W. L. NELSON.

DERAILMENT GUARD.

APPLICATION FILED JAN. 8, 1913.

1,075,600. Patented Oct. 14, 1913.

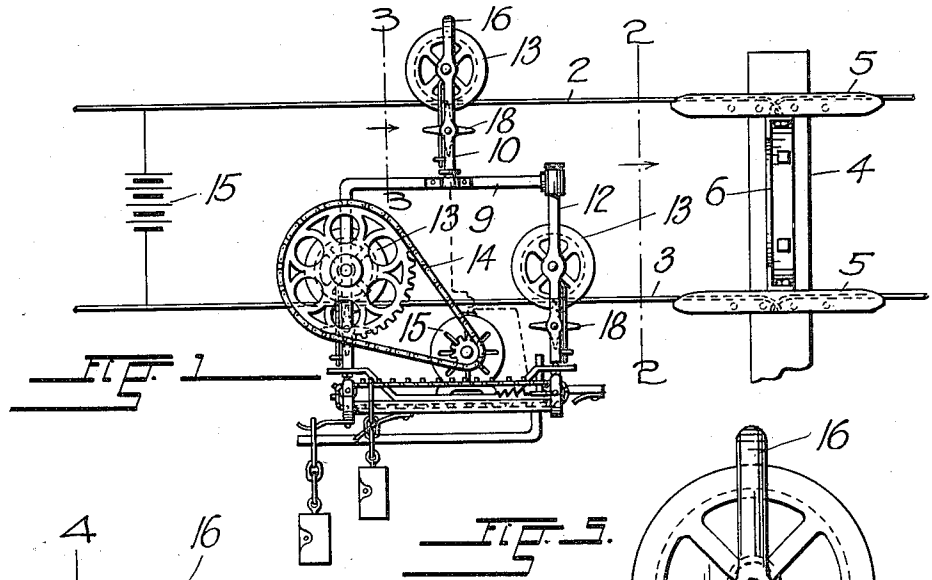


FIG. 1

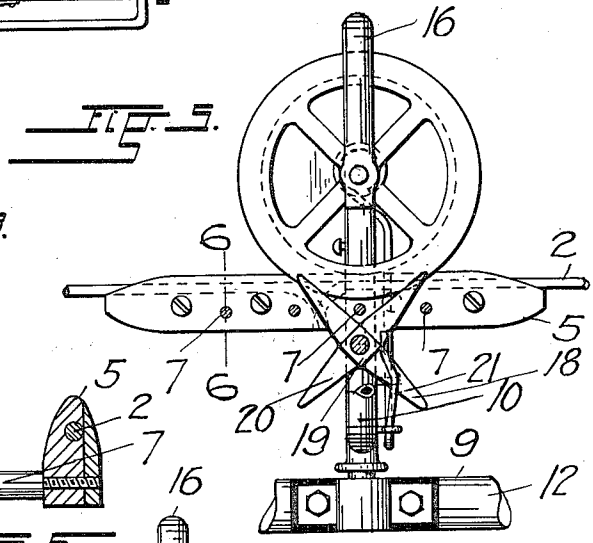


FIG. 5.

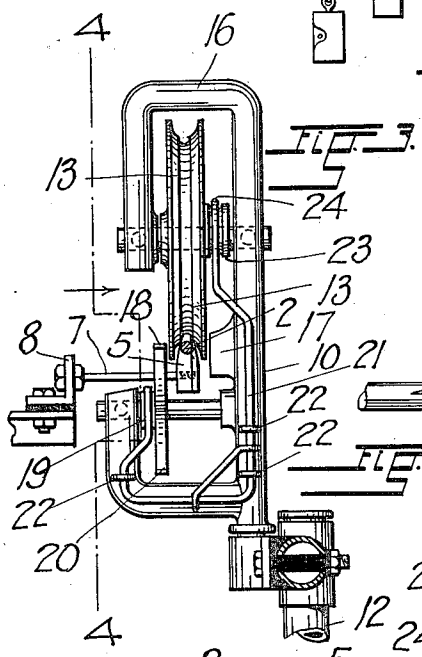


FIG. 3.



FIG. 6.

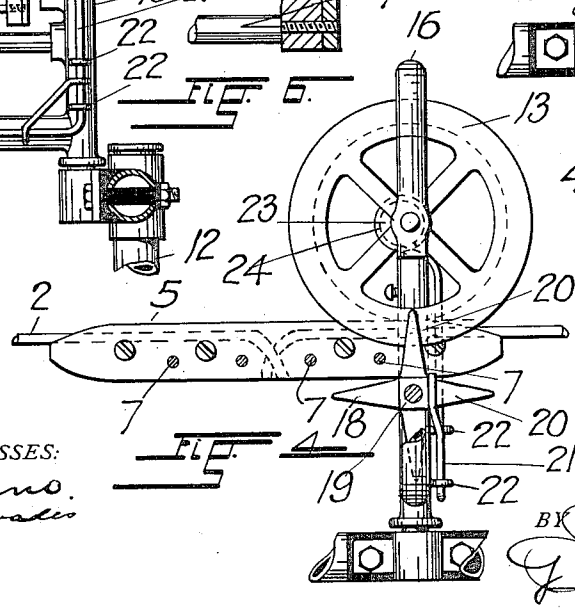


FIG. 4.

