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COMPLETE SPECIFICATION.

Improvements in Overhead Railways with Suspended Vehicles.

I, EUGEN LANGEN, of 14 Werthstrasse, Cologne, in the Empire of Germany, Manufacturer, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

5 In the Specifications to my Patent No. 4189 of 1893 I described in connection with the single rail-construction of railway a construction of line rail, or of girder supporting the line rail, with broad curved bottom flange, so that the safety wheels situated immediately below the underside of such flange can shift laterally under the same as the vehicle swings laterally on the rail as a centre, owing to centrifugal
10 action on curves &c.

According to my present improvement, instead of making the underside of the rail or the supporting girders of the rail with a broad curved flange as described, I construct it in the ordinary manner, and according to one arrangement I provide on the underside thereof a safety rail, below which is a broad roller with
15 concave curved surface carried by the wheel frame of the vehicle, so that as the latter swings laterally the curved surface of the roller will move in a corresponding manner under the rail so as always to be in close proximity thereto.

According to another arrangement, the safety rail is carried by the framing that supports the line rail at a point above the latter, and the wheel frame of the vehicle
20 is provided with a safety roller with convex surface arranged so as to be always in close contiguity to the safety rail, in whatever position the vehicle may assume.

Fig. 1 of the accompanying drawing shews by way of example a vertical cross-section of a construction according to the first above described arrangement.

The girder A supporting the line rail B has fixed to its underside a safety rail B¹,
25 immediately below which is the broad roller C with concave surface formed as a circular arc struck from the top of rail B as a centre, the roller C being carried by the frame D of the running wheels E. The roller is made of such a width that on the vehicle F swinging to its extreme angular position, such as, for example that indicated by the dotted line X, the end of the curved surface of the roller C will still
30 be situated immediately below the rail B¹, and will thus prevent the running wheels from rising off the rail.

In the arrangement shewn in the vertical section at Fig. 2, the safety rail B¹ is carried by the supporting frame G, vertically above the line rail B, and the wheel frame D is extended upwards and carries the broad safety roller C¹ with convex
35 surface, the curvature of which is formed as the arc of a circle struck from the rail B, and which is situated immediately below the rail B¹.

In order to prevent the necessity of making the roller C¹ of undue width, it is arranged to slide longitudinally on its axis I, and the ends are provided with flanges as shewn, against which the rail B¹ abuts when the vehicle has assumed a certain
40 angular position, so that when the angle is increased, the rail will push the roller along its spindle to a corresponding extent. The roller is brought back to the middle position by means of two helical springs H bearing at the outer ends against collars on the axis I, and at the inner ends against an internal projection on the roller.

45 As the vehicle will always assume a certain inclined position on passing round curves, owing to centrifugal action, the safety rail B¹ can, at such curves be shifted laterally from the vertical centre line to a corresponding extent, as shewn at Fig. 2, where the section is supposed to be taken on a curve, the normal position of the safety rail being indicated in dotted lines.

Langer's Improvements in Overhead Railways with Suspended Vehicles.

The safety rail B¹ of Fig. 1 might also in like manner be shifted laterally on curves.

Having now particularly described and ascertained the nature of this invention and in what manner the same is to be performed, I declare that what I claim is :—

