Aug. 10, 1943. J. J. McBRIDE 2,326,377

SLACK ADJUSTER FOR RAILWAY BRAKES

Filed Nov. 8, 1941

Fig. 1.

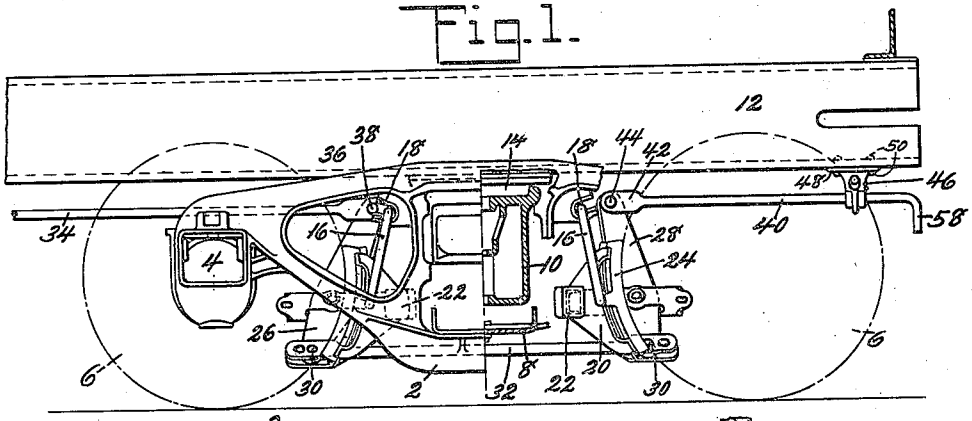


Fig. 2.

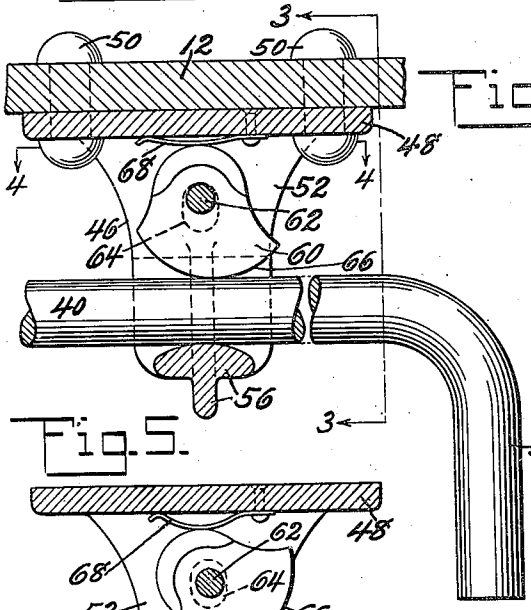


Fig. 3.

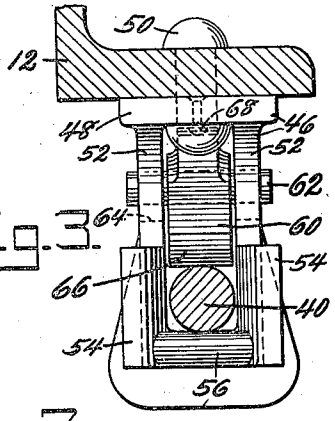


Fig. 5.

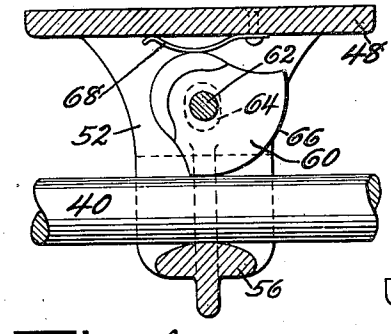


Fig. 7.

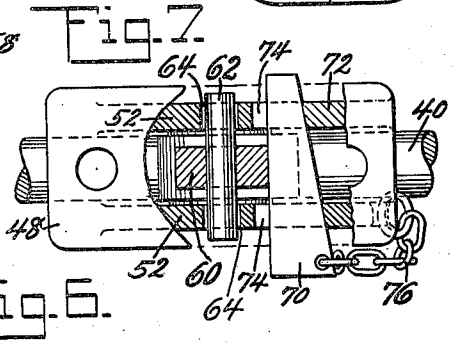


Fig. 4.

