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(54) **Device for sliding along cables**

(57) It is described a device (1) for the sliding on cables (10) comprising a base body (2), at least one connecting element (3) openable to couple the base body (2) to a load and/ or to at least one cable (10), and means (20, 21, 22) for the sliding on the cable.

Furthermore, the device comprises at least one hub (5) provided with at least one opening (6) passing through it in which the connecting element (3) is inserted, and the base body (2) is rotatable with respect to the hub (5) and with respect to the connecting element (3).

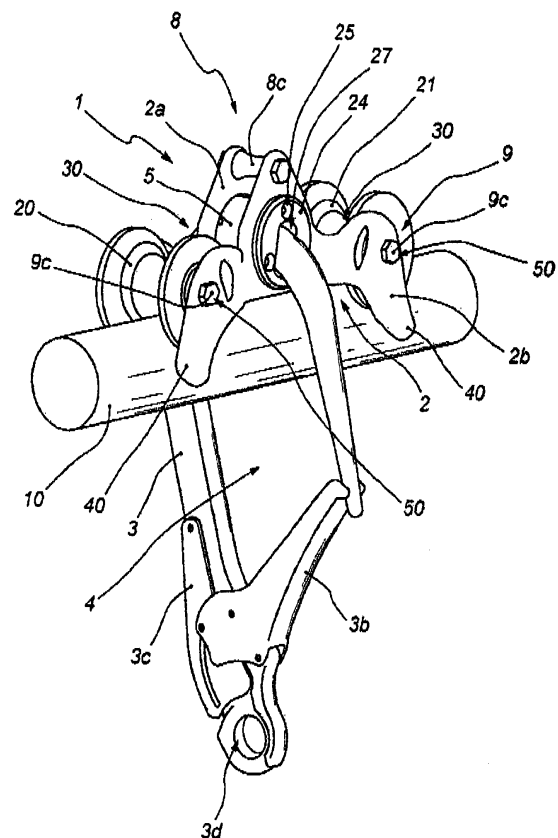


Fig. 1

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Description

[0001] The present invention relates to a device adapted to move and slide along load suspension cables. More in detail, such type of devices are commonly used for moving along suspension cables one or more people and/ or loads which are coupled to the device to allow the overhead displacement.

[0002] It has to be noted that here and in the following with the term cable it is intended single cable or multiple cables, twisted as well, made of metal material, or natural material as well, plastic and the like.

[0003] The sliding on cables is necessary for example to give aid to the occupants of ski facilities such as cableways, chair lifts, cable cars, and the like, in case of facility stop due to a failure or to adverse weather conditions.

[0004] In these cases, one or more rescuers reach an upper descent point (disposed upstream along the cable) with respect to the cable cars or the seats where are the passengers to be aided, and the device is constrained to the cable, generally by means of a karabiner.

[0005] The rescuer couples himself to the device karabiner by means of a harness, thus staying hanging, and slides along the cable by the device driving the movement by means of a safety rope which is secured to a fixed point, for example a cableway pylon.

[0006] Further, such devices can be used to transport loads, for example some material or tools in a place where overhead works along the suspension cable are intended to be done.

[0007] Another use is providing the sliding along a cable suspended and constrained between two fixed points, known as "Tyrolean traversing", which is done in adventure parks or during the hiking, climbing activities, etc.

[0008] The devices presently used commonly comprise an element connecting to the user or to the load to be moved along the cable, for example a hook shaped coupler or a karabiner, and one or more sliding means, generally one or more rested pulleys contacting the cable and which allow the rolling slide thereupon.

[0009] The device described in US6810818, in the name of Petzl, comprises a main body formed by an U-shaped plate to which two pulleys, which are adapted to slide while rolling along the cable, are rotatably constrained to. To the main body a karabiner openable by means of a couple of openings realized on two opposite flanges of the U-shaped plate, can be constrained.

[0010] The karabiner allows to constrain the user to the device, by means of a belt constrained in its turn to a user harness or belt, who thus becomes hanging from the cable by means of the device. Further, the karabiner allows to constrain the device to the cable, such that an accidental and undesired disengagement between the device and the cable during the use is avoided. In fact, the constraint point of the karabiner to the main plate of the device is higher than the contact point of the pulleys with the cable, so that the latter can be inserted inside

the karabiner when the device is placed in an operative position on the cable and the pulleys are placed in contact therewith.

[0011] In the device according to US6810818, despite being possible to avoid the accidental disengagement between the device and the cable, the karabiner is constrained to the device body so to result fixed with respect thereto.

[0012] In particular, in US6810818 it is disclosed that the karabiner mounting is done by interposing, inside an opening of the device body, an element of plastic material which makes the karabiner integral with the main plate of the device.

[0013] Therefore the karabiner is prevented from rotating with respect to the device body adversely affecting its use efficiency. In fact, during the sliding on tilted cables, the karabiner would tend to arrange along the vertical line due to the weight force of the load constrained thereto. Meanwhile, the pulleys constrained to the device body will tend, on the contrary, to "follow" the cable tilt. The stiff constraint between the karabiner and the device body prevents the respective movement therebetween, determining the rising of undesired inner stresses inside the device which can cause breakings, or failures.

[0014] The device described in the document DE102007028119 comprises a main body provided with a through opening for constraining a karabiner by the interposition of a bushing. In fact, inside the through opening a bushing made of plastic material is inserted and is blocked so as to result fixed with respect to the device body. In its turn, the karabiner is mounted in a through opening of the bushing made of plastic material. Despite the karabiner is movable inside the bushing, the allowed rotation movement is very limited and does not allow an effective fitting to the cable tilt during the sliding thereon.

[0015] In fact, in the device according to DE102007028119, the bushing made of plastic material is fixed with respect to the device body adversely affecting its use efficiency. In fact, the stiff constraint between the bushing made of plastic material and the device body prevents the relative movement therebetween, thereby also limiting the karabiner movement with respect to the device body, besides determining the rising of undesired inner stresses in the device which can cause breakings, or failures.

[0016] Object of the present invention is to solve the above briefly discussed problems and to provide a device for the sliding on cables that allows the fitting to the cable tilt by avoiding risks of karabiner and device breakings.

