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(54) Safety anchor for climbing

(57) The invention relates to a safety anchor for climbing, formed by two pairs of swiveling cams (1 and 1') assembled in a support (5) through shafts (10), a rope being secured to which support for the suspension of the climber. The anchor further includes tighteners (7) associated to a manual pull rod enabling the cams to be folded. The shafts (10) for swiveling the cams are assembled in elongated and oblique holes (11) provided in the support.

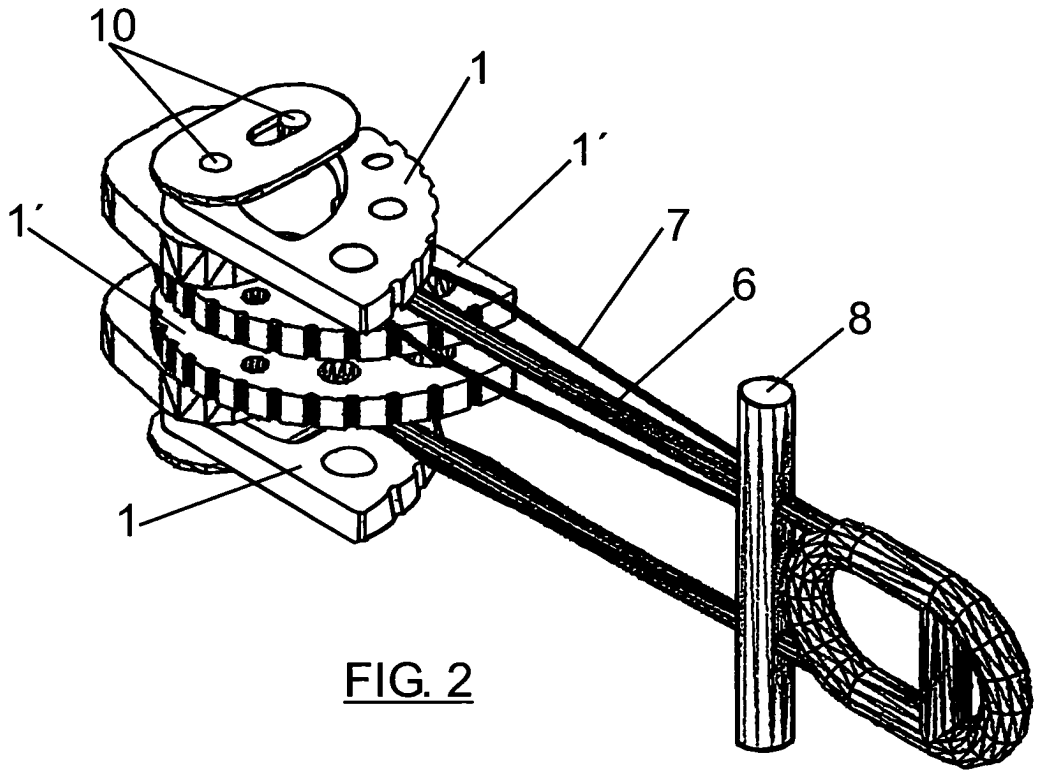

FIG. 2

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Description

Object of the Invention

[0001] The present invention relates to a safety anchor for climbing, specifically provided for achieving an optimal binding of the anchor which is arranged on a crevice of the wall or rock which is being climbed.

[0002] Therefore, an object of the invention is to provide an anchor of the type formed by two pairs of cams or eccentrics, which can swivel and which in a rest position are introduced in a crevice of a wall, so that by means of pulling a pull rod provided in the suspension rope such pairs of cams can be swiveled outwards and pressed against the walls of the crevice, such that according to the invention, in addition to the swiveling movement of the cams for their binding on the crevice, a transverse movement thereof occurs which increases the binding of the anchor on the crevice.

