

H. S. ROBINSON.
AERIAL TRAMWAY.
APPLICATION FILED OCT. 14, 1907.

942,518.

Patented Dec. 7, 1909.
3 SHEETS—SHEET 1.

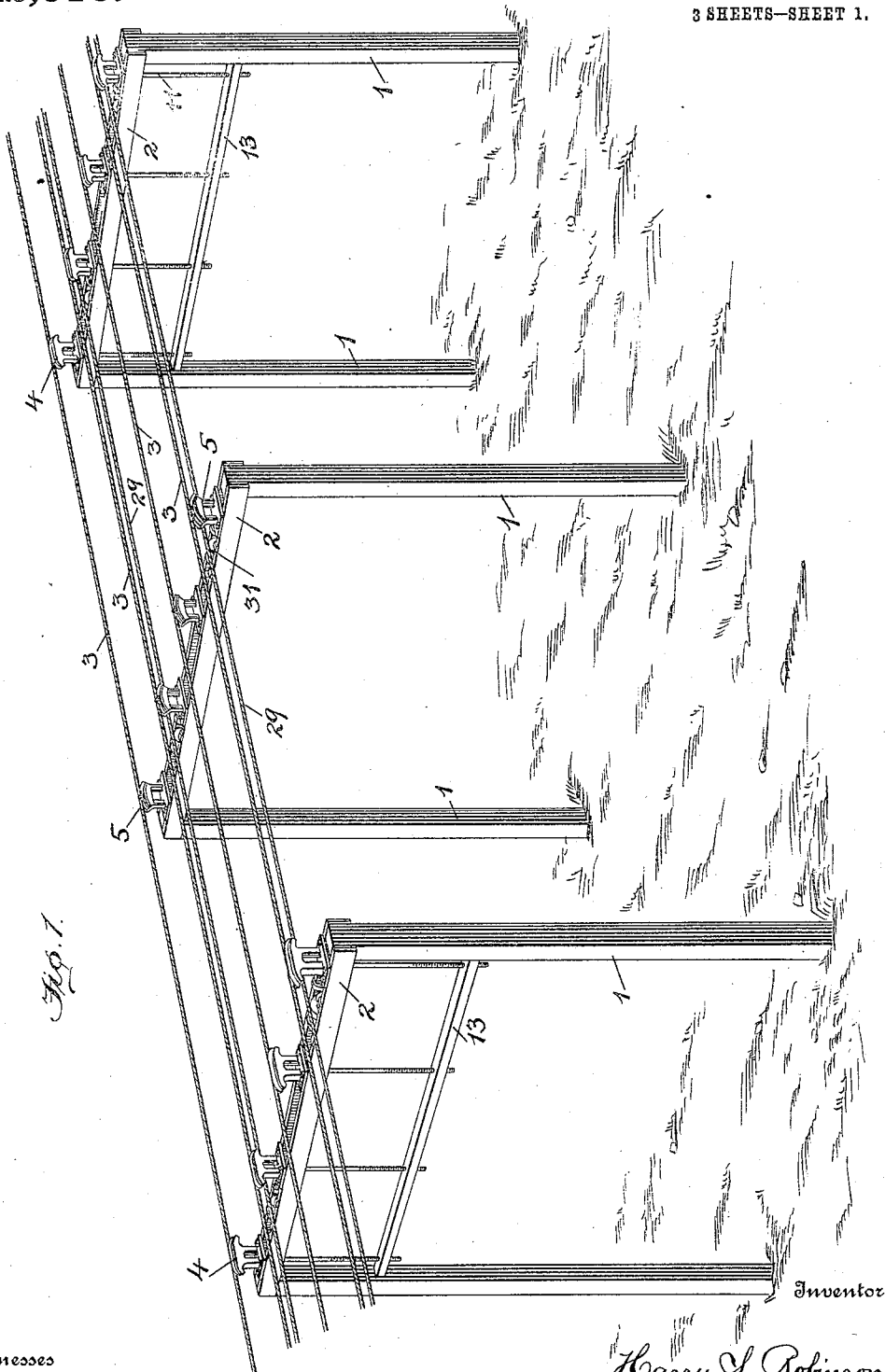


Fig. 1.

