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(71) Applicant: **Kösedag Tel Örme Sanayi Ve Ticaret Ithalat Ihracat A.S.**
34940 Istanbul (TR)

(72) Inventor: **KÖSEDAG, Ali,**
KÖSEDAG TEL ÖRME SANAYI VE TICARET
Tepeören-Tuzla,
34940, Istanbul (TR)

(74) Representative: **Sevinç, Erkan**
Istanbul Patent & Trademark Consultancy Ltd.
Plaza-33, Büyükdere cad. No: 33/16
Sisli
34381 Istanbul (TR)

(54) **Self-Supporting Multiple Part Winged Fence Post**

(57) The present invention provides a two-part tubular hollow post body having ear portions extending so as to define and delimit a longitudinal space suitable for receiving a vertical fence portion in an interlocking manner. Two parts of the tubular hollow body of the preferred embodiment are designed to form post halves that fit into each other. Ear portions of post halves are provided at both sides to encircle one another. Said portions are arranged at each side so as to fit into each other in a manner to be fixedly joined when interlocked. Outer surfaces of each ear portion comprise lateral openings that coincide in mounted position for receiving a horizontal fence portion integral to said vertical fence portion. Said openings are longitudinally arranged in an equally spaced manner, which is suitable for engagement of fence material.

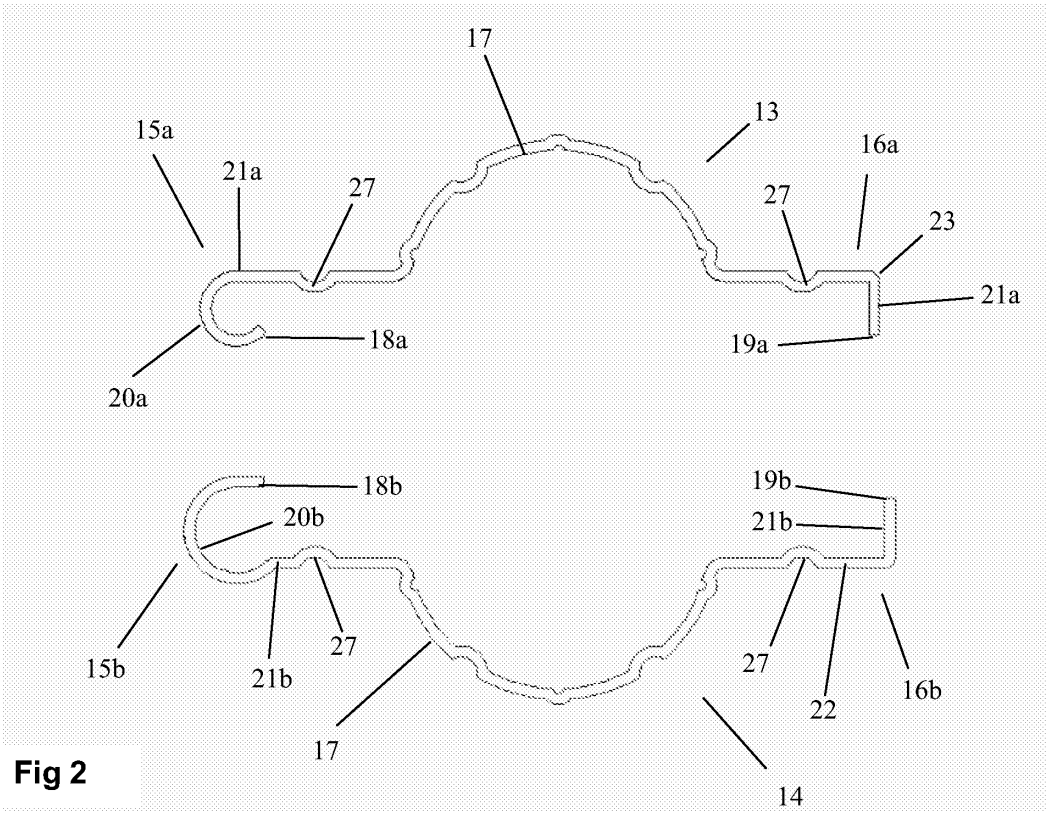

Fig 2

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Description

Technical Field of the Invention

[0001] The present invention relates to a fence post adapted to be erected generally in an equally spaced manner around an area, e.g. a residential area. In particular, the present invention relates to a fence post which eliminates use of fastening means for fixing a mesh wire or a framed panel to said posts and to a fence which comprises said posts.

Background of the Invention

[0002] A plurality of patents/patent applications are present in the field in relation to fence posts and to their configuration with regards to fixing of posts and/or fences and fittings thereof. In general terms, a design priority taken into account in the field is to obtain a fence post which requires a reduced number of fastening means or mounting fittings without compromising safety characteristics. A post system requiring a reduced number of fittings and fastening means such as bolts, nuts, clips, and clamps is advantageous as it involves simplicity and necessitates less man-hour work during installation. A system consisting of a limited number of components is also advantageous in that it requires maintenance to a lesser extent. Further use of such fittings generally damage dyed surfaces or coatings on the fence material and result in corrosion of the material.

[0003] One of the prior disclosures in the present field is US 4,050,828. Among others US 4,050,828 discloses an interlocking system with upright hollow posts and a number of vertical bars connecting an upper and a bottom rail without use of rivets, bolts and nuts, or welding. A prominent disadvantage of the system, however, lies in that, although it requires no mechanical fittings, it only allows use of specially adapted connection blocks and is substantially complex in the sense that its erection process requires comprehensive labor and time.

[0004] The present invention, involves a reduced number of components so as to provide a fence post system which is quickly and easily mountable on site and which is self-supporting in terms of mechanical stability as different components attached to form up the system are arranged in an inseparable manner when mounted. The self-supporting structure is crucial in that simpler constructions are available without requiring additional fitting elements or fastening means. Further, a secure structure in mechanical terms without fittings may only be achieved with a design in which different components are attached to each other in such a manner that every single components is secured relative to an adjoining component. This is achieved by the special design according to the present invention, which allows interlocking of adjoining components without additional fixing means and without compromising overall simplicity and/or safety of the system. The present invention provides a system in which different system parts fit or slide one within another so as to enable a simple and robust connection in contrary to prior art systems.

[0005] Conventional fences require use of fastening means such as bolts and nuts, rivets, welding, clamps, screws, shackles etc. in order to attach the fence material to fence posts. The fastening means not only bring an add-on the costs of the end product but also require additional labor time for cutting, fixing, screwing or welding. In order to eliminate surface corrosion, they shall either be made of a costly non-corrosive material or painted or coated with a corrosion inhibitor upon installation.

Objects of the Invention

[0006] One of the objects of the present invention is to provide a fence post system which eliminates use of fastening means or mounting fittings in order to affix a wired mesh or a framed panel to fence posts.

[0007] Another object of the present invention is to provide a quickly and easily mountable fence post system which reduces labor costs during installation.

[0008] Another object of the present invention is to provide a self-supporting fence post in terms of mechanical stability.

[0009] A further object of the present invention is to provide a system in which different system parts fit or slide one within another so as to enable a simple and robust connection.

[0010] Still a further object of the invention is to provide a post system for fences which allows cornering at an angle ranging from 0° to 120° without modification of the posts.

[0011] Yet another object of the invention is to provide a post system for fences, said posts being obtained by extrusion of sheet metal whereby fabrication costs as well as raw material costs are reduced.

Summary of the Invention

[0012] The present invention provides a two-part tubular post body having ear portions extending so as to define and delimit a longitudinal space suitable for receiving an end part of a vertical fence portion in an interlocking manner. Two parts of the tubular hollow body are designed to form post halves that engage into each other. Ear portions of post halves are provided at both sides to entrap one another. Said portions are arranged at each side so as to fit into each other in a manner to be fixedly joined when interlocked. Outer surfaces of each ear portion comprise lateral openings that coincide in mounted position for receiving a horizontal fence portion integral to said vertical fence portion. Said openings are longitudinally arranged, generally, in an equally spaced manner, which is suitable for engagement of horizontal fence material. Typically, the fence material may be selected from one or more of the group consisting of mesh wires, welded wires, razor wires, gabion, single panels, double re-

inforced panels and framed panels.

