The present invention relates to Blondin type cableway installations. As is known, in the Blondin ropeway, the truck is borne by a carrying cable held taut as a single span between two stations. The truck is moved by a haulage rope which is endless so as to ensure the return of the truck to either station with the aid of a single mechanism. A lifting rope is further provided, which is anchored to either station, held in line switched over the truck and the block and sent to the other station wherein it is fastened to a drum which takes up it, or pays it off consistently with the direction of travel. In practice the cable loops held taut between the two stations are at least four: the “ahead” haulage cable, the “reverse” haulage cable, the standing rope and the lifting rope. Said ropes, on account of their own nature undergo different tension magnitudes, thus forming non-parallel catenaries.

Conventionally, the service ropes of a Blondin ropeway are kept spaced apart by travelling or fixed cradles, but in this case, with the aid of other mechanisms, either of their own or belonging to the truck, which change their positions so as to avoid interferences.

In contradistinction thereto, the object of this invention is to provide means, fastened to the standing cable, which keep the service ropes uniformly spaced apart from one another and which, in the truck crossing instants, are encompassed by said truck without giving rise to any interferences.

According to this invention, the Blondin type ropeway installation is characterized in that the standing cable, the “ahead” haulage cable and the lifting rope are kept mutually spaced apart by a fixed distance with the aid of mutually spaced apart rigid or articulated cradles, each of which is affixed in its top portion to the standing cable and carries horizontal axis wheels which receive by gravity the lifting ropes and the “ahead” haulage cable, the truck moving on said rope having a longitudinal recess formed in its structure, the cross-sectional area of said recess being such as to encompass the outer profile of said cradles to allow the free travel thereof, said truck having further distances from the point at which it rests on the standing cable to the respective opints at which said “ahead” haulage rope and said lifting rope are received, which are less than the corresponding distances from said cradles, so that the passage of the truck when crossing a cradle determines a lifting movement of said “ahead” haulage rope and said lifting rope from said wheels on said cradle, substantially on the vertical of said wheels.

In said cradles a seating can be further provided, for causing the “reverse” haulage cable to slide, said cable having no points of contact with said truck.

All of these cradles, moreover, can be kept in alignment by a guiding rope which acts as a tail-cable. On the truck, a seat can be catered for, in which said rope is allowed to slide, thus affording a vertical posture for the truck and ensuring that said cradles may enter said longitudinal recess of said truck.

In order that the advantages and features of the Blondin ropeway installation according to the invention may be fully understood, an exemplary embodiment thereof will be now described with reference to the accompanying drawings, wherein:

**FIG. 1** is a side view of the truck and of a cradle affixed to the standing cable.

**FIG. 2** is an end elevation, as viewed from A of **FIG. 1** and

**FIG. 3** is a cross-sectional view taken along the line III—III of **FIG. 1**.

The truck has a frame 1 to which webs 3 are pivoted at 2. On said webs 3 are pivoted, in turn, at 4, plates 5, on which wheels 7, resting on a standing cable 8, are freely rotatably mounted at 6.

The truck is moved by a forward haulage cable 9 connected thereto at 10 and 10’. The return lap of said cable 9 is designated at 9’.

To the truck is also connected a lifting rope 11 which is guided by a set of wheels 12 idly mounted on frame 1, which guide said rope onto the wheels 13 pivoted at 14, wherefrom the rope is divided into two laps 11’ and 11’, which can control the lifting and converting of members carried by the truck 1. These latter members, for example, may be arranged in a closed loop around a hooked tackle or the like.

Between the rope enumerated above are arranged cradles 15; these are affixed at 16 to the standing rope and, on them, are pivotally mounted at 18, wheels 17 placed on opposite sides of the standing rope, to provide a guide for the reverse haulage rope 9’.

On the cradle, at 19, are also pivoted two coaxial wheels 20. When the truck crosses a cradle, the wheels 20 are in the same vertical plane as the ropes 9 and 11. Thus, as the truck leaves the cradle and the sag of the ropes arranged according to a catenary line is increased with respect to their own supporting points, the ropes can rest on the wheels 20 and are supported thereby. To ensure that the ropes rest on the wheels 20, the supporting members of these last are extended at 21 so as to facilitate the cooperation between said ropes and said wheels.

Between the cradles, a guiding rope 22 is held taut and serves to position the cradles and also functions as a tail-cable for stabilizing the cradles and guiding them so as to ensure a proper positioning of the truck with respect to the cradles. Thus, the cradles are enabled correctly to enter the longitudinal recess formed in the truck 1 as shown in **FIG. 2**. To this end, the truck 1 has rollers 23 rotatable about vertical axes. These rollers position the truck and the cradle in a suitable arrangement by the instrumentality of the rope 22. Rollers 24 are rotatable about horizontal axes, conversely, support said rope when the truck is at a point which is sufficiently distant from the cradles, thus increasing the distance between the haulage rope and the guiding rope: the latter sags according to a catenary line between two consecutive cradles.

