Feb. 20, 1940. J. ROBINSON 2,190,681

SLACK ADJUSTER

Original Filed June 8, 1936 2 Sheets-Sheet 1

Fig. 1

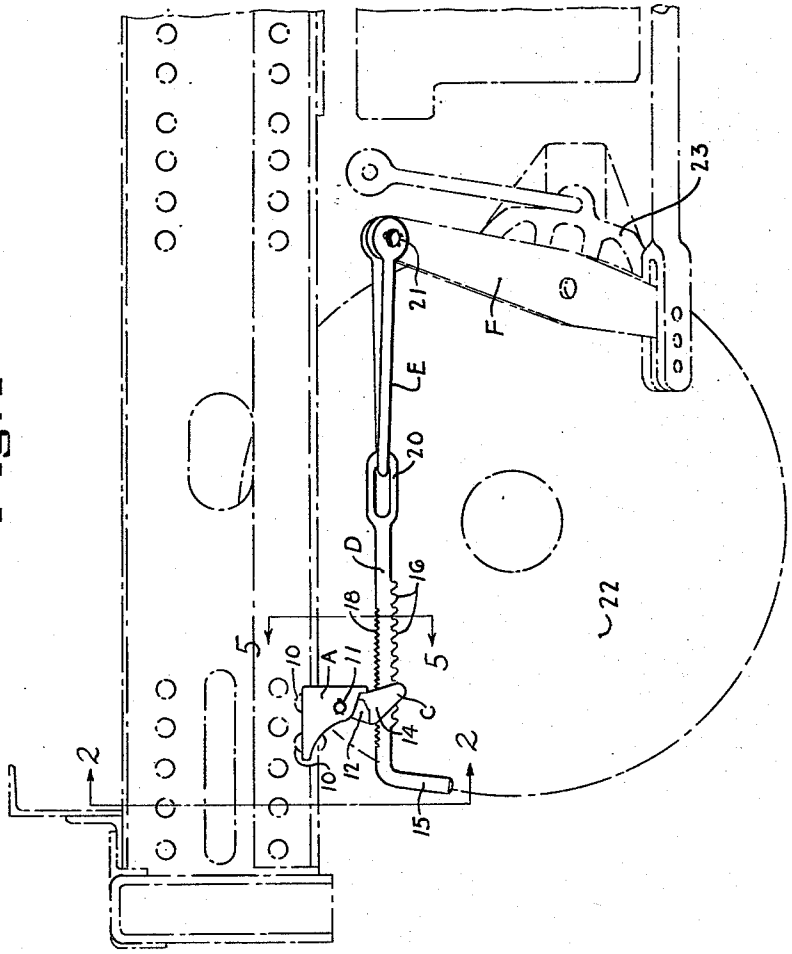
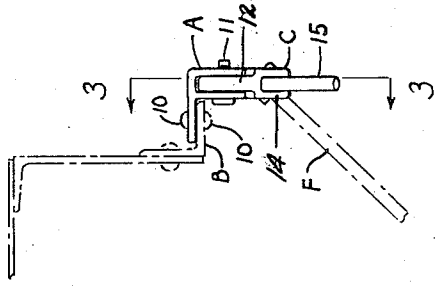