[0013] According to the present invention, the tubular post comprises a first part that have ear portions on the left and right of an outwardly protruding portion where said ear portions have at their outer ends inwardly extending lips. The post comprises a second part which have, likewise to the first part, ear portions on the left and right of an outwardly protruding portion where said ear portions have at their outer ends inwardly extending lips, The first part and second part have a plurality of lateral openings adapted to receive horizontal ends of a fence material, in particular a mesh wire or a framed panel, throughout their lengths. The lips of the second part are shaped and dimensioned to engage and fit snugly on the corresponding lips of said first part. Each of the lips form a lengthwise housing for vertical ends of said fence material when second part is fit snugly onto said first part.

Brief Description of the Figures

[0014] Accompanying drawings are given solely for the purpose of exemplifying a two part fence post and fence mounted using said post, whose advantages over prior art were outlined above;

Fig. 1 demonstrates a perspective view of a partly (cap removed) mounted winged fence post with ear portions at both sides according to the present invention.

Fig. 2 demonstrates a cross-section view of post body parts according to a first embodiment of the invention in disassembled position.

Fig. 3 demonstrates a perspective view of the fence post system according to the present invention with the cap mounted.

Fig. 4 demonstrates a perspective view of the fence post system according to the present invention.

Fig. 5 demonstrates another embodiment of the fence post with double horizontal bars according to the present invention.

Fig. 6 demonstrates a perspective view of the fence post system according to the present invention with a second post part.

Fig. 7 demonstrates a perspective view of the fence post system according to the present invention with a first post part.

Fig. 8 demonstrates a perspective view of the fence post system according to the present invention with the post flange.

Fig. 9 demonstrates a perspective view of the post flange according to the present invention.

Fig. 10a and 10b demonstrates a cross-section view of post body halves in respectively assembled and disassembled positions according to a second embodiment of the present invention.

Fig. 11 a and 11 b demonstrates a schematic cross-section view of post body halves in respectively assembled and disassembled positions according to a third embodiment of the present invention.

Detailed Description of the Invention

[0015] Referring now to the figures outlined above, the present invention provides a fence post system (11) having a fence post (12) consisting of two post parts (body halves) (13, 14) that fit into each other to form up a hollow tubular body fence post (12). Assembled post parts (13, 14) extend longitudinally at both sides to form ear portions (15, 16) that define and delimit radially enlarged lateral spaces, which also extend longitudinally along the entire length of said hollow tubular body (12).

[0016] According to an embodiment of the present invention (Fig. 2), post parts (13, 14) are shaped to have a circular portion (17) at both sides of which said ear portions (15a, 15b, 16a, 16b) extend outwardly. While the outwardly protruding portion (17) of the post parts (13, 14) is a semi-circle in cross section in the preferred embodiment, it is not an essential feature to use a semi-circle and various other shapes (e.g. ellipse, triangle, square, pentagonal, hexagonal or other polygonal shapes) may be utilized for providing support from said outwardly protruding portion (17).

[0017] Each ear portion (15a, 16a) of a first post body part (13) fits into a respective ear portion (16a, 16b) of the second part (14). Said ear portions (15a, 15b and 16a, 16b) are designed to have distinct-profile configurations at both sides such that while ear portions at one side (15a and 15b) have a circular profile characteristic, ear portions at the other side (16a, 16b) have a non-circular profile characteristic. When fitted together, ear portions (15a, 15b and 16a, 16b) at each side are interlocked to the extent that only telescopic movement of one of the parts (13, 14) relative to the other part (13, 14) is allowed, meaning that body parts (13, 14) can not displace transversely.

[0018] In a preferred embodiment (Fig. 2), circular profile ear portions (15a, 16a) of the first and second post parts (13, 14) are fitted together such that the tip portion (18a) of said first part (13) reaches over the end of the inner circular surface of the lip (20b) of the ear portion (15b) of said second part (14), outer circular surface of the lip (20a) of the ear portion (15a) of said first part (13) corresponding to the curvature of said inner circular surface (20b) of the ear portion (15b) of said second part (14). In this configuration, both circular lines 20a and 20b lead to inner linear extensions (respectively 21 a and 21

b) of the lips. Smaller diameter circular line 20a is fully surrounded and in contact by said circular line 20b, i.e. the tip portion (18b) of said second post part (14) reaches over the inner linear extension of the lip 21 a. It is to be understood that curvilinear contact lines are also suitable for achieving an interlocking relationship between the first and the second ear portions (15a, 16a) at the first side. More generally a non-cornered, i.e. smooth profile opposite surface pairs may be of practical use. The lips (20a, 20b) of respectively the first and second parts (13, 14) have circular cross section that allow easy rotation of said parts (13,14) relative to each other.

[0019] Cornered profile ear portions (15b, 16b) of the first and second post parts (13, 14) at the other side of said post body (12) are fitted together such that the tip portion (19a) of said first part (13) leans on the inner linear surface (22) of the ear portion (16b) of said second part (14), outer cornered surface of lip (21 a) of the ear portion (16a) of said first part (13) corresponding to the cornered cavity of said inner linear lip (21 b) of the ear portion (16b) of said second part (14). The tip portion (19b) of said second post part (14) preferably reaches over a corner (23) of the ear portion (16a) of said first part (13). According to the present invention, cornered profile ear portions (15b, 16b) are on principle linear portions linked by corners. The lips (21 a, 21 b) of respectively the first and second parts (13, 14) are particularly made straight in order to allow easy snap of the second part (14) to the first part (13).

[0020] Outer surfaces of each ear portion (15a, 15b, 16a, 16b) comprise lateral openings (26) arranged vertically in spaces along the longitudinal length of the hollow tubular post body (12). They might well be positioned in an equally spaced manner. Said openings (26) extend at least partially along linear extensions of said ear portions (15a, 15b, 16a, 16b) on horizontal axis. Opening (26) on each pair of ear portions (15a, 15b and 16a, 16b) coincide in mounted position. They may for example reach over the curvature regions or ribs (27) on each ear portion (15a, 15b, 16a, 16b) in Fig. 2. On the other hand, it is always preferable to have the first and second parts have vertical ribs (36, 27) for enhancing mechanical strength. Likewise, these parts may also have horizontal ribs (35) for the same purpose.

[0021] Openings (26) extending horizontally along all three sides of each ear portion (15, 16) provides spaces for transversal displacement of a horizontal fence portion (24) in the opening (26). This is especially advantageous in that it avoids use of a specially adapted corner post (s). The arrangement of the present invention is suitable for providing a turning angle up to 120 degrees in corners without use of additional material. In the preferred embodiment, these lateral openings (26) are arranged in the shape of a rectangular slot so as to allow rotation of said horizontal fence members (24) around the contained vertical end of the fence material in an angle ranging from 0° to 120°.

[0022] The fence modules used according to the preferred embodiment of the present invention, conventionally comprising intersecting bars, consist of vertical (23) and horizontal (24) fence portions fastened to the post (12) without use of additional fittings. Vertically extending outermost bars at both sides of each module is fitted in the longitudinal spaces delimited by ear portions (15, 16) of said hollow tubular post body (12). An outermost vertical bar fitted in said longitudinal space communicate with horizontal fence portions (24) integral thereto through openings (26) arranged longitudinally in spaces and in the manner to extend along all three sides of said ear portions (15 ,16) on horizontal axis.

[0023] Post parts (13, 14) being fitted into each other with the respective ear portions (15a, 15b; 16a, 16b) being interlocked, each part (13, 14) is now only allowed a vertical, i.e. telescopic movement. Prior to assembling post halves (13, 14), vertically extending outermost fence portions (25) at both sides of a fence module are fitted in the longitudinal spaces delimited by ear portions (15, 16) of said hollow tubular post body (12).

[0024] Following insertion of vertically extending fence portions (26) in the longitudinal spaces delimited by ear portions (15, 16) and alignment of adjoining horizontally extending fence portions (29) integral thereto, a cap (28) is placed upon the post (12) so as to cover both the circular portion (17) and adjoining ear portions (15, 16). Presence of the cap (28) further ensures securing of essential components of the post (12), i.e. of post parts (13, 14) and vertical fence portions (25).

