L. EVERDING.

AERIAL TRANSPORTING SYSTEM.

APPLICATION FILED JULY 18, 1918.

1,299,314.

Patented Apr. 1, 1919.

4 SHEETS—SHEET 1.

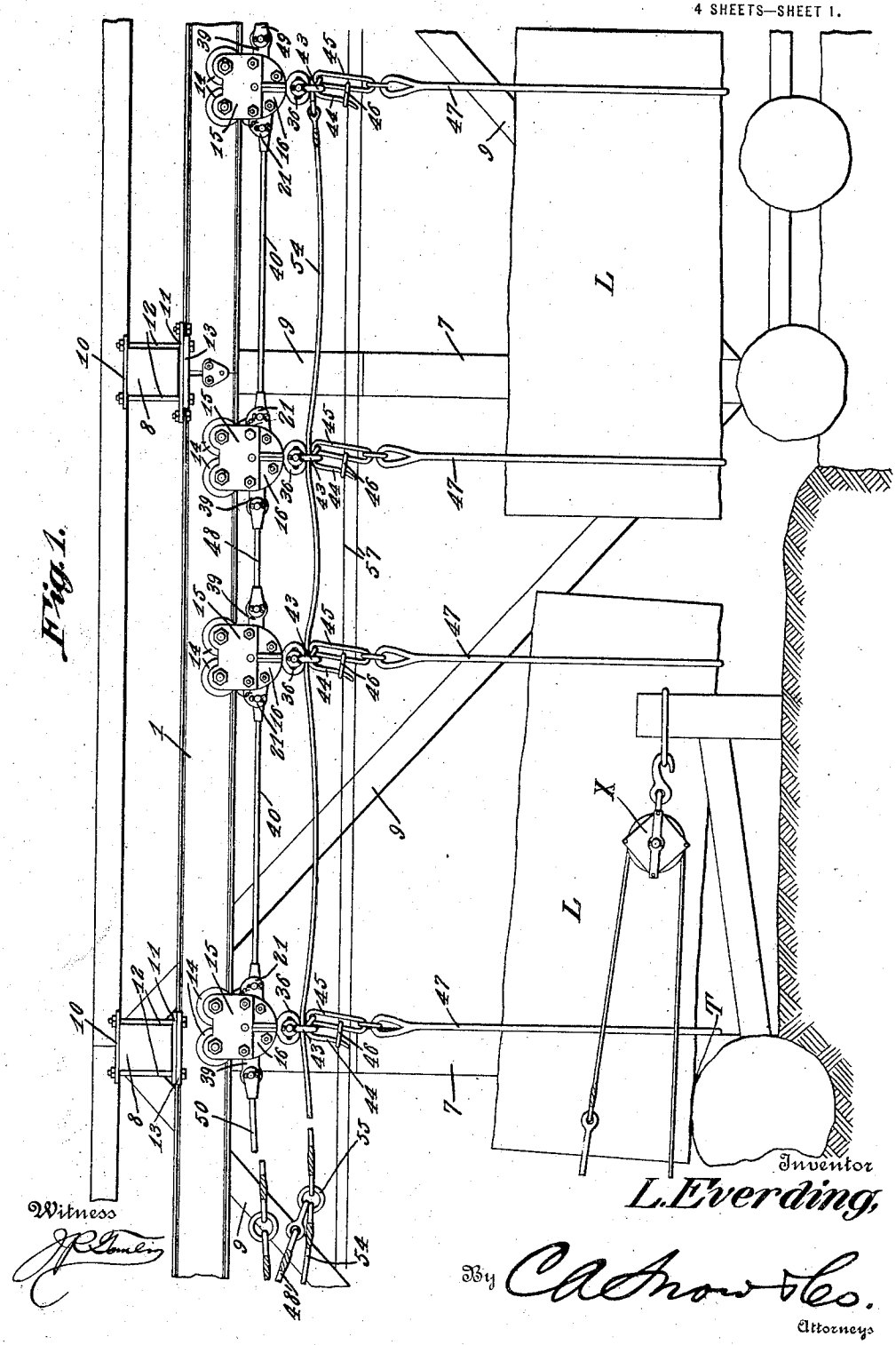

Fig. 1.

