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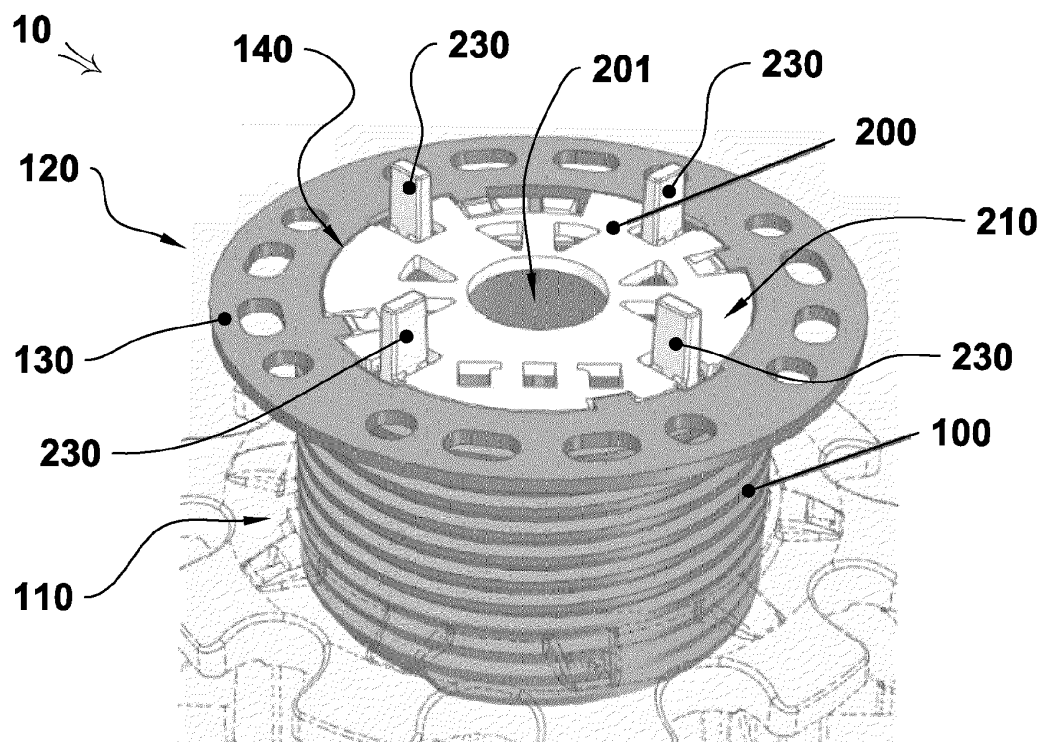
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(54) **HEAD WITH REVERSIBLE ADAPTER FOR SUPPORTING RAISED FLOORS**

(57) The invention is a head (10) of supports for raised floors, comprising an upper element (100), the upper end (120) of which is provided with at least one seat (140), and an adapter (200) suited to be inserted in said seat (140) of said upper end (120), and wherein said adapter (200) comprises a substantially plane body in

which a first side (210) is different from the second side (220), and wherein said adapter (200) and said seat (140) are configured in such a way that said adapter (200) can be selectively positioned in said seat (140) with said first side (210) facing upwards or with said second side (220) facing upwards.



**Fig. 1**

## Description

**[0001]** The present patent concerns raised floors and the respective supports, and more specifically it concerns a new head with a reversible adapter for supports of raised floors. At present, in order to create raised floors on supporting surfaces in general, first of all conveniently spaced supports are laid, on which the joists and/or panels making up the floor are subsequently placed.

**[0002]** Supports are known which are constituted by a base element suited to be rested on the ground and supporting the four corners of four panels arranged side by side.

**[0003]** The base element is generically cylindrical in shape and its underside is provided with an enlarged base, while its upper part is flat, orthogonal to the cylindrical part, and suited to support the elements of the raised floor.

**[0004]** The corners of the panels laid side by side to form the floor rest on each of said flat upper parts, commonly called heads.

**[0005]** Supports are known which comprise a base element and an element intended to adjust the height of the support, wherein said adjusting element comprises the head, on which the top panels of the raised floor rest, and is suited to be coupled with said base element and to adjust the height of the support.

**[0006]** For the construction of some raised floors, the panels do not rest directly on the supports but on wooden joists or metal sections. Said wooden joists or metal sections are laid and fixed on said heads, and the panels of the raised floor are laid on said wooden joists or metal sections.

**[0007]** In the case where the panels rest directly on said supports or heads, the flat upper part of said heads of the supports themselves is provided with partitions for centering and spacing the corners of said panels.

**[0008]** Said partitions are generally four, are arranged according to a cross-shaped configuration and radially with respect to the centre of said head, in such a way as to accommodate the corners of four panels placed side by side.

**[0009]** In the case where said supports do not have to support the corners of the panels but one of their sides, it is possible to remove one or more of said partitions by simply breaking them along pre-cut lines in proximity to their junction with said head.

**[0010]** In the case where wooden joists or metal sections are used between said panels and said supports, the flat upper part of the head of said supports is provided with seats, projections, partitions or other parts suitable for accommodating and fixing each wooden joist or each metal section.

**[0011]** These differences in the heads of said supports make it necessary to produce different supports or upper heads of supports for the different intended uses.

**[0012]** This makes it necessary to have different production lines, different moulds, and to keep supports or

upper heads of supports in stock for the different applications.

**[0013]** In addition to the above, if during the installation of the raised floor it becomes necessary to change the laying procedure, for example inserting wooden joists or metal sections or laying the panels directly without joists and without section bars, supports or upper heads of supports suitable for the various applications must be available.

**[0014]** In order to overcome all the above-mentioned drawbacks, a new head with a reversible adapter for supports of raised floors has been designed and manufactured.

**[0015]** It is one object of the invention to provide a new head that can be used directly with the panels of the raised floor and also with wooden joists or metal sections.

**[0016]** It is another object of the invention to provide a new head that does not require additional elements when it must be used with the panels of the raised floor or with wooden joists or metal sections.

**[0017]** It is another object of the invention to provide a new head that makes it possible to reduce the production costs of supports on which the panels of the raised floor can be directly rested or on which the wooden joists or metal sections suited to support the panels of the raised floor can be rested.

**[0018]** It is another object of the invention to provide a new head that makes it possible to reduce the space required in the warehouse to store supports suitable for various needs.

**[0019]** It is another object of the invention to provide a new head that during the installation of the floor allows the operator to rest the panels of the raised floor directly on the supports or to use wooden joists or intermediate metal sections with no need to replace any supports or parts of the supports.

**[0020]** These and other direct and complementary objects are achieved by the new head with reversible adapter for supports for raised floors, which is suited to support the panels of the raised floor directly resting thereon and suited to support and be connected with wooden joists or metal sections.

**[0021]** The new head comprises an upper element suited to be coupled with a base or lower element and an adapter suited to be coupled with said upper element.

**[0022]** Said upper element comprises a substantially cylindrical body, wherein the upper end of said cylindrical body, that is, the part intended to face upwards, is provided with at least one seat, for example but not necessarily circular in shape.

**[0023]** On the entirety or part of its external surface, said cylindrical body is provided with a spiral-shaped projection intended to create a thread or a screw suited to be coupled with the base or ring nut of known supports.

**[0024]** Said upper seat of said upper element is suited to accommodate and retain said adapter. Said adapter comprises a substantially flat body suited to be housed and removably retained in said upper seat of said upper

element.

**[0025]** Said adapter thus has two opposite sides, a first side and a second side that are different from each other, and wherein said adapter is configured in such a way that it can be selectively accommodated in said upper seat of said upper element in two different ways, that is, with said first side facing upwards or with said second side facing upwards.

**[0026]** In a first possible solution, on a first side of said adapter there are one or more partitions, substantially orthogonal to the flat side of the adapter itself and arranged radially with respect to the centre of the adapter.