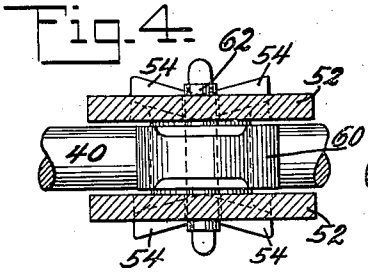
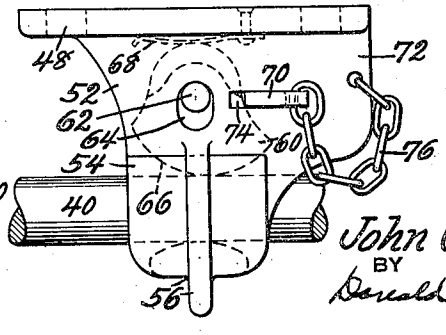


Fig. 6.



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Patented Aug. 10, 1943

2,326,377

UNITED STATES PATENT OFFICE

2,326,377

SLACK ADJUSTER FOR RAILWAY BRAKES

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Application November 8, 1941, Serial No. 418,282

3 Claims. (Cl. 188—197)

This invention relates to slack adjusters for railway brake rigging and in particular to adjusters of the type in which excess slack due to wear of the brake shoes is taken up by shifting of the pivot of the dead cylinder lever. Shifting of the dead lever pivot serves to restore the proper clearance between the worn brake shoes and the wheels, permitting full application of the brakes with normal movement of the brake cylinder piston.

Heretofore in slack adjusters of this type the brake rigging has been held in adjusted position by means of gearing, rack and pinion or other similar devices. These for the most part were of complicated construction, comprising many parts, and did not provide for uniform shoe clearance from new to completely worn out brake shoe, resulting in unevenly worn brake shoes. Furthermore, breaking of a tooth of the gears or rack in such devices prevented proper operation and reduced the effectiveness thereof. It is an object of the present invention, therefore, to provide a slack adjuster for railway brake rigging which comprises but few essential parts, and which eliminates the use of gearing, rack and pinion or other such devices.

A further object of the invention is the provision of a slack adjuster for railway brakes which positively provides the proper amount of slack in the brake rigging and insures uniform shoe clearance from new to completely worn out brake shoe.

A still further object of the invention is the provision of a slack adjuster for railway brake rigging in which a cam member serves to positively lock the rigging in adjusted position.

These and other objects of the invention will be apparent to those skilled in the art from a study of the following description and accompanying drawing, in which:

Figure 1 is a side elevational view of a railway truck and car underframe showing the invention applied thereto, certain parts being shown in section to better disclose the brake rigging;

Fig. 2 is an enlarged sectional view showing the slack adjuster in operative position;

Fig. 3 is an end view of the improved slack adjuster taken substantially on the line 3—3 of Fig. 2;

Fig. 4 is a plan view of the slack adjuster taken substantially on the line 4—4 of Fig. 2;

Fig. 5 is a sectional view similar to Fig. 2, but showing the slack adjuster in released position;

Fig. 6 is a side view of the slack adjuster showing the use of a wedge to assist in maintaining the parts in adjusted position, and

Fig. 7 is a top plan view of the device shown in Fig. 6, parts thereof being broken away to better disclose the construction.

Referring now more particularly to the drawing, the invention may be used with any suitable design of truck, such as that shown in Fig. 1, which comprises side frames 2 supported by journal boxes 4 on wheel and axle assemblies 6. The truck side frames are shown as connected together by a spring plank 8 and support the truck bolster 10 which in turn supports the car center sill 12 through center bearing 14. Brake hangers 16 are pivotally carried in brackets or other means 18 provided on the truck side frames, the brake hangers being pivotally connected at their lower ends to brake heads 20 which are connected to truss type brake beams 22 and carry brake shoes 24.

