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(54) PANEL FOR CLADDING SURFACES

(57) A panel for cladding surfaces, comprising:
a main portion (10);
a first coupling (2), projecting from the main portion (10), which comprises a head portion (21), having a curved profile, and a base portion (24), which connects the head portion (21) to the main portion (10);
a second coupling (3), projecting from the main portion (10), which comprises a head portion (31), having a curved profile complementary to the head portion (21) of the first coupling (2), and a base portion (34), which connects the head portion (31) to the main portion (10).

The first coupling (2) comprises an intermediate part (23), associated with the base part (34), which exhibits an arcuate profile complementary to at least a side portion of the head portion (31) of the second coupling (3).

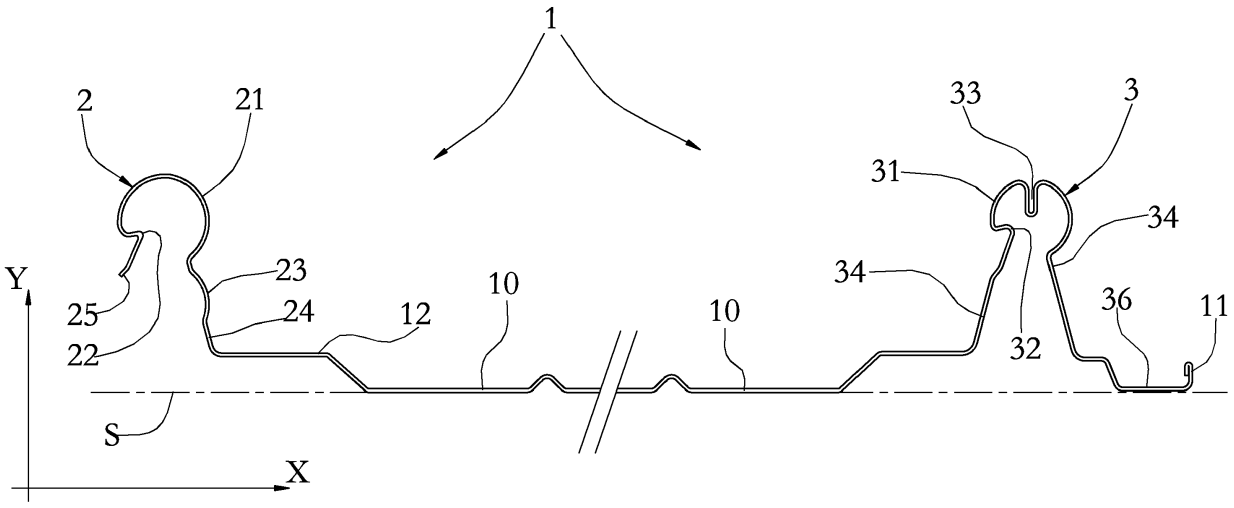

Fig.1

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Description

[0001] The present invention relates to a panel for cladding surfaces.

[0002] The panel according to the present invention is useful for covering roofs and walls, but not exclusively.

[0003] Various types of panels for covering roofs are currently available on the market. An example of such panels, to which the invention relates in particular, has two coupling portions that are substantially complementary to one another. Such coupling portions are arranged in side zones of the panel and extend parallel to one another. Each coupling portion is provided for being engaged with the complementary coupling portion of an adjacent panel, to allow the mutual fixing of the panels.

[0004] In the panels currently available, the two coupling portions, seen on a sectional plane perpendicular to the longitudinal extension thereof, have a complex profile that comprises a circular top portion connected to the panel through a base portion, being open at the bottom. Between the top panel and the base portion, at least one undercut is arranged.

[0005] To couple two adjacent panels to one another, it is necessary to engage the top portion of a coupling profile of a first panel in the top portion of the complementary coupling profile of the second panel. Such engagement takes place by first inserting the end portion of a coupling profile into the base portion of the supplementary coupling profile, subsequently pressing the two coupling portions towards one another, so as to surpass the undercut placed below the two end portions and complete the insertion. The preliminary insertion of the end portion of the coupling profile of a panel in the base portion of the complementary profile of the adjacent panel is not particularly precise, i.e. it leaves substantial freedom of movement between the two panels. This means that, in the event of incorrect alignment, the pressure exerted for completing the coupling leads to excessive deformation or even damage to the two profiles.

[0006] The aim of the present invention is to offer a panel for cladding surfaces that makes it possible to overcome the drawbacks of the currently available panels.