[0017] Further object of the present invention is to provide a device which is simple and easy to realize besides being one-hand maneuverable, highly resistant, safe and effective during the sliding on cables, in particular on tilted cables.

[0018] These and other objects are obtained by a device for the sliding on cables, according to the present invention, comprising a base body, at least one connect-

ing element openable to couple the base body to a load and/or to at least one cable, and means for the sliding on the cable.

[0019] Note that according to possible embodiments the sliding means are of rolling or wiping type, and preferably comprise at least one pulley rotatably constrained to the base body.

[0020] Furthermore, the device comprises at least one hub provided with at least one opening passing through it in which the connecting element is inserted, and the base body is rotatable with respect to the hub and with respect to the connecting element. The through opening the hub is provided with, allows the insertion and the passing of the connecting element through it, such that at least part of the connecting element is enclosed by the hub.

[0021] According to a preferred embodiment, the hub comprises a metal cylindrical body provided with a through opening along its longitudinal axis and the openable connecting element comprises a karabiner provided with a main body and at least one movable portion constrained to the main body.

[0022] Advantageously, the presence of a hub having a through opening inside thereof allows to easily insert and extract the connecting element to the device, and at the same time allows to rotatably constrain the device base body with respect to the karabiner.

[0023] In fact, the device base body is therefore rotatable with respect to the hub, and then with respect to the connecting element inserted inside it.

[0024] Advantageously, with respect to the devices known in the art and in particular with respect to the type described in DE102007028119, the device body rotation with respect to the hub in which the connecting element is inserted, allows to increase the fitting to the cable tilt, besides making the device safer by avoiding the generation of stresses inside thereof. It has to be kept in mind that the device base body is rotatable with respect to the connecting element.

[0025] In particular, it has to be noted that according to an embodiment the device base body is rotatable with respect to the connecting element independently from the device base body rotation with respect to the hub.

[0026] Furthermore, as it will be better described in the following, according to a possible embodiment, the connecting element is fixed with respect to the hub, therefore the base body rotation with respect to these two elements is the same. More in detail, according to a possible embodiment, the connecting element is not rotatable with respect to the hub, therefore the base body rotation with respect to these two elements is the same.

[0027] According to a possible embodiment the hub and the connecting element are made in one-piece.

[0028] During the sliding along the cable, the karabiner, inserted inside the hub, would freely rotate with respect to the device body remaining in a substantially vertical direction, under the effect of the weight force of the load constrained thereto. Furthermore, the hub presence

contributes to strengthen the device, in fact, the connecting element will not rotate directly contacting the device body but by the hub interposition.

[0029] According to an aspect of the present invention, the device base body comprises at least one seat for accommodating at least partially the hub so as to allow the rotation of the base body with respect to the hub and the connecting element, and vice versa. It has to be noted that the at least one seat of the base body for accommodating at least partially the hub can allow the independent rotation of the base body with respect to the hub and of the base body with respect to the connecting element. Obviously, in the embodiment wherein the connecting element is fixed with respect to the hub, or it is made in one-piece with it, the base body rotation with respect to these two elements is the same.

[0030] According to a possible embodiment the device body comprises at least one flange on which the seat is provided for rotatably accommodating at least partially the hub, and thus such that the at least one flange is rotatable with respect to the hub and with respect to the connecting element.

[0031] In the preferred embodiment that will be described in the following referring to the accompanying figures, the device comprises two flanges integrally constrained one to another and provided with a pair of seats disposed in a facing position, formed by two openings passing through the side surfaces of the two flanges, which allow to accommodate at least partially the hub such that the two flanges are freely rotatable with respect to it.

[0032] According to a possible embodiment, the device comprises, as well, fastening means of the connecting element, and in particular of the hub to the karabiner.

This way the karabiner will be fastened to the hub and will therefore freely rotate, together with it, with respect to the device base body, in particular during the sliding on tilted cables. Note that in the embodiment wherein the base body comprises one or more flanges, the sliding means and in particular one or more pulleys are rotatably constrained to the one or more device flanges. In the embodiment wherein the device base body comprises two constrained flanges spaced one from another, at least one pulley, preferably two or more, are rotatably constrained to the two flanges on a rotation axis placed between the two flanges.

[0033] It has to be noted also that according to a possible embodiment, the sliding means of the device are arranged on the hub too, and preferably one additional pulley is installed on the hub so as to be rotatable with respect to the hub itself.

[0034] Advantageously, the presence of a pulley rotatably constrained to the hub allows to further stabilize the device during the sliding along the cable.

[0035] These and other advantages will be evident from the following description and the figures in attachment, herein reported for illustrative and not limitative purposes, wherein:

- figure 1 shows a perspective view of the device for the sliding on cables according to the present invention provided with two pulleys;
- figure 2 shows an exploded view of the device components according to figure 1;
- figure 3 shows a side view of the device according to figure 1 during the use on a tilted cable;
- figure 4 shows a perspective view of a further possible embodiment of the device for the sliding on cables according to the present invention provided with three pulleys;
- figure 5 is a front view, according to the cable section, of the device according to figure 4;
- figure 6 is a sectional view according to a plane passing through the axis of the device hub according to figure 4.

[0036] Referring to the accompanying figures 1 - 6, the device 1 for the sliding on cables 10, according to the present invention, comprises a base body 2 to which sliding means 20, 21 and 22 on the cable 10 are constrained and at least one connecting element 3 openable for the coupling of the device base body to a load and/ or at least one cable 10.

[0037] As said above, the general term "cable" is used herein to describe cables having different individual characteristics, or constituted by several twisted cables and made of different materials.

[0038] Preferably the device according to the present invention is used for the sliding on overhead metal cables of cableways, chairlifts, rope-ways, and the like. Despite this, obviously, the present device can find other applications in different sectors in which there is the need to handle a load, and therefore one or more people, or stocks, tools and the like, along one or more sustaining cables.

[0039] As it will be described more in detail in the following, the sliding means 20, 21 and 22 along the cable, according to some possible embodiments, can be both of the rolling and wiping type.

[0040] Preferably the device 1 comprises rollingly sliding means, that is to say means which are in contact with the cable and, due to the rolling friction, allow the sliding thereon. Preferably such rollingly sliding means comprise one or more pulleys 20, 21, or similar means, rotatably constrained to the body 2 of the device.

