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(54) **Post for balusters, railings and similar**

(57) A post for balusters, railings and similar, comprising a tubular body (4), provided with a lower end (5) suitable for being fixed to a floor, a step of a staircase (3) or another similar surface, and an upper end (6), the post (1) also comprising a rotary joint (7) associated with the upper end (6) and comprising a first member (8) able to be connected to the upper end (6), and a second member (9) able to be connected to a handrail (11) of a banister

(2); the first member (8) and the second member (9) respectively comprise a first tang (16) able to be inserted in the cavity of the upper end (6) of the tubular element (4), and a second tang (17) able to be inserted in the cavity opening of the free end (10) of the handrail (11); the first member (8) and the second member (9) are identical and interchangeable.

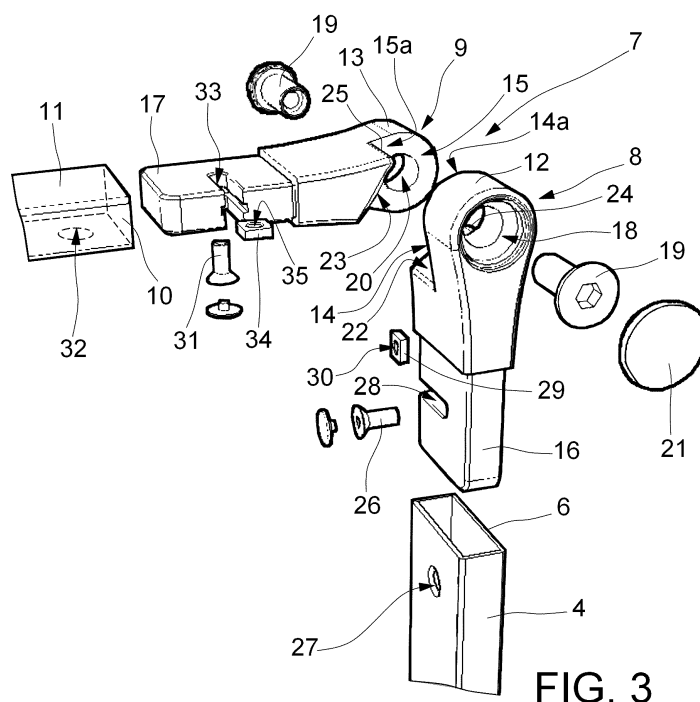


FIG. 3

Description

[0001] The present invention concerns a post for balusters, railings and similar.

STATE OF THE ART

[0002] Some types of railings, banisters and other protective fall-prevention structures for staircases are normally made using vertical posts mounted on the floor, to the top of which the handrails are fixed.

[0003] The most common banisters and railings are made entirely from metallic components, for example made from stainless steel or other materials having suitable characteristics both in terms of appearance and in terms of function.

[0004] One of the main technical problems encountered in the installation of banisters or railings for staircases is, as known, the different slope of each staircase, to which the inclination of the handrail must adapt with respect to the vertical posts to obtain correct assembly.

[0005] Many known railings or banisters are built using metallic pieces cut to size and welded.

[0006] If the assembly of the parts is carried out in the workshop and not on site, obviously at the moment of mounting there can be problems of unevenness or imprecise alignments, which force the assembler to modify the parts on site.

[0007] In order to avoid these problems, banisters have been developed in which the connection between the posts and the handrail is of the rotary type, in order to obtain different inclinations in relation to the slope of each staircase.

[0008] These solutions, however, are not currently considered entirely satisfactory mainly in terms of the possibility of adjusting the inclination, which is increasingly limited and difficult to achieve. Moreover, the solutions currently available on the market foresee rotary couplings between posts and handrail that are very bulky, and that substantially limit the features of the product also in terms of appearance.

PURPOSES OF THE INVENTION

[0009] The technical task of the present invention is therefore that of improving the state of the art. Within such a technical task, a purpose of the present invention is to devise a post that makes it possible to easily adjust the inclination of the handrail, with angular excursion greater than that of known posts.

[0010] Yet another purpose of the present invention is to make a post characterised by a connection to the handrail of a banister, or other protective structure, having limited bulk and therefore that is more functional.

[0011] This task and these purposes are accomplished by the post for baluster, railings and similar according to the attached claim 1.

[0012] The post according to the invention comprises

a tubular body, provided with a lower end suitable for being fixed to a floor, a step of a staircase or other similar surface, and an upper end, the post also comprising a rotary joint associated with the upper end and comprising a first member able to be connected to the upper end, and a second member able to be connected to a handrail of a banister; the first member and the second member respectively comprise a first tang able to be inserted in the cavity of the upper end of the tubular element, and a second tang able to be inserted in the cavity opening of the free end of the handrail. The connection between the post and the handrail is carried out with a solution of minimum bulk, and therefore particularly functional and adaptable to different requirements, even aesthetic ones; moreover, the same solution makes it possible to adjust the inclination between the post and the handrail with an angular excursion that cannot be obtained with other known solutions.

