(No Model.) 3 Sheets—Sheet 1.

# F. J. COLE.

## SLACK ADJUSTER FOR CAR BRAKES.

No. 509,018. Patented Nov. 21, 1893.

Fig. 1.

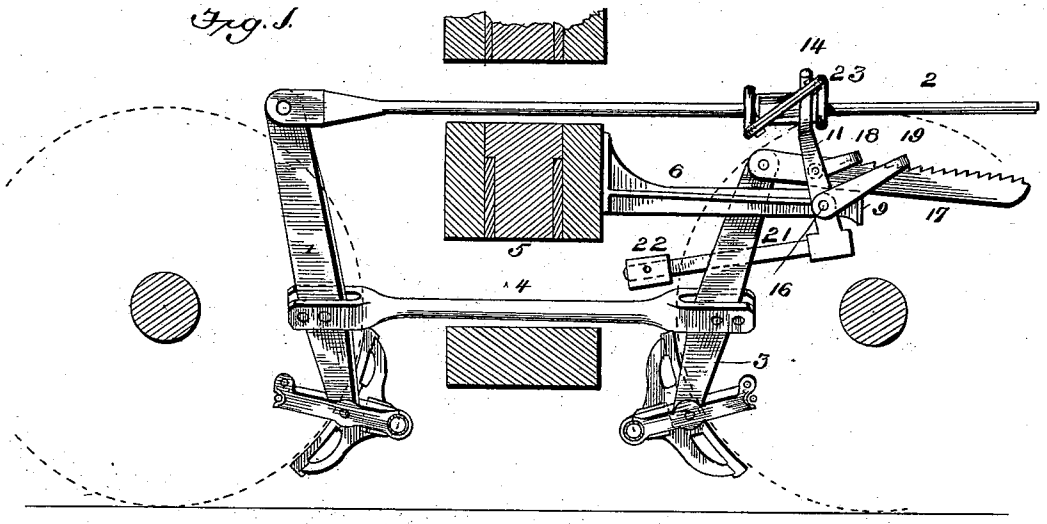



Fig. 2.

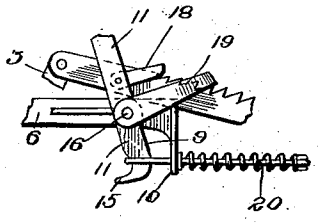



Fig. 4.

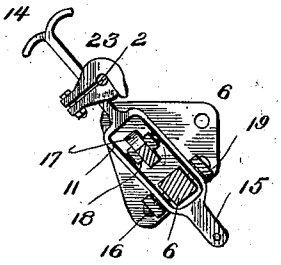



Fig. 16.

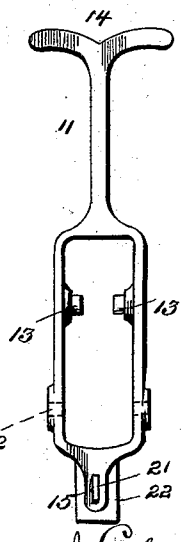



Fig. 9

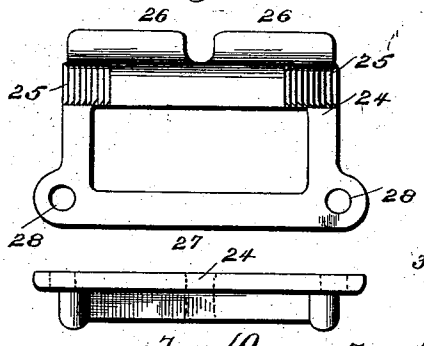



Fig 10

Fig. 13.

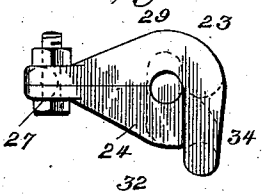



Fig. 11.

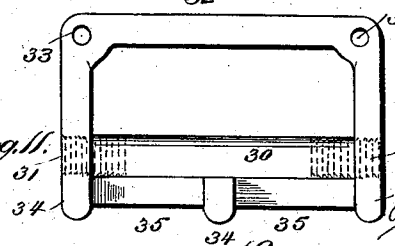
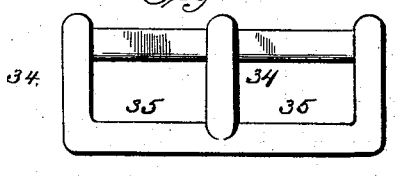



Fig. 12.