[0041] The rotatable type constraint to the device allows the pulleys to roll on the cable and thus to allow the sliding of the device along it. Furthermore, the outer surface of the pulleys which is intended to contact the cable can be circumferentially U-shaped so as to fit to the cable surface by forming a recessed portion which improves the contact and the restraint of the cable.

[0042] Alternatively, the sliding means can be stiffly constrained to the device, or formed with it in one-piece, so as to form fixed elements able to wipe on the cable like sliding blocks.

[0043] As can be seen in the accompanying figures,

and particularly in the exploded view of figure 2, the device 1 further comprises at least one hub 5 provided with at least one opening 6 passing through it, and wherein the connecting element 3 is inserted.

[0044] As it will be described more in detail in the following, the base body 2 of the device is rotatable with respect to the hub 5 and with respect to the connecting element 3, and during the sliding, the connecting element 3, due to the weight force acting on it by virtue of the load constrained to it, maintains a substantially vertical direction. In the case the cable 10 is tilted, as shown in figure 3, or has different tilt along its extension, the rotation of the hub 5 with respect to the base body 2 of the device allows the latter to fit to the cable tilt without the formation of undesired stresses. More in detail, the sliding means will follow the cable tilt as well as the device base body. The connecting element 3 could rather maintain the vertical direction given by the weight force thanks to the free rotation of the hub 5, inside which the connecting element 3 is inserted, with respect to the base body 2. It has to be noted that the base body 2 is rotatable with respect to the connecting element 3 and, as it will be better described in the following, according to a possible embodiment the connecting element 3 is fastened to the hub 5, or it is realized in one-piece with it. Obviously, in this case, the rotation of the base body 2 with respect to the hub 5 and the connecting element 3 is the same.

[0045] The connecting element 3 allows to constrain the device to the overhead cable 10 thus avoiding its disengagement during the use, and at the same time it allows to constrain the user to the device.

[0046] In particular, as shown in figures, the connecting element 3 is inserted in the hub 5, and in particular through the opening 6 passing through it, such that at least a part of the connecting element 3 becomes enclosed by the hub 5.

[0047] In the embodiment illustrated in figures, the hub 5 comprises a cylindrical body provided with a through opening 6 along its own longitudinal axis, therefore forming a cylindrical body provided with an axial recess.

[0048] As better visible in figure 6 which is a sectional view according to a plane passing through the axis of the cylindrical body of the hub 5, the through opening 6 which connects the two opposite base surfaces of the cylindrical body forms an inner recess which, in the illustrated embodiment, is not perfectly cylindrical but tapered towards the center portion of the cylindrical body.

[0049] It has to be noted that the hub 5, as well as the through opening 6, can be realized according to shapes different with respect to the one herein described, providing that the passage of at least part of the connecting element through it is allowed. Advantageously, the presence of a hub 5 inside which the connecting element is passed through, allows to strengthen the device, besides ensuring the free rotation of the base body 2 of the device with respect to the hub 5 during the use.

[0050] To allow the insertion inside the hub 5, in addition to the passage of the cable 10 and/or of the harness

or belt the load to be handled is constrained to, the connecting element 3 is openable.

[0051] In fact, the connecting element is provided with a central seat 4 inside which the cable 10 slides during the use.

[0052] In other words, the connecting element is movable between a closing position and an opening position in which it takes respectively an open arrangement suitable for the insertion and the extraction of the connecting element 3 inside the hub 5, and of the cable 10 inside the connecting element itself. The connecting element in a closed position is passing through the hub 5 and can not be extracted therefrom, see the accompanying figures.

[0053] In the same way, as depicted in the accompanying figures, in a closed position the cable 10 is enclosed by the connecting element in the seat 4 and it can not be extracted therefrom.

[0054] In the embodiments illustrated in the figures, the connecting element 3 comprises a karabiner provided with a main body 3a and at least one movable portion 3b constrained to the main body 2.

[0055] The portion 3b is manually movable between an opening position and a closing position for the insertion of said karabiner inside the hub and, also, for the passage of the cable 10 inside the seat 4.

[0056] Obviously, other types of connecting elements can be employed, such as for example openable metal rings, elements provided with two separable half-parts, and the like.

[0057] The karabiner 3 shown in the accompanying figures further comprises a safety device adapted to prevent the undesired opening of the karabiner following the accidental displacement of the movable portion 3b. More in detail, in such type of karabiners, known in the art as "double lever" karabiners, there is a safety lever 3c which prevents the displacement of the movable portion 3b which can be carried out only also if the safety lever 3c is actuated concurrently.

[0058] Further, the karabiner 3 shown in figures comprises a seat, or eyelet 3d, which allows the constraint, following the passage through it, of a belt or directly of the user's harness. As said, alternatively, the load and/or harness belt of the user can be mounted inside the seat 4 of the karabiner 3 by the opening of the movable portion 3b, for example analogously to what occurs for the insertion/ extraction of the cable 10 inside thereof.

[0059] The device comprises, as well, means for fastening the connecting element 2, and in particular the hub 5, to the karabiner.

[0060] In the embodiment shown in figures such means comprise one or more grub screws (not shown) which are passed through proper corresponding seats 12 obtained on the side surface of the hub 5.

[0061] The fastening means are such to lock the karabiner with respect to the hub, more particularly, they prevent the rotation and/ or the translation of the karabiner 3 with respect to the hub 5.

[0062] In the shown example, the hub 5 is monolithic, but it could also be made of two or more longitudinal parts, for example rings, or transverses, for example half shells. Obviously other embodiments of the fastening means can be used, both of removable type, such as for example pins, screws, etc., or not removable such as for example the use of welding, adhesives, etc.

[0063] It has to be noted as well that the fastening can occur by interference of parts between the connecting element 3 and the hub 5.