[0007] An advantage of the panel according to the present invention is to notably facilitate the application and coupling operations of adjacent panels, hence substantially reducing the risks of damage to the coupling profiles. Another advantage of the panel according to the present invention is that it substantially facilitates the fixing operations to a support structure.

[0008] A further advantage of the panel according to the present invention is that it allows an excellent seal against infiltrations in the coupling zone between two adjacent panels.

[0009] Further characteristics and advantages of the present invention will become more apparent in the following detailed description of an embodiment of the present invention, illustrated by way of non-limiting example in the attached figures, in which:

- figure 1 shows a schematic view of the panel according to the present invention;
- figure 2 shows an enlargement of two coupling portions of two adjacent panels, in an alignment position;
- figure 3 shows the two coupling portions of figure 2, coupled to one another.

[0010] The panel (1) for cladding surfaces according to the present invention comprises a main portion (10), flat overall, which lies on a longitudinal plane (S) whose trace is shown in figure 1. The panel extends longitudinally on such longitudinal plane (S).

[0011] The panel (1) has a complex profile that is represented, in figure 1, in a view on a sectional plane (X,Y) perpendicular to the longitudinal plane (S). The panel (1) is defined overall by the projection, along a perpendicular direction to the plane (X,Y) of the profile shown in figure 1.

[0012] The panel (1) comprises, for example, a metal sheet, folded along directrices perpendicular to the plane (X,Y) for forming the profile shown in figure 1.

[0013] The panel comprises a first coupling (2) projecting from the main portion (10). The first coupling (2) comprises a head portion (21) with a curved profile, for example circular or semicircular, and a base portion (24), which connects the head portion (21) to the main portion (10). The base portion (24) is inclined upwards, in a distancing direction from the longitudinal plane (S). The head portion (21) is associated with an end of the base portion (24).

[0014] The first coupling (2) further comprises an undercut (22) arranged below the head portion (21). In particular, the undercut (22) is located at an end of the head portion (21), in an opposite position to the base portion (24). Overall, the first coupling (2) is open at the bottom and has a concavity facing downwards.

[0015] The panel further comprises a second coupling (3) projecting from the main portion (10). The second coupling (3) projects from the main portion (10) in the same direction as the first coupling (2).

[0016] The second coupling (3) comprises a head portion (31) with a curved profile being complementary to the head portion (21) of the first coupling (2). The second coupling (3) further comprises a base portion (34) which connects the head portion (31) to the main portion (10). The base portion (34) comprises two walls (34) inclined upwards, in a distancing direction from the longitudinal plane (S). The head portion (31) is connected to the ends of the two walls (34) being inclined upwards. Overall, the second coupling is U-shaped, with a concavity facing downwards.

[0017] The second coupling (3) further comprises an undercut (32) arranged below the head portion (31). In particular, the undercut (32) faces towards the first coupling (2) and is arranged between an end of the head portion (31) and the corresponding end of the base portion (34). The undercut (32) of the second coupling (3) is complementary to the undercut (22) of the first coupling

(2). When the second coupling (3) of a panel is inserted into the first coupling (2) of an adjacent panel, the undercut (22) of the first coupling (2) is arranged in contact with the undercut (32) of the second coupling (3), on an internal side of the latter.

[0018] The head portion (31) of the second coupling (3) has a curvature such as to be able to be arranged in contact with an internal surface of the head portion (21) of the first coupling (2), as shown in figure 3. In substance, the second coupling (3) of a panel can be inserted into the first coupling (2) of an adjacent panel. In such an arrangement, the head portion (21) of the first coupling (2) envelops the head portion (31) of the second coupling (3). The main portion (10) is interposed between the first and the second coupling (2,3) i.e. the first and the second couplings (2,3) are arranged on opposite sides of the main portion (10). Preferably the first and the second coupling (2,3) extend parallel to one another along a perpendicular direction to the sectional plane (X,Y).

[0019] Advantageously, the first coupling (2) comprises an intermediate part (23), associated with the base part (34), which exhibits an arcuate profile complementary to at least a side portion of the head portion (31) of the second coupling (3). For example, the intermediate portion (23) has a profile shaped like an arc of a circle.