**[0027]** Said partitions are preferably four and equally distributed around the centre of the adapter according to a cross-shaped configuration.

**[0028]** Said partitions are suited to centre and space the corners of the panels of the raised floor. Said partitions can be pre-cut so that they can be rapidly removed, or they can be detachable in any way, in the case where one or more of them is not required.

**[0029]** On the second side of said adapter there are one or more vertical elements extending vertically from said flat body of the adapter, for example two vertical elements or two sets of vertical elements parallel to one another and arranged in proximity to or at the level of the circular edge of the adapter.

**[0030]** For example, said vertical elements are arranged in pairs, wherein one vertical element of each pair is arranged in a position diametrically opposite the second vertical element of the same pair.

**[0031]** Said vertical elements are arranged in such a way as to retain a joist or section bar resting on the adapter and interposed between at least one pair of facing vertical elements. Said vertical elements, like said partitions on the other side, can be removed according to the size of the joist or section bar.

**[0032]** Said vertical elements can be configured in various ways, for example with at least one substantially flat surface orthogonal to the flat body of the adapter, said flat surface being directed towards the centre of the adapter and suited to abut an edge of the joist or section bar placed on the adapter.

**[0033]** According to the invention, said vertical elements can also be configured with hooks or protruding parts suited to be coupled with the correspondingly shaped edges of the joists and section bars.

**[0034]** An innovative aspect of the present invention lies in that said adapter and said upper seat of the upper element are configured in such a way that the adapter can be selectively accommodated in the upper seat in two different ways, namely:

- with said first side facing upwards: in this configuration, said partitions also face upwards and the upper element with the adapter can therefore be used to support panels; the panels are positioned against the partitions, which in fact serve as positioning guides and spacers between the panels;

- with said second side facing upwards: in this configuration, said vertical elements face upwards and the upper element with the adapter can therefore be used to support one or more joists or section bars constrained between the vertical elements, which thus function as anchoring elements for the joists or section bars.

**[0035]** In another possible solution, both said first side and said second side are provided with partitions, arranged radially, for example four partitions on each side arranged according to a cross-shaped configuration, wherein the thickness of the partitions on one side is different from the thickness of the partitions on the opposite side.

**[0036]** According to the invention, said adapter can simply be housed in the seat and remain in a stable position simply thanks to their matching shapes: for example, said seat is circular and said adapter has a corresponding circular shape, so that it can be inserted into the seat.

**[0037]** Alternatively, according to the invention said adapter can also be constrained in the seat provided in the upper element through reversible means, for example through fixed joints or elastic tabs or other means.

**[0038]** The characteristics of the present invention are better clarified in the following description, which makes reference to the drawings that are attached hereto by way of non-limiting examples.

Figure 1 shows the upper element (100) according to a first embodiment of the invention, with the adapter (200) installed.

Figure 2 shows the upper element (100') according to a second embodiment of the invention, with the adapter (200') installed.

Figures 3 and 4 show the two different ways of positioning the same adapter (200), respectively for the installation of panels (Figure 3) and for the installation of joists/section bars (Figure 4). In both cases, the upper element (100) is mounted on a lower element (300) shaped as a ring nut.

Figures 5 and 6 show the two different ways of positioning the same adapter (200), respectively for the installation of panels (Figure 5) and for the installation of joists/section bars (Figure 6). In both cases, the upper element (100) is directly mounted on a base or lower base element (400).

Figure 7 shows a view of the first side (210) of the adapter (200), where the partitions for positioning the panels are located.

Figures 8 and 9 show two views of the second side (220) of the adapter (200), where the vertical elements for retaining the joists/section bars are located.

Figure 10 shows the new head (10) with a joist (T) resting thereon.

Figure 11 shows the new head (10) with a section

bar (P) resting thereon.

Figures 12 and 13 show the new head (10) with panels (F) resting thereon.

**[0039]** The new head (10, 10') comprises an upper element (100, 100') and an adapter (200, 200') suited to be coupled with said upper element (100, 100').

**[0040]** As shown in Figure 1, said upper element (100) comprises a substantially cylindrical body (110) that can be entirely or partially threaded on its external surface or in any case configured so that it can be coupled with a lower element or a lower base.

**[0041]** Figure 3 shows, for example, the new head (10) mounted on a lower element (300) shaped as a ring nut, while Figure 5 shows the new head (10) mounted on a base (400), for example of the known type.

**[0042]** The upper end (120) of said cylindrical body (110) can comprise an annular flange (130) or it can be without said annular flange, as shown in Figure 2.

**[0043]** Said upper end (120) is provided with a seat (140) configured to accommodate said adapter (200, 200').

**[0044]** Said adapter (200) comprises a substantially flat body suited to be removably housed and retained in said seat (140). For example, said flat body of the adapter (200) has a circular shape, or any shape, corresponding to the shape of the seat (140), so that, when the adapter (200) is correctly inserted into the seat (140), it is substantially flush with said flange (130) or in any case with the perimeter edge of said upper end (120).

**[0045]** Said adapter (200) preferably includes also at least one hole (201), preferably in a substantially central position, which is useful for the insertion of screwing tools.

**[0046]** On a first side (210) of said adapter (200) there are one or more partitions (230), substantially orthogonal to the flat side of the adapter (200), arranged radially with respect to the centre of the adapter.

**[0047]** In the examples of Figures 1 and 2, said partitions (230) are preferably four and are uniformly distributed around the centre of the adapter (200) according to a cross-shaped configuration.

**[0048]** Said partitions (230) are suited to centre and space the corners of the panels (F) of the raised floor, as shown in Figures 12 and 13, and can be selectively removed if they are not required or if they hinder the installation of the panels.

**[0049]** On the second side (220) of said adapter (200) there are one or more vertical elements (240, 250) extending from said flat body of the adapter (200).

**[0050]** Said vertical elements (240, 250) are preferably arranged in pairs, or pairs of groups, parallel to one another and preferably, but not necessarily, arranged in proximity to or at the level of the circular edge of the adapter.

**[0051]** The distance between each pair of vertical elements (240, 250) actually determines the width of the joist/section bar that can be inserted and constrained between the vertical elements (240, 250).

**[0052]** In the examples of Figures 8 and 9, said vertical elements (240, 250) are, for example, diametrically opposite with respect to the centre of the adapter (200).

**[0053]** In this example, a vertical element (240) has a surface (241) facing towards the centre of the adaptor (200) and substantially flat or in any case intended to abut the edge of a joist (T) or section bar (P) as shown, for example, in Figure 10.

**[0054]** In the same example shown in Figure 8, the second vertical element (250) is configured with a hook (251) or projection or coupling element for anchoring to a correspondingly shaped edge of a section bar (P), as shown, for example, in Figure 11.

**[0055]** Said vertical elements (240, 250) can also be drilled (242) so as to allow the insertion of means for fixing the joists or section bars, for example nails or screws.

**[0056]** Said second vertical elements (250) can conveniently be removed, for example manually broken, in the case where the width of the joist (T) or section bar (P) is greater than the distance between the vertical elements (240, 250) facing each other.

**[0057]** Said adapter (200) and said upper seat (140) of the upper element (100) are configured in such a way that the adapter (200) can be selectively accommodated in the upper seat (140) in two different ways, that is, so that said first side (210) faces upwards or downwards, meaning towards the inside of the upper element (100).

**[0058]** Figures 3 and 4, for example, show how the adapter (200) can be mounted alternatively with the first side (210) facing upwards (Figure 3), that is, with the partitions (230) facing upwards, or with the second side (220) facing upwards (Figure 4), that is, with the vertical elements (240, 250) facing upwards.

**[0059]** According to the invention, said adapter (200) is also shaped along the edge (260), for example with recesses (261) or projections or tabs or otherwise, in such a way that it matches the shape of said seat (140), to ensure that the adapter (200), even if it is removable, is positioned in the seat (140) in a stable manner.