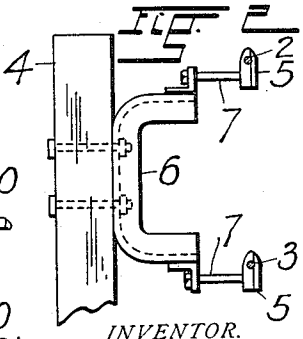


FIG. 2

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## DERAILMENT-GUARD.

1,075,600. Specification of Letters Patent. Patented Oct. 14, 1913.

Original application filed October 2, 1912, Serial No. 723,623. Divided and this application filed January 8, 1913. Serial No. 740,762.

*To all whom it may concern:*

Be it known that I, WILLIAM L. NELSON, a citizen of the United States, residing at Boss, in the county of Dent and State of Missouri, have invented certain new and useful Improvements in Derailment-Guards, of which the following is a specification.

This invention relates to derailment guards for elevated railways and its object resides in the provision of a simple mechanism by which a carriage propelled along an elevated track is effectively prevented from leaving the same by lateral displacement while it moves along the said track between the supports from which the latter is suspended as well as when it passes said supports.

While the present invention is adapted for use on railway systems of different character and construction, it is more particularly designed to be employed in connection with the parcel carrying apparatus shown and described in my application for Patent No. 723,623, filed October 2, 1912, of which the present application is divisional.

An embodiment of my invention has been shown in the accompanying drawings in the various views of which like parts are similarly designated, and in which—

Figure 1 represents a side elevation of a carrier to which my invention is applied, in its operative position on a pair of elevated tracks and in adjacency to one of the poles upon which the latter are supported, Fig. 2, a section taken along the line 2—2, Fig. 1, Fig. 3, an enlarged fragmentary section taken along the line 3—3, Fig. 1, Fig. 4, a section along the line 4—4, Fig. 3 with the parts of the derailment guard in the position they occupy prior to the carrier to which it is applied, passing one of the track supports, Fig. 5, a view similar to Fig. 4 showing the derailment guard in the position it assumes while passing a track support, and, Fig. 6, a section taken along the line 6—6, Fig. 5.

Referring more specifically to the drawings, the reference numerals 2 and 3 designate two parallel, aerial tracks which are supported one above the other on poles 4 erected along the line of travel. Each track is preferably composed of a wire cable made in sections of the ordinary length in which cables of this character are usually manufactured, which are jointed and secured in clamp rails 5 which, as shown in Fig. 2 of the drawings, are attached to brackets 6 that are bolted to the poles.

The clamp-rails are composed of two sections, one of which is recessed to receive the wires, and in case they are spliced, their twisted ends, as is shown in broken lines in Fig. 4, the said sections being connected by means of a series of equidistantly disposed bolts 7 which extend outwardly from the brackets in horizontal alinement, and whose reduced threaded extremities pass through plain openings in one of the sections thereof and are screwed into correspondingly threaded openings in the other section, thereby clamping the wires firmly between the same.

The bolts 7 are fastened to angle bars 8 secured one above the other on the brackets 6 from which one of said bars is insulated by means of an interposed strip of nonconductive material to prevent the flow of current between the two tracks in case the latter are used as conductors of electricity, as in the system described in the prior application for patent above referred to.

The cables and clamps thus connected and supported, provide continuous track rails for the support of a wheeled carrier, it being understood that the upper edges of the clamps form a continuation of the wires extending at opposite ends of the same.

While my improved derailment guard may be effectively employed in connection with wheeled carriages of different character it has been shown in the drawings as applied to a carrier of the construction used in the system described in the application of which the present application is divisional, said carrier being designed to deliver and collect parcels at stations along the lines of the track.

The carrier which in the drawings is designated by the reference character 9, consists of a frame composed of two pivotally connected sections 10 and 12 on which are journaled three grooved traction wheels 13 by means of which the carrier is supported upon and propelled along the two tracks.

One of the two traction wheels mounted on the lower section of the frame is by means of a sprocket chain 14, connected

with an electric motor 45 installed on the carrier, the said motor being through the medium of the frame sections which are insulated from each other, as shown in Fig. 3, electrically connected with the two track rails which, as hereinbefore explained, serve as conductors for the current of electricity which actuates the motor, by connection with a suitable source of electricity 15 shown in Fig. 1 of the drawings.

In a carrier of the construction shown, the several traction wheels are mounted upon shafts which are journaled in bearings formed in inverted U-shaped yokes 16 which are part of the frame and provided with enlargements 17 which constitute fixed guards which by their proximity to the outer surfaces of the wheels prevent their leaving the tracks on which they are supported, in a direction away from the track poles 4.

To hold the wheels against derailment by lateral displacement in the opposite direction either while moving along the tracks between the poles, or while passing the latter, I provide guard wheels 18 which being rotatably mounted in suitably formed bearings on the frame of the carrier below the respective wheels 13, extend past the peripheral edges of the latter in sufficiently close proximity to their upright faces to effectively prevent the passage of the respective cables through the spaces between them in case the carrier leaves the tracks in the direction of the poles on which the latter are supported.