The brake rigging comprises a live lever 26 and a dead lever 28 pivotally connected at their intermediate portions to opposite brake beams 22 with their lower end portions pivotally connected by means of pivot pins 30 with bottom connection 32, which is shown as of the conventional adjustable type. A pull rod 34 is operatively connected at one end by suitable leverage to the brake cylinder (not shown), while its opposite end portion is pivotally connected through the medium of jaw 36 and pin 38 to the upper end of the live lever 26. An operating or anchor rod 40 is pivotally connected at one end through jaw 42 and pin 44 to the upper end of dead lever 28 and extends forwardly towards the adjacent end of the car to be adjustably held in position by the device now to be described.

The improved slack adjuster consists of an anchor bracket 46 provided with a flat attaching or base portion 48 by which it is secured to the lower flange of the car center sill 12 by rivets or other suitable means 50. Depending from the attaching portion 48 are spaced side walls 52, the lower portions 54 of which, as shown in Figs. 3 and 4, diverge outwardly from the center for a purpose to be later explained. The side walls are joined together at their lower edge portions by an anchor rod supporting member or bar 56, as clearly shown in Fig. 3. The anchor rod 40 extends through the anchor bracket 46 and is slidably supported adjacent its forward end portion by the member 56, the rod terminating in a downwardly bent portion providing a handle 58 by which the rod may be operated to adjust the slack in the brake rigging. A cam member 60 is

rotatably mounted in the bracket 46 between the spaced walls 52 thereof by means of a pivot or fulcrum pin 62 passing through the cam member and being slidably arranged in vertical slots 64 formed in the bracket side walls. The cam member is bored so as to provide a driving fit for the pivot pin 62, the latter being inserted through the side wall slots and cam member after the cam member has been set in position in the anchor bracket. The size and arrangement of the bracket wall slots 64 and cam member 60 are such as to permit the bearing surface 66 of the cam member to be always in engagement with the anchor rod. It will thus be seen that the cam member is rotatably mounted in bracket 46 on a vertically shiftable pivot, and being in contact at all times with the anchor rod, will be rotated upon movement of the latter in either direction. Pulling of anchor rod 40 towards the end of the car to the limit of its movement acts to remove all slack in the brake rigging while rotating cam member 60 counter-clockwise to released position. With all of the slack removed the anchor rod is now pushed in the opposite direction to provide the proper amount of slack in the rigging, the cam member being rotated clockwise during this operation into wedging engagement with the rod whereby to lock the same in adjusted position. The contour of the cam bearing surface 66 is of such shape and the wall slots 64 so arranged as to permit only a predetermined limited movement of the anchor rod before it is locked in adjusted position by the wedging action of the cam to provide the proper amount of slack in the brake rigging. It will be seen that when the cam member is rotated into wedging position with the anchor rod a powerful upward thrust is exerted on pivot pin 62, forcing it hard up against the tops of wall slots 64, thus preventing further vertical shifting of the cam and consequently any further movement of the anchor rod. To increase the binding action of cam member 60 on the anchor rod, when in the locked position, carborundum, emery or some other similar coarse abrasive material may be cast into the cam bearing surface 66. The changing positions of the anchor rod 40 due to swinging movements of the truck and when the car is rounding a curve are permitted without injury to the mechanism by reason of the diverging lower bracket wall portions 54. A flat spring 68 secured to the under surface of bracket base portion 48 constantly urges cam member 60 toward engagement with the anchor rod and serves to insure continuous frictional contact between the cam and anchor rod during operation of the device.

In the slight modification shown in Figs. 6 and 7 a wedge member 70 is used to aid in the locking of cam member 60 in adjusted position. The modified construction is the same as that shown in Figs. 1 to 5 except that the spaced side walls 52 of anchor bracket 46 are extended to provide portions 72 in which are formed rectangular openings 74. The wedge member 70 is inserted in the openings after the cam member has been wedged in locked position and driven up against the side of the cam member to retain it positively locked in such position. The wedge member is held against loss by provision of a chain 76 connected to the wedge member and to one of the extended wall portions 72.