[0013] The dependent claims refer to preferred and advantageous embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The characteristics of the invention will become clearer to those skilled in the art from the following description and from the attached tables of drawings, given as a non-limiting example, in which:

figure 1 is a perspective view of a post according to the present invention;
figure 2 is a detailed side view of the rotary joint of the post;
figure 3 is an exploded perspective view of the rotary joint of the post;
figure 4 is a detailed side view of the rotary joint in different assembly positions;
figure 5 is a detailed and exploded perspective view of a central portion of the post;
figure 6 is a detailed side view of a central portion of the post in different assembly positions;
figure 7 is a detailed side view of the base of the post;
figure 8 is a perspective and exploded view of the base of the post;
figure 9 is a perspective view of an example of a banister able to be made with the post according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

[0015] With reference to the attached figure 1, a post for balusters, railings and similar according to the present invention is wholly indicated with 1.

[0016] The post according to the present finding can be used in the installation of railings, banisters, parapets, or any other protective structure associated with stairs, galleries, terraces, balconies, or similar, without any limitation.

[0017] For example, figure 9 illustrates a portion of pro-

protective banister 2 of a flight of stairs 3 comprising a plurality of posts 1 according to the invention, fixed to the floor, on steps or intermediate landings.

[0018] It should be specified that the attached figure 9 constitutes only one possible non-limiting example of use of the post 1 according to the invention, with many other applications not represented in the figures being possible.

[0019] The post 1 comprises a tubular body 4.

[0020] The tubular body 4, in the embodiment represented, has a hollow rectangular cross section, but it could have a cross section of any other shape suitable for the application.

[0021] The tubular body 4 can be made for example from stainless steel, or from another material suitable for the specific application.

[0022] The tubular body 4 comprises a lower end 5.

[0023] The lower end 5 is suitable for being fixed to a floor, a step of a staircase 3 or another similar surface.

[0024] The tubular body 4 also comprises an upper end 6.

[0025] The post 1 also comprises a rotary joint 7.

[0026] The rotary joint 7 is associated with the upper end 6 of the tubular body 4.

[0027] The rotary joint 7, in greater detail, comprises a first member 8.

[0028] The first member 8 can be connected to the upper end 6 of the tubular body 4.

[0029] The rotary joint 7 also comprises a second member 9.

[0030] The second member 9 can be connected to the free end 10 of a handrail 11, for example the handrail 11 of a banister 2.

[0031] The first member 8 comprises a respective first articulation portion 12.

[0032] Moreover, the second member 9 comprises a respective second articulation portion 13.

[0033] The first articulation portion 12 and the second articulation portion 13 are coupled together at a rotation axis A.

[0034] According to another aspect of the present invention, the first member 8 comprises a first lateral recess 14. The first lateral recess 14 defines a respective first back surface 14a that coincides with the side surface of the first articulation portion 12.

[0035] Moreover, the second member 9 comprises a second lateral recess 15.

[0036] The second lateral recess 15 defines a respective second back surface 15a that coincides with the side surface of the second articulation portion 13.

[0037] With the rotary joint 7 assembled, the first articulation portion 12 of the first member 8 is engaged in the second lateral recess 15 of the second member 9; in the same way, the second articulation portion 13 of the second member 9 is engaged in the first lateral recess 14 of the first member 8.

[0038] In greater detail, in assembly configuration the first back surface 14a and the second back surface 15a

abut against one another.

[0039] In this assembly configuration, the rotary joint 7 has a minimal transversal bulk.

[0040] In an embodiment of particular practical interest of the present invention, the articulation portions 12, 13 - and consequently the lateral recesses 14, 15 - are sized so that the rotary joint 7 in assembly configuration has a transversal bulk not greater than that of the single components of the banister 2, i.e. the post 1 and the handrail 11.

[0041] This makes it possible to obtain a particularly advantageous solution in functional terms, since the banister 2 made with the post 1 according to the invention has a minimal transversal bulk.

[0042] It can therefore also be installed in situations of limited available space: moreover, its limited transversal bulk makes the flight of stairs 3 more accessible, particularly if it is a very narrow flight. According to an aspect of the invention, the first member 8 comprises a respective first tang 16.

[0043] As illustrated in figure 3, the first tang 16 can be inserted in the cavity of the upper end 6 of the tubular body 4.

[0044] Moreover, the second member 9 comprises a respective second tang 17.

[0045] The second tang 17 can be inserted in the cavity of the free end 10 of the handrail 11.

[0046] In this way, a butt connection can be made between the post 1 and the handrail 11 that is particularly practical and of minimum bulk.

[0047] Thanks to this, the connection between the two components is very advantageous for example in installation situations in which the available space is limited, or in which it is intended to make a banister 2 that is particularly light but equally safe.

[0048] The first articulation portion 12 is substantially cylindrical or semi-cylindrical in shape, with axis of symmetry coinciding with the rotation axis A.

[0049] The second articulation portion 13 is also substantially cylindrical or semi-cylindrical in shape, with axis of symmetry coinciding with the rotation axis A.

