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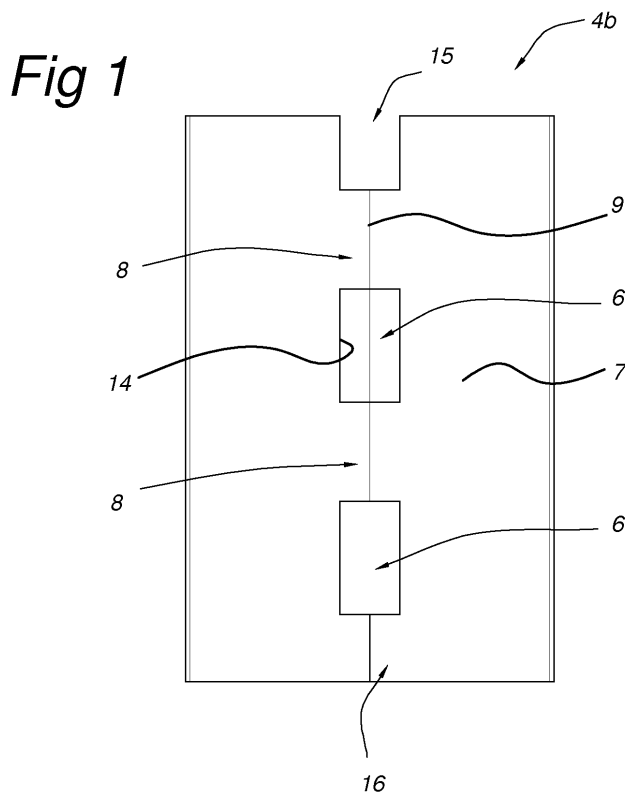
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(54) **Head piece for a ground anchor**

(57) Stabilizing device (1) for a load element (2) of a ground anchor (3), the device consisting of two plate members 4(a,4b), wherein the plate members have a generally L-shape and are complementary and do form a generally cross shape when coupled together and when coupled together form a feed through sleeve for

leading the load element there through, wherein each plate member comprises at least one recess (6) surrounded by plate material (7), which at least one recess of each plate member receives a central feed through sleeve forming plate member portion (8) when the plate members are coupled together for forming the generally cross shaped stabilizing device.



Description

Background

[0001] The present invention relates to a stabilizing device for a load element of a ground anchor.

[0002] Such stabilizing device is known from DE1928145 of Dahl, Gunnar. This publication discloses a stabilizing device. However the device is not robust in use. The stabilizing device is prone to bending outwards of plate material specifically when driving the device into the ground and during use when the device is subjected to severe lateral loads caused by canting of the load element, in this case a pipe.

[0003] The invention further relates to an assembly of a ground anchor having a load element and a stabilizing device.

[0004] The invention further relates to a method for installation of an assembly of a ground anchor having a load element and a stabilizing device.

Summary of the invention

[0005] The invention aims to at least partly solve a problem associated with a known stabilizing device for a load element of a ground anchor.

[0006] Another object of the invention is to improve stabilizing device for a load element of a ground anchor.

[0007] Still, another object of the invention is to provide a stabilizing device for a load element of a ground anchor, wherein the stabilizing device has an improved strength.

[0008] Yet another object of the invention is to provide an alternative stabilizing device for a load element of a ground anchor.

[0009] According to a first aspect of the invention this is realized with a stabilizing device for a load element of a ground anchor, the device consisting of two plate members, wherein the plate members have a generally L-shape and are complementary and do form a generally cross shape when coupled together and when coupled together form a feed through sleeve for leading the load element there through, wherein each plate member comprises at least one recess surrounded by plate material, which at least one recess of each plate member receives a central feed through sleeve forming plate member portion when the plate members are coupled together for forming the generally cross shaped stabilizing device.

[0010] This provides the possibility of forming the sleeve by recesses surrounded by plate material that gives a much better performance under side loads when the load element is canted. In addition, the stabilizing device is more robust in connection with driving of the stabilizing device into the ground.

