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**(54) ANCHORING DEVICE FOR A FENCE**

VERANKERUNGSVORRICHTUNG FÜR EINEN ZAUN

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## Description

**[0001]** The present invention relates to an anchoring device for anchoring and supporting a fence, wherein the anchoring device comprises at least one fence post. The invention also relates to an assembly for placing a fence comprising an anchoring device, for anchoring and supporting a fence, and reinforcement for reinforcing concrete, wherein the anchoring device comprises at least one fence post.

**[0002]** The present invention also relates to a method of installing an anchoring device for anchoring and supporting a fence, wherein the anchoring device comprises at least one fence post.

**[0003]** The present invention more specifically also relates to such anchoring device and method with which a crash barrier can be erected as fence. More specifically, but not limiting, fences withstanding crash test M40 PI according to ASTM F 2656 are envisaged. This crash test is a standard test method for vehicle crash testing of perimeter barriers.

**[0004]** Fences are normally placed on the ground. They often comprise several fence posts to support the fence and to anchor the fence firmly into the ground. To give such a fence a certain rigidity, the fence posts are partially embedded, such that they are located under the ground surface. They can be embedded in the ground as such and/or a binder such as concrete could be used. It is not uncommon that the bottom of each fence post is at least 1 meter below the ground surface. Therefore to place the fence on the ground, relatively deep holes need to be dug in the ground, this certainly with crash barriers. This of course takes time and is also labor-intensive. Another problem that arises is that it is not always possible or easy to dig deep holes. For example, certain surfaces are hard and/or contain many rocks such that a lot of energy is needed to dig holes. In sandy areas holes easily collapse such that holes need to be re-dug several times. This is of course time consuming. Cables such as electricity cables, telephone cables, fiber optic cables and pipelines such as gas pipelines and water pipelines are often present in the underground. When digging holes it is therefore very important that these cables and/or pipelines are not damaged. However it is often not known where these cables and/or pipelines are situated, such that the need to dig deep holes is problematic.

**[0005]** Anchoring devices for anchoring and supporting a fence are for example known from US 2003/0230039 A1 and WO 2015/047209 A1.

**[0006]** It is therefore an object of the invention to provide an anchoring device for anchoring and supporting a fence, wherein there is no need for deep holes.

**[0007]** The object of the invention is achieved by the technical features of appended claim 1, providing an anchoring device for anchoring and supporting a fence, wherein the anchoring device comprises at least one fence post, and wherein the fence post comprises one or more connecting elements which are provided to be

connected to reinforcement for reinforcing concrete.

**[0008]** Said reinforcement is here thus suitable to reinforce concrete. For example the reinforcement can be a (steel) reinforcement mesh or can be a (steel) reinforcement bar. This does not mean that when the connecting elements are connected to said reinforcement, concrete should always be poured around the reinforcement, when placing a fence comprising said anchoring device. Concrete can indicate any cement comprising binder or the like.

**[0009]** With the aid of these connecting elements, the fence post can be connected to reinforcement such as reinforcement mesh. Because the fence post is then connected to this reinforcement, it is not necessary that a large part of the fence post is located below the ground surface, to supply enough rigidity to the fence. This because it is possible with the aid of reinforcement to firmly anchor the fence into the ground at relatively shallow depths. For example one can dig a hole that is less than for example 50 cm deep, preferably between 20 and 40 cm deep, and place the fence post and the reinforcement connected to said fence post in this shallow hole. The surface of the reinforcement in combination with the part of the fence post that is located below the ground surface will give the fence the necessary rigidity. The hole can then be refilled with for example concrete, another binder or ground earth, such that the reinforcement and the bottom of the fence post is firmly anchored into the ground. Preferably the bottom of the fence post comprises the connecting elements such that reinforcement is connectable to the fence post at the height of the bottom portion of the fence post. Also preferably the anchoring device comprises several such fence posts with one or more connecting elements which are provided to be connected to reinforcement. The fence is then at several places firmly anchored into the ground, at shallow depths.

**[0010]** Optionally the anchoring device can have several intermediate posts which are placeable between said fence posts, to additionally support the fence, wherein these intermediate posts are not provided to be connected to reinforcement. Preferably these intermediate posts are also placed in shallow holes which are less than 50 cm deep. For example if the fence comprises several tensioned cables, these intermediate posts can aid with the support and holding of these cables. Such cables can e.g. be connected to such intermediate posts by means of U-bolts or any other suitable means and can e.g. be connected to the fence posts by means of clamps or any other suitable means.

**[0011]** According to the present invention, said fence post comprises an upright extending post portion and a base on which the post portion rests, wherein the base comprises said one or more connecting elements. Here a lower portion of the fence post, namely the base, comprises the connecting elements. Therefore it is very easy to connect reinforcement to the fence post such that the reinforcement is located at a lower portion of the fence post. The reinforcement connected to the fence post will

then preferably be located in the shallow ditch/hole that is dug out for the fence post, such that it is located underground/below ground surface after refilling of the ditch/hole. Preferably the upright extending post portion is an elongated element and the longitudinal direction of the post portion is provided to extend substantially vertical. The reinforcement is then further provided to preferably extend substantially in a horizontal direction.

**[0012]** Preferably at least one connecting element comprises a blocking portion to block the connection with the reinforcement. The connection of the reinforcement to the said connecting element will then not loosen easily. For example, when the reinforcement is connected to the connecting element with the aid of binding wire the blocking portion can prevent the movement of the binding wire in a certain direction.

**[0013]** According to the present invention, at least one connecting element is an outwardly directed projection. In such a way, the connecting element is easily accessible and one can easily connect reinforcement to the connecting element. For example one can connect the reinforcement to an outwardly directed projection with the aid of binding wire such as for example metal wire.

**[0014]** At least part of the projection is elongated and provided to extend upright, such that reinforcement is connectable to the fence post at a desired height. To make full use of the strength of reinforcement, reinforcement is preferably fully embedded in concrete. When the bottom of the fence post, for example if present the base of the fence post, is placed upon for example a surface of an excavated ditch or hole, then the reinforcement preferably does not come into contact with this surface such that it can be completely embedded in concrete. With the aid of such a projection one can easily connect the reinforcement with the fence post at the desired height of the fence post, this at a distance from the said surface. If the fence post comprises a base that comprises the said projection, the entire projection is preferably elongated and provided to extend upright.

**[0015]** Further in a preferred embodiment said blocking portion is a thicker part of the projection according to a direction parallel with the lengthwise direction of the said at least elongated part of the projection, to block the connection with the reinforcement according to the lengthwise direction of the said at least elongated part of the projection. For example the projection can be a stud fastener such as a nelson stud. A fence post comprising an upright post portion and a base with stud fasteners can easily be fabricated.

**[0016]** In a very preferred embodiment the anchoring device comprises a first support bar to support the fence post. Here the fence post is additionally supported with the aid of a support bar. For example this support bar can be with one end connected to a part of the fence post that is provided to be located aboveground, while the other opposite end of the support bar is provided to be located underground.

**[0017]** Further preferably the anchoring device com-

prises a second support bar which cooperates with the first support bar to support the fence post. With the aid of two cooperating support bars, the fence post is even better supported. Each support bar is then preferably on the one hand provided to be connected to the fence post and on the other hand provided to be connected to the respective other support bar, such that a triangle is formed. Here the fence post and the two support bars form a triangle. This triangle shape provides good strength and rigidity to the fence post.

