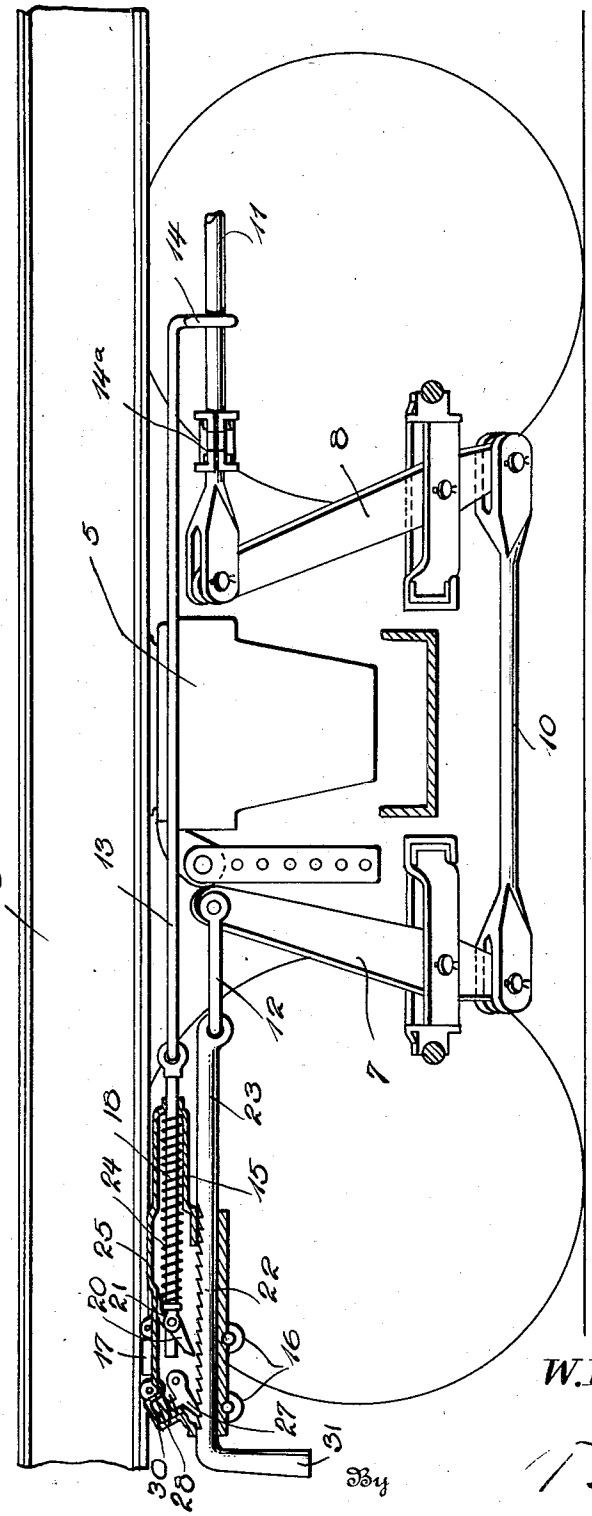
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W. H. SAUVAGE

SLACK ADJUSTER

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Fig. 1.



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UNITED STATES PATENT OFFICE.

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SLACK ADJUSTER.

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This invention relates to slack adjusters and more particularly to improvements in automatic slack adjusters for brake rigging of railway cars or the like.

One of the objects of the present invention is to provide a reliable and efficient slack adjuster of the above character particularly adapted to co-act with the truck brake rigging of railway cars, although it will, of course, be understood that various features thereof are applicable to other installations without material modification.

A further object is to provide a slack adjuster of simple and practical construction adapted to take up all of the excess travel of the brake rigging upon each complete actuation of the brakes.

A further object is to provide a slack adjuster particularly adapted to be mounted upon the underside of the car body and operable to take up the slack in the brake rigging of the adjacent truck, yet permitting free movement of the truck with respect to the car body, without actuation of the slack adjuster mechanism as when the car makes a turn.

Other objects will be in part obvious from the annexed drawings and in part indicated in connection therewith by the following analysis of this invention.

