effort and costs for the installation. In addition, the spacers of this structure are in their turn flat against the outer wall of the building, so that the above-mentioned damage can still occur.

From WO 2013/181685 A1 a surface drainage system is known with a gutter to be installed under the surface of the ground, in which in order to avoid a lifting of the gutter due to a heavy rain and the hydraulic pressure caused thereby, the side walls of the gutter do not extend vertically but inclined upwards from a base diagonally inwards, so that the ground holds the gutter in its position outside the side walls.

EP 1 176 262 B1 provides an assembly system for mounting and fixing a gutter, which is either completely installed in a screed floor or fastened to it with support elements.

It is the object of the present invention to provide a drainage gutter which effectively prevents the formation of a water film between the drainage gutter and an outer wall of the building.

This object is solved by a drainage gutter with the features of claim 1.

The drainage gutter according to the invention comprises a gutter body with an

interior space bounded by a base and two side walls for receiving and transporting water.

At least a first of the side walls is formed in a curved manner from a side edge of the base extending in the longitudinal direction of the gutter body in the direction of the interior space.

The at least one side wall has at least one ventilation opening for ventilating a space adjacent to the outside of the first side wall.

On the one hand, a drainage gutter designed in this way ensures that there is only a very small contact area between the drainage gutter and the outer wall of the building. The inwardly curved area of the side wall of the drainage gutter with the at least one ventilation opening ensures ventilation of the area of the outer wall of the building covered by the drainage gutter and thus effectively prevents soaking of the outer wall of the building.

Advantageous embodiment variants of the invention are the subject matter of the subclaims.

According to an advantageous embodiment variant of the invention, the first side wall has three regions aligned at an obtuse angle with respect to each other. This enables a sufficiently large ventilated space to be created between the drainage gutter and the outer wall of the building.

In accordance with a preferred embodiment variant, a first region of the side wall is arranged at an acute angle at a first angle α to the side edge of the base extending along the longitudinal extension of the gutter body.

Accordingly, preferably a second region of the first side wall is arranged oriented at an obtuse angle in a second angle to the first region of the first side wall and substantially perpendicular to the ground.

A third region of the first side wall is preferably disposed in an obtuse manner at a third angle to the second region of the first side wall.

However, an oval design of the first side wall, for example, is also conceivable.

The at least one ventilation opening is arranged in a particularly preferred manner in the second region of the first side wall.

Such a ventilation opening can be easily punched into the side wall of the gutter

body in the case of a gutter body preferably formed from a metal sheet.

In another preferred embodiment design, the side edge of the base, to which the first side wall adjoins, lies in the plane of the base transverse to the longitudinal extension of the gutter body closer to the second side wall than the bearing surface of the first side wall remote from the base.

This enables the drainage gutter to be laid against the outer wall of the building only with a narrow contact surface in the upper area of the drainage gutter during installation in an outer wall of the building and the side edge of the base to be fixed into the base surrounding the drainage gutter at a small distance from the outer wall of the building.

To support a cover of the drainage gutter, webs projecting in the direction of the interior space are formed on the edge of the side walls remote from the base in accordance with another preferred embodiment design.

In order to further support such a cover and/or to stabilize the gutter body, at least one transverse web is arranged between the side walls of the gutter body according to a further preferred embodiment variant.

In the following, a preferred embodiment of the invention is explained in more detail using the enclosed drawings, wherein:

Fig. 1 shows a perspective view of an embodiment variant of a drainage gutter according to the invention,

Fig. 2 shows a sectional view of the drainage gutter shown in Fig. 1, and

Fig. 3 shows a sectional view of an alternative embodiment variant of a drainage gutter according to the invention.

In the following figure description, terms such as above, below, left, right, front, rear etc. refer exclusively to the exemplary representation and position of the drainage gutter, the gutter body, the side walls, the base, the ventilation openings and the like selected in the respective figures. These terms are not to be understood restrictively, i.e. these references can change by different working positions or the mirror-symmetrical interpretation or the like.

The drainage gutter shown in Fig. 1 has a U-shaped or box-shaped gutter body 1 which is essentially formed by a base 2, a first side wall 3 and a second side wall 4. The second side wall 4 is formed essentially flat and preferably extends

perpendicularly to the base 2 in a longitudinal direction x of the gutter body 1. The gutter body 1 in the embodiment variant shown here is designed as a drainage gutter with lateral slots 35, 45.