**[0018]** For example when the fence comprises a said post portion and base, this post portion is then preferably elongated and the second support bar is preferably provided to be connected to a lower part of the fence post and to extend substantially perpendicular to the lengthwise direction of the post portion and the first support bar is then preferably provided to be connected to a higher part of the fence post. Here the post portion and the two support bars form approximately a rectangular shaped triangle. Here the post portion preferably extends substantially vertical to the ground surface on which the fence is placed and the second support can be located under the ground surface. This second support bar can then for example also be embedded in concrete. If the base comprises a base plate and one or more said projections protruding from said base plate, then the second support bar preferably extends substantially parallel to the plane in which the base plate extends or slightly goes upwards away from this base plate. The longitudinal direction of the post portion extends substantially perpendicular to said plane.

**[0019]** Also further preferably the second support bar is provided to be connected to a lower part of the post portion and said at least one projection is provided to protrude above the second support bar according to the lengthwise direction of the post portion. This means that the reinforcement can be connected to the fence post at a position above the second support bar. The second support bar is then located beneath the reinforcement, such that the fence post can be firmly anchored with the aid of the reinforcement and the support bars.

**[0020]** In a preferred embodiment the anchoring device comprises at least one additional pair of two cooperating support bars wherein each support bar of said additional pair of support bars is on the one hand provided to be connected to the fence post and on the other hand provided to be connected to the other support bar of the said pair, such that a triangle is formed. Here the fence post is further supported. For example there can be one additional said pair, but two or more additional said pairs are also possible. Preferably if said anchoring device comprises several said fence posts with one or more connecting elements, then only some of these fence posts are supported by a said additional pair of two cooperating support bars. For example the outer fence posts can be supported with two pairs of two cooperating support bars, while some inner posts are only supported by one pair of two cooperating support bars. This to reduce the cost

of the anchoring device and to reduce the time of placement of the fence with the anchoring device. Some fence posts can be supported with at least three pairs of two cooperating support bars, when a more rigid fence is desired.

**[0021]** Further preferably said formed triangles, which are provided to support the same fence post, are positioned at an angle with regard to each other, wherein the angle is between 70° and 110°. With triangles at such an angle the fence post is well supported.

**[0022]** Preferably the base of the fence post comprises a base plate and the said one or more connecting elements protrude outwardly from said base plate. With the aid of a base plate, the fence post can easily be placed in a stable manner on the surface of an excavated ditch or hole.

**[0023]** The object of the invention is also achieved by the technical features of appended claim 10, providing an assembly for placing a fence comprising an anchoring device according to appended claim 1, for anchoring and supporting a fence, and reinforcement for reinforcing concrete, wherein the anchoring device comprises at least one fence post wherein the fence post comprises one or more connecting elements to connect the reinforcement to the fence post. The said reinforcement is here suitable to reinforce concrete. For example this reinforcement is a (steel) reinforcement mesh or a (steel) reinforcement bar. However this does not mean that this reinforcement should also be used to reinforce concrete.

**[0024]** With the aid of this anchoring assembly, it is not necessary that a large part of the fence is located below the ground surface, to supply enough rigidity to the fence. This because it is possible with the aid of reinforcement and said anchoring device to firmly anchor the fence into the ground at relatively shallow depths. For example one can dig a hole or a ditch that is less than for example 50 cm deep, preferably between 20 and 40 cm deep, and place the fence post and the reinforcement in this shallow hole or this shallow ditch. The surface of the reinforcement in combination with the part of the fence post that is located below the ground surface will give the fence the necessary rigidity. The hole/ditch can then be refilled for example with concrete during the placement of the fence, such that the reinforcement and the bottom of the fence post is firmly anchored.

**[0025]** In a preferred embodiment the reinforcement is a reinforcement mesh or a reinforcement net. Such meshes or nets are very suitable to reinforce concrete. Thus when the reinforcement and the bottom part of the fence post is placed in an excavated ditch or hole, one can refill this ditch or hole with concrete such that the fence post and reinforcement are firmly anchored in said ditch or hole and thus the fence is firmly anchored into the ground.

**[0026]** In a very preferred embodiment the anchoring device is an anchoring device according to any of the appended claims 1 to 9.

**[0027]** The object of the invention is also achieved by

the technical features of claim 13, providing a method of installing an anchoring device according to appended claim 1, for anchoring and supporting a fence, wherein the anchoring device comprises at least one fence post wherein the fence post comprises one or more connecting elements and wherein the method comprises the following steps

- placing the fence post;
- providing reinforcement for reinforcing concrete and connecting the reinforcement to the fence post using the one or more connecting elements;
- providing concrete and pouring this concrete after or during the connecting of the reinforcement to the fence post, such that the reinforcement and the lowest part of the post portion are embedded in the concrete.

**[0028]** Here the fence post is placed. Preferably the fence post is placed on the surface of an excavated hole or ditch, wherein this hole or ditch is then later filled with the said concrete such that the fence post and the reinforcement are embedded in the concrete. The depth of the excavated hole or ditch is preferably less than 50 cm, even more preferably between 20 cm and 40 cm. Here the fence post is then partly located under the ground surface. Also the reinforcement is here preferably connected to the fence post in such a way that the reinforcement completely extends within the said hole or ditch, such that one can easily embed the reinforcement in the concrete by filling the hole or ditch with concrete.

**[0029]** The connection of the reinforcement to the connecting element of the fence post can for example be done with the aid of binding wire such as steel wire. Such a connection can be done fast and also such a connection is strong and will not easily break when concrete is poured upon the reinforcement and the fence post.

**[0030]** In a preferred embodiment, one or several ditches/holes are made for the anchoring device and the said fence post is placed upon the surface of a said ditch/hole and this ditch/hole is filled with the concrete. Here the bottom part of the fence post is located below the ground surface and the reinforcement is preferably also located below the ground surface. Here only the ditches/holes need to be filled with concrete and a said fence post is firmly anchored in the concrete and thus in the ground. Cables and/or (wire) panels which are then connected to a said fence post to form a fence, are well supported such that the formed fence is very rigid and strong.

**[0031]** According to the present invention, the fence post comprises an upright extending post portion and a base on which the post portion rests wherein said base comprises said one or more connecting elements and wherein at least one connecting element is an outwardly and upright extending projection and the reinforcement is connected to said projection. By connecting the reinforcement to a said projection, one can easily choose at which height of the projection, thus at which height with

regard to the fence post, the reinforcement is connected to the fence post. To be able to enjoy the full strength of the reinforcement, the reinforcement should be placed at some distance from the surface upon which the fence post is placed, such that the reinforcement can be almost completely surrounded with concrete. Therefore if one can choose at which height of the fence post the reinforcement is connected to the fence post, one can more easily ensure that the reinforcement does not or only makes little contact with said surface, such that the reinforcement can be almost completely embedded in concrete.

