(No Model.) 2 Sheets—Sheet 1.

K. G. FIEKE.

CAR BRAKE.

No. 519,993. Patented May 15, 1894.

Fig. 1

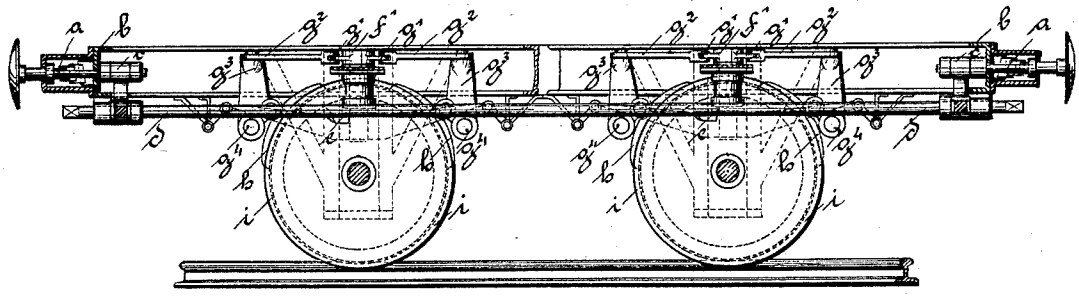


Fig. 2

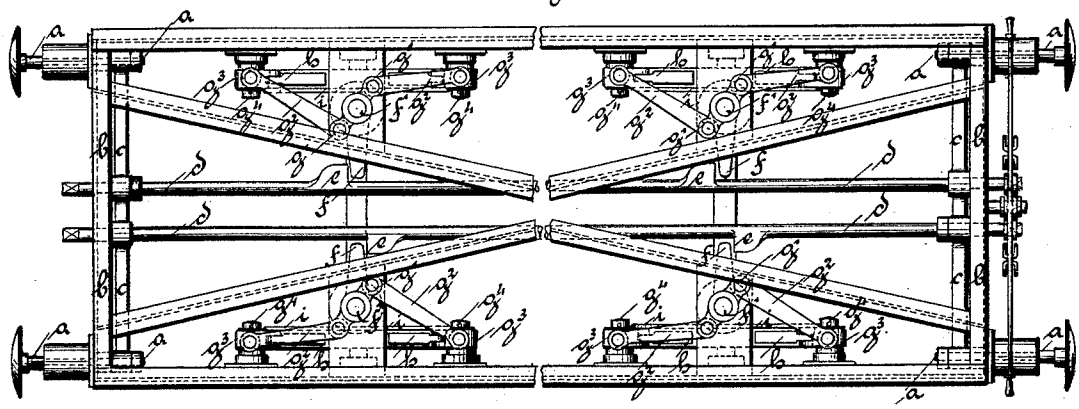
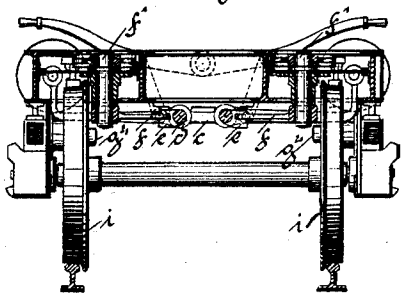


Fig. 3.



Witnesses
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 4

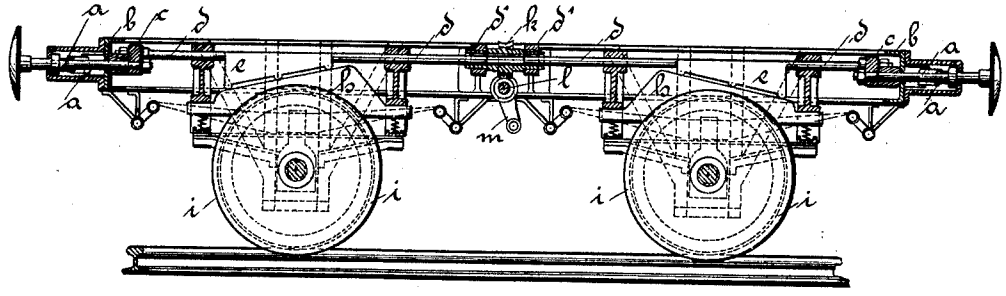
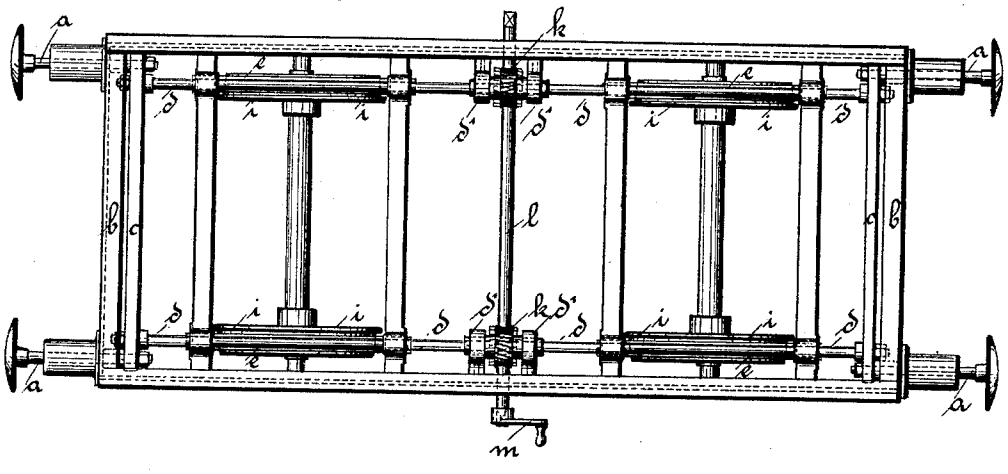