[0050] The first articulation portion 12 comprises a respective first hole 18 for the insertion of articulation means 19.

[0051] In the same way, the second articulation portion 13 comprises a respective second hole 20 for the insertion of the aforementioned articulation means 19.

[0052] The articulation means 19 are for example of the screw type or another equivalent type.

[0053] Lateral closing covers 21 are foreseen that hide the articulation means 19 from view.

[0054] The first lateral recess 14 is defined in particular by a first surface 22 that is inclined with respect to the longitudinal axis of the tubular body 4.

[0055] The second lateral recess 15 is defined by a second surface 23 that is inclined with respect to the longitudinal axis of the handrail 11.

[0056] The first inclined surface 22 defines, with the

side surface of the first member 8, a first abutment edge 24 on the second articulation portion 13, so as to make at least one end stop position in the rotation of the first member 8 with respect to the second member 9.

[0057] In the same way, the second inclined surface 23 defines, with the side surface of the second member 9, a second abutment edge 25 on the first articulation portion 12, again in order to obtain at least one end stop position.

[0058] This solution makes it possible to obtain a wide angular excursion in the rotation of the first member 8 with respect to the second member 9.

[0059] As illustrated in figure 4, two opposite end stop positions are defined: in the first end stop position - in which the handrail 11 is represented with a broken line - the handrail 11 is inclined, for example, by 45° with respect to the post 1, whereas in the second end stop position the handrail 11 and the post 1 are aligned, i.e. an angle of 180° is defined between them. The angular values quoted above are quoted only as examples, and they are not, of course, limiting.

[0060] As can be easily understood - also by looking at figure 9 - thanks to this solution the post 1 can be easily and effectively used both as lower post and as upper post of the same banister 2, situations in which the handrail 11 defines an angle with respect to the post 1 that is respectively obtuse and acute.

[0061] In particular, it should be noted that this solution makes it possible to obtain inclinations between the post 1 and the handrail 11 that cannot be obtained with other known solutions in which the post is associated in an adjustable manner with an intermediate portion of the handrail.

[0062] The first tang 16 can be blocked in the cavity of the upper end 6 of the tubular body 4 through a first screw 26 engaged in a first through hole 27 made in the tubular body 4.

[0063] In greater detail, the first tang 16 comprises a respective first side seat 28 in which a first insert 29 is slidably housed, engaged by a first threaded hole 30.

[0064] Similarly, the second tang 17 can be blocked in the cavity of the free end 10 of the handrail 11 through a second screw 31 engaged in a second through hole 32 made in the handrail 11.

[0065] In greater detail, the second tang 17 comprises a respective second side seat 33 in which a second insert 34 is slidably housed, engaged by a second threaded hole 35.

[0066] Thanks to the solutions described here, the first member 8 and the second member 9 can be produced with a single machining process: indeed, no other machining is necessary, for example, to make the fixing holes of the first screw 26 or of the second screw 31.

[0067] In an embodiment of the invention, the first member 8 and the second member 9 can be made from sintered stainless steel.

[0068] In other embodiments, the first member 8 and the second member 9 can be made from another material

and/or with another technology, for example by moulding or fusion of a metallic alloy or of polymeric material.

[0069] According to an aspect of the invention, the first member 8 and the second member 9 of the rotary joint 7 are identical to each other and interchangeable.

[0070] In other words, each of them can be associated without distinction with the tubular body 4 of the post 1 or with the handrail 11.

[0071] This allows substantial savings both in the production of components and in storage costs.

[0072] According to another aspect of the invention, the lower end 5 of the tubular body 4 comprises means 36 for adjusting the fixing height to a floor, a step of a staircase 3 or another similar surface.

[0073] As will become clearer hereafter, the adjustment means 36 make it possible to constrain the tubular body 4 of the post at different heights with respect to the fixing surface.

[0074] This feature, together with the wide possibility of adjustment of the angle between the post 1 and the handrail 11, makes it possible to install the banister 2 in a simple manner in flights of stairs 3 of any type.

[0075] In greater detail, the adjustment means 36 comprise a support 37.

[0076] The support 37 is fixed inside the cavity of the lower end 5 of the tubular body 4.

[0077] The support 37 has one or more plates 38 connected to it, that can be superimposed, resting on the floor, on a step of a staircase 3 or on another similar surface. As made clear for example in the detail of figure 7, by mounting a suitable number of plates 38 superimposed on top of one another, it is possible to vary the mounting height of the post 1.

[0078] Of course, the plates 38 can be made with various thicknesses, to more or less precisely adjust the mounting height of the post 1.

[0079] The support 37 comprises a head 39 able to be fixed inside the cavity of the lower end 5 of the tubular body 4 through upper screws 40.

[0080] More specifically, the head 40 has lateral appendages 41 in which respective threaded holes 42 are foreseen.

[0081] In assembled configuration, the upper screws 40 pass through respective countersunk holes 43 foreseen in the tubular body 4, and are screwed in the aforementioned threaded holes 42.