Background of the Invention

[0003] There is a type of safety anchor used in high mountain climbing which is formed by two pairs of eccentrics assembled such that they can swivel with respect to respective fixed shafts, and associated to a support to which the corresponding rope that the climber is tied to is linked, further having tighteners joined at the end by a pull rod and connected to the two cams, such that the pulling of the pull rod entails the swiveling of the cams towards a closing position for the purpose of introducing the anchor in a crevice of the face or wall which is being climbed, such that based on internal springs and when the pull rod is released, the pairs of cams tend to open and press against the walls of the crevice, thus forming the corresponding binding of the anchor to prevent the possible fall of the climber suspended from the rope linked to the anchor.

[0004] Said anchors usually work in a satisfactory manner, although occasionally and due to the existence of moisture, mud, moss, considerably polished crevice walls etc, they may be certain tendency for the anchor to slip on the rock, i.e. the initial friction considerably decreases, such that the sudden pulling of the anchor, for example the anchor which supports during a fall, can be insufficient to make the pairs of cams rotate and the friction against the rock increase so as to stop the fall.

Description of the Invention

[0005] The proposed anchor, based on two pairs of rotating or swiveling cams, the support to which the rope that the climber is tied to is fixed, and the two shafts of the ropes of the cams, has the peculiarity that the mentioned support has two elongated and oblique holes in which the shafts of the cams are precisely positioned, such that when the mentioned support is pulled downwards, and precisely by virtue of the elongated configuration and inclination of the holes of the shafts, there is a transverse movement of the mentioned shafts of the cams parallel to the swiveling of such cams, two stresses being generated on the crevice, a conventional and classic stress due to the rotation of the cams and another stress corresponding to a transverse movement of such cams with respect to the crevice, which movement is considerably perpendicular to the walls of the mentioned crevice, therefore these two pressing stresses of the cams on the crevice prevent any type of slipping of the anchor, the effectiveness of the binding being thus considerably increased.

[0006] Springs have been provided in the elongated holes of the support in which the shafts work in, which springs make the shafts be separate at rest, for the purpose that they are always separate so as to act in the case of a pull, because when the latter occurs, said shafts tend to move closer together due to the orientation and configuration of the holes in which they are placed, tending to separate the cams in addition to the separation caused as is conventional, i.e. by means of springs tending to make the cams separate and press against the walls of the crevice in which it is applied.

Description of the Drawings

[0007] To complement the description which is being made and for the purpose of aiding in better understanding the features of the invention according to a preferred practical embodiment thereof, a set of drawings is attached as an integral part of said description, in which the following has been shown with an illustrative and non-limiting character:

Figure 1 shows a perspective view of the support of the anchor, in which the cams are assembled.

Figure 2 shows a perspective view of the anchor of the invention, in the closing position of the cams, to introduce said anchor in a crevice.

Figure 3 shows a front view of the safety anchor object of the invention in the position of Figure 2.

Figure 4 shows another front view of the same anchor, in this case with cams released so that they swivel outwards and press against the walls of the crevice.

Figure 5 shows a view like that of the previous figure, in which, in addition to the swiveling of the cams according to Figure 2, there is a transverse movement thereof caused by the shafts working in the elongated holes of the intermediate support to which the corresponding suspension rope of the climber is fixed moving closer together.

Preferred Embodiment of the Invention

[0008] In view of the described figures, it can be observed how the anchor of the invention comprises two pairs of cams (1 and 1') in the form of eccentrics and with

an irregular outer surface for the purpose of achieving a correct binding thereof on the walls (3) of a crevice (4) corresponding to a rock or wall which is being climbed.

[0009] Said cams (1) and (1') are assembled on a support (5), with guide rods 6, Figure 1, to which the corresponding suspension rope of the climber, not shown, is fixed, further including a pair of tighteners (7) which at one end are joined to a pull rod (8) and at the other end are joined to the two cams (1 and 1') at attachment points (9) and (9'), such that to introduce the anchor in the crevice (4), the pull rod (8) is pulled, whereby the tighteners (7) pull the two pairs of cams (1 and 1') tending to close them as shown in Figures 2 and 3, for their introduction in the crevice (4). This operation can also be carried out manually by the climber.