[0011] A stabilizing device for a load element of a ground anchor, specifically stabilizes the load element with respect to lateral loads such that the load element maintains its position when subjected to lateral loads. A load element may be an elongate tension member like a

cable or a compression member like a rod or a pile depending on the type of ground anchor. Such an elongate load element couples the ground anchor with the load to be anchored. The elongate load element, when not stabilized, easily cuts through the ground when subjected to lateral loads and thus may leave its intended position, which is undesirable.

[0012] In an embodiment of the invention, the two plate members are similar, preferably identical. This makes the stabilizing more efficient in use and during transportation.

[0013] In an embodiment of the invention, the feed through sleeve is arranged centrally with respect to the stabilizing device.

[0014] In an embodiment of the invention, each plate member comprises a plurality of recesses, in a specific embodiment two recesses. This makes the stabilizing device even more robust because loads are better distributed along the height of the plate members.

[0015] According to a further aspect of the invention this is realized with an assembly of a ground anchor having a load element and a stabilizing device according to the invention, wherein the load element is fed through the central feed through sleeve.

[0016] In an embodiment of the assembly, the load element is coupled with the stabilizing device in a slideable manner.

[0017] In an embodiment the assembly comprises coupling means for fixedly coupling the load element with the stabilizing device once the earth anchor and the stabilizing device have taken their desired position.

[0018] In an embodiment of the assembly, the coupling means are provided with the upper and/or lower side of the stabilizing device for fixedly coupling the load element with the stabilizing device at the upper and/or lower side of the stabilizing device.

[0019] In an embodiment of the assembly, the ground anchor is a pivoting anchor. For a pivoting ground anchor it is even more beneficial to be coupled with the stabilizing device in a slideable manner because the load element needs to be taken in to deploy or set the pivoting anchor.

[0020] According to an even further aspect of the invention this is realized with a method for installation of an assembly of a ground anchor having a load element and a stabilizing device according to the invention, comprising the steps;

- placing a ground anchor with a load element,
- sliding a stabilizing device according to a preceding claim around the load element for accommodating the load element at least partly in the feed through sleeve,
- driving the stabilizing device in the ground while sliding the stabilizing device with respect to the load element,

[0021] In an embodiment of the method the ground anchor is a pivoting ground anchor, and the method further

comprises the step;

- taking in the load element through the feed through sleeve for pivoting the ground anchor.

[0022] The invention further relates to a device comprising one or more of the characterising features described in the description and/or shown in the attached drawings.

[0023] The invention further relates to a method comprising one or more of the characterising features described in the description and/or shown in the attached drawings.

[0024] The various aspects discussed in this patent can be combined in order to provide additional advantageous advantages.

Description of the drawings

[0025] The invention will be further elucidated referring to an preferred embodiment shown in the drawing wherein shown in:

- Fig. 1 in side view a plate member of the stabilizing device;
- fig. 2 a top view of the plate member of fig. 1;
- fig. 3 a perspective view of the stabilizing device;
- fig 4 an assembly of the stabilizing device and a ground anchor;
- fig. 5 a top view of the assembly of fig. 3;
- fig 6 an assembly of the stabilizing device and another type of ground anchor; and
- fig. 7 an assembly of the stabilizing device and a pile.

Detailed description of embodiments

[0026] The invention will now be described referring to all figures 1-5. In Fig. 1 a plate member 4b of the stabilizing device 1 is shown. In general such a plate member 4b is made of steel by cutting and bending. Any other suitable material for such a plate member is conceivable. The plate member has a height of 400 cm and a thickness of about 4 cm. The plate member 4 is bend along a, here central, bending line 9 which gives the plate member 4 a L-shape. The plate member 4 has two legs 10, 11 which legs are mutually arranged transversely. In this case the two legs 10, 11 have similar length of about 180 cm. These legs 10, 11 in use extend in the ground for accommodating side loads to the stabilizing device 1. It will be clear that the plate member 4b may have other dimensions.