**[0032]** Further preferably the anchoring device comprises at least two cooperating support bars to support the fence post and the post portion is elongated, wherein a said first support bar is connected to a higher part of the fence post and a said second support bar is connected to a lower part of the fence post such that it extends substantially parallel to the lengthwise direction of the post portion and the first support bar and the second support bar are connected to each other, wherein the concrete is also poured over the second support bar, such that the second support bar is embedded in the concrete. Here the second support bar is embedded in the concrete. Since the first support bar is connected to the second support bar, the first support bar is also partly embedded in the concrete. The fence post is thus even better supported and more firmly anchored in the concrete.

**[0033]** Still further preferably at least one projection protrudes above the second support bar according to the lengthwise direction of the post portion and the reinforcement is connected to the projection such that the second support bar substantially extends between the reinforcement and the base. Here if the fence post is placed upon a surface, the second support bar prevents at least partly that the reinforcement comes into contact with said surface. Here the reinforcement is substantially located above the second support bar and makes sure that the second support bar is well anchored in the concrete.

**[0034]** In a very preferred embodiment the anchoring device is an anchoring device according to any of the appended claims 1 to 9.

**[0035]** The present invention is now explained in greater detail below with reference to the following detailed description of some preferred embodiments of an anchoring device and a method of placing such an anchoring device according to the present invention. The aim of this description is solely to give illustrative examples and indicate further advantages and particularities and thus cannot be interpreted as a limitation of the field of application of the invention or of the patent rights claimed in the claims.

**[0036]** In this detailed description, reference is made by means of reference numerals to the appended drawings, wherein

- **figure 1** is a perspective view of a first part of a fence comprising an anchoring device according to the in-

vention;

- **figure 2** is a perspective view of a second part of the said fence;
- **figure 3** is a perspective view of a third part of the said fence;
- **figure 4** corresponds to the perspective view of figure 1, wherein only the visible parts of the fence after installation are shown;
- **figure 5** corresponds to the perspective view of figure 2, wherein only the visible parts of the fence after installation are shown;
- **figure 6** corresponds to the perspective view of figure 3, wherein only the visible parts of the fence after installation are shown.

**[0037]** The fence as shown in the figures is a crash barrier comprising several tensed cable wires (7), which are provided to extend in a horizontal direction, an anchoring device according to an embodiment of the invention for anchoring and supporting the fence and several intermediate posts (8) to further support the cable wires (7).

**[0038]** The anchoring device comprises several fence posts (1), wherein each fence post (1) comprises an upright extending post portion (3) and a base (4) on which the post portion (3) rests. This upright extending post portion (3) is provided to extend substantially vertical. The base (4) comprises a base plate and several connecting elements (2) which are provided to be connected to reinforcement for concrete when the fence is in its installed position. The post portion (3) extends substantially perpendicular with regard to the base plate.

**[0039]** The connecting elements (2) are outwardly directed, elongated and vertical extending projections (2) which each are connected with one end, according to the longitudinal direction of the said projection (2), to the base plate. They extend substantially vertical with regard to the base plate. The other end of each projection (2) is a blocking portion (5) which is a thicker part of the projection (2) according to a direction parallel to the lengthwise direction of the projection (2).

**[0040]** Further for each fence post (1), there is at least one pair of a first and a second support bar (6a, 6b). Said first support bar (6a) supports the fence post (1) and said second support bar (6b) cooperates with the first support bar (6a) to further support the fence post (1).

**[0041]** The first support bar (6a) is provided to be connected with one end to a higher part of the post portion (3) and the second support bar (6b) is provided to be connected with one end to a lower part of the post portion (3) and to extend substantially perpendicular to the post portion (3). The other ends of the first and second support bars (6a, 6b) are provided to be connected to each other such that approximately a rectangular triangle is formed. Here the second support bar (6b) goes a little bit up, away from the fence post (1), but still substantially extends horizontal and thus approximately parallel with regard to the plane in which the upper surface of the base plate ex-

tends. The connection between the support bars (6a, 6b) and between a said support bar (6a, 6b) and the post portion (3) is preferably a hinge connection (11) and can be realised with the aid of for example bolts.

**[0042]** How many pairs of support bars (6a, 6b) are foreseen for a said fence post (1), depends on the position of the fence post (1) and of the desired strength of the fence post (1). The more pairs of support bars (6a, 6b) that are provided the stronger the anchoring of the fence post (1). The fence posts (1) located at the ends of the fence can for example have two said pairs of support bars (6a, 6b). This can be viewed in figure 1 and 4. Here the fence post (1) then forms the end point of the fence. The angle between the two formed triangles of the said pairs of support bars (6a, 6b) is substantially 90° such that the fence post (1) is well supported. Other fence posts (1) that are located more central in the fence can only have one pair of support bars (6a, 6b), see figures 2 and 5. To reinforce the fence additionally, one or more central located fence posts (1) can be foreseen of three pairs of support bars (6a, 6b), see figures 3 and 6.

**[0043]** In the illustrated example, the cable wires (7) are connected to the fence posts (1) by means of a clamping plate (10), which is bolted to the upper part of the corresponding fence post (1).

**[0044]** To further support and hold the cable wires (7), intermediate posts (8) can be foreseen. This is however optional. In the illustrated example the cable wires (7) are connected to the intermediate posts (8) by means of U-bolts (9).

**[0045]** This fence is provided to form an obstacle preventing people or animals to enter a certain area. For this the fence needs to be installed.

**[0046]** To install this fence, firstly the anchoring device is installed and also the intermediate posts (8) are installed. After this the cable wires (7) are connected to the anchoring device and the intermediate posts (8). The cable wires (7) could also be connected to the anchoring device and/or to the intermediate posts (8) before the installation of the anchoring device and the intermediate posts (8) or during the said installations.

**[0047]** To install the anchoring device, for each fence post (1) a ditch is excavated. Each fence post (1) is then placed with its base plate upon the ground surface of the respective ditch. Alternatively one large ditch can be excavated wherein all the fence posts (1) are placeable or several larger ditches can be excavated wherein in some ditches it is provided to place two or more fence posts (1).

**[0048]** After the placement of a said fence post (1), reinforcement mesh is provided and placed in the said ditch. Preferably the size of the ditch approximately corresponds to the size of the reinforcement mesh, such that the installation can run smoothly. This reinforcement is then connected to the projections (2) of the base (4) in such a way that the reinforcement mesh is located above the second support bar(s) (6b) and between the second support bars (6b) and the blocking portions (5) of the projections (2). The connection can be realised

with the aid of binding wire. Because the reinforcement mesh is located between the second support bar(s) (6b) and the blocking portions (5), the reinforcement mesh will not come loose from the projections (2). For example, when binding wire is used, the blocking portions (5) will prevent the binding wire from moving upwards. The depth of the ditch is such that the base (4) and thus the reinforcement and the projections (2) are completely retained in the ditch such that they don't protrude above the ditch. Preferably the depth of each ditch is between 20 cm and 40 cm.

**[0049]** After or during the connection of the reinforcement to the projections (2), concrete is poured in the ditch until the ditch is filled. The base (4), the reinforcement and the lower part of the post portion (3) are thus embedded in the concrete and no longer visible. This can be seen in figures 4 to 6.

**[0050]** For the installation of the intermediate posts (8) holes are dug out and these intermediate post (8) are placed in these holes. These holes can then be filled with concrete or with the same substance that was dug out.