**[0060]** Figure 14 shows how said first side (210) of said adapter (200") can be provided with said partitions (230) having a given thickness (S1), while said second side (220) of the adapter has, instead of said vertical elements (240, 250), further partitions (270) like those previously described and having a different thickness, for example smaller.

**[0061]** For example, said partitions (270) of the second side (220) are oriented radially, in a position corresponding or not corresponding to the position of said partitions (230) of the first side (210). In the example shown in the figure, said partitions (270) of the second side (220) are distributed in such a manner that they exactly correspond to said partitions (230) of the first side (210).

**[0062]** This solution is particularly effective because it is possible to position the adapter (200") selectively, so that the partitions (230, 270) with the desired thickness can be directed upwards, depending on the gap to be

obtained between the panels (F) of the floor. Therefore, with reference to the above description and the attached drawings, the following claims are made.

## Claims

1. Head (10) of supports for raised floors, **characterized in that** it comprises:

- at least one upper element (100) suited to be coupled with a base or lower element (300, 400) in general, said upper element (100) in turn comprising a substantially cylindrical body (110) at the upper end (120) of which there is at least one seat (140);
- an adapter (200) suited to be inserted in said seat (140) of said upper end (120), and wherein said adapter (200) comprises a substantially plane body, where a first side (210) is different from the second side (220),

and wherein said adapter (200) and said seat (140) are configured in such a way that said adapter (200) can be selectively positioned in said seat (140) with said first side (210) facing upwards or with said second side (220) facing upwards.

2. Head (10) according to claim 1, **characterized in that** said cylindrical body (110) of the upper element (100) has, on the entirety or part of its external surface, a spiral-shaped projection intended to create a thread or a screw suited to be coupled with said base or lower element (300, 400).

3. Head (10) according to claim 1, **characterized in that** on said first side (210) of said adapter (200) there are one or more partitions (230) which are substantially orthogonal to said plane body of the adapter (200) itself, are arranged radially with respect to the centre of the adapter (200) and are suited to centre and space the panels (F) of the raised floor that are laid on said head (10).

4. Head (10) according to claim 3, **characterized in that** said partitions (230) are preferably four and equally distributed around the centre of the adapter (200) according to a cross-shaped configuration.

5. Head (10) according to claim 1, **characterized in that** on said second side (220) of said adapter (200) there are one or more vertical elements (240, 250) extending from said plane body of the adapter (200), which are arranged along one or more chords of the circumference having as its centre the centre of the adapter (200) and are suited to form lateral support surfaces for joists (T) or sections bars (P) resting on the head (10) itself.

6. Head (10) according to claim 5, **characterized in that** said second side (220) comprises at least two vertical elements (240, 250) or two sets of vertical elements parallel to one another and arranged in proximity to or at the level of the circular edge (160) of the adapter (200).

7. Head (10) according to claim 5, **characterized in that** said vertical elements (240, 250) comprise at least one substantially plane vertical element (241) on which said joists (T) or section bars (P) can be rested and/or one or more hooks (251) or projections or means in general for anchoring said vertical elements (240, 250) to the correspondingly shaped edge of the section bar (P).

8. Head (10) according to claim 1, **characterized in that** on said second side (220) of said adapter (200) there are one or more partitions (270) which are substantially orthogonal to said plane body of the adapter (200) itself, are arranged radially with respect to the centre of the adapter (200) and are suited to centre and space the panels (F) of the raised floor laid on said head (10), and wherein the thickness (S2) of said partitions (270) of said second side (220) is different from the thickness (S1) of said partitions (230) of said first side (210).

9. Head (10) according to claim 3 or 5 or 8, **characterized in that** one or more of said partitions (230) and/or of said vertical elements (240, 250) are removable.

10. Head (10) according to the preceding claims, **characterized in that** said adapter (200) has a shape that substantially corresponds to the shape of said seat (140) and its thickness is such that the adapter (200), when correctly inserted in the seat (140), is substantially flush with the perimeter edge of said upper end (120).

11. Head (10) according to the preceding claims, **characterized in that** said adapter (200) is constrained in said seat (140) with reversible means, for example through fixing joints or elastic tabs or other means.

12. Head (10) according to the preceding claims, **characterized in that** said upper end (120) of said cylindrical body (110) comprises an annular flange (130).

