

Oct. 5, 1926.

1,602,271

G. M. KILCARR

AERIAL TRAMWAY

Filed Jan. 18, 1925

4 Sheets-Sheet 2

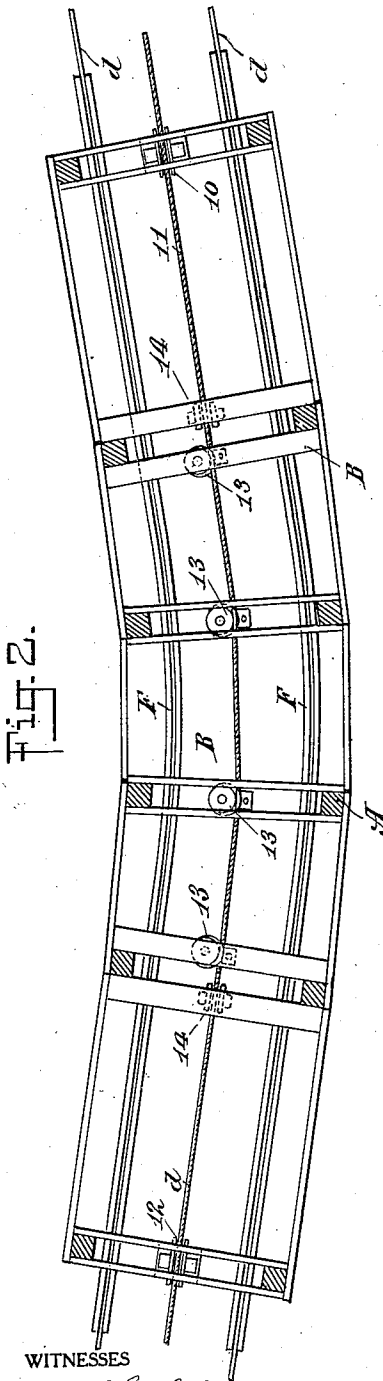


Fig. 2.

WITNESSES

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J. R. Munn

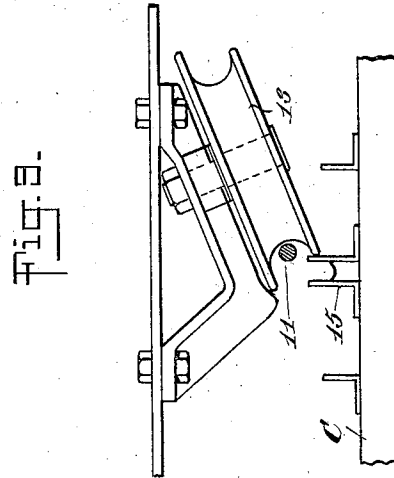


Fig. 3.

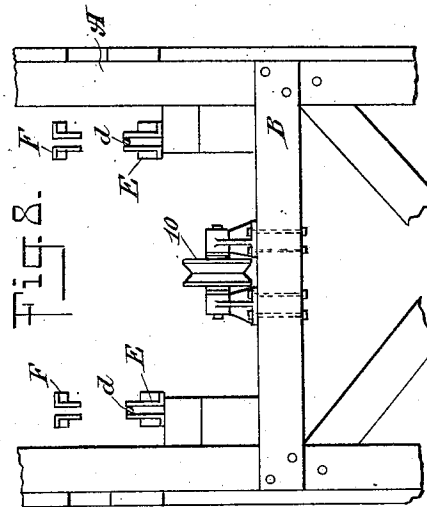


Fig. 4.