Fig. 5.



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UNITED STATES PATENT OFFICE.

KARL GOTTHELF FIEKE, OF DRESDEN, GERMANY.

CAR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 519,993, dated May 15, 1894.

Application filed February 2, 1893. Serial No. 460,796. (No model.)

To all whom it may concern:

Be it known that I, KARL GOTTHELF FIEKE, a subject of the King of Saxony, residing at Dresden, Saxony, German Empire, have invented certain new and useful Improvements in Railway-Brakes, of which the following is a specification.

This invention relates to railway brakes and consists in so constructing the brake mechanism that, when the brake is applied at the engine, the respective buffers of the carriages, brought into contact by the sudden resistance, mutually yield, and thereby displace a series of levers, rods, and cams or wedges which operate the brake-shoes acting on the wheels. A most effective brake-action is obtained by this means inasmuch as the arrangement is calculated to absorb or store up the resultant power generated by the combination of the weight and impact of the carriages in motion and to transmit such power to the block or shoe of the brake. One advantage of this brake-mechanism over other similar devices known hitherto is, that the arrangement of levers or rods is continuous and connects the buffers on either side both with each other and with the buffers of the opposite side, so that the buffers of one side in yielding to pressure, operate not only the brakes immediately adjoining them, but also those located at the opposite end of the carriage while the two buffers at each end are adapted to act jointly. This will be found to be the most rational brake-arrangement first because it overcomes and as it were compensates the force of traction or "pull" which it is the object of a brake to overcome; but the second and by far more important reason is that this brake is arranged to act without any assistance from man, whereas vacuum brakes and the like require, as is well known, the services of an attendant, whereby the risk is increased. This brake operates automatically the moment the train meets with any obstacle, however small. It may be assumed safely enough that where there is immediate danger of an actual collision of two trains taking place the respective engine drivers or firemen will not overlook this and by promptly operating the brake at the engine or tender of each train, minimize and most likely avert the disaster. But in the worst case, where through neglect or any other cause, the collision has not been prevented in time, what this brake-arrangement certainly will prevent is, the "telescoping" of the carriages, now invariably consequent upon such accident, for each carriage on receiving the shock will instantly stand still under the action of its own brake device. Should any one of the central carriages be driven off the metals by the shock, instead of (as it hitherto would do) upsetting with it part or all of the following carriages and thereby causing great damage and loss of life it will be destroyed or wrecked alone, and form an obstacle for the next succeeding carriage whose brake it will immediately set in operation. This and the remaining carriages being therefore each energetically braked, the consequences of the disaster are reduced to a minimum. The advantages of this brake-arrangement will also be appreciated in the usual "pilot" work at termini and stations, viz., forming and dividing trains and arranging them on the different lines or sidings. Suppose that a portion of a train is slipped off and allowed to run down an incline by its own weight. It is only necessary to set the brakes of the different carriages when it will be sufficient for one man to stop the foremost carriage by means of a pole or the like, to cause all the subsequent carriages instantaneously to stop under the vigorous action of their brakes, so that sections of trains can no longer run up against each other as they frequently do at present, causing damage in many cases. An apparent objection is the increase in the cost of construction of the carriages if each is to carry its own brake-mechanism. But it may be pointed out in the first place that all existing brakes may be used in connection with the improved rod and lever arrangement herein described, while on the other hand any extra expense will be amply compensated by reducing the staff of brakemen.

Figure 1 is a side elevation partly in sec-

tion, of a car truck provided with my invention. Fig. 2 is a top plan view. Fig. 3 is a section on the line *x*—*x*, Fig. 2. Fig. 4 is a side elevation of a car truck provided with a modified form of brake mechanism. Fig. 5 is a top plan view showing modification of mechanism for turning the brake rods.