[0027] The stabilizing device 1 for a load element 2 of a ground anchor 3 consists of two plate members 4a, 4b. The plate members 4a and 4b are complementary for coupling the two plate members 4a, 4b together at their respective bending lines 9. In this case the two plate members 4a, 4b are identical. When the two plate members 4a, 4b are coupled, they form a generally cross

shape.

[0028] In addition, when the two plate members 4a, 4b are coupled together, a feed through sleeve 5 is formed for leading a load element 2 there through. The feed through sleeve is defined by the bend sections 12 of the two respective plate members 4a, 4b, specifically by the inside of the two respective bend sections 12.

[0029] Here, each respective plate member 4a, 4b comprises two recesses 6 surrounded by plate material 7. Another number of such recesses 6 is conceivable. In addition, each respective plate member 4a, 4b has a cut-away 15 which receives an opposite bend portion 16 when the two plate members 4a, 4b are coupled together. The recess 6 is defined by a recess outline 14. The recess is outline 14 is continuous, in other words uninterrupted. Here, the recess outline 14 has a rectangular shape.

[0030] When the two plate members 4a, 4b are coupled together for forming the generally cross shaped stabilizing device 1, here all the recesses of each respective plate member 4a, 4b receive a respective central feed through sleeve forming plate member portion 8. For coupling the two plate members 4a, 4b, one plate member 4b is positioned as shown in fig. 1. The other plate member 4a is turned upside down with respect to the one plate member 4b of fig. 1. The two plate members 4a, 4b are then coupled at their respective bend sections 9 such that all the respective central feed through sleeve forming plate member portion 8 of one plate member 4a, extend past the other plate member 4b. The two plate members 4a, 4b then do form in conjunction the sleeve 5. Here, the feed through sleeve 5 is arranged centrally with respect to the stabilizing device 1.

[0031] Fig 4 and 5 show an assembly 17 of the stabilizing device 1 and a ground anchor 3. The load element 3 of the ground anchor 3 is fed through the central feed through sleeve 5 of the stabilizing device 1. The load element 2 is coupled with the stabilizing device 1 in a slideable manner. The load element 2 may be provided with threading (not shown) for enabling use of a nut or the like for forming a stop for the stabilizing device 1.

[0032] The stabilizing device 1 is particularly useful in the assembly 17 with a pivoting ground anchor 3.

[0033] In use, during installation of the assembly 17, the following steps are taken;

[0034] Firstly the ground anchor 3 with a load element 2 is applied in the ground below the ground level 13 in a manner known per se at a depth of for instance a few meters.

[0035] Then the stabilizing device 1 is slid around the load element 2 wherein the load element 2 is fed into the sleeve 5 along the entire height of the stabilizing device 1.

[0036] Subsequently, the stabilizing device 1 is driven in the ground while sliding the stabilizing device 1 with respect to the load element 2. The stabilizing device 1 is driven in the ground in a manner known per se, like hammering.

[0037] When the ground anchor 3 is a pivoting ground anchor 3, in use of the assembly the following step will

additionally be taken;

[0038] Taking in, that is sliding, the load element 2 through the feed through sleeve 5 for pivoting the ground anchor 3 in a manner known per se.

[0039] The stabilizing device 1 of the invention is also beneficial in an assembly shown in fig. 6 with a ground anchor 19 which can take up both tensile and compressive forces. The load element, here a rod 18 is also able to take up both tensile and compressive forces.

[0040] The stabilizing device 1 of the invention is also beneficial in an assembly shown in fig. 7 with a pile 20 for use as foundation.

[0041] It will also be obvious after the above description and drawings are included to illustrate some embodiments of the invention, and not to limit the scope of protection. Starting from this disclosure, many more embodiments will be evident to a skilled person which are within the scope of protection and the essence of this invention and which are obvious combinations of prior art techniques and the disclosure of this patent.