[0025] According to the present invention, the fence post (12) in interlocking communication with fence modules is seated on a flange (30) having a corresponding cavity (31) for vertically receiving said post (12). The cavity (31) of the flange (30) is particularly shaped and dimensioned to receive the base of the post (12) so as to support and keep the same integral. Likewise, a cap (28) whose internal cavity is shaped and dimensioned to receive the top of said post (12) also serves to the same purpose of supporting and keeping the post integral in erected form. More preferably, said flange (30) has a plurality of mounting slots (33) in the shape of a rectangle that allow limited transitional movement of the post (12). This feature is especially advantageous during on-site installation and particularly stretching of fence material.

[0026] A fence post (12) obtained by way of fitting of components into each other in a reliable manner without use of additional fittings also enables use of thinner material in manufacturing, thereby allowing material saving. Fig. 4 demonstrates a fence panel with double horizontal bars extending into the openings (26). The present arrangement of the post (12) allows different fence types and configurations to be assembled with the post (12). For instance, metal mats or a welded wire mesh may be configured to be assembled with the post (12) according to the present invention. This can for instance be achieved without modifying present openings (26) by way of an interlocking connection.

[0027] In the preferred embodiment, the first and sec-

ond parts are made of sheet metal that is fabricated into the desired configuration by way of the crimping technique. Nevertheless, these parts may also be manufactured by pressing, extrusion, molding or various other manufacturing processes. The present invention is advantageous in that it eliminates losses of conventional techniques that rely on classical methods like cutting, welding, clamping etc. Therefore, it is preferable to eliminate post-manufacture processes to avoid associated labor and raw material costs and opt for crimping, extruding or pressing.

[0028] The tubular post (12) according to another preferred embodiment of the present invention comprises a second part (14) provided with a plurality of locking pins (34) located along an edge (19b) of the lips (16b) of the second part (14). The plurality of these locking pins (34) fit into corresponding slots (37) located along an edge of the lips (16a) of the first part (13). In order to obtain a better snap, said locking pins (34) may be L-shaped to first insert to corresponding slots and then to slightly slide downwardly for complete fixation.

[0029] In a nutshell, the present invention provides a fence post (12) comprised of two halves (13, 14), each (13) having curvilinear ear portions (15a, 15b; 16a, 16b) fitted into a respective ear portion (15a, 15b; 16a, 16b) of the other post part (14) in an interlocking manner at both sides of said post (12). Said ear portions (15a, 15b; 16a, 16b) enclose a longitudinal space adapted to receive a vertical fence portion (25) integral to a plurality of horizontal fence portions (29), the latter portions communicating with said vertical portion (25) through openings arranged longitudinally in spaces along the entire length of said ear portions (15, 16) integral to said hollow tubular post body (12).

[0030] The present invention proposes three different post profile embodiments as depicted in Fig 2, Fig. 10 and Fig. 11. Fig. 2 demonstrates two sets of ear portions (15a, 15b and 16a, 16b) having respective curvilinear and cornered interlocking profiles. Fig. 1 and Fig. 10 demonstrate the second embodiment of the present invention. In this configuration too, both interlocking ear portions (15, 16) at two sides may be designed to have either a curvilinear or a cornered profile. The distinguishing feature of the embodiment over the first embodiment, however, lies in that one of the ear portions (15, 16) is configured to have a protruding U-section (38), the outermost part of which is flush with the outermost lateral surface (39) of the corresponding ear portion (16b). The tip portion of said latter surface (39) further leaning against said U-shape section provided a further stability measure in terms of interlocking relation. The ear (16) is configured to have a protruding U-section (38) which has a plurality of slots (37) located along the outer edge of the ear (16a) of the first part (13). Likewise, the second part (14) comprises a plurality of locking pins (34) which are located along the edge (19b) of the lip (16b) of the second part (14). The locking pins (34) correspond to the slots (37) in their number and location. Thereby, the second part (14) fully snaps on the first part (13) when said locking pins (34) are inserted into said slots (37) in the end of mounting process.

[0031] The third embodiment of Fig. 11 provides a further pair of corresponding male and female ribs (40) that serves to the same purpose as the arrangement of Fig. 10. The lip (21a) of the first part (13) has a further rib (40) which extends lengthwise at least along a portion of the lip (21 a). The rib (40) is adapted to snap to a corresponding recess located along the lip (21 b) of the second part (14) in order to secure the second part to the first part.

Claims

1. A tubular post (12) for a fence **characterized in that** said post comprises;
   a first part (13) which comprises ear portions (15a, 16a) at both sides of an outwardly protruding portion (17), where said ear portions (15a, 16a) have at their outer ends inwardly extending lips (20a, 21 a),
   a second part (14) which comprises ear portions (15b, 16b) at both sides of an outwardly protruding portion (17), where said ear portions (15b, 16b) have at their outer ends inwardly extending lips (20b, 21 b),
   wherein said first part (13) and second part (14) have a plurality of lateral openings (26) adapted to receive horizontal ends of a fence material, in particular a mesh wire or a framed panel, throughout their lengths,
   wherein said lips (20b, 21b) of the second part (14) are shaped and dimensioned to engage and fit snugly on the corresponding lips (20a, 21 a) of said first part (13), and
   wherein each of the lips (20a, 20b) and (21 a, 21 b) form a lengthwise housing for vertical ends of said fence material when second part (14) is fit snugly onto said first part (13).

2. A tubular post (12) for a fence as set forth in Claim 1 wherein the lips (20a, 20b) of respectively the first and second parts (13, 14) have circular cross section so as to allow easy rotation of said parts (13, 14) relative to each other.

3. A tubular post (12) for a fence as set forth in Claim 1 wherein the lips (21 a, 21 b) of respectively the first and second parts (13, 14) are straight so as to allow easy snap of the second part (14) to the first part (13).

4. A tubular post (12) for a fence as set forth in Claim 1 wherein the post further comprises a flange (30) having a cavity (31) shaped and dimensioned to receive the base of said post (12) so as to support and keep the same integral.

5. A tubular post (12) for a fence as set forth in Claim 1 wherein the post further comprises a cap (28)

whose internal cavity is shaped and dimensioned to receive the top of said post (12) so as to support and keep the same integral.

6. A tubular post (12) for a fence as set forth in any of the preceding claims wherein the cross sectional view of the outwardly protruding portion (17) of at least one of the parts (13, 14) is one of the following; a semi-circle, ellipse, triangle, square, pentagon, hexagon.

7. A tubular post (12) for a fence as set forth in Claim 6 wherein each of the plurality of lateral openings (26) are arranged in the shape of a rectangular slot so as to allow rotation of said horizontal fence members (24) around the contained vertical end of the fence material in an angle ranging from 0° to 120°.

8. A tubular post (12) for a fence as set forth in Claim 1 wherein said first and second parts are made of sheet metal fabricated by crimping, pressing, extrusion or molding.

9. A tubular post (12) for a fence as set forth in Claim 8 wherein at least one of said first and second parts have vertical ribs (36, 27) for enhancing mechanical strength.

10. A tubular post (12) for a fence as set forth in Claim 8 wherein at least one of said first and second parts have horizontal ribs (35) for enhancing mechanical strength.

11. A tubular post (12) for a fence as set forth in Claim 1, wherein
said ear (16) is configured to have a protruding U-section (38) which has a plurality of slots (37) located along the outer edge the ear (16a) of the first part (13) and, wherein
said second part (14) comprises a plurality of locking pins (34) which are located along an edge (19b) of the lip (16b) of the second part (14) and which correspond to the slots (37) of the first part,
whereby said second part (14) fully snaps on said first part (13) when said locking pins (34) are inserted into said slots (37).

12. A tubular post (12) for a fence as set forth in Claim 11 wherein said locking pins (34) are L-shaped.

13. A tubular post (12) for a fence as set forth in Claim 11 wherein the lip (21 a) of the first part (13) has a further rib (40) which extends lengthwise at least along a portion of said lip (21 a) and which is adapted to snap to a corresponding recess located along the lip (21 b) of the second part (14).