The guard wheels are each provided with a multilateral hub 19 and a plurality of equidistant, radial teeth 20, and the distance between their axes of rotation and those of the respective traction wheels is such that during rotation of the guard wheels one or more of their teeth will always extend past the peripheral edge of the respective traction wheel to prevent derailment of the latter, either while the carrier moves between the supports upon which the tracks are suspended or past the same.

The guard wheels are normally held in the position shown in Fig. 4 of the drawings in which one of its teeth extends upwardly to engage the bolts 7 of the rail supports for the purpose hereinafter to be explained, by means of tension rods 21 which by engagement with one of the sides of the angular hubs of the wheels, yieldingly maintain them against accidental rotation.

The rods 21 are mounted for reciprocation in guides 22 on the adjacent parts of the frame on which the traction wheels are journaled and when the carrier is in motion they are reciprocated for the purpose of compelling the guard wheels with which they are in engagement, to reassume their normal position illustrated in Fig. 4, in case said wheels are turned so that the edges of their angular hubs are engaged by the respective rods as is shown in Fig. 5.

The reciprocating movement is imparted to the tension rods during movement of the carrier, through the instrumentality of peripherally grooved, eccentric disks 23 which are formed integral with the wheels 13 and which are surrounded by straps 24 which are provided by curving the upper ends of the rods 21 and which are loosely fitted in the grooves of the respective disks.

While the guard wheels of my invention may have a greater number of teeth, it is sufficient for the purpose for which they are designed, to provide them with four teeth at quadrant points as is shown in the drawings.

When the carrier to which the invention is applied is at rest or while it is propelled along the tracks between the supports with which the latter are connected, the guard wheels are positioned so that one pair of their oppositely extending teeth extends substantially in alinement with the center of the respective traction wheel, as is illustrated in Fig. 4 of the drawings and they are maintained in this position by the engagement of the reciprocating tension rods with one of the sides of the angular hubs, as hereinbefore explained.

It is obvious that when the carrier moves past the supports on which the aerial tracks are mounted, the derailment guard must be equally effective as when the carrier is propelled between the same and that at the same time the said guards must be capable of passing the connections between the tracks and the supports without in any way interfering with the movement of the carrier. This object is in the construction shown, automatically accomplished by the rotary toothed guard wheels which when the wheels of the carrier move onto the clamp which connects the track rails with the poles, engage with their upwardly extending teeth the first one of the rods 7 by means of which said clamps are attached to the bracket.

The engagement of the teeth of the guard wheels with the rod imparts to the former a partial rotation against the action of the respective tension rods which flex away from the center of the wheels to engage an edge of the hub of the same, as is illustrated in Fig. 5, and the guard wheels engage in the same manner, successively the following one of the series of equidistant rods which support the rails on the bracket, each of which causes it to rotate through a part of a revolution until the traction wheels have passed the supports when, in case the guard wheels have not already returned to their normal position, the reciprocating movement of the tension rods across the edges of their hubs

together with the tension of the same in the direction of the axes of rotation of the guard wheels will readily accomplish this object.

It will thus be observed that by the use of my invention one or more of the teeth of the guard wheels extend always in proximity to the surface of the carrier wheels at a distance which prevents the passage of the track rails between them and at the same time keeps the wheels from frictional engagement, that this object of my invention is as effectively accomplished while the carrier is propelled along the track between the supports as when it passes the latter, and that the action of the reciprocating tension rods assures the proper position of the guard wheels for engagement with the bolts between the said supports and the clamp rails as hereinbefore described.

What I claim and desire to secure by Letters-Patent is:

1. The combination with a track-rail and a support therefor, of a carrier having a wheel for operative engagement with said rail, a rotary, toothed guard-wheel on said carrier extending continuously past the periphery of the first-mentioned wheel in sufficiently close proximity to a face thereof to prevent the passage of said rail between them, and having a multilateral hub, the said support including means adapted to cause a rotary movement of the said guard-wheel by engagement with its teeth during movement of the carrier past said support, and a tension-device engaging a side of said hub to yieldingly hold the guard wheel against accidental rotation, and having a reciprocating movement along the same.

2. The combination with a track-rail and a support therefor, of a carrier having a wheel for operative engagement with said rail, a rotary, toothed guard-wheel on said carrier extending continuously past the periphery of the first-mentioned wheel in sufficiently close proximity to a face thereof to prevent the passage of said rail between them, and having a multilateral hub, the said support including means adapted to cause a rotary movement of the said guard-wheel by engagement with its teeth during movement of the carrier past said support, a tension device engaging a side of said hub, to yieldingly hold the guard-wheel against accidental rotation, and an eccentric movable with the said wheel of the carrier about its axis of rotation, in operative connection with said device to impart a reciprocating movement thereto.

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

WILLIAM L. NELSON.

Witnesses:
J. C. CROY,
F. H. DUNNINGTON.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."**