The invention accordingly consists in the features of construction, combination of parts and in the unique relations of the various members and in the relative proportioning and disposition thereof, all as more completely outlined herein.

To enable others skilled in the art so fully to comprehend the underlying features thereof that they may embody the same by numerous modifications in structure and relation contemplated by this invention, a drawing depicting a preferred form has been annexed as a part of this disclosure, and in such drawing like characters of reference denote corresponding parts throughout.

In the drawing, there is shown in elevation such parts of the slack adjuster, car body, truck and associated brake mechanism, certain parts thereof being broken away for sake of convenience, as is necessary to understand the invention.

Referring now to the drawings, 5 indicates a truck bolster pivotally mounted in a well known manner on the underside of the car body provided with the usual draft sill 6. At each side of the bolster are positioned brake actuating levers comprising a dead lever 7 and a live lever 8, connected by bottom rod 10, the upper end of the live lever being provided with the usual pull rod 11 and the upper end of the dead lever being connected by link 12 with the slack adjuster mechanism hereinafter described. It will also be noted that a second link 13 extends from the slack adjuster mechanism to the pull rod 11, provided at its end with an eye 14 through which the pull rod passes. A friction clamp 14^a is mounted on the pull rod, and normally spaced to the left of the eye 14 an amount equal to the usual piston travel. Thus, as the upper end of the live lever is moved an excess amount toward the right by the pull rod 11, the connecting rod or link 13 will have a corresponding movement on excess travel thereof. The truck brake mechanism herein shown is of such general and well known type and operation that further description thereof is believed to be unnecessary.

The slack adjuster as herein shown and described comprises a casing 15 preferably formed of two halves adapted to be secured together in any desired manner, as by means of fastening devices 16, and secured to the car body or draft sill by any desired supporting means, such as the bracket 17. This slack adjuster is provided with an adjusting rod 18 connected at one end with the link 13 and having at its opposite end a pawl 20 provided with an upwardly extending lug 21 normally engaging the top of the housing 15 in such manner as to be held out of engagement with the teeth of a rack 22 on the upper surface of a permanent take up means or bar 23. A spiral spring 24 is coiled about the rod 18 to hold the parts in normal position. The upper surface of the housing 15 is provided with a recessed portion 25 of perhaps six or seven inches in length, which begins approximately three or four inches from the end of the projecting lug 21. This three-inch or more space may be considered a lost motion provision for permitting the normal actuation of the brakes.

A second pawl 27 mounted in the casing 15 is resiliently urged into engagement with rack 22 by means of a spring 28 positioned in a housing 30, which mechanism acts to

permanently take up and hold the excess slack occurring upon each application of the brakes.

The operation of the device so far described is as follows: As the pull rod 11 moves toward the right in the usual braking operation, it will cause the link 13 and rod 18 to move a corresponding distance and carry the pawl 20 therewith through the usual lost motion space, and the parts, upon release of the brakes, will be carried back to their original position. If, however, due to wear of the parts as brake shoes, the actuating rod 11 exceeds this predetermined travel, the end 21 of the pawl 20 then moves up the inclined end of the recessed portion 25 allowing the pawl to drop into engagement with the rack 22. As is well known to those familiar with railway brakes, the usual piston travel or actuating movement is usually set for six or seven inches. Thus, after the pawl 20 moves into engagement with the rack 22 at the end of lost motion movement, corresponding to the usual piston travel, the pull rod 11 moves still further due to wear of the brake shoes, for example, to secure complete braking operation. Under these conditions, the pawl 20 will have engaged the rack, the end 21 being at the top of the inclined portion of the enlargement 25. As soon, however, as the brakes are released the spring 24, which, in the meantime is under high compression, will cause a return movement of the adjusting rod 18 towards the left which carries with it for the distance of the excess travel, and through the medium of the cam 20 and rack 24, the take up rod 23. The pawl 27, during this movement of the rod 23 to the left, rides over the teeth 22 while the excess travel is being taken up. Further movement, however, causes the end 21 of pawl 20 to engage the inclined surface of the recess 25 to disengage the pawl 20 from the rack, the pawl 27 permanently holding the excess slack. Thus, if excess travel occurs and the adjusting rod moves seven inches instead of the normal six inches, the pawl 20 rides over an additional tooth and on release of the brakes and on expansion of the spring 24, the adjusting rod 23 will be moved towards the left the distance of one tooth before the camming action above described takes place. The spring being under a high degree of compression, will thus positively insure the taking up of the slack adjuster on each complete cycle of operation.

