



(22) Date de dépôt/Filing Date: 2009/05/06

(41) Mise à la disp. pub./Open to Public Insp.: 2009/11/27

(45) Date de délivrance/Issue Date: 2014/04/22

(30) Priorité/Priority: 2008/05/27 (ATA 847/2008)

(51) Cl.Int./Int.Cl. *B61B 12/06* (2006.01),
B65G 17/30 (2006.01), *B65G 43/00* (2006.01),
B66B 7/12 (2006.01)

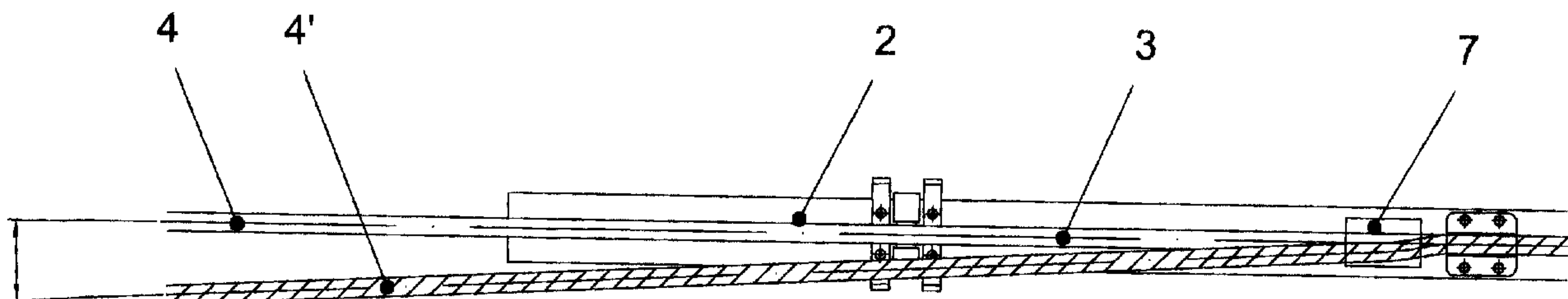
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(54) Titre : DETECTEUR DE POSITIONNEMENT DEFECTUEUX DE CABLE DE TRANSPORT DE SYSTEME DE
SUSPENSION POUR CABLES AERIENS

(54) Title: DEVICE FOR DETECTING FAULTY POSITIONING OF A CARRYING CABLE IN A CABLEWAY SYSTEM



(57) Abrégé/Abstract:

An arrangement on a cableway or a goods-conveying system for detecting incorrect positioning of a carrying cable (4) on a mount (2) with a channel (3) in which the carrying cable (4) is located has a device (18, 19) for detecting incorrect positioning of the carrying cable (4). A portion (7) of the mount (2) is movable, and the device (18, 19) for detecting the incorrect positioning of the carrying cable (4) detects movement of the portion (7) of the mount (2). It is thus possible for incorrect positioning of the carrying cable (4), which results in this portion (7) being displaced, to be detected in good time, even before the carrying cable (4) in this portion (7) has been completely derailed.



Abstract:

An arrangement on a cableway or a goods-conveying system for detecting incorrect positioning of a carrying cable (4) on a mount (2) with a channel (3) in which the carrying cable (4) is located has a device (18, 19) for detecting incorrect positioning of the carrying cable (4). A portion (7) of the mount (2) is movable, and the device (18, 19) for detecting the incorrect positioning of the carrying cable (4) detects movement of the portion (7) of the mount (2). It is thus possible for incorrect positioning of the carrying cable (4), which results in this portion (7) being displaced, to be detected in good time, even before the carrying cable (4) in this portion (7) has been completely derailed.

(Fig. 1)

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DEVICE FOR DETECTING FAULTY POSITIONING OF A CARRYING CABLE IN
A CABLEWAY SYSTEM

5 Arrangement on a cableway or a goods-conveying system for detecting incorrect positioning of a carrying cable on a mount with a channel in which the carrying cable is located, having a device for detecting incorrect positioning of the carrying cable.