Claims

1. Stabilizing device (1) for a load element (2) of a ground anchor (3), the device consisting of two plate members (4a, 4b), wherein the plate members have a generally L-shape and are complementary and do form a generally cross shape when coupled together and when coupled together form a feed through sleeve (5) for leading the load element there through, wherein each plate member comprises at least one recess (6) surrounded by plate material (7), which at least one recess of each plate member receives a central feed through sleeve forming plate member portion (8) when the plate members are coupled together for forming the generally cross shaped stabilizing device (1). 25 30 35
2. Stabilizing device according to claim 1, wherein the two plate members are similar, preferably identical. 40
3. Stabilizing device according to a preceding claim, wherein the feed through sleeve (5) is arranged centrally with respect to the stabilizing device. 45
4. Stabilizing device according to a preceding claim, wherein each plate member comprises two recesses. 50
5. Stabilizing device according to a preceding claim, wherein each plate member comprises a plurality of recesses.
6. Assembly of a ground anchor having a load element and a stabilizing device according to a preceding claim, wherein the load element is fed through the central feed through sleeve. 55

7. Assembly according to claim 6, wherein the load element is coupled with the stabilizing device in a slideable manner.
8. Assembly according to a preceding claim 6-7, comprising coupling means for fixedly coupling the load element with the stabilizing device once the earth anchor and the stabilizing device have taken their desired position. 5 10
9. Assembly according to claim 8 wherein the coupling means are provided with the upper and/or lower side of the stabilizing device for fixedly coupling the load element with the stabilizing device at the upper and/or lower side of the stabilizing device. 15
10. Assembly according to a preceding claim 6-9, wherein the ground anchor is a pivoting anchor.
11. Method for installation of an assembly according to a preceding claim, comprising the steps; 20

- placing a ground anchor with a load element,
- sliding a stabilizing device according to a preceding claim around the load element for accommodating the load element at least partly in the feed through sleeve,
- driving the stabilizing device in the ground while sliding the stabilizing device with respect to the load element,

12. Method according to claim 11, wherein the ground anchor is a pivoting ground anchor, and the method further comprises the step; 35

- taking in the load element through the feed through sleeve for pivoting the ground anchor.