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# F. J. COLE.

## SLACK ADJUSTER FOR CAR BRAKES.

No. 509,018. Patented Nov. 21, 1893.

Fig. 3.

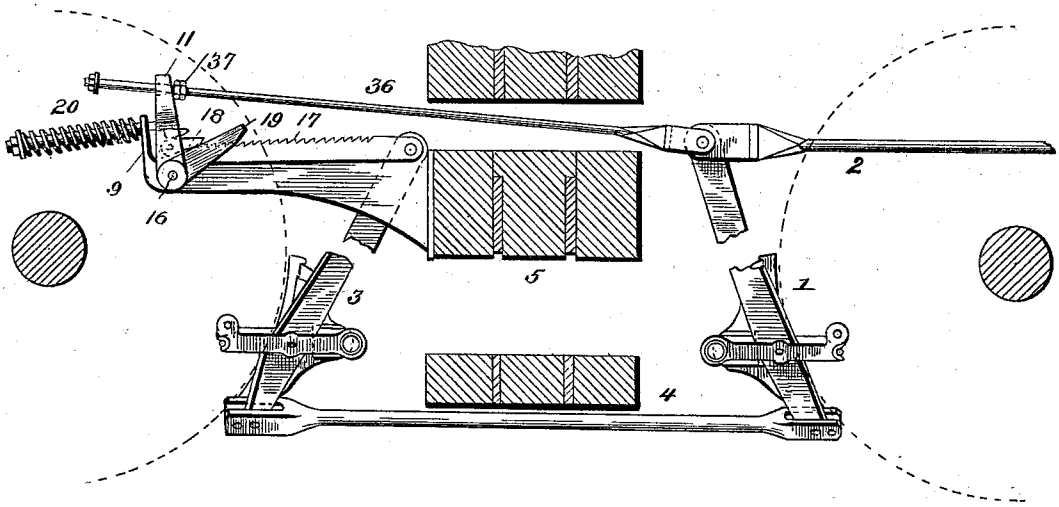



Fig. 5.

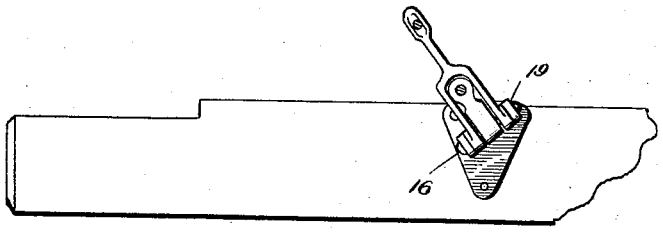



Fig. 6.

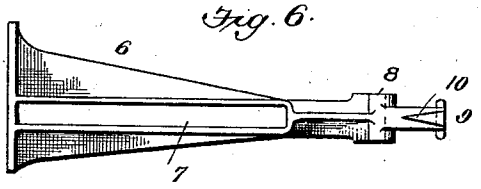



Fig. 8.

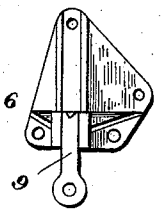
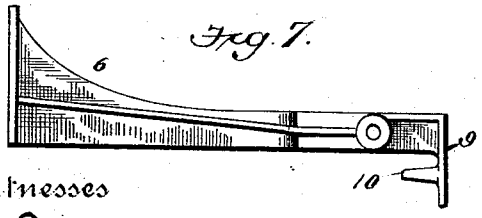



Fig. 7.

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# F. J. COLE.

## SLACK ADJUSTER FOR CAR BRAKES.

No. 509,018. Patented Nov. 21, 1893.