Fig. 2



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Fig. 3

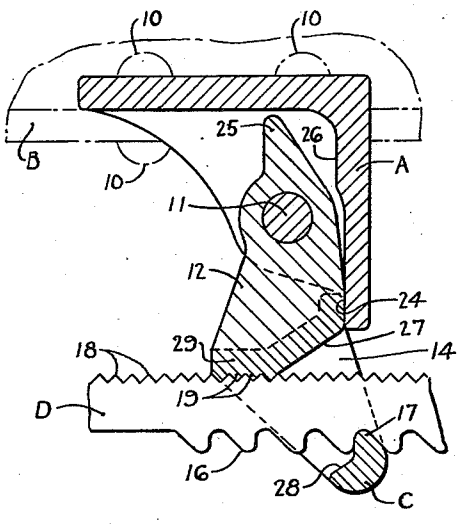


Fig. 4

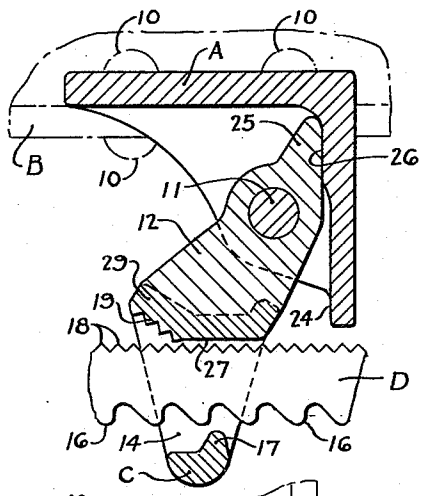


Fig. 5

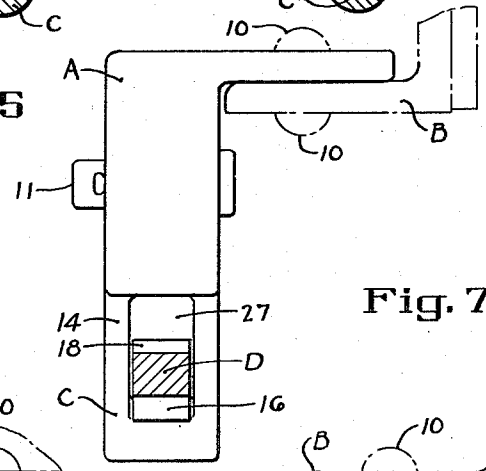


Fig. 6

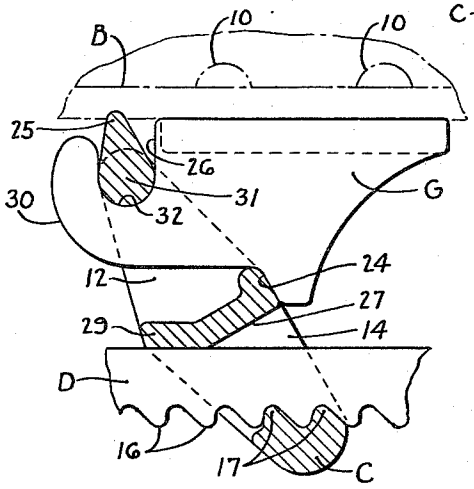
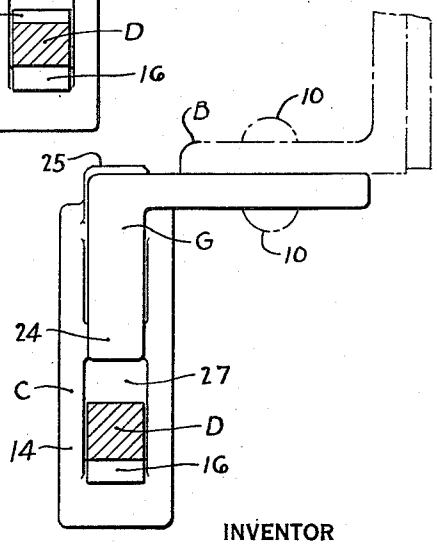


Fig. 7



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UNITED STATES PATENT OFFICE

2,190,681

SLACK ADJUSTER

Joseph Robinson, New York, N. Y.

Application June 8, 1936, Serial No. 84,087
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7 Claims. (Cl. 188—200)

This invention relates to manually operated devices for quickly removing undesired slack in the brake mechanism, or brake rigging, of railroad cars. It comprises but three essential parts, each novel in construction, simple to manufacture, and so formed and arranged that rust, snow or ice cannot interfere with their operation.

In the accompanying drawings in which like reference numerals indicate similar parts,

Figure 1 is a longitudinal phantom view through an end portion of a railroad freight car, showing my invention as it appears in side elevation when installed;

Figure 2 is a rear view on the line 2—2 of Figure 1;

Figure 3 is an enlarged sectional side view of the parts 11—15 on the line 3—3 of Figure 2 showing the parts in the normal service position. Only a part of the adjustment bar 16 is seen in this view, and it is shown in elevation;

Figure 4 is a view similar to Figure 3, showing the position the parts assume when the brake rigging is being adjusted;

Figure 5 is a front view, to the same scale as Figures 3 and 4, taken on the line 5—5 of Figure 1;

Figure 6 is a view similar to Figure 3 of a modified embodiment of my invention, and

Figure 7 is a view of this modified form similar to Figure 5.

