



(11) **EP 3 995 647 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
11.05.2022 Bulletin 2022/19

(51) International Patent Classification (IPC):
E04H 4/12 (2006.01) E04H 4/14 (2006.01)

(21) Application number: **21198296.2**

(52) Cooperative Patent Classification (CPC):
E04H 4/141; E04H 4/1227

(22) Date of filing: **22.09.2021**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(72) Inventors:
• **PARMIGIANI, Corrado Saverio**
42015 CORREGGIO (REGGIO EMILIA) (IT)
• **PARMIGIANI, Alessandro**
42015 CORREGGIO (REGGIO EMILIA) (IT)

(30) Priority: **05.11.2020 IT 202000026464**

(74) Representative: **Paparo, Aldo**
Bugnion S.p.A.
Via Vellani Marchi, 20
41124 Modena (IT)

(71) Applicant: **C.G.M. S.P.A.**
42015 Correggio (Reggio Emilia) (IT)

(54) **AN ADJUSTABLE EDGE FOR SWIMMING POOLS**

(57) An adjustable edge 1 for swimming pools P having at least one overflow element 100 and an adjustable grille 200. The overflow element 100 comprises a rest base 2, provided with a planar abutting surface 3, topped by a top edge 4. A rest base 2 and top edge 4 are connected together by tie rod means 5, wrapped by an elastic means 6, which is active on the top edge 4 to generate

a recall force of the top edge 4 to the rest base 2. The overflow element 100 then comprises an adjusting means 7 having an adjusting base 8 on which an adjusting ring nut 9 can translate to generate on the top edge 4 a thrust force moving away from the rest base 2 adapted to contrast and compress the elastic means 6.

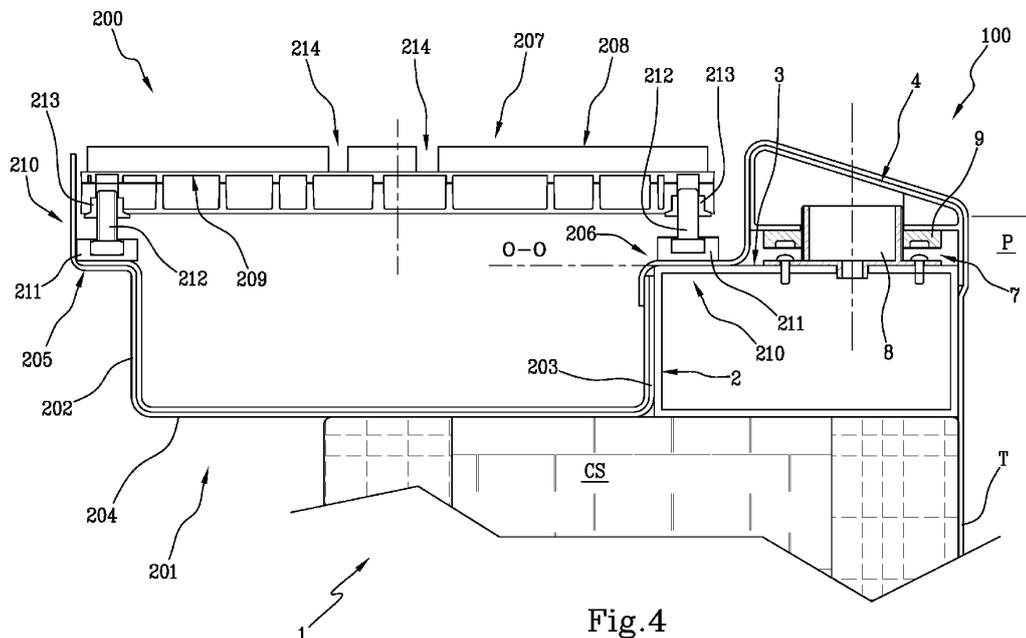


Fig.4

EP 3 995 647 A1

Description

[0001] The object of the present invention is an adjustable edge for swimming pools and finds its field of application in the sector of the design and realisation of indoor and outdoor swimming pools.

[0002] In order for it to be possible to use a swimming pool, it is necessary for the water inside the swimming pool to be treated frequently, namely to be collected, filtered, disinfected and returned purified to the swimming pool. On the basis of treatment or recirculation of the water, mainly two types of swimming pool exist: skimmer swimming pools and overflow swimming pools.

[0003] The difference between the two swimming pools is due, at a glance (without entering into details about water treatment systems) to the level of water contained in the swimming pools. In skimmer swimming pools, the water settles at about 10-15 cm below the edge and along the perimeter of the swimming pool there are openings through which the water is constantly collected for the mentioned filter treatments. In overflow swimming pools on the other hand the water reaches the edge of the swimming pool and then overflows outside the swimming pool into channels topped by cover grilles that convey water into suitable filtration systems.

[0004] Substantially, it is possible to describe an overflow swimming pool, unlike a skimmer swimming pool, as an extent of water "without barriers".

[0005] For correct operation of overflow swimming pools, the water has to exit, more or less uniformly, along all the edges of the swimming pool. If the water is unable to get over an edge of the swimming pool, puddles of water form at that edge where the dirt accumulates with clear compromising of the cleanliness and aesthetic appeal of the swimming pool.

[0006] The current method for constructing overflow swimming pools does not permit checking whilst work is in progress whether all project specifications are being correctly followed in the building work.

[0007] The only check that is performable by the builder is to ascertain whether the water is flowing out correctly along the entire perimeter of the swimming pool is during the final testing phase. In other words, at the end of building and installation of the swimming pool, the builder can check that the inflow of water is correct only by filling the swimming pool.

[0008] Once the swimming pool is filled, if the builder notices an edge that is not wetted and exceeded by the level of the water, there is no method for remedying matters.

[0009] The builder is left with a sole solution, that of greatly increasing the rate of delivery of water into the swimming pool so as to create a forced (and disproportionate) outflow of water, hoping to wet also the edge that the water did not previously reach.

[0010] This activity, over the long term, generates a loss of head in the pump that is translated into absence of outflow of water on one or more edges of the swimming

pool (at least on the edge of the swimming pool that was found to be defective after construction) and in other cases generates frequent pump faults.

[0011] The aforementioned problem can appear not only during final testing of the swimming pool, but also some time after completion of the building work. Settling of the terrain after excavation work or seismic events or other events that cannot be predicted by the manufacturer can change the position of the terrain that surrounds the swimming pool and change the outflow of water from the swimming pool, generating one or more edges that are not wetted by the water.

[0012] In this latter context, settling of the terrain can cause misalignments between the edges of the swimming pools and the grilles over the channels that surround the edges. These misalignments are not only aesthetically displeasing but can generate potential injury to persons who experience the swimming pool daily.

[0013] A grille that is lower than the edge level of the swimming pool can generate slopes of the grille near the swimming pool that can make users of the swimming pool slip.

[0014] A grille that is higher than the level of the edge of the swimming pool can generate protruding corners against which a user could stub toes. Substantially, a grille that is not aligned, i.e. is not coplanar with the edge of the overflow swimming pool, generates various accident risks.