14. A tubular post (12) for a fence as set forth in any of the preceding claims wherein said flange (30) has a plurality of mounting slots (33) in the shape of a rectangle that allow limited transitional movement of the post (12) for stretching the fence material.

15. A fence comprising a plurality of posts as set forth in any of the preceding claims, and a bundle of fence material selected from one or more of the group consisting of mesh wires, welded wires, razor wires, gabion, single panels, double reinforced panels and framed panels.

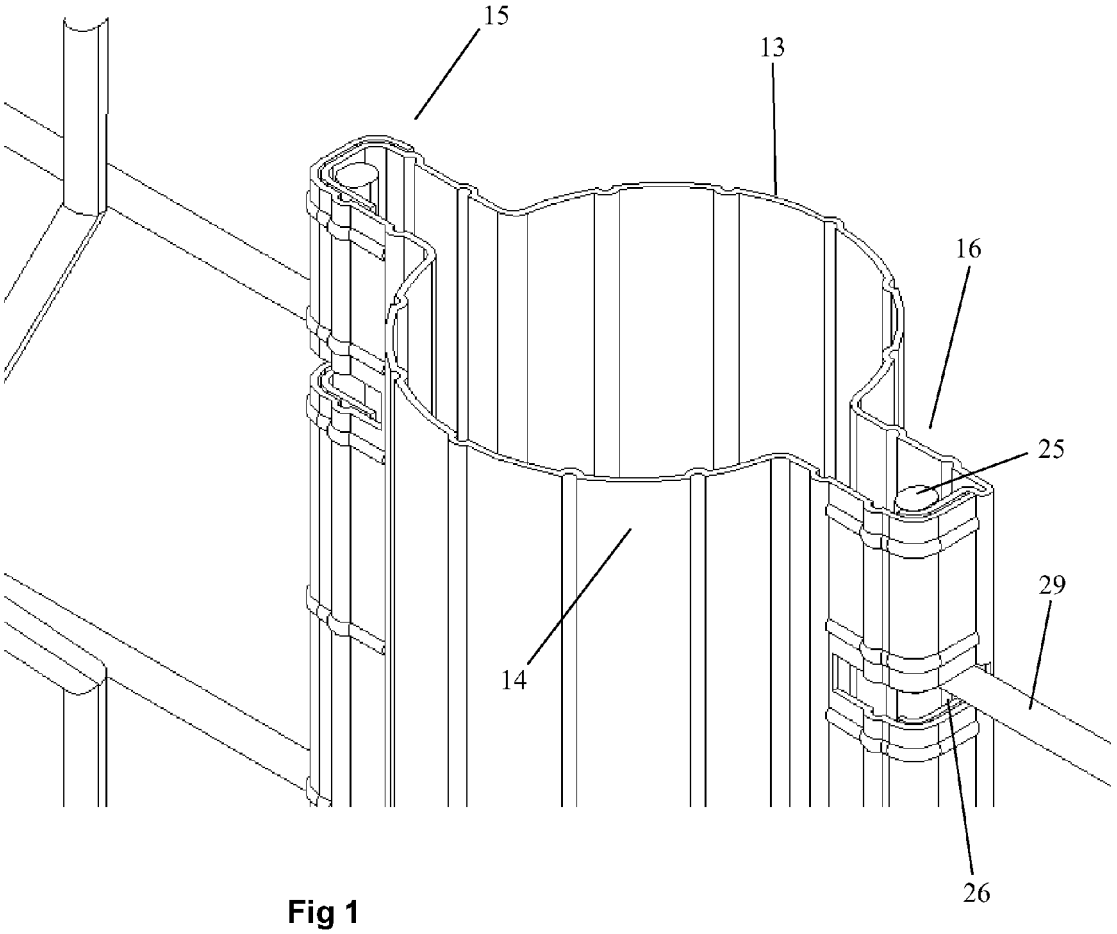

Fig 1

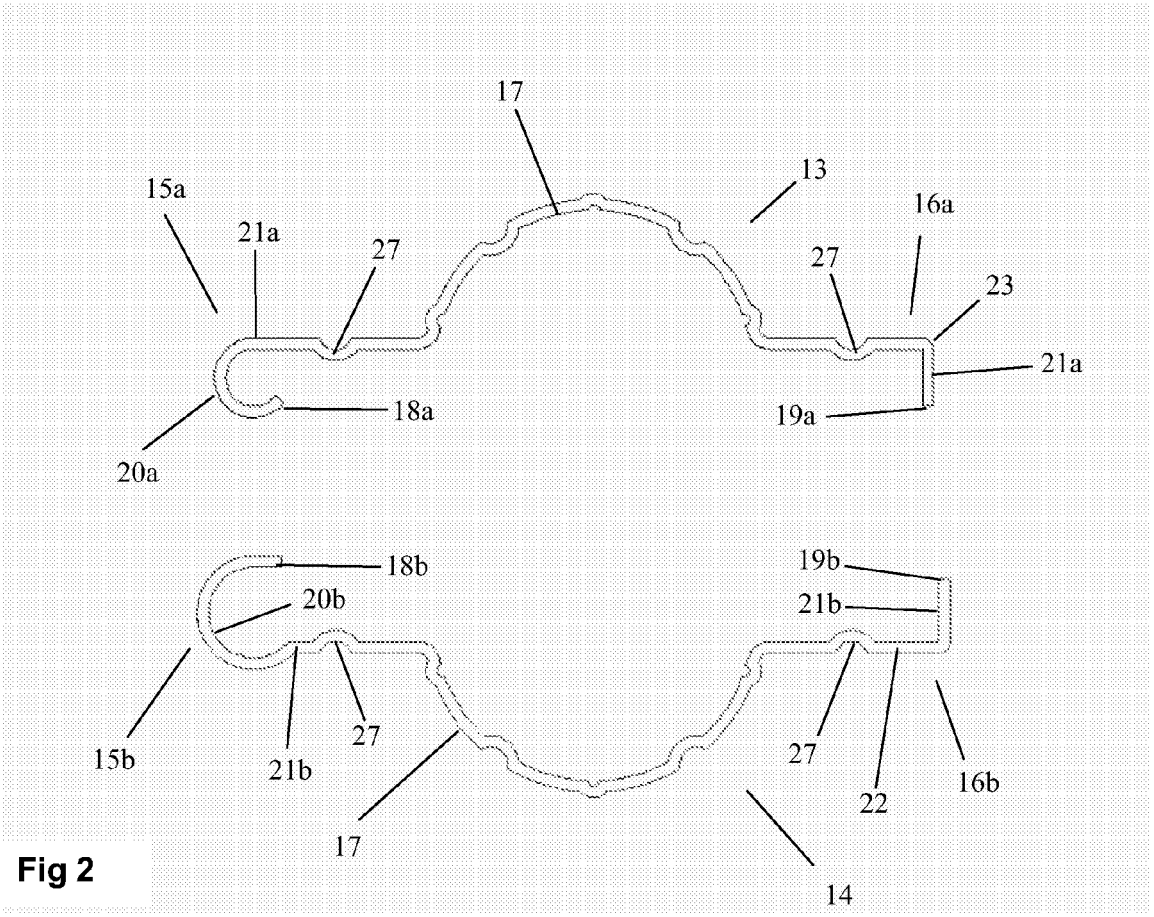
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Fig 2