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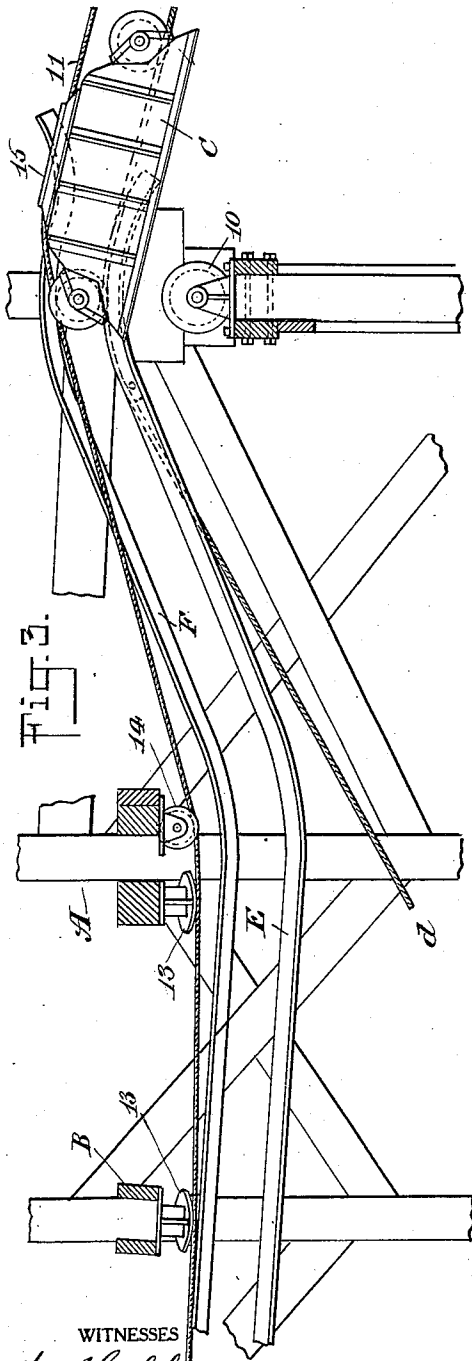
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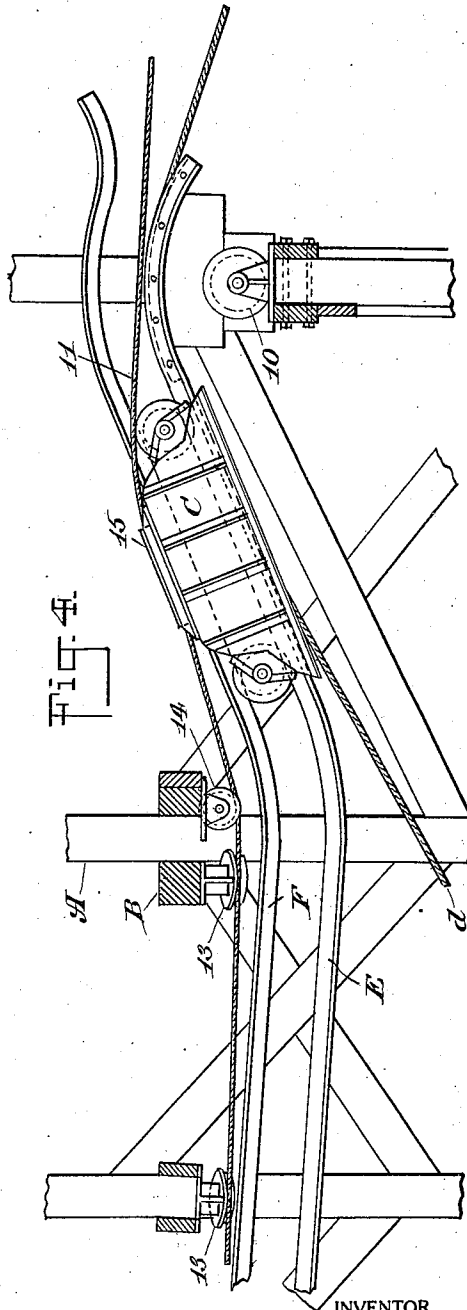
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4 Sheets-Sheet 5