[0082] The upper screws 40 can then be hidden from view with respective covers 44.

[0083] The support 37 also comprises a threaded pin 45 screwed into a corresponding mother screw foreseen in the head 39.

[0084] The threaded pin 45 has a length such as to partially protrude from the opening of the lower end 5 of the tubular body 4.

[0085] The support 37 also comprises a block 46.

[0086] The block 46 is associated with the intermediate portion of the threaded pin 45; in particular, the block 46 has a threaded through hole into which the threaded pin

45 is completely screwed.

[0087] The block 46 comprises a lower portion 47 to which the plates 38 can be connected.

[0088] In particular, the plates 38 can be connected to the lower portion 47 through lower screws 48.

[0089] Each plate 38, as shown in figure 8, has a respective central hole 49 for the threaded pin 45 to pass through.

[0090] The lower end of the threaded pin 45 can in turn be fixed to the floor, to a step of a staircase 3 or to another similar surface through a self-threading screw, a nut, or other similar elements.

[0091] The tubular body 4 of the post 1 comprises one or more slots 50 for the adjustable connection of respective wires 51 of the banister 2, or of a different protective structure.

[0092] Moreover, the post 1 comprises one or more bushings 52 rotatably supported inside the cavity of the tubular body 4 at the slots 50, through screw means 53.

[0093] The bushings 52 have respective side holes 54 for the insertion of the terminal ends of the respective wires 51.

[0094] As shown in the detail of figure 6, this solution makes it possible to easily adjust the inclination of each wire 51 with respect to the post 1 in an independent manner, adapting precisely to the inclination of the flight of stairs 3.

[0095] It has thus been seen how the invention achieves the proposed purposes.

[0096] The proposed solution firstly makes it possible, as has been seen, to obtain an adjustable inclination between the post and the handrail having an angular excursion that cannot be obtained with other known applications. Consequently, thanks to such a wide angular excursion, the post according to the invention can be used both as a lower post and as an upper post of the same banister. The solution devised is also particularly simple, slim and of limited bulk: it is thus particularly recommended in situations of little available space and/or in which it is intended to make a particularly light banister.

[0097] As well as this, the solution of adjusting the installation height of the post is also of particular interest, also allowing possible unevenness between different areas of the flight of stairs in which the single posts are mounted to be compensated.

[0098] The present invention has been described according to preferred embodiments, but equivalent variants can be devised without departing from the scope of protection offered by the following claims.

Claims

1. Post for balusters, railings and similar, comprising a tubular body (4), provided with a lower end (5) suitable to be fixed to a floor, a step of a staircase (3) or another similar surface, and with an upper end (6), said post (1) further comprising a rotary joint (7) as-

sociated to said upper end (6) and comprising a first member (8) which can be connected to said upper end (6), and a second member (9) which can be connected to a handrail (11) of a banister (2), said first member (8) and said second member (9) respectively comprising a first tang (16) able to be inserted in the cavity of said upper end (6) of said tubular element (4), and a second tang (17) able to be inserted in the cavity of the free end (10) of the handrail (11), **characterized in that** said first member (8) and said second member (9) are identical and interchangeable.

2. Post according to claim 1, wherein said first member (8) comprises a first side recess (14) and said second member (9) comprises a second side recess (15), at which said first (8) and second (9) member are respectively coupled along a rotation axis (A), in a configuration of minimum transversal dimension.
3. Post according to claim 2, wherein said first member (8) comprises a first articulation portion (12) engaging in said second side recess (15), and said second member (9) comprises a second articulation portion (13) engaging in said first side recess (14).
4. Post according to claim 3, wherein said first articulation portion (12) and/or said second articulation portion (13) have a substantially cylindrical or semi-cylindrical configuration with the symmetry axis coinciding with said rotation axis (A).
5. Post according to one of claims 2-4, wherein said first side recess (14) and/or said second side recess (15) are respectively defined by a first inclined surface (22) and by a second inclined surface (23) with respect to the longitudinal axis of said tubular body (4) and/or of said handrail (11).
6. Post according to the preceding claim, wherein said first inclined surface (22) and/or said second inclined surface (23) defines, with the side surface of said first member (8) and/or of said second member (9), a first abutment edge (24) and/or a second abutment edge (25) respectively on said second articulation portion (13) and/or first articulation portion (12), so as to obtain at least a stop position in the rotation of said first member (8) with respect to said second member (9).
7. Post according to one of claims 2-6, wherein said first tang (16) and/or said second tang (17) can be locked within the cavity of said upper end (6) of said tubular body (4) and/or within the cavity of said free end (10) of said handrail (11) by means of a first screw (26) and/or a second screw (31) engaged in a first through hole (27) made in said tubular body (4) and/or in a second through hole (32) made in said

handrail (11).

