

W. H. SAUVAGE.
BRAKE RIGGING FOR RAILWAY CARS.
APPLICATION FILED JAN. 28, 1907.

909,232.

Patented Jan. 12, 1909.

4 SHEETS—SHEET 1.

Fig. 1.

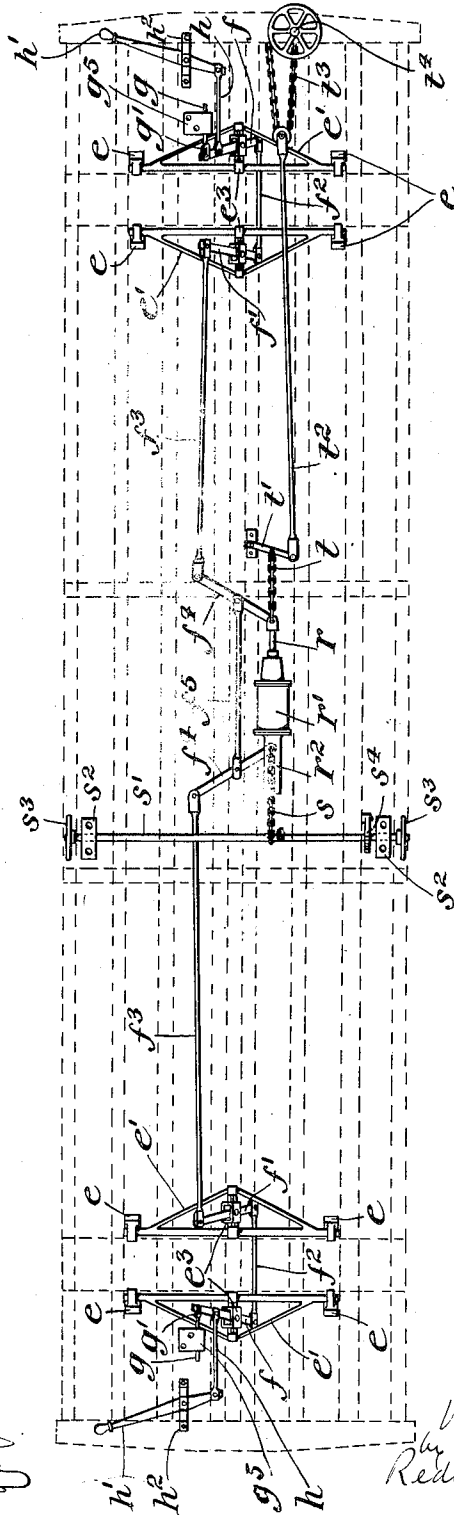
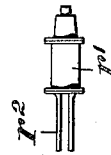


Fig. 2.