Fig. 17

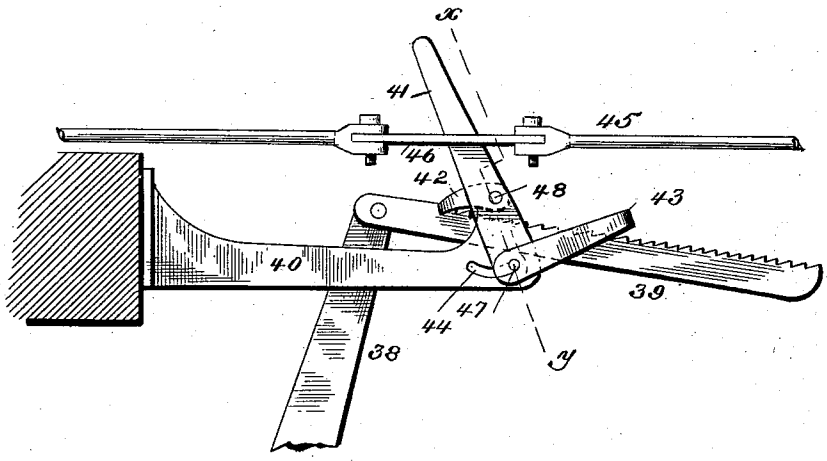



Fig. 18

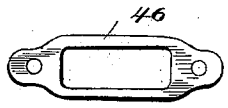



Fig. 19

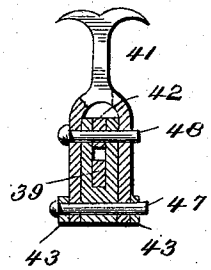



Fig. 14

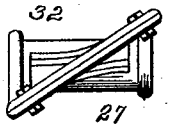
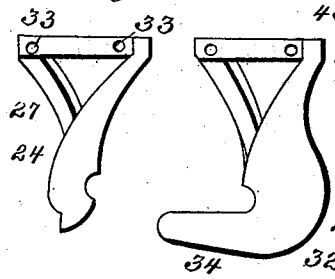



Fig. 15.

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# UNITED STATES PATENT OFFICE.

FRANCIS J. COLE, OF BALTIMORE, MARYLAND.

## SLACK-ADJUSTER FOR CAR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 509,018, dated November 21, 1893.

Application filed July 19, 1893. Serial No. 480,915. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS J. COLE, a citizen of the United States, and a resident of the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Slack-Adjusters for Car-Brakes, of which the following is a specification.

My invention relates to a slack adjuster for railroad brake mechanism and is designed for the purpose of taking up the slack produced in the braking mechanism by the wear of the brake shoes, so as to retain the efficiency of the brakes under a normal throw of the brake cylinder and pull-rod attached thereto.

The invention described in this application is an improvement upon that patented by me on August 30, 1892, No. 481,784, and consists in providing that mechanism with an automatic take-up device by means of which the slack of the brake lever is automatically adjusted by means of the pull-rod and a counter-balancing weight or spring.

It also consists of a detail structure of a pivoted take-up lever.

It also consists of detail structure of pull-rod clamp.

It also consists of a slotted bracket in which the take-up lever is pivoted.

In the drawings Figure 1 is an elevation of my slack adjuster mechanism, the bolsters and axles of the truck being in section. Fig. 2 represents a modified form of the application of my take-up mechanism. Fig. 3 represents a still further modification in which a weighted bell-crank lever is employed as the take-up lever. Fig. 4 is an end view of the slack adjuster mechanism, some of the rods being in section. Fig. 5 is an end view taken from the opposite side. Fig. 6 is a top view of the bracket in which the take-up lever is pivoted. Fig. 7 is a side elevation of the same. Fig. 8 is an end view of the same. Figs. 9 and 10 are interior and edge views of one half of the pull-rod clamp. Figs. 11 and 12 are an interior and edge view of the other half of the pull-rod clamp. Fig. 13 is an end elevation of the pull-rod clamp having a straight side bar. Fig. 14 is a top view of the pull-rod clamp having an inclined or skewed side-bar. Fig. 15 is an end view of the two parts of the pull-rod clamp having the skewed side-bar. Fig. 16 is an elevation of the take-up lever. Fig. 17 is a view of a modified form of my slack adjuster mechanism. Fig. 18 is a plan of link in pull-rod of Fig. 17. Fig. 19 is a section of the take-up lever taken through line $x$—$y$ Fig. 17.

In the drawings, 1 represents the live brake-lever; 2 the pull-rod; 3 the dead brake-lever; 4 the connecting rod between them; 5 the truck bolsters; 6 a bracket bolted to the truck bolster and shown in detail in Figs. 6 and 7.

The bracket 6 is slotted in its center with a longitudinal slot 7 which extends from its base to a point near its extremity. Within this slot plays the dead brake lever 3. Through the end of the bracket 6 is a horizontal hole 8 through which a bolt is passed for securing the take-up lever to the bracket. The extremity of the bracket is constructed in the form of a hook having a flat plate 9 on the end and a projecting lug 10 on the inside of said plate, which forms a back stop for the take-up lever.

