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(54) FOUNDATION FOR AN ELONGATE STRUCTURE AND AN ASSEMBLY OF THE ELONGATE STRUCTURE AND THE FOUNDATION

(57) The foundation comprises:
- a receiving element comprising a receiving opening, wherein said receiving element defines a receiving space for receiving a lower part of said elongate structure;
- a flange;
- a compression element;
- two positioning elements;
- a deformable plate element, wherein said two positioning elements and said deformable plate element are displaceable relative to said receiving element, said flange and said compression element in a virtual plane perpendicular to said longitudinal direction for, in use, positioning said elongate structure in said vertical direction;
- a compression arrangement arranged for compressing said deformable plate element between said two positioning elements, via said flange and said compression element, such that said deformable plate element is deformed and urged against said elongate structure for fixating said elongate structure relative to said receiving element in said vertical direction.

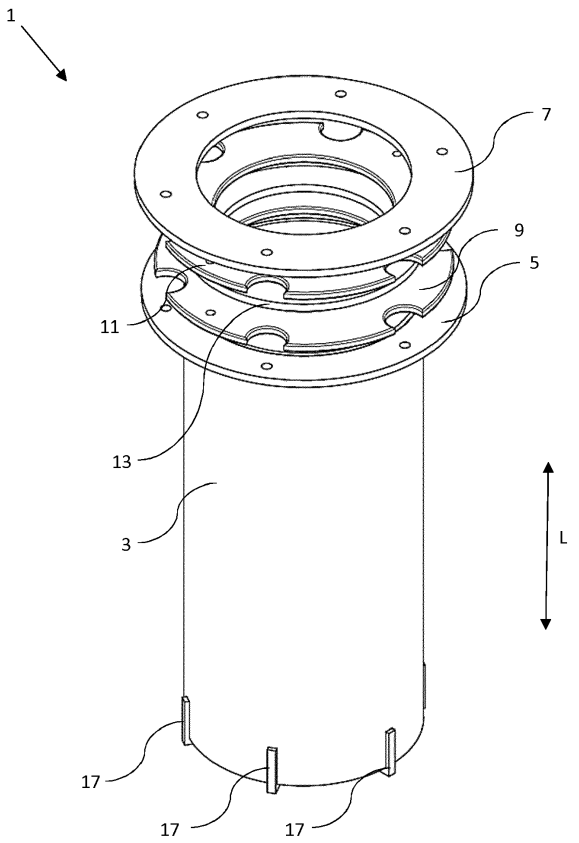

Fig. 1

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Description

[0001] According to a first aspect the present disclosure relates to a foundation for positioning an elongate structure, such as a lamppost, in an vertical direction.

[0002] According to a second aspect the present disclosure relates to an assembly of an elongate structure and a foundation according to the first aspect of the present disclosure.

[0003] A foundation for an elongate structure, such as a lamppost, is known and used for maintaining the elongate structure in a vertical direction. Positioning of the elongate structure in a vertical direction may be relative cumbersome when a vertical alignment of the elongate structure requires a relative accurate spatial positioning of the foundation. To overcome this drawback, improved foundations have been developed comprising adjustment arrangements for adjusting a position of the elongate structure relative to the foundation. These improved foundations may comprises a receiving chamber wherein a part of said elongate structure is provided and wherein said elongate structure is aligned and fixed relative to said receiving chamber by bolts that are provided in a wall of said receiving chamber and may be urged with an end face thereof against said elongate structure. A drawback of these improved foundations is that it relatively cumbersome to position and fixate the elongate structure in a vertical direction. US 2014/0227040 A1 discloses an anchor socket system for posts.

[0004] An objective of the present disclosure is therefore to provide a foundation for positioning and fixating an elongate structure, such as a lamppost, in an vertical direction in a relative practical way.

[0005] This objective is achieved by the foundation according to claim 1. The foundation according to claim 1 comprises:

- a receiving element comprising a receiving opening, wherein said receiving element defines a receiving space extending in a longitudinal direction for receiving, via said receiving opening of said receiving element, a lower part of said elongate structure;
- a flange attached to said receiving element;
- a compression element provided with a first through hole for allowing said elongate structure to pass said compression element via said first through hole;
- two positioning elements having, respectively, a second through hole and a third through hole for allowing said elongate structure to pass each of said two positioning elements via said corresponding second through hole and said third through hole, wherein said two positioning elements are arranged to be provided between said flange and said compression element;
- a deformable plate element provided with a fourth through hole for allowing said elongate structure to pass said deformable plate element via said fourth through hole, wherein said deformable plate element is arranged to be provided between said two positioning elements and wherein said two positioning elements and said deformable plate element are displaceable relative to said receiving element, said flange and said compression element in a virtual plane perpendicular to said longitudinal direction for, in use, positioning said elongate structure in said vertical direction;
- a compression arrangement arranged for compressing said deformable plate element between said two positioning elements, via said flange and said compression element, such that said deformable plate element is deformed and urged against said elongate structure for fixating said elongate structure relative to said receiving element in said vertical direction.

[0006] By providing a deformable plate element that is arranged to be provided between the two positioning elements directions of deformation of the deformable plate element may be directed relatively accurate. As a result of compression by the flange and the compression element, a thickness of the deformable plate element is reduced and the deformable plate element expands radially inward thereby reducing a dimension of the fourth through hole. The reduction of the dimension of the fourth through hole causes the deformable plate element to urge against the elongate structure and thereby a fixation of the elongate structure relative to the receiving element.

[0007] Allowing, during use, before compression of said deformable plate element, displacement of said two positioning elements and said deformable plate element relative to said receiving element, said flange and said compression element in a virtual plane perpendicular to said longitudinal direction said elongate structure may be positioned in said vertical direction. As such the functions of positioning and fixating are distributed in a relative practical manner allowing an elongate structure to be positioned and fixated in an vertical direction in a relative practical way.

[0008] Within the context of the present disclosure an elongate structure is to be understood a structure that has a significant larger extension in a first direction than in a direction transversal to said first direction. Examples of elongate structures are tubes, metal profiles having for instance an I or U shaped cross-section in said direction transversal to said first direction.

