H. M. HARDING.

SWITCH FOR MONORAILS.

APPLICATION FILED APR. 15, 1911.

994,461.

Patented June 6, 1911.

2 SHEETS—SHEET 1.

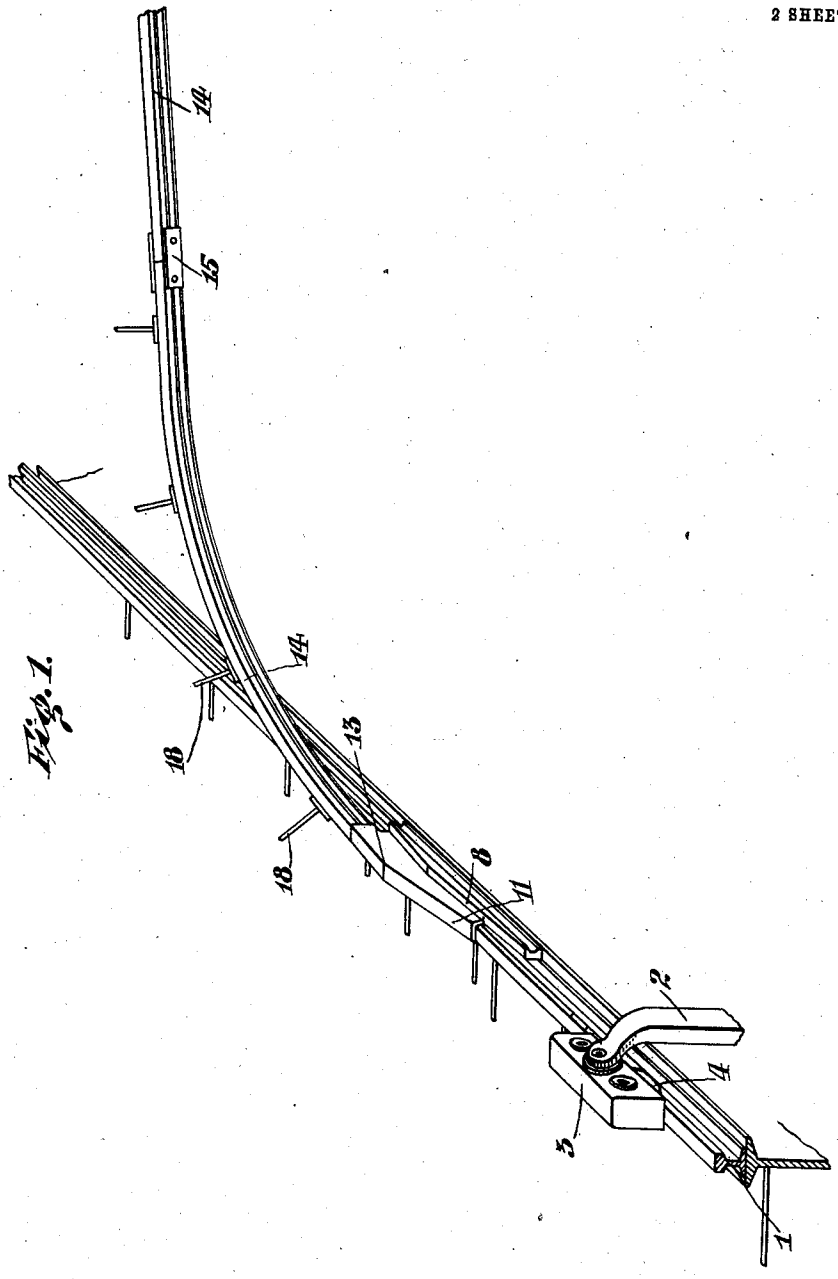

Fig. 1.