Witness

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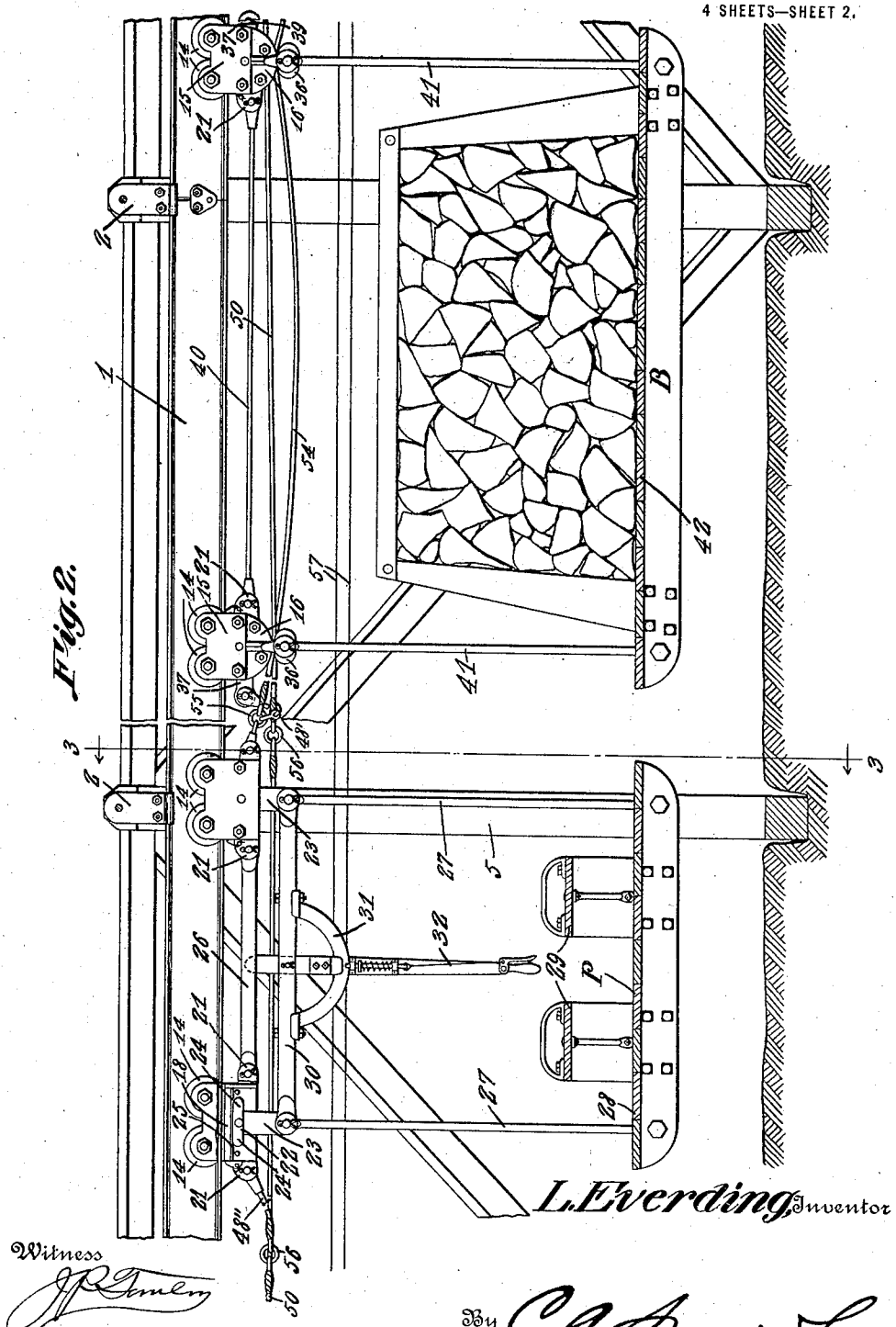

Fig. 2.

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4 SHEETS—SHEET 3.

Fig. 9.

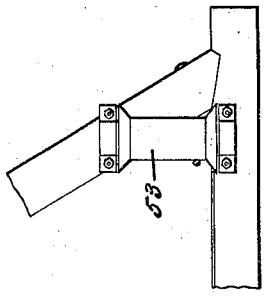

Fig. 3.

Fig. 7.

Fig. 8.