[0064] In a further embodiment said hub 5 can be monolithically integrated to the connecting element 3. In other words, the connecting element 3 and the hub 5 are realized in one-piece. Obviously, during the use the base body 2 of the device, and in particular the flanges 2a and 2b can rotate around the hub 5. In general, the through opening 6 of the hub 5 and the connecting element are dimensioned and shaped to ensure the passage thereof across the through opening 6 of the hub 5. However, according to possible embodiments, at least part of the connecting element 3 or the opening 6 of the hub 5 can be dimensioned such that once the insertion inside thereof has been carried out, an interference of parts is created such to fasten the two elements avoiding the relative rotation and/ or translation movement.

[0065] Advantageously, being the connecting element 3 fastened to the hub 5, during the sliding on tilted cables, the connecting element will remain arranged along the vertical and the base body 2 of the device will rotate with respect to the hub 5 fitting to the tilt of the cable 10 as a consequence of the contact of the sliding means with the cable itself (see figure 3 in this regard).

[0066] By doing so, the connecting element is fastened to the hub 5 and the base body 2 of the device is rotatable with respect to the hub 5 itself. For this purpose, the base body 2 of the device comprises at least one seat 7 for accommodating at least partially the hub 5, allowing the rotation of the base body 2 with respect to the hub 5.

[0067] According to possible embodiments, the base body 2 of the device comprises at least one flange 2a, 2b that is rotatable with respect to the hub 5. The one or more seats 7 for accommodating at least partially the hub 5 are arranged on the at least one flange of the device body. In the embodiment shown in figures the base body 2 of the device comprises two constrained flanges 2a, 2b spaced one from another.

[0068] Each flange is provided with a seat 7 for accommodating at least part of the hub 5, more in detail the seats 7 are shaped as holes passing through the side surfaces of the flanges 2a and 2b and they have a complementary shape with respect to the outer surface of the hub 5 that, as said, preferably comprises a cylindrical body.

[0069] The dimensions of the seats 7 are such to allow the housing of at least part of the hub 5 and at the same time such to allow the rotation motion of the hub 5 with respect to the flanges 2a, 2b, and vice versa.

[0070] In the shown embodiment the flanges 2a, 2b

have at least one additional portion 40 adapted to a better side containment of the rope 10.

[0071] It has also to be noted that the device according to the present invention comprises two side plates 23, 24 which are constrained at the ends of the hub 5. More in detail the plates are constrained at the base surfaces of the cylindrical body of the hub 5 and they are installed such to be outside of the flanges 2a and 2b.

[0072] The plates 23, 24 are constrained for example by threaded means, that is to say three screws which, passing through proper seats 25 of the plates, reach the surface of the hub 5 where they are constrained in as much corresponding seats 26.

[0073] Further, the flanges are provided with an opening 27 for the connecting element 3 passes through them.

[0074] Note that the plates 23, 24 cooperate containing the two flanges and preventing their removal.

[0075] In this regard, note that the two flanges 2a, 2b are also constrained spaced one from another such to result, preferentially, substantially parallel, by proper constraining means 8 and 9.

[0076] In the shown embodiment, the constraining means 8 and 9 of the flanges 2a, 2b comprise threaded elements, such as for example a nut 8a and/ or 9b and a screw 8b and/ or 9c which cooperate with a spacer member 8c and/ or 9a interposed between the two flanges.

[0077] The spacer member 8c further has the connecting function for at least one further safety device such as for example a descent device (for example quick link, karabiner, rope, etc.). Note that such a spacer member 8c can therefore be a connecting point which, differently from the existing sliding devices, is in a portion of the body 2 above the cable 10. Such a connecting point 8c can be integral to the body 2 and in particular to the flanges 2a and 2b.

[0078] Obviously other constraining means between the two flanges can be used without departing from the protection scope of the present invention.

[0079] As said, the sliding means comprise at least one pulley 20, 21 rotatably constrained to the base body 2.

[0080] In the embodiment shown in figures, the device comprises two pulleys 20, 21 which are rotatably constrained to the two flanges 2a, 2b on at least one rotation axis 50, which in its turn is constrained between the two flanges. In the embodiment shown in figures, the rotation axis 50 of the pulleys 20 and 21 corresponds to the constraining means 9 of the two flanges 2a, 2b. More in detail, the rotation axes of the pulleys 20, 21 are realized by the rigid element 9a which is interposed between the flanges 2a, 2b and which is constrained thereto, for example by the nut 9b and the screw 9c.

[0081] The hub 5 is arranged in center position between the two pulleys 20, 21, in fact the seats 7 in which the hub 5 is partially accommodated are arranged in a substantially center position on the two flanges 2a and 2b.

[0082] Furthermore, it has to be noted that the position of the seats 7 and the rotation axes 50 of the pulleys 20,

21 is such that once the device is mounted on the cable 10, the hub 5 is spaced from the cable itself.

[0083] As visible in figures, the axis of the hub 5 is preferentially oriented perpendicularly with respect to the sliding direction along the cable 10, and therefore in parallel with respect to the rotation axis 50 of the pulleys 20, 21.

[0084] It has to be noted also that, according to a possible embodiment shown in figures 4 - 6, the sliding means of the device are arranged on the hub 5 too. More in detail, as visible in figures 4 - 6, a pulley 22 is mounted on the hub 5 such to result rotatable with respect to the hub itself.

[0085] As easily observable by the comparison of the accompanying figures, the two possible embodiments respectively shown in figures 1-3 and 4-6 are the same except for the sliding means, and in particular the presence of the pulley 22, mounted on the hub 5 as visible in the figures 4 - 6.

[0086] Advantageously, the presence of the third pulley 22 allows to further stabilize the device during the sliding along the cable 10. It has to be noted that the pulley 22 can be dimensioned such to result in contact with the cable 10, or spaced therefrom (as in the sectional view of figure 6), so that to become operative upon the contact with the cable 10 only upon a device overload.

[0087] Another characteristic of the device according to the present invention is that the base body 2, and in particular one or more flanges 2a, 2b which compose it, are shaped so to present a seat 30 in their upper part for the resting of a further karabiner, or other safety elements, which are dragged during the sliding avoiding the contact and the wiping thereof with the cable and/ or with the sliding means 20, 21 on the cable 10.