**[0051]** Here the post portions (3), the cable wires (7) and the intermediate posts (8) are visible after installation.

**[0052]** In an alternative embodiment the fence can comprise fence panels instead of cable wires (7).

## Claims

1. An anchoring device for anchoring and supporting a fence, wherein the anchoring device comprises at least one fence post (1), wherein the fence post (1) comprises one or more connecting elements (2) which are provided to be connected to reinforcement for concrete, wherein said fence post (1) comprises an upright extending post portion (3) and a base (4) on which the post portion (3) rests, wherein the base comprises said one or more connecting elements (2), **characterized in that** at least one connecting element (2) is an outwardly directed projection (2) and at least part of the projection (2) is elongated and provided to extend upright, such that reinforcement is connectable to the fence post (1) at a desired height.
2. An anchoring device according to claim 1, **characterized in that** at least one connecting element (2) comprises a blocking portion (5) to block the connection with the reinforcement.
3. An anchoring device according to claim 2, **characterized in that** the blocking portion (5) is a thicker part of the projection (2) according to a direction parallel to the lengthwise direction of the said at least elongated part of the projection (2), to block the connection with the reinforcement according to the lengthwise direction of the said at least elongated

part of the projection (2).

4. An anchoring device according to any of the preceding claims, **characterized in that** the anchoring device comprises a first support bar (6a) to support the fence post (1). 5
5. An anchoring device according to claim 4, **characterized in that** the anchoring device comprises a second support bar (6b) which cooperates with the first support bar (6a) to support the fence post (1). 10
6. An anchoring device according to claim 5, **characterized in that** the each support bar (6a, 6b) is on the one hand provided to be connected to the fence post (1) and on to the other hand provided to be connected to the respective other support bar (6a, 6b), such that a triangle is formed. 15
7. An anchoring device according to claim 6, **characterized in that** the post portion (3) is elongated and that the second support bar (6b) is provided to be connected to a lower part of the fence post (1) and to extend substantially perpendicular to the lengthwise direction of the post portion (3) and the first support bar (6a) is provided to be connected to a higher part of the fence post (1). 20 25
8. An anchoring device according to claim 7, **characterized in that** the second support bar (6b) is provided to be connected to a lower part of the post portion (3) and that said at least one projection (2) is provided to protrude above the second support bar (6b) according to the lengthwise direction of the post portion (3). 30
9. An anchoring device according to any of the preceding claims, **characterized in that** the base (4) comprises a base plate and the said one or more connecting elements (2) protrude outwardly from said base plate. 35 40
10. An assembly for placing a fence comprising an anchoring device according to claim 1, for anchoring and supporting a fence, and reinforcement for reinforcing concrete, wherein the anchoring device comprises at least one fence post (1) wherein the fence post (1) comprises one or more connecting elements (2) to connect the reinforcement to the fence post (1), wherein said fence post (1) comprises an upright extending post portion (3) and a base (4) on which the post portion (3) rests, wherein the base comprises said one or more connecting elements (2), **characterized in that** at least one connecting element (2) is an outwardly directed projection (2) and at least part of the projection (2) is elongated and provided to extend upright, such that the reinforcement is connectable to the fence post (1) at a desired height. 45 50 55

11. An assembly as in claim 10, **characterized in that** the reinforcement is a reinforcement mesh.

12. An assembly as in claim 10 or 11, **characterized in that** the anchoring device is an anchoring device according to any of the claims 1 to 9.

13. A method of installing an anchoring device according to claim 1, for anchoring and supporting a fence, wherein the anchoring device comprises at least one fence post (1), wherein the fence post (1) comprises one or more connecting elements (2), wherein said fence post (1) comprises an upright extending post portion (3) and a base (4) on which the post portion (3) rests, wherein the base comprises said one or more connecting elements (2), **characterized in that** at least one connecting element (2) is an outwardly directed projection (2) and at least part of the projection (2) is elongated and provided to extend upright, and wherein the method comprises the following steps

- placing the fence post (1);
- providing reinforcement for reinforcing concrete and connecting the reinforcement to the fence post (1) using the one or more connecting elements (2);
- providing concrete and pouring this concrete after or during the connecting of the reinforcement to the fence post (1), such that the reinforcement and the lowest part of the post portion (3) are embedded in the concrete.

14. A method according to claim 13, **characterized in that** one or several ditches are made for the anchoring device and the said fence post (1) is placed upon the surface of a said ditch and this ditch is filled with the concrete.

15. A method according to claim 13 or 14, **characterized in that** the anchoring device is an anchoring device according to any of the claims 1 to 9.

#### 45 Patentansprüche

1. Verankerungsvorrichtung zum Verankern und Tragen eines Zauns, wobei die Verankerungsvorrichtung mindestens einen Zaunpfosten (1) umfasst; wobei der Zaunpfosten (1) ein oder mehrere Verbindungselemente (2) umfasst, die vorgesehen sind, um mit einer Betonverstärkung verbunden zu werden, wobei der Zaunpfosten (1) einen aufrecht verlaufenden Pfostenabschnitt (3) und eine Basis (4) umfasst, auf der der Pfostenabschnitt (3) ruht, wobei die Basis das eine oder die mehreren Verbindungselemente (2) umfasst, **dadurch gekennzeichnet, dass** mindestens ein Verbindungselement (2) eine

