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GUIDING DEVICE FOR DOUBLE-RAIL TRAINS

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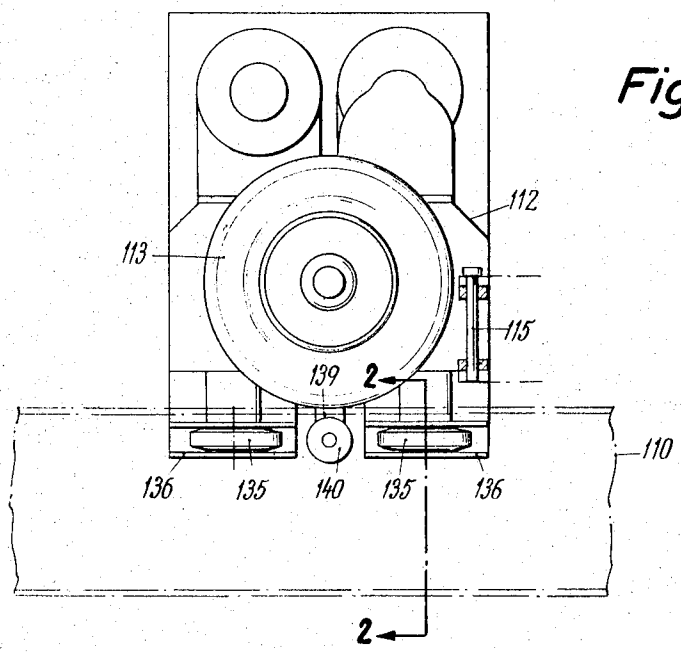


Fig. 1

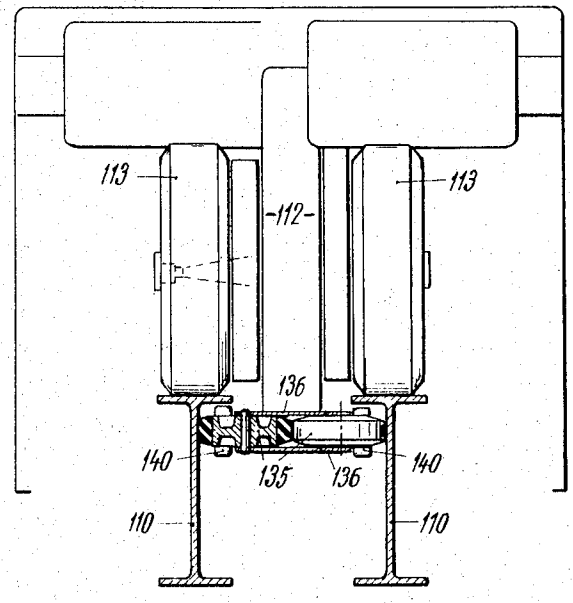


Fig. 2

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GUIDING DEVICE FOR DOUBLE-RAIL TRAINS

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ABSTRACT OF THE DISCLOSURE

A guiding device for a single axle, two wheel bogie of a train adapted to run along two rails of a narrow gauge double trail track, in which two pairs of guide rollers are carried by the bogie rotatable about substantially perpendicular axes and arranged between the rail so as to respectively engage with the webs of the latter and wherein a pair of bracing rollers are mounted on the bogie between the guide rollers of each pair of guide roller rotatable about the substantially horizontal axes and arranged to engage transverse flanges of the rails.

The present invention relates to a device for guiding the carriages of double-rail trains or the like, especially small-gauge trains, and more particularly it relates to improvements in such a train guiding device which comprises guide rollers which are mounted on a carriage or carriage bogie and are rotatable about substantially perpendicular axes between the rails by engaging upon the inner sides thereof.

It is the principal object of the present invention to improve one of the conventional guiding devices so as to insure that the carriages of a train or the like will be safely and reliably guided on the rails under any conditions and be securely prevented from derailing.

A further object of the invention consists in mounting the rollers which are provided for the above-mentioned purposes in the most compact and space-saving arrangement as possible, in which these rollers are also well protected from the outside.

An important feature of the invention for attaining these objects consists in preventing the carriages of a train or the like from derailing by providing them not only with guide rollers which are rotatable about substantially perpendicular axes and engage with the innert sides of the rails, but also with additional rollers which are rotatable about substantially horizontal axes and are adapted to engage upon the lower side of a laterally projecting part of each rail, for example, of an inwardly projecting flange on the upper side of the rail.

If the carriage is provided in a conventional manner with two guide rollers or two pairs of guide rollers behind each other, as it is done, for example, on the bogies of railroad or other carriages, the additional rollers according to the invention are preferably provided between the two guide rollers, as seen in the longitudinal direction of the carriage. These additional rollers may have a considerably smaller diameter than the main guide rollers since normally they are not subjected to any load and do not have to carry out any guiding action, but are primarily provided to serve as additional securing means for preventing a carriage from being lifted off the rails.