8. Post according to one of the preceding claims, wherein said lower end (5) of said tubular body (4) comprises means (36) for adjusting the fastening height of the post (1) to a floor, to a step of a staircase (3) or another similar surface. 5
9. Post according to the preceding claim, wherein said adjustment means (36) comprise a support (37) fixed inside the cavity of the lower end (5) of said tubular body (4), where to one or more overlapping plates (38) are connected for bearing to the floor, to a step of a staircase (3) or to another similar surface. 10
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10. Post according to the preceding claim, wherein said support (37) comprises a head (39) fixable inside the cavity of said lower end (5) of said tubular body (4) by means of upper screws (40), a threaded pin (45) fixed to said head (39) having such a length to partially project from the opening of said lower end (5), and a block (46) associated to the intermediate portion of said threaded pin (45), at the lower end (47) of which said plates (38) can be connected by means of lower screws (48), said plates (38) having respective central holes (49) for the passage of said threaded pin (45), the lower end of said threaded pin (45) being in turn fixable to the floor, to a step of a stairway (3) or to another similar surface by means of a self-threading screw, a nut, or other similar elements. 20
25
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11. Post according to one of the preceding claims, wherein said tubular body (4) comprises one or more slots (50) for the adjustable connection of respective wires (51) of a railing, banister or alike. 35
12. Post according to the preceding claim, comprising one or more bushings (52) rotatably supported inside the cavity of said tubular body (4) at said slots (50), and having respective side holes (54) for the insertion of the terminal ends of respective wires (51). 40

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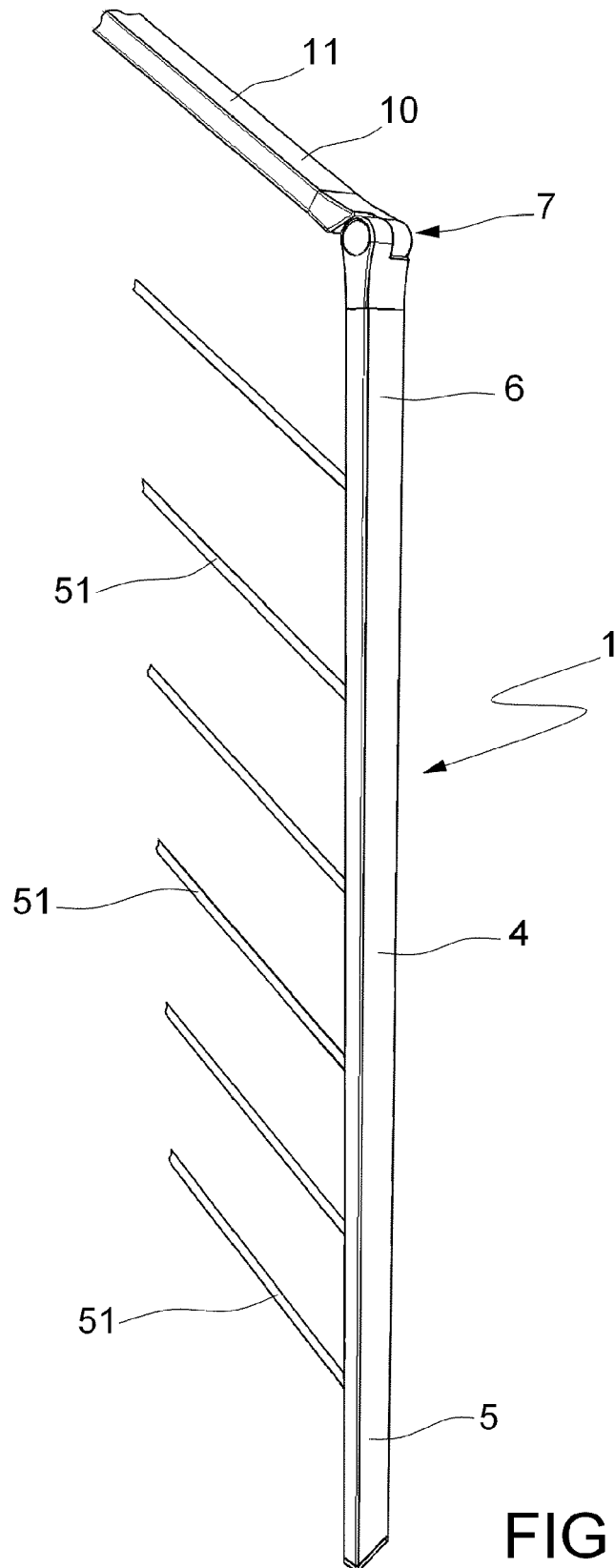


