

(No Model.)

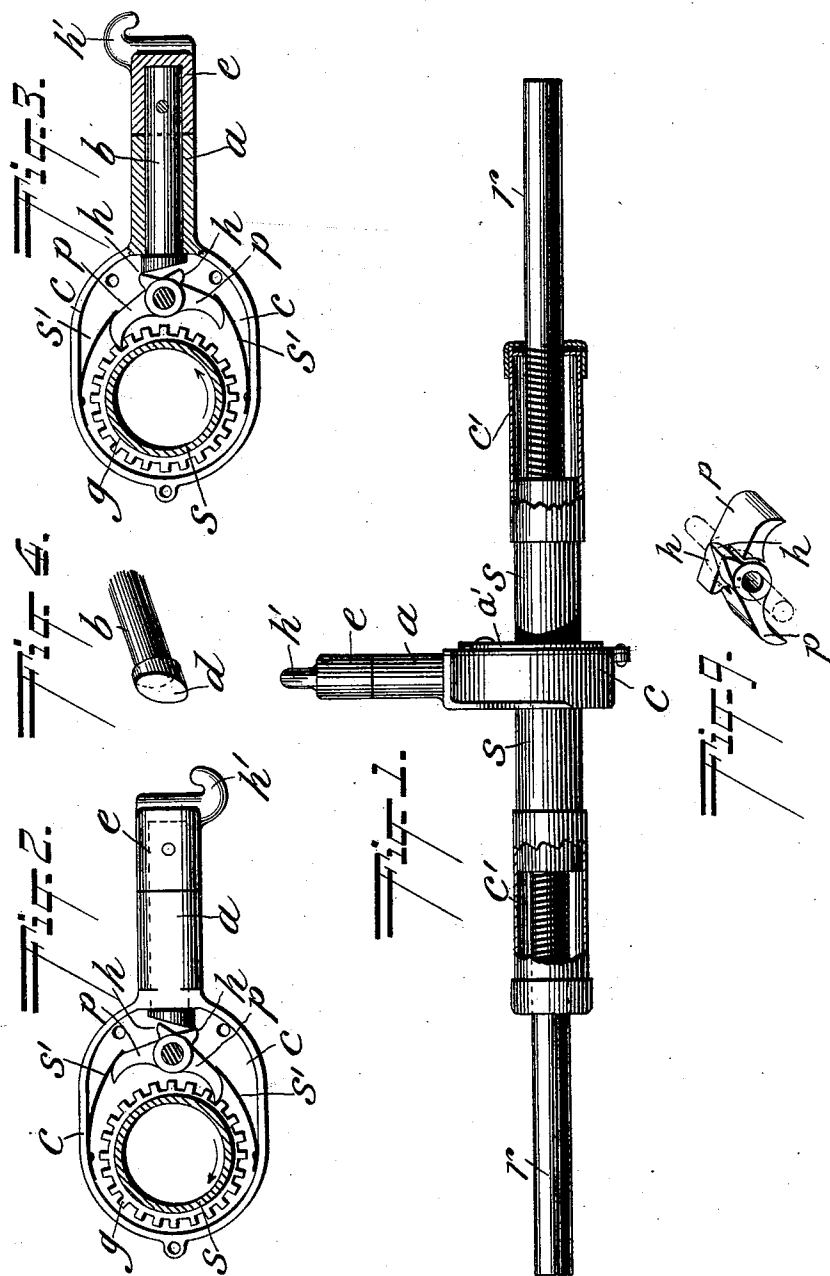
3 Sheets—Sheet 1.

H. HINCKLEY.

SLACK ADJUSTER FOR RAILWAY BRAKES.

No. 507,905.

Patented Oct. 31, 1893.



Attest:

W. H. Schott
Vinton Combs

Inventor:

Howard Hinckley by
Pemier & Goodenough
Attys.

(No Model.)