When installed next to an outer wall of the building, the drainage gutter is installed in such a way that the first side wall 3 faces the outer wall of the building and the second side wall 4 faces away from the outer wall of the building.

Transverse webs 6 are arranged between the side walls 3, 4. These transverse webs 6 serve, on the one hand, for the transverse stability of the gutter body 1 and, on the other hand, possibly as a support for a cover not shown here, with which an interior space 5 of the drainage gutter can be covered from above.

Horizontal support webs 34, 44, which are bent inwards from the free upper side edges of the side walls 3, 4 in the preferred embodiment design of the drainage gutter shown here, serve as further support for such a cover.

The first side wall 3 of the gutter body 1 is, as can be clearly seen in Fig. 1 and especially in Fig. 2, formed in a curved manner in the direction of the interior space 5 from a side edge 21 of the base 2 extending in longitudinal extension x of the gutter body 1

Furthermore, as shown in Fig. 1, the first side wall 3 has several ventilation openings 7 for the ventilation of a space 8 adjacent to the outside of the first side wall 3.

In the embodiment variant shown here, several such ventilation openings 7, which are designed here as rectangular window openings, are arranged next to each other in the longitudinal extension x of the gutter body 1.

Other shapes of ventilation openings 7 are also conceivable, for example as round, especially oval or circular, or other polygonal openings.

The curvature of the first side wall 3 is designed in the embodiment variant shown in such a way that the first side wall 3 has three regions 31, 32, 33 oriented at an obtuse angle with respect to each other.

A first region 31 of the first side wall 3 is arranged at an acute angle at a first angle α to the side edge 21 of the base 2 extending in longitudinal extension x of the gutter body 1, in particular curved.

The first angle α is preferably in a range from 45 to 65°.

A second flat region 32 of the first side wall 3 adjoining the first region 31 at an obtuse angle at a second angle β adjoins the first region 31 of the first side wall 3 and essentially perpendicular to the base 2.

Finally, a third region 33 of the first side wall 3 is arranged at an obtuse angle at a third angle γ to the second region 32 of the first side wall 3.

The angles β and γ preferably have the same size, while the heights Z1 of the first region 31 and Z3 of the third region 33 preferably deviate from each other by a small amount.

In particular, the height Z3 of the third region 33 of the first side wall 3 is greater than the height Z1 of the first region, which results in a bearing region 37 of the first side wall 3 adjoining the third region 33 being further apart from the second wall 4 in a direction y transverse to the longitudinal extension x of the drainage gutter (distance b in Fig. 2) than the side edge 21 of the base 2 to which the first region 31 of the first side wall 3 adjoins (distance a in Fig. 2).

It is also conceivable to fold the first region 31 of the first side wall 3 by 180° and then bend it upwards by about 90° into the second region 32. The third area 33 can also be shaped in such a way that it is bent outwards by approximately 90° from the second region 32, wherein the bearing region 37 adjoining the third region 33 adjoins the third area 33 in a curved manner approximately perpendicularly.

The height Z2 of the second region 32 of the first side wall 3 is preferably significantly greater than the heights Z1, Z3 of the first region 31 and the third region 33 of the first side wall 3. This creates a room volume that is large enough to ventilate the room 8 adjacent to the outside of the first side wall 3.

In addition to the ventilation openings 7 arranged next to each other as rectangular window openings, as shown in Fig. 1, it is also conceivable to provide only one such ventilation opening 7 in the first side wall 3. The at least one ventilation opening 7 is preferably located in the second region 32 of the first side wall 3.

It is important to arrange the ventilation openings 7 in a region of the first side wall 3 that does not rest against the outer wall of the building when the drainage gutter is installed.

In the alternative embodiment variant shown in Fig. 3, instead of the region 32 of the first side wall 3 adjoining the second flat region 32 of the first side wall 3 and the third region 33 at an obtuse angle, a step 38 is integrally formed, which serves to support the above-mentioned cover. The step 38 extends horizontally away from

the second wall 4. The vertically aligned bearing region 37 is further away from the second wall 4 in the direction y transverse to the longitudinal extension x of the drainage gutter (distance b in Fig. 3) than the side edge 21 of the base 2 to which the first region 31 of the first side wall 3 adjoins (distance a in Fig. 3).