It will be noted that the rod 23 is provided with a downwardly extended weighted handle 31 which not only maintains the rack in uppermost position, but permits the rod 23 to be turned through 90°, thus forcing the pawl 27 out of engagement with the rack 22 and allowing the rod 23 to be moved inwardly to its initial position. This operation is necessary, as when replacing worn brake shoes, or the like.

It is believed to be unnecessary to further state the operation of this device in view of the above. Particular attention, however, is directed to the special type of ratchet and take up dog which is normally out of engagement with the rack bar until excess travel occurs, when it effectively engages with an additional tooth of the rack bar to the extent of this excess travel. Under these conditions, the take up spring 24 is under a severe compression, so that if only one or more teeth have been taken up, due to excess travel, the spring has stored sufficient driving force to positively insure a prompt and efficient take up of this excess slack or travel.

The invention is of simple and practical construction, and highly reliable in use and operation, and is well adapted to accomplish among others all of the objects and advantages herein set forth.

Without further analysis the foregoing will so fully reveal the gist of this invention and others can by applying current knowledge readily adapt it for various applications without omitting certain features that, from the standpoint of the prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention, and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalency of the following claims.

I claim:

1. In an apparatus of the character described, in combination with the truck brake rigging of a railway car, a slack adjuster secured to the car body and connected with the actuating member of the truck rigging, comprising a rack, a permanent take up and holding means, a temporary take up and holding means normally spaced from the rack, and a spring adapted to be actuated on each operation of the brakes, said temporary take up means being operative only on excess travel of the brake rigging.

2. In an apparatus of the character described, in combination with the truck brake rigging of a railway car, a slack adjuster associated therewith, comprising an adjusting rod actuated upon each operation of the brakes, a permanent take up rod, a ratchet thereon, a pawl on the adjusting rod normally out of engagement with said ratchet but cooperative therewith on excess travel to move the take up rod, and means for holding the take up rod in its newly adjusted position.

3. In an apparatus of the character described, in combination with the truck brake rigging of a railway car, a slack adjuster mounted upon the car, an adjusting rod connected with the actuating mechanism of the

brake rigging, a take up rod having a rack, a pawl carried by the adjusting rod adapted to engage the said rack on release of the brakes only if excess travel has occurred, and means for holding said rack in its newly adjusted position.

4. In an apparatus of the character described, in combination with the truck brake rigging of a railway car, a slack adjuster mounted upon the car, an adjusting rod connected with the actuating mechanism of the brake rigging, a take up rod having a rack, a pawl carried by the adjusting rod adapted to engage the said rack on release of the brakes only if excess travel has occurred, and means for holding said rack in its newly adjusted position, said means comprising a pawl cooperating with said rack, and means for urging said pawl into engagement therewith at all times.

5. In an apparatus of the character described, in combination with the truck brake rigging of a railway car, a slack adjuster mounted on the underside of the car, and connected to both the live and dead levers of the brake rigging, one of said connections including permanent take up and holding means, the other of said connections including temporary take up mechanism, a rack mounted on the former and two pawls associated therewith, one of which is normally out of engagement with the rack and adapted to co-act therewith, and to move the rack only on excess travel, the other of said pawls being normally urged into engagement with the rack at all times.

6. In an apparatus of the character described, in combination with the truck brake rigging of a railway car, a slack adjuster mounted on the underside of the car, and connected to both the live and dead levers of the brake rigging, one of said connections including permanent take up and holding means, the other of said connections including temporary take up mechanism, a rack mounted on the former, and two pawls, one of which is normally out of engagement with the rack and adapted to co-act therewith at each operation of the brakes but to move the rack only on excess travel, the other of said pawls being normally urged into engagement with the rack at all times, and means whereby said rack may be rotated to carry the pawl out of engagement therewith.

Signed at New York city this 8th day of January, 1925.

WILLIAM H. SAUVAGE.