Attest:
Edgewood House
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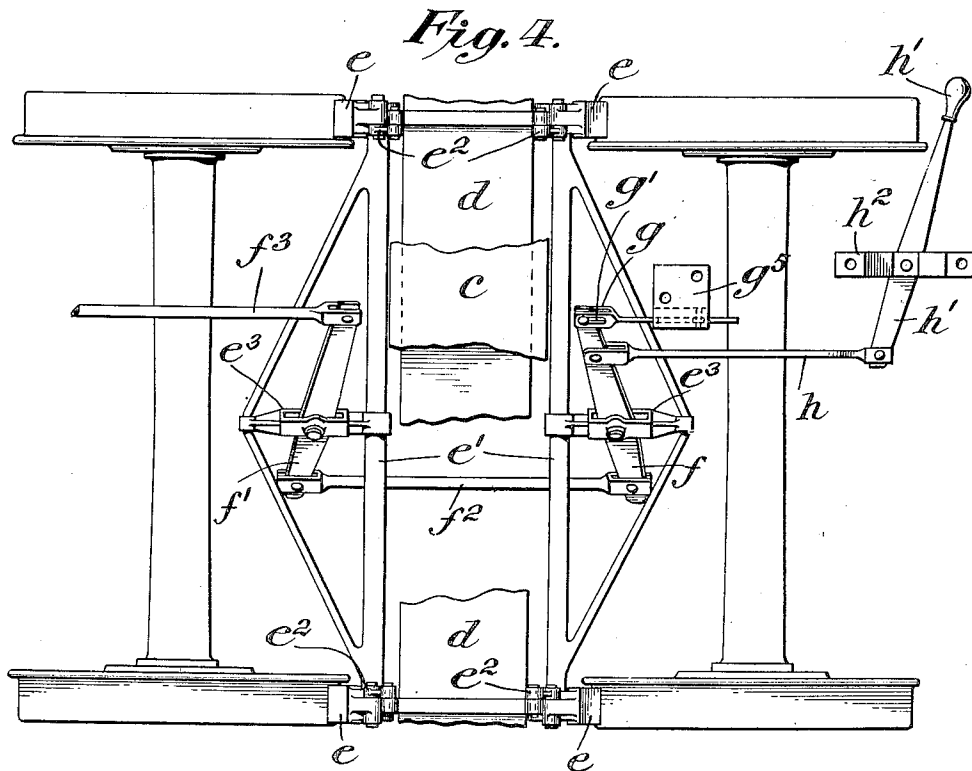
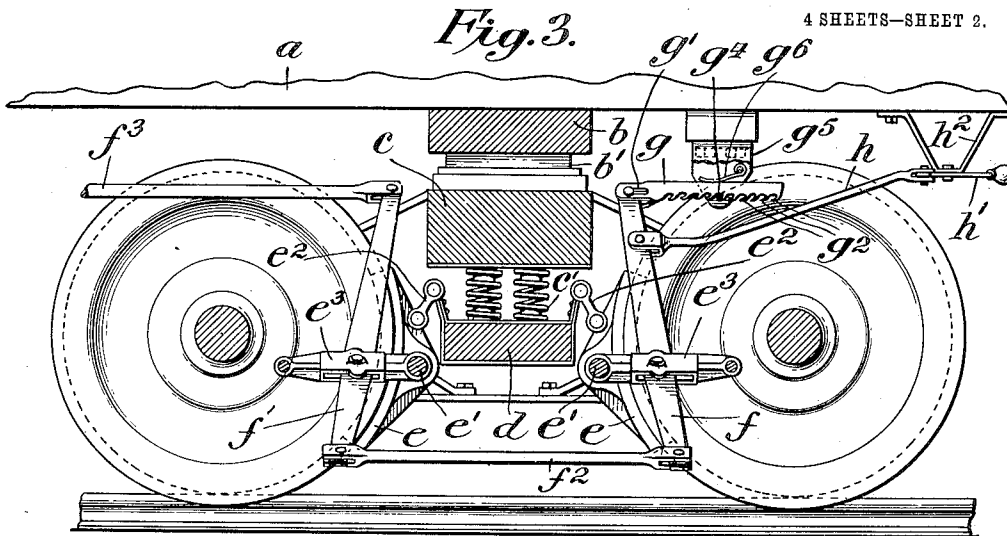
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 4.

Fig. 8.

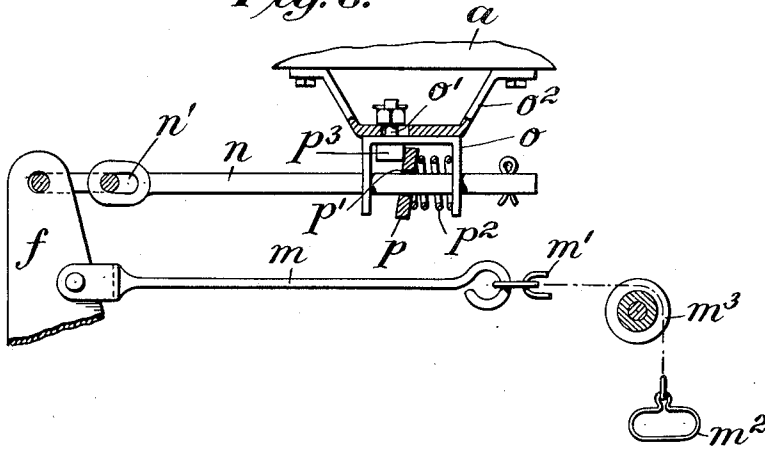


Fig. 9.

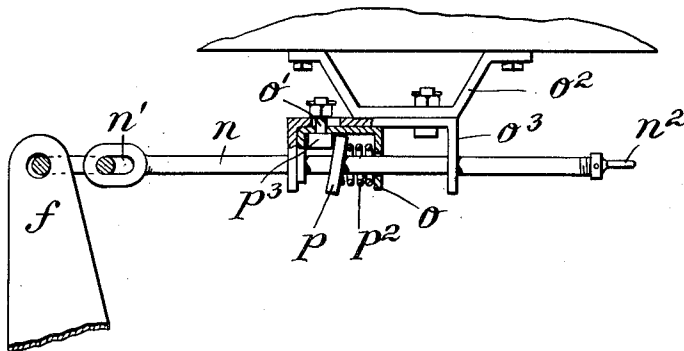
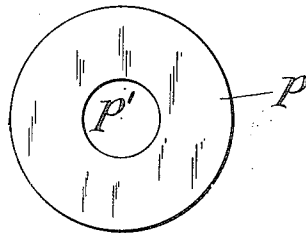


Fig. 10.



