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COMPLETE SPECIFICATION.

[Communicated from abroad by EUGEN LANGEN'S ERBEN, of Werthstrasse 14, Cologne, in the German Empire.]

Improvements in Suspended Vehicles of Elevated Railways.

I, CHARLES DENTON ABEL, of 28 Southampton Buildings, Chancery Lane, in the County of London, Consulting Engineer and Chartered Patent Agent, 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:—

This invention relates to the construction of elevated railways with suspended vehicles, in which guard rollers are made to bear against the underside of the rail, such as were described in Patents Nos. 4189 of 1893, 5408 of 1895, and 10028 of 1895.

The present invention relates to means whereby such guard rollers, instead of being merely held up, to the rail without exerting pressure thereon, as was heretofore the case, are pressed with slight spring pressure against the rail whereby, while such pressure does not prevent the necessary lateral motion of the rollers relatively to the rail which must occur when the carriage is deflected laterally by considerable forces it is sufficient to prevent, or considerably reduce minor oscillations such as are produced by the movement of persons within the vehicle, and the like, and which, if occurring frequently, may be unpleasant to the passengers. In combination with the said arrangement, there is also employed a spring brake apparatus as I will describe with reference to the accompanying drawings, in which

Figures 1, 2 and 3 shew one arrangement for the purpose. Figure 1 being a vertical section on line *n—o* Figure 3. Figure 2 a section on line *p—q* and Figure 3 a side view of so much of a vehicle as is required to explain the invention.

Figure 4 shews a section on line *l—m*.

Figure 5 which shews a side view of another arrangement with the brake device alone.

In the constructions at Figures 1, 2 and 3 the guard rollers *E* are pressed against the underside of the rail *F* by means of the springs *J* which in their turn are pressed upward by the helical springs *K*, so that by drawing downwards the rod *L* connected to the springs *K*, the pressure of the guard rollers against the rails can be reduced. The upward pressure of the rollers being thus capable of regulation, the extent to which the oscillations of the vehicle are controlled can also be regulated.

The guard rollers *E* are here shewn of the construction described in Patent No. 10028 of 1895 where, instead of forming the bottom of the rail, with a circular, curvature on which the guard roller slides laterally as described in the previous patents, the bottom of the rail is narrow and the guard roller is widened and formed with a concave curved surface, so as to enable it to slide laterally over the rail when the vehicle oscillates laterally. It will be seen therefore that although the guard rollers are pressed to a certain extent against the rail, the suspended vehicle is free to perform lateral oscillations produced by a certain force.

Between the springs *J* is placed a brake block *M*, which, when the rod *L* is not

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pulled downwards is pressed by the springs K against the underside of the rail F. This pressing of the brake block is independent of the adhesion-weight of the vehicle; the brake power will be the greater the stronger the springs K are made.

Preferably these springs are made so strong that when their action is not restricted the brake block M, will be pressed with such force against the rail that even under the most unfavourable conditions a sufficient brake action is obtained.

When no braking action is to take place the rod L is pulled downwards with such force that the brake block M, does not bear at all against the rail. The springs J, are in this case made of such strength, that on drawing the brake block out of action the rollers E will still be pressed against the rail, and will only be made to release the same on exerting a further pull upon the rod L.

The arrangement above described with reference to Figures 1 to 3 may be applied with advantage not only to the motor vehicles, but also to passenger cars that are drawn along by locomotives.

In the latter case, if the car is attached to the locomotive, and is to be transported thereby the rod L is so arranged as to be subject to a pull of the locomotive of such strength that the brake block is drawn out of action while the guard rollers are still pressed upward with the desired light pressure. Should the pull on the rod L be lessened, an automatic application of the brake will take place so that if the car is uncoupled from the locomotive or if the coupling between them should break, a sufficiently powerful brake action would at once take place.

Figures 4 and 5 shew the same arrangement of the brake for goods vehicles; with these vehicles it is not necessary to reduce the lateral oscillations by pressing the guard rollers against the rails, and the guard rollers can therefore be entirely dispensed with and the running off the rails by the running wheels R can be insured against by a suitable formation of the brake block.

In Figures 4 and 5 the brake block M, is pressed upwards against the underside of the rail by means of the springs K. The withdrawal of the brake block is effected by a pull on one of the rods L which act upon the brake block through the elbow levers N. The connection of these vehicles with the locomotive engine is just the same as described with reference to the passenger vehicles, so that in the event of the breaking of a coupling, or on the locomotive becoming detached from the vehicles the brake is put in action automatically.

In the above arrangements, the vehicles are otherwise constructed in any known manner suitable for railways with suspended vehicles; the running wheels R support the body A of the vehicle by the bracket B.