The invention is illustrated in the accompanying drawings in which *a* are the buffer-rods located within the frame *b* and connected by cross-pieces *c*. In these cross-pieces are supported the rods *d* extending beyond the ends of the frame *b* and terminating in squares. Upon these rods are arranged tappets or cams *e* which as shown in Figs. 1 to 3, may be brought into engagement with the projecting arms of a lever arrangement *g*. From this lever-arrangement are suspended the brake-shoes *h* which by operation of the levers are when required firmly pressed against the wheels *i*. When two adjoining carriages are pushed against each other so that their buffers meet, and their springs are compressed inwardly this also causes the cross-pieces *c* to move inward. These in their turn displace the rods *d* securely fixed to them, and the tappets or cams *e* engage the lever arms *f*. Upon the revoluble pivots *f'* of these are mounted the arms *g'* which are turned thereby and move the lever-arms g^2 closer together. These arms carry along with them the arms g^3 turning on the fixed pivot g^4 secured to the main frame *b*. The brake-shoes *h* are pivoted to, or suspended from, the arms g^2 which in approaching each other cause these brake-shoes to be firmly pressed against the wheel tires *i*. It will be observed that one of the rods *d* only is permanently secured in one of the cross-bars *c* of the buffer-rods *a*, while the other rod *d* is movable in that cross-bar. The cams *e* are so adjusted that one rod *d*, being capable of sliding in one direction, say from right to left, is adapted to operate the brakes of one side of the carriage, while the other rod *d* movable from left to right operates the brakes on the other side.

To enable the brake-action of the buffers to be temporarily suppressed, say at stations, in arranging trains by means of pilot engines, the rods *d d* are revoluble and their ends extending beyond the ends of the frame *b* may be provided with a square each as shown in Figs. 2 and 3, whereby with the assistance of a suitable key or tool the said rods *d* may be turned and the cams *e* disconnected from the arms *f* of the lever-mechanism *g*. For this purpose lever-arms may be provided and arranged to turn on a pivot or spindle between the said rods *d*. Such arms, being connected by rods, enable the lever to be reversed or turned out of engagement. Or the rotation of the rods *d* may be provided for in a more simple manner, viz., by the arrangement of a spindle threaded to work in connection with worm-wheels mounted upon the said rods *d* as illustrated by Figs. 4 and 5. These views, Figs. 4 and 5, represent moreover a modification of the brake-mechanism. The brake shoes *h* are here wedge-shaped and so arranged that the wedges or cams *e* of the rods *d* turned downward move and act upon them and press them against the wheels, which enables the whole of the above-mentioned lever arrangement to be dispensed with. For this purpose the rods *d d* should be arranged just above the wheels on both sides of the frame and centrally divided, at which point they carry a connecting sleeve *d'* in which they may be displaced longitudinally while they are prevented from turning by a suitable groove and tongue arrangement. The sleeve *d'* carries the worm-wheel *k* and spindle *l* adapted to be turned by means of a key or crank *m* at either side of the carriage and provided with worm threads. In this arrangement each pair of buffers connected by a cross-bar *c* acts upon the brake-shoes arranged over the pair of wheels situated on the same side while the brake-rods *d* may be turned together by means of a worm spindle when it is required to throw the brakes out of operation.

I claim—

1. In a brake mechanism for cars, the combination with the running gear, the buffers, the longitudinally movable brake rods connected with said buffers, of the projections mounted on said rods and co-operating with the brake to apply the same to the wheels; substantially as described.

2. In a brake mechanism for cars, the combination with the running gear, the buffers, the longitudinally movable and rotary brake rods connected with said buffers, of the projections mounted on said rods, co-operating with the brake, but capable of being thrown out of operative position when the rod is turned; and means for rotating said rods; substantially as described.

3. In a brake mechanism for cars, the combination with the truck frame, the buffers mounted at each end of the frame, one on each side thereof, of the two longitudinally movable and rotary brake rods carrying projections for co-operating with the brake to apply the same, one connected with the buffers at one end of the car, and the other with the buffers at the opposite end, whereby the brakes are applied to the wheels on one side of the car only; substantially as described.

4. In a brake mechanism, the combination with the buffers; the longitudinally movable and rotary brake-rods provided with lugs or projections, co-operating with the brake to apply the same, the worm gears mounted on said rods, of the rods journaled in bearings on the truck frame and extending across the same, provided with pinions meshing with the worms on the rods, whereby when said trans-

verse rod is turned, the longitudinal rods will be thrown out of operation; substantially as described.

5. In a brake mechanism, the combination with the running gear, the buffers, the longitudinal rods provided with the inclined projections, of the brake shoes inclined in the opposite direction from said projections, whereby when the rods are moved the projections will be brought into co-operation with the brake shoes and the brakes applied; substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

KARL GOTTHELF FIEKE.

Witnesses:

RUD. SCHMIDT,

HERNANDO DE SOTO.