FIG. 1

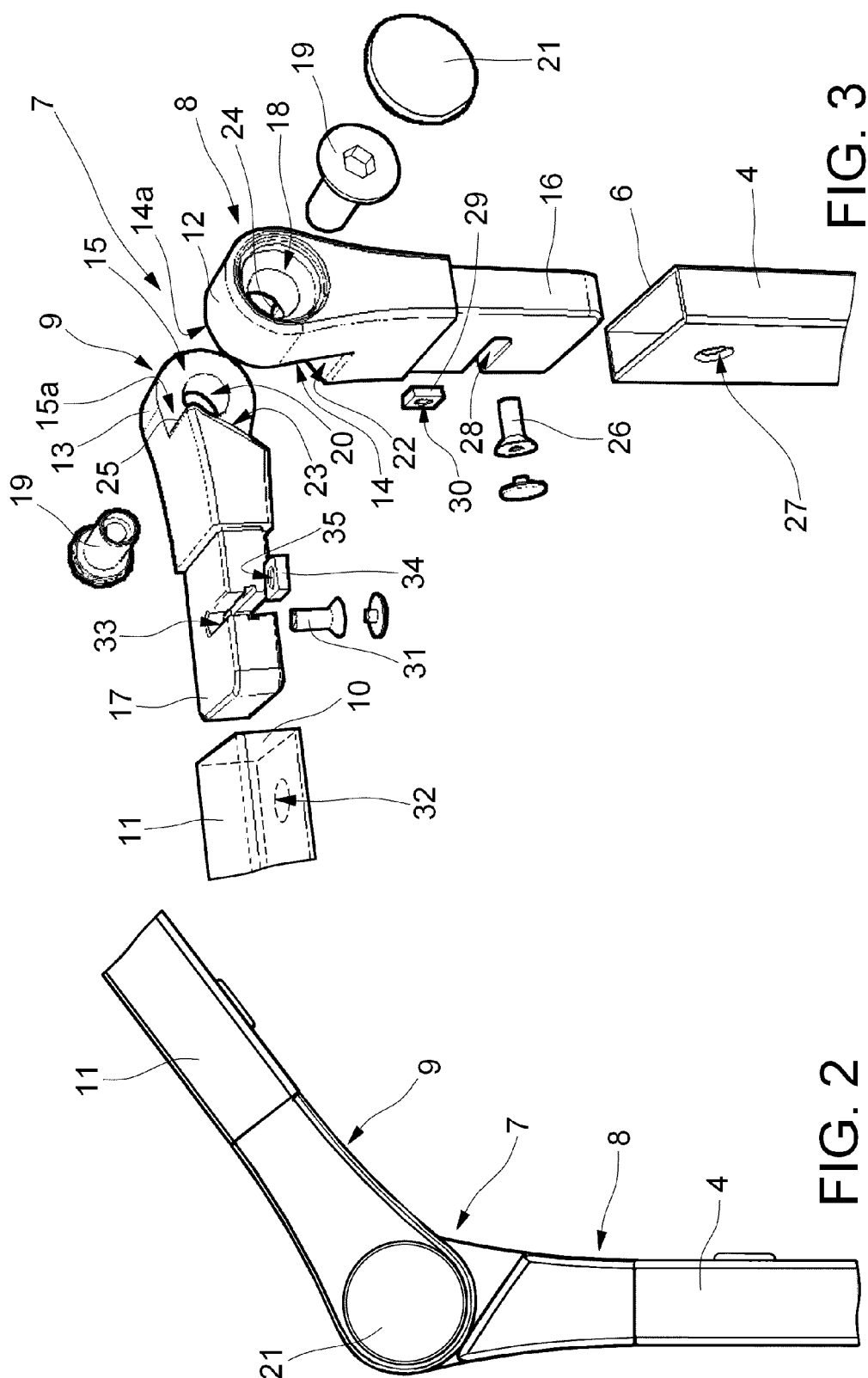


FIG. 2

FIG. 3

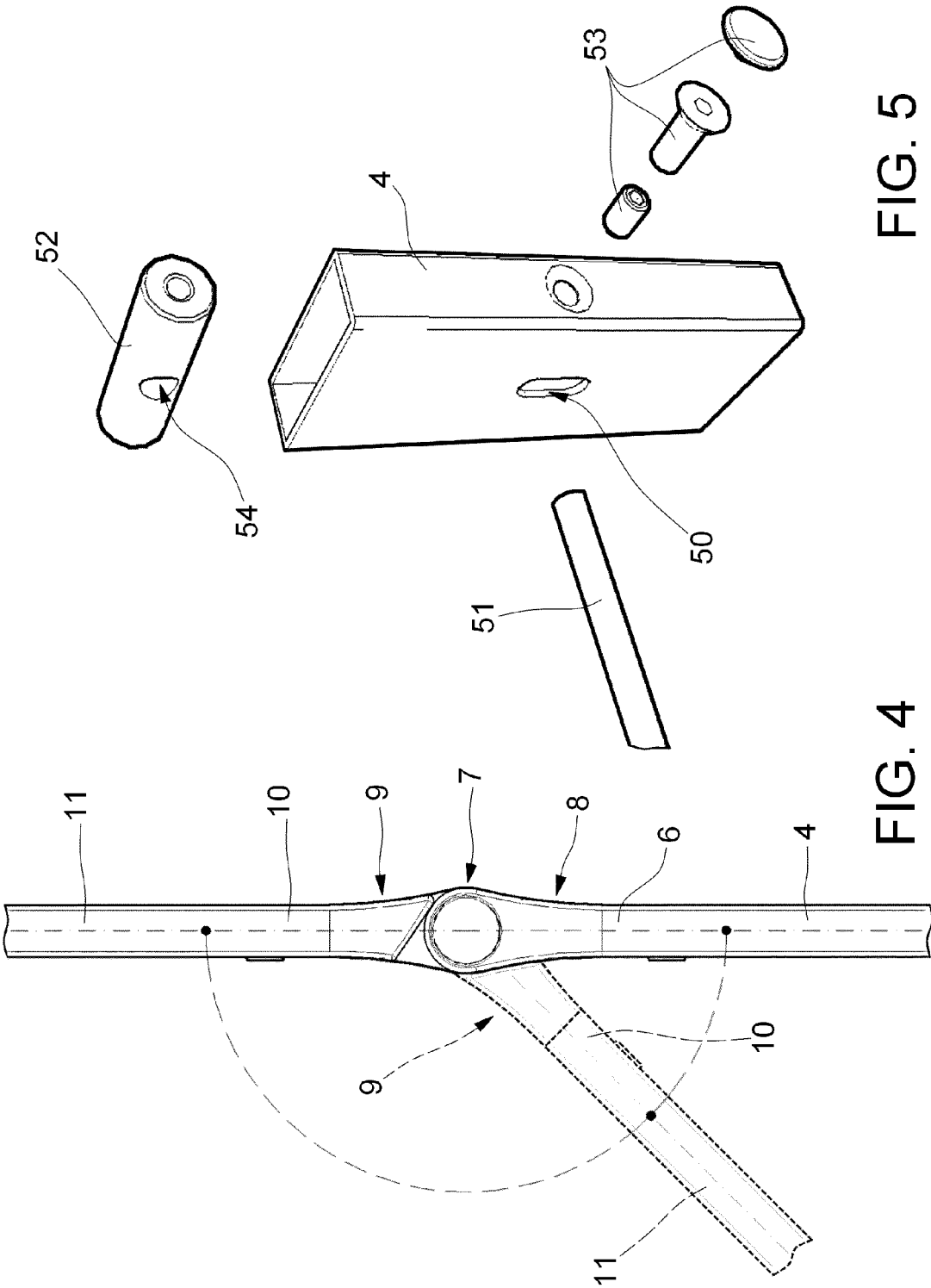


