

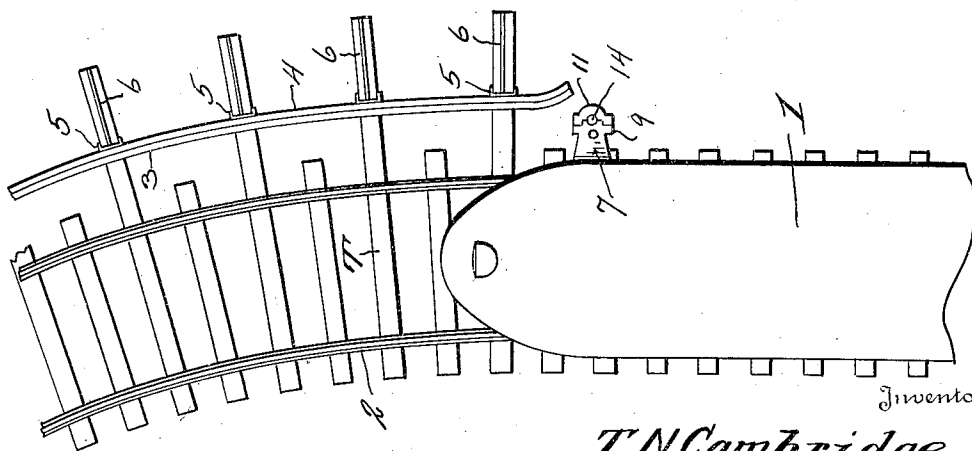
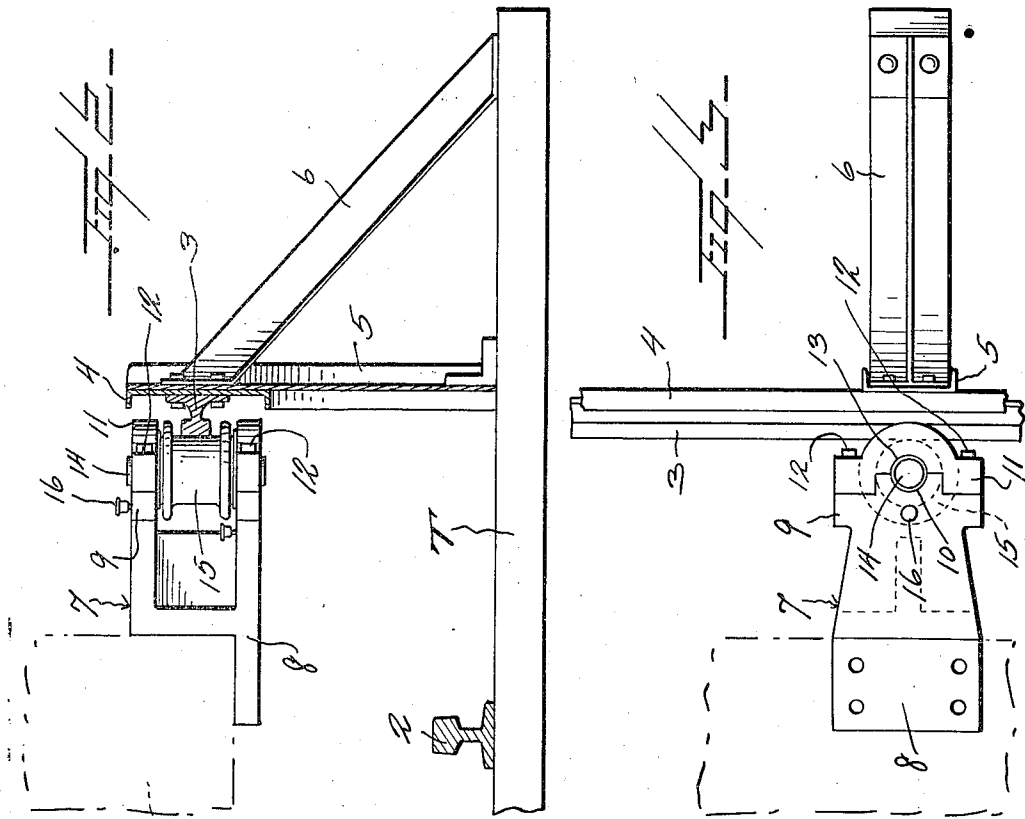
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SAFETY GUARD FOR TRAINS

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# UNITED STATES PATENT OFFICE

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## SAFETY GUARD FOR TRAINS

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1 Claim. (Cl. 104—245)

This invention relates to safety equipment for railroads and pertains particularly to a means or device for protecting trains against accident when traveling at high speed around curves.

5 Railway trains when traveling at high speed are obliged to check such speed when approaching curves because of the danger of accident resulting from the centrifugal action or tendency through inertia for the cars to continue to travel along  
10 the path which they had been following when the curve is entered and unless the speed of the train is reduced, spreading of the rails or overturning of the cars of the train is likely to result.

The present invention has for its primary object to provide a means for safeguarding trains  
15 on curves so that the train may maintain its full speed on approaching and entering a curve without danger of spreading the rails or of leaving the track.

20 A further object is to provide a safeguard means for trains on curves which is so designed that a bracing action will be obtained for the cars of the train at the forward end of each car and in substantially the same plane as the floor of the  
25 car so that the maximum efficiency of action will be obtained, thus permitting the train to operate at the desired high speed on a curve.