- nach außen gerichtete Projektion (2) ist und mindestens ein Teil der Projektion (2) länglich ist und vorgesehen ist, sich aufrecht zu erstrecken, so dass die Verstärkung in einer gewünschten Höhe mit dem Zaunpfosten (1) verbunden werden kann.
2. Verankerungsvorrichtung nach Anspruch 1, **dadurch gekennzeichnet, dass** mindestens ein Verbindungselement (2) einen Sperrabschnitt (5) aufweist, um die Verbindung mit der Verstärkung zu blockieren. 5
  3. Verankerungsvorrichtung nach Anspruch 2, **dadurch gekennzeichnet, dass** der Sperrabschnitt (5) ein dickerer Teil des Vorsprungs (2) gemäß einer Richtung parallel zur Längsrichtung des mindestens länglichen Teils des Vorsprungs (2) ist, um die Verbindung mit der Verstärkung gemäß der Längsrichtung des mindestens länglichen Teils des Vorsprungs (2) zu blockieren. 10
  4. Verankerungsvorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Verankerungsvorrichtung eine erste Stützstange (6a) zur Unterstützung des Zaunpfostens (1) umfasst. 15
  5. Verankerungsvorrichtung nach Anspruch 4, **dadurch gekennzeichnet, dass** die Verankerungsvorrichtung eine zweite Stützstange (6b) umfasst, die mit der ersten Stützstange (6a) zusammenwirkt, um den Zaunpfosten (1) zu stützen. 20
  6. Verankerungsvorrichtung nach Anspruch 5, **dadurch gekennzeichnet, dass** jede Stützstange (6a, 6b) einerseits vorgesehen ist, um mit dem Zaunpfosten (1) verbunden zu werden, und andererseits vorgesehen ist, um mit der jeweiligen anderen Stützstange (6a, 6b) verbunden zu werden, so dass ein Dreieck gebildet wird. 25
  7. Verankerungsvorrichtung nach Anspruch 6, **dadurch gekennzeichnet, dass** der Pfostenabschnitt (3) länglich ist und dass die zweite Stützstange (6b) vorgesehen ist, um mit einem unteren Teil des Zaunpfostens (1) verbunden zu werden, und um sich im Wesentlichen senkrecht zur Längsrichtung des Pfostenabschnitts (3) zu erstrecken, und die erste Stützstange (6a) ist vorgesehen, um mit einem höheren Teil des Zaunpfostens (1) verbunden zu werden. 30
  8. Verankerungsvorrichtung nach Anspruch 7, **dadurch gekennzeichnet, dass** die zweite Stützstange (6b) vorgesehen ist, um mit einem unteren Teil des Pfostenabschnitts (3) verbunden zu werden und dass der mindestens eine Vorsprung (2) vorgesehen ist, um entsprechend der Längsrichtung des Pfostenabschnitts (3) über die zweite Stützstange (6b) hervorzustehen. 35
  9. Verankerungsvorrichtung nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Basis (4) eine Grundplatte umfasst und das eine oder die mehreren Verbindungselemente (2) aus der Grundplatte hervorstehen. 40
  10. Baugruppe zum Platzieren eines Zauns mit einer Verankerungsvorrichtung nach Anspruch 1, zum Verankern und Abstützen eines Zauns und zur Verstärkung von Beton, wobei die Verankerungsvorrichtung mindestens einen Zaunpfosten (1) umfasst, wobei der Zaunpfosten (1) ein oder mehrere Verbindungselemente (2) umfasst, um die Verstärkung mit dem Zaunpfosten (1) zu verbinden, wobei der Zaunpfosten (1) einen aufrecht verlaufenden Pfostenabschnitt (3) und eine Basis (4) umfasst, auf der der Pfostenabschnitt (3) ruht, wobei die Basis das eine oder die mehreren Verbindungselemente (2) umfasst, **dadurch gekennzeichnet, dass** mindestens ein Verbindungselement (2) eine nach außen gerichtete Projektion (2) ist und mindestens ein Teil der Projektion (2) länglich ist und vorgesehen ist, sich aufrecht zu erstrecken, so dass die Verstärkung in einer gewünschten Höhe mit dem Zaunpfosten (1) verbunden werden kann. 45
  11. Baugruppe nach Anspruch 10, **dadurch gekennzeichnet, dass** die Verstärkung ein Verstärkungsnetz ist. 50
  12. Baugruppe nach Anspruch 10 oder 11, die **dadurch gekennzeichnet ist, dass** die Verankerungsvorrichtung eine Verankerungsvorrichtung nach einem der Ansprüche 1 bis 9 ist. 55
  13. Verfahren zum Installieren einer Verankerungsvorrichtung nach Anspruch 1 zum Verankern und Abstützen eines Zauns, wobei die Verankerungsvorrichtung mindestens einen Zaunpfosten (1) umfasst, wobei der Zaunpfosten (1) ein oder mehrere Verbindungselemente (2) umfasst, wobei der Zaunpfosten (1) einen aufrecht verlaufenden Pfostenabschnitt (3) und eine Basis (4) umfasst, auf der der Pfostenabschnitt (3) ruht, wobei die Basis das eine oder die mehreren Verbindungselemente (2) umfasst, **dadurch gekennzeichnet, dass** mindestens ein Verbindungselement (2) eine nach außen gerichtete Projektion (2) ist und mindestens ein Teil der Projektion (2) länglich und so vorgesehen ist, dass sie sich aufrecht erstreckt, wobei das Verfahren die folgenden Schritte umfasst:
    - Platzieren des Zaunpfostens (1);
    - Bereitstellen einer Verstärkung zur Betonverstärkung und Verbindung der Verstärkung mit

dem Zaunpfosten (1) unter Verwendung des einen oder der mehreren Verbindungselemente (2);

• Bereitstellen von Beton und Gießen dieses Betons nach oder während des Verbindens der Verstärkung mit dem Zaunpfosten (1), so dass die Verstärkung und der unterste Teil des Pfostenabschnitts (3) in den Beton eingebettet sind.

14. Verfahren nach Anspruch 13, **dadurch gekennzeichnet, dass** ein oder mehrere Gräben für die Verankerungsvorrichtung hergestellt werden und der Zaunpfosten (1) auf die Oberfläche eines Grabens gelegt wird und dieser Graben mit dem Beton gefüllt wird.

15. Verfahren nach Anspruch 13 oder 14, die **dadurch gekennzeichnet ist, dass** die Verankerungsvorrichtung eine Verankerungsvorrichtung nach einem der Ansprüche 1 bis 9 ist.

## Revendications

1. Dispositif d'ancrage pour ancrer et supporter une clôture, dans lequel le dispositif d'ancrage comprend au moins un poteau de clôture (1), dans lequel le poteau de clôture (1) comprend un ou plusieurs éléments de raccordement (2) qui sont prévus pour être raccordés à une armature pour béton, dans lequel ledit poteau de clôture (1) comprend une portion de poteau s'étendant verticalement (3) et une base (4) sur laquelle la portion de poteau (3) repose, dans lequel la base comprend lesdits un ou plusieurs éléments de raccordement (2), **caractérisé en ce qu'**au moins un élément de raccordement (2) est une saillie dirigée vers l'extérieur (2) et au moins une partie de la saillie (2) est allongée et prévue pour s'étendre verticalement, de telle sorte que l'armature puisse être raccordée au poteau de clôture (1) à une hauteur souhaitée.

2. Dispositif d'ancrage selon la revendication 1, **caractérisé en ce qu'**au moins un élément de raccordement (2) comprend une portion de blocage (5) pour bloquer le raccordement à l'armature.

3. Dispositif d'ancrage selon la revendication 2, **caractérisé en ce que** la portion de blocage (5) est une partie plus épaisse de la saillie (2) selon une direction parallèle à la direction en longueur de ladite partie au moins allongée de la saillie (2), pour bloquer le raccordement à l'armature selon la direction en longueur de ladite partie au moins allongée de la saillie (2).

4. Dispositif d'ancrage selon l'une quelconque des revendications précédentes, **caractérisé en ce que**

le dispositif d'ancrage comprend une première barre de support (6a) pour supporter le poteau de clôture (1).

5. Dispositif d'ancrage selon la revendication 4, **caractérisé en ce que** le dispositif d'ancrage comprend une seconde barre de support (6b) qui coopère avec la première barre de support (6a) pour supporter le poteau de clôture (1).

6. Dispositif d'ancrage selon la revendication 5, **caractérisé en ce que** chaque barre de support (6a, 6b) est, d'une part, prévue pour être raccordée au poteau de clôture (1) et, d'autre part, prévue pour être raccordée à l'autre barre de support respective (6a, 6b), de telle sorte qu'un triangle soit formé.

7. Dispositif d'ancrage selon la revendication 6, **caractérisé en ce que** la portion de poteau (3) est allongée et que la seconde barre de support (6b) est prévue pour être raccordée à une partie plus basse du poteau de clôture (1) et pour s'étendre de façon sensiblement perpendiculaire à la direction en longueur de la portion de poteau (3) et la première barre de support (6a) est prévue pour être raccordée à une partie plus élevée du poteau de clôture (1).