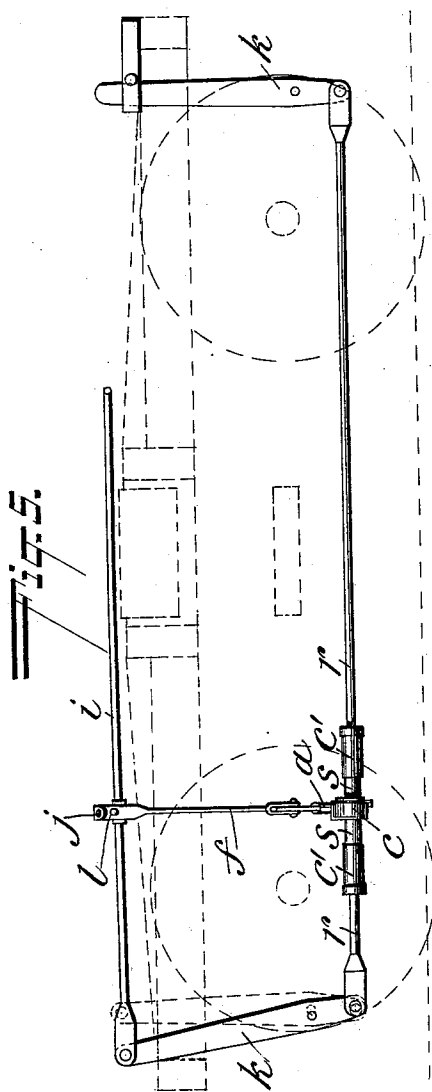
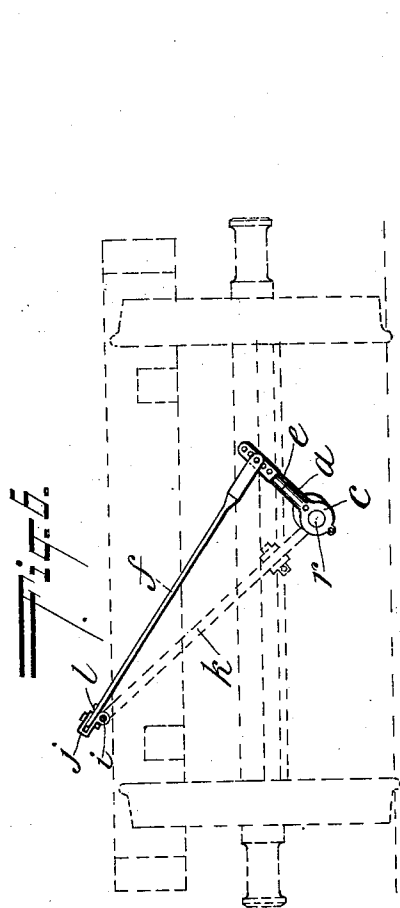
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SLACK ADJUSTER FOR RAILWAY BRAKES.

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Patented Oct. 31, 1893.



Attest:

J. H. Schott
Vinton Corbitt

Inventor:

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(No Model.)

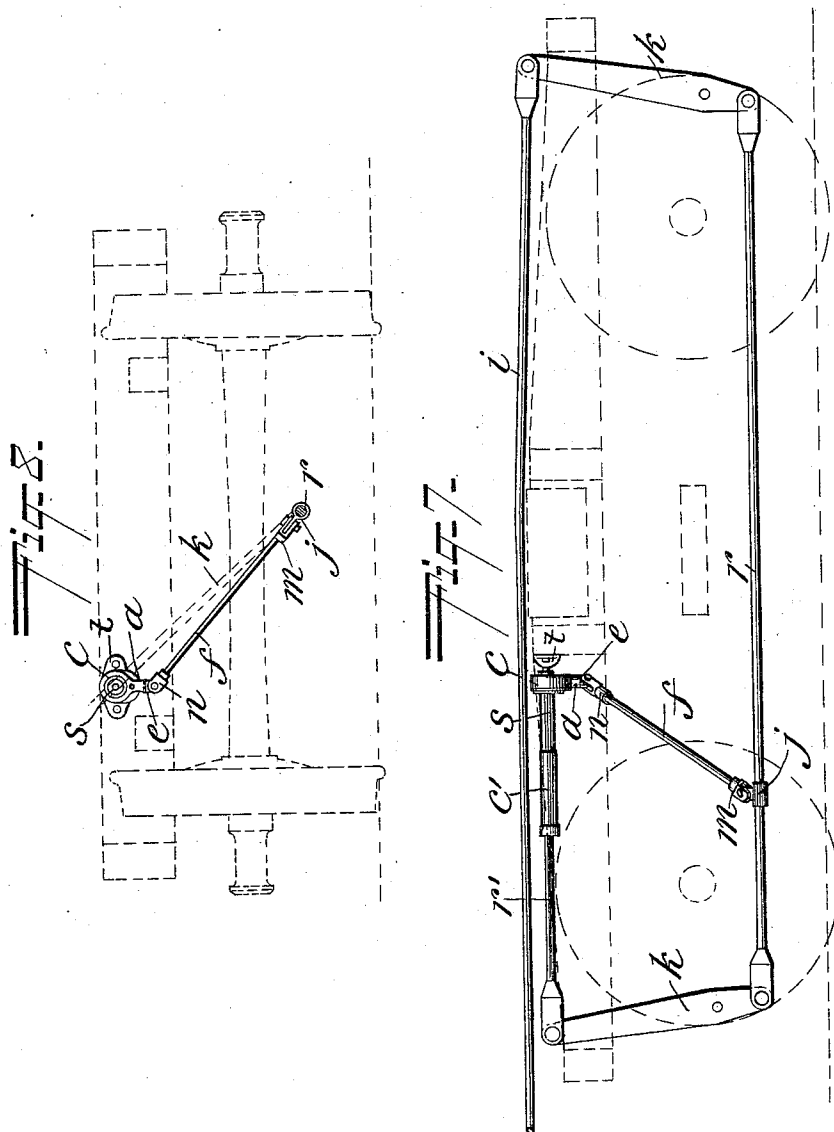
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SLACK ADJUSTER FOR RAILWAY BRAKES.

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Patented Oct. 31, 1893.