Fig 1

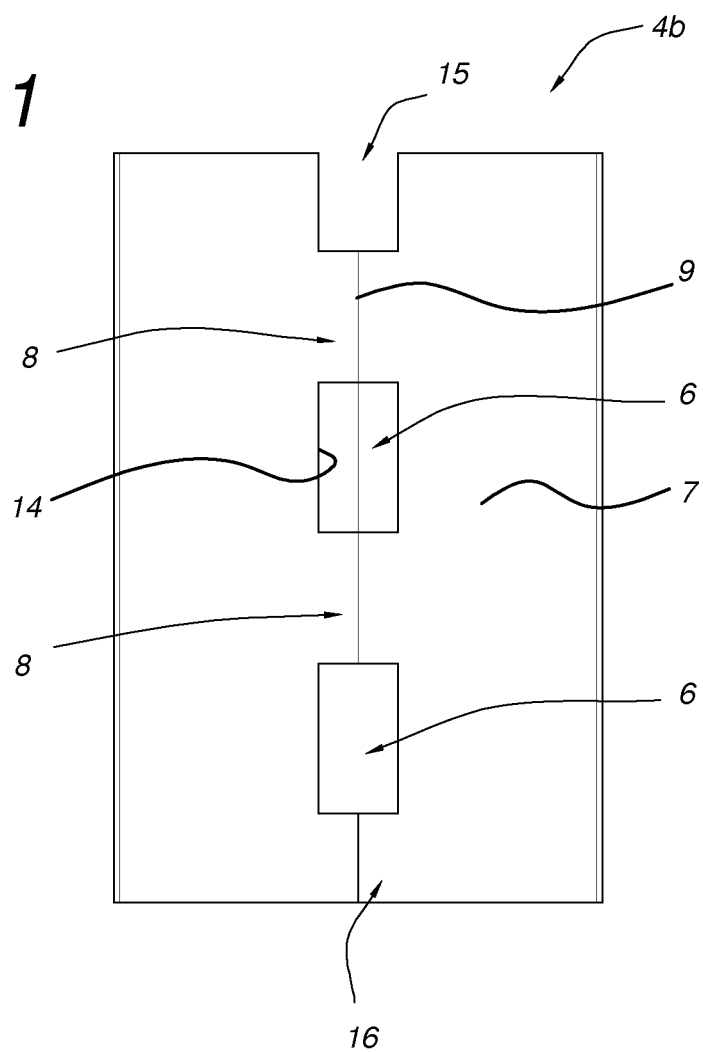


Fig 2

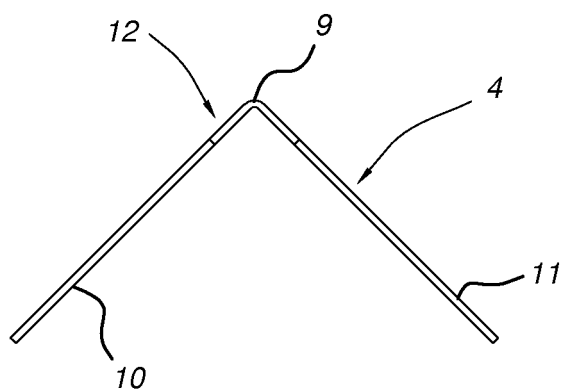


Fig 3

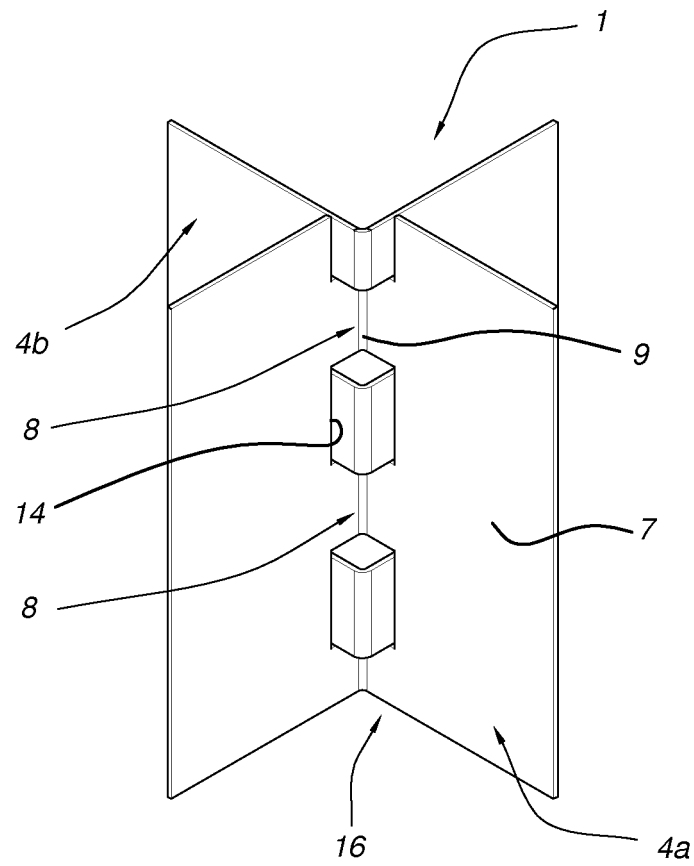