WITNESSES

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4 Sheets-Sheet 4

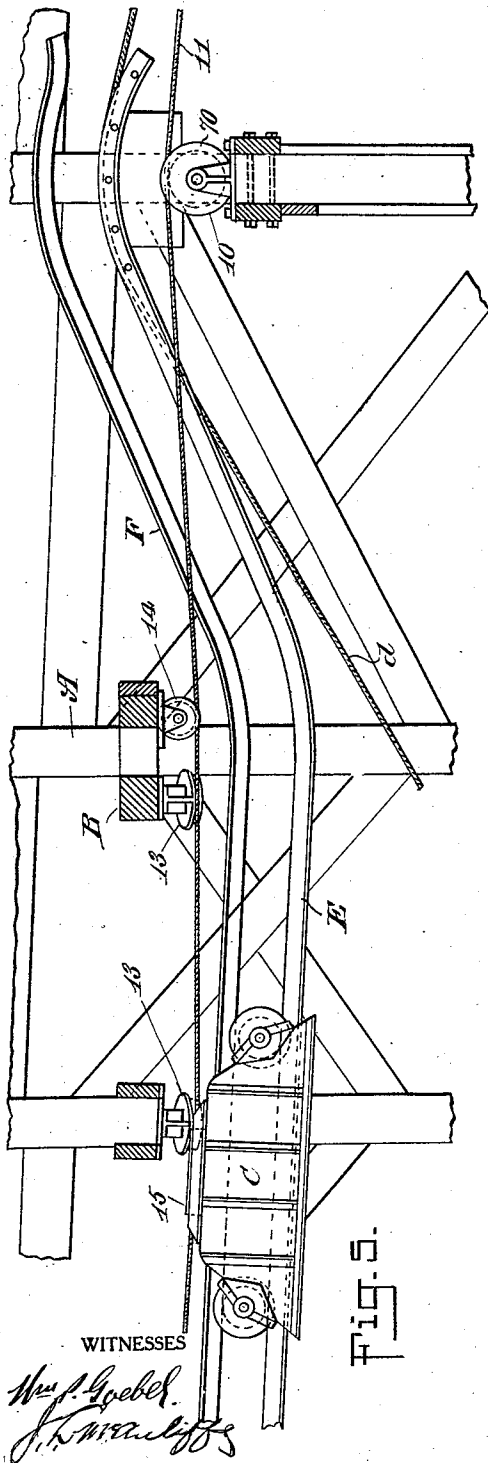


Fig. 5.

Fig. 7.

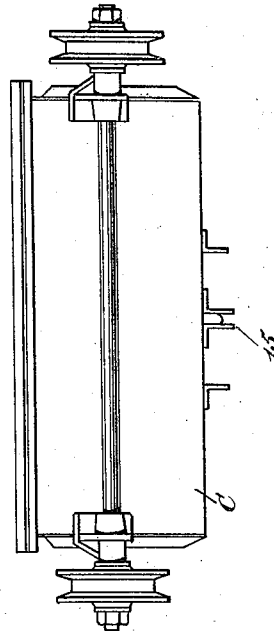
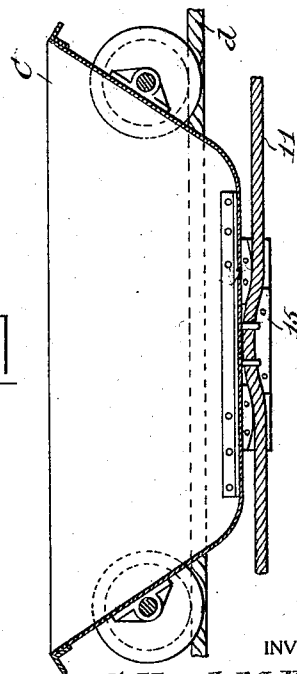


Fig. 6.



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UNITED STATES PATENT OFFICE.

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AERIAL TRAMWAY.

Application filed January 18, 1923. Serial No. 82,050.

My invention relates to tramways and more particularly to tramways in which the car returns to the loading terminal inverted. Such tramways include a haul rope for the car or carriage which haul rope is secured to the bottom of the car, the securing means being generally termed by engineers the haul link.

The present invention is embodied in what is usually termed the angle station, that is to say, where the track cables are turned through a horizontal angle between the loading terminal and the discharge terminal.

The general object of the present invention is to provide track means at the angle station referred to for the car on the return run and to provide an assemblage on said angle station whereby the haul rope is constrained to follow a path corresponding with the path of travel of the haul link securing the haul rope to the car.