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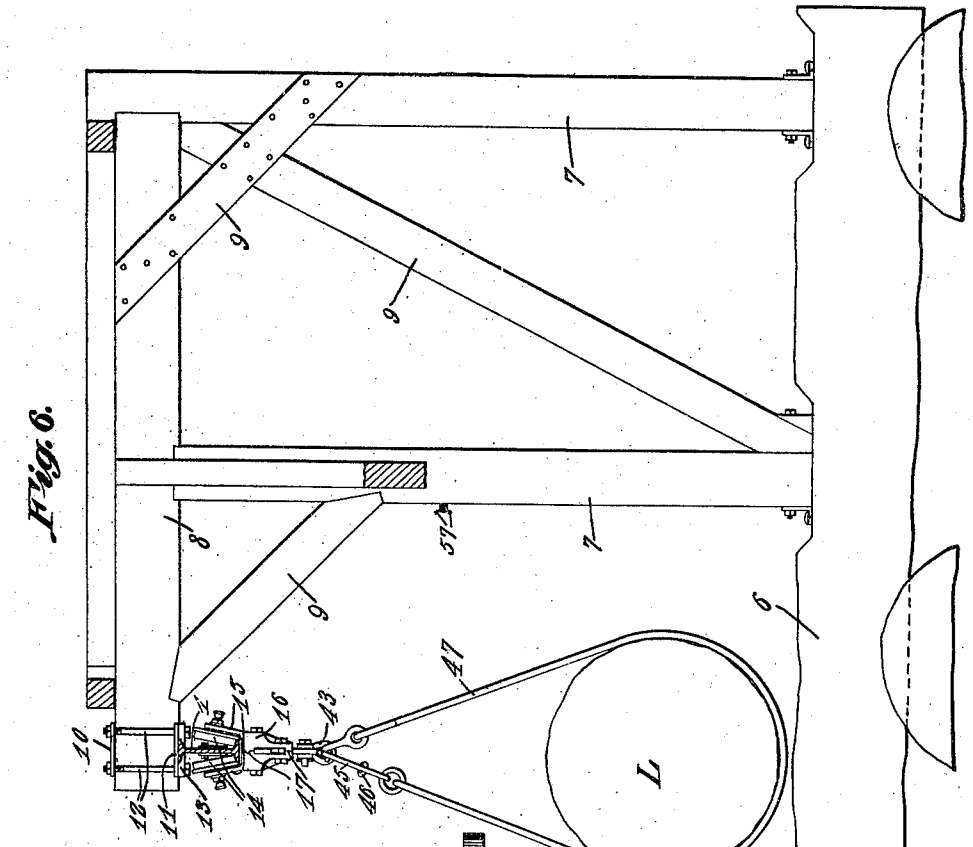

Fig. 6.

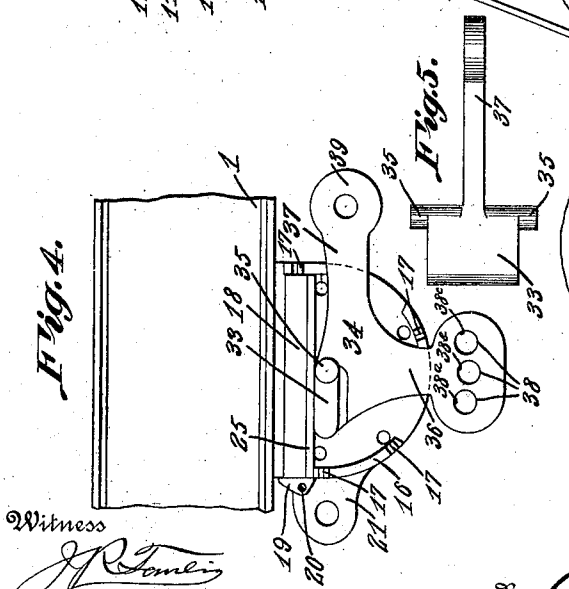

Fig. 5.

Fig. 4.

Witness

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UNITED STATES PATENT OFFICE.

LOUIS EVERDING, OF ARCATA, CALIFORNIA.

AERIAL TRANSPORTING SYSTEM.

1,299,314. Specification of Letters Patent. Patented Apr. 1, 1919.

Application filed July 18, 1918. Serial No. 245,561.

To all whom it may concern:

Be it known that I, LOUIS EVERDING, a citizen of the United States, residing at Arcata, in the county of Humboldt and State of California, have invented a new and useful Aerial Transporting System, of which the following is a specification.

This invention relates to aerial systems of transportation and is especially designed for use in handling timber, it being possible, by the use of the apparatus, to transport lumber, logs, bark, workmen, etc., up and down steep inclines, over uneven ground, and in many places where it is practically impossible to construct a railway, because of the topography, inaccessibility, and high cost.