10

Carrying cables of cableways for conveying individuals, but also those for conveying materials or of goods-conveying systems (e.g. EP 1 538 112 A), in which the present invention can be used are guided in the prior art, for example, on
15 supports via saddles and/or carrying-cable shoes, on which they are located in a mount with a channel which is open in the upward direction. Transporting means such as cars or conveying belts move along the carrying cable or cables. In the channel, the carrying cable, depending on the length of
20 the saddle, is secured against derailments by one or more clamps. In the region upstream and downstream of these clamps, in which the carrying cable, in the non-loaded state, in some cases is not located at all and, in a stage in which it is loaded by a transporting means, e.g. a car, is only located
25 loosely in the channel, the carrying cable may undergo derailment, for example by being deflected laterally by the wind, in which case it is lifted out of the channel and ends up located alongside the mount. In order to prevent the

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carrying cable from parting company with the saddle altogether, so-called carrying-cable interceptors are fitted alongside the mount, and these may also be equipped with, or connected to, a detector in order for a derailed carrying
5 cable to be detected and for the system to be switched off.

As long as the carrying cable is not subjected to any loading, however, a carrying cable which has already been derailed is often still not in contact with the carrying-cable interceptor
10 or the detector, in which case incorrect positioning of the carrying cable is detected only when the carrying cable, under the weight of the already relatively close transporting means, is forced downward to the extent where it rests on a carrying-cable interceptor and the detector indicates the incorrect
15 positioning of the carrying cable.

In this situation, however, it is often already difficult for the transporting means to be conveyed back into a station of the cableway system in order to allow the passengers to alight
20 safely and to reposition the carrying cable correctly on the saddle. Moreover, the carrying cable or the saddle may already have been damaged. Accidents are also possible in this situation.

25 It has thus been an object of the invention to provide an arrangement for a cable shoe which allows incorrect positioning of the carrying cable to be detected in good time.

This object is achieved by an arrangement having the features
30 of patent claim 1.

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In the case of the invention, a portion of the mount in the channel of which the carrying cable is located is movable, in which case incorrect positioning of the carrying cable, which results in this portion being displaced, can be detected in
5 good time, even before the carrying cable in this portion has been completely derailed.

Detection of the movement and/or change in position of the movable portion of the mount can take place in various ways.
10 Use can be made, for example, of all the devices known for measuring purposes and in electrical engineering for detecting a change in position, pressure or force. An example of a simple option would be that of the portion being coupled electromagnetically or optically to the device for detecting
15 incorrect positioning of the carrying cable.

However, it is preferred, within the context of the invention, for the device for detecting incorrect positioning of the carrying cable to be connected mechanically to the movable
20 portion of the mount, since this is a solution which has been tried and tested and is very robust and functions even under difficult weather conditions.

In a development of the invention, it may be provided here
25 that the device for detecting incorrect positioning of the carrying cable has an interrupting rod which, when the change in position of the movable portion of the mount exceeds a predetermined value, is broken off from a lever which is connected to the movable portion of the mount. It is also
30 possible, however, for the interrupting rod to be broken off from the movable portion itself.

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In order to provide for the movement capability of the movable portion of the mount, the movable portion of the mount can be pivoted about an axis of rotation. It is also possible for the movable portion of the mount to be displaceable along a sliding surface. If, in a particularly preferred embodiment of the invention, the sliding surface is formed by a circular-cylinder portion, the movable portion of the mount, ultimately, is pivoted about an axis which coincides with the center point of the curvature of the sliding surface. It is also conceivable, however, to have other forms of curved sliding surfaces which do not define a single pivot axis for the movable portion of the mount.

According to the invention, the movable portion of the mount is preferably located in a region of the mount which is spaced apart both from one end of the mount and from a clamp and, in particular, in a region between one end of the mount and a clamp for the carrying cable. The reason for this is that, in most cases, the carrying cable, in the non-loaded state, does not reach the end of the mount in the channel, in which case it would not be possible to detect incorrect positioning of the carrying cable either. However, it is, of course, possible, in particular in the cases where a mount is provided with more than one movable portion, for a movable portion to be provided also at the end of a mount.