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

1. In suspended vehicles of elevated railways the combination of guard rollers E pressed against the underside of the rail by means of springs, such as J, a brake block M, also pressed against the underside of the rail by springs K, which at the same time press the first named springs J upwards, the action of these parts being controlled by a rod L in such manner that on exerting a certain pull upon the said rod, the brake block is alone removed from the rail while on exerting a farther pull the guard rollers are also more or less relieved of the spring pressure acting upon them substantially as and for the purposes described.

2. In suspended vehicles of elevated railways, the combination of guard rollers E pressed against the underside of the rail by means of blade springs such as J which in their turn are pressed upward by helical springs such as K the pressure of which can be controlled by means of a rod such as L whereby the degree of elastic pressure of the wheels E against the rail can be accurately regulated substantially as described.

3. In suspended vehicles of elevated railways, the use in lieu of or in combination with guard rollers E, of brake blocks M with concave faces pressed upward against

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the underside of the rail by means of springs K, such upward pressure being controlled by rods L that are subjected to the pull exerted by the locomotive engine substantially as and for the purposes described.

Dated this 26th day of August 1896.

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ABEL & IMRAY,
Agents for the Applicant.

FIG. 4.

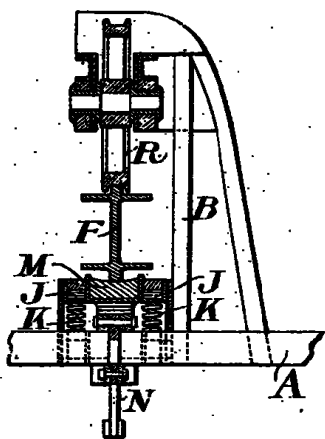


FIG. 5.

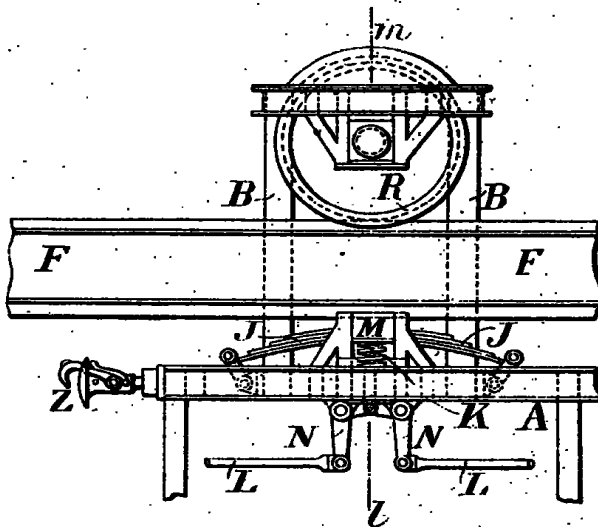


FIG. 1.

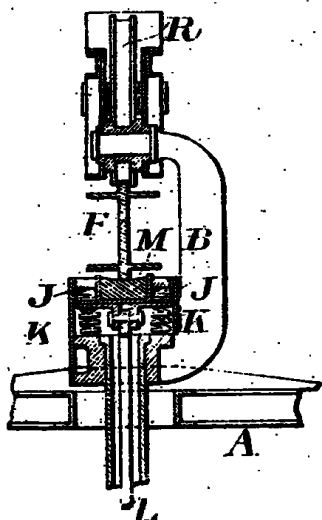
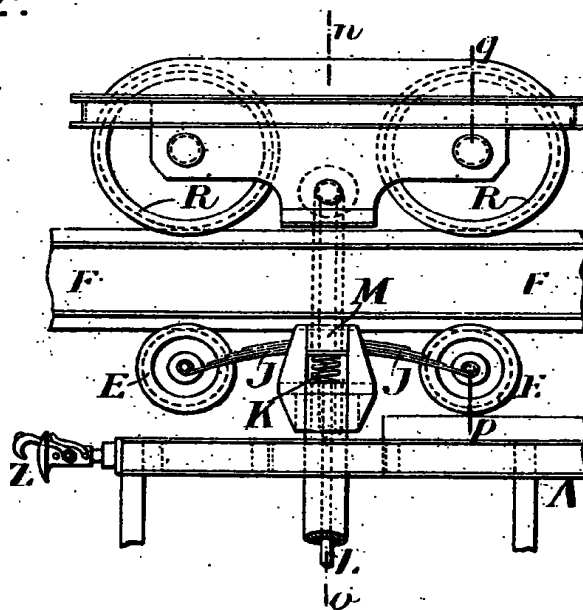


FIG. 2.



FIG. 3.



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