FIG. 5

FIG. 4

FIG. 7

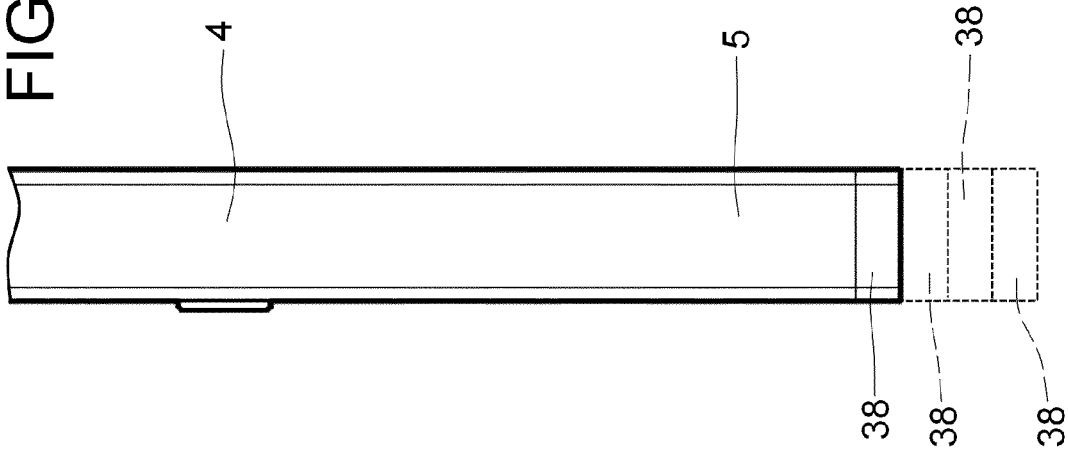
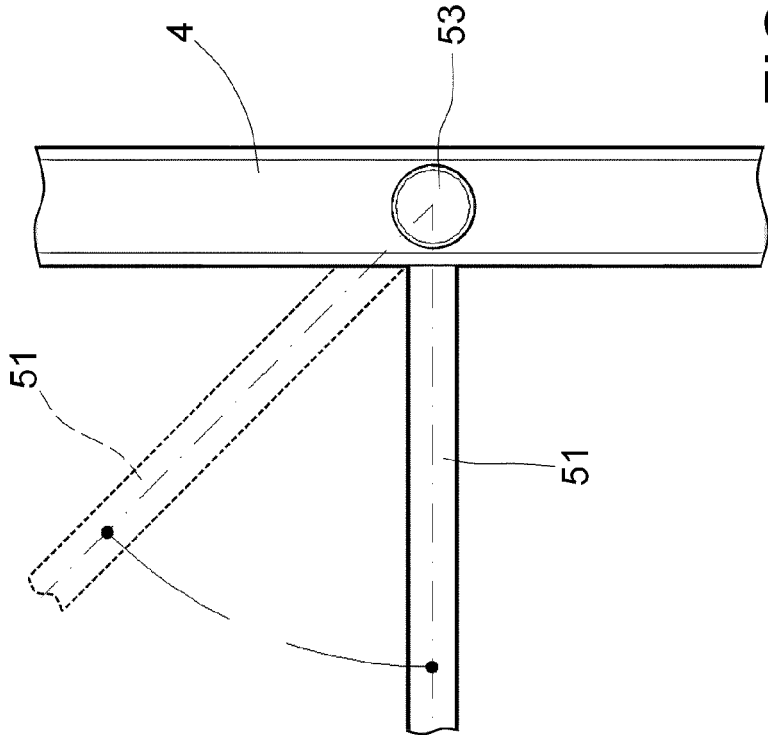