[0015] The technical task of the present invention is thus to provide an adjustable edge for swimming pools able to overcome the drawbacks which have emerged from the prior art.

[0016] In particular, the object of the present invention is to make an adjustable edge for swimming pools that is able to change the position of the edges both during installation of the swimming pool and many years after construction of the swimming pool.

[0017] A further object of the present invention is to make an adjustable edge for swimming pools that is easy to mount and simple to maintain at the same time.

[0018] Another object of the present invention is to make an adjustable edge for swimming pools that can make up for possible height differences or misalignments between the grille and the overflow element of the swimming pool.

[0019] The technical task set and the objects specified above are substantially attained by an adjustable edge for swimming pools comprising the technical characteristics as set out in one or more of the accompanying claims. The dependent claims correspond to possible embodiments of the invention.

[0020] Further characteristics and advantages of the present invention will become more apparent from the indicative and thus non-limiting description of an embodiment of an adjustable edge for swimming pools. Such a description will be set out below with reference to the appended drawings, which are provided solely for illustrative and therefore non-limiting purposes, in which:

- Figure 1 is a plan view of a first component of the adjustable edge for swimming pools that is the object of the present invention;
- Figure 2 is a sectional view of the first component of the adjustable edge according to a plane I-I of figure 1;
- Figure 3 is a sectional view of the first component of the adjustable edge according to a plane II-II of figure 1;
- Figure 4 is a sectional view of a detail of the first component and of a second component of the adjustable edge for swimming pools that is the object of the present invention.
- Figures 5 and 6 show, in cross section, two movement transients of the second component relative to the first component of the adjustable edge.
- Figures 7 and 8 show, in cross section, a first operating situation of two elements of the first component of the adjustable edge.
- Figures 9 and 10 show, in cross section, a second operating position, different from the preceding one, of the two elements of figures 7 and 8.

[0021] With reference to the cited figures, 1 indicates an adjustable edge for swimming pools P as a whole.

[0022] The swimming pool P can be made by joining several adjustable edges 1 adapted to define a closed contour. The contour of the swimming pool P can be polygonal or curvilinear or mixed or consist of sides connected in curved parts.

[0023] The preliminary work on building a swimming pool P, once the geometry of the contour and the depth of the swimming pool P have been established, start with making a pit. On the side constituting the pit, walls are erected by installing several blocks of expanded polystyrene that are consolidated together through a concrete cast, or through the formation of several concrete CS walls or also by installing a prefabricated concrete and/or steel structure.

[0024] Further on in the description of the present invention, reference will be made for the sake of simplicity to the formation of concrete walls, specifying that the object of the present invention can be applied to walls made with blocks of expanded polystyrene or to walls made with other methods.

[0025] In the continuation of the present description, just one adjustable edge 1 will be described, specifying that the description extends to several adjustable edges that, as said previously, form the closed contour of the swimming pool P.

[0026] The adjustable edge 1 comprises two main elements: an overflow element 100 and an adjustable grille 200.

[0027] The overflow element 100 has in turn a rest base 2 and a top edge 4 that are in relation with one another through further devices described better below.

[0028] The rest base 2 is fixable to the upper end of the concrete wall CS and terminates above with a planar

abutting surface 3.

[0029] Said planar abutting surface 3 defines a horizontal plane O-O that provides the builder with a reference plane on which to connect the top edge 4.

5 **[0030]** Once the "levelling" of the abutting surface 3 has been ascertained, i.e. once the abutting surface 3 no longer has a tilt relative to an ideal horizontal plane, the rest base 2 is fixed to the upper end of the concrete wall CS through a first fixing means 17.

10 **[0031]** The rest base 2 is defined by a hollow tubular body. As is visible in the accompanying figures 2 and 3, the rest base 2 has, in cross section, a quadrangular contour that is adapted to define above the planar abutting surface 3.

15 **[0032]** In figure 1, it is possible to note how the rest base 2 has a prevalent extension along an axis X-X. In other words, the height and width of the cross section of the rest base are noticeably lower than the length thereof. Inside the rest base 2, at least one second seat 13 is present that is defined by a tubular chamber with parallel inner walls the function of which will be set out in detail below.

20 **[0033]** Above the rest base 2, the top edge 4 is present connected to the preceding rest base 2. More in particular, the top edge 4 faces below the planar abutting surface 3 and is connected thereto via a connecting means that is set out in detail below.

25 **[0034]** The top edge 4 defines the end part of the overflow element 100 of the swimming pool P. In other words, the top edge 4 is the "visible" edge of the completed swimming pool P. Thus this edge is partially wrapped by a coating cloth T of the swimming pool P.

30 **[0035]** As is visible from the accompanying figures 2 and 3, the top edge 4 has a hollow cross section with a preferably trapezium-shaped contour. It is understood that, without departing from the scope of protection of the present invention, the top edge can have any cross section.

35 **[0036]** Taking as a reference the preferred cross section of the top edge 4, this cross section has a first side flank 41 facing the inside of the swimming pool P, a second side flank 42 facing opposite the inside of the swimming pool P, an upper connecting wall 43, connecting above the first and second side flank 41 and 42, facing upwards and a lower connecting wall 44, connecting below the first and second side flank 41 and 42, facing the planar abutting surface 3.

40 **[0037]** In figures 2 and 3 the cloth T partially going over the top edge 4 is shown schematically.

45 **[0038]** The cloth T coating the concrete wall CS (which is also possibly coated) is wrapped on the first side flank 41, on the upper connecting wall 43 and on the second side flank 42.

50 **[0039]** The water, once the swimming pool P has filled up entirely and during the normal operation thereof, wets the first side flank 41 and flows out of the swimming pool, wetting the upper connecting wall 43 and the second side flank 42.

[0040] The rest base 2 and top edge 4 are placed connected together through a tie rod means 5 associated with an elastic means 6 (shown in figure 2).

[0041] The tie rod means 5 promotes the physical connection between the rest base 2 and top edge 4, whereas the elastic means 6, applied around the tie rod means 5, induces a recall force R recalling the top edge 4 to the rest base 2.

[0042] This recall force R has been shown schematically in figure 2 with an arrow pointing downwards.

[0043] As is visible in figure 2, the tie rod means 5 is defined by a tubular body 19 associated with a bolt 20 that comprises a stem 10 and a head 11. The tie rod means 5 extends along a longitudinal axis Y-Y. The stem 10 is screwed inside the tubular body 19, which is in turn screwed onto a first seat 12 obtained on the top edge 4. More precisely, the tubular body 19 is screwed above at the first seat 12 obtained on the lower connecting wall 44 and screwed below onto the stem 10 of the bolt 20.

[0044] On an opposite side to the stem 10, the head 11 is present that is inserted inside a second seat 13 made in the rest base 2.

[0045] The second seat 13 is defined by a chamber that has the inner walls (at least two) in contact with and abutting on the head 11 of the tie rod.