Witnesses

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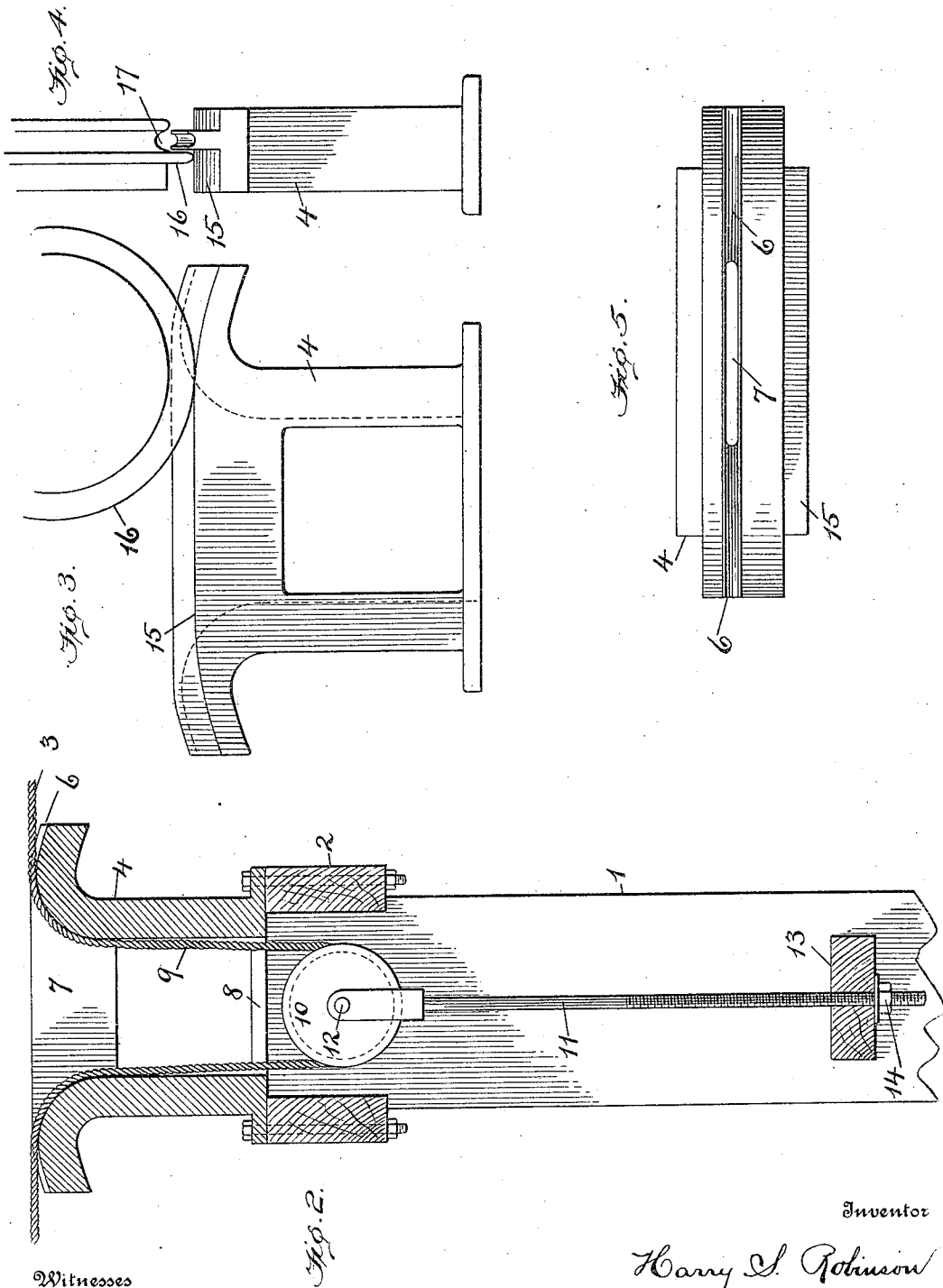
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