8. Dispositif d'ancrage selon la revendication 7, **caractérisé en ce que** la seconde barre de support (6b) est prévue pour être raccordée à une partie plus basse de la portion de poteau (3) et que ladite au moins une saillie (2) est prévue pour faire saillie au-dessus de la seconde barre de support (6b) selon la direction en longueur de la portion de poteau (3).

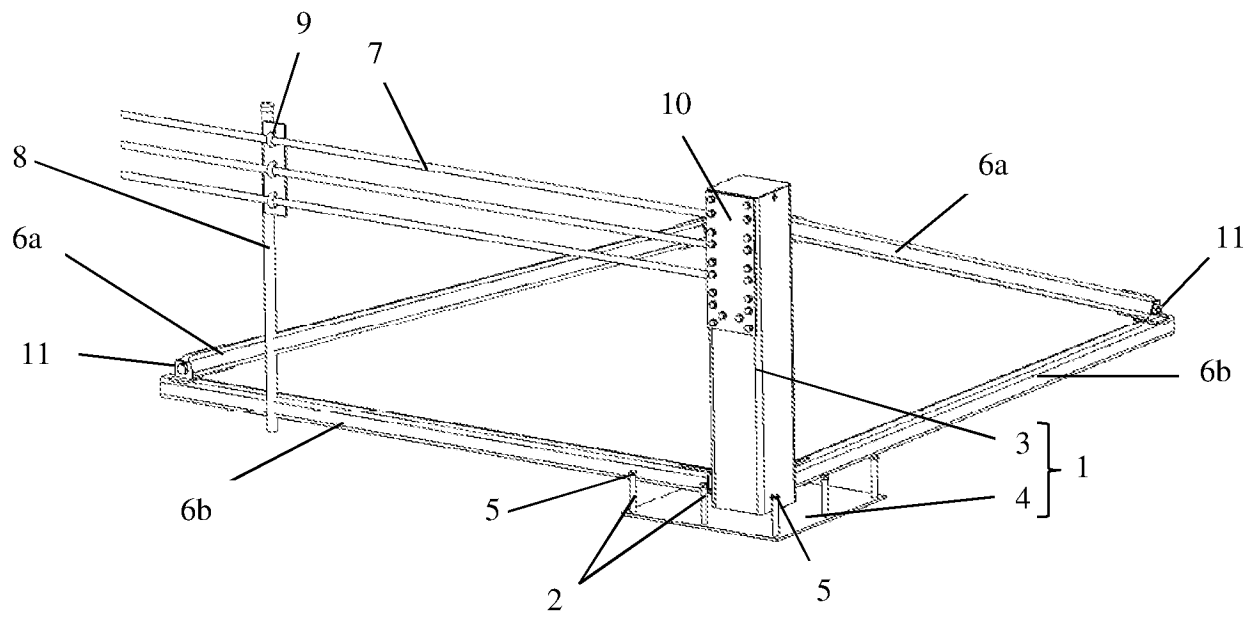
9. Dispositif d'ancrage selon l'une quelconque des revendications précédentes, **caractérisé en ce que** la base (4) comprend une plaque de base et lesdits un ou plusieurs éléments de raccordement (2) font saillie vers l'extérieur à partir de ladite plaque de base.

10. Ensemble pour placer une clôture comprenant un dispositif d'ancrage selon la revendication 1, pour ancrer et supporter une clôture, et une armature pour armer du béton, dans lequel le dispositif d'ancrage comprend au moins un poteau de clôture (1) dans lequel le poteau de clôture (1) comprend un ou plusieurs éléments de raccordement (2) pour raccorder l'armature au poteau de clôture (1), dans lequel ledit poteau de clôture (1) comprend une portion de poteau s'étendant verticalement (3) et une base (4) sur laquelle la portion de poteau (3) repose, dans lequel la base comprend lesdits un ou plusieurs éléments de raccordement (2), **caractérisé en ce qu'**au moins un élément de raccordement (2) est une saillie dirigée vers l'extérieur (2) et au moins une partie de la saillie (2) est allongée et prévue pour s'étendre ver-

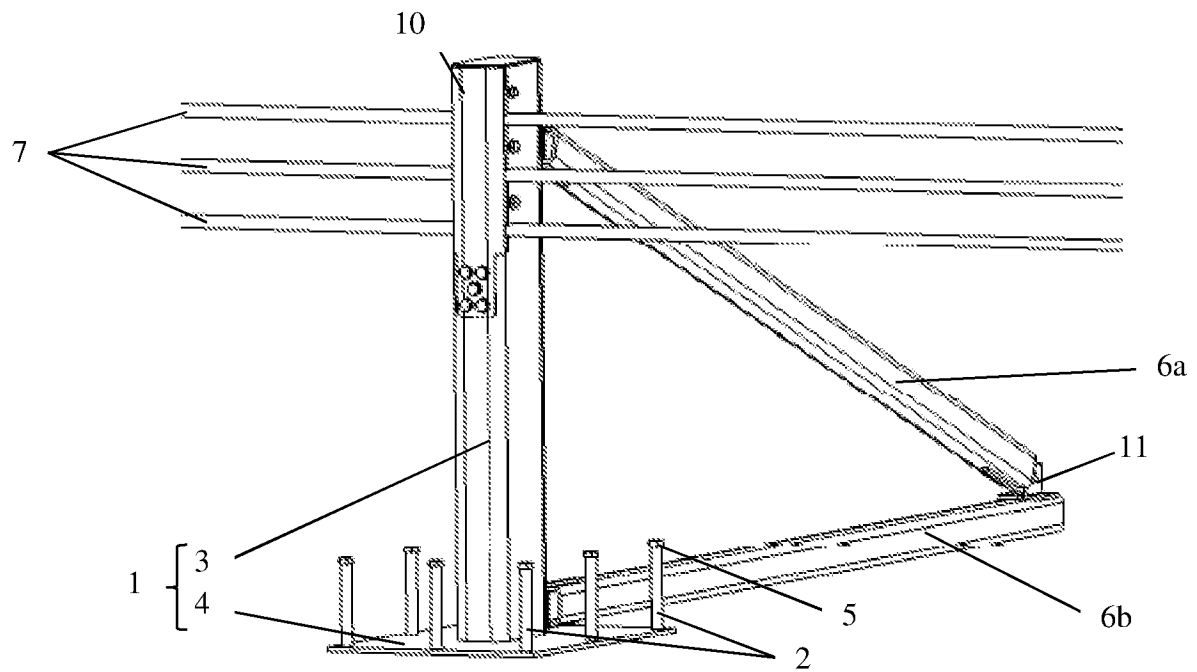
ticalement, de telle sorte que l'armature puisse être raccordée au poteau de clôture (1) à une hauteur souhaitée.