[0046] Through this particular conformation of the chamber, and more specifically through the effect of the inner walls in contact with the head 11, the tie rod 5 can translate along the longitudinal axis Y-Y without making movements transverse to the longitudinal axis Y-Y as will be explained better below. The elastic means 6 is fitted to the tubular body 19 of the tie rod 5 and is closed in a pack between the head 11 of the tie rod 5, below, and on the lower region of the planar abutting surface 3, above.

[0047] Through a first manoeuvre of screwing the tie rod 5, the rest base 2 is connected to the top edge 4.

[0048] By continuing screwing of the tie rod 5, the elastic means 6 is compressed that in turn recalls the top edge 4 to the rest base according to the recall force R indicated in the figure.

[0049] The tie rod can be screwed until the top edge 4 reaches a settling position against the planar abutting surface 3 of the rest base 2 by coming into contact with the adjusting means 7 disclosed better below. Further screwing of the tie rod 5 can cause exclusively further compression of the elastic means 6 closed between the head 11 and lower region of the planar abutting surface 3.

[0050] As anticipated, the adjusting means 7 is interposed between the top edge 4 and the rest base 2 that is better shown in figure 3.

[0051] The adjusting means 7 comprises an adjusting base 8 on which, through actuation by an operator, an adjusting ring nut 9 can translate that is adapted to generate on the top edge 4 a thrust moving away from the rest base 2 opposite the recall force generated by the elastic means 6.

[0052] As is visible in figure 3, the thrust force is represented schematically by an arrow indicated by the letter S.

represented schematically by an arrow indicated by the letter S.

[0053] The thrust force S applied through the effect of lifting, promoted by the ring nut 9, of the top edge 4 moving away from the rest base 2 induces in the elastic means 6 compression contrasting the recall force R.

[0054] The adjusting base 8 comprises a base body 14 located resting on the rest base 2 in contact with the planar abutting surface 3. A second fixing means 18 is present on the base body 14.

[0055] From the base body 14 moving away from the rest base 2, a first cylindrical body 15 extends, opening inside the top edge 4 by traversing the lower connecting wall 44.

[0056] In the same manner, again from the base body 14 from the side opposite the first cylindrical body 15, a second cylindrical body 16 extends, traversing the planar abutting surface 3, opening inside the rest base 2. The first cylindrical body 15 is externally threaded and the adjusting ring nut 9 is coupled thereupon.

[0057] Said adjusting ring nut 9 is defined by a cylindrical disc having inside a through hole with a nut screw. The adjusting ring nut 9 is interposed between the planar abutting surface 3 and the top edge 4.

[0058] Following a rotation of the adjusting ring nut 9, the adjusting ring nut 9 translates, depending on the rotation direction, in a direction parallel to the axis Y-Y of the tie rod means 5 along the first cylindrical body 15.

[0059] When rotated in a first, preferably clockwise, direction, the adjusting ring nut 9 translates away from the top edge 4 whereas when rotated in a second preferably anticlockwise direction opposite the preceding direction, the adjusting ring nut translates nearing the top edge 4.

[0060] The further the adjusting ring nut 9 rotates in the first direction, the more it nears the top edge 4. The rotation of the adjusting ring nut 9 in the first direction takes the adjusting ring nut 9 to abut on the lower connecting wall 44 of the top edge. Continuing the rotation of the adjusting ring nut 9 in the first direction promotes moving the top edge 4 away from the rest base 2. This moving away simultaneously promotes compression of the elastic means 6 crushed between the head 11 of the tie rod means 5 and lower region of the planar abutting surface 2.

[0061] As is visible in figure 1, the adjustable edge can comprise one or more adjusting means 7 just as it can comprise one or more means and tie rod 5 associated with the respective elastic means 6.

[0062] In particular, each adjusting means 7 is interposed between two tie rod means 5 and the respective elastic means 6, so that each tie rod means, including the respective elastic means 6, is interposed between two adjusting means 7.

[0063] In a condition of balance of the system, a first spatial lying plane of the top edge 4 parallel to the axis O-O can be hypothesised supported by the planar abutting surface 3 (because resting on the planar abutting

surface 3 or because raised thereby to the same height). Following the rotation of just one adjusting ring nut 9, a second spatial lying plane of the top edge 4 is obtained, this second spatial lying plane being different, substantially oblique relative to the first lying plane.

[0064] This is due to the thrust force S that the adjusting ring nut induces on the top edge 4.

[0065] Also adjusting a single ring nut 9 promotes a spatial lying plane that is different from the preceding spatial lying plane that the top edge had reached previously.

[0066] The operating principle and interaction of the tie rod means 5 associated with the elastic means 6 and the adjusting means is shown in accompanying figures 7-10.

[0067] In figure 7, the adjusting means 7 is illustrated whereas in figure 8 the tie rod means 5 is illustrated, associated with the elastic means 6.

[0068] As is visible in figure 7, the adjusting ring nut 9 is located about halfway up the first cylindrical body 15. With this positioning of the adjusting ring nut 9, it is possible to note, in figure 8, a first compression level of the elastic means 6.

[0069] Moving on to figure 9, it is possible to note the movement of the adjusting ring nut 9 through the effect of actuation by the operator. This shift, in the preferred embodiment, occurs through rotation in one direction of the adjusting ring nut 9 on the first cylindrical body 15.

[0070] Following the shift of the adjusting ring nut 9 along the arrow S, it is possible to note, in figure 10, how the elastic means 6 is compressed further.

[0071] The transition from figures 7 and 8 to figures 9 and 10 generates a raising of the overflow element 100. In figures 7 and 8, a first spatial lying plane is shown of the top edge 4 whereas in figures 9 and 10 a second spatial lying plane is shown of the top edge 4 located at a height that is higher than the previously reached height. By reversing the rotation direction of the adjusting ring nut 9 it is possible to induce at the top edge 4 a simulated lowering in sequence looking at figures 9 and 10 and then figures 7 and 8.

[0072] By inverting the rotation direction of the adjusting ring nut 9, the ring nut moves away from the lower connecting wall 44 of the top edge 4 and the elastic means 6 attracts the top edge 4 to the rest base 2.

[0073] To complete the adjustable edge 1, an adjustable grille 200 is present that is illustrated in figure 4. Said adjustable grille 200 is placed next to the overflow element 100. More precisely, depending on the contour adopted by the swimming pool P, an adjustable grille 200 is present for each overflow element 1.

[0074] A single adjustable grille 200 will be disclosed below, specifying that the grille is replicated, in association with each overflow element 100, for each adjustable edge 1 constituting the sides of the swimming pool P.

[0075] The adjustable grille 200 is located next to the overflow element 100 and rests, at least partially, on a channel 201 adapted to collecting and channelling the

water flowing out of the swimming pool P.

[0076] The channel 201 rests on the top of the concrete wall CS and is moved laterally close to the rest base 4.

[0077] Each channel 201 has a first vertical side 202, a second vertical side 203 and a bottom side 204 connecting the aforesaid two sides 201 and 202. The first vertical side 202 is placed distanced from the swimming pool P whereas the second vertical side 203 is located abutting on the rest base 2.

[0078] In this configuration, the channel 201 has a U-shaped cross section.

