

(No Model.)

2 Sheets—Sheet 1.

F. ROBINSON.
BRAKE SLACK ADJUSTER.

No. 535,772.

Patented Mar. 12, 1895.

Fig. 1.

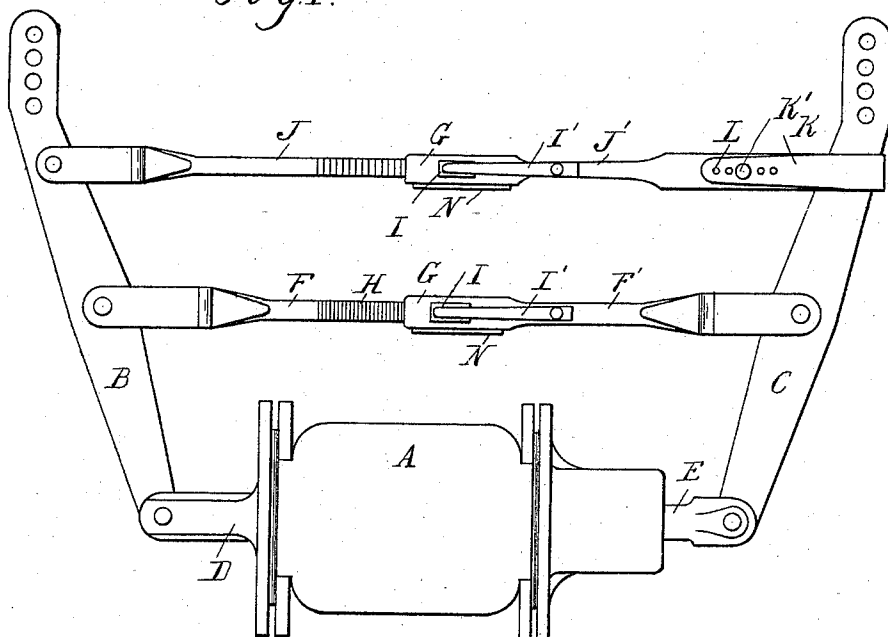


Fig. 2.

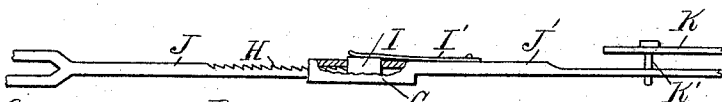


Fig. 3.

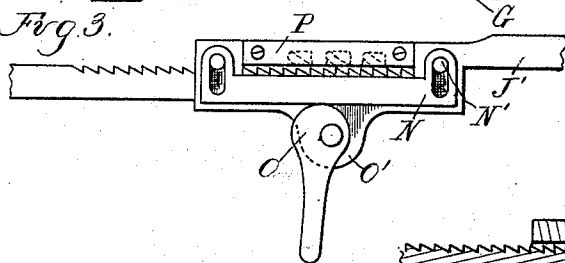
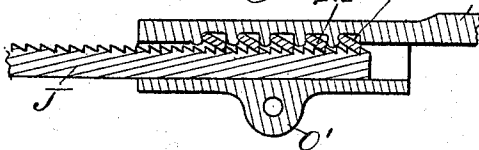


Fig. 4.



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Fig. 5.

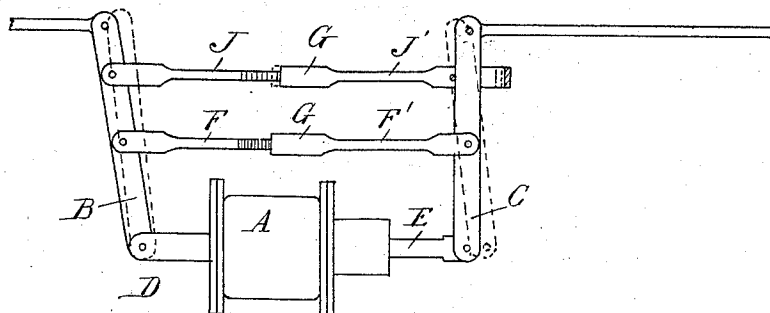
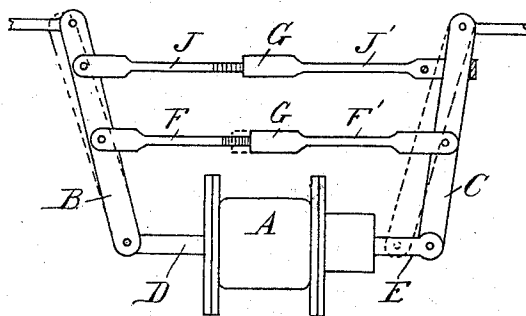