From the foregoing it will be seen that a slack adjuster has been provided which is of simple yet strong construction, easy to operate and positive in action. When it is desired to adjust the slack in the brake rigging due to excess wear of the brakes shoes, it is only necessary to pull anchor rod 40 to the full extent of its movement toward the forward end of the car. This removes all slack in the brake rigging, and upon pushing the anchor rod as far as it will go in the opposite direction a predetermined amount of slack is restored in the brake rigging without further attention on the part of the operator. With the design of Figs. 6 and 7, of course, it would be necessary to first remove the wedge member and then replace it after adjustment of the slack; however, the operation is the same in all other respects and a predetermined amount of slack is positively and automatically obtained in the brake rigging.

The invention has been shown and described more or less in detail but various changes in the form and proportions of the parts will be obvious to those skilled in the art and all such changes are contemplated as will come within the scope of the following claims.

What is claimed is:

1. A slack adjuster for railway car brake rigging comprising an anchor bracket fixed relative to the car, an anchor rod pivotally connected at one end with the brake rigging and having its other end portion slidably supported in said bracket in frictional engagement therewith, and a cam member rotatably mounted in said bracket and adapted to wedgingly engage said anchor rod between the cam and bracket to lock the same against movement.

2. A slack adjuster for railway car brake rigging comprising an anchor bracket fixed relative to the car, said bracket being provided with side walls having slots formed therein, an anchor rod pivotally connected at one end with the brake rigging and having its other end portion slidably supported in said bracket, and a cam member rotatably mounted in said bracket on an axis slidable in said slots and frictionally engaging said anchor rod at all times.

3. A slack adjuster for railway car brake rigging comprising an anchor bracket fixed relative to the car and being provided with side walls, slots formed in said side walls, an anchor rod pivotally connected at one end with the brake rigging and having its other end portion slidably supported in said bracket, a cam member rotatably mounted in said bracket on an axis slidable in said slots, and resilient means constantly urging said cam member into frictional engagement with said anchor rod.

4. A slack adjuster for railway car brake rigging comprising an anchor bracket fixed relative to the car, said bracket being provided with side walls having slots formed therein, an anchor rod pivotally connected at one end with the brake rigging and having its other end portion slidably supported in said bracket, and a cam member rotatably mounted in said bracket on a pivot pin slidable in said slots, said cam member being rotatable into wedging engagement with said rod upon limited movement of the latter in one direction, and said bracket being additionally provided with openings in the side walls thereof adapted to receive wedge means therethrough to positively lock said cam member in wedging position.

5. A slack adjuster for railway car brake rigging comprising an anchor bracket fixed relative to the car and being provided with side walls, slots formed in said side walls, an anchor rod

pivotally connected at one end with the brake rigging and having its other end portion slidably supported in said bracket, and a cam member mounted in said bracket for rotation on an axis slidable in said slots and frictionally engaging said anchor rod, said cam member being so formed and arranged as to permit movement of said rod in one direction to remove all slack from said brake rigging and to wedgingly lock said rod upon movement of the latter in the opposite direction in a position providing a predetermined amount of slack in said brake rigging.

6. A slack adjuster for railway car brake rigging comprising an anchor bracket fixed relative to the car and provided with side walls, slots formed in said side walls, an anchor rod pivotally connected at one end with the brake rigging and having its other end portion slidably supported in said bracket, said anchor rod being movable in one direction to remove all slack from said brake rigging, and means for adjusting said brake rigging to a predetermined slack comprising a cam member rotatably mounted in said bracket on an axis slidable in said slots and adapted to wedgingly engage said rod upon movement thereof in the opposite direction to lock said rod in adjusted position.

7. A slack adjuster for railway car brake rigging comprising an anchor bracket fixed relative to the car, an anchor rod pivotally connected at one end with the brake rigging and having its other end portion directly supported by said bracket in frictional engagement therewith and adapted to be slidable relative thereto, and a cam member rotatably mounted in said bracket and adapted to wedgingly engage said anchor rod between the cam and bracket to lock the same against movement.

8. A slack adjuster for railway car brake rigging comprising an anchor bracket fixed relative to the car, said bracket being provided with side walls having longitudinally arranged slots formed therein, an anchor rod pivotally connected at one end with the brake rigging and having its other end portion directly supported by and slidable relative to said bracket, and a cam member rotatably mounted in said bracket on an axis longitudinally shiftable in said slots and adapted to wedgingly engage said anchor rod to lock the same against movement.

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