A further object of the invention is to provide an assemblage which will insure that the haul rope settles back on the end sheaves of the supporting structure at the angle station after the passing of a car through said angle station.

The nature of the invention and its distinguishing features and advantages will more clearly appear as the description proceeds.

Reference is to be had to the accompanying drawings forming a part of this specification, it being understood that the drawings are merely illustrative of one example of the invention.

Figure 1 is a vertical sectional view of an angle station equipped with means for controlling the haul rope at said station on the return run of a car, the view including also means for controlling the cable during the outward run of the car;

Figure 2 is a horizontal section on the line 2-2, Figure 1, showing in plan the tracks for the return run of the car, as well as the track cables and haul rope;

Figure 3 is a detail in vertical section at the lower return track showing the inverted car as it takes the track rails;

Figure 4 is a view similar to Figure 3 but showing the inverted car in a different position as it moves through the station;

Figure 5 is a fragmentary view in vertical section showing the inverted car on the re-

turn trip through the angle station and the disposition of the haul rope on said return trip;

Figure 6 is a vertical section of the car in upright position, the view being particularly given to show the haul link or means for securing the cable to the car or carriage;

Figure 7 is an end view of the car or carriage;

Figure 8 is a fragmentary end view of the angle station at the return tracks;

Figure 9 is a fragmentary view showing portions of the car and the angle station and showing the relation of the haul link on the car to guide sheaves above and slightly distant from the haul link.

In the illustrated example of my invention, a structure known as an angle station, that is to say, one in which the cables are turned through a horizontal angle between the loading and discharge terminals, is illustrated, and includes posts A and transverse bars B, variously disposed throughout the structure.

A tramway includes upper and lower outgoing tracks D and return track rails E, as well as upper guard rails F above the track rails D and E, the car C on the outgoing run being in normal position right-side up whereas on the return run of the loop-line tramway at the different stations, including the angle which has been referred to above, the car *c* travels on the return run on the tracks E at the angle station up-ended or inverted after dumping at the discharge station. At the entrance end of the angle station guide sheaves 10 are provided for the haul rope 11. The numeral 12 indicates sheaves at that end of the angle station from which the track cables *d* depart.

The return tracks E and certain sheaves hereinafter referred to, in addition to the sheaves 10 and 12, embody my present invention as will appear.

Attempts heretofore to control the inverted car *c* on the return run have included means to guide the cable from the under side of the inverted car *c*. The present invention provides means whereby the haul rope is constrained to follow a path corresponding approximately with the path of travel of the haul link which secures the cable to the car and whereby a secondary effect is produced that the arrangement insures that the haul rope settles back on the end sheaves

(10 and 12) of the supporting structure at the angle station after the passing of a car through said angle station.

The assemblage illustrated for carrying out the purpose of the invention in insuring the desired improved relation between the haul rope 11 and the inverted car *c* includes in addition to the end sheaves 10 and 12 at the angle station, a series of intermediate sheaves 13 on the frame structure of the station. These sheaves 13 are shown as four in number and they angle slightly to a horizontal plane transecting the upper guard rail *F* of the return tracks through the angle station. Besides the four sheaves 13 shown, I employ a sheave 14 adjacent the first sheave 13 and a final sheave 14 adjacent the last angular sheave 13 passed by the car *c*. Thus, the arrangement is such that the haul rope 11 upon entering the angle station runs over the top of the first sheave 10 at the entrance of the station. Then from the sheave 10 the haul rope 11 passes beneath the under side of the vertical or approximately vertical sheave 14 and then past the angularly disposed sheaves 13 and from the last sheave 13 said haul rope 11 passes beneath the second sheave 14 and from said second sheave 14 the haul rope passes directly over the top of the sheave 12 at that end of the angle station from which the haul rope 11 departs in its passage on its return run toward the loading station. It will be seen that the several sheaves 13 and the sheaves 14 at the approach of the haul rope to the sheaves 13 and the departure of said haul rope from said angular sheaves 13 are so disposed that the haul rope is constrained to move along a line corresponding approximately with the path traversed by the haul link which haul link is designated generally by the numeral 15. The path of the haul rope 11 past the pulleys 13 and 14 and between the pulleys 10 and 12 is such that the settling of said haul rope 11 back onto the pulley 10 is assured after the car *c* passes said pulley 10 and similarly the settling back of the haul rope on the pulley 12 is assured after the car *c* leaves the angle station and passes beyond said pulley 12.