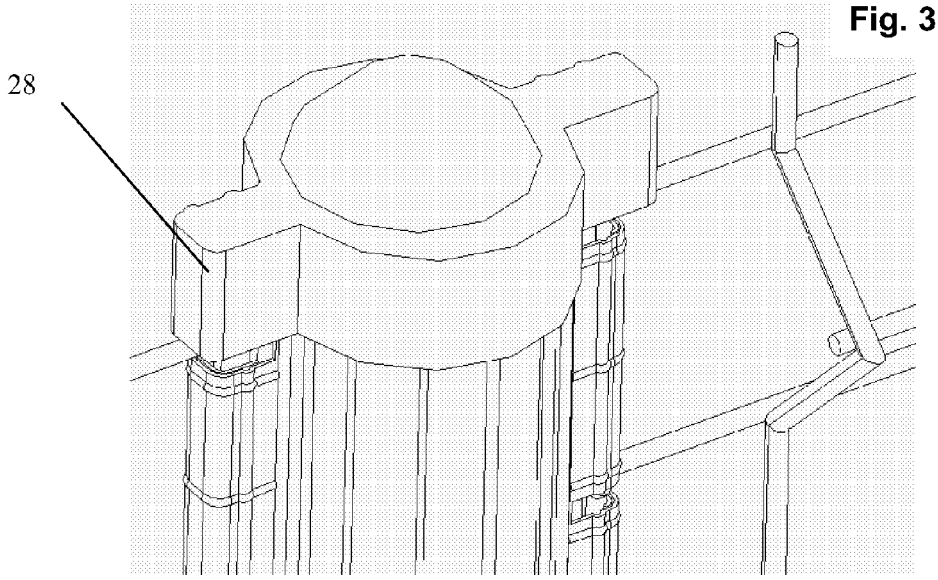
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Fig. 3