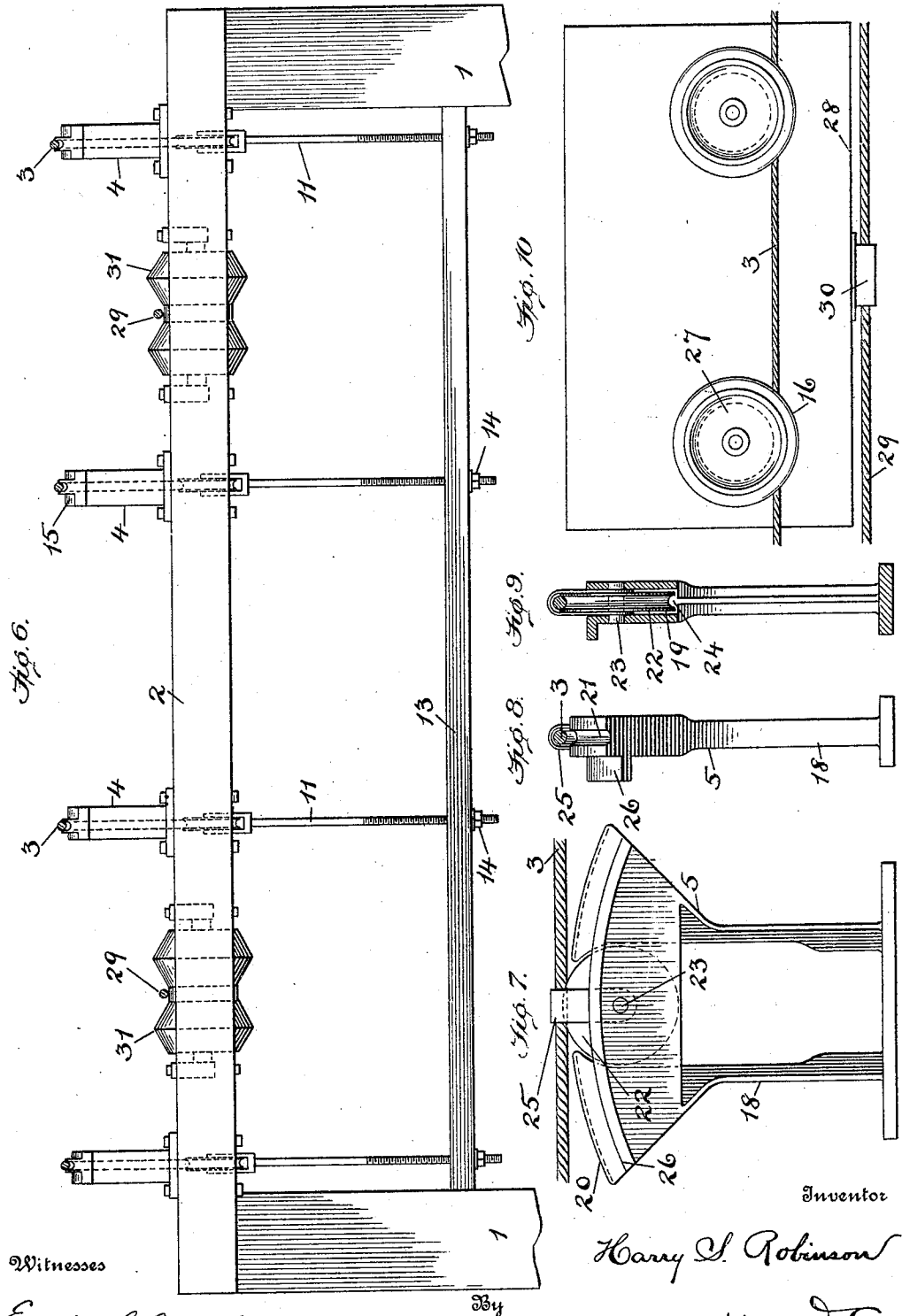
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UNITED STATES PATENT OFFICE.