[0079] In another embodiment that is not shown, the channel 201 is defined by the first vertical side 202 and by the bottom side 204 whilst the second vertical side 203 is defined by a flank of the rest base 2. In this version, the channel 201 has an L-shaped cross section.

[0080] The channel 201, being parallel to the rest base 2 has the same prevalent extension along the axis Y-Y (which in figure 4 is an axis traversing the plane of the sheet).

[0081] At the first and second vertical sides 202 and 203, two steps 205, 206 are present. The first step 205 is defined by the (and on the) first vertical side 202 whereas the second step is defined by a portion of planar abutting surface 3 not affected by the top edge 4.

[0082] Above the channel 201, a cover grille 207 is present to cover the channel 201.

[0083] The cover grille 207, has a slab-shaped form and has at least one opening 214. Preferably, the cover grille of 207 has a plurality of openings 214 that are parallel to one another, dividing the cover grille 207 into strips, or crossed over one another, dividing the cover grille 207 into mosaic tiles. The outflow water from the swimming pool P can enter through the at least one opening 214 to then be conveyed, through the channel 201, inside filtering means that is not described because it is known.

[0084] The cover grille 207 has an exposed face 208 and a rear face 209. The exposed face 208 is the fine face of the grille and usually has the features of the flooring that surrounds the swimming pool P. The rear face 209 is on the other hand generally rough and faces the bottom 204 of the channel 201.

[0085] The exposed face 208, in operation, is located at a height substantially the same as the top edge 4 of the overflow element 100 to avoid level differences between the cover grille 207 and top edges 4.

[0086] Below the cover grille 207, at least one pair of adjusting feet 210 is present. The adjusting feet 210 are active on the rear face 209 of the grille 27 and movable for promoting a movement of the cover grille 207 away from or towards the channel 201.

[0087] The aforesaid movement of the cover grille 207 away or towards is intended to adjust the positioning height of the grille 207, and more specifically of the exposed face 208, relative to the top edge 4.

[0088] Each adjusting foot 210 comprises a pedestal 211, a pin 212 and an adjusting bush 213.

[0089] The pedestal 211 is restingly connected to a respective step 205 or 206. From the pedestal 211, according to a preferably vertical extension, the pin 212 rises that terminates in contact, or in relation, with the rear face 208 of the cover grille 207.

[0090] An adjusting bush 213 is associated with each pin 212. The bush 213 is movable, through adjustment by an operator, on the pin 212 to promote raising or lowering of the cover grille 207.

[0091] In particular, each pin 212 is threaded and each bush 213 has a hole, which is also threaded.

[0092] Depending on the rotation direction of the adjusting bush 213 relative to the pin 212, it is possible to promote movement of the bush 213 away from or towards the pedestal 211, thus promoting raising of the cover grille 207 or lowering thereof.

[0093] As is visible in figure 4, the plurality of pedestals is preferably divided into two series, a first series placed on the first step 205 and a second series placed on the second step 206.

[0094] Depending on the movements of the adjusting bushes 213, it is possible to promote horizontal or oblique positions of the cover grille 207 to make up for possible spatial position variations of the overflow element 100 or possible settling of the terrain.

[0095] In figure 5, a condition is shown where the overflow element 100 is located at a greater height than the adjustable grille 200 and in particular than the exposed face 208 of the cover grille 207.

[0096] This could occur owing to the settling of the terrain or through adjustment of the height of the overflow element 100 through a correct inflow of the water outside the swimming pool P.

[0097] In figure 6, the adjustment is shown of the height of the cover grille 207 through actuation of the bushes 213 (in figure 6 only one of them is shown).

[0098] Rotating the bushes 213 promotes the distancing of the pin 212 at the bottom of the rear surface 219.

[0099] By adjusting the height of the adjustable grille 200, it is possible to make up for a level gap formed between the top edge 4 and the exposed face 208.

[0100] The present invention achieves many advantages.

[0101] Firstly, the possibility of adjusting the spatial position of the overflow element 100 enables any building defect of the swimming pool P to be made up for. This can also occur if, some time after the installation of the swimming pool P, possible settling of the terrain or possible seismic events occur that are such as to modify the position of the swimming pool itself.

[0102] Then the particular conformation of the rest base 2 and top edge 4 assembly makes an adjustable, thus movable assembly but which in fixing conditions remains stable.

[0103] Any pressure on the top edge 4 does not generate any movement on a vertical axis or an axis that is transverse to the vertical axis.

[0104] In fact, on the vertical axis, the adjusting ring

nut 9 is present that, by acting on the adjusting base 8, does not consent any vertical movement of the top edge 4.

[0105] In the case of transverse thrusts on the top edge 4, the latter are not transferred to the edge because of the effect of the first seat 13. The cylindrical chamber of the first seat 13 maintains in a vertical position the tie rod means 5, preventing any axial movement of the top edge.

[0106] This is very important because an adjustable edge 1 that once it is adjusted remains movable through the effect of clearance or tolerance between the systems in contact would be perceived to be unstable and thus of poor quality as well as being dangerous.

[0107] In fact, the possibility of having available, in addition to an adjustable overflow element 100 also an adjustable grille 200, enables any level difference between the two elements to be made up for to avoid the formation of steps or surface interruptions that in addition to being perceived as being of low quality can be dangerous.

Claims

1. An adjustable edge for swimming pools having at least one overflow element (100) of the type comprising:

- a rest base (2) that is fixable to the upper end of a wall (CS), preferably made of concrete, defining, together with other walls, the perimeter of the swimming pool (P) and terminating above with a planar abutting surface (3);
- a top edge (4), defining the end part of the adjustable edge (1) of the swimming pool (P) wrapped by an inner coating cloth (T) of the swimming pool (P), facing below the planar abutting surface (3) and connectable to the rest base (2);

characterized in that it comprises:

- tie rod means (5) adapted to promote a connection between the top edge (4) and rest base (2);
- elastic means (6) encircling the tie rod means (5) and active, through the tie rod means (5), on the top edge (4) to generate a recall force (R) of the top edge (4) towards the rest base (2); said elastic means (6) promoting a first spatial orientation of the top edge (4)
- adjusting means (7), comprising an adjusting base (8) on which, through actuation by an operator, an adjusting ring nut (9) can translate to generate on the top edge (4) a thrust force (S) moving away from the rest base (2), opposite the recall force (R), adapted to counteract and compress the elastic means (8); said adjusting ring nut (9) inducing in the top edge (4) a second