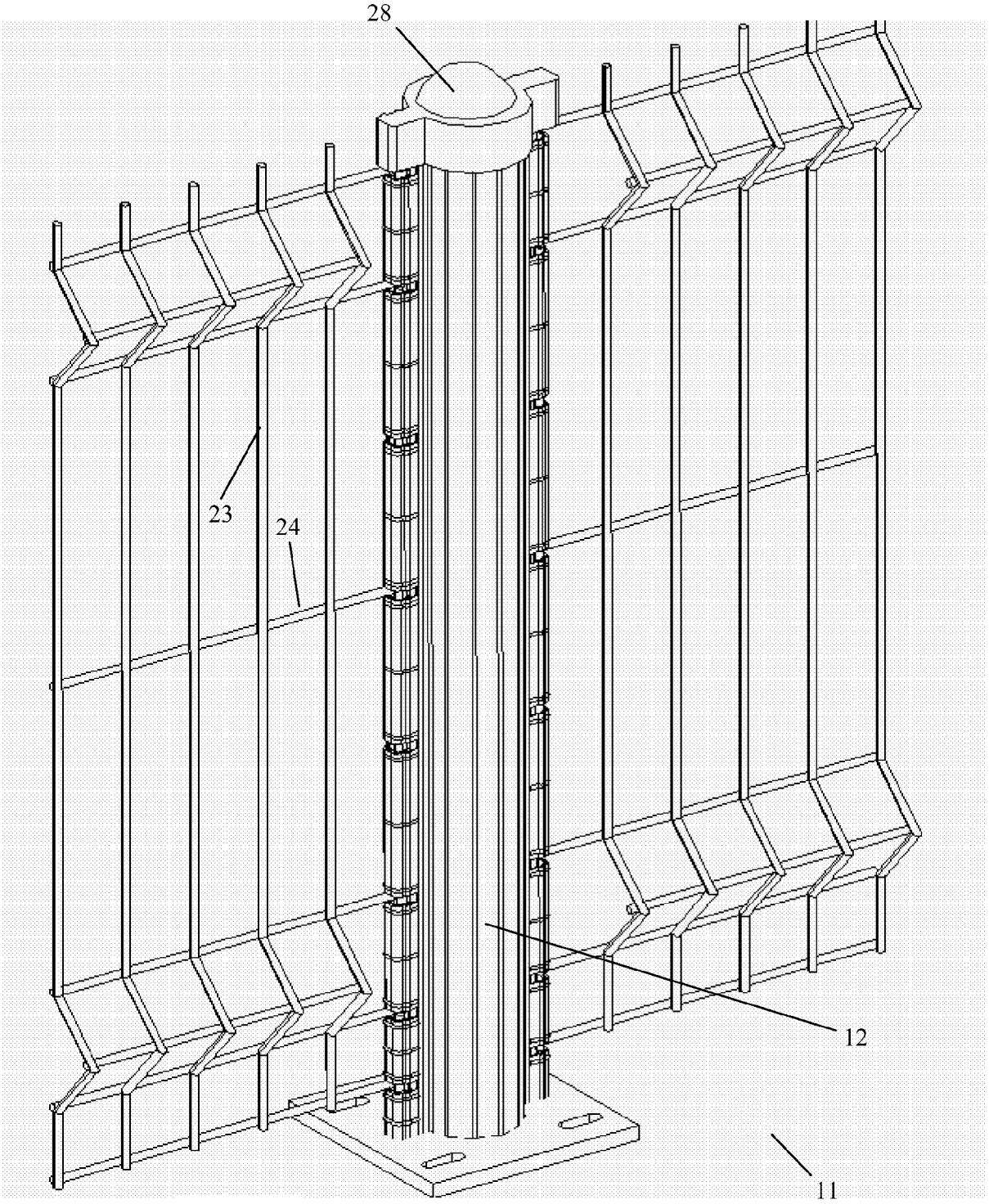

Fig. 4

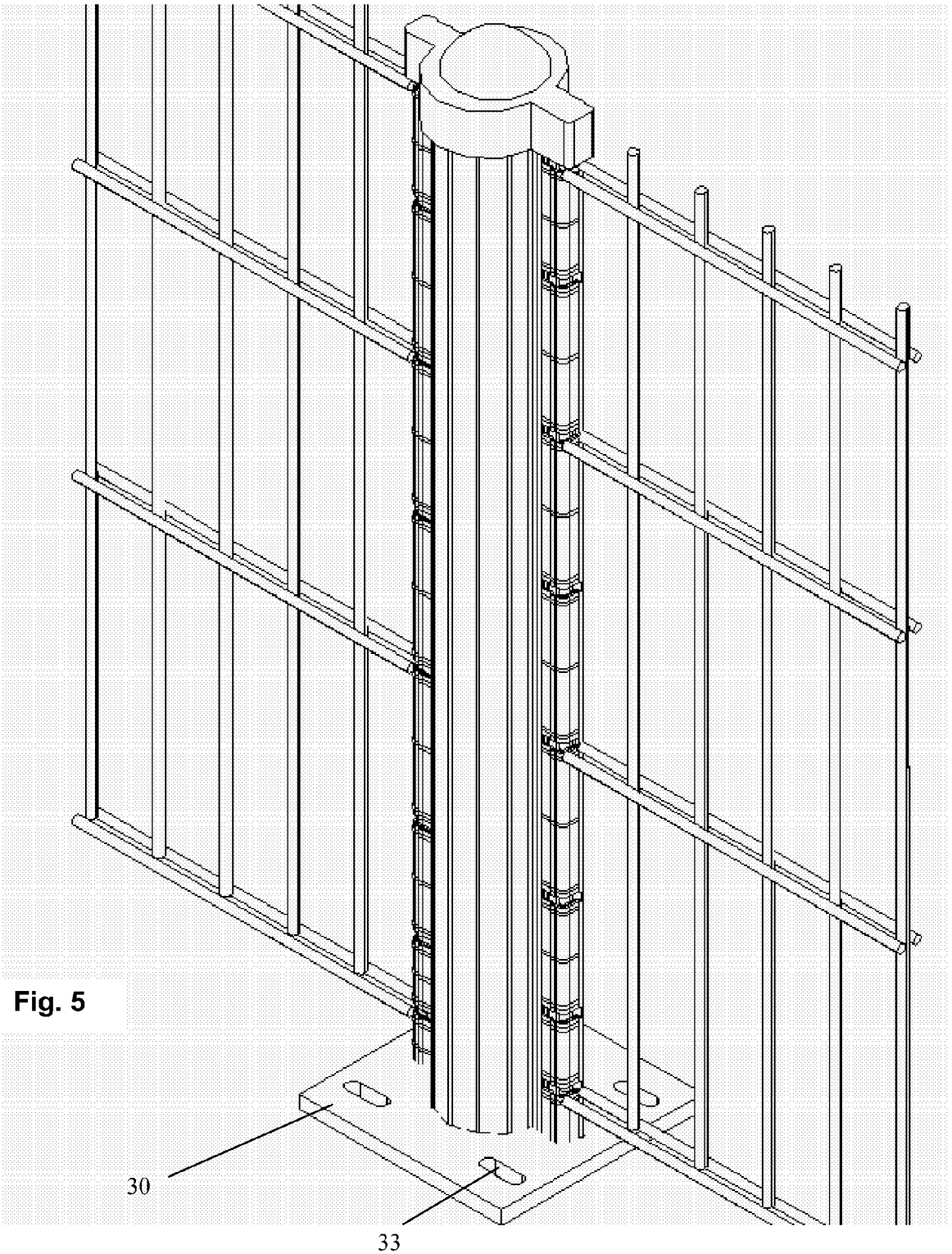

Fig. 5

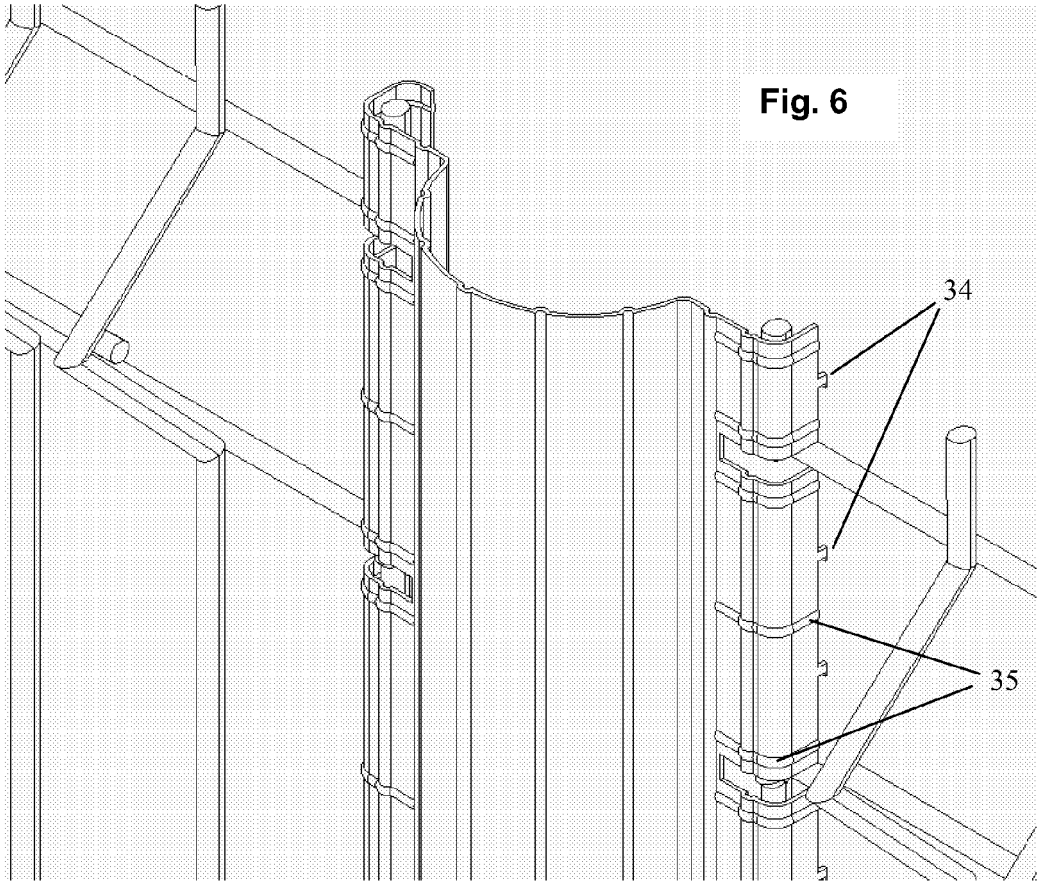

Fig. 6

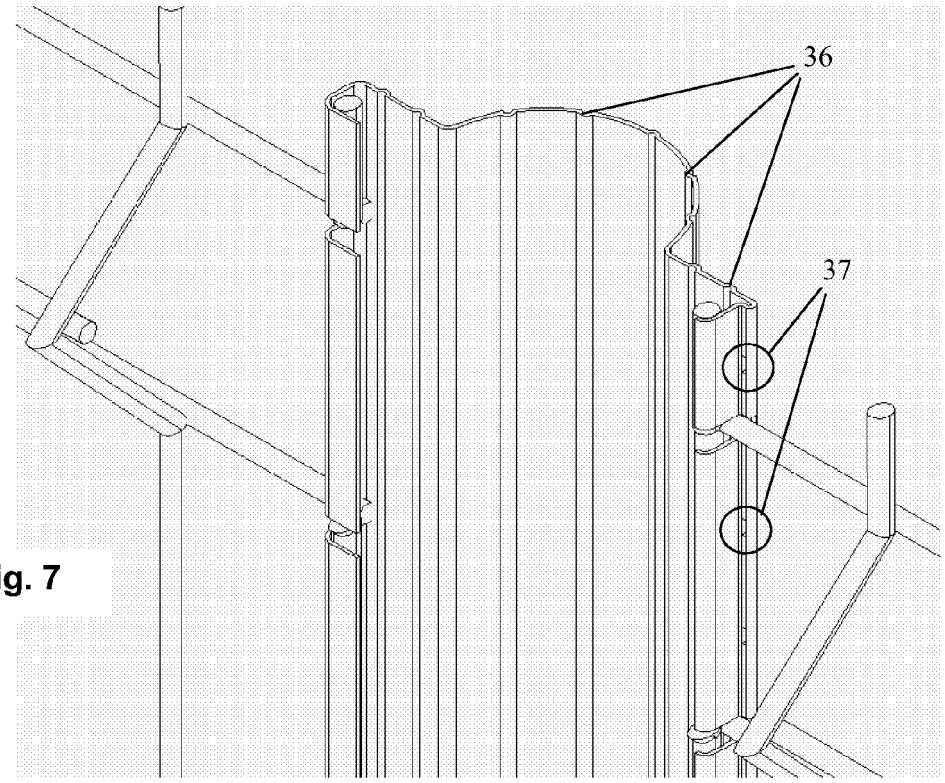

Fig. 7

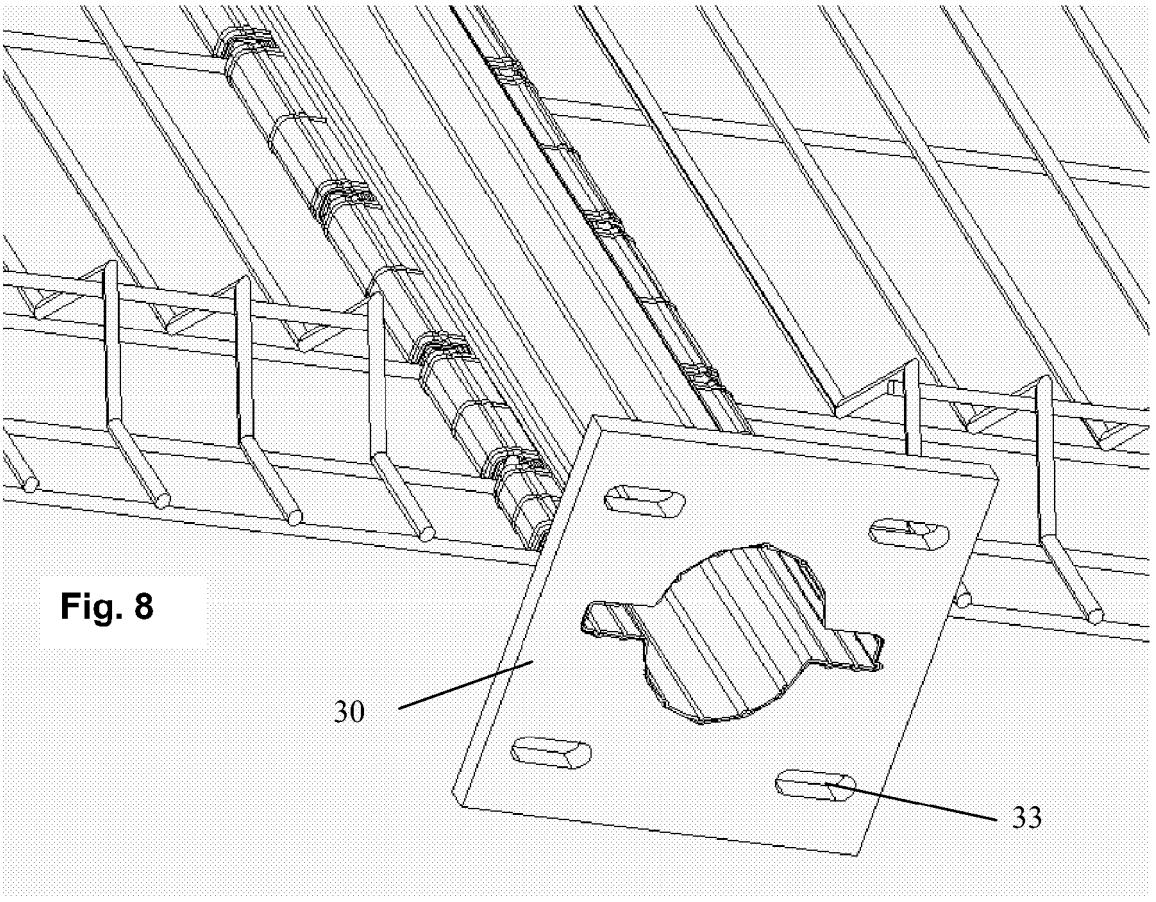

Fig. 8

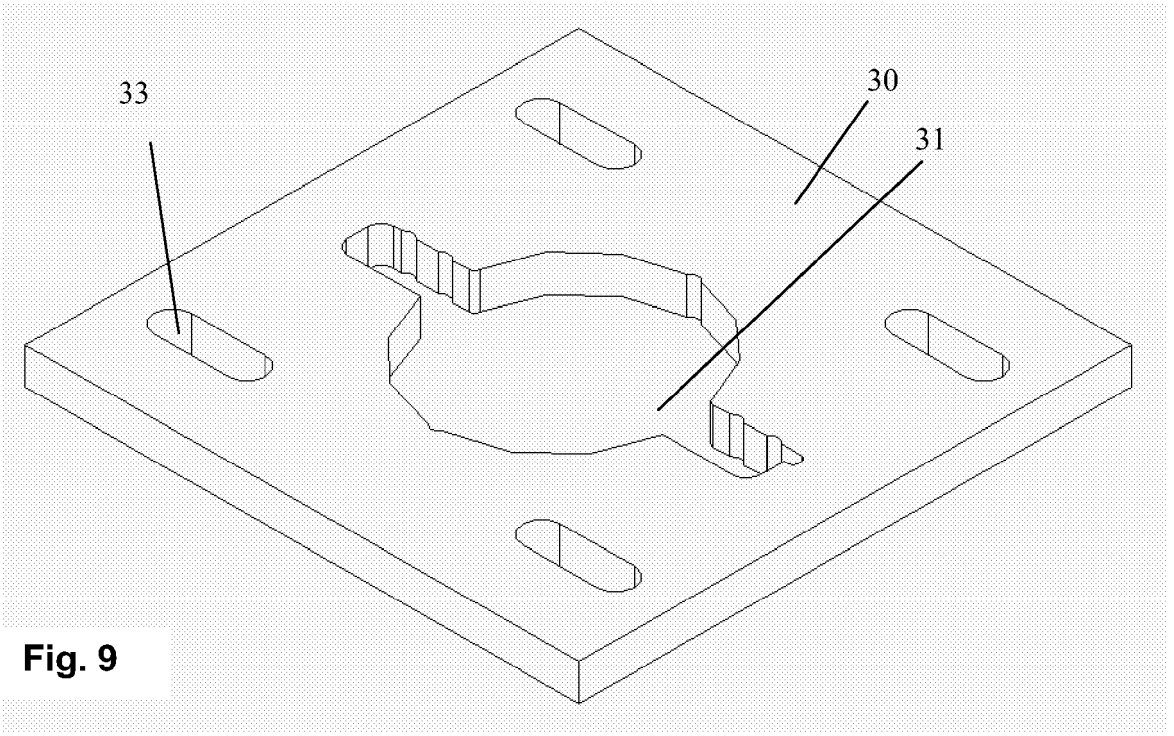

