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R. MARX.

BRAKING DEVICE.

APPLICATION FILED OCT. 3, 1904.

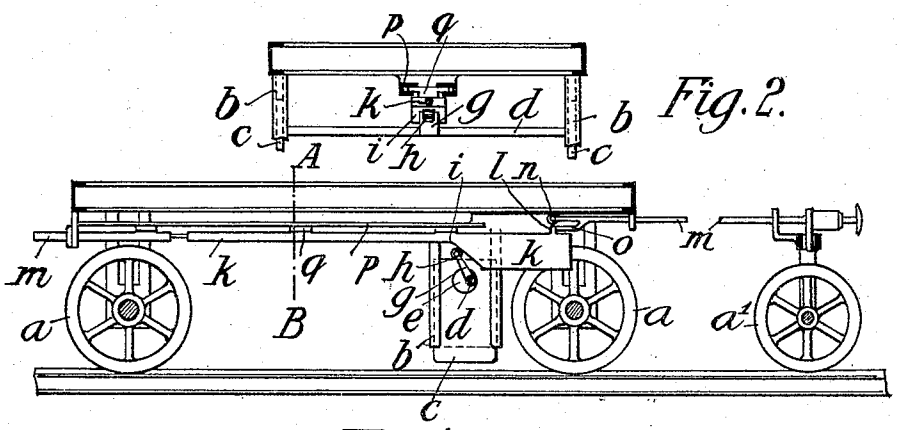



Fig. 2.

Fig. 1.

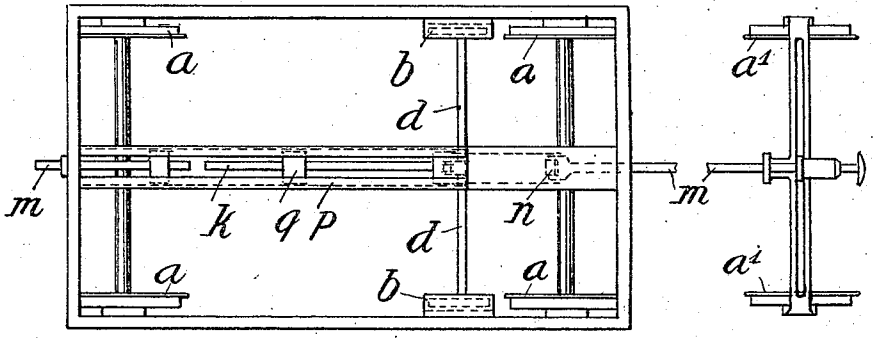
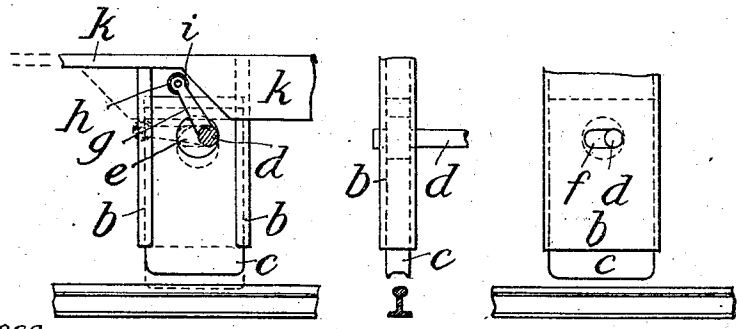



Fig. 3.




Witnesses
Frieda Steinseifer.
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Fig. 4. Fig. 5. Fig. 6.

Inventor
Richard Marx

No. 787,779. Patented April 18, 1905.

# UNITED STATES PATENT OFFICE.

RICHARD MARX, OF HAMBURG, GERMANY

## BRAKING DEVICE.

SPECIFICATION forming part of Letters Patent No. 787,779, dated April 18, 1905.

Application filed October 3, 1904. Serial No. 227,068.

*To all whom it may concern:*

Be it known that I, RICHARD MARX, a subject of the King of Prussia, Emperor of Germany, and a resident of 75 Eimsbütteler-Chaussee, Hamburg, in the Empire of Germany, have invented a new and useful Improved Braking Device, of which the following is a specification.

The present invention relates to a new kind of braking device specially adapted as an auxiliary brake for the protection of railway-trains in the case of collision.

Special objects of my invention are to simplify and cheapen the construction and to render more efficient, serviceable, and durable in operation devices of the kind referred to.

With these ends in view the invention consists in the novel combination, arrangement, and adaptation of parts, all as more fully hereinafter explained, shown in the accompanying drawings, and then specifically set out in the appended claims.

One embodiment of the present invention is shown, by way of example, in the accompanying drawings, in which—

Figure 1 is a longitudinal section through the underframe of the locomotive. Fig. 2 is a transverse section on the line A B of Fig. 1. Fig. 3 is a plan of the underframe shown in Fig. 1. Figs. 4, 5, and 6 illustrate the brake-block device on an enlarged scale.

One of the main features of the braking device consists in brake-blocks which in the case of collision act on the surface of the head of the rail and which are adapted to slide in rigid guides at right angles to the rail-track and to be moved by the aid of eccentrics.