In order to connect two such drainage gutters to one another, the ends of the gutter body 1, which are spaced apart from one another in longitudinal extension x, are preferably designed in such a way that the ends 22 of the base and projecting ends 36, 46 of the first side wall 3 and of the second side wall 4 can be inserted into a second end of an adjacent gutter body 1.

The transverse webs 6 can preferably be hung and/or rivetted into recesses 41 provided on the side walls 3, 4 of the gutter body 1.

Reference signs

1	Gutter body
2	Base
21	side edge
22	End
3	Side wall
31, 32, 33	Regions
34	Support webs
35	Slot
36	End
37	Bearing region
38	Step
4	Side wall
41	Recess
44	Support webs
45	Slots
46	End
48	Step
5	Interior space
6	Transverse webs
61	End
62	End
7	Ventilation opening
8	Adjoining space
x	Longitudinal direction
y	Cross direction
z	Height
Z1, Z2, Z3	Height of regions
a	Distance
b	Distance

PATENTKRAV

1. Vandafløbsrende, omfattende et rendelegeme (1) med et indre rum (5), som er afgrænset af en bund (2) og to sidevægge (3, 4) med henblik på modtagelse og befor-
5 dring af vand, hvorved mindst en første af sidevæggene (3, 4) omfatter mindst en ventilationsåbning (7) til ventilation af et rum (8), som grænser op til ydersiden af den første af sidevæggene (3, 4), **kendetegnet ved, at** den første sidevæg (3) er dannet som hvælvet af en sidekant (21) af bunden (2), og som strækker sig i rendelegemets (1) længdeudstrækning (x) i retning af det indre rum (5), hvorved et første område
10 (31) af den første sidevæg (3) er anbragt spidsvinklet under en første vinkel (α) i forhold til bundens (2) sidekant (21), der strækker sig i rendelegemets (1) længdeudstrækning (x).
2. Vandafløbsrende ifølge krav 1, **kendetegnet ved, at** et andet område (32) af den
15 første sidevæg (3) er anbragt stumpvinklet under en anden vinkel (β) i forhold til det første område (31) af den første sidevæg (3) og i det væsentlige rettet vinkelret på bunden (2).
3. Vandafløbsrende ifølge krav 1, **kendetegnet ved, at** den første sidevæg (3) omfat-
20 ter tre områder (31, 32, 33), som er rettet under en stump vinkel i forhold til hinanden.
4. Vandafløbsrende ifølge krav 3, **kendetegnet ved, at** et tredje område (33) af den første sidevæg (3) er anbragt stumpvinklet under en tredje vinkel (γ) i forhold til det andet område (32) af den første sidevæg (3).
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5. Vandafløbsrende ifølge krav 4, **kendetegnet ved, at** den tredje vinkel (γ) er lig med den anden vinkel (β).
6. Vandafløbsrende ifølge et af de foregående krav, **kendetegnet ved, at** en i forhold
30 til bunden (2) distal rand af den første sidevæg (3) er udformet som anlægsflade (37) med henblik på anlæg mod en bygningsvæg.

7. Vandafløbsrende ifølge krav 6, **kendetegnet ved, at** bundens (2) sidekant (21), hvortil den første sidevæg (3) slutter sig, ligger i bundens (2) plan på tværs af rendelegemets (1) længdeudstrækning (x), nærmere ved den anden sidevæg end den i forhold til bunden distale anlægsflade (37) for den første sidevæg (3).

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8. Vandafløbsrende ifølge et af kravene 2 til 7, **kendetegnet ved, at** den mindst ene ventilationsåbning (7) er anbragt i det andet område (32) af den første sidevæg (3).

9. Vandafløbsrende ifølge et af de foregående krav, **kendetegnet ved, at** den mindst ene ventilationsåbning (7) er udformet som rektangulær eller rund vinduesåbning.

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10. Vandafløbsrende ifølge et af de foregående krav, **kendetegnet ved, at** der på sidevæggenes (3, 4) rand, som er distal i forhold til bunden (2), er påformet stykker (34, 44), som rager frem i retning af det indre rum (5) med henblik på understøtning af et dæksel, fortrinsvis et gitterdæksel.