A bracket or hanger A of suitable material is attached as by rivets 10—10 to a part of the car body or frame. In the present embodiment this hanger is mounted on the bottom flange B of the car center sill, but other positions or arrangements of the hanger will occur to those versed in the art. A swinging link or retaining device C is mounted for limited rocking movement on the bracket in any suitable way, as by a pin 11. The link comprises a vertically or otherwise disposed shank 12, through which the pin 11 passes, and an enlarged lower end or head 14. The head is perforated to receive the adjustment or tie rod D, which is provided with a suitable handle 15, and which may be of any suitable shape in cross section, such as half-round, square or V-shape. On the lower side of the rod teeth 16 are formed to interlock with a complementary tooth or teeth 17 in the bottom of the head 14. A series of teeth 18 of smaller size may be arranged on the upper surface of the tie bar D to mate with similar teeth 19 on the upper inner wall of the head 14, but these are not essential.

A suitable clevis or connecting member E is secured in the eye 20 of the rod D in any way desired, preferably in a flexible manner, and is movably attached to the arm or lever F (sometimes called the dead lever) of the brake rigging, as by a bolt or pin 21.

It will be appreciated that when the brakes are in the normal released position a certain amount of clearance is necessary between the rim of the wheels 22 of the car and the brake shoes 23. To provide for this clearance, or normal slack, the link or shoe C is arranged so that it may swing or rotate forward on the pin 11 from the position shown in Figure 4 to the position shown in Figures 1 and 3, the extent of this rotation being such as to provide the desired free slack. This forward swing of the link is limited by engagement with a stop or bearing 24 on the bracket A, Figure 3, whilst the reverse swing, Figure 4, is limited by engagement of the lug 25, arranged on the shank 12 above the pin 11, against a bearing or stop 26 on the bracket. When the link or shoe C reaches the limit of its rearward throw or swing, Figure 4, the inclined face 27, Figure 3, assumes approximately a horizontal position at which time the interlock of the rod D with the shoe C is released, and the teeth 16 of the rod may then slide over the tooth 17 of the link or shoe. The base of this tooth tapers downwardly as at 28, Figure 3, to expedite the exit of any foreign substance that might happen to enter the shoe. As the shoe rocks forward to the normal holding position, Figure 3, the teeth 16—17—18 engage and the heel 29 of the shoe contacts the top of the rod D and forces these teeth into full and firm interlocked engagement.

In the modification shown in Figures 6 and 7, the pin 11 is eliminated and the shoe or link C is pivotally mounted on a suitable lug or hook 30 formed integral with the bracket G. In this embodiment of my invention the shank 12 of the link or shoe is hollow and spans or straddles the bracket, which is the reverse of the arrangement shown in Figures 1–5. The shank is provided at its upper end with a curved bearing 31 which is mounted for limited rocking movement in a complementary bearing 32 on the lug 30. To remove the link from this lug, the rod D must be taken out of it. This done the link can be swung rearwardly off the lug 30. In this modification the pivotal point of the link C on the bracket is moved back (to the left, Figure 6) a considerable extent, and the metal of the link is distributed approximately equally on either side of the center of the pivot 31. This arrangement permits the link to hang about vertical, and at the rear of its adjustment swing (such swing being indicated in Figure 4), when the rod D is removed.

The movement that corresponds to the slack movement in the case of the modified construction of Figures 6 and 7 is the rearward swing of the lower part of the link C, as will be seen by comparison of Figures 3 and 4, wherein Figure 3 is generally equivalent to Figure 6.

On practically all freight cars adjustment of the lever F to compensate for undesired slack is accomplished by withdrawing a pin and moving the lever to the left (Figure 1) to the proper hole of a spanner which straddles the upper end of the lever and has a series of holes for adjustment purposes, the spanner being, of course, rigidly tied to some part of the car as, for instance, the center sill. This operation is not only slow but in cold weather it is also difficult, and the advantages of close adjustment cannot be had due to the necessary size of the retaining pin. With my invention slack take-up, while manually performed, is easily and quickly done. The operator reaches in from a safe position adjacent the car end and grasps the handle 15 and simply pulls the rod D rearwardly (to the left in Figure 1) as far as he can and then lets go. This simple, quickly performed operation instantly removes all undesired slack in the brake rigging. The first part of the rearward movement of the rod D causes the link or shoe C to swing to the position shown in Figure 4, the amount of this travel being as aforesaid the extent of brake shoe clearance etc. normally desired. As the shoe is stopped in the position shown in Figure 4 the rod D rises off the tooth 17 and continues to move rearwardly a distance equal to the accumulated undesired slack. The brake shoes 23 are then against the wheels 22, and the rod D can be drawn up no further. The operator therefore lets go of the handle 15 whereupon the rod drops into locking engagement with the tooth 17, and the link C is swung forward by the retractive action of the brake shoe rigging to the position shown in Figure 3 which automatically establishes the brake shoe clearance normally desired. The flexible connection between the clevis E, the rod D and the lever F, and also the clearance allowed for the rod in the opening in the link C through which it passes, prevents binding and undue strain on any of the parts of my invention due to truck angularity, with respect to the car body, in rounding curves etc. To return the rod D to full release position the link C is held in the position shown in Figure 4 with one hand and the rod is lifted off the teeth 17 and shoved forward with the other hand to the limit of its movement. By allowing sufficient clearance between the rod and the opening it occupies in the link C, the rod may be rotated out of engagement with the tooth 17 and shoved forward to obtain clearance for the application of new brake shoes.