More specifically, the invention comprises employment of a guard rail along the convex side  
30 of the track curve in association with a wheel carried bracket which is secured to the body of each car of the train so that the wheel will contact the braced guard rail and prevent the car from swaying outwardly as it goes around the curve,  
35 and also preventing the application of such excessive pressure by the wheels of the car trucks as would be likely to cause the track rails to shift or cause the wheels to ride over the rails so as to derail the car. The guard rail and bracket  
40 carrying wheel are disposed at such an elevation as to balance the pressure applied to the side of the car so that in addition to preventing the undesired action of shifting of the outside rail of the track or the tendency of the car wheels to  
45 ride over the track on the curve, the tendency of the upper part of the car to swing outwardly over the guard rail as it would be likely to do if the guard rail and contacting wheel were placed low down or close to the ground, is avoided.

50 The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention  
55 is not to be confined to any strict conformity

with the showing of the drawing but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claim.

In the drawing:

Fig. 1 is a view in plan of a portion of the guard rail structure together with the car carried unit, embodying the present invention, showing the guard rail and unit in operative position.

Fig. 2 is a sectional view taken transversely of the guard rail looking toward the car carried unit.

Fig. 3 is a plan view of the structure of Fig. 2.

Referring now more particularly to the drawing, the numeral 1 generally designates the body of a railway car while the supporting track rails therefor are indicated at 2.

In accordance with the present invention, there is provided at the outer side of a curve in the track, a bracing rail 3 which may comprise a section of light gauge track rail curved to conform to the outside curvature of the track 2. This guard rail has its base secured to the inner side of the web of a channel iron bar 4, the concave side of the channel bar to which the brace rail 3 is secured, being directed toward the track. This unit consisting of the track bar or rail 3 and the channel iron bar 4 is supported by a series of steel posts 5 which may be mounted upon and secured to the track ties T. These ties may be of the usual wood type but under some conditions concrete type might be employed so as to give greater stability to the guard rail structure. The supporting posts for the guard rail are braced by the beam braces 6 which are disposed upon the sides of the posts opposite from the track and which may be of the T-form shown or of I-form, as desired.

The numeral 7 generally designates the guard rail engaging unit which is carried upon or secured to the train car. Each car of the train as well as the locomotive has one of these units secured thereto preferably at the forward end thereof so that the unit will come into operation immediately that the car which carries it starts to move along the curved portion of the track. In addition to having such a unit at its forward end, the rear end of each rear car of the train will have such a unit secured thereto to prevent whipping.

Each of the guard rail engaging units comprises a bracket 8 formed to provide upper and lower spaced arms 9, each of which at its outer end is formed to provide a bearing recess 10. To the outer end of each arm 9, a bearing cap 11 is secured by the bolts 12 and each of these bearing

caps has a semi-circular recess 13 which corresponds with the bearing recess 10 of the adjacent arm for the reception of a shaft 14 which is disposed vertically between the arms. The shaft 14 carries between the arms the flanged roller 15. Suitable means is provided for lubricating the bearings at the ends of the shaft 14 such as the grease cups 16, which are connected with suitable passages formed through the arms and leading to the bearing recesses 10.

A particular feature of the present invention resides in the disposition of the guard rail or roller engaging track 3 at an elevation above the train tracks at least equal to the elevation above the tracks of the floors of the cars. Thus the brackets 8 may be secured to the cars rather than to the trucks and, therefore, when the cars are passing around the curve adjacent which the guard rail is placed, there will be no tendency for the body of the car to shift outwardly relative to the wheel trucks no matter how fast the train may be traveling for the reason that the resistance to the outward movement is applied to the body rather than to the trucks as is the case in other devices of a similar nature. For this reason, it will be readily obvious that in addition to the fact that the present apparatus is structurally novel, its disposition is such with respect to the train cars that all tendency of the car as a whole to move tangentially to the track curve is avoided and also there is avoided the tendency of the car body to shift with respect to the wheel trucks as would be the case if the guard rail 3 and the roller carrying unit were placed on the wheel trucks and, therefore, at an elevation below the bottom or floor of the car.

It has previously been stated that the roller-carrying unit 7 is to be placed at the forward or front end of a car at about the elevation of the car floor and it is to be preferred that it be placed slightly ahead of the forward truck of the car and ahead of the pony truck of the engine. With this arrangement, it will be readily seen that the roller at the front end of each car or at the front end of the engine will contact the guard rail 3 as soon as the engine or car starts around the curve and, therefore, any tendency on the part of the train or car to leave the track or run tangentially to the curve will be immediately overcome.

What is claimed is:

In a safety structure for railway trains, including a buffer roller supported upon the side of a unit of a train for rotation upon a vertical axis, a buffer rail structure disposed adjacent the outer side of a track curve, comprising a series of vertical posts spaced along the track, an outwardly and downwardly extending brace arm connected at one end with each post and secured at its lower end against movement outwardly from the track, a channel iron rail longitudinally curved to substantially conform to the curvature of the track and secured to the upper ends of said posts with its channeled side directed toward the track, and a track rail extending throughout the length of said channeled rail and secured against the channeled face thereof with its head disposed at an elevation for engagement by said buffer roller upon the passage of a train along the curved extent of the trackway.

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