Fig 4

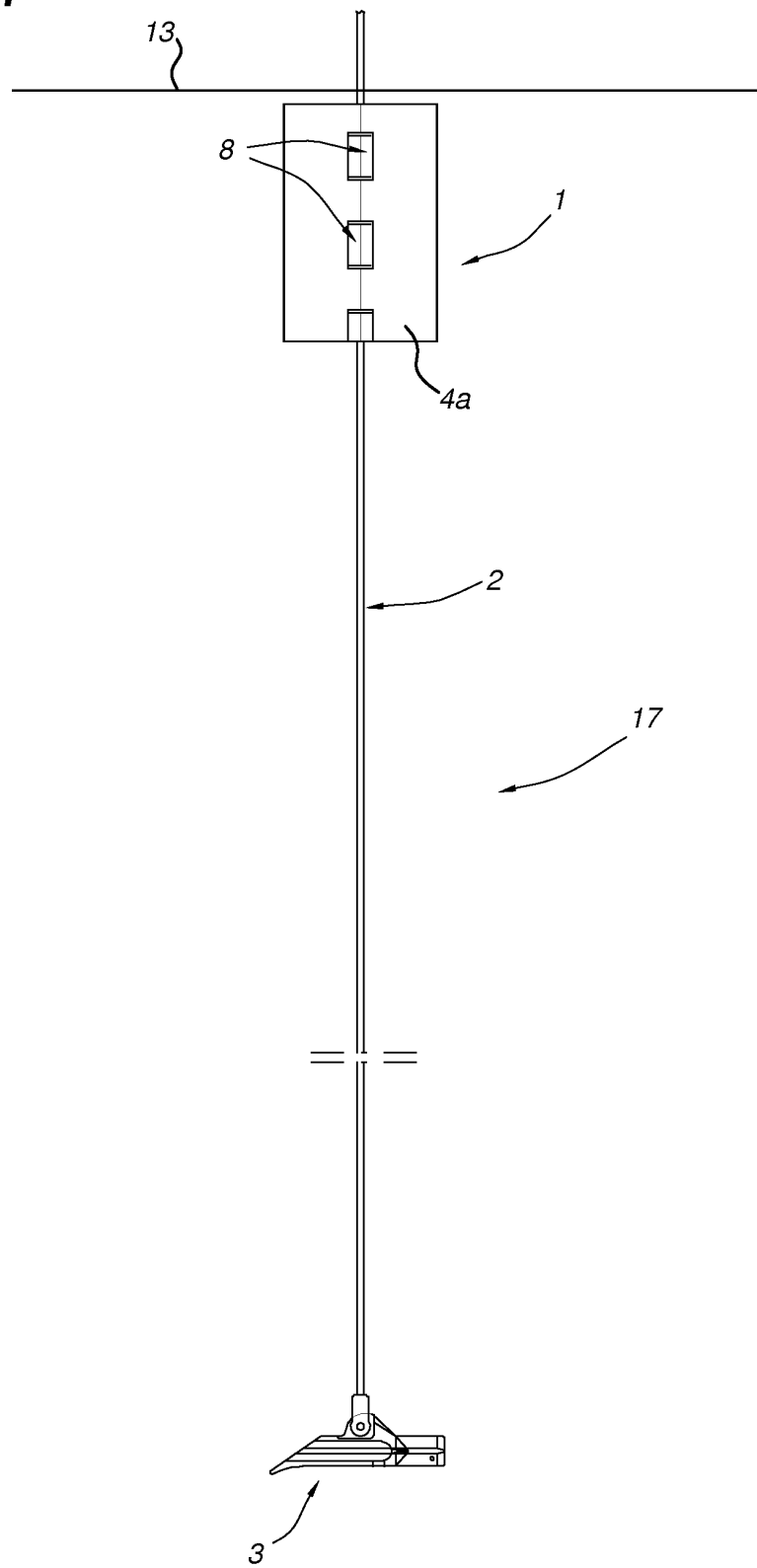


Fig 5

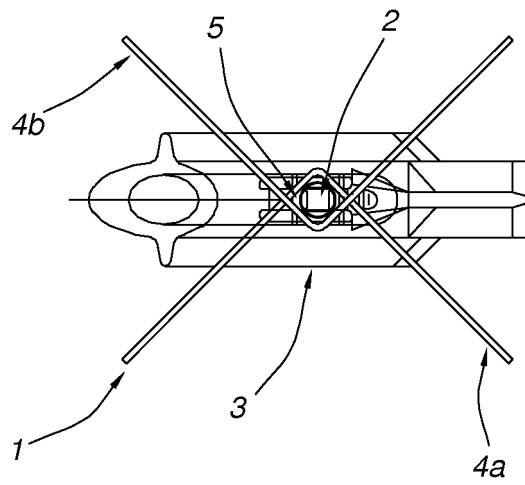


Fig 6

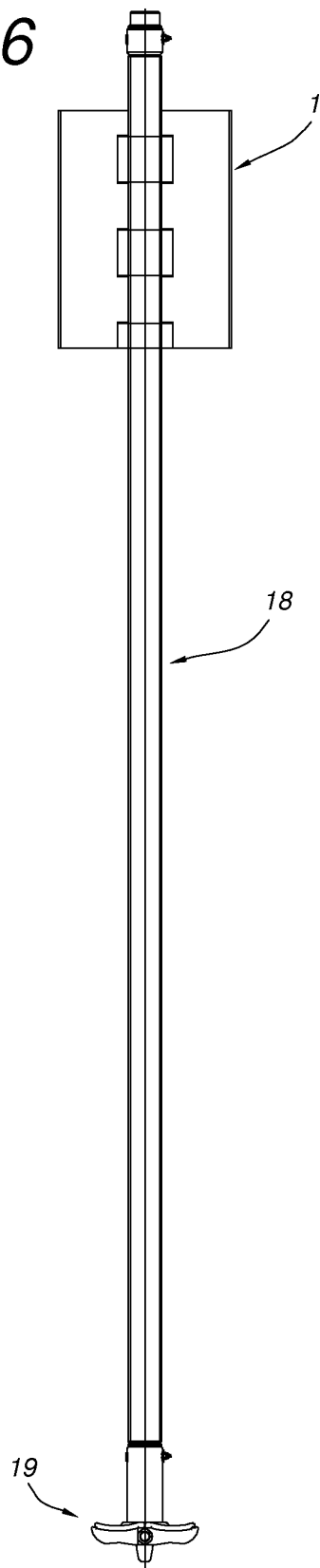