I am aware that the link or shoe C may be mounted so as to rock or swing in the horizontal plane instead of the vertical plane, and that other modifications may be made in my invention without departing from its spirit or scope. I therefore do not wish to be limited to the details of construction herein described.

What I claim is:

1. A slack adjuster comprising in combination, a link, a fixed member on which the link is normally freely pivotal in opposite directions between predetermined limits, and means connected with the brake rigging of the car and adjustably engageable with said link for cooperating with the link to remove undesired slack in said brake rigging when the link is swung to the limit of its pivotal movement in one direction and to preserve desired slack therein when the link is swung to the limit of its movement in the opposite direction.

2. A slack adjuster comprising in combination, a link, a fixed member on which the link pivots, said member having provision for limiting the pivotal swing of the link, and means connected with the brake rigging of the car and adjustably engageable with said link for cooperating with the link to remove undesired slack in said brake rigging and to preserve desired slack therein, said means including a member adapted to interlock with said link on one side of said pivot when the link swings toward the limit of its forward movement.

3. A slack adjuster comprising in combination, a bracket fixed relative to the car body, a link pivotally mounted on the bracket and provided with an opening, means at one side of said pivot for limiting the pivotal movement of the link on the bracket, a rod mounted in said opening and having sliding movement therein when the link is at the limit of its movement in one direction and being locked to the link when the link is at the limit of its movement in the other direction, and means for effectively augmenting said locking engagement.

4. A slack adjuster comprising in combination, a bracket fixed relative to the car body, a link pivotally mounted on the bracket, means for limiting the pivotal movement of the link on the bracket, said link being provided with an opening in which an anchor lug or tooth is located, a rod mounted in said opening and having a plurality of spaced teeth adapted to engage said anchor lug, said link being adapted to swing on said pivot to an extent equal to the amount of slack which it is desired to preserve, said rod having sliding movement in the link when the link is at the limit of its swing in one direction and being locked to the link by said spaced teeth and said lug when the link is at the limit of its swing in the other direction, means on said link for engaging said rod at a point opposite said anchor lug to augment the locking engagement between the rod and said link, said rod having angular movement in said link when in the locked position to prevent undue strains on said parts when the car trucks assume different angles with respect to the car body in negotiating curves etc.

5. A slack adjuster comprising in combination, a stationary bracket, a link pivotally mounted on the bracket for limited rocking movement thereon, said link being perforated at one end and being provided adjacent such end with an anchor lug or tooth, said link having a stop engageable with said bracket to limit the rocking movement of the link in one direction and a rod mounted in the opening in said link and having a plurality of teeth adapted to engage said anchor lug to provide graduated adjustment of said rod when said rod is drawn rearwardly relative to said link.

6. A slack adjuster such as described in claim 1, in which the link is constructed to permit a limited amount of lateral movement, relative to the fixed member, of the means that is connected with the brake rigging, whereby the railway car truck is relieved of angular and lateral drag on curves.

7. A slack adjuster for the brake rigging of a railway car, comprising in combination, a pivoted link having an opening therethrough, a longitu-

dinally movable rigid member connected with said brake rigging and mounted in the opening in said link for movement therein when taking slack, said member being adapted to interlock with said link to prevent relative longitudinal movement between the link and the member when not taking slack, and a bracket fixed to the car, said link being pivoted to said bracket and said bracket being provided with a stop against which the link strikes to limit the longitudinal movement of said member and the pivotal movement of said link in one direction.

JOSEPH ROBINSON.