A further object is to provide a system of transportation which is easily constructed, cheap to install, and will handle all loads in an efficient manner, whether or not there are passengers.

Another object is to provide means whereby the speed of the carriers, while traveling down an incline, is controlled automatically.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts which will be hereinafter more fully described and pointed out in the claims, it being understood that various changes may be made in the construction and arrangement of the parts without departing from the spirit or sacrificing any of the advantages of the invention as set forth in the appended claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings,

Figure 1 is a side elevation of a portion of the apparatus, showing log carriers at a loading station.

Fig. 2 is a vertical longitudinal section through another portion of the apparatus showing wood and passenger carriers which may be combined in one train with the carriers shown in Fig. 1.

Fig. 3 is a section on line 3—3, Fig. 2.

Fig. 4 is a side elevation of the brake of one of the carriers, the cover plate thereof being removed.

Fig. 5 is a plan view of a brake shoe and its arm.

Fig. 6 is a transverse section through the apparatus showing the construction and arrangement of parts at a log unloading station.

Fig. 7 is a transverse section through the apex portion of an A-frame and showing the arrangement of rollers employed for guiding the cables at the bottom of an incline.

Fig. 8 is a detail view of one of the base timbers or sills and showing means employed for guiding a cable at the top of an incline.

Fig. 9 is an elevation of one side portion of an A-frame and showing a means employed for guiding a cable at a turn.

Referring to the figures by characters of reference, 1 designates the supporting rail of the system and is formed of I-beams suitably coupled together and extending throughout the length of the system. The upper flanges of the rail are engaged at intervals by hangers 2 the lower ends of which are hooked to engage the flange at one side of the rail, as shown at 3, while a clamping plate 4, which is hooked to engage the other side flange, is fastened to the hanger by bolts or in any other desired manner. This form of hanger is designed primarily for use in connection with an A-frame 5 constituting the principal form of support used with the rail 1. At loading and unloading stations the rail is supported by a framework such as shown in Fig. 6 and which is made up of base timbers or sills 6 having standards 7 erected thereon and supporting a top beam 8 which extends laterally beyond the standards, this top beam and the standards being suitably braced, as shown at 9. Instead of using the hangers 2 for securing the rail to the beams 8, top and bottom plates 10 and 11 can be fastened to the projecting end of the beam 8 by bolts 12, these bolts also serving to secure plates 13 in position to engage and hold the top flanges of the rail. See Fig. 6.

The lower flanges of the rail 1 are adapted to be engaged by and to support wheels 14 journaled on the inner sides of the upwardly diverging wings 15 of a carriage 16 which is arranged under the rail 1 and is formed of opposed members bolted together as shown. Preferably two wheels are connected to each of the wings and the opposed members of the carriage are preferably held spaced apart by interfitting lugs 17 on the inner faces thereof. This space between the side members is provided for a brake block 18 of wood or other suitable material which

is supported close to and under the rail 1 and is held detachably within the carriage by a holding block 19 secured in place by a removable pin 20 or the like. This pin extends through spaced ears extending from one end of the carriage, as at 21, the block 19 projecting between the ears. A lifting lever is fulcrumed in each carriage and these levers can be of different forms. Where the carriage is used to support a passenger carrier such as shown at P in Fig. 2, the lifting lever is T-shaped as at 22 and has a central depending arm 23 and oppositely extending upper arms 24. The arms 24 extend under and support a wear plate 25 on which rests the brake block 18. The carriages are arranged to form a pair and the ears 21 of said pair of carriages are pivotally engaged by the ends of a coupling bar 26. Hangers 27 extend from the arms 23 and are pivotally connected to the ends of the platform 28 of the carrier P, it being understood that one or more seats 29 can be provided on the platform for the passenger or passengers. A bar 30 connects the arms 23 and has secured to it a segment 31. A controlling lever 32 is fulcrumed on the bar 26 and is pivotally connected to the bar 30, this lever extending to a point where it can be reached conveniently by a passenger.