- spatial orientation that is different from the first orientation.
2. The adjustable edge according to claim 1, **characterized in that** said top edge (4) has a first side flank (41) wet by the water contained inside the swimming pool (P), facing the inside of the swimming pool (P) and wrapped by the cloth (T), a second side flank (42) wet by the water that overflows from the swimming pool (P), facing opposite the inside of the swimming pool (P) and wrapped by the cloth (T), a connecting wall (43) wrapped by the cloth (T), connecting the first and the second side flanks (41,42) and crossed by the water that overflows from the swimming pool (P), and a base wall (44), connecting below the first and second side flanks (41,42) facing the rest base (2).
 3. The adjustable edge according to claim 1 **characterized in that** said rest base (2) is defined by a hollow tubular body, a preferably quadrangular cross section, defining above the planar abutting surface and provided with prevalent extension along an axis (X-X); said top edge (4) having a prevailing extension along the axis (X-X).
 4. The adjustable edge according to any one of the preceding claims **characterized in that** said tie rod means (5) comprises:
 - a hollow tubular body (19) having an extension axis along a longitudinal axis (Y-Y) and comprising an upper end connected on a first seat (12) obtained on the top edge (4) and a free lower end and leading inside a second seat (13) made inside the rest base (2);
 - a bolt (20) comprising a stem (10) connectable to the lower end of the hollow tubular body (19) and a head (11) inserted into the second seat (13).
 5. The adjustable edge according to the preceding claim **characterized in that** said elastic means (6), fitted to the hollow tubular body (19), is abutted below on the head (11) of the bolt (20) and above on the lower region of the planar abutting surface (3).
 6. The adjustable edge according to claim 4 **characterized in that** said second seat (13) is defined by a tubular chamber having inner walls in contact with the head (11) of the bolt (20) to allow possible translations of the head (11) along the longitudinal axis (Y-Y), by the effect of screwing the head (11) or of the thrust force (S) or recall force (R) exerted respectively by the adjusting ring nut (9) or by the elastic means (6), avoiding movements that are transverse to the longitudinal axis (Y-Y).
 7. The adjustable edge according to claim 1 **characterized in that** said adjusting base (7) comprises:
 - a base body (14), resting on the rest base (2) from which there extends, moving away from the rest base (2), a first cylindrical body (15) opening inside the top edge (4), and from which, on a side opposite the first cylindrical body (15), a second cylindrical body (16) extends, crossing the planar abutting surface (3) entering inside the rest base (2); said first cylindrical body (15) being threaded;
 - an adjusting ring nut (9) in threaded coupling on the first cylindrical body (15) and interposed between a planar abutting surface (3) and top edge (4); said adjusting ring nut (9) being translatable along the first cylindrical body (15) moving away from the top edge (4), when rotated in a first direction, and moving closer to the top edge (4) when rotated in a second direction opposite the preceding direction.
 8. The adjustable edge according to claims 5 and 7 **characterized in that** said adjusting ring nut (9), when rotated in the second direction, is translated until it abuts against the top edge (4) and promotes a movement of the top edge (4) away from the rest base; said distancing being contrasted by the recall force of the elastic means (6) that is compressed between the head (11) of the tie rod means (5) and lower region of the planar abutting surface (3).
 9. The adjustable edge according to claim 1 **characterized in that** it comprises at least two adjusting means (7); said tie rod means (5) and said elastic means (6) being interposed between the two adjusting means (7).
 10. The adjustable edge according to claim 1 **characterized in that** it comprises at least two tie rod means (5), each associated with respective elastic means (6); said adjusting means (7) being interposed between the two tie rod means (5).
 11. The adjustable edge according to claims 9 and 10 **characterized in that** said planar abutting surface (3) defines on a horizontal plane (O-O); said adjusting means (7), said tie rod means (5) and said elastic means (6) promoting positioning of the top edge (4), with respect to the planar abutting surface (3), with a parallel or oblique lying plane.
 12. The adjustable edge according to claim 1 **characterized in that** it further comprises an adjustable grille (200) comprising:
 - a channel (201), for collecting the water flowing out of the swimming pool (P) located parallel to

the rest base (2), comprising a first vertical side (202), placed distanced from the overflow element (100), a second vertical side (203), placed in contact with the rest base (2), and a bottom side (204), connecting the first and second vertical side (202,203); said first vertical side defining a first step (205) said planar abutting surface (3), not occupied by the top edge (4) defining a second step (206);

- a cover grille (207), having an exposed face (208) facing upwards and a rear face (209) facing the bottom side (204), adapted to close, at least partially, the channel (201) and comprising at least one opening (214) from which the water flowing out from the swimming pool (P) enters; said exposed face (208) being at a height that is substantially equal to the top edge (4) of the overflow element (100) in order to prevent any difference in level between the cover grille (207) and top edge (4);
- at least one pair of adjusting feet (210), active on the rear face (209) of the cover grille (207), which are movable to promote a movement away from or closer to the cover grille (207) from the channel (201), enabling the positioning height of the grille (207) to be regulated with respect to the top edge (4).

13. The adjustable edge according to claim 13 **characterized in that** each adjusting foot (210) comprises:
- a pedestal (211) resting on a respective step (205, 206);
 - a pin (212), having a preferably vertical extension terminating in contact or in relation to the rear face (208) of the cover grille (207);
 - an adjusting bush (213) movable, through adjustment by an operator, on the pin (212) to promote raising or lowering of the cover grille (207).
14. The adjustable edge according to claim 14 **characterized in that** said plurality of the adjusting feet (210) is divided into a first series, resting on the first step (205), and a second series, resting on the second step (206); said adjusting bushes (213) promoting horizontal or oblique positions of the cover grille (207).
15. The adjustable edge according to claim 13 **characterized in that** said pin (212) is threaded and said adjusting bush (213) has a hole with nut screw; said adjusting bush (213) being movable away from and closer to the respective pedestal (212) according to the rotation direction of the adjusting bush (213) with respect to the pin (212).