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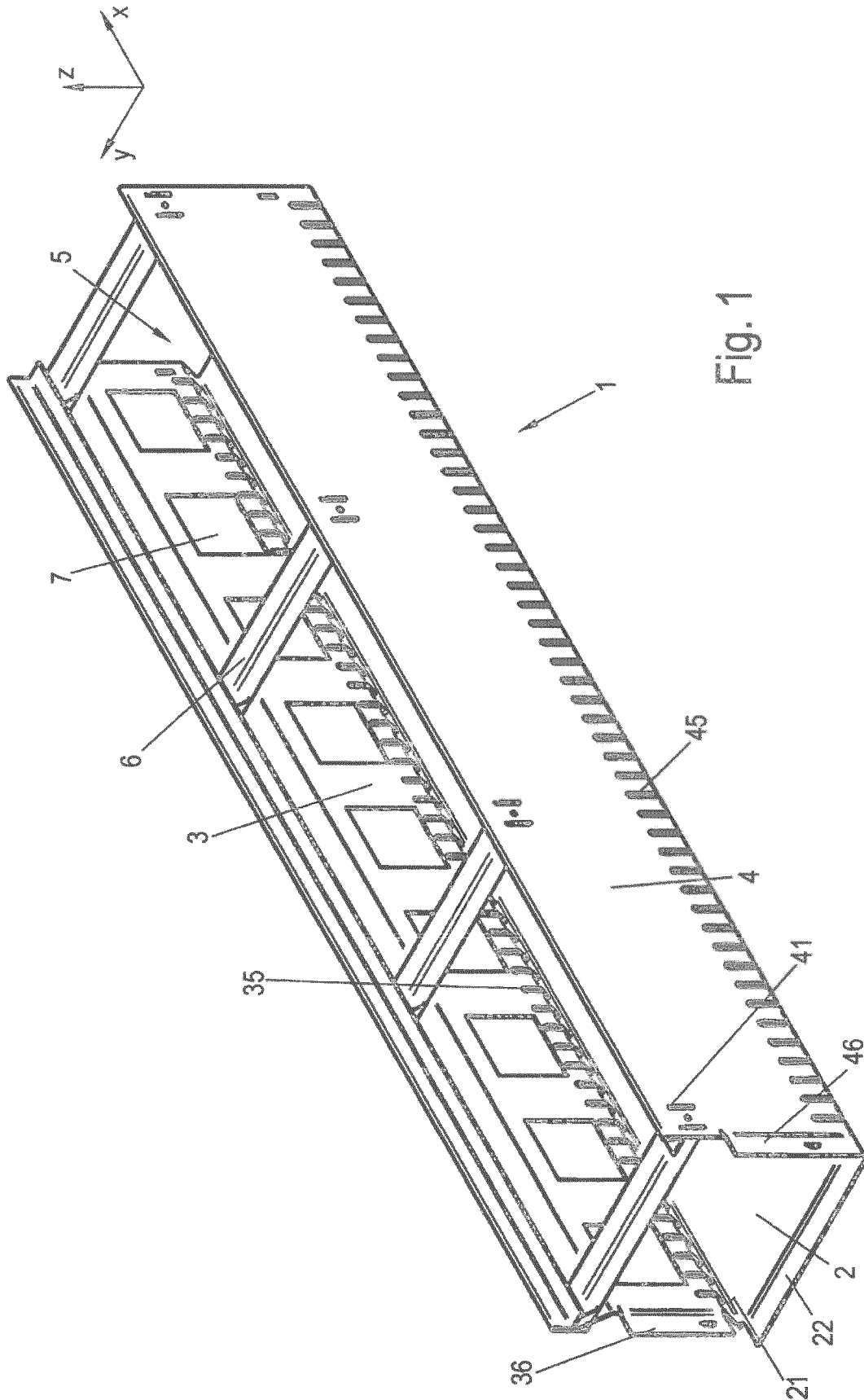
11. Vandafløbsrende ifølge et af de foregående krav, **kendetegnet ved, at** der mellem rendelegemets (1) sidevægge (3, 4) er anbragt mindst et tværstykke (6).