Further features and advantages of the invention can be gathered from the following description of a preferred exemplary embodiment of the invention, with reference to the drawings, in which:

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Fig. 1 shows a plan view of part of a saddle for a carrying cable of a cableway with a partially derailed carrying cable,

Fig. 2 shows an oblique view from the side of the part of the saddle from figure 1,

Fig. 3 shows an oblique view solely of a movable portion of the mount for the carrying cable in the non-release state, and

Fig. 4 shows the portion from figure 3 in the release state.

Figure 1 illustrates a plan view of part of a saddle. It is possible to see a mount 2 which has a channel 3 which, in the installed position, is open in the upward direction and in which a carrying cable 4 is located. As figure 2 shows, the carrying cable 4, in the non-loaded state, rather than reaching the end 5 of the mount 2 in the channel 3, is located only in the central region. 4' is used in figures 1 and 2 to illustrate the carrying cable 4 in a so-called incorrect position, in which the carrying cable 4' is partially derailed, that is to say it is no longer located correctly in and/or over the channel 3.

Clamps 6 and carrying-cable interceptors are fitted on the mount 2, although these, of course, need not always be present. The clamps 6 in the central region prevent further derailment of the carrying cable 4 from the mount. The carrying-cable interceptors serve for intercepting the carrying cable 4 when adverse conditions result in the carrying cable 4' being derailed between the end 5 of the mount 2 and the clamp 6.

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Arranged between the clamp 6 and the end 5 of the mount 2 is a movable portion 7 of the mount 2, which is illustrated on its own in figures 3 and 4 and, in the event of the carrying cable 4 being positioned correctly, assumes the position which is illustrated in figure 3 and, in the event of the carrying cable 4' being positioned incorrectly, assumes the position which is illustrated in figure 4.

The portion 7 of the mount 2 which is illustrated in figures 3 and 4 has essentially the same cross-sectional shape as the rest of the portions of the mount 2, but, rather than being fixed to an installation plate, is fastened in a movable manner on an articulation plate 8. The movement capability of the movable portion 7 is provided for, in the exemplary embodiment illustrated, with the aid of a rib 9 which is arranged on the articulation plate and has a sliding surface 10 directed toward the movable portion 7. The sliding surface 10 has the geometrical shape of a circular-cylinder portion, as does the mating surface 11 on the movable portion 7. Since the movable portion 7 is spaced apart from the articulation plate 8, on both sides of the rib 9, by a gap 12, the movable portion 7 can be displaced laterally along the sliding surface 10, 11 until it butts against the articulation plate 8. The point of rotation, or the axis of rotation of the movement of the movable portion 7 is located at the geometrical center point of the sliding surfaces 10, 11.

Instead of the portion 7 sliding on a rib 9 on the articulation plate 8, it would also be possible, for example, for the portion 7 itself to be divided longitudinally and for a top part of the portion 7 to slide on a bottom part. However, it would also be possible to use an entirely

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conventional articulation between the portion 7 and the articulation plate 8 having an articulation pin and two or more bearing bushings, of which the axis of articulation runs essentially parallel to the axis of the carrying cable.

5

If the carrying cable 4 begins to slide out of the channel 3 as a result of external forces, as illustrated in figures 1 and 2, the movable portion 7 is tilted all the more to the side the further the carrying cable 4 slides out of the channel 3 in the region of the movable portion 7. A lever 13 is fastened on the movable portion 7, in the exemplary embodiment illustrated it is screwed thereon with the aid of two screws 14, and has a bifurcation in the region of its free end 15. Accommodated between the two fingers 16, 17 is an interrupting rod 18 which is bent in the form of a U and is fitted on a device for detecting incorrect positioning of the carrying cable 4 in the form of a so-called interrupting-rod switch 19. The interrupting rod 18 has current flowing through it, the current being interrupted when the interrupting rod 18 breaks.

