United States Patent

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[31] **6092**

[54] **DEVIATION DEVICE OF A TOWING OR SUSPENSION ROPEWAY**
6 Claims, 6 Drawing Figs.

[52] **U.S. Cl.** **104/191,** 104/173, 104/182
[51] **Int. Cl.** **B61b 11/02,** B61b 7/10
[50] **Field of Search** 104/173, 182, 191, 197; 74/230.18, 230.21, 230.24; 198/130

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ABSTRACT: A deviation device of a towing or suspension ropeway, including a revolving support for laterally deviating the hoisting rope of the ropeway, on which rope spaced load carriers are secured each having laterally a transversal part, all these parts projecting horizontally from the same side of the rope, the revolving support being equipped with a plurality of rope guiding elements each being transiently displaceable in order to leave a gap in the row for the transient entrance of such transversal part when the same passes together with the hoisting rope through the deviating range of the revolving support.

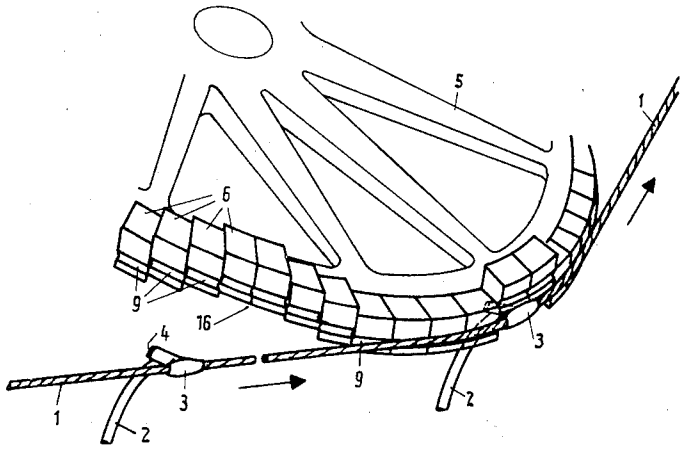

FIG.1

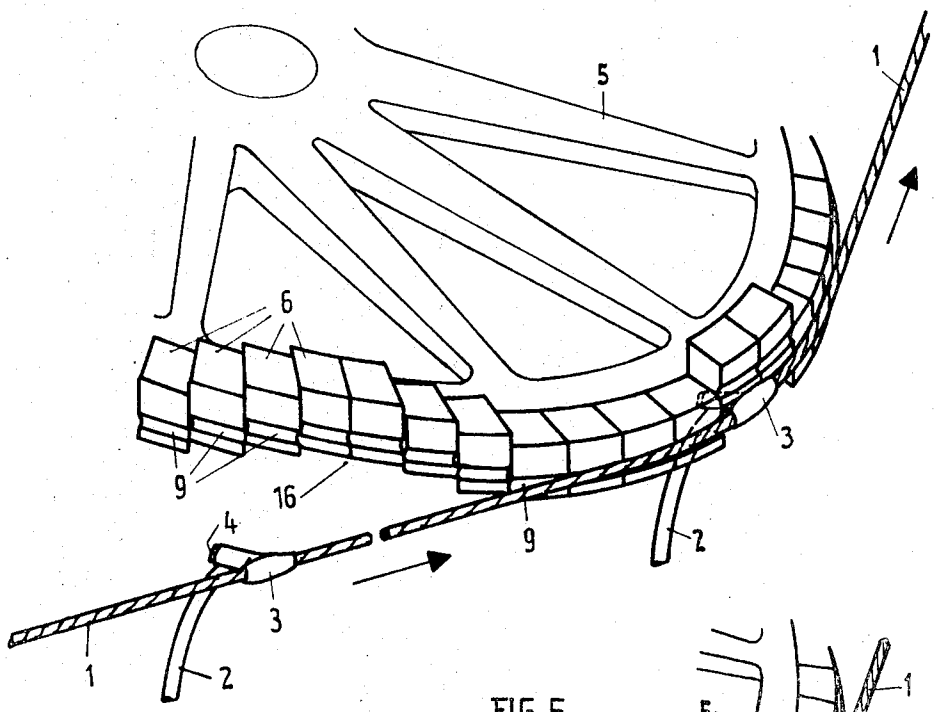

FIG.5

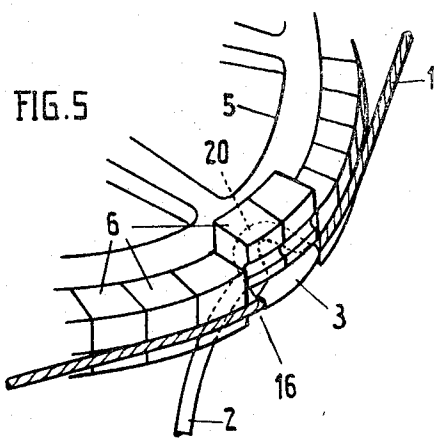

FIG.6

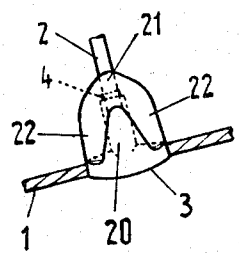

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FIG. 2

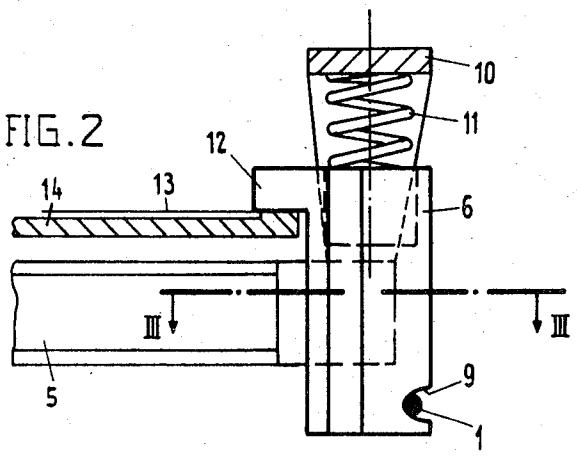


FIG. 3

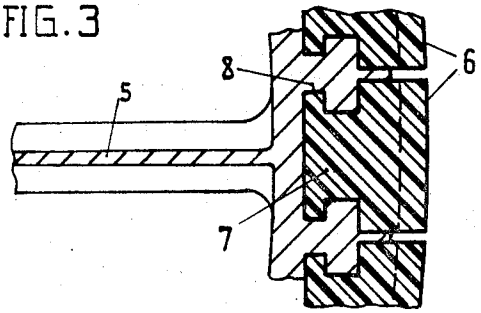
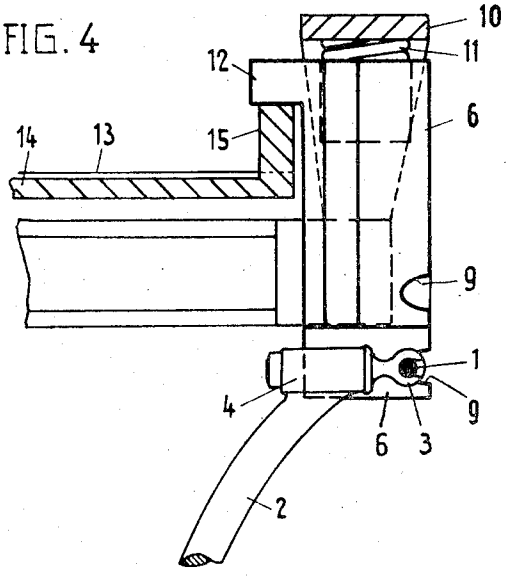


FIG. 4



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DEVIATION DEVICE OF A TOWING OR SUSPENSION ROPEWAY

BACKGROUND OF THE INVENTION

The present invention relates to a deviation device of a towing or suspension ropeway, e.g. ski towing or suspending seat ropeways, and allows to deviate the hoisting rope thereof laterally also unto the side where the load carriers secured on the rope have a transversal part projecting horizontally from the rope, which parts made a deviation unto that side hitherto impossible.

SUMMARY

According to the invention there is provided a deviation device of a towing or suspension ropeway, including a revolving support for laterally deviating the hoisting rope of the ropeway, which support is equipped with a plurality of rope-guiding elements arranged in a continuous row in the revolving direction and forming a deviation track for the rope, each element being transiently displaceable out of its supporting position for leaving a gap in the row, and further including control means for causing such guiding elements to move off and into the row in such a manner that the elements cannot be an obstacle for laterally projecting parts of load carriers secured to the rope, when such a part passes, together with the travelling rope, the deviating range of the revolving support.

The control means can be provided as a stationary part of the deviation device, forming a cam track or the like which cooperates with the revolving rope-guiding elements for lifting the same at the place where a load carrier part may enter into the row of elements and for permitting their return into the row when no carrier part has entered or when the same has left the deviating range of the revolving support.

In another embodiment of the invention the control means can be provided as cams secured to the hoisting rope for travelling therewith, each of these cams being adapted to lift only those guiding elements out of their row which would be an obstacle for the laterally projecting part of a load carrier when it enters the row of elements, and which cam permits the return of the lifted element into the row when the projecting part leaves the deviating range of the revolving support.