Claims

1. Device (1) for the sliding along a cable (10) comprising a base body (2), at least one connecting element (3) openable to couple said base body of the device to a load and/ or to at least one cable (10), sliding means (20, 21, 22) on said cable, **characterized by** comprising at least one hub (5) comprising at least one opening (6) passing through it in which said connecting element (3) is inserted and in that said base body (2) is rotatable with respect to said hub (5) and with respect to said connecting element (3).
2. Device according to claim 1, wherein said hub (5) comprises a cylindrical body provided with a through opening (6) along the longitudinal axis of said cylindrical body, said openable connecting element (3) being inserted in said at least one through opening (6).
3. Device according to claim 1 or 2, wherein at least part of said connecting element (3) is enclosed by

said hub (5), when said connecting element is inserted in said through opening (6) of said hub (5).

4. Device according to any one of the preceding claims, wherein said connecting element (3) comprises a karabiner provided with a main body (3a) and at least one mobile portion (3b) constrained to said main body (3a). 5
5. Device according to any one of the preceding claims, **characterized in that** said base body comprises at least one seat (7) to accommodate at least partially said hub (5) allowing the rotation of said base body (2) with respect to said hub (5) and with respect to said connecting element (3). 10 15
6. Device according to any one of the preceding claims, **characterized in that** said base body (2) comprises at least one flange (2a, 2b) rotatable with respect to said hub (5) and with respect to said connecting element (3). 20
7. Device according to claims 5 and 6, wherein said at least one seat (7) is arranged on said at least one flange (2a, 2b). 25
8. Device according to any one of the preceding claims, **characterized in that** said sliding means comprise at least one pulley (20, 21) rotatably constrained to said base body (2). 30
9. Device according to any one of the preceding claims, wherein said sliding means comprise at least one pulley (22) mounted on said hub (5) and rotatable with respect to said hub. 35
10. Device according to claim 6, wherein said base body comprises two flanges (2a, 2b) spaced one another.
11. Device according to claim 10 wherein said flanges (2a, 2b) have at least one additional portion (40) adapted to improve the containment of said cable (10). 40
12. Device according to claims 8 and 10 wherein said at least one pulley (20, 21) is rotatably constrained to said two flanges (2a, 2b) on at least one rotation axis (50) constrained between said two flanges. 45
13. Device according to any one of the preceding claims, **characterized by** comprising fastening means (12) of said hub (5) to said connecting element (3). 50
14. Device according to any one of the claims 1 to 12, wherein said hub (5) is made in one-piece with said connecting element (3). 55
15. Device according to any one of the preceding claims,

characterized by comprising a connecting point (8c).

16. Device according to claim 15 wherein said connecting point (8c) is in a portion above said cable (10).
17. Use of the device (1) according to any one of the preceding claims for sliding on overhead cables of cableways.