Fig. 9

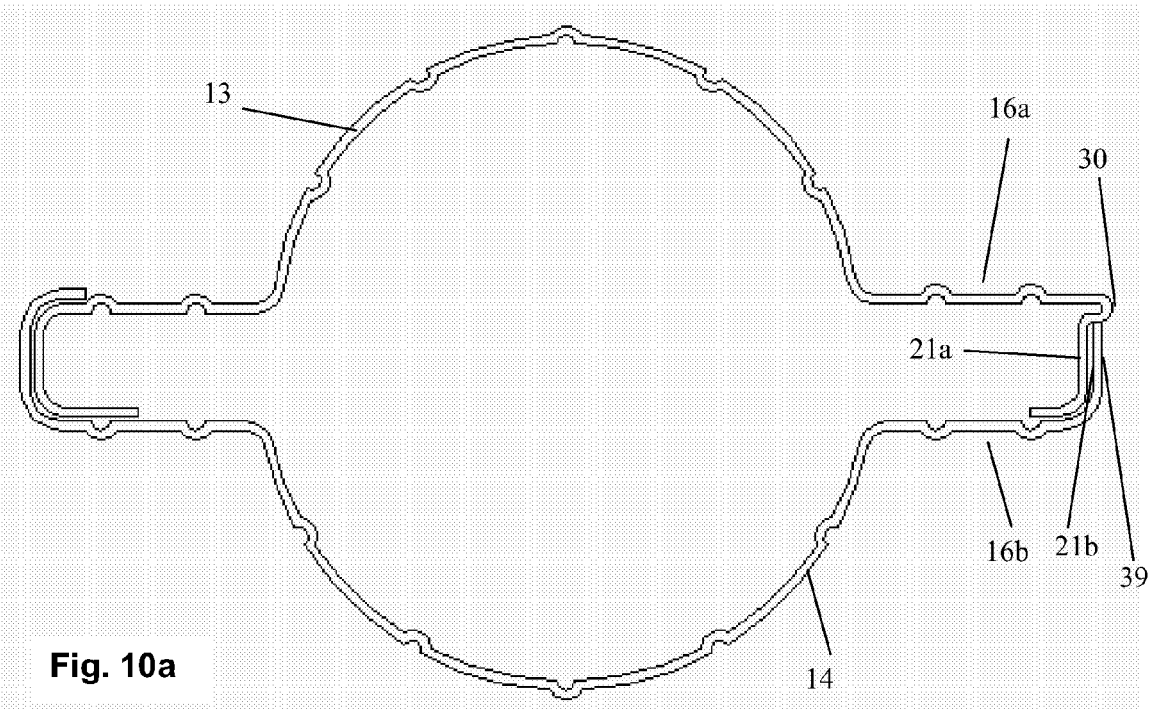

Fig. 10a

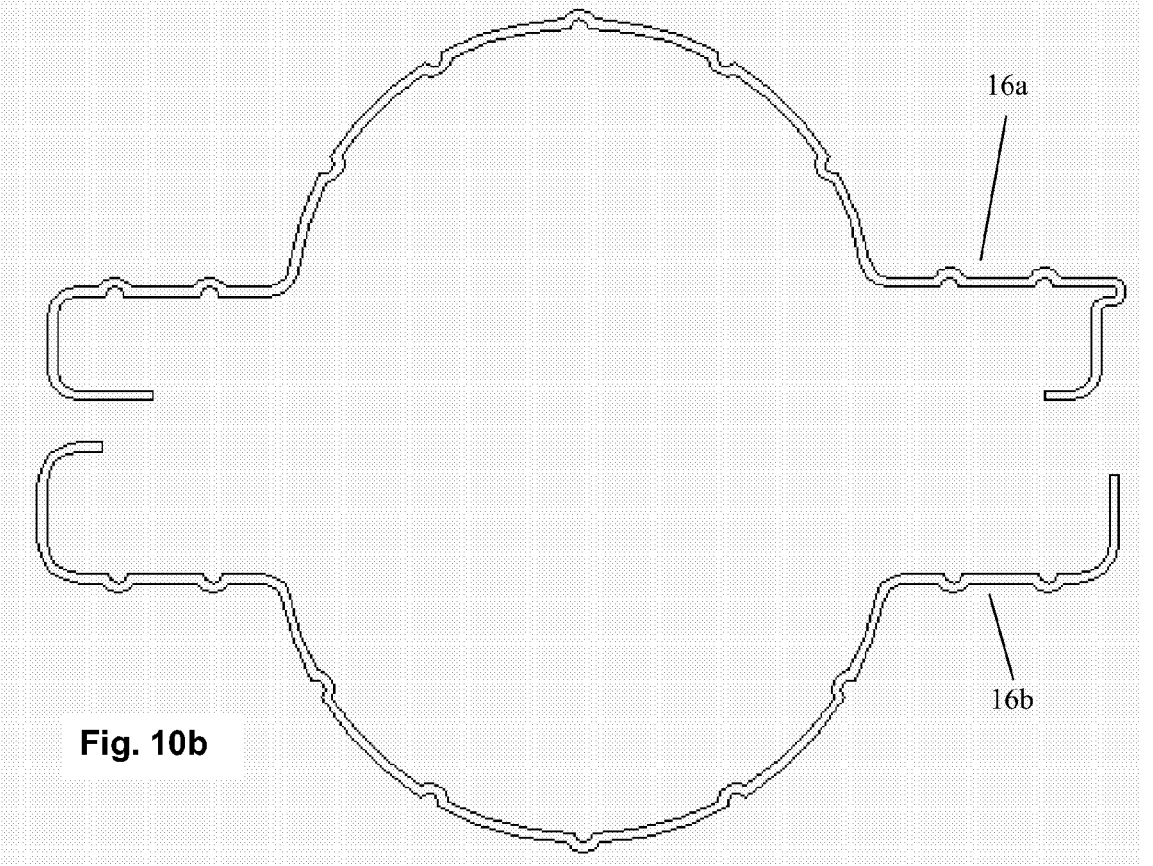

Fig. 10b

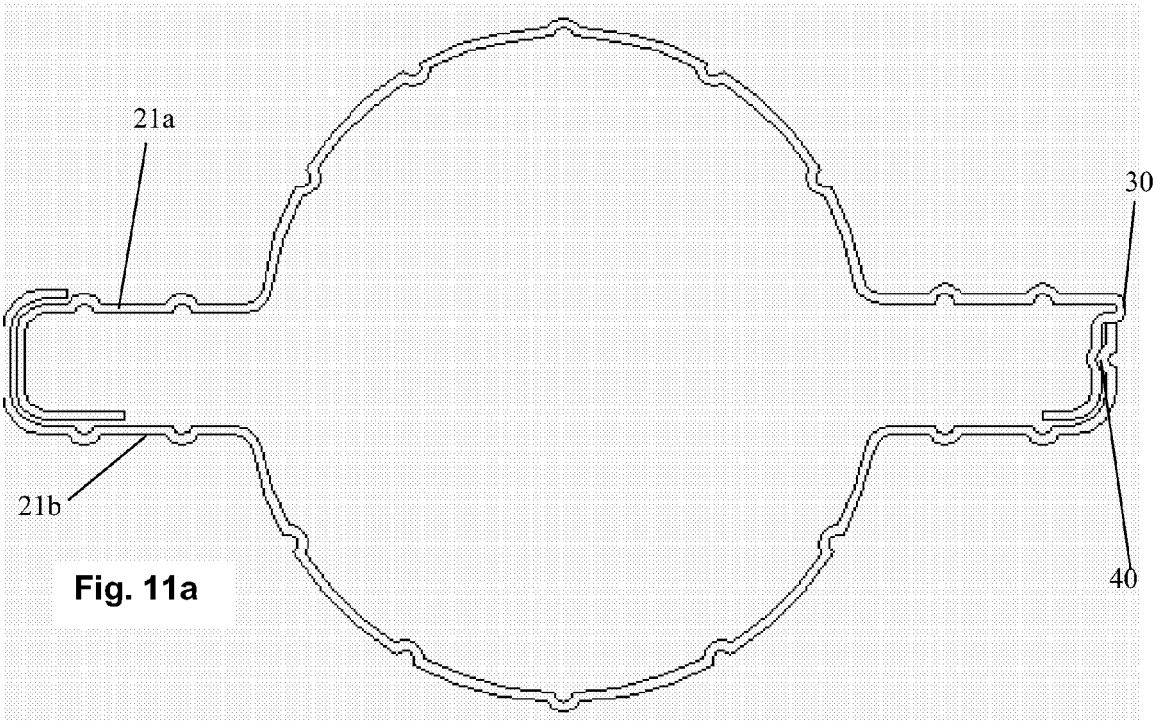

Fig. 11a

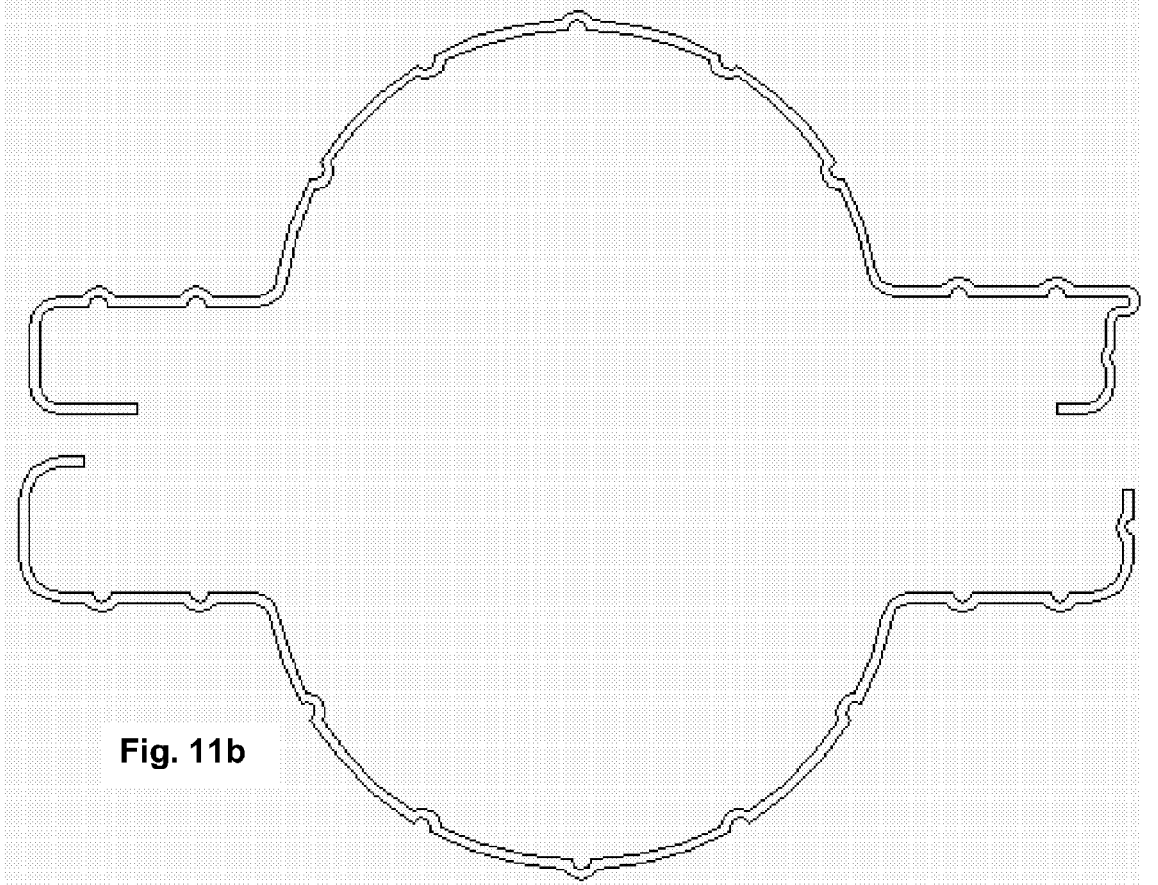

Fig. 11b

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EUROPEAN SEARCH REPORT

Application Number
EP 07 10 6189

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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E04H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	27 September 2007	Zuurveld, Gerben

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