HARRY S. ROBINSON, OF FALLSTON, MARYLAND, ASSIGNOR TO CHARLES B. MANN, JR.,
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AERIAL TRAMWAY.

942,518.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed October 14, 1907. Serial No. 397,303.

To all whom it may concern:

Be it known that I, HARRY S. ROBINSON, a citizen of the United States, residing at Fallston, in the county of Harford and State of Maryland, have invented certain new and useful Improvements in Aerial Tramways, of which the following is a specification.

This invention relates to an aerial tramway or cableway.

Aerial cableways of the class here referred to are employed in the transportation of ore and coal from mines; dirt and rock in the construction of rail-roads, canals, and extensive excavations; and also for the carriage of timber and logs.

One object of the invention is to provide an elevated cableway comprising two stationary parallel track-cables which serve as a track on which a four-wheel car may travel and each of the parallel track-cables to be wholly independent of the other and capable of separate tightening or adjustment.

Another object of the invention is to provide an elevated cableway, which may have supporting posts at suitably short intervals, with means located on some of the supports to take up the slack or sag in the cables.

Another object of the invention is to provide stands for sustaining the cables with improved means for retaining the cables seated on the stand, while also permitting the cable freedom for endwise movement.

Another object of the invention is to provide means for the passage of cars along the cables and over the stands, so that the car wheels will not wear the cable where it rests on the stand.

The accompanying drawing is an illustration of one form of construction of the improvements constituting the present invention.

Figure 1 is a view showing the aerial cableway. Fig. 2 is an elevation of one of the supports and stands and shows the means for tightening the slack cable. Figs. 3, 4 and 5 are side, end and top views, respectively of one form of stand which serves to support the cable, and also serves to cause the cable to form a special loop by means of which the slack that may be in the cable can be tightened. Fig. 6 is a vertical cross-section showing the posts and beams that support the two cable tracks of a double-track cableway. Figs. 7, 8 and 9 are side view,

end view and vertical sectional view of one of the intermediate cable supports. Fig. 10 is a side view illustrating one of the cars supported on the cables.

Referring now to the drawings the numeral, 1, designates the posts which support the entire cableway; these posts are to be spaced in pairs apart at suitable intervals and are planted in the ground and at their upper ends the two posts of each pair are connected by horizontal cross-beams, 2. The track cables, 3, should preferably be made of steel wire, and may be of indefinite length, and each stretch of cable is independent of all the adjoining parallel stretches. In the present example, see Figs. 1 and 6, four track-cables are shown, this being a double-track cableway in order to provide for the continual passage of cars in opposite directions. Two kinds of stands are used on the cross-beams, 2, for supporting the track-cables, 3; one type of said stands is shown in Figs. 2, 3, 4 and 5, and are designated, 4. This type of stand is combined with means to take up the slack or sag in the cable. Another type of supporting stand is shown in Figs. 7, 8 and 9 and is designated, 5. This second type is provided with means for retaining the track-cables in position on the stand, while also permitting the cable a limited endwise movement. Both types of these stands have provision to enable the wheels of the cars to pass or roll over the stands without injury or wear to the cables where the latter rest on the stand.

A description will first be given of the cable-supporting stands, 4. These stands may be made of one piece of metal if desired, whose construction will be readily understood by reference to Figs. 2, 3, 4 and 5. The base of the stand is bolted to the supporting cross-beams, 2; at its top the stand, 4, has two grooved seats, 6, whose upper faces are curved or rounded in the vertical direction; the grooves of these two curved seats are in alinement with each other and with the stretched cable, 3, and the cable itself rests on said grooved seats. In the present instance the top of the stand, 4, has a slot, 7, which is open in the vertical direction between said two grooved seats, 6, and the base of the stand also has an open slot, 8, directly below the upper slot. These slots, 7, and, 8, allow the cable, 3, see Fig. 2, to form a down-pointing loop, 9, which lat-

ter projects down through both slots, and a grooved wheel or pulley, 10, hangs in the said loop. Mechanical means are applied to this loop whereby to stretch the cable when desired, and to the extent required. In the present instance this means consists of a pendent rod, 11, whose upper end is bifurcated to straddle the pulley in order to take on the pin, 12, which passes through the center of the pulley; the lower part of the pendent rod is screw-threaded and passes down through a suitable cross-beam, 13, which is below the beams, 2; a nut, 14, is on the screw-threaded rod below the beam, 13, and by turning this nut the loop, 9, in the cable may be drawn downward as tightly as desired, and when desired, and thereby the slack or sag in the cable be taken up.

The stand, 4, has at or near its top, and at one side of the grooves where the cable is seated, a bridge, 15. This bridge comprises a surface which extends in the direction of the cable track and over which the wheels of the car may pass, instead of said wheels resting on the track-cables where the latter are seated on the said stand. The bridge extends fully across the stand where it is widest. The arrangement of the parts is such that the car wheel, when it reaches the bridge will be raised a little, and will at once begin to travel on the said bridge alone. To effect this the car wheel has two rims—a circular rim, 16, and a circular grooved-rim, 17; the circular rim, 16, which is for traversing the bridge, must be of a different diameter from the circular grooved-rim, 17, that traverses the track-cable. In the present instance, the height of the bridge on the stand relative to the height of the grooved seats for the cable, and also the diameter of the circular-rim of the car-wheel that is to traverse said bridge, are so related, that the car-wheel (in the present instance) has a circular-rim for the said bridge of greater diameter than the grooved-rim for the track-cable. It is obvious, however, that the reverse of these proportions might be employed,—that is, the grooved-rim for the track-cable might be of greater diameter than the circular rim for traversing the bridge. Of course in this latter case the bridge must have a greater height on the stand relative to the height of the grooved seats for the cable, than that shown in the drawing.