20

If the movable portion 7 is moved toward one side or the other by incorrect positioning of the carrying cable 4, the lever 13 fastened thereon is also moved to the side. There is a small spacing between the fingers 16, 17 and the interrupting rod 18, the size of this spacing making it possible to define the admissible position deviation of the movable portion 7. If this admissible position deviation is exceeded, the interrupting rod 18 is bent to the side by one of the two fingers 16 or 17 until, once a certain level of elastic deformability has been exceeded, it breaks. This interrupts the flow of current and the interrupting-rod switch 19 detects

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a safety-specific change in position of the movable portion 7 and transmits a corresponding signal to the central control means of the cableway system which, in accordance with the safety regulations, either reduces the traveling speed of the transporting means or brings the same to a standstill.

Since, in contrast to the prior art, the arrangement according to the invention can be used to detect incorrect positioning of the carrying cable 4 without a transporting means having to come into close proximity with the cable shoe, it is possible to prevent complete derailment and to avoid damage which may possibly occur, in certain conditions, as a result.

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Patent claims

1. An arrangement on a cableway or a goods-conveying system for detecting incorrect positioning of a carrying cable on a mount with a channel in which the carrying cable is located, having a device, for detecting incorrect positioning of the carrying cable, characterized in that a portion of the mount is movable, and in that the device for detecting the incorrect positioning of the carrying cable detects movement of the portion of the mount.

2. The arrangement as claimed in claim 1, characterized in that the device is coupled mechanically to the movable portion of the mount.

3. The arrangement as claimed in claim 1 or 2, characterized in that the device has an interrupting rod which, when the change in position of the movable portion of the mount exceeds a predetermined value, is broken off from the movable portion of the mount.

4. The arrangement as claimed in claim 2, characterized in that the device has an interrupting rod which, when the change in position of the movable portion of the mount exceeds a predetermined value, is broken off from a lever which is connected to the movable portion of the mount.

5. The arrangement as claimed in claim 1, characterized in that the device is connected electrically or electromagnetically to the movable portion of the mount.

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6. The arrangement as claimed in claim 1, characterized in that the device is connected optically to the movable portion of the mount.

7. The arrangement as claimed in one of claims 1 to 5, characterized in that the movable portion of the mount can be pivoted about an axis of rotation.

8. The arrangement as claimed in claim 7, characterized in that the axis of rotation is oriented in the longitudinal direction of the carrying cable and, in the installed position, is arranged beneath the channel.

9. The arrangement as claimed in one of claims 1 to 6, characterized in that the movable portion of the mount can be displaced along a sliding surface.

10. The arrangement as claimed in claim 9, characterized in that the sliding surface is curved.

11. The arrangement as claimed in claim 10, characterized in that the sliding surface is formed by a circular-cylinder portion.

12. The arrangement as claimed in claim 10 or 11, characterized in that an axis of curvature of the sliding surface, in the installed position, is located vertically beneath an axis of curvature of the channel.

13. The arrangement as claimed in one of claims 1 to 12, characterized in that the movable portion of the mount is spaced apart from one end of the mount.

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14. The arrangement as claimed in one of claims 1 to 13, characterized in that the movable portion of the mount is located between one end of the mount and a clamp for the carrying cable.

15. Shoe for a carrying cable of a cableway, characterized in that an arrangement as claimed in one of claims 1 to 14 is arranged on the carrying-cable shoe.