[0010] On the other hand, the two pairs of cams (1) and (1') are assembled such that they can swivel on respective shafts (10) located in elongated and oblique holes (11) provided for that purpose in the support (5), all this with the following peculiarities:

[0011] As already mentioned, once the anchor is introduced in the crevice (4) as shown in Figure 3, it is enough to release the pull rod (8) for the tighteners (7) to slacken, or in the event of having carried it out manually, release the cams (1-1') so that in any case such cams, due to the action of the springs associated thereto, tend to swivel outwards so as to press against the walls (3) of the crevice (4), as shown in Figure 4.

[0012] In addition to this binding effect of the anchor, as it is conventionally carried out, there is a transverse movement of the cams (1) and (1'), Figure 5, as a result of the fact that in the swiveling movement thereof, there is a parallel translational movement due to the shafts (10) moving closer together in their positioning on the elongated and oblique holes (11), forcing the pairs of cams (1) and (1') to tend to open to a greater extent, or in other words, causing a greater pressure against the walls (3) of the crevice (4) and therefore increasing the binding effect of the anchor in such crevice, especially when the rope (6) is pulled due to the climber falling, which entails the downward movement of the support (5) and therefore the shafts (10) move closer together with the aforementioned effect.

Claims

1. A safety anchor for climbing, which being provided to achieve an optimal binding in a crevice of a wall or face which is being climbed, and being formed by means of two pairs of swiveling cams assembled on respective shafts arranged in a support to which the suspension rope of the climber is secured, and further having tighteners associated to a manual pull rod enabling the cams to be folded for their introduction in the corresponding crevice, is **characterized in that** the shafts for swiveling the cams are arranged in respective elongated and oblique holes provided for that purpose in the support itself, the arrangement of which entails a movement for bringing such shafts closer together when the support to which the suspension rope of the climber is secured is pulled, it being provided that the shafts for swiveling the cams moving closer together entails a transverse outward movement of such cams to increase the binding effect thereof on the crevice.