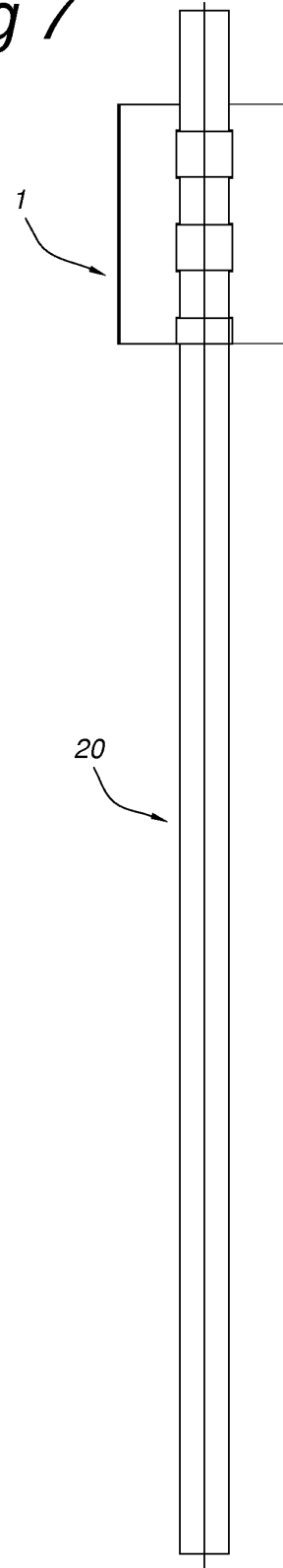


Fig 7



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- DE 1928145, Dahl, Gunnar [0002]