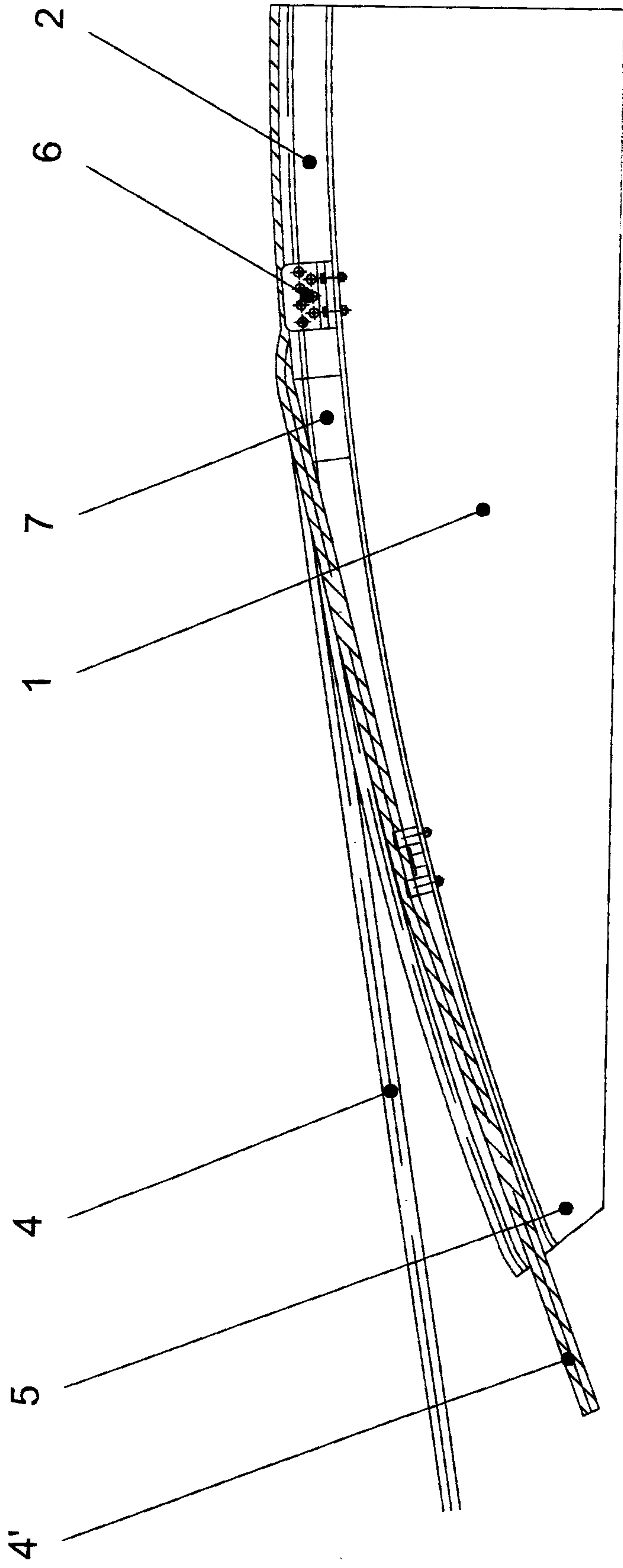


Figure 2

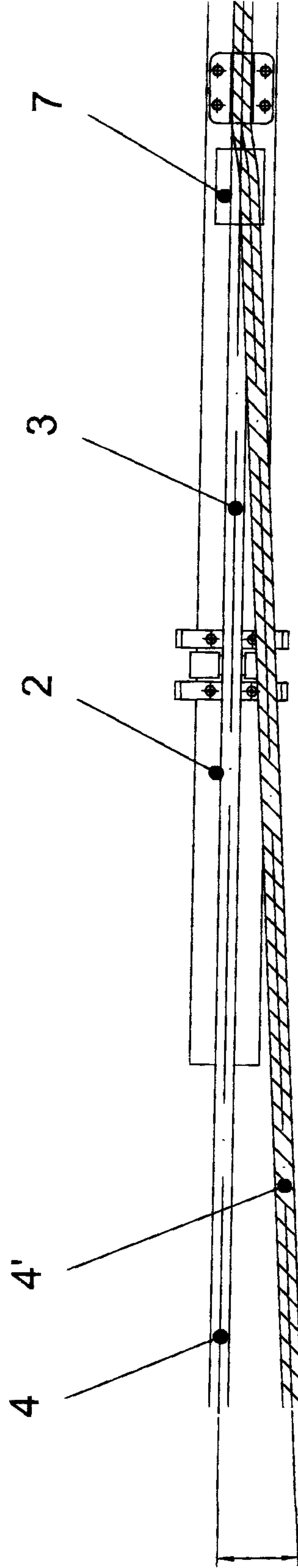