[0009] It is noted that within the context of the present disclosure positioning in a vertical direction is to be understood as a condition wherein said first direction of said elongate structure is brought in substantial alignment, preferably completely aligned, with said vertical direction. In other words, in a vertical position, said first direction extends substantially, preferably completely, in the same direction as said vertical direction.

[0010] In this regard it is advantageous if said receiving element is provided with a support element for supporting said elongate structure, preferable at an end face thereof,

in said receiving space of said receiving element for realizing, in use, when said elongate structure is supported by said support element, a pivot arrangement for pivoting said elongate structure inside said receiving element for allowing said vertical direction to differ from said longitudinal direction. Supporting said elongate structure inside said receiving element is attractive for realizing a pivot location of said elongate structure relative to said foundation in a relative robust manner. Known foundations are arranged such that a pivot point of an elongate structure is positioned above the known foundation making the foundation more vulnerable to damage caused by objects, such as cars, impacting the elongate structure.

[0011] It is beneficial if said compression arrangement comprises nuts and bolts for compressing said deformable plate element between said two positioning elements, wherein said flange and said compression element are provided with bolt receiving openings for receiving said bolts. Nuts and bolts are attractive for realizing a compression of said deformable plate element in a relative short time period.

[0012] In a practical embodiment of the foundation according to the first aspect of the present disclosure a diameter of said second through hole and a diameter of said third through hole is smaller than a diameter of said receiving opening and a diameter of said first through hole. This is beneficial for realising a foundation wherein displacement of said two positioning elements in a virtual plane perpendicular to said longitudinal direction may be effected while having said elongate structure passed through said receiving opening and said compression element.

[0013] It is advantageous if a diameter of said fourth through hole is smaller than a diameter of said second through hole and a diameter of said third through hole. This is advantageous for realizing that said elongate structure is fixated by said deformable plate element while avoiding direct contact of said position elements with said elongate element. This is beneficial for avoiding, or at least significantly reducing, the risk of damaging the elongate structure.

[0014] Preferably, said elongate structure has an outer surface profile and wherein a shape of said second through hole and a shape of said third through hole correspond to said a shape of said outer surface profile and/or wherein a shape of said fourth through hole corresponds to said shape of said outer surface profile. This is beneficial for realizing a relative even urging of said deformable plate element along said surface profile. This is beneficial for avoiding, or at least significantly reducing, the risk of damaging the elongate structure.

[0015] In a practical embodiment of the foundation according to the first aspect of the present disclosure said deformable plate element is made of a resilient material, preferably a resilient material comprising rubber. This is beneficial for avoiding, or at least significantly reducing, the risk of damaging the elongate structure. Moreover, a resilient element allows for re-use of the foundation if said resilient element is only elastically deformed during use of the foundation. In this regard it is beneficial if said deformable plate element is made of a rubber, preferably an ethylene propylene diene monomer rubber.

[0016] In an embodiment, said flange and said two compression elements are made from the same material, preferably are made of a metal.

[0017] Preferably said flange is attached to an outer wall of said receiving element.

[0018] It is advantageous if said receiving element, preferably at a bottom side thereof, is provided with a wire feed opening for allowing, in use, said elongate structure to be connected to a wire such as a power cable or a data communication cable.

[0019] According to the second aspect the present disclosure relates to an assembly of an elongate structure and a foundation according to the first aspect of the present disclosure, wherein said elongate structure, with a lower part thereof, is at least partly received in said receiving space of said receiving element and positioned in said vertical direction, wherein said elongate structure is fixated relative to said receiving element by compressing, by said compression arrangement, said deformable plate element between said two positioning elements, via said flange and said compression element, such that said deformable plate element is deformed and urged against said elongate structure. Embodiments of the assembly according to the second aspect of the present disclosure correspond to embodiments of the foundation according to the first aspect of the present disclosure. The advantages of the assembly according to the second aspect of the present disclosure correspond to the advantages of the foundation according to the first aspect of the present disclosure presented previously.

[0020] It is beneficial if said lower part of said elongate structure received in said receiving element has a diameter in the range of 100 mm to 450 mm. This is beneficial for realizing a relative robust elongate structure.

[0021] Preferably said deformable plate element is deformed and urged against said elongate structure such that said deformable plate element prevents fluid to pass between said elongate structure and said deformable plate element. This is advantageous for maintaining said receiving space relatively dry and thereby prevent corrosion or other negative influence of fluid on said foundation and/or said part of said elongate structure received in said receiving space.

[0022] In a practical embodiment of the assembly according to the second aspect of the present disclosure said elongate structure with an end face thereof is supported by said support element and said vertical direction differs from said longitudinal direction. Supporting said elongate structure inside said receiving element is attractive for realizing a pivot location of said elongate structure relative to said foundation in a relative robust manner. Known foundations are arranged such that a pivot point of an elongate structure is positioned above the known foundation making the foundation more vulnerable to

damage caused by objects, such as cars, impacting the elongate structure.

[0023] It is advantageous if said foundation is provided below a ground surface, preferably completely below a ground surface. This is of particular benefit for preventing objects, such as cars, impacting the foundation. By providing the foundation completely below the ground surface a damage of the foundation by an object hitting the elongate structure is avoided, or at least significantly reduced.

[0024] In a practical embodiment of the assembly according to the second aspect of the present disclosure said elongate structure is a lamppost. A lamppost is a relative vulnerable elongate structure that should be maintained in a vertical direction. The present assembly is particularly attractive for positioning a lamppost in a relative short time period in a relative robust manner.

[0025] In an embodiment said elongate structure is connected to a wire such as a power cable or a data communication cable, wherein said wire is passed through said wire feed opening. This is beneficial for powering a device, such as a lamp or a wireless antenna. An embodiment of the assembly wherein said elongate structure is supported by said support element is of particular interest in this regard due to the presence of said pivot point inside said receiving element causing no or only relative small variations of the elongate structure relative to the receiving element thereby avoiding the risk, or at least greatly reducing the risk, of damaging the wire due to movement of the elongate structure relative to the receiving element.