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UNITED STATES PATENT OFFICE.

WILLIAM H. SAUVAGE, OF NEW YORK, N. Y.

BRAKE-RIGGING FOR RAILWAY-CARS.

No. 909,232.

Specification of Letters Patent.

Patented Jan. 12, 1909.

Application filed January 28, 1907. Serial No. 354,371.

To all whom it may concern:

Be it known that I, WILLIAM H. SAUVAGE, a citizen of the United States, residing in the borough of Manhattan, of the city of New York, in the State of New York, have invented certain new and useful Improvements in Brake-Rigging for Railway-Cars, of which the following is a specification, reference being had to the accompanying drawings, forming a part hereof.

One object of this invention is to provide means whereby the slack of the brake rigging of railway cars can be readily and safely taken up and adjusted by the trainman whenever required. This part of the invention is particularly applicable and is hereinafter described and shown as applied to railway cars provided with swiveling trucks and in which the "dead" lever is fulcrumed upon the car body so as to avoid the twisting strain upon the truck and the consequent danger of derailment which is incident to a powerful application of the brakes by hand or otherwise when the dead lever is fulcrumed upon the truck itself.

In accordance with the invention, the fulcrum of the dead lever is mounted upon the car body and means are provided whereby the fulcrum can be adjusted readily, such means being accessible to the trainman without requiring him to go under the car.

A further feature of the invention relates also to the brake system just referred to, in which the fulcrum of the dead lever is mounted on the car body, and consists in an improved construction and arrangement of the brake rigging which is practicable only when the fulcrum of the dead lever is mounted on the car body.

The invention will be more fully explained hereinafter with reference to the accompanying drawings in which it is illustrated and in which—

Figure 1 is a plan view of the improved brake rigging, the bottom of the car body being indicated by dotted lines, while the trucks are omitted altogether. Fig. 2 is a detail side elevation of the brake cylinder shown in Fig. 1. Fig. 3 is a view on a larger scale, partly in longitudinal section and partly in elevation, showing a conventional form of truck and a portion of the car body with one form of the means for adjusting by hand the fulcrum of the dead

lever applied thereto. Fig. 4 is a plan view of the same without the car body, parts being broken away. Fig. 5 is a detail view, on a larger scale, of the adjustable fulcrum of the dead lever shown in Figs. 3 and 4. Figs. 6-9 are detail views showing modifications of the devices for adjusting the fulcrum of the dead lever. Fig. 10 is a detail view, on a larger scale, of the clutch grip shown in Figs. 8 and 9.

In Fig. 3 of the drawings the car body *a* is shown as supported upon the body bolster *b*, which in turn is supported upon the truck bolster *c* through the usual king bolt or plate *b'*. The truck bolster may be supported with springs *c'* upon the sand plank *d* or other rigid portion of the truck frame. The brake shoes *e* with the brake beam *e'* may be hung by links *e²* from the sand plank *d*, the brake beams being centrally connected, as usual, by links *e³* to the "dead" lever *f* and the "live" lever *f'*, the two levers being connected, as usual, by the bottom rod *f²* while the live lever *f'* is connected to the top rod *f³* of the brake actuating mechanism, whether hand operated or power operated, the preferred arrangement of which is described hereinafter.

In the application of the present improvements to a railway car of ordinary construction, the dead lever *f* is provided with an adjustable or shiftable fulcrum mounted on the car body, hand operated devices, readily accessible from outside the truck, being provided for the purpose of adjusting or shifting the fulcrum from time to time to take up wear on the brake shoes and stretch of the connection and otherwise to take up the slack which is created from time to time in the ordinary usage.

In the arrangement shown in Figs. 3, 4 and 5, there is provided at the end of the dead lever *f* a toothed link *g*, which preferably has a slotted connection with the dead lever, as at *g'*, for the purpose of permitting the necessary free movement of the brake shoes for clearance, the teeth *g²* of the link being suitably formed to engage a pin *g⁴* carried by a plate *g⁵* which is secured to the car body *a*. For the purpose of holding the toothed link *g* yieldingly in engagement with the pin *g⁴* a spring may be provided, as indicated at *g⁶*. In this arrangement the lever *f* is also shown as connected

by a link h with a hand lever h' which is pivoted upon a suitable bracket h^2 also secured to the car body. It will now be seen that when it is necessary to take up slack in the brake rigging the trainman has simply to grasp the lever h' and to pull the same in the direction and to an extent sufficient to cause the toothed link g to slip over the pin g^4 until the latter can be engaged by the next tooth g^2 . Obviously the first part of the movement of the lever is occupied in overcoming the clearance of the brake shoes, while the final movement of the lever shifts the link g . When the hand lever is released the slot g' permits the clearance of the brake shoes to be accommodated, but in the movement of the link the fulcrum of the dead lever is adjusted or shifted to the required degree.