Figure 1

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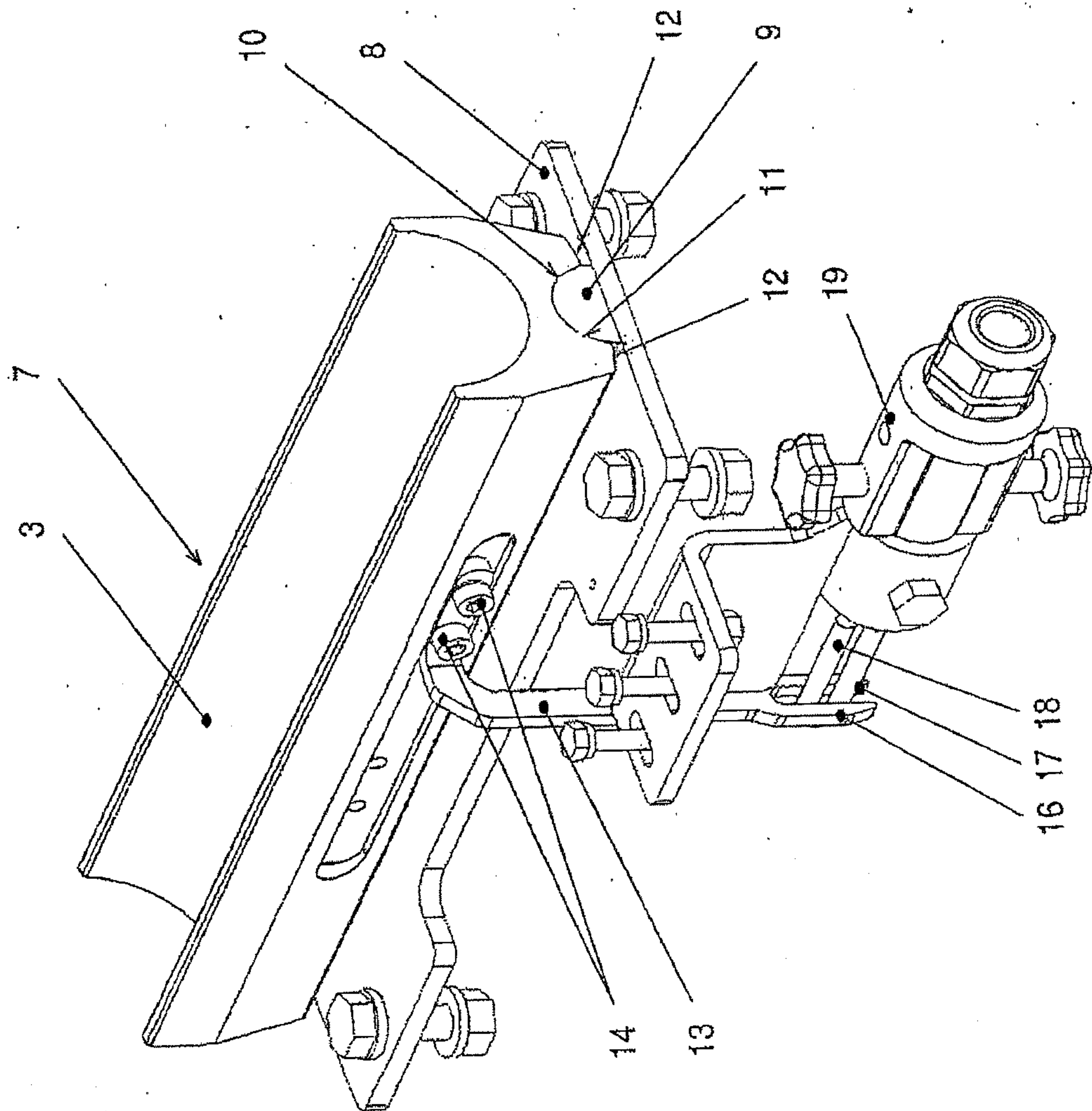