11. Ensemble selon la revendication 10, **caractérisé en ce que** l'armature est un treillis d'armature. 5
  
12. Ensemble selon la revendication 10 ou 11, **caractérisé en ce que** le dispositif d'ancrage est un dispositif d'ancrage selon l'une quelconque des revendications 1 à 9. 10
  
13. Procédé d'installation d'un dispositif d'ancrage selon la revendication 1, pour ancrer et supporter une clôture, dans lequel le dispositif d'ancrage comprend au moins un poteau de clôture (1), dans lequel le poteau de clôture (1) comprend un ou plusieurs éléments de raccordement (2), dans lequel ledit poteau de clôture (1) comprend une portion de poteau s'étendant verticalement (3) et une base (4) sur laquelle la portion de poteau (3) repose, dans lequel la base comprend lesdits un ou plusieurs éléments de raccordement (2), **caractérisé en ce qu'**au moins un élément de raccordement (2) est une saillie dirigée vers l'extérieur (2) et au moins une partie de la saillie (2) est allongée et prévue pour s'étendre verticalement, et dans lequel le procédé comprend les étapes suivantes 15
  - le placement du poteau de clôture (1) ; 30
  - la fourniture d'une armature pour armer du béton et raccorder l'armature au poteau de clôture (1) en utilisant les un ou plusieurs éléments de raccordement (2) ;
  - la fourniture de béton et la coulée de ce béton après ou durant le raccordement de l'armature au poteau de clôture (1), de telle sorte que l'armature et la partie la plus basse de la portion de poteau (3) soient encastrées dans le béton. 35
  
14. Procédé selon la revendication 13, **caractérisé en ce qu'**un ou plusieurs fossés sont réalisés pour le dispositif d'ancrage et ledit poteau de clôture (1) est placé sur la surface d'un dit fossé et ce fossé est rempli du béton. 40
  
15. Procédé selon la revendication 13 ou 14, **caractérisé en ce que** le dispositif d'ancrage est un dispositif d'ancrage selon l'une quelconque des revendications 1 à 9. 45

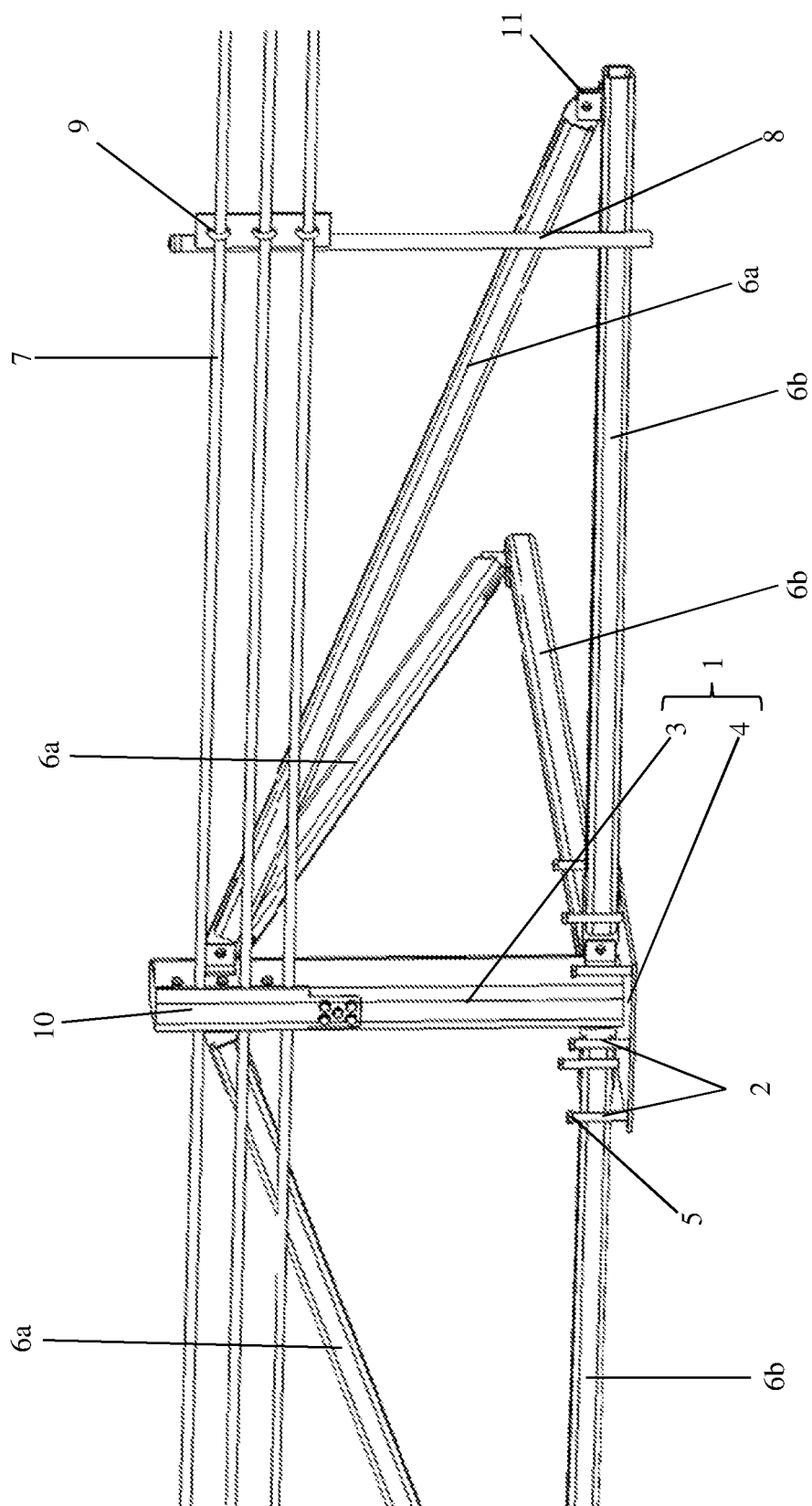
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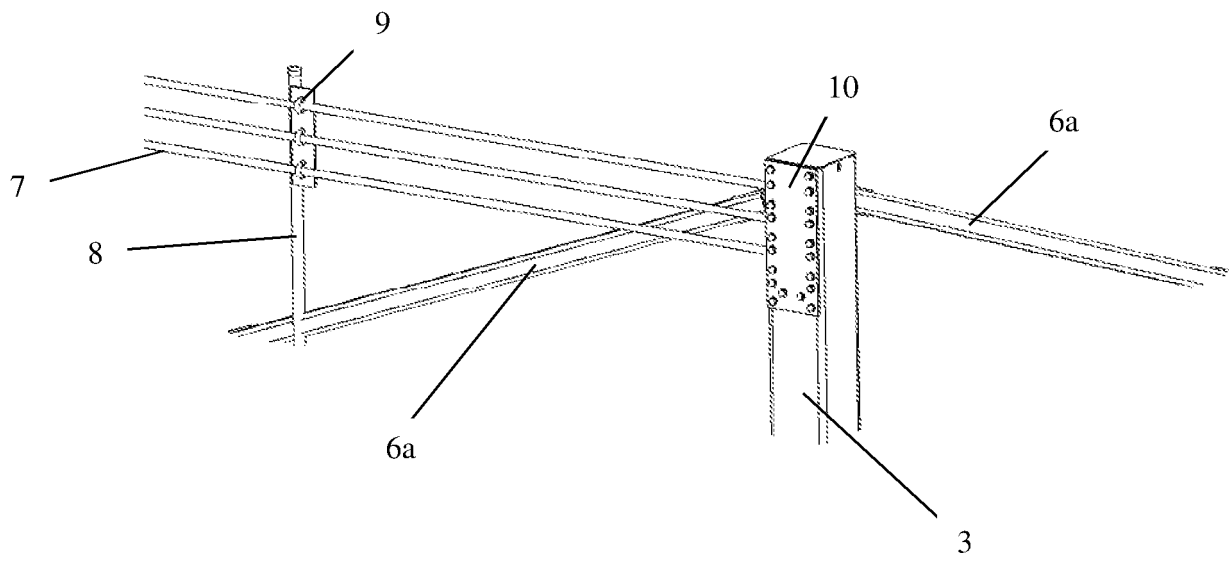
**Fig. 1**