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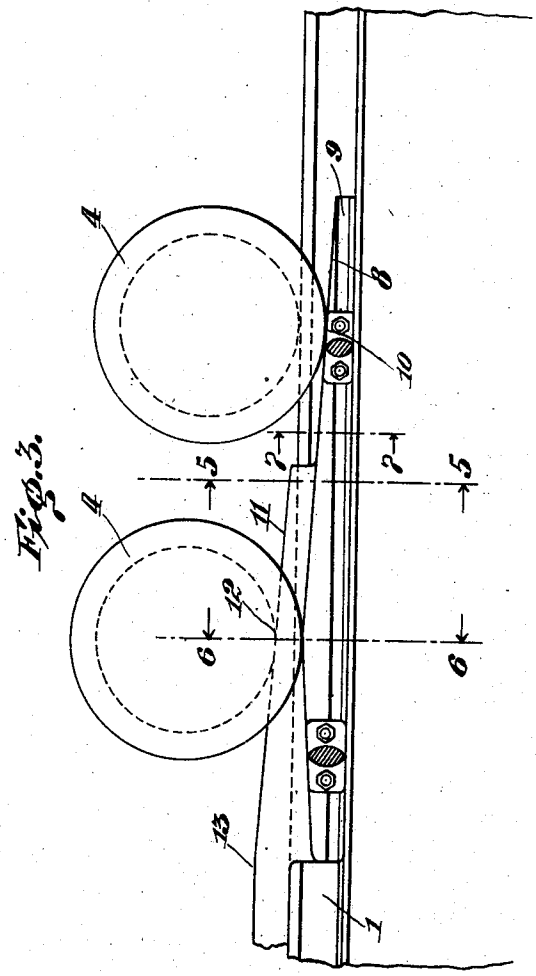

Fig. 3.

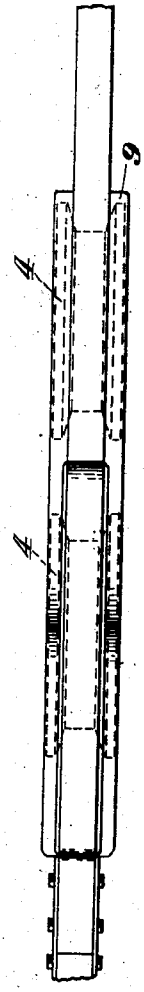

Fig. 4.

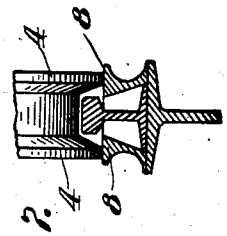

Fig. 7.

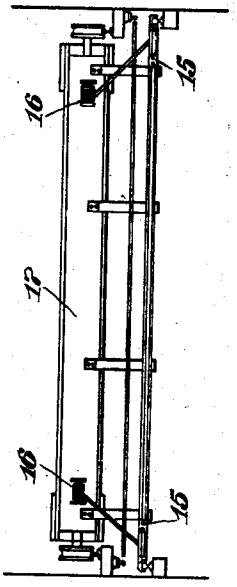

Fig. 2.

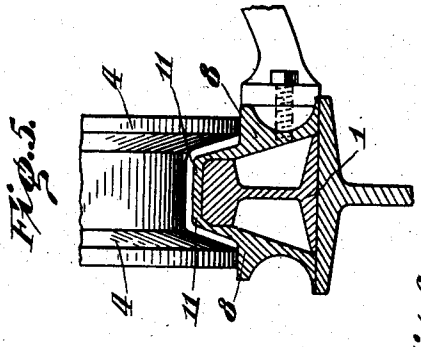

Fig. 5.

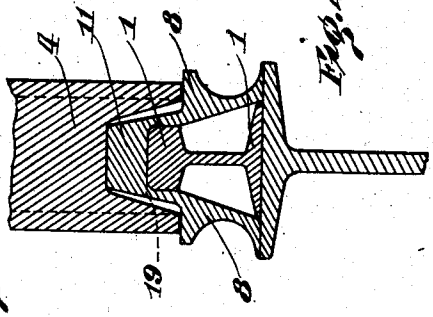

Fig. 6.

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UNITED STATES PATENT OFFICE.

HENRY M. HARDING, OF NEW YORK, N. Y.

SWITCH FOR MONORAILS.

994,461. Specification of Letters Patent. Patented June 6, 1911.

Application filed April 15, 1911. Serial No. 621,193.

To all whom it may concern:

Be it known that I, HENRY M. HARDING, a citizen of the United States, residing in the city of New York, State of New York, have invented certain new and useful Improvements in Switches for Monorails, of which the following is a specification.

Monorail systems, such as are described in my Patent No. 961,348, dated June 14, 1910, comprise an overhead rail on which travels a car. The wheels of the car have flanges on both sides, whereby they are held in position on the rail, and depending from the car are down-comes, which support, below the rails, trucks, grab-buckets, or other devices for transporting material or goods.

Certain portions of the above referred to monorail system consist of permanently located stationary main tracks, but in order to facilitate handling and storage of various materials and goods it is necessary from time to time to provide means for reaching portions of the under-lying area other than those to which the stationary main rails afford access.