[0020] The intermediate portion (23) is structured to define a temporary housing for the head portion (31) of the second coupling (3) of an adjacent panel. Such temporary housing obstructs or prevents relative movements between the first and the second coupling (2,3) along a transverse direction (X) parallel to the longitudinal plane (S), as can be deduced from figure 2. The temporary housing defined by the intermediate portion (23) therefore allows the first coupling (2) of one panel to be correctly aligned with the second coupling (3) of an adjacent panel. In this way, the application of a force that pushes the first coupling (2) towards the second coupling (3) is transmitted to the two couplings (2,3) along a substantially perpendicular direction to the longitudinal plane (S). This means that the first coupling (2) is exclusively strained to enlarge in order to allow the insertion of the second coupling (3) as far as the coupling position illustrated in figure 3.

[0021] The intermediate portion (23) projects outside the base portion (24) towards the second coupling (3), so as to turn its concavity towards the inside of the first coupling (2).

[0022] Preferably, the first coupling (2) comprises an edge (25), arranged in a substantially opposite position to the intermediate portion (23). As shown in figure 2, the edge (25) defines, together with the intermediate part (23), the temporary housing for at least one part of the head portion (31) of the second coupling (3) of an adjacent panel. The presence of the edge (25) makes the positioning of the first coupling (2) with respect to the second coupling (3) even more stable for movements along the transverse direction (X). This is because the head portion (31) of the second coupling (3) can be arranged in contact both with the intermediate portion (23), and the edge (25). Furthermore, the presence of the edge (25) promotes the enlargement of the first coupling (2) due to the effect of a pressure force towards the second coupling (3).

[0023] Advantageously, the head portion (31) of the second coupling (3) comprises a longitudinal groove (33). Such groove (33) allows any infiltrations of water between the two couplings (2,3) coupled to one another to be collected. Through a pre-established inclination it is possible to drain out the liquid accumulated along the groove itself. A gasket, not illustrated in detail, may be inserted in the longitudinal groove (33) to prevent or limit the accumulation of liquid inside the groove (33).

[0024] On an opposite side to the first coupling (2), the panel is equipped with a raised end edge (35), arranged to be fitted into a fixing bracket (38). In the embodiment shown, the end edge (35) is inclined upwards, with an orientation that is roughly perpendicular with respect to the longitudinal plane (S). The end edge (35) is connected to the panel through a flat portion (36), which can be provided with holes for fixing to a support structure, alternatively to or in combination with the fixing bracket (38). The fixing bracket (38) is shown schematically in figure 3. The bracket (38) is U-shaped, and is structured to be positioned straddling the end edge (35), with concavity facing downwards. At one of its ends, the bracket (38) may be fixed to a support structure, for example a frame or another part of the surface to be clad, so as to constrain the panel to the support structure.

[0025] To promote the coupling between the first coupling (2) of a panel and the second coupling (3) of an adjacent panel, a rise (12) is interposed between the main portion (10) and the first coupling (2). Such rise (12) is structured to be superposed on an end edge (35) and on the possible bracket (38) of an adjacent panel, as shown in figure 3.

[0026] The cladding of a surface, for example the covering of a roof or the cladding of a wall, may be realised substantially with the same methods used in the prior art. In practice, the cladding may be realised by applying the necessary panels in succession. To couple two adjacent panels to one another, it is necessary to engage the head portion (21) of the first coupling (2) of a first panel on the head portion (31) of the second coupling (3) of a second panel, adjacent to the first. In turn, the head portion (21) of the first coupling (2) of the second panel will be engaged on the head portion (31) of the second coupling (3) of a third panel, adjacent to the second on the opposite side with respect to the first panel, and so on for all the other panels. Each panel can be constrained to the support structure of the cladding by means of one or more brackets (38).

[0027] The panel according to the present invention provides important advantages.

[0028] First of all, it notably facilitates the application and coupling operations of adjacent panels, hence substantially reducing the risks of damage to the coupling

profiles. This is thanks to the presence of the intermediate portion (23) which allows the first coupling (2) of one panel to be correctly positioned, in perfect alignment, with respect to the second coupling (3) of an adjacent panel. Thanks to the presence of the intermediate portion (23), the first coupling (2) as well as being perfectly aligned with respect to the second coupling (3) of an adjacent panel, is also positioned in a stable way. In this way, in the subsequent assembly step, the operator can concentrate solely on applying on the first coupling (2) a direct force towards the longitudinal plane (S), i.e. directed downwards, without worrying about maintaining the two couplings in alignment. Furthermore, the first coupling (2) is exclusively strained to be enlarged in order to allow the insertion of the second coupling (3) of the adjacent panel, as far as the complete insertion position in which the two undercuts (22,32) are engaged with one another in the configuration of figure 3.