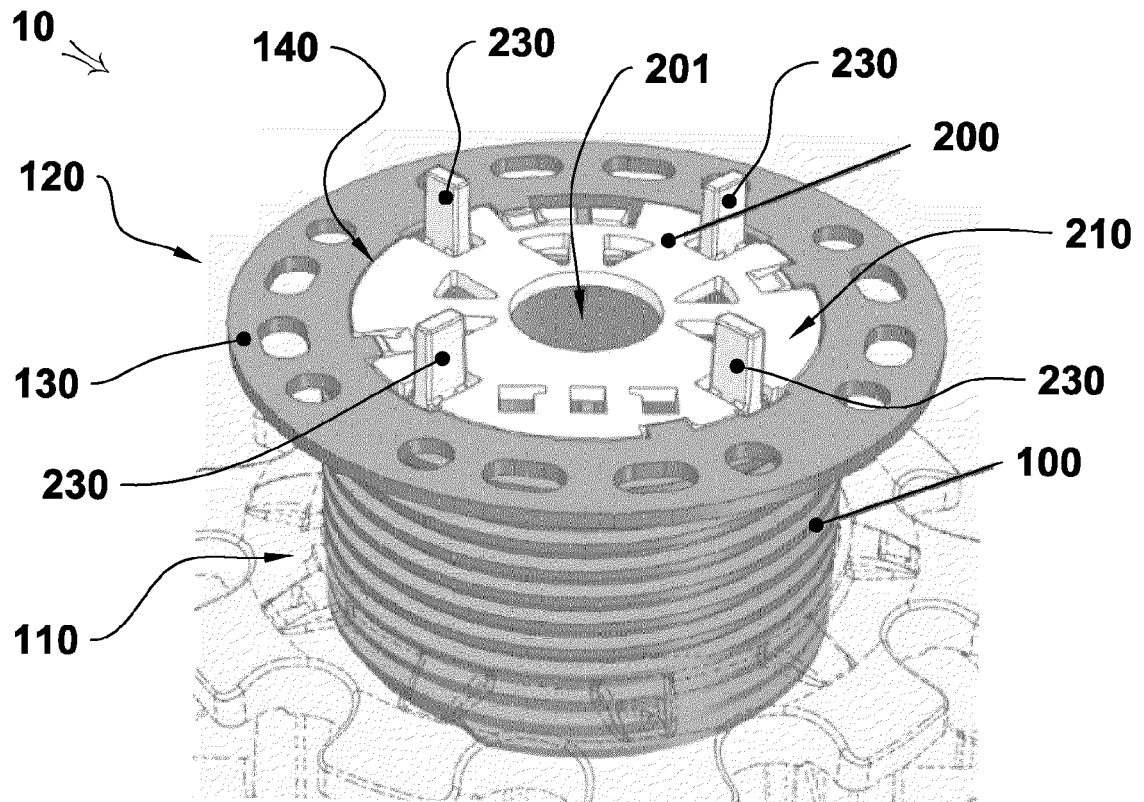


Fig. 1

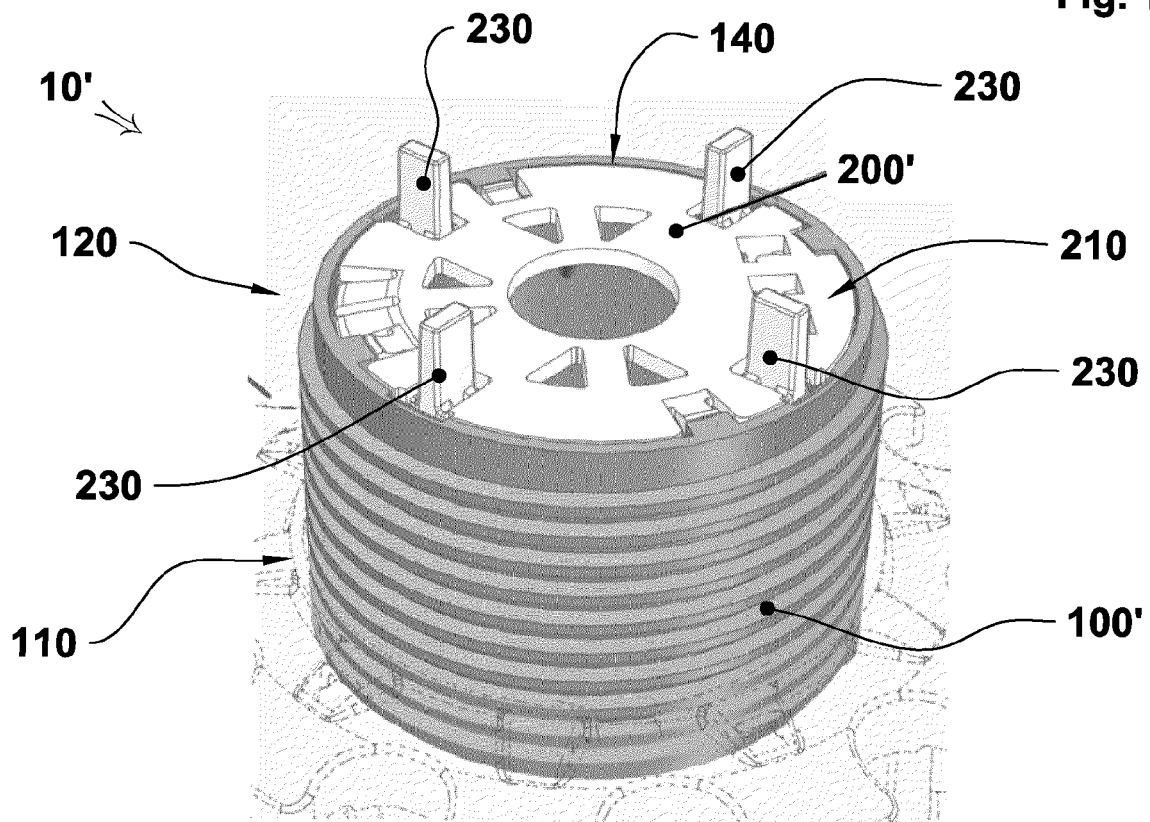


Fig. 2

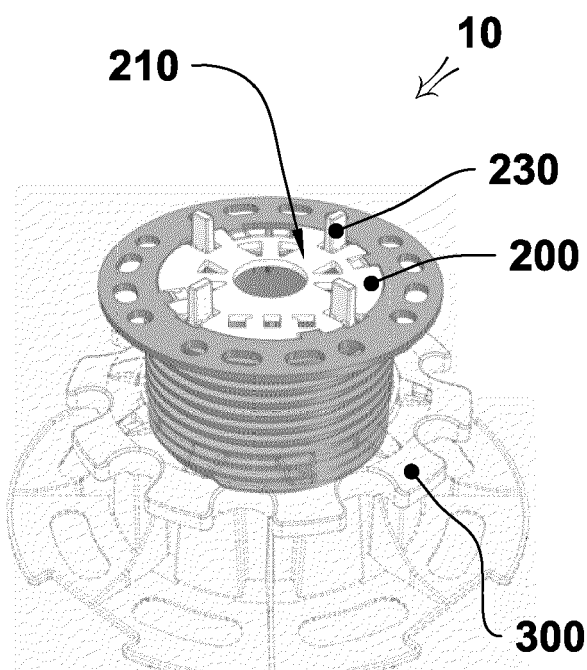


Fig. 3

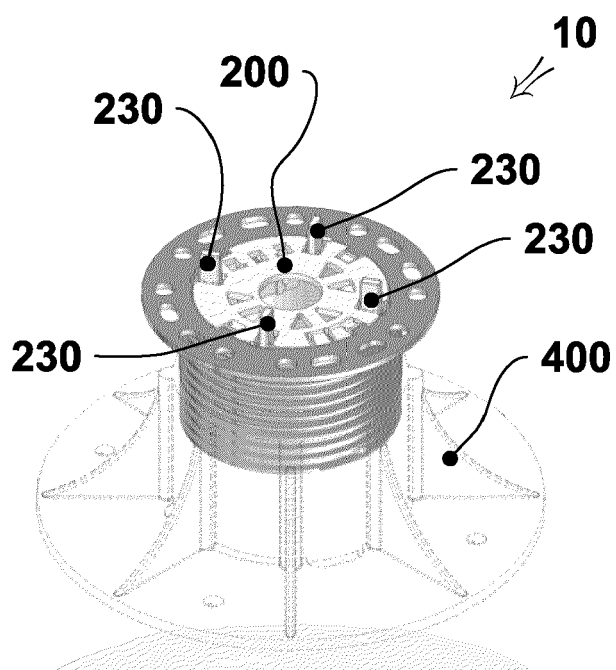


Fig. 5

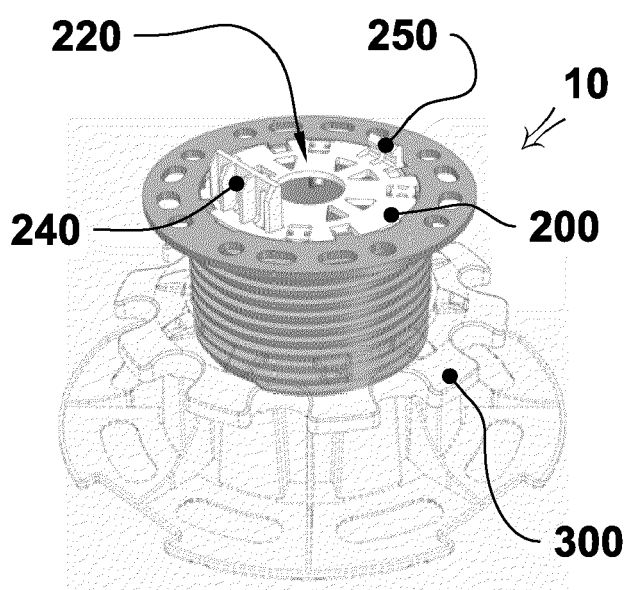


Fig. 4

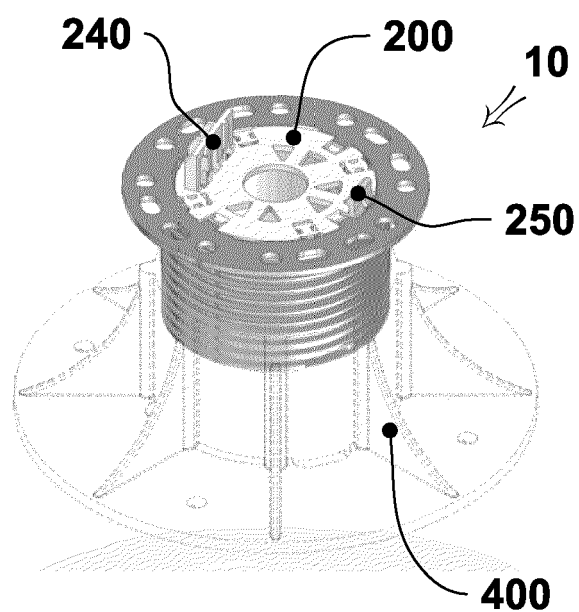


Fig. 6

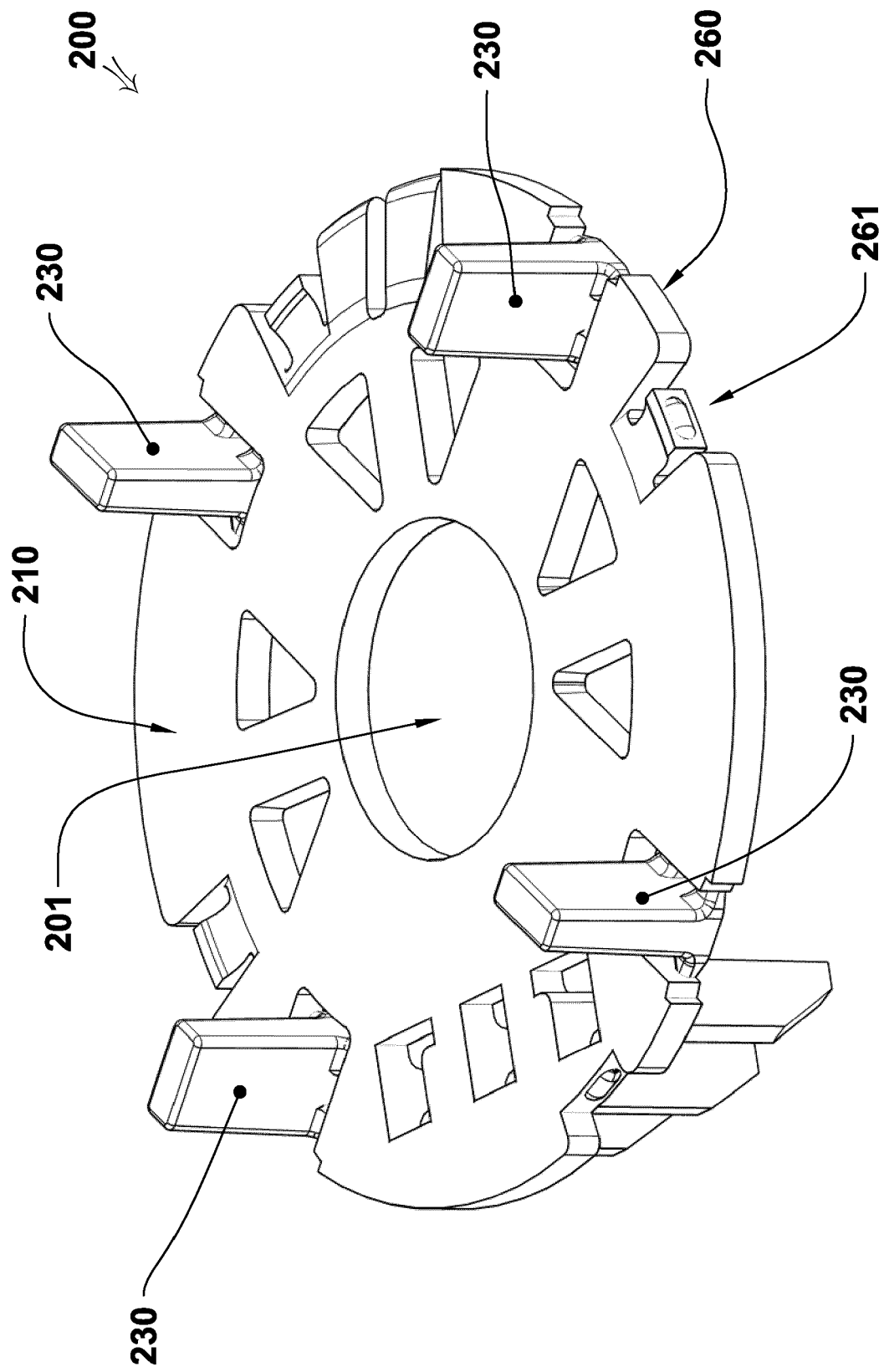


Fig. 7



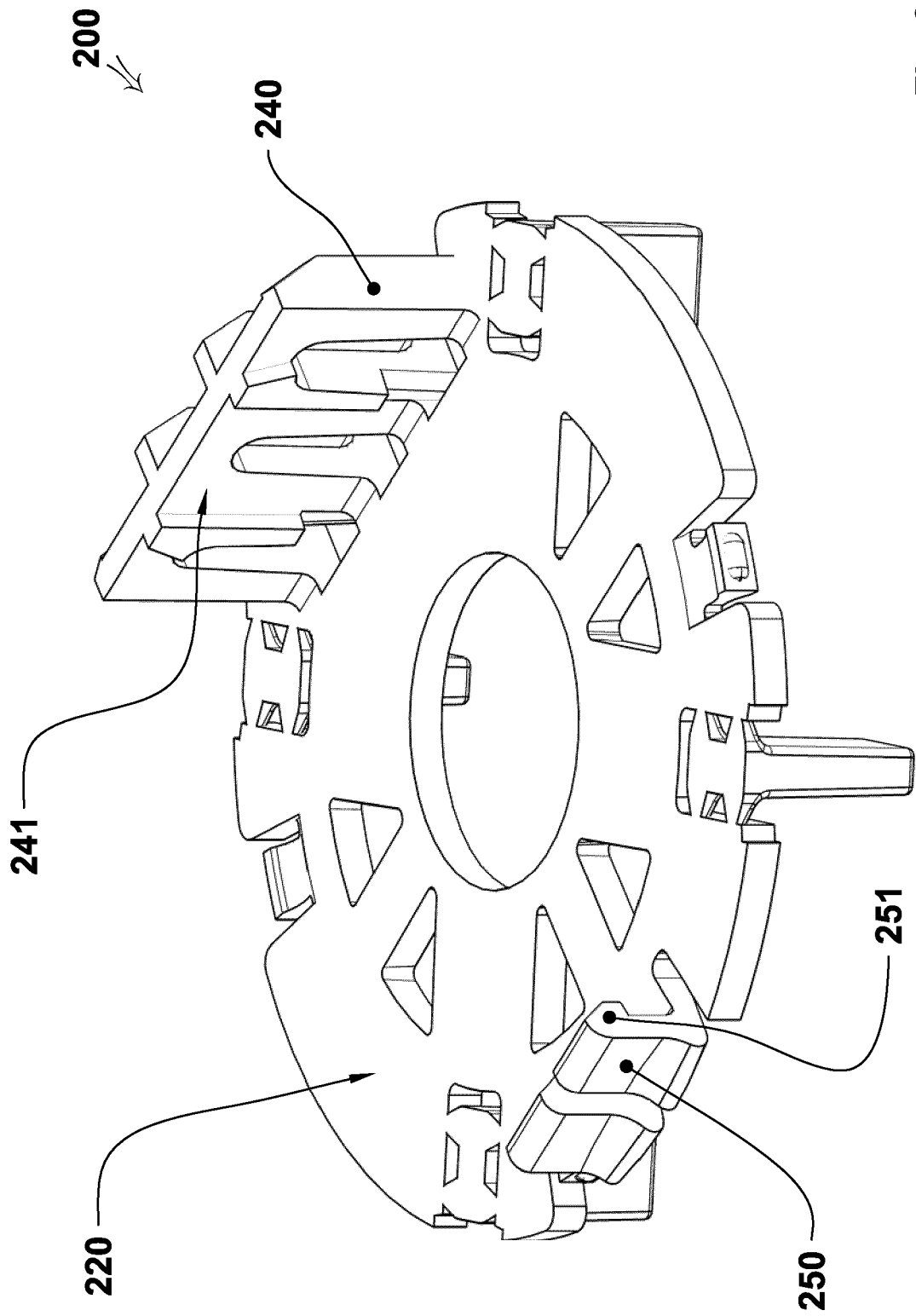


Fig. 8

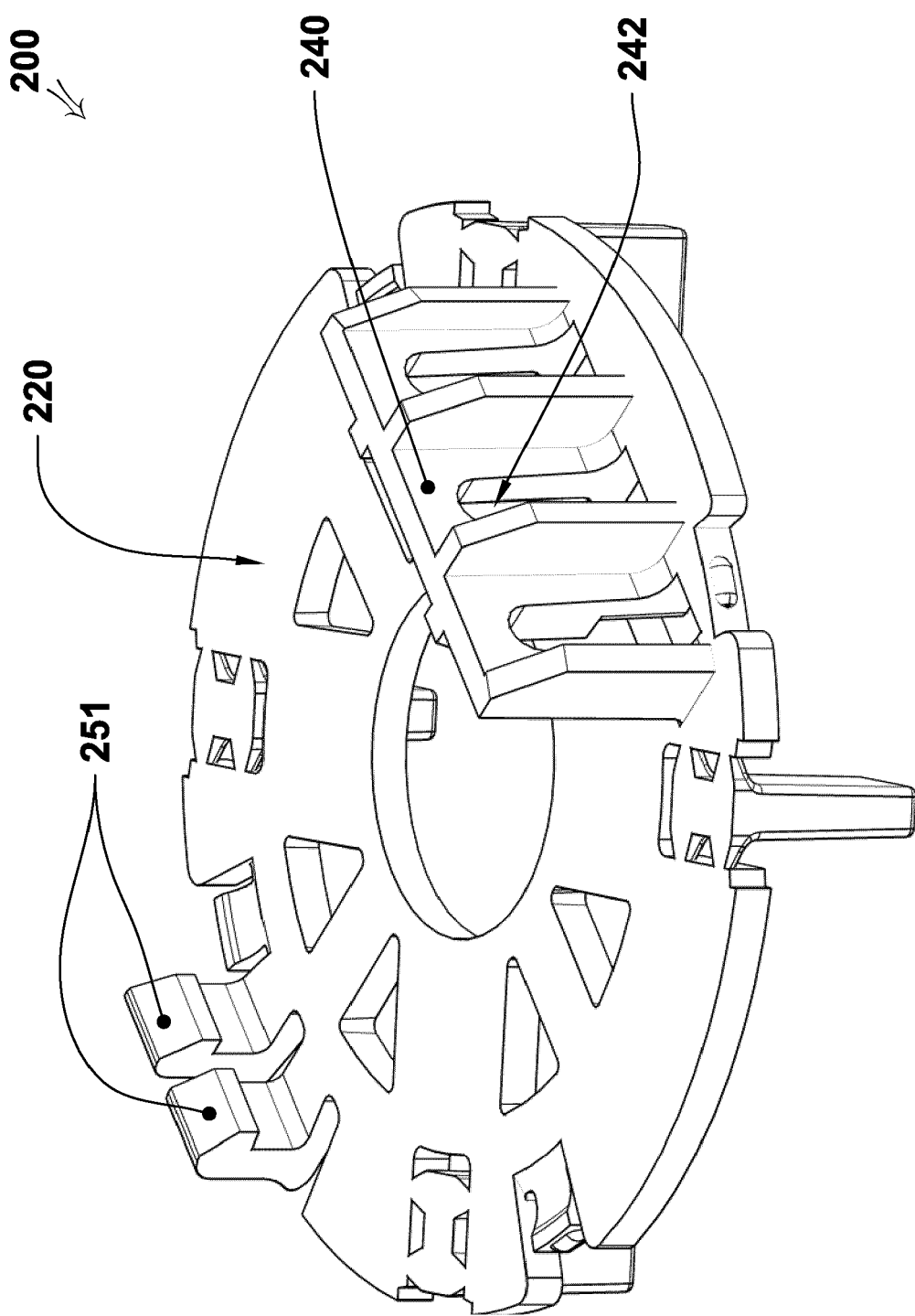


Fig. 9

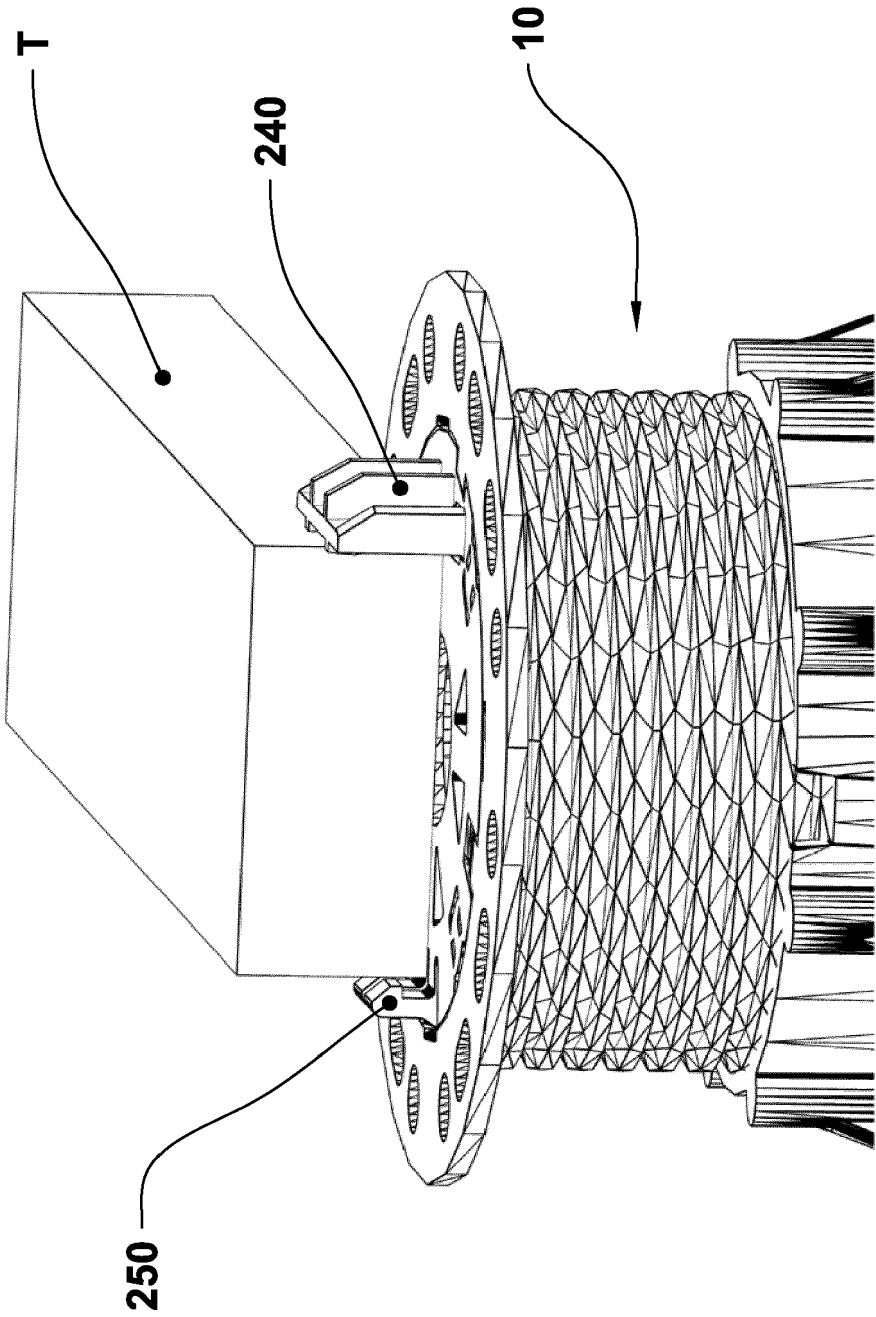


Fig. 10

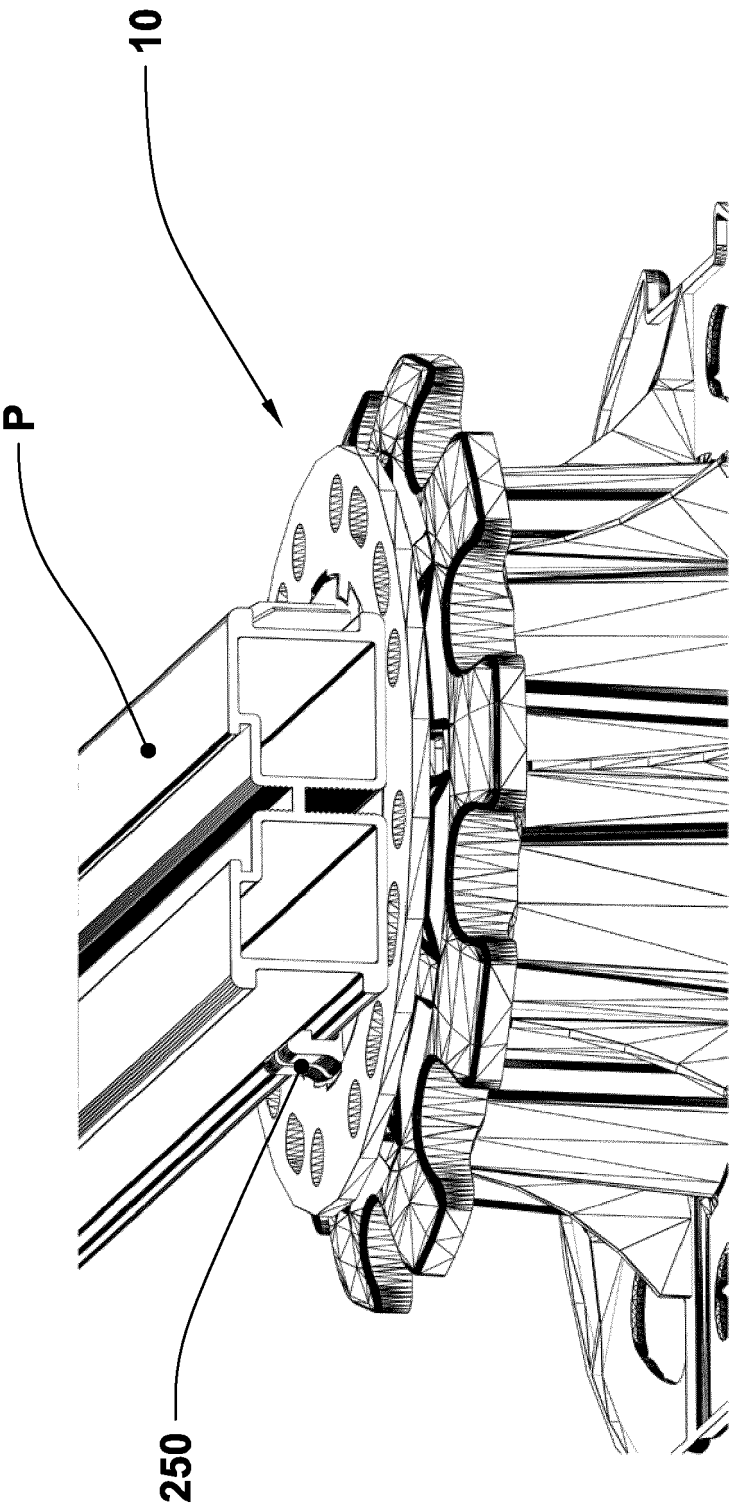


Fig. 11

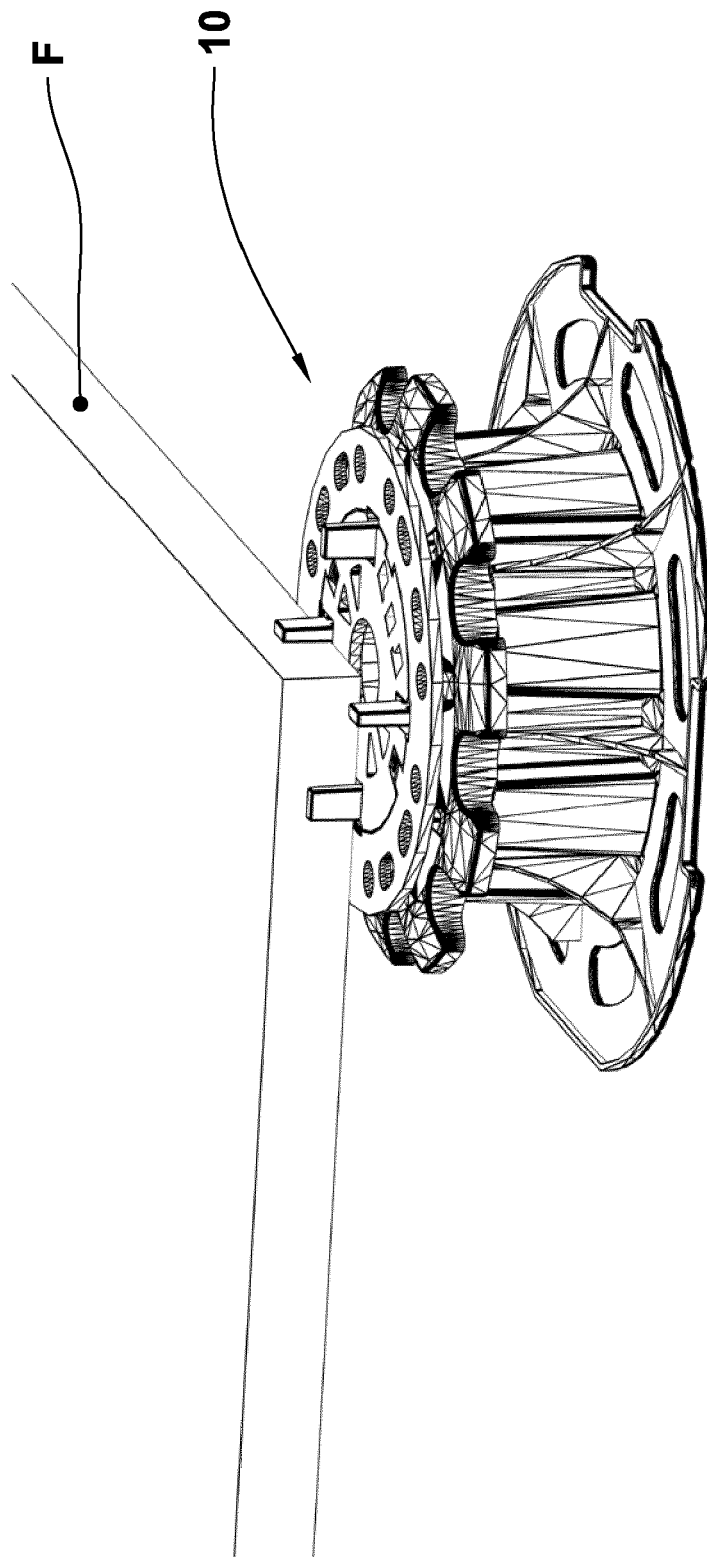


Fig. 12

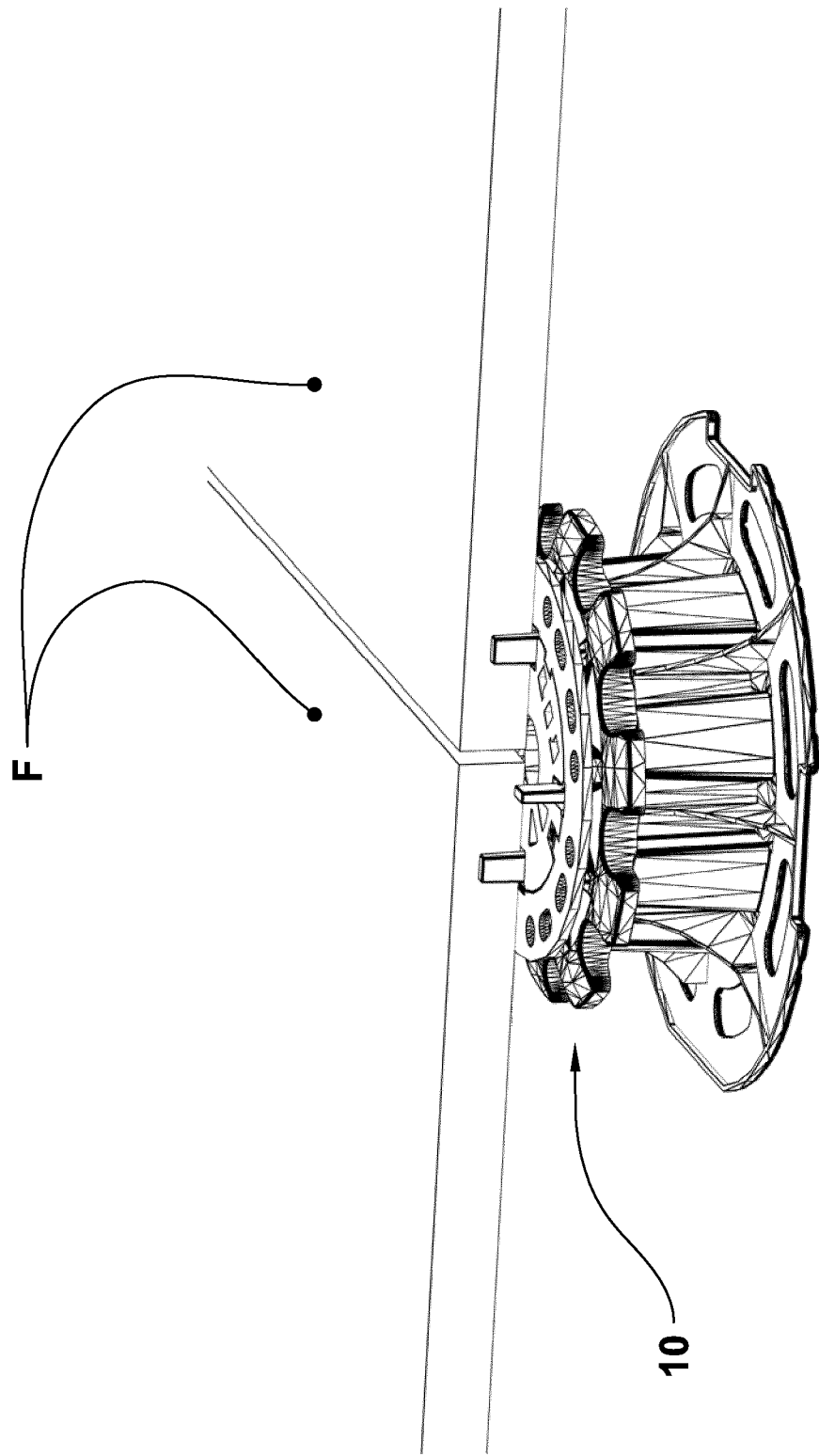


Fig. 13

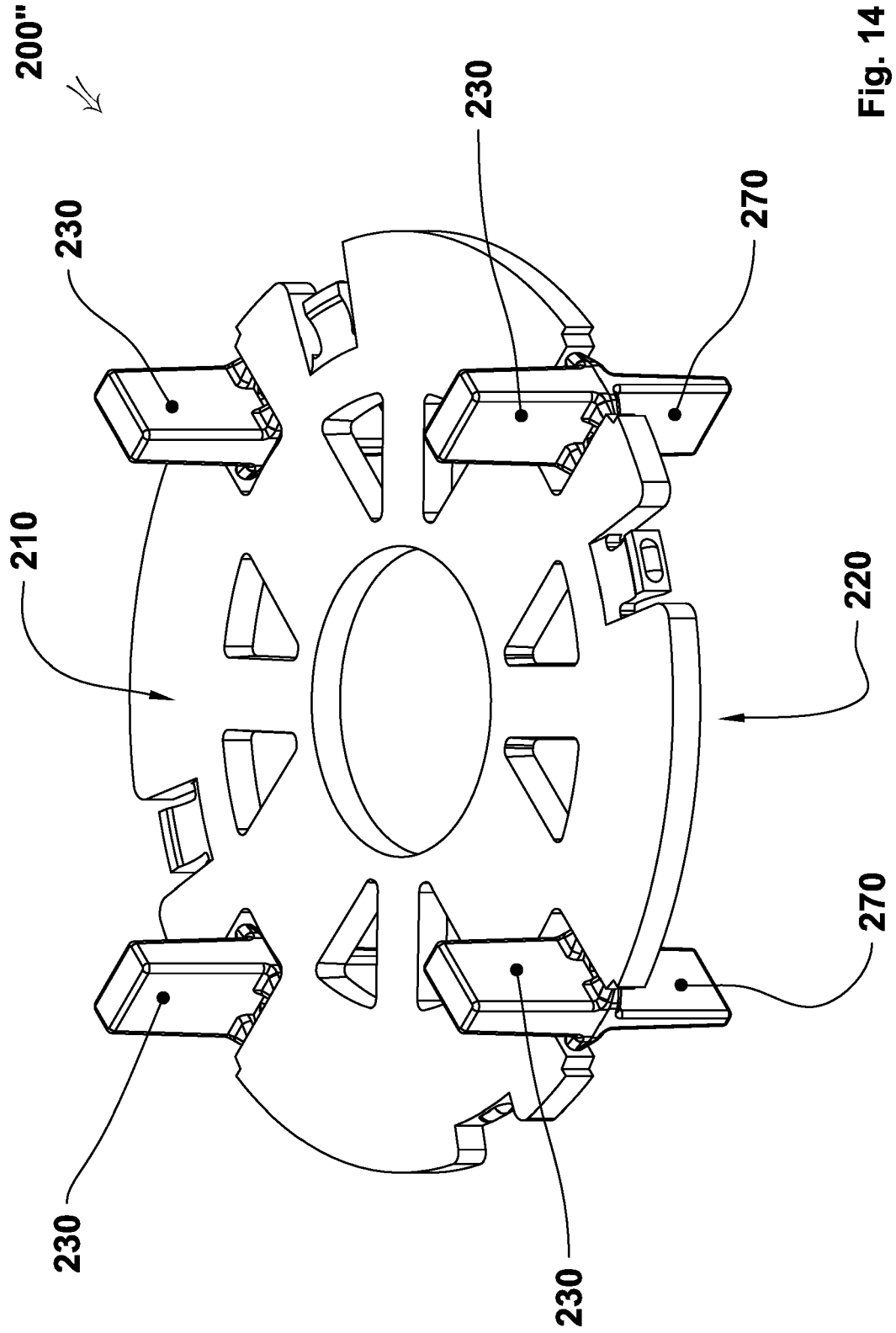


Fig. 14



## EUROPEAN SEARCH REPORT

Application Number

EP 23 15 5158

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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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|                                                                                                                                                                                                                                                                                       |                                                                                                                                                                 |                                  | E04F                                    |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                            |                                                                                                                                                                 |                                  |                                         |
| Place of search                                                                                                                                                                                                                                                                       |                                                                                                                                                                 | Date of completion of the search | Examiner                                |
| Munich                                                                                                                                                                                                                                                                                |                                                                                                                                                                 | 23 February 2023                 | Estorgues, Marlène                      |
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**ANNEX TO THE EUROPEAN SEARCH REPORT  
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
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| 35    |                                           |                     |                            |                     |
| 40    |                                           |                     |                            |                     |
| 45    |                                           |                     |                            |                     |
| 50    |                                           |                     |                            |                     |
| 55    |                                           |                     |                            |                     |

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