FIG. 6



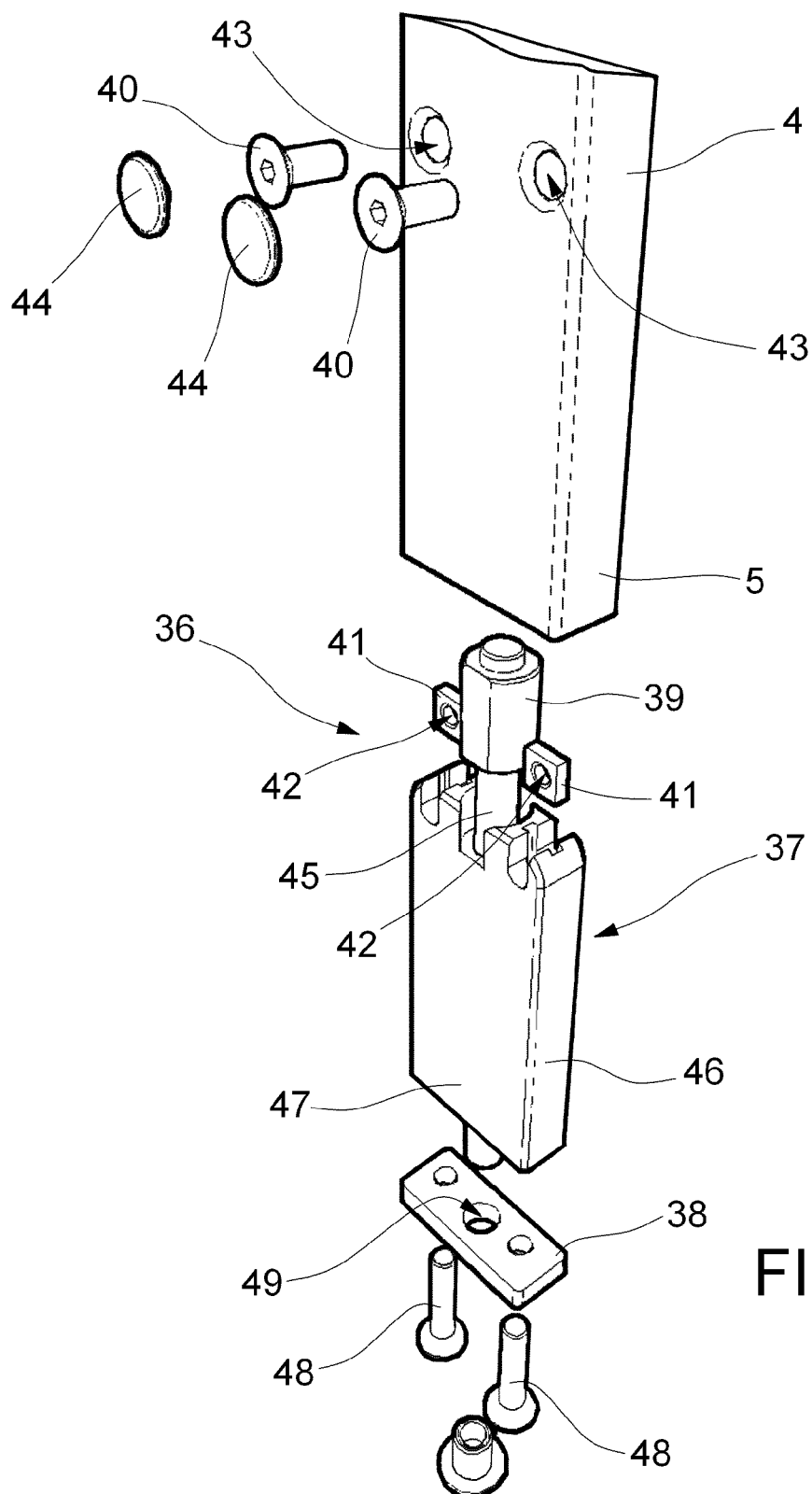


FIG. 8