[0029] Another advantage of the panel according to the present invention is that it substantially facilitates the fixing operations to a support structure. This is thanks to the presence of the end edge (35), which can be constrained to the support structure by means of the bracket (38), safely and easily.

[0030] A further advantage of the panel according to the present invention is that it allows an excellent seal against infiltrations in the coupling zone between two adjacent panels. This is because of the presence of the longitudinal groove (33), which allows any infiltrations to be collected and/or a sealing gasket to be housed.

Claims

1. A panel intended for surface cladding, comprising:

a main portion (10);
a first coupling (2) projecting from the main portion (10), which comprises a head portion (21) with a curved profile, and a base portion (24), which connects the head portion (21) to the main portion (10);
a second coupling (3) protruding from the main portion (10), which comprises a head portion (31) with a curved profile being complementary to the head portion (21) of the first coupling (2), and a base portion (34) which connects the head portion (31) to the main portion (10);
characterized in that the first coupling (2) comprises an intermediate portion (23), associated with the base portion (34), which exhibits an arcuate profile complementary to at least a side portion of the head portion (31) of the second coupling (3).

2. A panel according to claim 1, wherein the first coupling (2) comprises an edge (25), arranged in a substantially opposite position to the intermediate portion (23) so as to define, together with the intermediate portion (23), a housing for at least a section of the head portion (31) of the second coupling (3).

3. A panel according to claim 1, wherein the first and second coupling (2,3) comprise a respective undercut (22,32) disposed below of its head portion (21,32), the two undercuts (22, 32) being complementary to each other.

4. A panel according to claim 1, wherein the head portion (31) of the second coupling (3) comprises a longitudinal groove (33).

5. A panel according to claim 4, comprising a gasket inserted in the longitudinal groove (33).

6. A panel according to claim 1, comprising a raised end edge (35), that is arranged to fit into a fixing bracket (38).

7. A panel according to claim 1, comprising a rise (12), interposed between the main portion (10) and the first coupling (2), which is so structured as to be capable to be superposed on a raised end edge (35) of an adjacent panel.