In my Patent No. 961,348 above referred to I have shown that this may be accomplished by the use of traveling tracks which may be placed where desired and on to which the cars may be switched from any point on the stationary main track.

The chief object of my present invention is to provide a switch device for leading the car wheels from the main track to the traveling tracks, but my switch may obviously be used in any other connection where desired to lead a wheel from one track to another.

Since my switch need not be attached at a constant point on the main rail it is desirable that the integrity and uniformity of the main rail be not interfered with.

My device may consist of a saddle which straddles and engages the main rail at any point where it may be desired, or may consist of a side inclined-plane or planes only, not of necessity forming or verging into a saddle.

Inasmuch as the wheels of the telpherage car have flanges on both sides of the rail it is obvious that in order to pass from the rail, it is essential either to provide a passage through the rail for one of the flanges, or to lift the flange over the rail. The latter method is the method which will maintain the integrity of the main rail.

In elevating the wheel preparatory to switching it, a wedge shaped device may be applied to the top of the rail and the wheel run on this, and so, as it travels up the incline, lift the flanges above the top of the main rail. It has been found however that the point of the wedge, which is necessarily very thin, is worn away, deformed and beaten out of position by the frequent impact of the wheel carrying the heavy loads at the high speeds common in telpherage systems.

I provide in my switch an incline which at its initial point or points is thick and adapted to stand the wear. This incline may consist of two portions. The first of which engages the flanges of the wheel and gradually lifts the wheel tread from contact with the main rail, and in addition to this incline is a second incline which engages the already elevated tread of the wheel and further elevates it so that the flange may pass over the top of the main rail, allowing the wheel to pass on to the switch-track, or the side flanges alone may accomplish this elevating and the tread not engage the switch rail until the flanges are above the main rail.

The entire traveling track including the switch may be supported by a traveling crane or bridge and may be lifted as a whole from engagement with the main track, or the curved end carrying the switch may alone be lifted or it may be hinged or pivoted so as to move in a vertical or diagonal plane, removing the switch from the main track without requiring the movement of the switch track which may indeed be itself stationary and obviously my invention may be applied to a stationary switch connecting stationary tracks, but in the instance illustrated and described in the drawings, it is a movable switch applied to a moving track and of course may slide or roll along the main track from place to place without being raised so as to actually disengage the main track unless so desired. In one form my switch may be disengaged from the track by movement in a horizontal plane alone.

In the accompanying drawings Figure 1 represents a perspective view of my switch applied to the junction between two rails.

Fig. 2 shows a moving cross-rail supported from an over head traveling crane in connection with which two of my switches are applied leading to a pair of parallel main rails. Fig. 3, shows a side elevation of my switch in position on a rail together with a diagrammatic illustration of two wheels in position on the switch. Fig. 4, is a plan view of Fig. 3, Fig. 5, is a section on the line 5—5 of Fig 3. Fig. 6, is a section on the line of 6—6 of Fig. 3. Fig. 7, is a section on the line 7—7 of Fig. 3.

The main track 1, is supported in any suitable manner and as shown in Fig. 1, rests upon an I-beam, which is supported in such a manner as to leave the inside free from obstruction for the passage of the downcome 2 of the trolley or carrier 3, which travels on the wheels 4.

The switch consists of an incline 8, of a casting which extends down to and rests upon the I-beam, supporting the main rail, which gives the switch a rigid foundation. (The casting might rest on the lower flange of the rail itself.) As illustrated, the lowest point 9 of the inclined plane 8, is farther from the top of the rail than the depth of a flange so that when the wheel flange comes in contact with the inclined plane 8 at the point 10 there is not an attenuated end to be subjected to hammering of the flanges. Somewhat beyond the point 10, on the inclined plane 8 there is formed across the top of the main rail, a second inclined plane 11. The incline 11 is made slightly steeper than the incline 8, so that as the wheel travels up the incline 8, and the tread is raised from contact with the main rail it finally reaches the point 12, at which the tread of the wheel is brought into contact with the incline 11. The contact point 12, is away from the point or end of the incline 11, and there the incline 11 has sufficient thickness to give it rigidity and wearing power. As the wheel travels up the incline 11 it is raised so that when it reaches the point 13, at the top of the incline the bottom of the wheel flanges have been raised above the upper surface of the rail 1, so that the wheel can leave that rail and travel upon the switch rail 14, to which the switch leads. The incline 8 might be continued and the entire lift of the wheel accomplished on the flanges till the wheel is delivered above the main rail onto the switch track in which event the incline 11 might be entirely omitted.