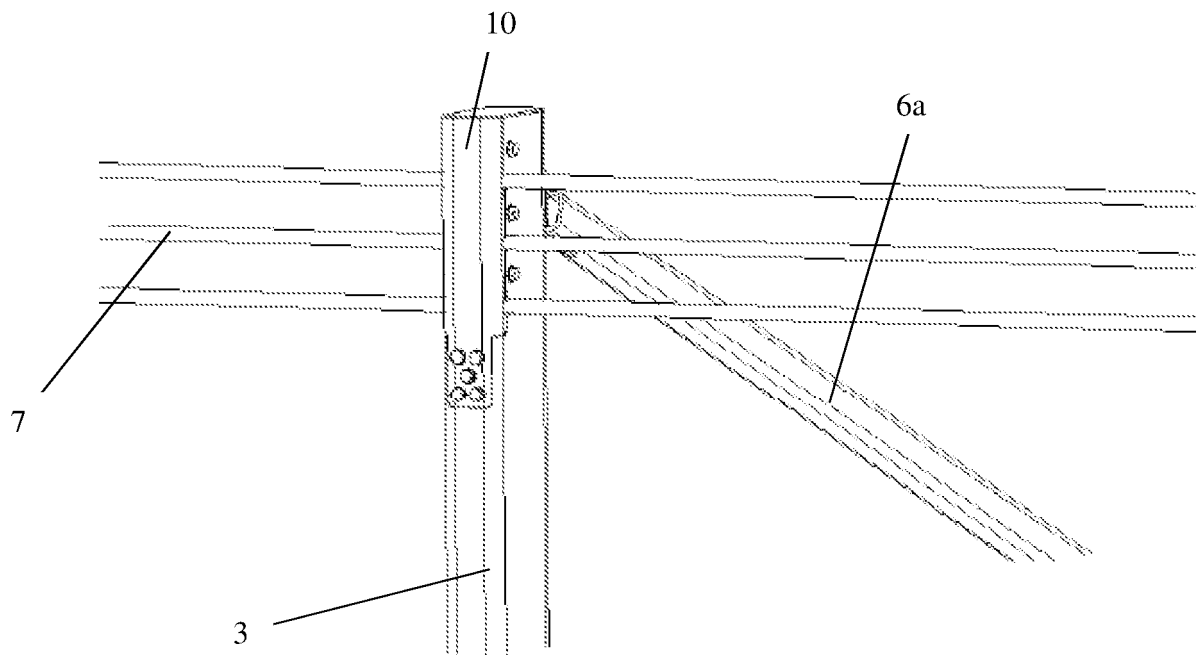
**Fig. 2**



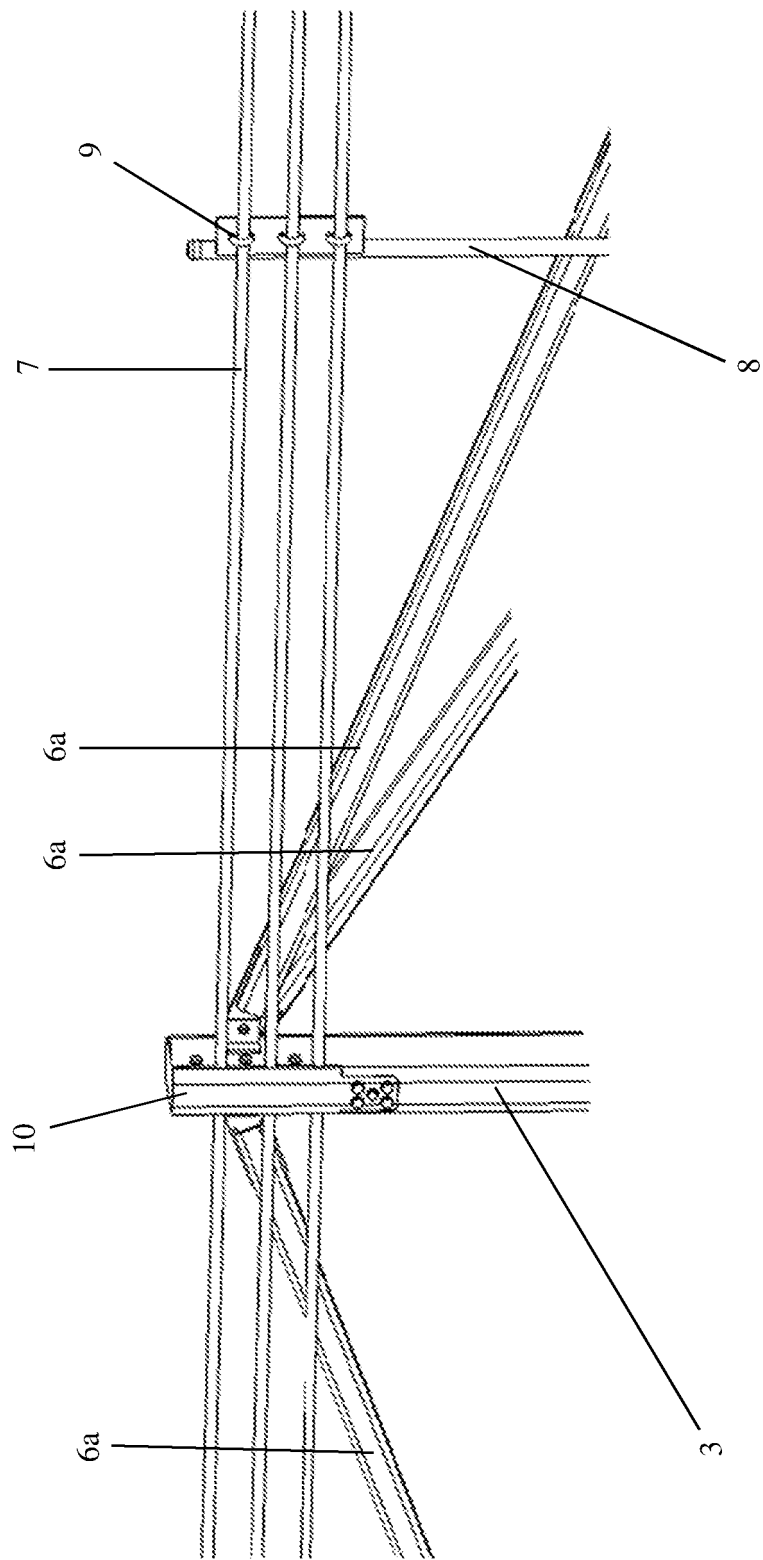
**Fig. 3**



**Fig. 4**



**Fig. 5**



**Fig. 6**

**REFERENCES CITED IN THE DESCRIPTION**

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