The particular shapes of the cradles and the truck can of course be varied, as well as the mutual positions of the cables.

What is essential is that the cradles be affixed to the standing cable while causing no obstruction to the movement of the truck, and that the points at which the ropes are applied to the truck be at a higher level than the cable-supporting members carried by the cradles. Thus any further contact between the truck and the cradles can be overcome, and they may come into mutual contact only in correspondence with their respective point of attachment to the standing cable and the guiding rope.
Also the lifting cable can go through any desired path on the truck, providing that said rope do not cause any obstruction in the longitudinal recess of said cradles. In the example shown the lifting rope is wound for a convolution around said cavity, this fact permitting that the points of attachment of said cable to the truck be kept in the immediate neighborhood of the axis of the truck: by so doing no torque does develop.

What is claimed is:

1. A Blondin type ropeway installation, characterized in that a standing cable extending between support means, a forward haulage cable for traversing a truck along the standing cable and a hoist cable for lifting a load by the truck are kept mutually spaced apart by a fixed distance with the aid of mutually spaced apart cradles, each of which is affixed in its top portion to the standing cable and carries horizontal axis wheels which receive by gravity the hoist cable and the forward haulage cable, a guide rope parallel to said standing cable connecting said cradles at the bottom portions thereof, said guide rope guiding and balancing said cradles so as to maintain the same in a substantially vertical and mutually parallel relationship one with another, said truck moving on said standing cable having a longitudinal recess formed in its structure, the cross-sectional area of said recess being such as to encompass the outer profile of said cradles to allow the free travel thereof, said truck having distances from the point at which it rests on the standing cable to the respective points at which said forward haulage rope and said hoist cable are received, which are less than the corresponding distances from said cradles, so that the passage of the truck when crossing a cradle determines a lifting movement of said forward haulage rope and said hoist cable from said horizontal axis wheels on said cradle, substantially in the vertical plane of said wheels.

2. An installation according to claim 1, characterized in that said cradles have a guiding member and a reverse haulage cable is guided by said guiding member.

3. An installation according to claim 1, characterized in that said truck has at least a member for housing said guiding rope with respect to which said guiding member cannot undergo any lateral displacement, thus mutually aligning said truck and said cradles and facilitating the entrance of said cradles into said longitudinal recess of said truck.

4. An installation according to claim 3, characterized in that said truck has suspension members for said guiding cable, spaced apart from the point at which said truck is attached to said standing rope by a distance higher than that between said standing cable and said guiding cable as defined by said cradles, said guiding cable resting on said suspension members when said truck is in a position away of any of said cradles.

5. A Blondin type ropeway installation comprising in combination:
   a) a standing cable adapted to be supported by support means;
   b) a truck suspended from said standing cable;
   c) a forward hauling cable secured to the truck for pulling the same along the standing cable in one direction;
   d) a reverse haulage cable secured to the truck for pulling the same in the opposite direction;
   e) a hoist cable mounted on the truck in a horizontal plane with the forward haulage cable for lifting a load by the truck;
   f) a plurality of cradles secured at their upper ends to the standing cable vertically suspended therefrom in lengthwise spaced relationship, each of said cradles mounting in its vertical plane a pair of superimposed coating pulleys each rotatable about a horizontal axis and positively guiding therebetween said reverse haulage cable and on opposite sides of said vertical plane a second pair of pulleys each rotatable about a horizontal axis, one pulley of said second pair of pulleys being engageable with the forward haulage cable and the other with the hoist cable for guiding said cables to maintain the same in predetermined spaced relationships when and while the truck is travelling between any two cradles, said truck having a frame structure including a passage opening therethrough, said passage opening defining a substantially closed peripheral outline providing clearance for the cradles while being passed by the truck in either direction, the vertical distance between the standing cable and the points at which the forward haulage cable and the hoist cable are secured to the truck being greater than the distance between the standing cable and the horizontal axes of the pulleys for guiding the forward haulage cable and the hoist cable to cause lifting of said cables as the carrier approaches a cradle thereby assuring that the forward haulage cable and the hoist cable are engaged with said pulleys for support by the same.

References Cited

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Patent Number</th>
<th>Date</th>
<th>Inventor(s)</th>
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</thead>
<tbody>
<tr>
<td>470,948</td>
<td>3/1892</td>
<td>North</td>
</tr>
<tr>
<td>496,203</td>
<td>4/1893</td>
<td>Miller</td>
</tr>
<tr>
<td>609,961</td>
<td>8/1898</td>
<td>Camp</td>
</tr>
<tr>
<td>728,574</td>
<td>5/1903</td>
<td>Hardaway</td>
</tr>
<tr>
<td>3,245,550</td>
<td>4/1966</td>
<td>Trutsch</td>
</tr>
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