[0026] Preferably, said elongate structure is a metal structure. This is beneficial for realizing a relative robust elongate structure.

[0027] It is advantageous if said elongate structure has a diameter in the range of 100 mm to 450 mm. This is beneficial for realizing a relative robust elongate structure.

[0028] It is advantageous if said elongate structure has a length in said vertical direction in the range of 3 m to 16 m.

[0029] According to a third aspect the present disclosure relates to a foundation for positioning an elongate structure, such as a lamppost, in an vertical direction, said foundation comprising:

- a receiving element comprising a receiving opening, wherein said receiving element defines a receiving space extending in a longitudinal direction for receiving, via said receiving opening of said receiving element, a lower part of said elongate structure;
- a positioning arrangement for positioning, in use, said elongate structure in said vertical direction, wherein said positioning arrangement is displaceable relative to said receiving element in a virtual plane perpendicular to said longitudinal direction for, in use, positioning said elongate structure in said vertical direction;
- a compression arrangement for fixating said elongate structure to said receiving element in said vertical direction, said compression arrangement comprising a deformable plate element, wherein said compression arrangement is arranged for compressing said deformable plate element such that said deformable plate element is deformed and urged against said elongate structure for fixating of said elongate structure relative to said receiving element in said vertical direction.

[0030] Preferably, said foundation according to the third aspect comprises:

- a flange attached to said receiving element; and

wherein said compression arrangement comprises a compression element provided with a first through hole for allowing said elongate structure to pass said compression element via said first through hole;
wherein said positioning arrangement comprises two positioning elements having, respectively, a second through hole and a third through hole for allowing said elongate structure to pass each of said two positioning elements via said corresponding second through hole and said third through hole, wherein said two positioning elements are arranged to be provided between said flange and said compression element;
wherein said deformable plate element is provided with a fourth through hole for allowing said elongate structure to pass said deformable plate element via said fourth through hole, wherein said deformable plate element is arranged to be provided between said two positioning elements and wherein said two positioning elements and said deformable plate element are displaceable relative to said receiving element, said flange and said compression element in a virtual plane perpendicular to said longitudinal direction for, in use, positioning said elongate structure in said vertical direction;
wherein said compression arrangement is arranged for compressing said deformable plate element between said two positioning elements, via said flange and said compression element, such that said deformable plate element is deformed and urged against said elongate structure for fixating of said elongate structure relative to said receiving element in said vertical direction.

[0031] Further embodiments of the foundation according to the third aspect correspond to embodiments of the foundation according to the first aspect of the present disclosure. The advantages of the foundation according to the third aspect correspond to the advantages of the foundation according to the first aspect of the present disclosure presented previously.

[0032] According to a fourth aspect the present disclosure relates to an assembly of an elongate structure and a foundation according to the third aspect,
wherein said elongate structure, at a lower side thereof, is at least partly received in said receiving space of said

receiving element and positioned in said vertical direction, wherein said elongate structure is fixated relative to said receiving element by compressing, by said compression arrangement, said deformable plate element such that said deformable plate element is deformed and urged against said elongate structure. Embodiments of the assembly according to the fourth aspect correspond to embodiments of the foundation according to the third aspect of the present disclosure. The advantages of the assembly of the fourth aspect of the present disclosure correspond to the advantages of the foundation according to the third aspect of the present disclosure presented previously.

[0033] The present disclosure will now be explained by means of a description of a preferred embodiment of a foundation according to the first and third aspect of the present disclosure and embodiments of an assembly according to the second and fourth aspect of the present disclosure, in which reference is made to the following schematic figures, in which:

Fig. 1: a foundation according to the present disclosure in exploded view is shown;
Fig. 2: a cross-section of the exploded view from Fig. 1 is shown;
Fig. 3 - 6: elements of the foundation according to Fig. 1 are shown;
Fig. 7: an assembly according to the present disclosure is shown;
Fig. 8: another assembly according to the present disclosure is shown.

[0034] Foundation 1 comprises a receiving element 3 in the form of a tube element wherein an inner space of said tube element forms a receiving space 15 extending in a longitudinal direction L for receiving a part 35 of an elongate structure 33 such as a lamppost via a receiving opening 31. At a lower side said receiving element 3 is provided with support elements 17. The support elements 17 are distributed along a wall of the tube and provide a support surface for supporting the elongate structure 33 at a bottom side 45. By supporting the elongate structure 33 at a bottom side 45 the elongate structure 33 may pivot with respect to the receiving element 3 inside the receiving element 3, wherein a pivot axis is located in a virtual volume that is bound by said support elements 17. As a result of this pivot action, the longitudinal direction L of the receiving element 3 may differ from the vertical direction V, wherein the vertical direction V is defined as the direction wherein said elongate structure 33 should extend. Allowing a difference between the vertical direction V and the longitudinal direction L reduces the need for the receiving element 3 to be positioned relative accurately to a ground surface 47. At an upper side of said receiving element 3 the receiving element 3 is provided with a flange 5. Flange 5 extends from an outer wall 43 of the receiving element 3 and is provided with openings 29 for receiving bolts 41.

[0035] Foundation 1 further comprises a compression element 7, two positioning elements 9 and 11 and a deformable plate element 13. The compression element 7 is formed as a ring and is provided with further openings 27. The further openings 27 correspond with the openings 29 in flange 5 for allowing bolts 41 to pass through said openings 29 and said further openings 29 and driving the compression element 7 in the direction of the flange 7 by tightening nuts 39 on said bolts 41.

[0036] The deformable plate element 13 is a rubber ring that is provided between the two positioning elements 13. The two positioning elements 13 are identical and are provided with recesses 19. The recesses 19 are positioned such that in use, when bolts 41 extend through said openings 29 and further openings 27, said bolts 41 pass through said recesses 19 and thereby allow said positioning elements 9, 11 to be displaceable over a relative large distance in a virtual plane perpendicular to said longitudinal direction L for, in use, positioning said elongate structure 33 in said vertical direction V.