Where the carriages are to be used to support lumber, bark, logs, and the like, another form of brake lifting lever is used. This form has been shown in detail in Figs. 4 and 5 and includes a plate 33 formed on the angle portion of a bell crank lever 34, said lever having trunnions 35 engaging the sides of the carriage and having one arm, 36, extended downwardly while the other arm, 37, is extended outwardly from the carriage. The lower end of the arm 36 is enlarged and formed with a series of openings 38 as 38^a, 38^b, 38^c, (see Fig. 4) while the other arm 37 has a terminal eye 39. In this form of device the plate 33 supports the wear plate 25 under the brake block 18. A bar 40 connects the ears 21 on the carriages of the bark or lumber carrier B and the arms 37 of the carriages of said pair are extended away from each other. Hangers 41 are secured at their upper ends in any of the holes 38 and their lower ends are pivotally connected to and support the ends of the platform 42 of the carrier.

Where logs are to be transported loops or clevises 43 are connected to the lower ends of the arms 36 and are adapted to be engaged by hooks 44 pivotally connected to the upper ends of links 45 and held against movement relative to the links by rings 46. Slings 47 are connected to and supported by the links 45 and are adapted to be extended under the logs L as shown. It might be stated, at this time, that a log can be placed in its slings 47 by rolling the log into position on cross timbers under the rail 1 at the loading station and as shown at T in Fig. 1. One of the slings is placed under the forward end of the log and both ends of the sling secured to the clevis provided therefor. By means of block and tackle X or any other suitable means, the log is forced longitudinally as the carriages are moved along the rail 1 and the other sling is then placed under the rear end portion of the log. The log is then drawn off of the timbers at the loading station and will be supported solely by the slings until the unloading station is reached whereupon the rings 46 are disengaged from the hooks 44 and the slings drop off of the clevises. This will cause the log to be deposited on timbers 6 (see Fig. 6) along which it will roll into the mill or onto the platform C of an awaiting car.

It is to be understood that a number of carriers, each having a pair or coupled carriages, can be connected together to form a train for transporting loads of material and the carriages of adjoining pairs are to be connected together by short cables 48 or the like attached to the eyes 39. A haul cable 49 is connected to the eye 39 at the front end of the train and is extended within the rail supporting structure to the far or delivery end of the system. A return cable 50 extends from the loading to the delivery end of the apparatus by the most direct route possible and is connected to the eye 39 at the rear end of the train.

When the haul cable is taken up the carriages will be drawn along the rail 1 up inclines of any grade and, as the connections between the carriages are taut during this movement the levers 34 will be held without lifting the brake blocks 18 against the rail. However, when the carriages move downwardly along an incline, the haul cable becoming slack, will allow the loads, which will always hang vertically from the carriages, to shift the levers 34 relative to the carriages and cause the plates 33 to press the blocks 18 upwardly against the rail 1 and retard the movement of the carriages until a pull is again exerted by the haul cable. Only the front brake shoe 18 of each carrier will be applied while the carriages are moving down an incline, one shoe operating during the movement of the train toward the delivery end of the apparatus and the other shoe of each carrier being applied during the movement of the train toward the loading end of the apparatus. The return cable 50 will bring the train back to its starting point although, where there is a grade extending throughout the length of the system, one of the cables can be dispensed with and the train caused to move by gravity in one direction.

Guide rollers 51 can be mounted in the top

portions of the A-frames for engagement by the cables at low points in the system. Other rollers 52 can be mounted on the bottom timbers of the A-frames etc. at high points of the system, thus to guide the cables and where there are turns in the track, guide rollers 53 can be located at the sides of the A-frames or other rail supports.

Every train is designed to have coupled to the rear end thereof a passenger carrier such as shown, for example, in Fig. 2. This and other carriers, such as the carrier B can be detachably connected to the train as shown. By referring to Figs. 1 and 2 it will be noted that a short haul cable 54 is connected to the foremost clevis of the train and passes rearwardly through the several clevises and is attached to the front carriage of the carrier P. Rings 55 are carried by this cable 54 and coupling cables 48′ can be used for connecting the eyes 39 of the carrier B to these rings. The cable 50 has rings 56 and the rear end of the carrier P can be coupled to one of them by means of a short cable 48″ or the like extending from the rear ear 21 thereof. By thus coupling the carriers P and B to the train they can be uncoupled readily from the train and placed on a siding while the train is being made up and can thereafter be coupled to the train if so desired.

By having a passenger carrier at the rear end of the train the lever 32 can be utilized to apply the brake shoes 18 of the carrier P wherever an emergency arises, as, for example, should the haul cable break.