Another feature of the invention consists in mounting two guide rollers in a manner so as to be rotatable about substantially perpendicular axes which are located within the same transverse plane of the carriage or bogie and so that these guide rollers will be either in direct engagement or nearly in engagement with each other within this plane. Such an arrangement has the advantage over one in which only one guide roller is provided between the

two rails that even if both guide rollers engage simultaneously with the rails and also if both guide rollers engage with each other, each of these guide rollers can roll along the associated guide rail without sliding thereon.

The features and advantages of the present invention will become more clearly evident from the following description of a preferred embodiment thereof which is to be read with reference to the accompanying drawings, in which:

FIGURE 1 shows a side view of a bogie which is provided with a roller arrangement according to the invention; and

FIGURE 2 shows a front view thereof, partly in a cross section which is taken along the line 2—2 of FIGURE 1.

As illustrated in the drawings, the wheels **113** which are provided with rubber tires and are mounted on and support a bogie **112** are adapted to run along the upper surfaces of a pair of rails **10** which may have, for example, a double-T-shaped cross section. The bogie **112** may, for example, be rigidly connected within a horizontal plane to a carriage of a train or the like and be flexibly connected to another carriage either in front or at the rear of the first carriage by means of a coupling link **115** and preferably in a manner so as to permit the two carriages to run not only along curves but also along rail curvatures within a vertical plane at the beginning or end of steep grades. The bogie may, however, also be flexibly connected to two adjacent carriages of the train.

For guiding the bogie or the carriage in lateral directions, each bogie is provided with four guide rollers **135** forming two pairs which are located in front of and behind the wheels **113**. Each pair of these guide rollers **135** is rotatable about perpendicular axes by being mounted on and partly enclosed by a pair of supporting plates **136** which are secured to the bogie **112**, and they are made of such a size that, as illustrated in FIGURE 2, one of two rollers **135** which are disposed opposite to each other in a direction transverse to that of the rails **110** is adapted to roll along the left rail **110** and the other roller along the right rail, and both rollers engage with and roll along and press against each other within the central vertical longitudinal plane of the rail track.

In addition to the guide rollers **135**, the invention provides further rollers or bracing rollers **140** which are mounted on bearing elements **139** on the bogie **112** so as to be rotatable about a horizontal axis, and they either directly engage or nearly engage with the lower side of the inner flanges on the upper side of the double-T rails **110**. These additional rollers **140** thus absolutely prevent the bogie or carriage from being lifted off the rails. They may for this purpose either engage directly and under any desired pressure upon the upper flanges of the rails or they may be spaced at a small distance therefrom, especially when the bogie or carriage is running on the rails under a heavier load.

Although my invention has been illustrated and described with reference to the preferred embodiment thereof, I wish to have it understood that it is in no way limited to the details of such embodiment but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed my invention, what I claim is:

1. A guiding device for a bogie of a train or the like adapted to run along two rails of a narrow gauge double-rail track, each of said rails having an upper, substantially horizontal flange and a substantially vertical web, said guiding device comprising a bogie part; a single pair of coaxial wheels rotatably mounted on said bogie part and adapted to run along the upper sides of said flanges; two pairs of guide rollers mounted on said bogie part

so as to be rotatable about substantially perpendicular axes and disposed between said two rails, the wheels of each of said two pairs of guide rollers being disposed behind each other, as seen in the longitudinal direction of said rails, and respectively to opposite sides of the axis of said single pair of coaxial wheels, one of said pairs engaging with and adapted to run along the web of one of said rails and the other pair engaging with and adapted to run along the web of the other rail for preventing said wheels from derailing in lateral directions; and a pair of bracing rollers arranged at a distance from each other smaller than the distance between the web-engaging portions of corresponding guide rollers of said two pairs of guide rollers, each of said bracing rollers being disposed between the two guide rollers of each pair, as seen in said longitudinal direction, and mounted on said bogie part so as to be rotatable about a substantially horizontal axis and adapted to engage with the bottom face of said upper flange of one of said rails for preventing said wheels from being lifted off said rails.

2. A guiding device as defined in claim 1, in which each of said bracing rollers has a smaller diameter than that of said guide rollers.

3. A guiding device as defined in claim 1, in which each of said guide rollers has a diameter substantially equal to one half of the distance between said substantially perpendicular webs of said two rails and is rotatably mounted adjacent to and other guide roller on said bogie part within the same transverse plane of said bogie so as to engage with said other guide roller within said plane.

4. A guiding device as defined in claim 1, in which each of said guide rollers and bracing rollers is provided with a rubber tire.

5. A guiding device as defined in claim 1 wherein the axes of said bracing rollers are located substantially in a horizontal plane of symmetry of said guide rollers.

6. A guiding device as defined in claim 5, wherein the axes of said bracing rollers are located substantially in a vertical plane including the axis of said wheels.

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