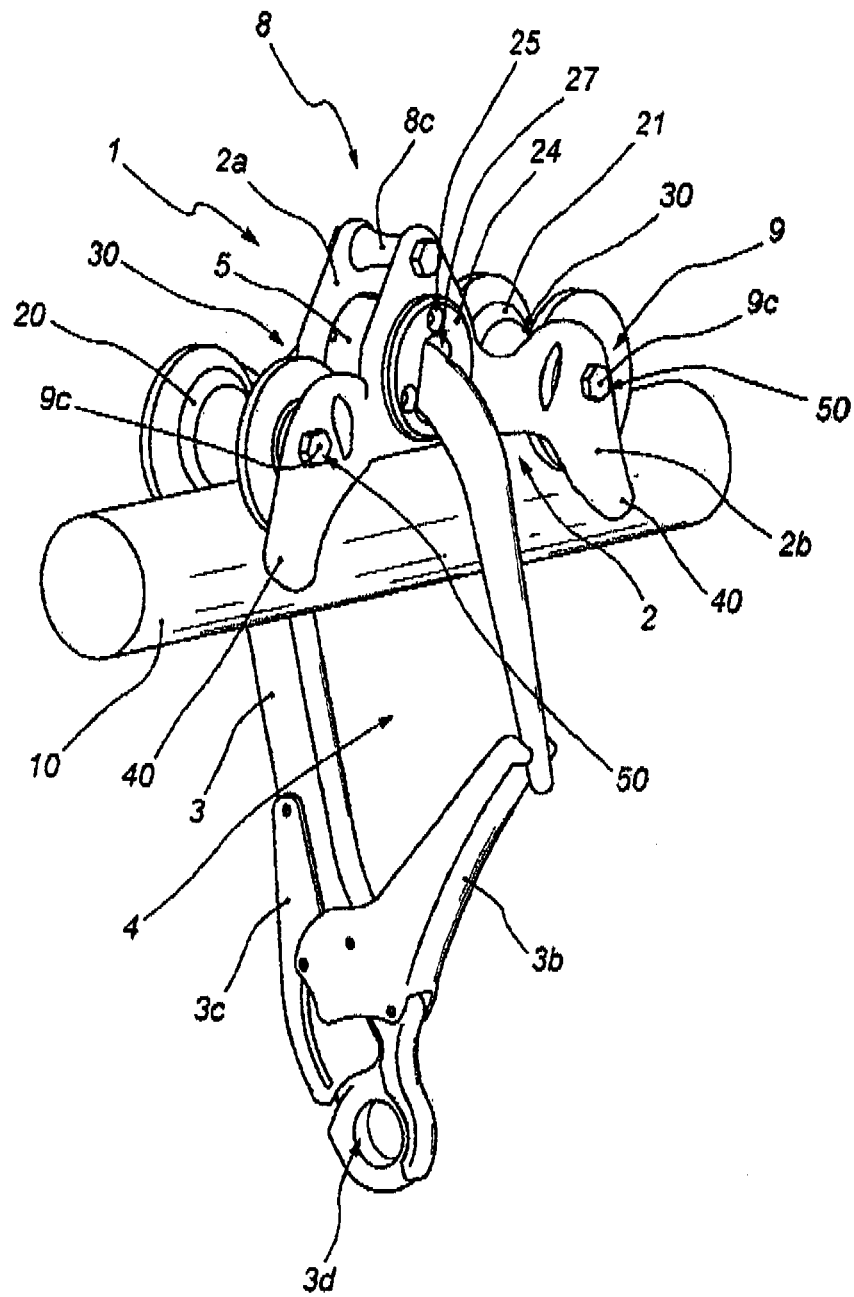


Fig. 1

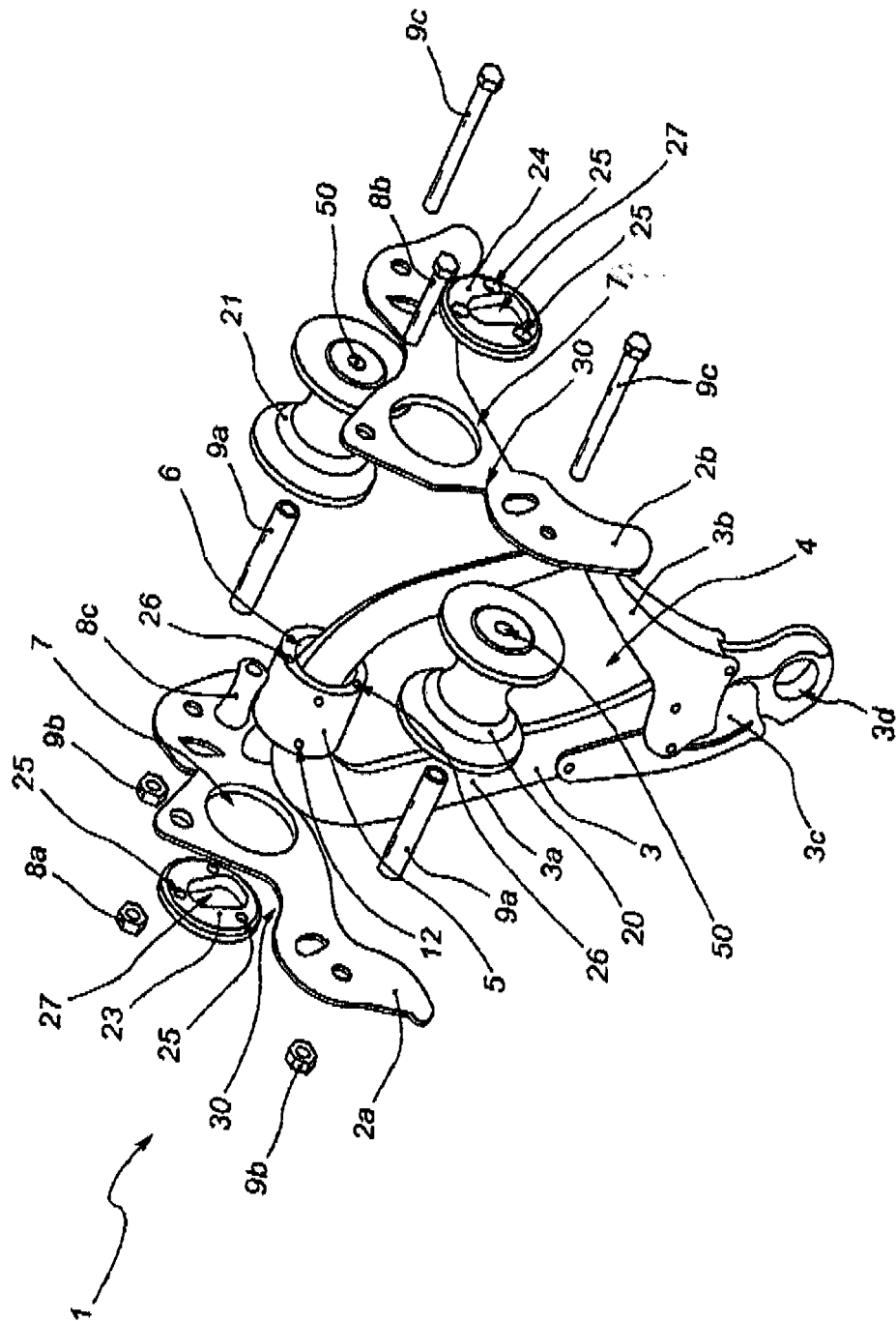


Fig. 2

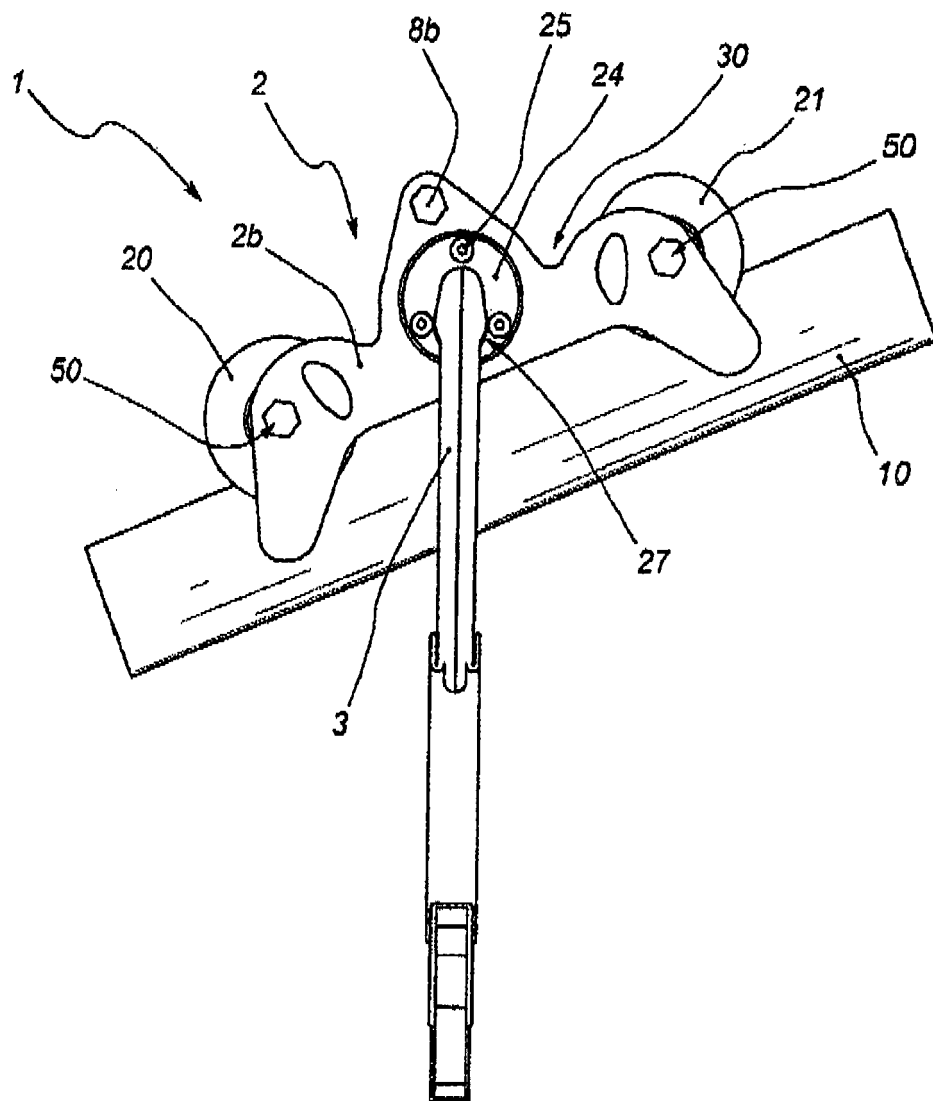


Fig. 3

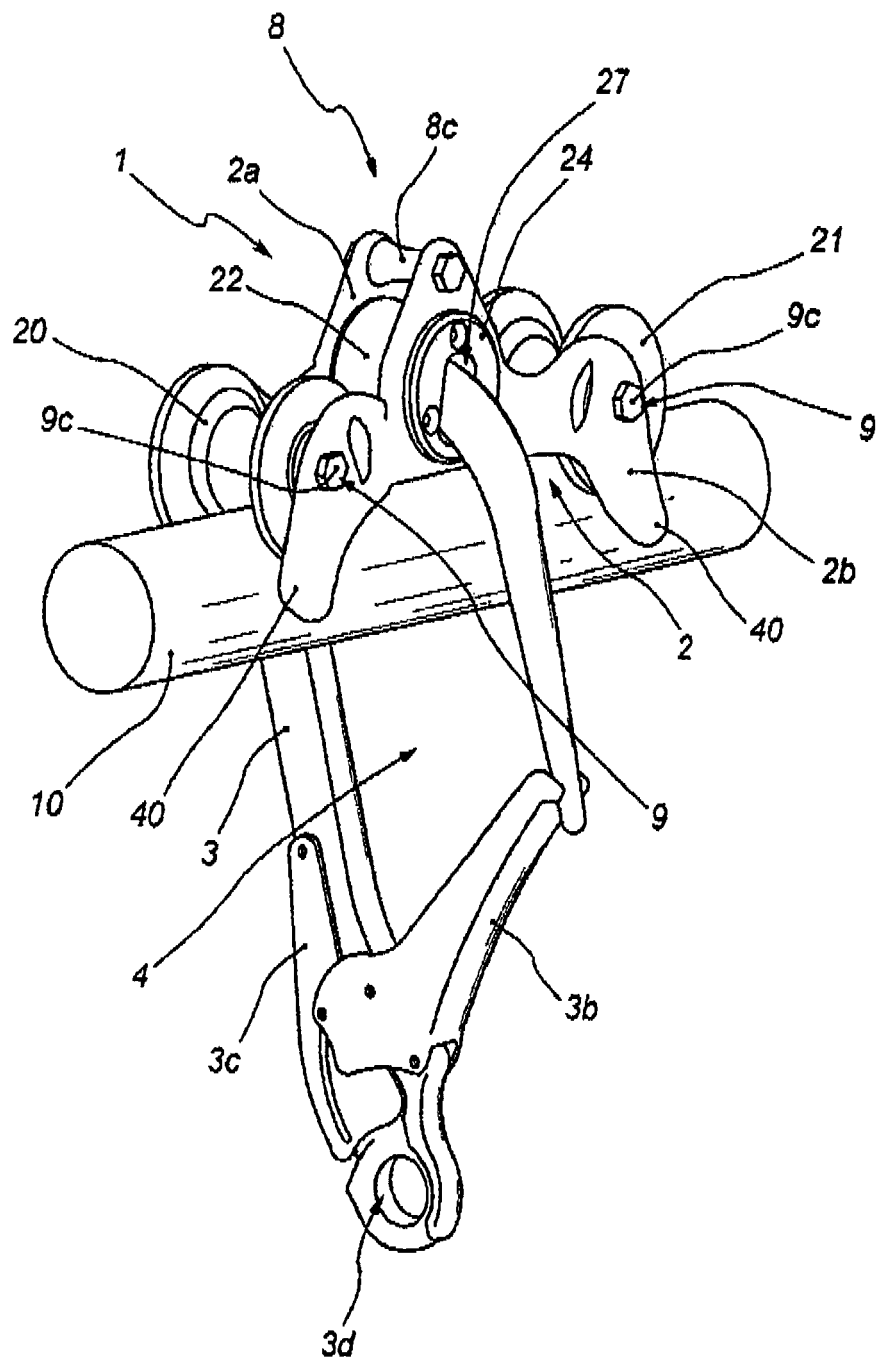


Fig. 4