When the car-wheel reaches the stand, 4, the largest circular rim, 16, of the wheel rolls on the bridge, 15; while the circular rim, 16, of the wheel is resting on the said bridge, 15, the weight of the wheel and also the car is not on the track-cable, 3. This bridge therefore sustains the weight, and the track-cable is protected from injury or wear where it is seated on the stand. The utility of the bridge on this stand is entirely inde-

pendent of the means to take up the sag or slack in the cable.

It will be readily seen that there is no liability of the track-cable, 3, accidentally leaving its seat on the stand, 4, because the loop, 9, which the cable forms, serves to prevent the cable from so doing.

The other type of cable-supporting stand, 5, will now be described. These stands are plainly shown in Figs. 7, 8 and 9. The bases of these stands are to be bolted to the cross-beams, 2, of the elevated structure. The stand, 5, has two legs, 18, and the top at its center has a slot, 19, opening in the vertical direction through the top to the space below the top and between the two legs; at each side of the slot, 19, see Fig. 7, the top of the stand has a down-curved or inclined seat, 20, which is provided with a groove, 21. A roller, 22, is in the said slot, 19, and is mounted on a pin, 23, fixed in the stand; the roller is free to turn on the pin, 23, and around its rim has a groove, 24. A clip, 25, in practice is made of thin band steel, and has a loop-form somewhat similar to an inverted letter, U; this loop clip straddles the top of the said grooved roller and the ends of the clip are pivoted on the same pin, 23, on which the rollers turn. This construction of stand, roller and clip allows the track-cable, 3, to pass over the stand directly above the grooves, 21, in the stand-top, which grooves serve as seats for the cable, and the cable passes through the loop-clip, 25, and also rests upon the grooved roller, 22. It will be seen, therefore, that the track-cable, 3, is supported by the grooved stand-top and the roller and can not become displaced from the top of the stands, 5. It will also be seen that the track-cable, 3, although held in position on the stand-top, has freedom of end-wise movement. The stand, 5, is also provided at or near its top with a bridge, 26. This bridge in the present instance, consists of a lateral flange, which in Fig. 7 has a slight curve like an arch. The bridge on the stands, 5, is to co-act with a circular rim on the car-wheels, exactly the same as the bridge already described on the other type of stand, 4, namely, the bridge supports the car-wheels and takes the weight of the load off the cable where the cable is supported by the stand, and thereby saves the clip, and also the cable from being injured by the hammering they would otherwise receive between the top of the stand and the car-wheels.

The car may be of any approved form and the grooved wheels may be applied to the car in any desired manner. Fig. 10 shows a form of car where the wheels, 27, are entirely above the bottom, 28, of the car, in other words, the bottom of the car hangs down between the wheels and also below the wheels at each side of the car-body. The two sta-

tionary track-cables, 3, on which the wheels travel are at the sides of the car body, and the hauling cable, 29, is below the car. A suitable grip or clutch, 30, is carried on the bottom of the car, and when this clutch grips the moving cable, 29, the car will be moved.

The hauling cable, 29, may be endless, like a driving belt, and movement imparted to this cable by an engine located at a terminal of the cableway. Guide rollers, 31, of suitable construction are mounted on the cross-beams, 2, of the supporting posts, and the hauling cable, 29, passes over said guide-rollers and is thereby supported.

An elevated cableway having the parts, constructions and features of operation herein shown and desired, will possess many practical advantages, some of which have already been pointed out, and others will be apparent to any person who is skilled or well versed in the operation of this type of cableway. As each of the two parallel cables, 3, that make one track, is independent of the other, it will be seen that said cables may be separately tightened to meet their respective requirements.

The stands, 4, which are provided with means for taking up the sag in the track-cables, may be placed on the supporting cross-beams, 2, at such intervals apart as the topography of the ground or other local conditions may indicate to be requisite. The length of the intervals may vary and is not dependent on the cable or on any other part of the structure.

The stands, 5, which are provided with means which prevent the track-cables from becoming displaced while at the same time allowing endwise movement of the cable, are used to support said cables between the positions where the other stands, 4, are located.