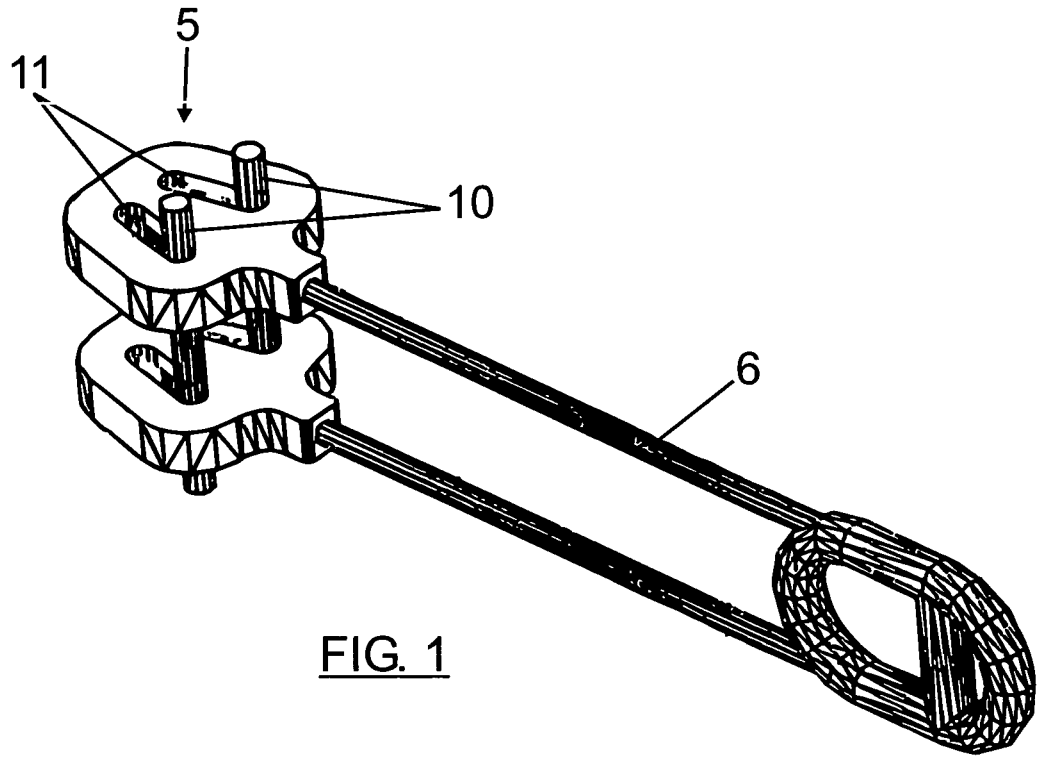

FIG. 1

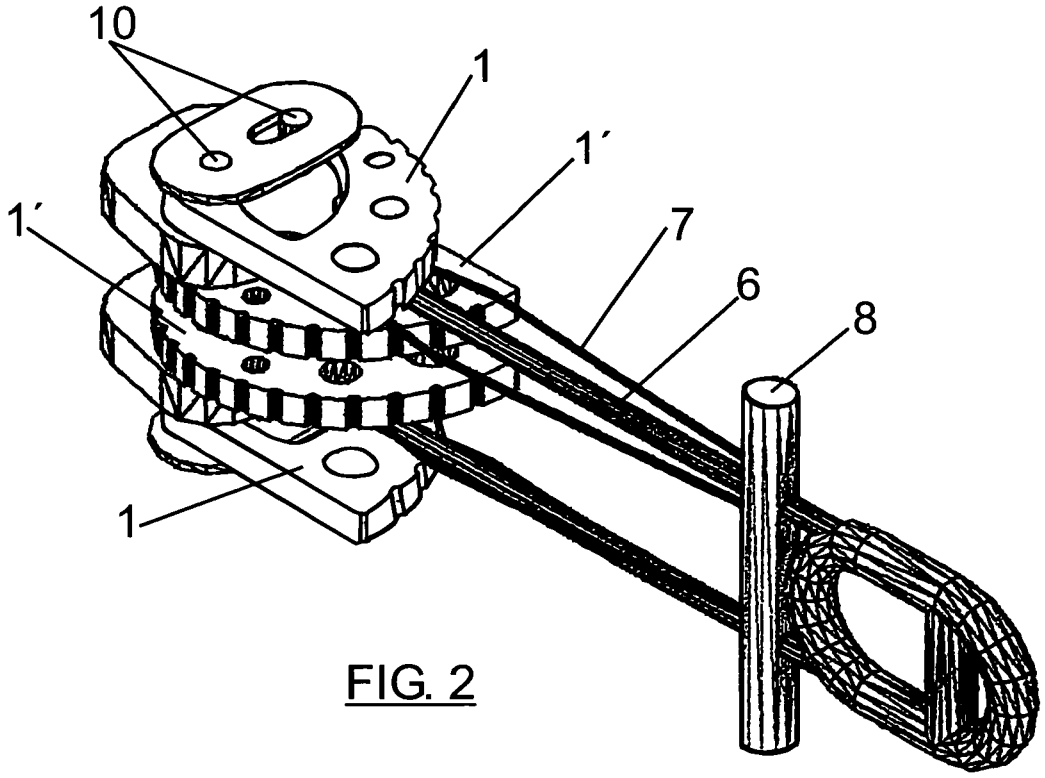

FIG. 2

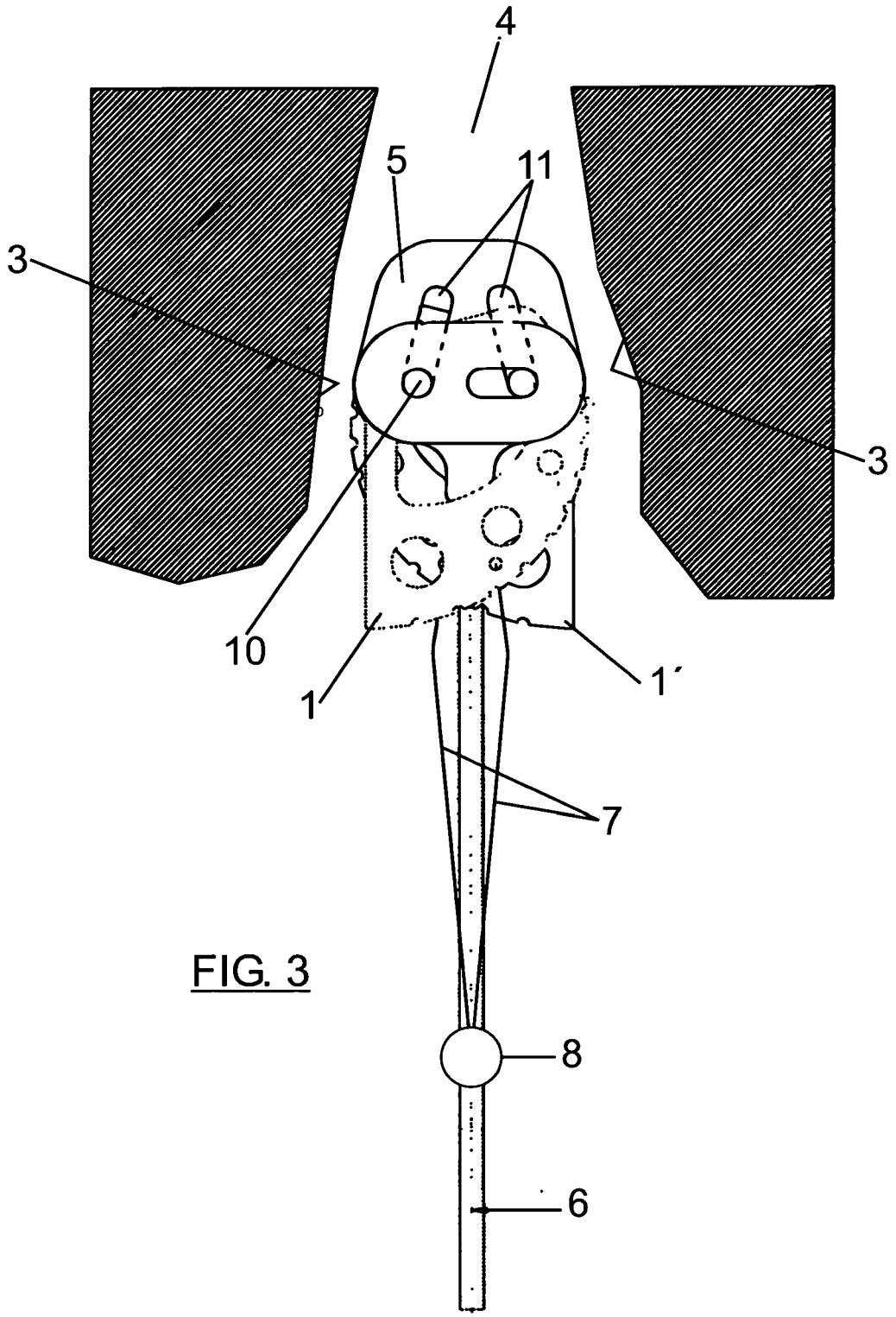

FIG. 3

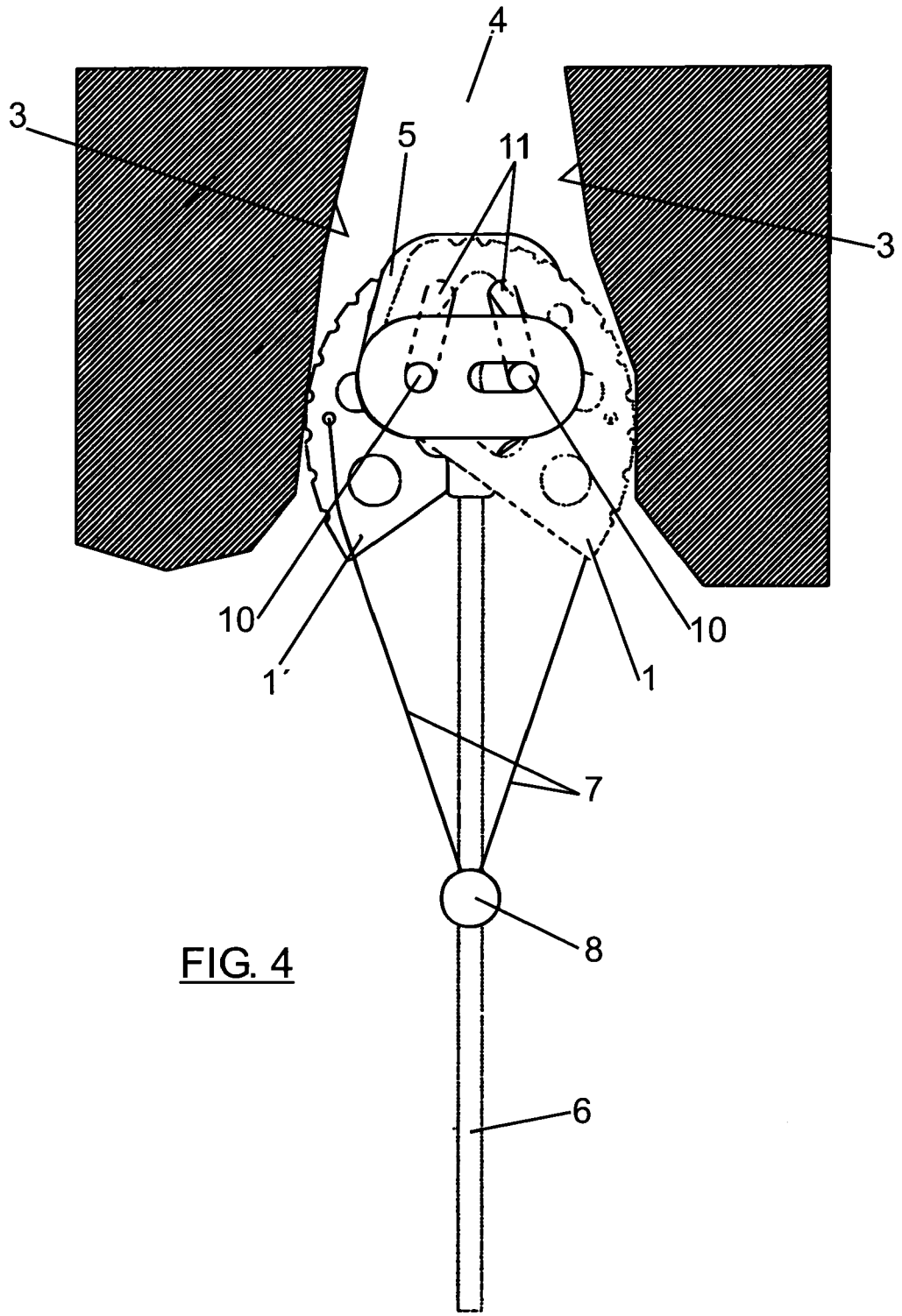