11 is the take-up lever shown in detail in Fig. 16. This lever consists of a slotted lever provided with perforations 12—12 on the lower end of the slot for the passage of a pivotal bolt. On the interior of the slot near its upper end are cast trunnions 13—13 to which is secured a pawl for operating the take-up mechanism. The upper end of the lever is provided with a cross-bar 14 and at its lower end below the slot and pivot it has a projecting lug 15 which is either in the form of a hook or is perforated to receive a bar with a weight on its extremity or a rod around which a spring is placed. This lever may be constructed as shown in Fig. 1 in the form of a bell-crank, one arm of the bell-crank being constructed as is the lever shown in Fig. 16, while the other and horizontal arm is provided with an adjustable weight so as to operate the take-up mechanism by gravity.

16 is the bolt by means of which the take-up lever is pivoted to the bracket 6.

17 is a ratchet bar pivoted to the upper end of the dead brake lever 3, the opposite end of the said ratchet bar being free. The ratchet bar 17 passes through the center of the take-up lever 11 through its slot.

18 is a link pawl which is pivoted to the in-

terior of the slot in the take-up lever at the trunnions 13—13 and engages the ratchet of the ratchet bar 17 and by the motion of the take-up lever operates said ratchet bar.

19 is a dog or locking pawl which consists of a link pivoted on the pivoted bolt 16 outside of the take-up lever 11 and which engages the ratchet of the ratchet bar 17 and holds it in a fixed position after it has been moved forward by the take-up lever and its pawl 18.

20 is a spring (Fig. 2) secured by means of a rod to the lower end 15 of the take-up lever 11 and by which said lever is held in contact with the stop 10, except when it is moved away from said stop by the action of the pull rod 2.

Referring to Fig. 1 it will be seen that the bell-crank lever 21 and its weight 22 will serve the same function as the spring 20, but it is a simpler and better form of mechanism and I prefer to use it rather than the spring. 23 is an adjustable clamp upon the pull rod 2, and by which the take-up lever 11 is operated. This clamp is of peculiar construction and is shown in detail in Figs. 9, 10, 11, 12 and 13, and in a modified and preferred form it is shown in Figs. 14 and 15. The clamp consists of two parts which are united by means of an open hinge and held together by bolts which are capable of being screwed up so as to clamp the two parts of the clamp upon the pull rod.

Referring to Fig. 9, that view shows the interior of the part marked 24 in Fig. 13. It is provided with a semi-circular slot the interior surface of which is ratcheted as at 25—25; at one side of the slot there is a projecting lug 26 and on the opposite side arms and a bar, which together with the portion containing the slot forms a loop 27, the bar 27 being straight. The extremities of the bar 27 are provided with holes 28—28 for the clamping bolts.

Fig. 10 is an edge view of the bar 24 looking at it from the side of the bar 27.

Figs. 11 and 12 are interior and bottom views of the part marked 29 in Fig. 13. Fig. 11 being the interior view shows a semi-circular slot 30 provided with ratchets 31—31, a loop 32 at one side having an exterior bar parallel to the slot 30. The loop 32 at its corners is provided with bolt holes 33—33 which will register with the bolt holes 28 — 28. 34—34 represents the right-angle projecting lugs shown in Fig. 13, which extend from the bottom of the bar 29 of the clamp, and 35 is a bar connecting those lugs at their extremities. That bar is supported by three lugs 34—34—34. Fig. 12 is a bottom view of the portion 29 shown in Fig 13 which shows the lugs 34 and their connec.ing bars 35. It will be seen from these figures that when the two halves of the clamp are put together the foot 26 of the bar 24 is inserted into the loops formed by the lugs 34 and the bar 35, and upon which the bar 24 bears, and is pivoted so as to form a hinge. The semi-circular slots 25 and 30 coming together form a circular aperture through the clamp. The extending portions of the clamp 27 and 32 coming together and the holes 28 and 32 registering with one another, bolts may be passed through said holes and the device clamped upon the rod.