Having thus described my invention what I claim is,—

1. The combination in an elevated cableway of two parallel cables comprising one track; a plural number of stands on which said cables are seated—said stands provided with a bridge extending in the direction of the cable track fully across the stand; and a car having wheels provided with two circular rims of different diameters—one for traversing the track-cable and the other for traversing said bridge.

2. An elevated cableway having two parallel cables composing one track; and a plural number of upright stands on which said cables are seated, and said stands provided with an immovable bridge extending across the stand in the same direction as the cable-track.

3. The combination in an elevated cableway of two parallel cables comprising one track; a plural number of immovable stands on which said cables are seated—said stands

provided with a bridge extending in the direction of the cable track; and a car having wheels provided with two circular rims of different diameters, one rim of which is grooved to traverse the track-cable and the other adapted to traverse the said bridge and while traversing on the bridge will support the car at a higher elevation than when traversing the track-cable.

4. The combination in an elevated cableway of two parallel cables comprising one track, said two cables being independent of each other and a down-pointed loop formed in each cable; a plural number of immovable stands each having on top two seats on which a cable is supported and provided between said seats with a slot that opens in the vertical direction and down through which one of said loops projects, whereby the loop can be inserted bodily or removed bodily; and mechanical means applied to said loop to stretch the cable-track when desired.

5. The combination in an elevated cableway of two parallel cables comprising one track, said two cables being independent of each other and a down-pointed loop formed in each cable; a plural number of immovable stands each having on top two seats on which a cable is supported and provided between said seats with a slot that opens in the vertical direction and down through which one loop projects; a pulley hanging in said loop, a screw-threaded rod pendent from said pulley, and a nut on said screw-threaded rod to draw downward on the pulley.

6. The combination in an elevated cableway of two parallel cables comprising one track, and a down-pointed loop formed in each cable; a plural number of immovable stands each having on top two seats on which a cable is supported and provided between said seats with a slot that opens in the vertical direction and down through which one loop projects; mechanical means applied to said loop to stretch the cable-track, and a car-wheel bridge on each of said stands and extending in the same direction as the cable-track.

7. A cable-supporting stand having on top two grooved seats and provided between said seats with a slot that opens in the vertical direction, and having near its top an immovable bridge extending crosswise and adapted to be traversed by a car-wheel.

8. A cable-supporting stand having a top surface whose two outermost ends are curved downward or rounded in the vertical direction and each curved end provided with a top groove, and said stand also having a rigid curved bridge extending in the same direction as the grooves but out of line of said grooves.

9. The combination of an elevated cable; a stand having a curved top provided with a

groove which forms a seat for the said cable and a loop-clip loosely straddling the said cable and secured to said stand, whereby the cable is kept on its grooved seat but is permitted an endwise movement.

10. The combination of an elevated cable; a stand having a curved top provided with a groove which forms a seat for the said cable; an immovable bridge extending in the same direction as the groove in the top but out of line of said groove; and means to keep the cable on its grooved seat.

11. The combination in an elevated cableway of two parallel cables comprising one track; a plural number of stands on which said cables are seated—said stands provided with a bridge extending in the direction of the cable track and adapted to be traversed by a car-wheel; and a loop-clip loosely straddling the track-cable and secured to said stands.

12. The combination in an elevated cableway of two parallel cables comprising one track; a plural number of stands on which said cables are seated—said stands provided with a bridge extending in the direction of the cable track and adapted to be traversed by a car-wheel; a roller mounted on the said stands; and a loop-clip loosely straddling the track-cable and secured to said stands.

13. A cable-supporting stand having on top two grooved seats and provided between said seats with a slot that opens in the ver-

tical direction, and having near its top a bridge extending crosswise and adapted to be traversed by a car-wheel; a roller mounted in said slot, and a loop-clip straddling the roller and secured to its position.

14. A cable supporting stand having two legs with open space between and having a top provided with two grooved seats and between the said seats a slot which opens to the space below; a roller mounted in said slot, and a loop-clip straddling the roller and secured to its position.

15. The combination in an elevated cableway of two parallel cables comprising one track said two cables being independent of each other and capable of separate adjustment; stands which support said track-cables; a grooved roller mounted on said stands; and a loop-clip straddling the said cable and also each roller.

16. The combination of an elevated cable track; and stands at intervals to support the cable, said stands provided with means to keep the cable seated also with means to raise the car-wheels above the cable as they pass the stands, and also with means to stretch the cable.

In testimony whereof I affix my signature in presence of two witnesses.

HARRY S. ROBINSON.

Witnesses:

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G. FERDINAND VOGT.