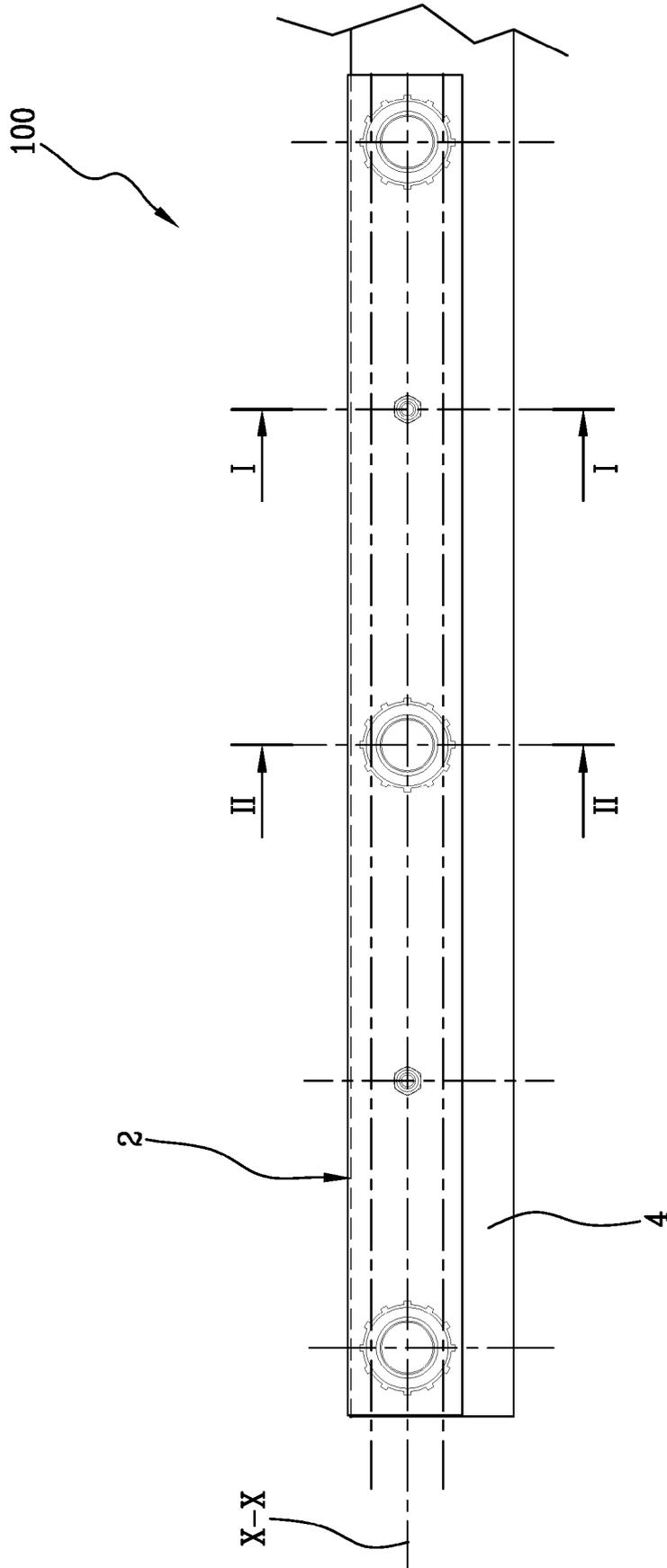
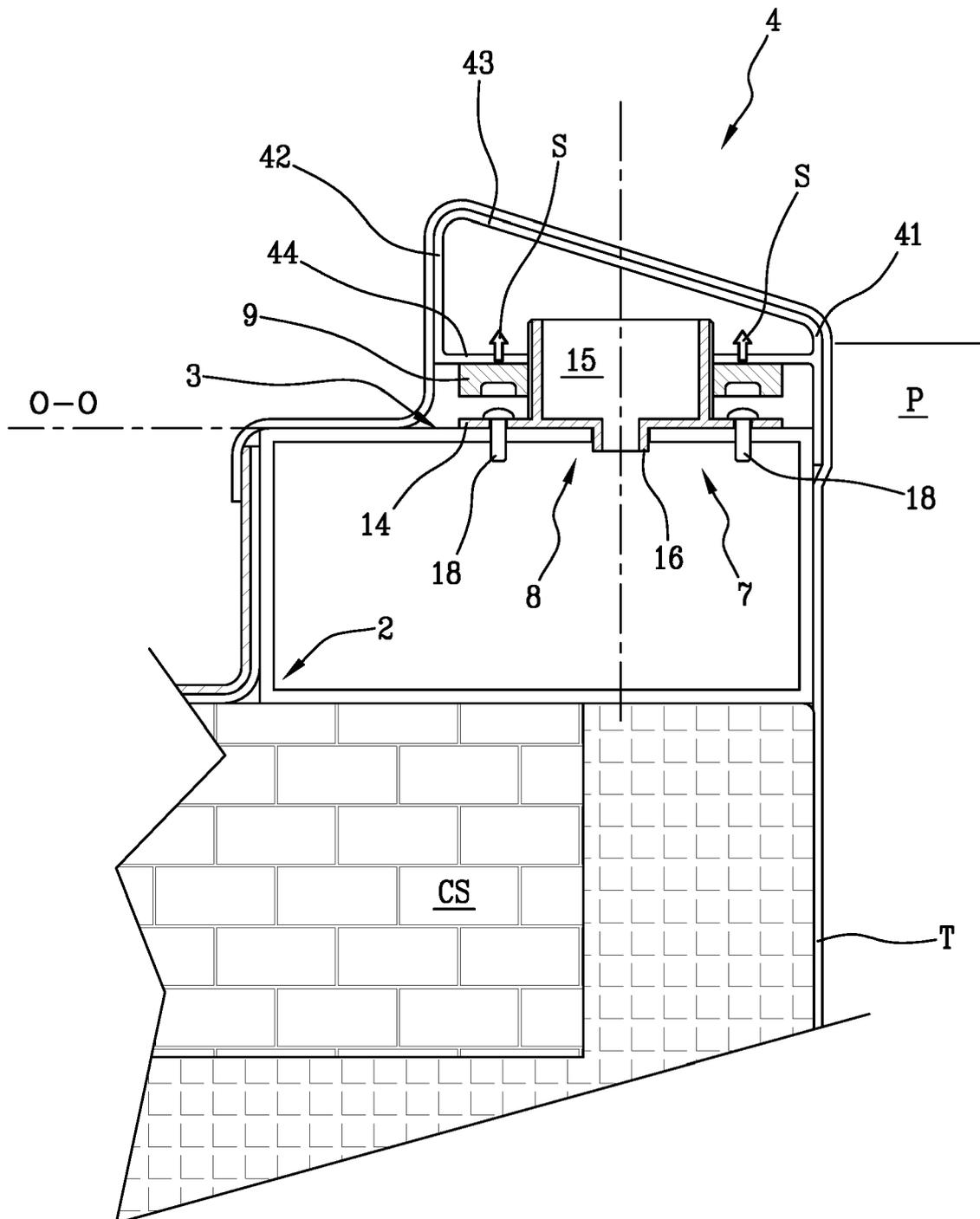