The initial portion of the switch rail carrying the switch may be pivoted at 15, to the switch rail proper, so that by any suitable means the switch may be raised from contact with the main rail. In Fig. 2, I have shown a cable attached to one or more of the hangers 18 and running on a drum 16, as one means for effecting this lift, the pivot 15 might however be replaced by a rigid connection and the switch rail and switch as a whole raised by the traveling crane 17, leaving the main track free throughout its length for the travel of the car.

The crane 17 as it travels may slide the switch and switch rail from place to place on the main rail without disengaging it therefrom. The left hand portion of the switch below the point 10 on Fig. 6, might obviously be omitted and the inclined plane engaging one flange of the wheel be relied upon to lift the wheel. In this event a vertical pivot might be substituted for the pivot 15, and the switch removed from engagement with the rail by movement in a horizontal plane alone and it is obvious that numerous changes in detail might be made without departing from my invention.

I claim as my invention:

1. In a monorail system, a stationary main track, a moving track, and a switch between the tracks comprising an inclined plane for engaging the wheel flanges and an inclined plane for engaging the wheel tread.

2. In a monorail system, a main track, a moving switch-track, and a switch between the tracks and pivoted to the switch comprising an inclined plane for engaging the wheel flanges and an inclined plane for engaging the wheel tread.

3. In a monorail system, a main track, a moving switch track, a switch between the tracks comprising an inclined plane for engaging the wheel tread, means for moving the switch track and means for causing the switch to engage and disengage the main track.

4. In a monorail system, a main track, a moving switch track, switches between the two tracks adapted to engage the main track at any point throughout its length, an inclined plane on the switch for engaging the wheel flanges, an inclined plane on the switch for later engaging the wheel tread whereby the flanges are raised above the main track, and means for moving the cross-track and switch.

5. In a switch, an inclined plane engaging the wheel flange to lift the tread from track contact and an inclined plane engaging the tread later to lift the flange above the track.

6. In a monorail system, a main track, a switch track, a switch between the tracks comprising an inclined plane for engaging the wheel flange and an inclined plane for engaging the wheel tread.

7. In a monorail system, a main track, a switch track, a switch between the tracks and pivoted to the switch track comprising an inclined plane for engaging the wheel flanges and an inclined plane for engaging the wheel tread.

8. In a monorail system, a main track, a

moving track, a switch between the tracks comprising an inclined plane for engaging the wheel flange and an inclined plane for engaging the wheel tread, means for moving the moving track and means for causing the switch to engage and disengage the main track at any point on the main track.

9. In a monorail system, a main track and a moving switch track, switches between the two tracks adapted to engage the main track at any point throughout its length, an inclined plane in the switch for engaging the wheel flange, an inclined plane in the switch for later engaging the wheel tread whereby the flanges are raised above the main track and means for moving the switch track and switch along the main track.

10. In a monorail system, a main track, a switch track, and a switch between the tracks comprising inclined planes for engaging the wheel flanges and an inclined plane for engaging the wheel tread.

11. In a monorail system, a main track, a moving switch track, a switch between the tracks and pivoted to the switch track comprising means for engaging the main track at any point and an inclined plane for engaging the wheel flanges and an inclined plane for engaging the wheel tread and means for moving the switch track along the main track.

12. In a monorail system, a main track, a moving switch track, a switch between the tracks comprising inclined planes for engaging the wheel flanges and an inclined plane for engaging the wheel tread, means for moving the switch track and means for causing the switch to engage and disengage the main track.

13. In a monorail system, a main track, a moving switch track, switches between the two tracks adapted to engage the main track, at any point throughout its length, inclined planes on the switch for engaging the wheel flanges, an inclined plane on the switch for later engaging the wheel tread whereby the flanges are raised above the main track, means for moving the switch track and switch, and means for causing the switch to engage and disengage the main track.

14. In a switch, inclined planes engaging the wheel flanges to lift the tread from track contact and an inclined plane for engaging the tread later to lift the flanges above the track.

15. In a switch, a socket for engaging the track, inclined planes engaging the wheel flanges to lift the tread from track contact and an inclined plane engaging the tread later to lift the flanges above the tracks.

16. In a monorail system, a track, a moving track, a switch between the tracks comprising an inclined plane for engaging the wheel flanges, means for moving the moving track, and means for causing the switch to engage and disengage the main track.

Signed at New York, this 14th day of April, 1911.

HENRY M. HARDING.

Witnesses:
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GERTRUDE E. COYLE.