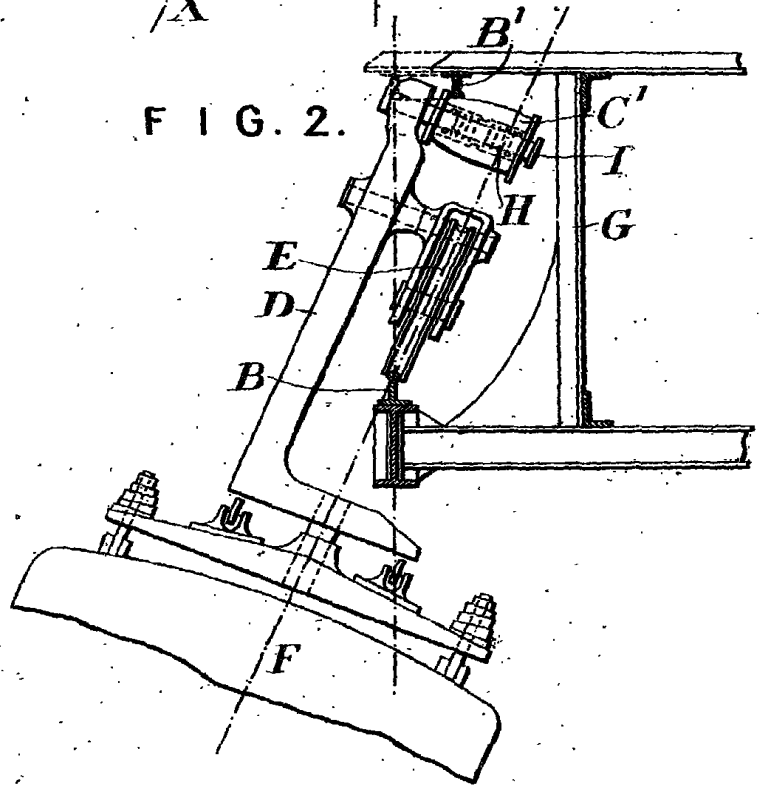
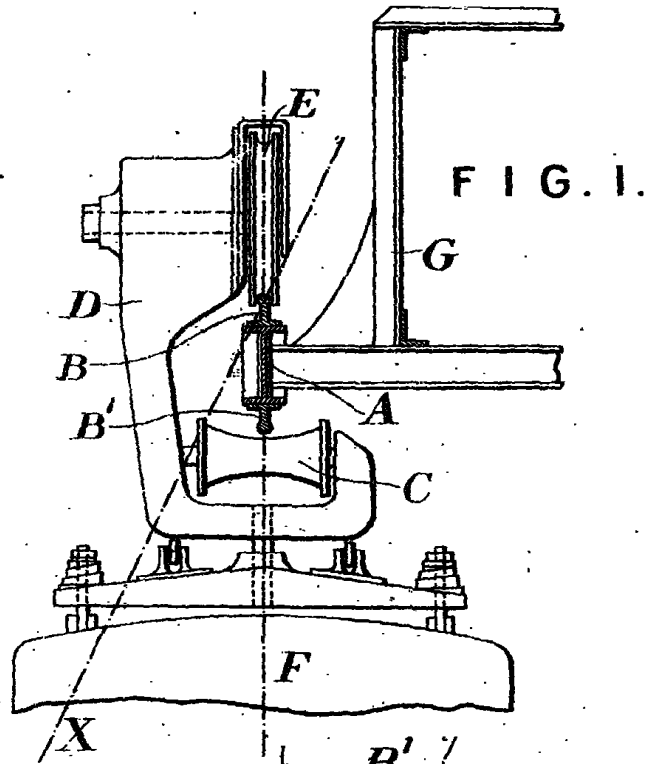
1. In an elevated railway with vehicles suspended from a single rail, the use of a safety rail carried by the line-rail support and operating in combination with a broad safety roller having a surface curved in longitudinal direction as a circular arc struck from the head of the line-rail, the said roller being carried by the wheel-frame immediately below the said safety rail in whatever angular position the vehicle may assume, substantially as described. 10

2. In an elevated railway with vehicles suspended from a single rail the use of a safety rail B¹ fixed on the underside of the support of the line rail B, and operating in combination with a broad safety roller C having a concave surface curved in longitudinal direction as a circular arc struck from the head of the line-rail B, the said roller being carried by the wheel frame D so as to be immediately below the safety rail B¹ in whatever angular position the vehicle may assume substantially as described with reference to Fig. 1. 15

3. The modified arrangement of the safety rail B¹ and roller C¹ described in reference to Fig. 2, in which the safety rail is carried by the line-rail support at a point above the line rail, and the safety roller C¹ is made with a convex surface curved in a longitudinal direction as a circular arc struck from the head of the line rail. 20

Dated this 21st day of May 1895.

ABEL & IMRAY, 25
Agents for the Applicant.



[This Drawing is a reproduction of the Original on a reduced scale.]