Fig.1

Fig.3



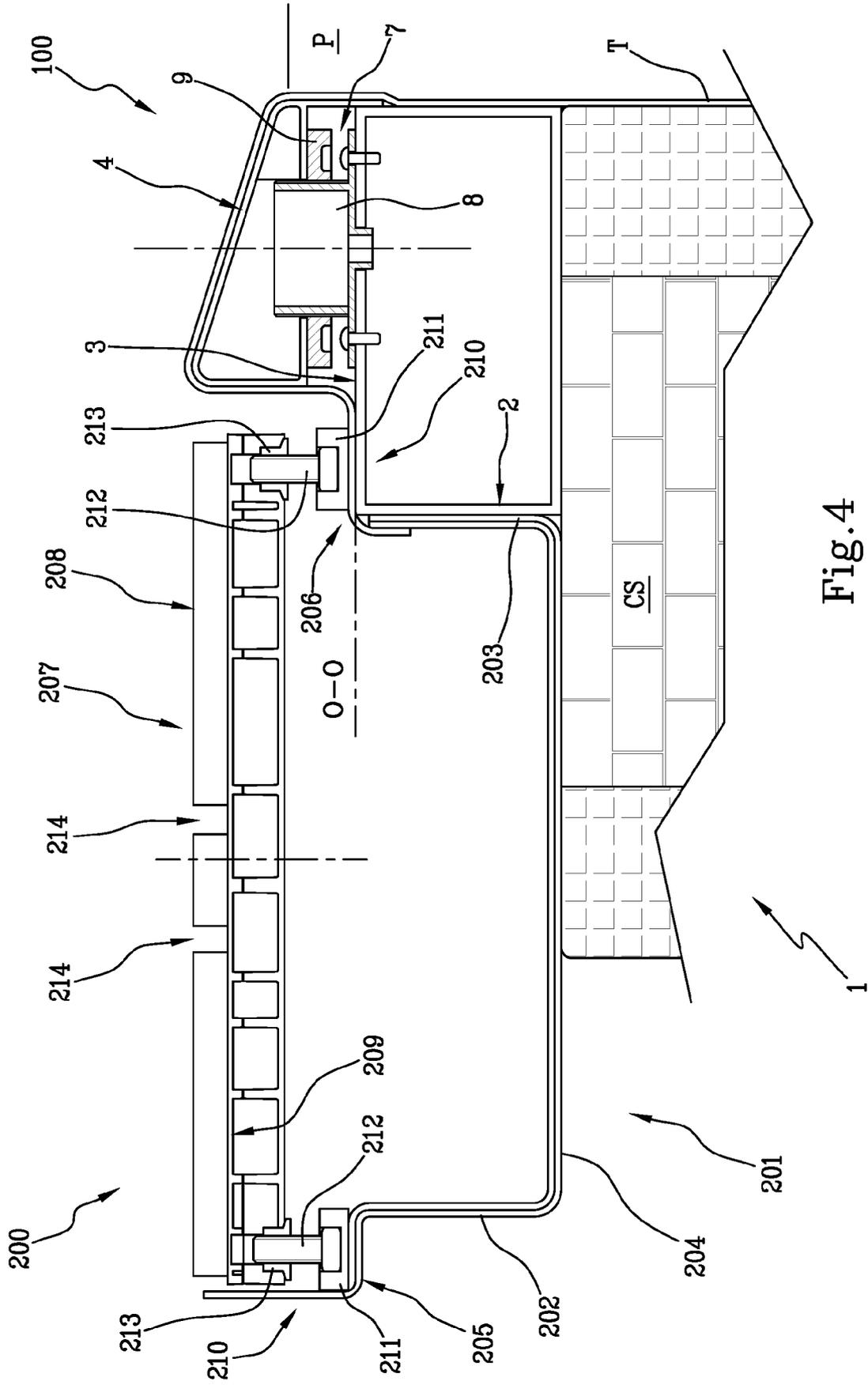
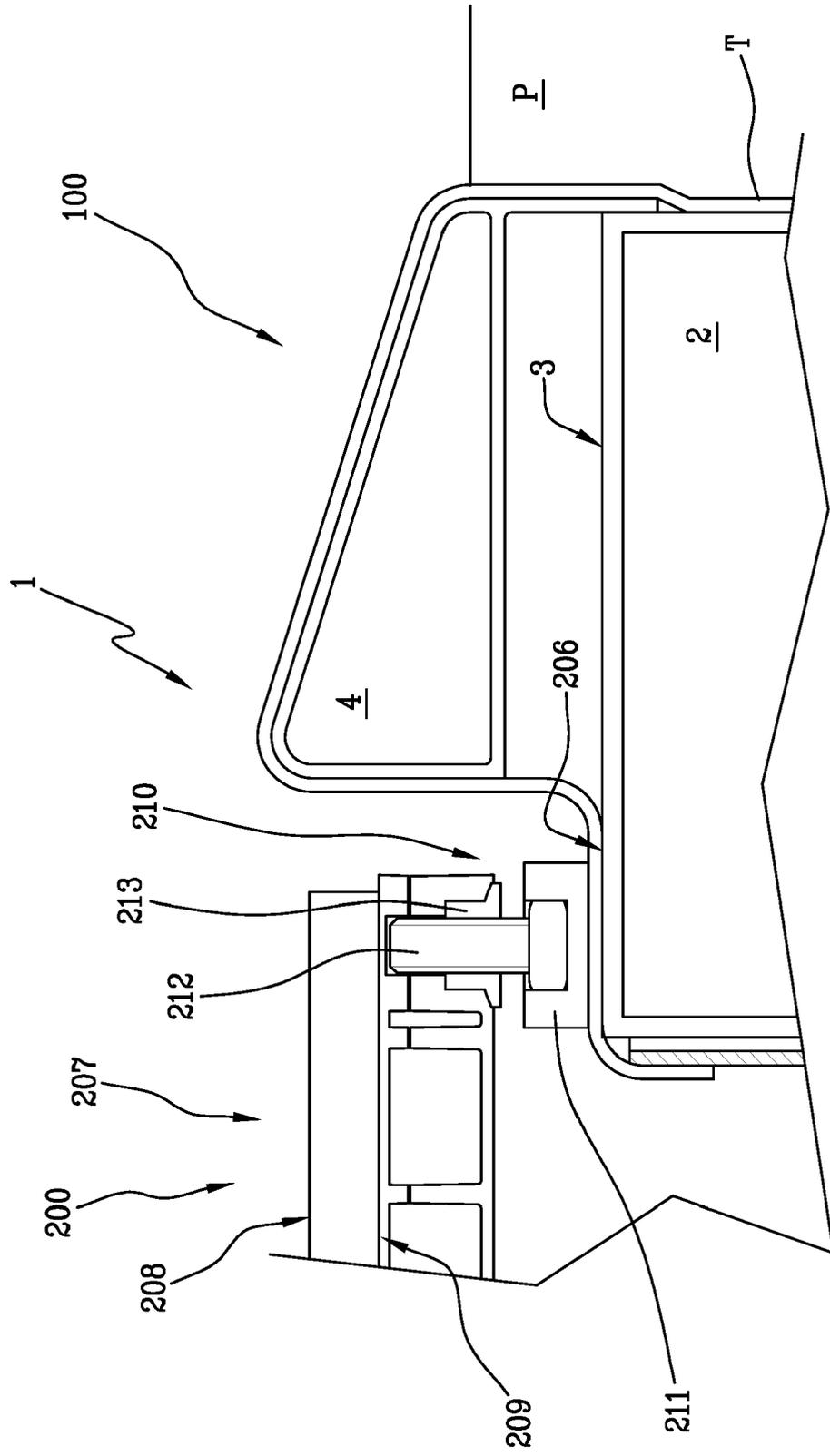
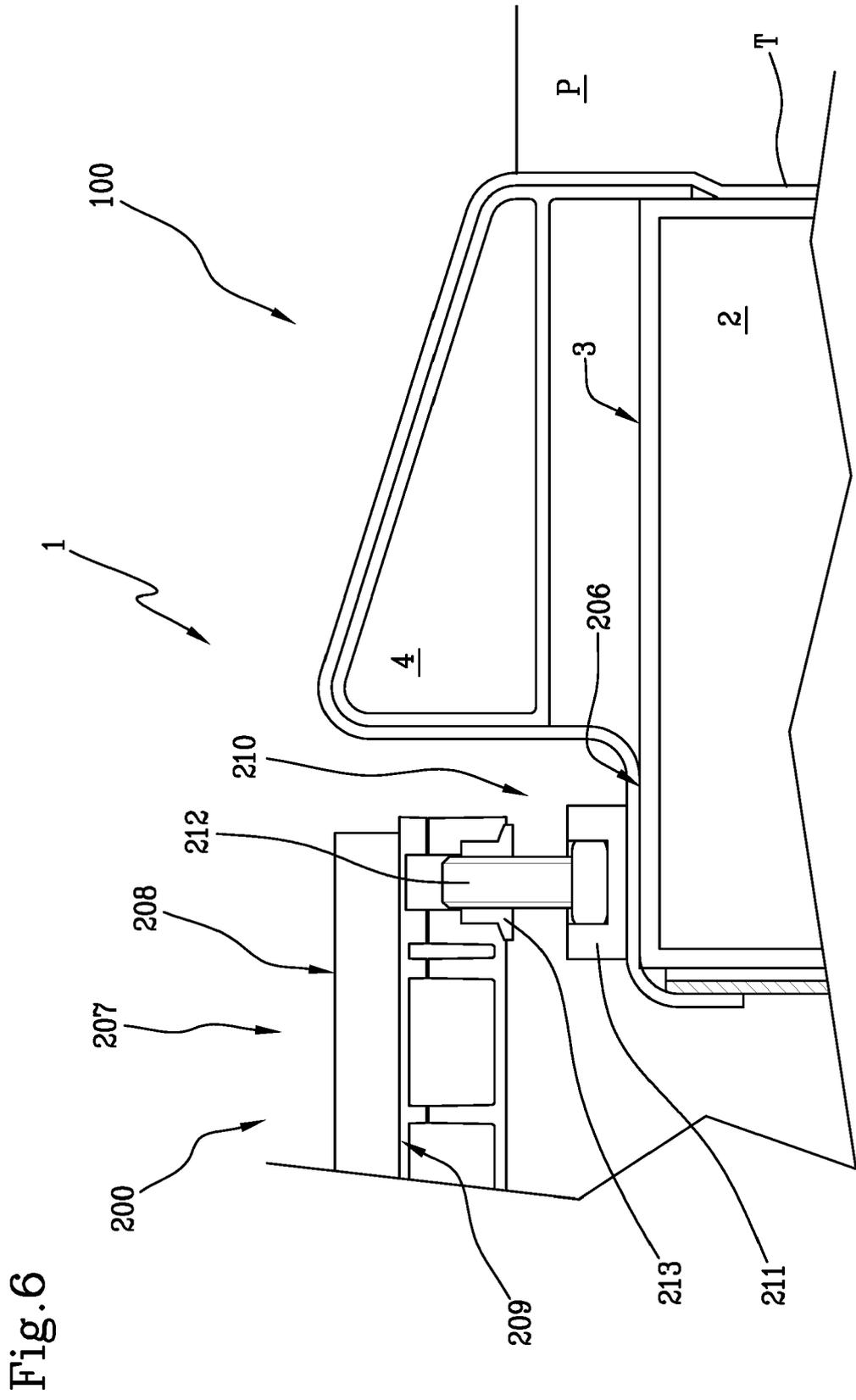