The movement of the brake-blocks is brought about in any desired manner from the supporting-board or cabin of the locomotive, the brake-blocks, for example, being adapted to be brought under the influence of steam or compressed air. The auxiliary brake may also be acted upon by means of a projecting rod in connection with a wagon-frame or fore-carriage preceding the locomotive, which frame in the case of collisions has to suffer the first shock. Further, an arrangement for actuating the brakes on all the wagons is connected with the locomotive.

The underframe of the locomotive or of the passenger or goods wagon, carrying the wheels *a*, is provided with the brake-blocks *c*, which are arranged in rigid guides *b* at right angles to the rail-track, the number of said brake-blocks being selected according to desire. In the constructional form shown in the drawings two such brake-blocks are provided, one being behind each front wheel. The brake-blocks at both sides are connected together by means of a shaft *d*, whose pivots carry eccentrics *e*, which are adapted to revolve in bearings of the brake-blocks *c*. The ends of the shaft *d* are guided in transverse slots *f* in the guides *b*. In the middle, between the rails, the shaft *d* carries on a projecting arm *g* an idle roller *h*, which in the raised position of the brake-blocks (shown in Fig. 1) rests against the oblique surface *i* of a slide *k*, guided horizontally in the wagon-frame.

A fore-carriage having two track-wheels *a'* is connected with the wagon-frame, said fore-carriage preceding the latter at a suitable distance. The connecting-rod *m*, which permits the fore-carriage to turn unhindered on passing around curves, carries at its free end an idle roller *n*, with which said connecting-rod is enabled to slide on a corresponding surface of the wagon-frame. The connecting-rod *m* also possesses beneath the idle roller *n* a finger *o*, directed toward the free end of the rod. Said finger presses against a nose *l*, arranged on the slide *k*. The arrangement of the fore-carriage is such that the pressure exerted on the slide *k* on account of the inertia of the fore-carriage when the train suddenly strikes against it is sufficient to actuate the brake-blocks. In the case of railway collisions the thrust exerted on the fore-carriage is transmitted by the finger *o* to the slide *k*, so that the latter slides backward and turns the shaft *d* with its oblique surface *i* lying against the roller *h* of the arm *g*. The eccentric *e*, in consequence of the guidance of the shaft-pivots *d* in the transverse slots *f*, presses the brake-blocks *c* downward upon

the head of the rail. When the brake-blocks are completely depressed, the front wheels of the locomotive are raised from the rails, so that an effective braking of the train takes place without considerable damage being caused by the collision of the fore-carriage preceding the locomotive. The rod *m* after acting on the brake-blocks runs with its roller *n* on an inclined surface provided by means of guide-rails in connection with the truck-frame. It is thereby lifted up and its finger *o* separated from the nose *l* of the slide *k* and finally lies hidden beneath the truck-frame. The rectilinear guidance of the slide *k* is effected with the aid of guides *p*, arranged on the wagon-frame, in which guides lateral arms *q* engage, said arms being, if desired, fitted with rollers in order to diminish the friction. The slide *k* reaches to the back end of the locomotive for the purpose of actuating the similarly-arranged braking device of the following wagon. The wagon connected with the locomotive is for this purpose provided with a rod *m*, which is guided in the guides *p* close up to the outer end of the slide *k*.

The above-described braking device can also be actuated from the supporting-board or cabin of the locomotive by arranging the brake-blocks in any desired manner, so as to be capable of being actuated by steam, compressed air, or electric current.

In carrying the invention into practice various constructional alterations can be made without the scope of the present invention being exceeded. For example, the actuation of the braking device of the wagon connected with the locomotive can take place in a manner other than that described—for instance, by means of compressed air or the like. The braking-surfaces of the blocks *c* are readily exchangeable, and their distance from the rail-surface can be adjusted according to requirement.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A braking device for railway-trains consisting of the combination, with a railway-vehicle frame, of a brake-block, means for supporting the same in proximity to the surface of the rails, an eccentric *e* engaging with said brake-block, a shaft *d* carrying said eccentric, members having slots parallel to the rail-track, in which slots the ends of the shaft engage, an arm *g* fixed on said shaft, a slide having an oblique surface contacting with said arm, means for guiding said slide parallel to the axis of the frame, and means for moving said slide to operate said brake-block on the occurrence of a collision, substantially as described.

2. A braking device for railway-trains consisting of the combination, with a railway-vehicle frame, of a brake-block, means for supporting the same in proximity to the surface of the rails, an eccentric *e* engaging with said brake-block, a shaft *d* carrying said eccentric, members having slots parallel to the rail-track, in which slots the ends of the shaft engage, an arm *g* fixed on said shaft, a slide having an oblique surface contacting with said arm, means for guiding said slide parallel to the axis of the frame, a fore-carriage preceding the railway-vehicle frame, a connecting-rod on said fore-carriage connecting the same with the railway-vehicle frame, and a pressure-finger on said rod contacting with the slide, substantially as and for the purpose set forth.

In witness whereof I have hereunto signed my name, this 8th of September, 1904, in the presence of two subscribing witnesses.

RICHARD MARX.

Witnesses:
E. H. L. MUMMENHOFF,
OTTO W. HELLMRICH.