[0037] The two positioning elements 9, 11 like the flange 5 and the compression element 7 are made of metal allowing said positioning elements 9 and 11 to be displaced at relative low force compared to the force required for displacing one of said two positioning elements 9, 11 relative to said rubber ring 13 in a stacked condition of said compression element 7, said two positioning elements 9, 11, said rubber ring 13 and said flange 5.

[0038] For fixating the elongate structure 33 in the vertical direction V, the compression element 7 is driven to said flange 5 by tightening said nuts 39 and bolts 41. This causes a compression of said deformable plate element 13 between said two positioning elements 9 and 11. As a result of this compression of the rubber ring 13, the rubber ring 13 is deformed and may be urged against said elongate structure 33 for fixating of said elongate structure 33 relative to said receiving element 3.

[0039] A diameter D4 of through hole 25 the rubber ring 13 is smaller than a diameter D0 of the receiving opening 31 and a diameter D2 of the positioning elements. An outer diameter of the rubber ring 13 is smaller than an outer dimension of the positioning elements 9 and 11 for allowing said stack of rubber ring 13 and positioning element 9 and 11 to be displaceable over a relative large distance in a virtual plane perpendicular to said longitudinal direction L for, in use, positioning said elongate structure 33 in said vertical direction V. The diameter D2 of through hole 23 of the positioning elements 9 and 11 is smaller than diameter D0 of the receiving opening 31 and diameter D1 of compression element 7.

[0040] Assembly 100 comprises a foundation 1 and a lamppost 33. Only a lower part 35 of lamppost 33 is shown in figure 7. Foundation 1 is position in the ground 49 such that said foundation 1 is completely below a ground surface 47. Receiving element 3 of assembly 100 is provided in the ground 49 under an acute angle relative to the ground surface 47. Lamppost 33 is positioned such in said receiving element 3 that lamppost 33 extends in the

vertical direction V wherein vertical direction V differs from the longitudinal direction L of the receiving element 3. This difference in direction L and V is achieved by displacing the positioning elements 9 and 11 together with the deformable plate element 13 in direction Z relative to the receiving element 3.

[0041] Assembly 200 differs mainly from assembly 100 in that the longitudinal direction L of receiving element 3 coincides with the vertical direction V.

Claims

1. Foundation (1) for positioning an elongate structure (33), such as a lamppost, in an vertical direction (V), said foundation (1) comprising:

   - a receiving element (3) comprising a receiving opening (31), wherein said receiving element (3) defines a receiving space (15) extending in a longitudinal direction (L) for receiving, via said receiving opening (31) of said receiving element (3), a lower part (35) of said elongate structure (33);
   - a flange (5) attached to said receiving element (3);
   - a compression element (7) provided with a first through hole (21) for allowing said elongate structure (33) to pass said compression element (7) via said first through hole (21);
   - two positioning elements (9, 11) having, respectively, a second through hole (23) and a third through hole for allowing said elongate structure (33) to pass each of said two positioning elements (9, 11) via said corresponding second through hole (23) and said third through hole, wherein said two positioning elements (9, 11) are arranged to be provided between said flange (5) and said compression element (7),

   characterized in that the foundation (1) comprises:

   - a deformable plate element (13) provided with a fourth through hole (25) for allowing said elongate structure (33) to pass said deformable plate element (13) via said fourth through hole (25), wherein said deformable plate element (13) is arranged to be provided between said two positioning elements (9, 11) and wherein said two positioning elements (9, 11) and said deformable plate element (13) are displaceable relative to said receiving element (3), said flange (5) and said compression element (7) in a virtual plane perpendicular to said longitudinal direction (L) for, in use, positioning said elongate structure (33) in said vertical direction (V);
   - a compression arrangement (37) arranged for compressing said deformable plate element (13) between said two positioning elements (9, 11), via said flange (5) and said compression element (7), such that said deformable plate element (13) is deformed and urged against said elongate structure (33) for fixating said elongate structure (33) relative to said receiving element (3) in said vertical direction (V).

2. Foundation (1) according to claim 1, wherein said receiving element (3) is provided with a support element (17) for supporting said elongate structure (33), preferable at an end face (45) thereof, in said receiving space (15) of said receiving element (3) for realizing, in use, when said elongate structure (33) is supported by said support element (17), a pivot arrangement for pivoting said elongate structure (33) inside said receiving element (3) for allowing said vertical direction (V) to differ from said longitudinal direction (L).

3. Foundation (1) according to claim 1 or 2, wherein said compression arrangement (37) comprises nuts (39) and bolts (41) for compressing said deformable plate element (13) between said two positioning elements (9, 11), wherein said flange (5) and said compression element (7) are provided with bolt receiving openings (27, 29) for receiving said bolts (41).

4. Foundation (1) according to any one of the preceding claims, wherein a diameter (D2) of said second through hole (23) and a diameter of said third through hole is smaller than a diameter (D0) of said receiving opening (31) and a diameter (D1) of said first through hole (21).

5. Foundation (1) according to any one of the preceding claims, wherein a diameter (D4) of said fourth through hole (25) is smaller than a diameter (D2) of said second through hole (23) and a diameter of said third through hole.

6. Foundation (1) according to any one of the preceding claims, wherein said deformable plate element (13) is made of a resilient material, preferably a resilient material comprising rubber.

7. Foundation (1) according to claim 6, wherein said deformable plate element (13) is made of a rubber, preferably an ethylene propylene diene monomer rubber.

8. An assembly (100, 200) of an elongate structure (33) and a foundation (1) according to any one of the preceding claims, wherein said elongate structure (33), with a lower part (35) thereof, is at least partly received in said receiving space (15) of said receiving element (3) and positioned in said vertical direction (V), wherein said elongate structure (33) is fixated

relative to said receiving element (3) by compressing, by said compression arrangement (37), said deformable plate element (13) between said two positioning elements (9, 11), via said flange (5) and said compression element (7), such that said deformable plate element (13) is deformed and urged against said elongate structure (33).