Fig.4

Fig.5





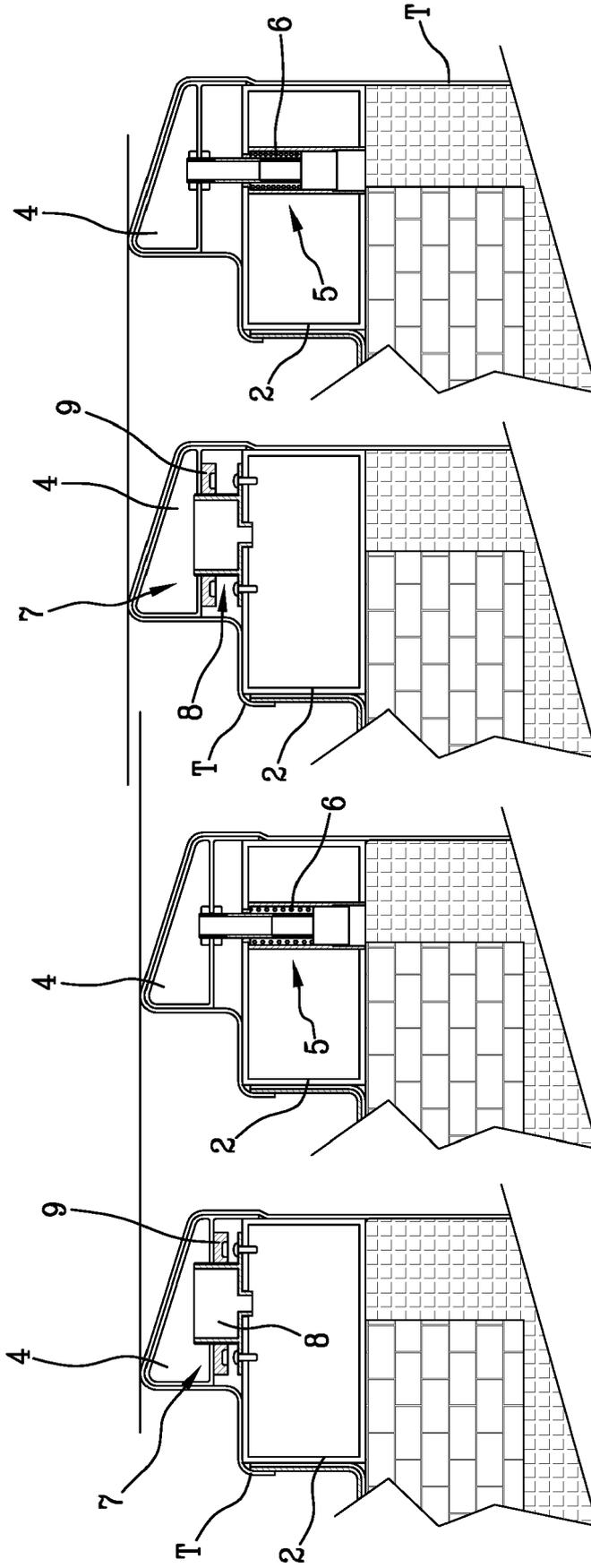


Fig. 7

Fig. 8

Fig. 9

Fig. 10



EUROPEAN SEARCH REPORT

Application Number
EP 21 19 8296

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 1 767 728 A1 (BASTIANINI SIMONE [IT]; PAVIA NICOLA [IT]) 28 March 2007 (2007-03-28) * paragraphs [0028] - [0034]; claim 1; figures 1-4b *	1-15	INV. E04H4/12 E04H4/14
A	DE 296 04 536 U1 (DITTLER JOCHEN [DE]) 15 May 1996 (1996-05-15) * claims 1,10; figures 1,2 *	1-15	
A	DE 37 35 794 A1 (WAAGNER BIRO AG [AT]) 19 May 1988 (1988-05-19) * claim 1; figures 1,2 *	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04H
1 The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 February 2022	Examiner Rosborough, John
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 21 19 8296

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

21-02-2022

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1767728	A1	28-03-2007	NONE

DE 29604536	U1	15-05-1996	NONE

DE 3735794	A1	19-05-1988	AT 386244 B
		DE 3735794 A1	25-07-1988
			19-05-1988

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82