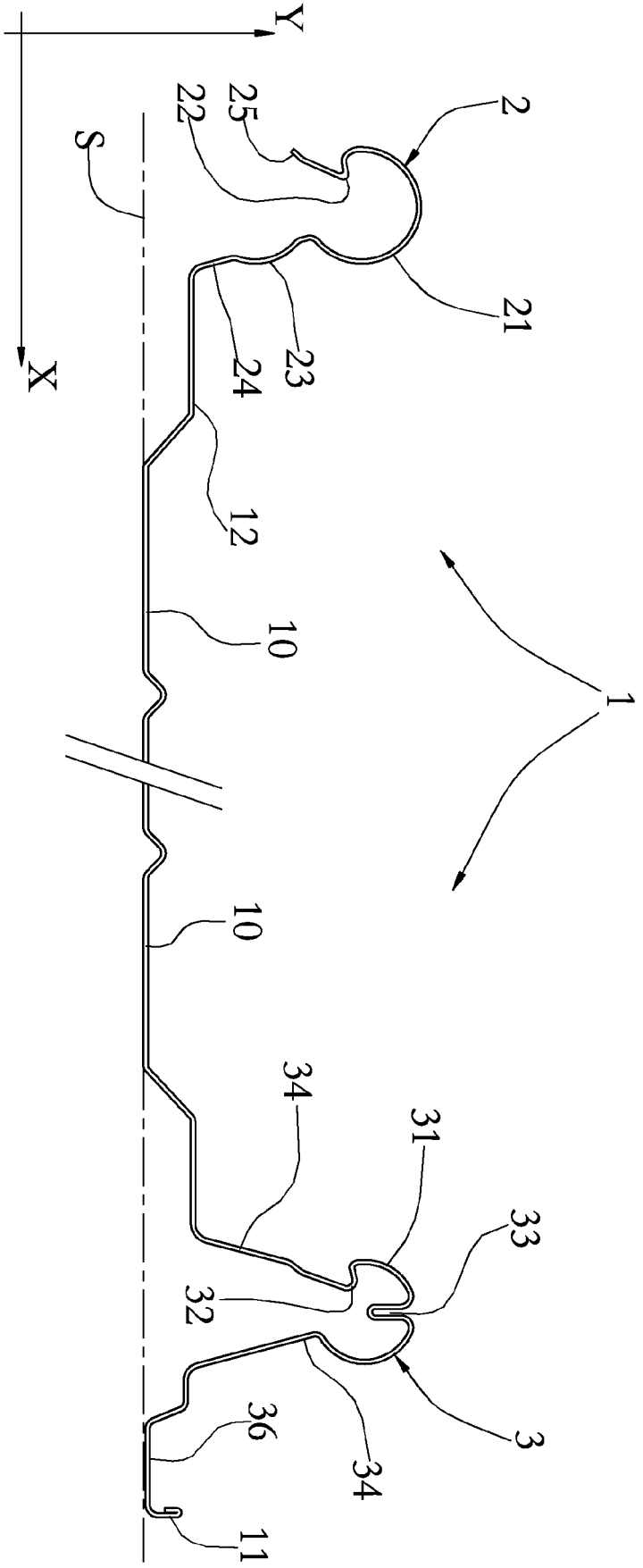

Fig.1

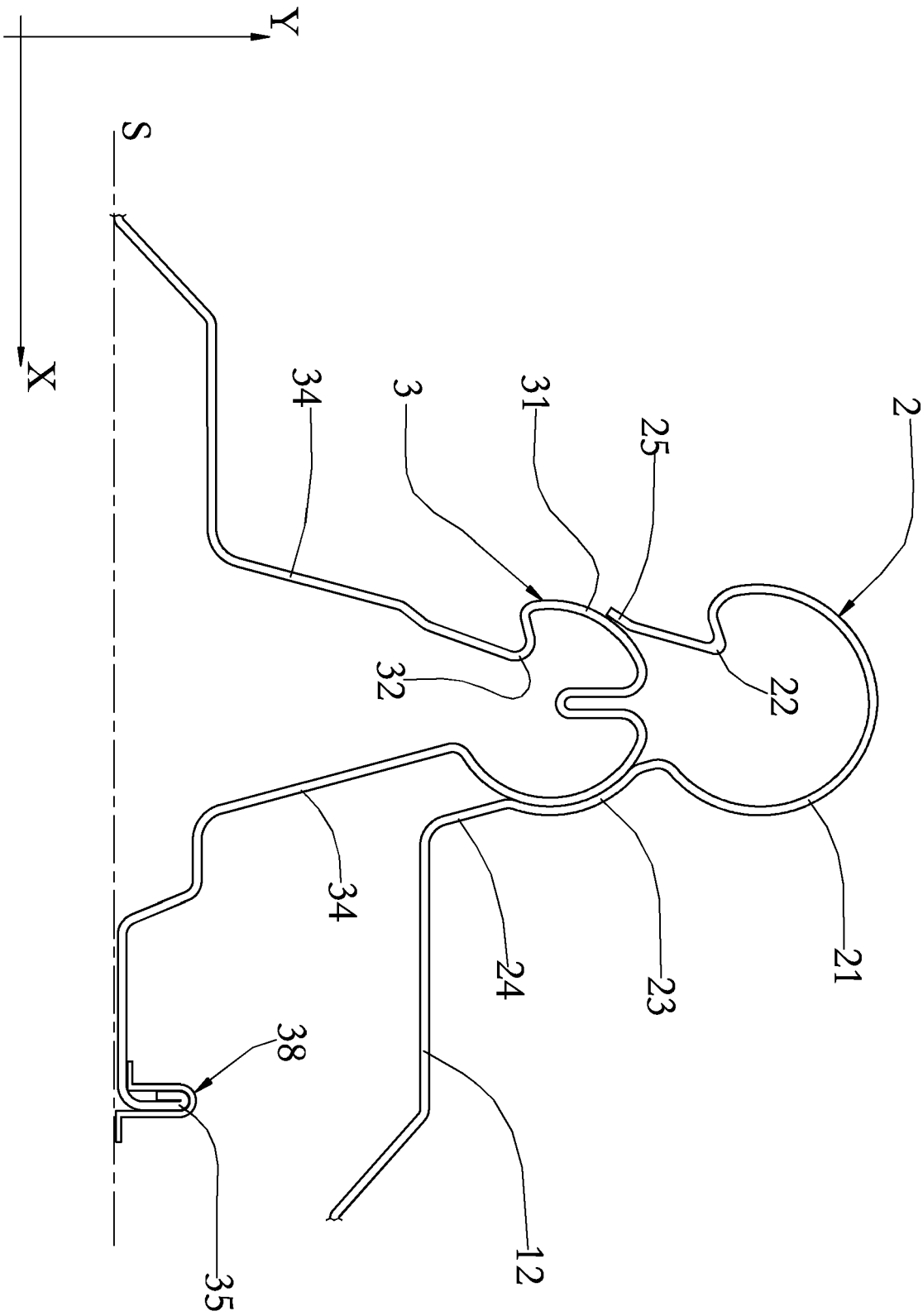

Fig.2

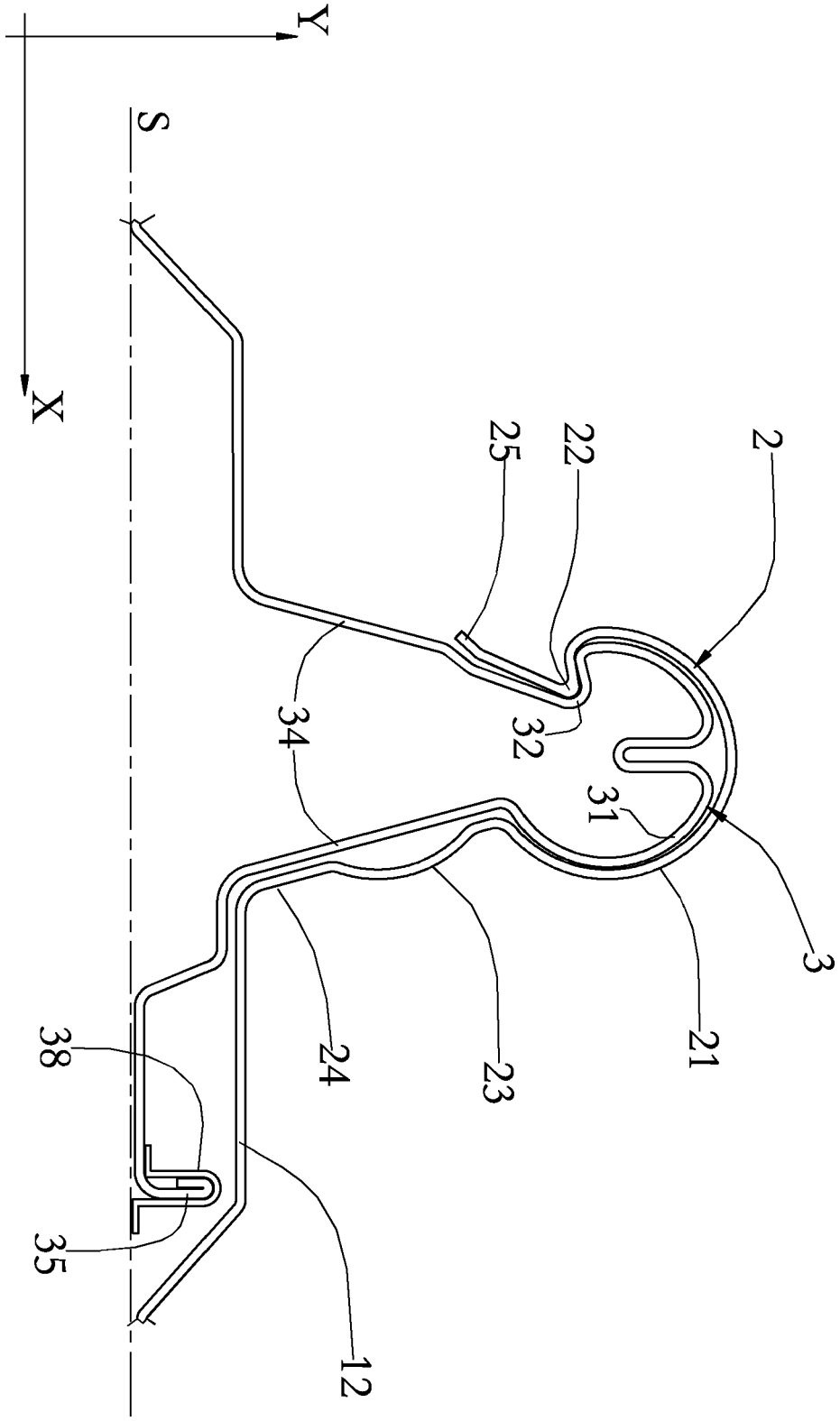

Fig.3

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EUROPEAN SEARCH REPORT

Application Number
EP 17 17 7054

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	10 November 2017	Demeester, Jan

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