FIG. 4

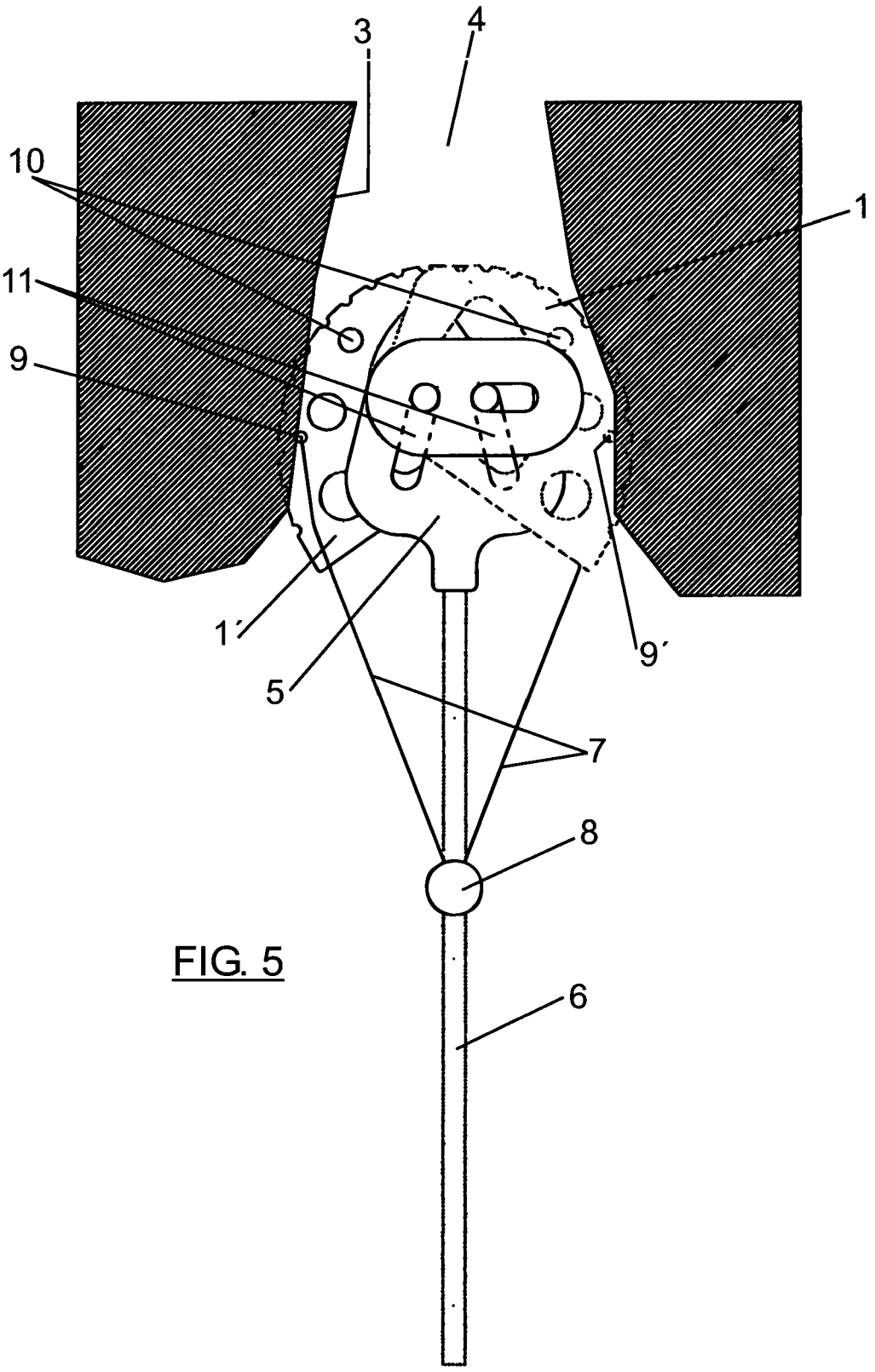

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 07 38 0126

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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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TECHNICAL FIELDS SEARCHED (IPC)

A63B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	24 August 2007	Millward, Richard

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24-08-2007

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