In the arrangement represented in Fig. 6 a link i , toothed on its upper edge, as at i' , and resting upon a roller i^2 carried by the dead lever f , is pivoted upon a suitable support i^3 secured to the car body. A pawl i^4 , having a slotted engagement with the lever f , as at i^5 , is adapted to engage the toothed link i , and may be yieldingly held in engagement therewith by a spring i^6 . The slotted engagement of the pawl with the lever accommodates the clearance of the brake shoes as will be clearly understood without further description. In this arrangement a chain k is shown as connected to the link i and to a shaft k' mounted in suitable brackets k^2 and provided with an operating handle k^3 at the side of the car. By rotating the shaft k' the chain is wound upon it and the lever is drawn back until the pawl i^4 , slipping over the teeth of the link i , engages a fresh tooth and so holds the fulcrum of the lever in its adjusted position.

In the arrangement shown in Fig. 7 the dead lever f is connected, as before, by a chain k with a shaft k' mounted in suitable brackets k^2 on the car body a and provided with an operating crank k^3 . The shaft in this instance is provided with a rigid wheel k^4 engaged by a pawl l mounted on a suitable bracket l' secured to the car body a and having a slotted engagement with the bracket, as indicated at l^2 , and being pressed normally forward by a suitable spring as l^3 . By the rotation of the shaft the chain is wound upon it as before. During the first part of the rotation of the shaft the pawl travels forward with the tooth of the rigid wheel with which it is at first engaged, but the continued rotation of the shaft causes a fresh tooth to be brought into engagement with the pawl, thereby securing the fulcrum of the lever f in its adjusted position, and when the pressure is removed from the crank k^3 the shaft rotates backward to an

extent permitted by the slotted connection l^3 to accommodate the clearance of the brake shoes.

In the arrangement shown in Fig. 8 the dead lever f is pulled into its position of adjustment by a link m and chain or other flexible connection m' provided with a handle m^2 , such flexible connection being suitably guided by a guide pulley m^3 . Also connected with the lever f by a slotted connection n' is a rod n arranged to slide in suitable bearings in the members of a U-shaped bracket o , adjustably secured by a bolt and slot connection o' to a second bracket o^2 which is secured to the car body a . Between the two members of the U-shaped bracket or yoke o there is placed upon the shaft a clutch grip p , shown in enlarged view in Fig. 10. Such clutch grip consists of a disk of material thickness having an aperture p' which receives the rod n somewhat loosely. Between the clutch grip p and the forward member of the yoke o is placed a spring p^2 which presses the clutch grip rearwardly. The latter is arranged to bear at one side against a suitable stop p^3 which may be the head of the bolt which secures the yoke to the bracket o^2 . When the lever f is turned forward to take up the slack the clutch grip p comes to a position at right angles with the rod n and the latter slips freely through the same in a forward direction or toward the right hand in Fig. 8. When, however, the pull of the hand-operating devices on the lever f is released, the clutch grip p , being pressed forward by the spring p^2 , bears at one point against the stop p^3 and is displaced from its position at right angles to the rod and immediately grips the rod tightly and holds it from further movement to the left in Fig. 8. It will be observed that the slotted connection n' accommodates the clearance of the brake shoes, and furthermore that through the bolt and slot connection of the yoke o to the bracket o^2 such adjustment of the bracket o can be effected as may be necessary to secure a proper operation of the devices.

The arrangement shown in Fig. 9 is quite similar to that shown in Fig. 8, but the operating handle n^2 is applied directly to the rod n which has a slotted connection n' as before with the lever f . The rod n , as before, is provided with a clutch grip p and spring p^2 between the members of a yoke o , which is itself adjustably mounted within a larger yoke o^3 secured to the bracket o^2 . The yoke o is secured to the yoke o^3 by a bolt and slot connection o' , the head of the bolt serving as a stop p^3 for cooperation with the clutch grip p . The operation of this arrangement will be readily understood without further explanation.