9. An assembly (100, 200) according to claim 8, wherein said lower part (35) of said elongate structure (33) received in said receiving element (3) has a diameter in the range of 100 mm to 450 mm.

10. An assembly (100, 200) according to claim 8 or 9, wherein said deformable plate element (13) is deformed and urged against said elongate structure (33) such that said deformable plate element (13) prevents fluid to pass between said elongate structure (33) and said deformable plate element (13).

11. An assembly (100) according to any one of the claims 8 to 10 comprising a foundation according to claim 2, wherein said elongate structure (33) with an end face (45) thereof is supported by said support element (17) and said vertical direction (V) differs from said longitudinal direction (L).

12. An assembly (100, 200) according to any one of the claims 8 to 11, wherein said foundation (1) is provided below a ground surface (47).

13. An assembly (100, 200) according to any one of the claims 8 to 12, wherein said elongate structure (33) is a lamppost.

14. An assembly (100, 200) according to any one of the claims 8 to 13, wherein said elongate structure (33) has a diameter in the range of 100 mm to 450 mm.

15. An assembly according to any one of the claims 8 to 14, wherein said elongate structure has a length in said vertical direction in the range of 3 m to 16 m.

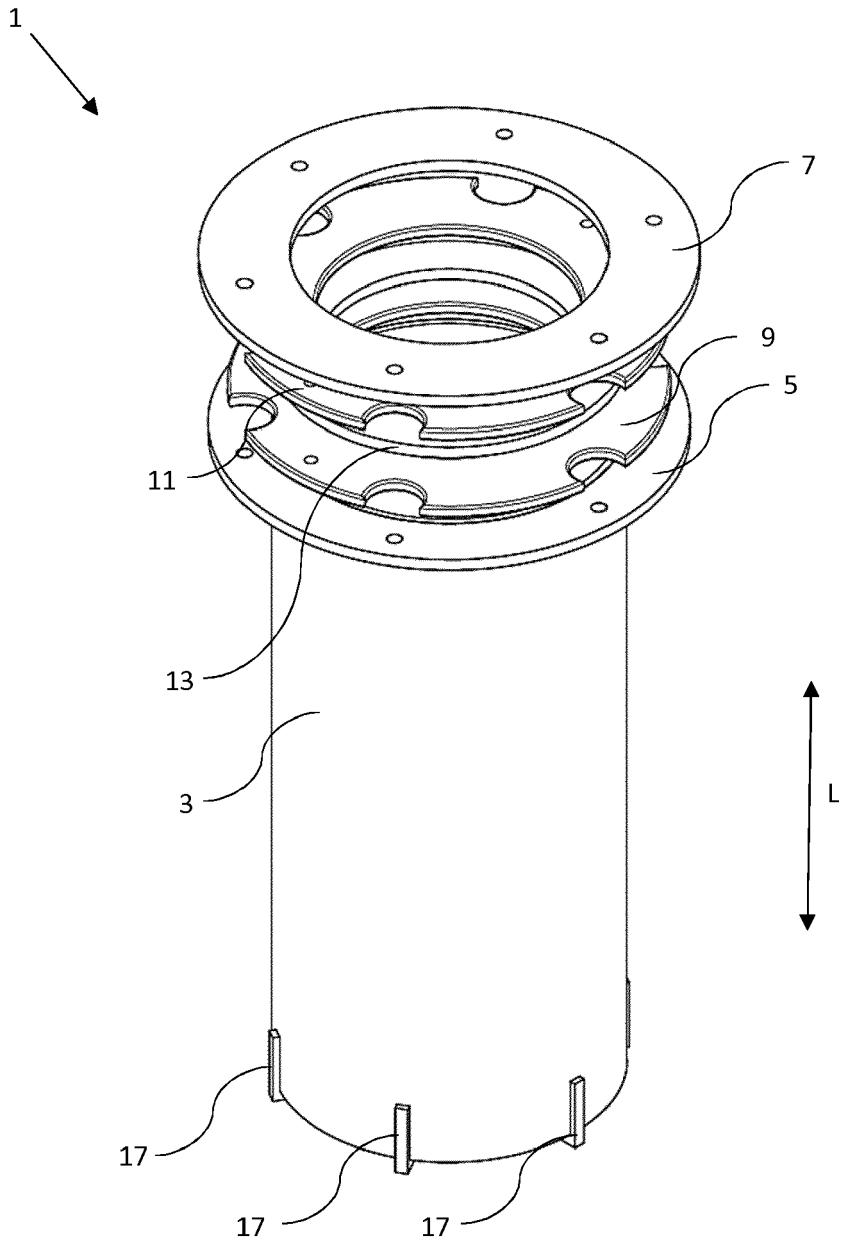

Fig. 1

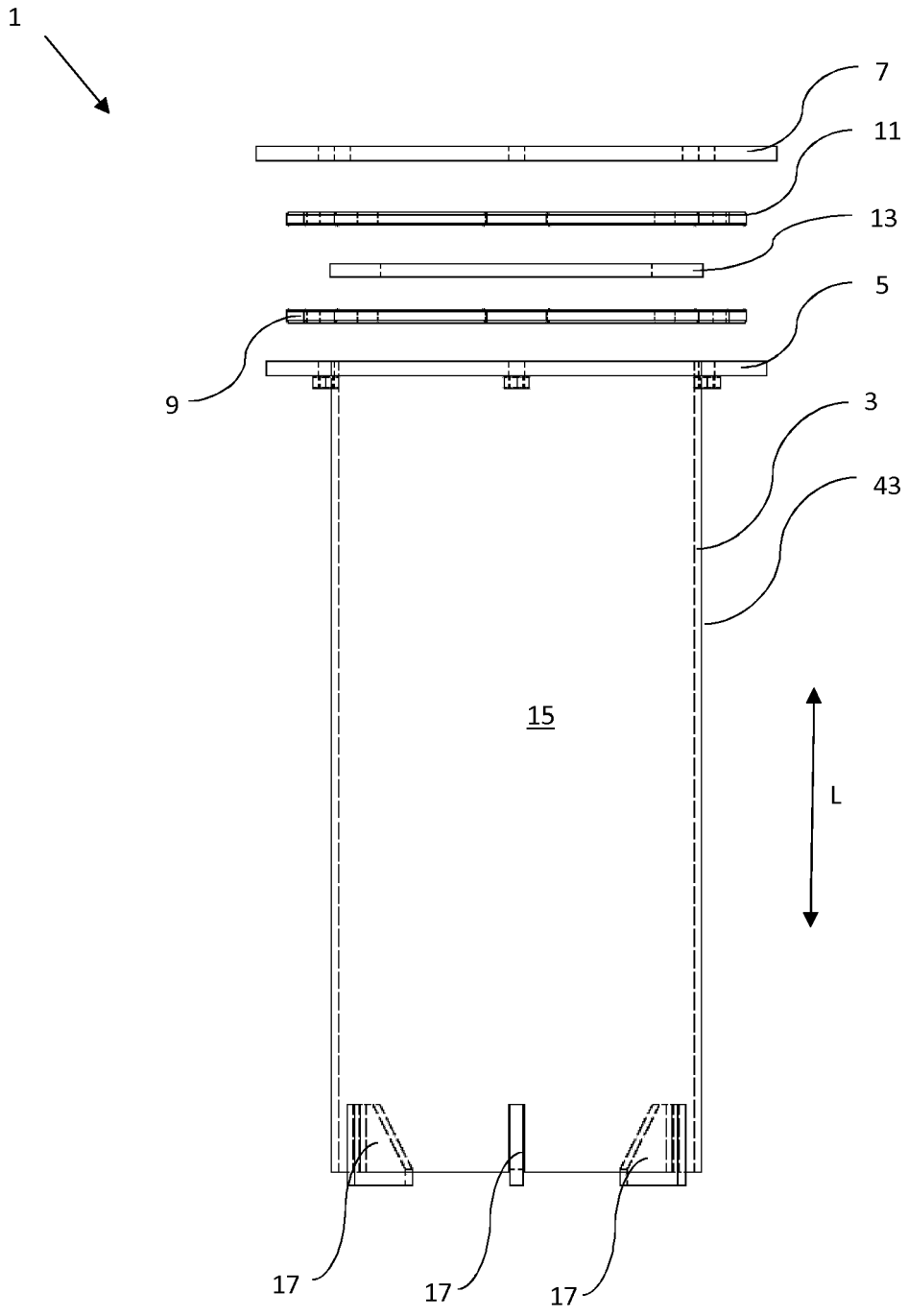

Fig. 2

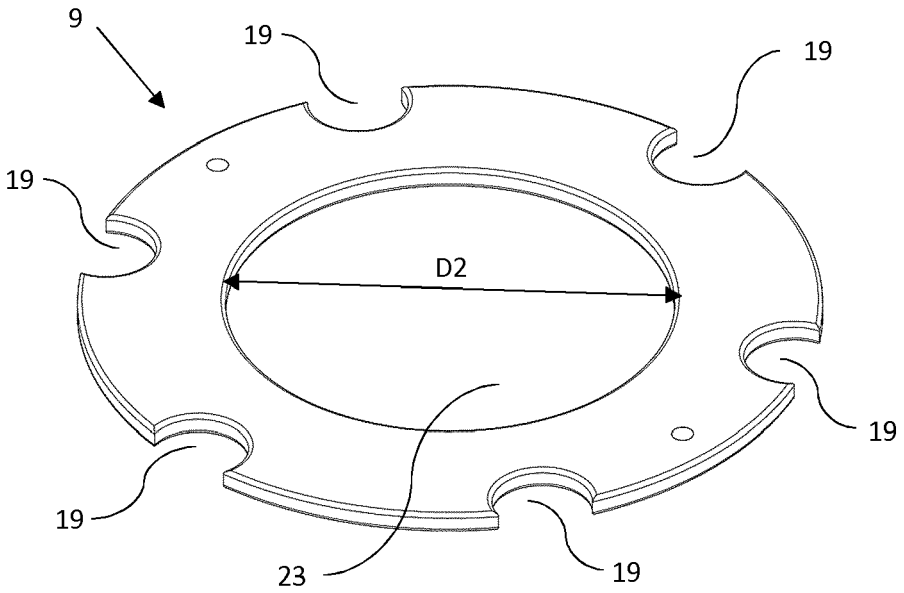

Fig. 3

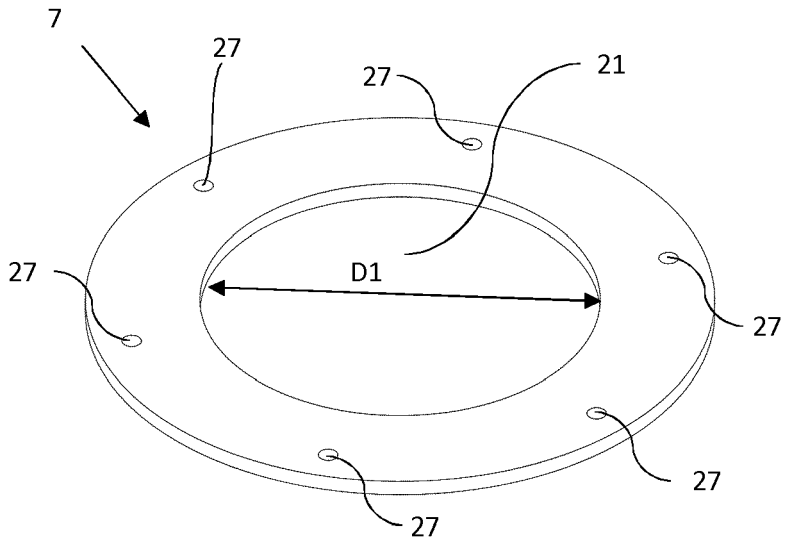

Fig. 4

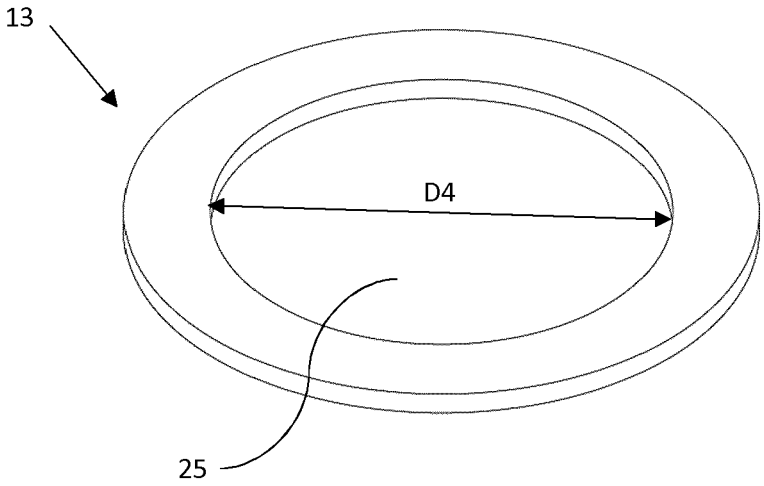

Fig. 5

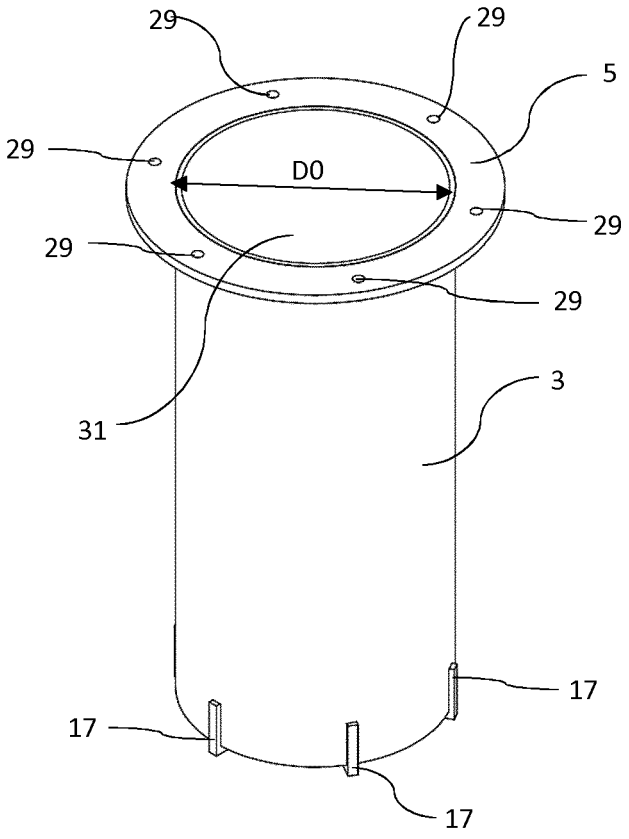

Fig. 6

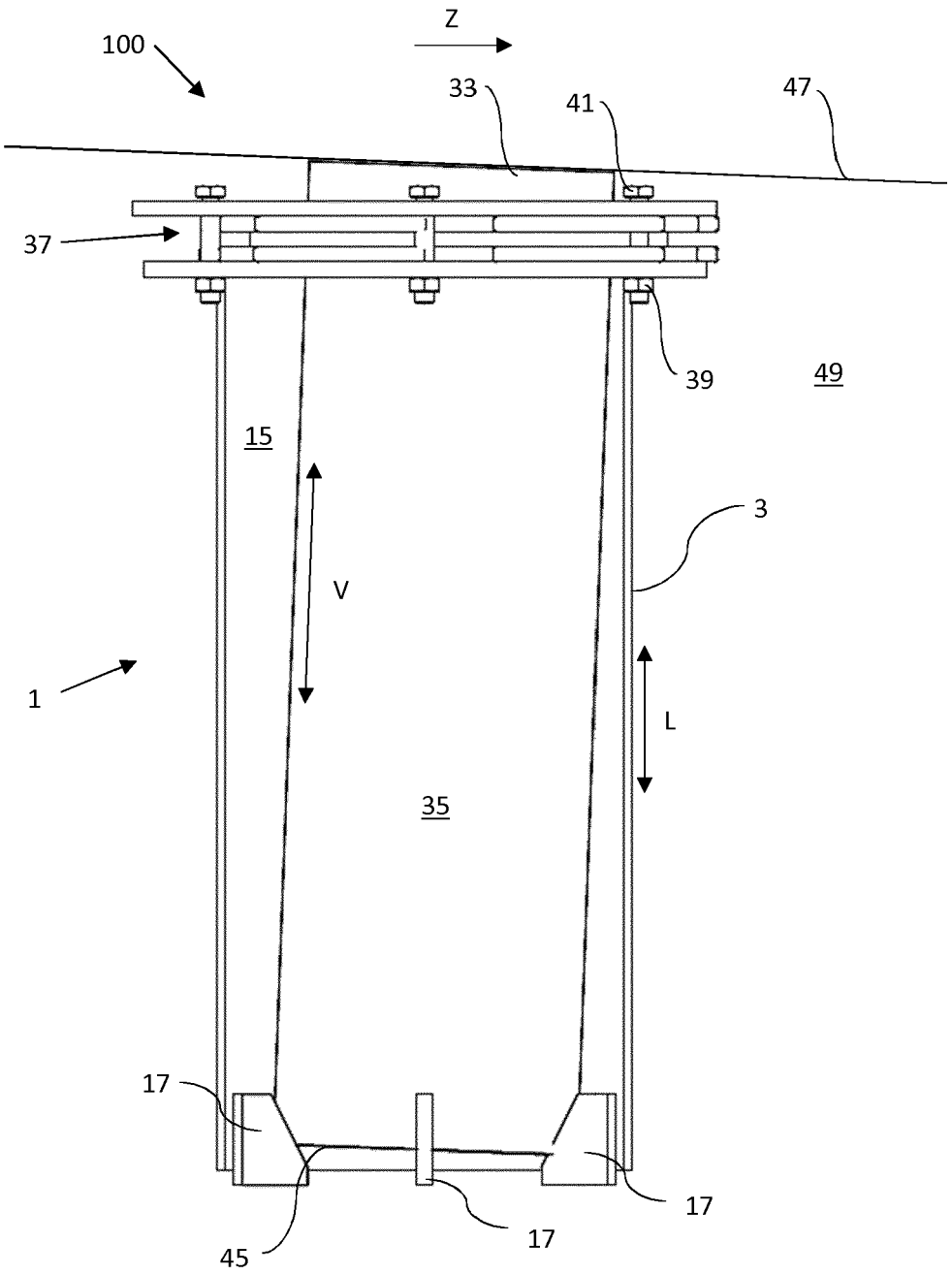

Fig. 7

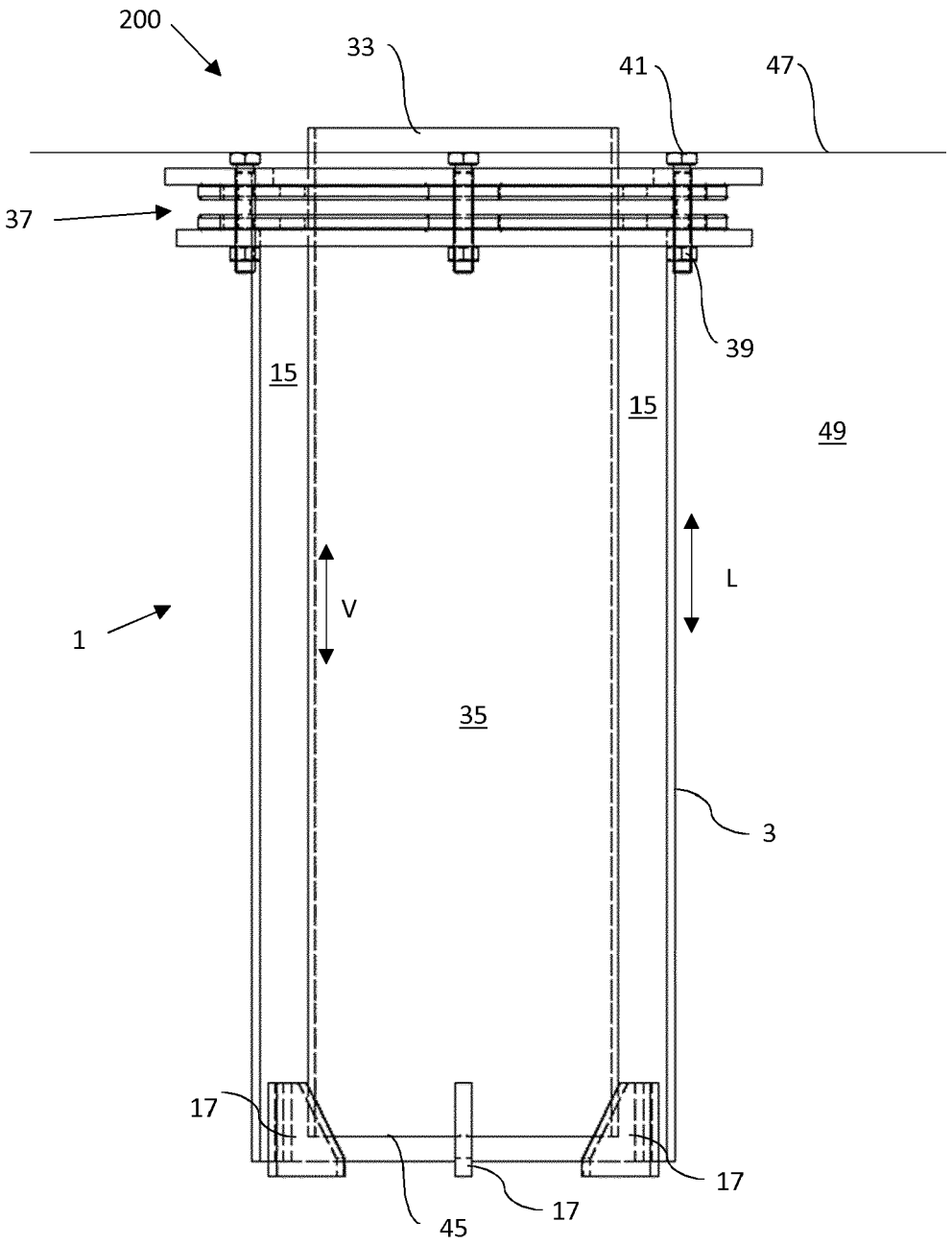

Fig. 8

Europäisches Patentamt
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Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 19 16 7286

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	US 2014/227040 A1 (VOLUM PATRICK J [US]) 14 August 2014 (2014-08-14) * paragraph [0012] - paragraph [0031]; figures 1,3,4,5a-5b *	1-15	INV. E02D27/42 E04H12/22
A	KR 100 934 934 B1 (SEOHAN ELECTRIC INDUSTRY CO [KR]) 6 January 2010 (2010-01-06) * paragraph [0017] - paragraph [0042]; figures 3-7 *	1-15	
A	US 2012/324825 A1 (VRAME PETER A [US]) 27 December 2012 (2012-12-27) * paragraph [0005] - paragraph [0038]; figures 1-2,4 * * paragraph [0031] - paragraph [0036]; figure 3 *	1-15	
A	DE 27 25 057 A1 (OTTO KNICKENBERG FA) 14 December 1978 (1978-12-14) * page 6, paragraph 2 - page 8, paragraph 1; figures 1-2 *	1-15	TECHNICAL FIELDS SEARCHED (IPC) E02D E04H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	23 July 2019	Geiger, Harald

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