Turning now to Figs. 14 and 15, it will be seen that the part formed by the two parts 27 and 32 may be twisted so as to give it an inclined position as shown in those figures. The ends of the clamp plates being turned upon the axis of the central hole would assume positions corresponding to the extremities of the bar 27—32. The effect of this inclining of the cross-bar 27—32 would be as shown in Fig. 1 to cause the clamp of the pull-rod to strike the take-up lever 11 nearer to the pivot 16 when moving forward so as to cause it to act quickly; while in coming back the portion of the clamp slot which strikes the take-up lever will engage it at the farthest possible point from its pivot, thereby exercising a maximum amount of power upon the levers and the take-up mechanism to take up the slack of the shoes. This is necessary in consequence of the fact that considerable power is required to operate the take-up lever and it is desirable to cause it to move in the direction in which it is engaging another tooth on the ratchet bar 17 with promptitude and quickness, little power being required to cause it to move in that direction, while considerable power is required to make it move in the opposite direction.

Referring to Fig. 3 the mechanism there shown is constructed on the same principle as that shown in Figs. 1 and 2, but the form is somewhat modified. The pull-rod 2 and the live brake-lever operate in a reverse direction from that shown in Figs. 1 and 2. It is a lever of another kind, the shoes being above the rod 4 instead of below it. In this case a supplemental rod 36 is provided, connected to the top of the live brake-lever and employed only for the purpose of operating the take-up mechanism. It is provided with a nut upon its extremity and a pair of locking nuts 37 fixed upon the rod at the desired point. The take-up mechanism is similar in this case to the other except that the spring by which the take-up is fed is applied above the pivot of the take-up lever, so as to move it in the opposite direction from the former case.

Referring to Figs. 17, 18 and 19, 38 is the dead brake lever; 39 the rack bar pivoted to the upper end thereof. 40 is the slotted bracket bolted to the bolster of the truck. 41 is the take-up lever pivoted on a bolt 48 in the end of the bracket 40. 42 is a pawl pivoted upon the bolt 48 in the center of the slotted take-up lever and engaging the upper surface of the rack bar. 43 is a link pawl pivoted on the bolt 47 in the end of the take-up lever 41, and which plays in the curved slot 44. 46 is a link in the pull-rod 45 in which the upper end of the take-up lever plays and

by which it is operated. The action of this device is similar to the other forms in principle but differs slightly in form of application. The take up of the slack is accomplished by means of the link pawl 43, while the dead lever is held by the pawl 42.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a brakeshoe adjusting device for railroad car trucks the combination of the dead brake lever, a bar connected to the upper end of said dead brake-lever and by which it may be moved to adjust the shoes, a bell-crank lever pivoted at or near its angle to a stationary part of the truck one arm of which is weighted and the other provided with means for engaging, moving and holding the bar of the dead brake lever and the pull rod of the brake mechanism provided with attachments for engaging and moving the pivoted lever, as and for the purpose specified.

2. In a slack adjuster for car brakes a slotted bracket bolted to the truck bolster and forming a guide for the dead brake lever and having the take-up lever pivoted to its extremity.

3. In a slack adjuster for car brakes a clamp for the pull-rod consisting of two parts hinged together and provided with means for clamping them upon the rod and having a loop on one side of the clamp which forms a guide and actuating device for the take-up lever.

4. In a slack adjuster for car brakes a clamp for the pull-rod consisting of two parts hinged together and provided with means for clamping them upon the pull rod and having a loop at one side of the clamp which forms a guide for the take up lever as well as actuates it, the side bar of said loop being inclined to the axis of the pull rod, substantially as described.

5. In a slack adjuster for railroad cars, the combination of the dead-brake-lever, a bar connected to the upper end of said dead-brake-lever and by which it may be moved to adjust the shoes, a slotted take-up-lever pivoted to a stationary part of the truck, and through which said bar moves and by which it is guided.

6. In a slack adjuster for railroad cars the combination of the dead-brake-lever, a bar connected to the upper end of said dead brake lever and by which it may be moved to adjust the shoes, a take-up-lever pivoted to a stationary part of the truck provided with a locking device for the take-up bar, and an operating pawl for said take-up bar pivoted to the take-up lever, and the pull-rod of the brake mechanism provided with attachments for engaging and moving the pivoted lever, as and for the purpose specified.

Signed at Baltimore, in the State of Maryland, this 8th day of July, A. D. 1893.

FRANCIS J. COLE.

Witnesses:
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J. H. ADAMS.