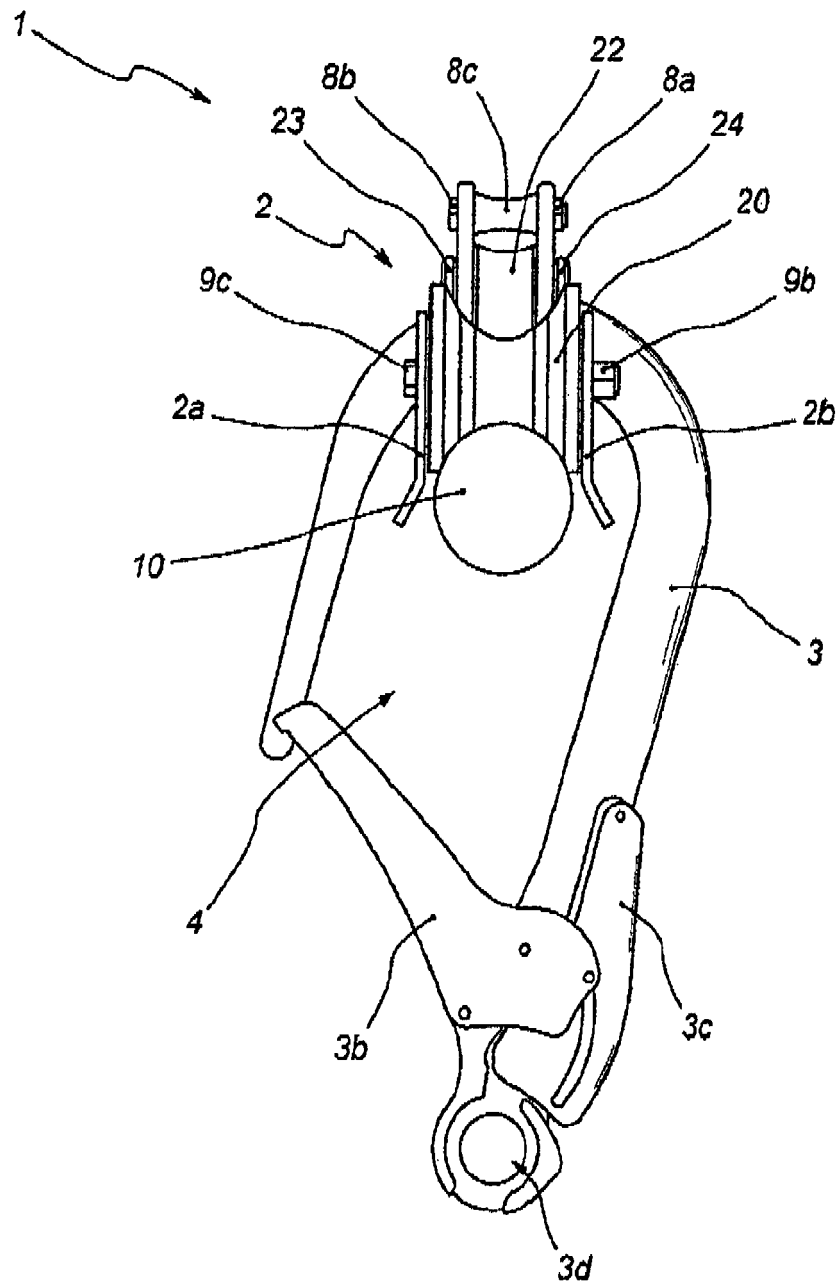


Fig. 5

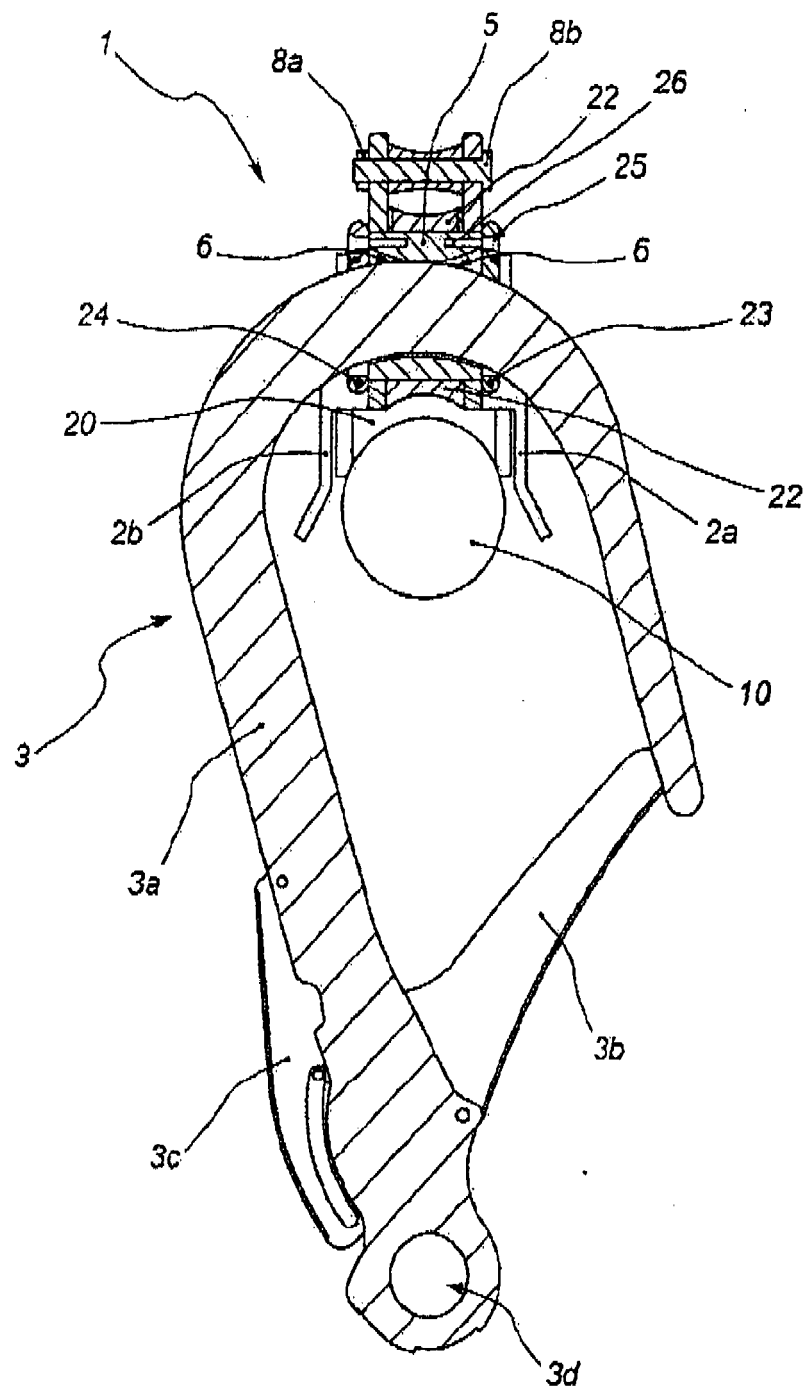


Fig. 6



EUROPEAN SEARCH REPORT

Application Number
EP 13 00 0314

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 9 April 2013	Examiner Chlosta, Peter
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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09-04-2013

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