By adjusting the hangers of the carriers relative to the depending arms of the brake lifting levers, the application of the brakes can be regulated. For example, by placing the hangers 41 or the clevises 43 in engagement with the openings 38^a (see Fig. 4) the brake shoes 18 will only be applied to the rail 1 on very steep grades; by placing them in engagement with the openings 38^b the shoes will be applied at all grades; whereas, by attaching them to the arms at the openings 38^c a brake shoe 18 that has been worn down until quite thin, can still be used effectively.

In order that the passenger on the carrier P can properly signal the engineer when to start or stop the train, parallel wires 57 are extended along the supporting structure of the rail 1. These wires are insulated from each other and one is extended from a source of electrical energy while the other is extended to a signal. The passenger is provided with a hooked member 58 constituting a switch and by placing this member on the two wires so as to establish an electrical connection therebetween, the signal will be operated. As the wires run parallel with the path of the train they can be reached readily at any point.

What is claimed is:—

1. In an overhead carrier system the combination with a rail, and carriages mounted to travel therealong, of load supporting means suspended from the carriages, means operated by the supported load for frictionally engaging the rail to retard the movement of the carriages down an incline, a haul cable, and means operated by the cable when drawn taut for releasing the rail from the retarding means.

2. In an overhead carrier system the combination with a rail, and a carriage mounted to travel therealong, of a rail engaging brake shoe upon the carriage, load supporting means suspended from the carriage, means operated by the relative movement of the carriage and swinging movement of the load supporting means for applying the shoe to the rail during the movement of the carriage down an incline, a haul cable, and a connection between said cable and carriage for holding the shoe disengaged from the rail when the cable is taut.

3. In an overload carrier system the combination with a rail, of a connected pair of carriages mounted to travel thereon, load supporting means suspended from and adapted to swing relative to the carriages, a haul cable adapted, when taut, to hold the load supporting means against swinging relative to the carriages, and means actuated by said load supporting means when swung relative to the carriages, for frictionally engaging the rail and retarding the movement of the carriages.

4. In an overhead carrier system the combination with a supporting rail, of a pair of carriages movable along the rail, a connection between the carriages, a vertically movable brake shoe in each carriage, lifting levers in the carriages and extending under and adapted to elevate the respective shoes, and means suspended from the carriages and adapted to swing relative thereto for actuating the levers and applying the shoes to the bottom of the rail.

5. In an overhead carrier system the combination with a supporting rail, of carriages movable along the rail and coupled together in pairs, a brake shoe in each carriage and under the rail, a brake lifting lever in each carriage and having an arm extending outwardly therefrom, load engaging means suspended from the levers and adapted to swing relative to the carriages to lift the shoes into engagement with the rail, means for coupling together the lever arms of adjacent pairs of carriages, and a haul cable connected to one of the arms.

6. In an overhead carrier system a carriage including connected members, rail engaging wheels attached thereto, a brake shoe movable upwardly and downwardly between said members, a lever fulcrumed between

the members for shifting the shoe, and load supporting means suspended from the lever.

7. In an overhead carrier system a carriage including connected side members, rail engaging wheels attached thereto, a brake shoe between the members, a shoe lifting lever fulcrumed in the carriage and having a depending arm, there being a series of apertures in said arm, load supporting means secured within any one of the apertures and suspended from the arm.

8. In an overhead carrier system a carriage including opposed side members, rail engaging wheels connected thereto, a brake shoe within the carriage, a shoe lifting lever within the carriage and having a depending arm and a longitudinally extending coupling arm, and load supporting means connected to the depending arm.

9. In an overhead carrier system a carriage including opposed side members, rail engaging wheels connected thereto, a brake block insertible longitudinally between said members, a retaining block detachably secured to the members for holding the brake block in position, a block lifting lever, and load supporting means suspended from and adapted to actuate the lever.

10. In an overhead carrier system, the combination with a rail and connected carriages mounted to travel therealong, of load supporting means mounted to swing relative to and suspended from the carriages, means operated by the swinging of the supported load for retarding the movement of the carriages along the rail.

11. In an overhead carrier system the combination with a rail, of connected carriages movable along the rail, brake shoes upon the carriages, shoe lifting levers depending from the carriages, load supporting means suspended from the levers, a haul cable connected to one of the levers, and a return cable connected to the other lever, each cable, when taut, constituting means for preventing relative movement of its lever and application of the brake shoe thereof during the movement of the carriages down an incline, or along a level.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

LOUIS EVERDING.

Witnesses:

WARREN H. MOULTON,

C. F. EMENEGGER.