The arrangement of the pulleys and the relation of the several pulleys 10, 12, 13 and 14 to the haul link 15 are such that the haul rope has no tendency to turn over the inverted car *c*.

The track cables *d* terminate at the station, the terminals being anchored as at 16 (see Figure 1) below the return track rails *E*. Similarly, the track cables *d* associated with the outgoing track rails *D* are anchored at the station as at 17. Thus, the track rails *D* and *E* bridge gaps or interruptions at the station in the running of the car on the track cables *d*. The numeral 18 indicates guide sheaves for the haul rope 11 associated with

the outgoing track rails *D*, said sheaves 18 not forming part of the present invention.

Reverting to the path of travel of the haul rope 11 corresponding with the path of movement of the haul link 15, said path of the haul rope is insured by forming a dip or drop in the return track rails *E* at the station, said tracks, except at the ends thereof, being depressed.

I would state furthermore that while the illustrated example constitutes a practical embodiment of my invention, I do not limit myself strictly to the exact details herein illustrated, since, manifestly, the same can be considerably varied without departure from the spirit of the invention as defined in the appended claims.

Having thus described my invention, I claim:

1. In a loop-line tramway in which a car travels in inverted position on the return run, a supporting structure constituting an intermediate station in the tramway line, track rails on said structure in which the inverted car is adapted to travel, said track rails having a dip or depression between their ends, a haul rope, and means on the bottom of the car to which said haul rope is fastened.

2. In a loop-line tramway in which a car travels in inverted position on the return run, a supporting structure constituting an intermediate station in the tramway line, track rails on said structure in which the inverted car is adapted to travel, said track rails having a dip or depression between their ends, a haul rope, and means on the bottom of the car to which said haul rope is fastened; together with a plurality of sheaves disposed above the depressed portion of the track and adjacent thereto to constrain the haul rope to travel a path corresponding with the path of movement of the means fastening the haul rope to the bottom of the car.

3. In a loop-line tramway in which the car on the return run travels in inverted position, a supporting structure constituting a station intermediate in the tramway, tracks on said structure for the travel of the inverted car, a haul rope for the car, means on the bottom of the car by which said haul rope is fastened to the car, and sheaves above the track and disposed adjacent to the path of movement of the haul rope securing means on the car.

4. A structure for aerial tramways, said structure constituting an intermediate station in the tramway, and tracks on said structure, said tracks turned through a horizontal angle, a car adapted to travel in inverted position through said structure on the return run of the car, a haul rope for the car, means for securing said haul rope to the bottom of the car, and sheaves above the

track rails against which the haul rope cable is adapted to exert upward pressure to constrain the car to travel in a path corresponding with the path of movement of the haul rope securing means on the car.

5. A structure for aerial tramways, said structure constituting an intermediate station in the tramway, and tracks on said structure, said tracks turned through a horizontal angle, a car adapted to travel in inverted position through said structure on the return run of the car, a haul rope for the car, means for securing said haul rope to the bottom of the car, and sheaves above the track rails against which the haul rope cable is adapted to exert upward pressure to constrain the car to travel in a path corresponding with the path of movement of the haul rope securing means on the car; together with sheaves at the ends of said structure over the tops of which said haul rope

runs in passing to and from the first-mentioned sheaves.

6. A structure for aerial tramways, said structure constituting an intermediate station in the tramway, track rails for the return run of a car, said track rails being depressed between the ends thereof, and sheaves above said depressed portion of the track rails in position to engage a haul rope of a tramway car.

7. In an aerial tramway, a car travelling inverted for a portion of the way about the tramway, a track-way for the travel of the car when inverted, a haul rope secured to the bottom of the car to be disposed above the car when travelling in inverted position, and means to cause the haul rope in front and in the rear of the car to travel in a path adjacent the path of travel of the bottom of the inverted car.

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