Figure 3

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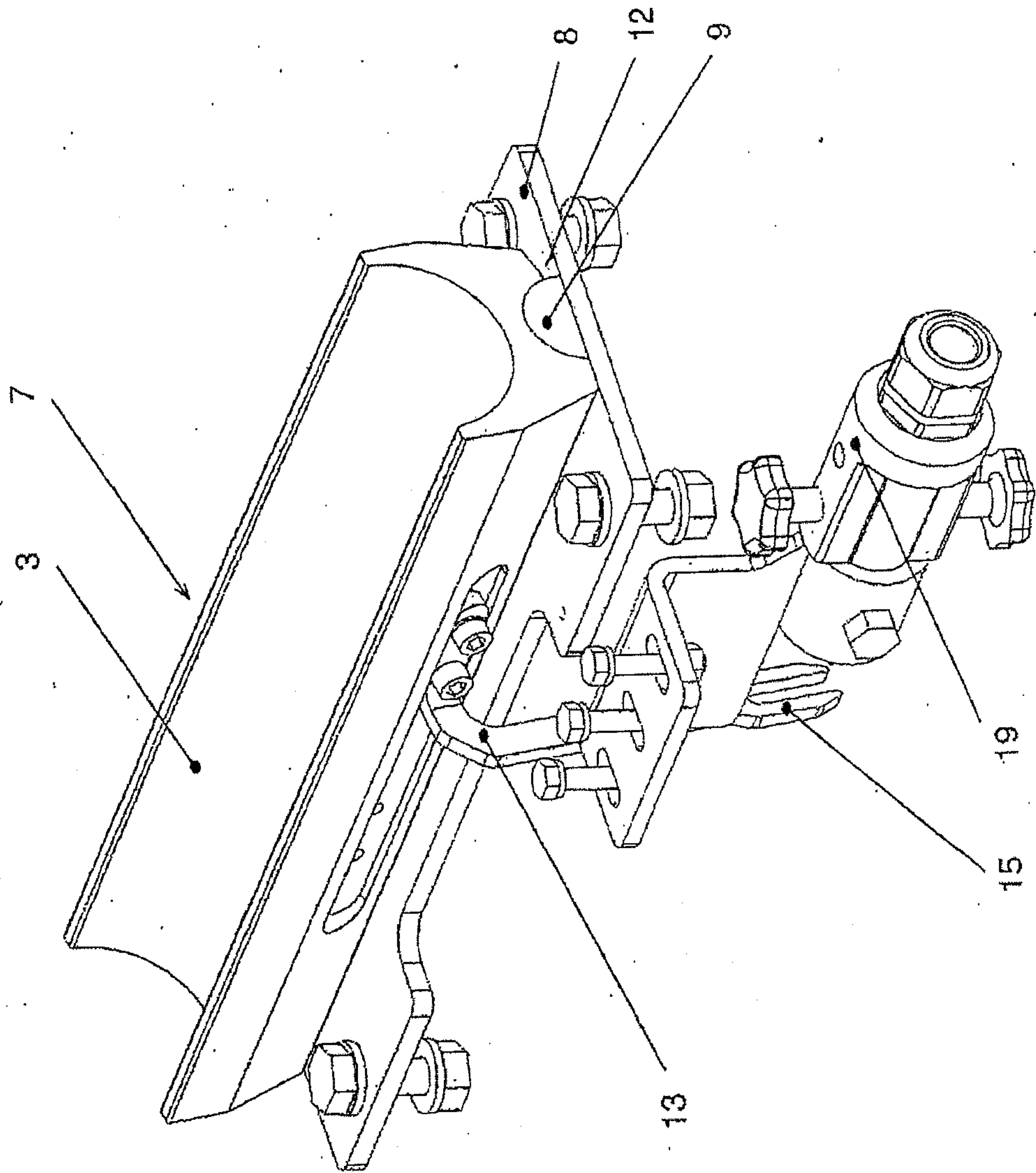


Figure 4