Various other hand operated means for

effecting the desired shifting of the fulcrum of the dead lever will readily suggest themselves and it is, therefore, to be understood that the invention is not limited to the precise details of construction and arrangement shown and described herein. It will be seen moreover, whether by the particular means shown and described, or by others which may be substituted for them, the slack in the brake rigging can be readily taken up or adjusted at any time without requiring the trainman to go beneath the car, it being simply necessary to arrange the hand-operating devices in any convenient position readily accessible from the side of the car.

When the fulcrum of the dead lever is mounted on the car truck, as usual, so that the lever system of each truck is carried with the truck as it swivels with respect to the car body, the lever systems of the two trucks are of necessity oppositely set or placed in order to compensate for the swiveling of the two trucks in opposite directions on a curve, as otherwise the parts of the brake rigging would be subjected to an excessive tension and liable to rupture. The mounting of each dead lever fulcrum on the car body, however, permits the lever systems of the two trucks to be arranged in the same position with respect to the longitudinal axis of the car. Such arrangement not only further relieves the truck of twisting strains but it permits a much simpler organization of the levers to be employed, reducing expense of manufacture as well as the weight of parts necessary to be moved and the liability to breakage by disarrangement. The further feature of the present invention, heretofore alluded to, resides therefore in the improved brake lever system herein described, which is specially adapted for use with the dead levers fulcrumed on the car body.

As clearly shown in Fig. 1, live levers f' are mounted in the same position with respect to the longitudinal axis of the car, their free ends pointing toward the same side of such axis. Both of the top rods f^3 therefore lie on the same side of the longitudinal axis of the car and connect such live levers directly with the cylinder levers f^4 . The latter are connected by the tie rod f^5 and one of them is connected directly to the brake actuator, which in this instance is shown as the piston rod r of the usual brake cylinder r' , while the other so called cylinder lever travels between guides r^2 which may be supported by the brake cylinder r' and has therein an adjustable fulcrum, the end of the lever being connected to a chain s which is fast to a transverse hand shaft s^1 mounted in bearings s^2 provided at each side of the car with a hand wheel s^3 and, at some con-

venient point, with a ratchet and pawl s^4 . Slack may thus be taken up easily and conveniently from either side of the car without requiring the trainman to go beneath the car. For the operation of the brakes by hand the piston r may be connected by a chain t , multiplier t' , link t^2 and chain t^3 with the staff t^4 of the usual hand brake operating devices. It will be observed that the improved brake rigging is exceedingly simple in construction, that it does not require the usual floating lever and its connections and that it not only saves expense in manufacture but weight of parts to be moved.

I claim as my invention:

1. The combination with the dead levers of a brake rigging for railway cars etc. having each a shiftable fulcrum mounted on the car body, of hand operated devices also mounted on the car body and acting upon each of said levers to shift its fulcrum to a new position, means also mounted on the car body to retain the fulcrum of the levers in their new positions, a brake cylinder with piston and piston rod, connected cylinder levers and similarly arranged lever, mechanism connecting each of the cylinder levers with the respective dead lever.

2. The combination with the dead levers of a brake rigging for railway cars etc., of links engaged with the fulcrum of the levers respectively, hand operated devices supported on the car body to change the positions of the fulcrum of the levers, means also mounted on the car body and coöperating with the links to retain the fulcrum of each lever in its new position, a lost motion device included in the connections to each lever to accommodate clearance of the brake shoes, a brake cylinder with piston and piston rod, connected cylinder levers, and similarly arranged lever mechanism connecting each of the cylinder levers with the respective dead lever.

3. The combination of a car body, a brake actuator, cylinder levers, a tie rod connecting the cylinder levers, live levers, dead levers having shiftable fulcrum, hand-operated devices mounted on the car body acting upon said shiftable fulcrum to change their positions, means also mounted on the car body to retain the shiftable fulcrum in their new positions, links directly connecting the cylinder levers with the live levers respectively and links connecting the live levers with the dead levers respectively, the two sets of levers and links, one at each end of the car, being arranged in the same position with respect to the longitudinal axis of the car.

4. The combination of a car body, a brake actuator, cylinder levers, a tie rod connecting the cylinder levers, live levers, dead

levers, links directly connecting the cylinder levers with the live levers respectively, links connecting the live levers with the dead levers respectively, a transverse hand shaft mounted in bearings on the car body, and a chain connecting the fulcrum end of the corresponding cylinder lever with said shaft.

This specification signed and witnessed this 24th day of January, A. D., 1907.

WILLIAM H. SAUVAGE.

Signed in the presence of—

AMBROSE L. O'SHEA,
W. B. GREELEY.