12. Vandafløbsrende ifølge krav 11, **kendetegnet ved, at** tværstykket (6) kan ophænges i udsparinger (41), der er tilvejebragt på rendelegemets (1) sidevægge (3, 4).

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13. Vandafløbsrende ifølge et af de foregående krav, **kendetegnet ved, at** rendelegemet (1) er dannet af en metalplade eller er dannet som en sprøjtetøbt plastmateriale-del.

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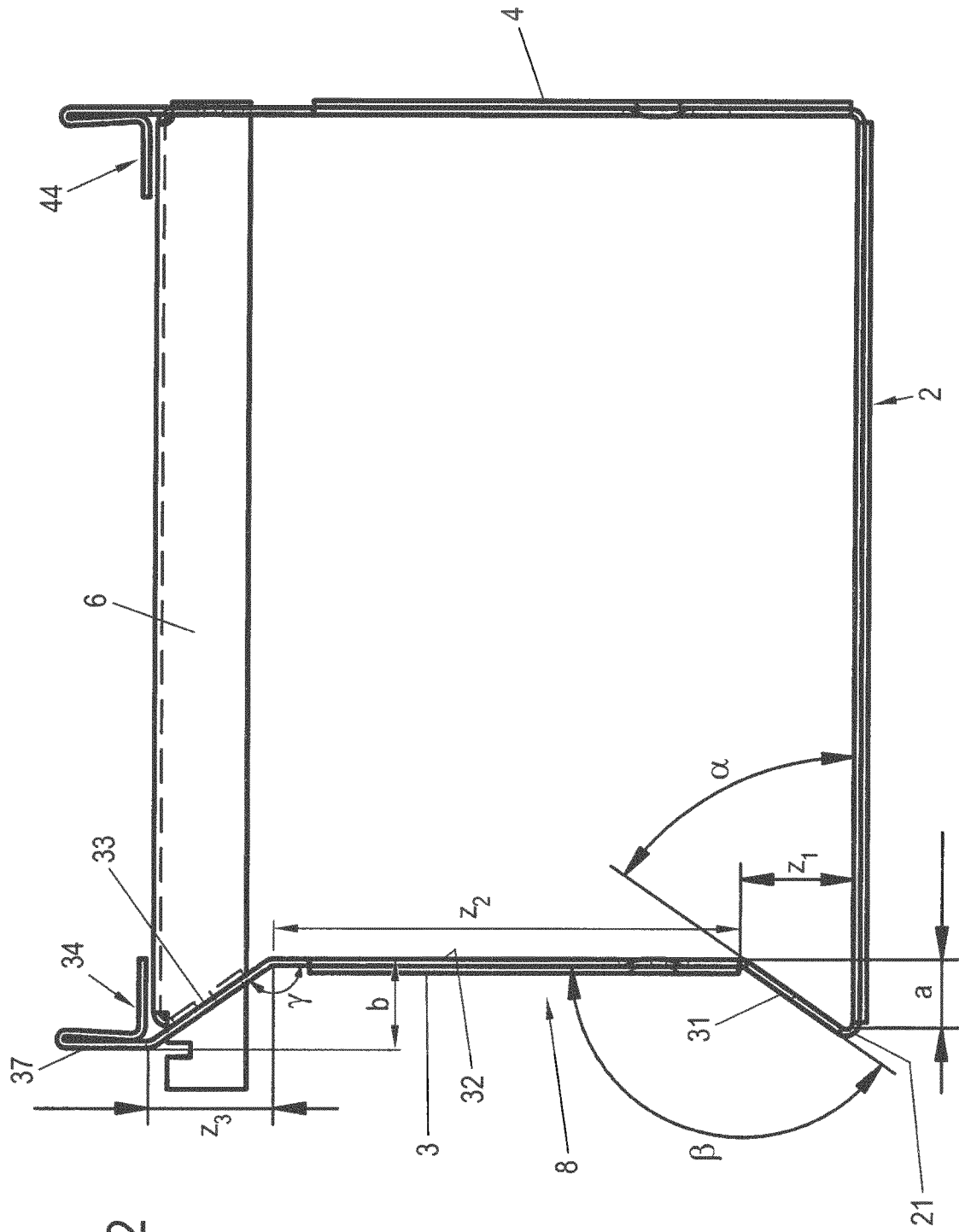


Fig. 2