Fig. 6.



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UNITED STATES PATENT OFFICE.

FRANK ROBINSON, OF BANGOR, ASSIGNOR OF ONE-HALF TO JAMES H. SEWALL, OF PORTLAND, MAINE.

BRAKE-SLACK ADJUSTER.

SPECIFICATION forming part of Letters Patent No. 535,772, dated March 12, 1895.

Application filed December 8, 1894. Serial No. 531,233. (No model.)

To all whom it may concern:

Be it known that I, FRANK ROBINSON, a citizen of the United States, residing at Bangor, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Brake-Slack Adjusters, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention consists in the construction of an automatic slack adjuster applied between the cylinder levers, and so constructed that the adjustment is effected without connecting the adjusting devices to a stationary part of the car.

The invention particularly consists in the construction of a two-part fulcrum rod having a central take-up connection, and a two-part adjustment rod, likewise connecting these two levers beyond the fulcrum rod, having a take up connection, one cylinder lever having a limited amount of lost motion or a play on the adjustment rod, the parts being so constructed and combined as to maintain a substantially constant travel of the air brake piston at all times, regardless of the wear of the shoes, all as more fully hereinafter described.

In the drawings, Figure 1 is a plan view of the cylinder and cylinder levers showing my invention applied thereto. Fig. 2 is a side elevation, partly in section of the adjustment rod. Fig. 3 is a side elevation of a take-up connection of slightly modified form. Fig. 4 is a section therethrough. Figs. 5 and 6 are diagram plans showing the different positions of the parts in operation.

A is the air brake cylinder.

B and C are the two cylinder levers, the lever B being pivoted to the bracket D at one end of the cylinder and the cylinder lever C being connected to the piston rod E. These levers at their ends have connected to them the usual rods which operate brakes at the opposite ends of the cars in the well known manner. The two levers are connected together at or near their middle by a tie-rod, which I call the fulcrum rod. This fulcrum rod is made in two parts F and F'. On the inner end of the section F' is an open box like socket or guide G in which the end of

the section F of the rod slidingly engages. Upon the upper face of this section F is formed a ratchet bar H.

I is a toothed block or pawl slidingly engaging in a vertical aperture in the top of the box G on the section F' of the fulcrum rod, and I' is a spring acting to hold this block in engagement with the ratchet bar H as plainly shown in Fig. 2. This construction of take-up joint between the two members of the fulcrum rod is especially desirable as the ratchet bar and pawl are entirely inclosed, so that there is no danger of the dust or dirt interfering with their movement, or the positive engagement of the pawl with the ratchet bar.

At a point at or near the ends of the levers B and C is a rod made in two sections J and J', their meeting ends overlapping and having a similar take up connection. The section J is pivoted to the lever B. The section J' is provided at its end with a loop or guideway K in which slidingly engages the lever C.

K' is a pin adapted to be engaged in any one of a series of apertures L through the loop K and adapted to span the loop so as to lengthen or shorten the guide way or slot in which the lever C may move.

Instead of the construction shown in Fig. 2 I may use the take up connection, as shown in Figs. 3 and 4. In this construction of take-up I employ a series of dogs M supported in transverse grooves or sockets M' in the top of the box portion of the section J' engaging with the ratchet bar on the section J.

N is a plate having vertical slots at the ends engaging with pins N' so as to permit said plate to have a limited vertical movement, the upper edge of the plate resting under the lower edge of the dogs M.