BRIEF DESCRIPTION OF THE DRAWINGS

Two preferred embodiments of a deviation device according to the invention will now be described in detail, by way of example, with reference to the accompanying drawings in which

FIG. 1 is a partial perspective view of the device according to a first embodiment;

FIG. 2 shows a vertical section through the periphery of the deviating wheel of the device, with a rope-guiding element in its rope-supporting position;

FIG. 3 shows a horizontal section along line III–III in FIG. 2;

FIG. 4 shows a vertical section similar to FIG. 2, with a rope-guiding element lifted above its rope-supporting position;

FIG. 5 is a partial perspective view of a second embodiment of the device; and

FIG. 6 is a top view upon a detail in connection with the hoisting rope.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The suspension ropeway has a hoisting rope 1 to which evenly spaced load carriers 2 are secured each by means of a rope coupling 3 having a transversal axle 4 wherefrom the load carrier 2 is pivotally suspended, all of these axles 4 projecting horizontally from the same side of the rope 1. A horizontally revolving wheel 5 mounted on a mast which is not shown is provided for deviating the rope 1 from the entrance direction unto the rope side showing the axles 4. The wheel 5 is equipped along its periphery with a plurality of equal rope-guiding elements 6 forming a continuous row for supporting

the rope 1 along the deviating range thereof. Each element 6 is slidably guided with a T-shaped profile portion 7 (FIG. 3) in a corresponding vertical slot 8 of the wheel rim and has on its peripheral side a groove 9 for receiving and supporting the rope 1. Preferably, the elements 6 are made of artificial resin.

A ring 10 is mounted on the rim of the wheel 5 above the row of elements 6 (FIG. 2) with space therefrom. Each element 6 accommodates in a borehole a pressure spring 11 bearing against the ring 10 for resiliently maintaining the element 6 with a radially projecting nose 12 thereof in sliding engagement with an annular rim 13 of a stationary disc 14 being rigidly mounted on the mast. This rim 13 has an elevated cam portion 15 provided to lift the elements 6 against the action of their springs 11 when the noses 12 slide upon the cam portion 15 for creating a gap 16 in the row of elements into which gap may enter an axle 4 and rope coupling 3 when passing the rope-deviating range of the wheel 5. If such coupling 3 and axle 4 of a load carrier 2 have entered the gap two of the lifted elements 6 cannot return into the rope-supporting position since they are stopped in their downward movement by the coupling 3 and axle 4 while all other lifted elements 6 being not withheld return into the rope-supporting position in the row under the action of their springs 11 by sliding downwards from the cam portion 15 due to the continuous rotation of the wheel 5. Of course, if there is no coupling 3 and axle 4 to enter the gap 16, all the lifted elements 6 return successively into their rope-supporting position. When the coupling 3 and axle 4 leave the deviating range of the wheel 5 also the two withheld elements 6 close the gap by returning into the row.

The nose 12 of the element 6 may be provided with a roller for moving on the rim 13. It is also possible that in the rope-supporting position of the elements 6 their noses 12 could rest on the rim of the wheel and then run or roll upon a stationary cam mounted above the angular section where the gap in the row of elements must be created.

Instead of such stationary control means for creating the gap 16 in the row of elements the second embodiment of the deviation device according to FIGS. 5 and 6 is equipped with control means being rigidly provided on the rope coupling 3 and being formed by a shieldlike shoe 20 which projects slightly above the axle 4 from the coupling 3 and is downwardly chamfered at the free end 21 and on the sides 22. Just before a coupling 3 of the travelling hoisting rope 1 is going to enter the deviating range of the rotating wheel 5 the shoe 20 of this coupling arrives with its free end 21 somewhat below the reached elements 6 and lifts the same by its chamfered surfaces 21 and 22 due to its entering movement. During the creation of the gap 16 the shoe 20 and therewith the coupling 3 and axle 4 penetrate fully thereinto and leave it at the end of the deviating range whereby the lifted elements drop again into their rest position in the row of elements. This dropping of the elements 6 may occur automatically by the own weight since in this embodiment preferably no compression springs are provided for restoring the elements, which restoring may be easily supervised or fully obtained by a checking member.

Instead of the rotating wheel a revolving apparatus in the manner of a caterpillar track could be provided whereon the elements 6 would be movably mounted and displaced to create a gap in similar manner as described above.

I claim:

1. A deviation device of a towing or suspension ropeway, including a hoisting rope, spaced load carriers having each a rope coupling by which they are secured to said rope and forming a transversal part on said coupling, said parts projecting substantially horizontally from the same side of said rope, a revolving support for laterally deviating said hoisting rope, a plurality of rope-guiding elements mounted on said support in a continuous row in the revolving direction and forming a supporting and deviation track for said rope, each element being transiently displaceable out of its normal position in the row, and control means adapted to engage those guiding elements which are to be displaced for creating a gap in the row of ele-

ments, which gap permits the entrance of said rope coupling and projecting part of a load carrier when the same reach the deviating range of said revolving support.

2. A deviation device as claimed in claim 1, wherein the control means are stationarily mounted in the path of said rope guiding elements.

3. A deviation device as claimed in claim 1, wherein the rope-guiding elements are displaceable transversally to the plane of revolution of said support and said control means are formed by a stationary cam in the path of said elements.

4. A deviation device as claimed in claim 1, wherein to each of said rope-guiding elements a spring member is provided for tending to resiliently maintain the element in its normal position.

5. A deviation device as claimed in claim 1, wherein the control means are mounted on said hoisting rope.

6. A deviation device as claimed in claim 1, wherein the control means are formed by a cam mounted in connection with said rope coupling on said hoisting rope and projecting therefrom unto the same side as said transversal part of said load carrier.