O is a cam journaled on an extension O' on the under side of the section J' and which may be turned to actuate the plate N vertically, thereby lifting the dogs out of engagement with a ratchet bar to permit the adjustment or disengagement of the parts of the take-up connection.

P is an end plate detachably secured in the section J' over the end of the sockets M' and acting to hold the dogs in position against end displacement.

The parts being thus constructed their op-

eration is as follows: In setting the brake the parts are adjusted so that with the desired travel of the brake piston, the brakes will be set. When so set, the lever C will move back and forth within the loop K without striking the bent end thereof, or the pins K' at the other end. The length of this movement can be varied by adjusting the pin K' into the different adjusting holes L. In case the shoes wear so as to give too great a piston travel, the outer end of the levers B and C approach each other, the lever C will strike the pin K' and the take-up rod will thus be under compression at opposite ends between the two cylinder levers, which will effect a sliding movement between the overlapping ends of its two sections, thereby shortening that rod. The toothed block I engaging in the ratchet bar will hold it in its adjusted position. When the levers B and C return to their initial position, the lever C will strike against the end of the loop K and thereby cause such lever to fulcrum thereon, when the further inward movement of the piston rod E will act to put a compression strain upon opposite ends of the fulcrum bar and shorten that in the same manner as described for the adjustment bar. When the piston is again actuated the fulcrum bar being shortened the slack will have been taken up and the piston will make its usual and desired travel.

I deem it especially desirable to apply my adjustment to the cylinder levers, as it takes up the slack positively and is not affected by the wear of the parts, springing of levers, &c., requiring but a single adjuster for each car.

Another advantage of my construction is that it does not require any changes to the brake apparatus as now ordinarily applied, simply the use of the two part fulcrum rod in place of the usual rigid rod, and the two-part adjustment rod. It can thus be applied to brake equipments now in use with practically no change therein.

What I claim as my invention is—

1. The combination of the cylinder levers, a fulcrum rod having an intermediate take up, an adjustment rod extending between the levers beyond the fulcrum rod, one end of said adjustment rod having a loose connection with the lever, and a "take-up" in said adjustment rod, substantially as described.

2. The combination of the cylinder levers, a two-part fulcrum rod, having a ratchet and

pawl connection at the meeting ends of the parts, a two-part adjustment rod pivoted at one end near the outer end of one lever, a loop or eye at the other end through which the other lever engages, and a "take up" at the meeting ends of the adjustment rod, substantially as described.

3. The combination of the cylinder levers, a two part fulcrum rod having an intermediate "take-up," a two part adjustment rod having a similar take up, one end of said rod being pivotally connected to one lever, a loop at the other end of the adjustment rod through which the other lever passes, and a pin adapted to adjust the length of the play of the lever in the loop, substantially as described.

4. In a device of the kind described, a take up connecting rod formed in two parts having overlapping ends, a box shaped sleeve at the inner end of one part, a toothed section on the top face of the inner end of the other part slidably engaging into the sleeve, a series of dogs on the inner face of the top of the sleeve engaging with the toothed section, a bar on the sleeve engaging beneath the dogs, and means for raising said bar to simultaneously disengage all the dogs, substantially as and for the purpose described.

5. The combination with the cylinder levers of a brake apparatus, of a tie or fulcrum bar having a "take up" joint, an adjuster rod or bar between the levers beyond the fulcrum bar, and an adjustable loose connection between one lever and the bar, whereby the piston travel may be adjusted to a given length.

6. The combination with two oppositely moving levers of a car brake apparatus, of a slack-take-up connecting bar therefor made in two sections, a guide sleeve at the end of one section, a toothed bar at the end of the other section fitting snugly into the sleeve, a series of recesses in the under face of the top of the sleeve, and a series of gravity dogs or pawls loosely seated in said recesses engaging the teeth of the ratchet bar, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK ROBINSON.

Witnesses:

C. F. WOODARD,
H. M. BURR.