Attest:

H. H. Schott
Vinton Coombe

Inventor.

Howard Hinckley:
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UNITED STATES PATENT OFFICE.

HOWARD HINCKLEY, OF TRENTON, NEW JERSEY.

SLACK-ADJUSTER FOR RAILWAY-BRAKES.

SPECIFICATION forming part of Letters Patent No. 507,905, dated October 31, 1893.

Application filed June 17, 1893. Serial No. 477,928. (No model.)

To all whom it may concern:

Be it known that I, HOWARD HINCKLEY, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Slack Take-Ups for Railway-Brakes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to mechanism for automatically taking-up the slack in railway brake rigging.

In patents granted to me May 17, 1892, Nos. 475,014, and 475,015, I have shown, described and claimed a slack take-up apparatus consisting generally of a turn-buckle working on the threaded end of one of the connecting rods, or between the threaded ends of a two-part rod, an oscillating arm for working the turn-buckle, and a guide and spring for operating the arm as the rod travels to and fro in the operation of the brakes.

In patent granted to me May 2, 1893, No. 496,607, I have described and claimed certain improvements in the above invention, the same being designed to simplify and cheapen the construction and improve the working parts.

The object of the present invention is to still further improve the working and construction of these devices, especially the form of apparatus patented to me May 2, 1893, No. 496,607.

In the accompanying drawings forming part of this specification, Figure 1 is an elevation of my improved form of apparatus. Fig. 2 is a side view of the ratchet-operating arm and casing (the casing cover being removed) showing one of the pawls engaged with the ratchet. Fig. 3 is a view similar to Fig. 2, the opposite pawl being engaged with the ratchet, and the operating arm being sectioned for the purpose of disclosing the cam bolt. Fig. 4 is a perspective view of the bolt showing the shape of the cam head. Fig. 5 is a side view of a brake lever, illustrating one method of mounting and operating my adjuster. Fig. 6 is an end view of the same. Fig. 7 is a view corresponding to Fig. 5, showing a modified form and location of the adjuster, and Fig. 8

is an end view of the same. Fig. 9 is a perspective view of the ratchet operating pawls.

Referring to the several views, *r* indicates the usual rod connecting the brake levers. In the preferred application of the invention, this rod is divided into two parts as shown in Figs. 1 and 5, and the adjacent ends of the parts are screw-threaded, as shown in my former patents above referred to, and as illustrated in Fig. 1 herein.

s indicates a connecting sleeve, screw-threaded at its ends, and joining the two parts of the connecting rod together. This sleeve is in all respects like that of my former patent, and is provided with caps or collars *c'* for the purpose of protecting the threaded portions of the rods and excluding dust and dirt therefrom. Specifically, the present invention relates to the manner of operating this connecting sleeve.

In the former patents, duplex ratchet rims with teeth set in opposite directions were secured to the coupling sleeve, and the operating arm was provided with weighted pawls, one for each ratchet.

In the present improvement, I am enabled, by constructing the ratchet teeth with square faces like ordinary gear teeth, to dispense with one of the ratchet rims, and use a single annulus adapted to be engaged by either one of two pawls carried by the operating arm. In Figs. 2 and 3, *g* denotes this ratchet rim. It is secured fast to the sleeve *s*, as in the former constructions, and is incased in a box or casing *c* having a removable cover *a'*, substantially as in the former arrangement. This casing *c* is integral with the inner end of the operating arm *a*, being preferably formed therewith as a single casting. Pivoted in the casing, are oppositely disposed pawls *p*. These pawls are substantially the same as in my former patents, excepting that they are arranged so that their operative ends work in the same plane. Instead of being operated by gravity, as in the former construction, I provide springs *s'* fast to the walls of the casing, and bearing on the outer ends of the pawls, and tending to hold them normally in engagement with the ratchet. For the purpose of positively disengaging these pawls, according as it is desired to screw up or back off the sleeve, I make the arm of the operat-

ing lever *a* hollow, as shown in Fig. 3; and in the hollow of this arm I mount a rotary bolt *b* having a cam-shaped head *d*, as shown in Fig. 4. The outer end of the bolt *b* is secured fast to a block *e* having at one side a hook *h'*, by means of which the arm is connected to the spring which holds it against the cam, as more fully explained and illustrated in my Patent No. 475,014.

In Fig. 3, the parts are shown in operative position for taking up slack. In this position the advancing pawl *p* is engaged with the ratchet, and the opposite or retracting pawl is disengaged by the cam head of the bolt engaging the heel projection *h*, with which each of the pawls is provided on the opposite side of its pivot. When it is desired to reset the rigging, the hook *h'* is released from the spring which holds it up against the cam, and turned with the bolt half way round into the position shown in Fig. 2. This reverses the position of the bolt head, and causes the latter to release the retracting pawl, and to engage and detach the advancing pawl from its ratchet, the spring *s'* meanwhile pressing the retracting pawl into the ratchet. By working the arm *a* with the parts in this position, the connecting sleeve *s* is unscrewed, and the length of the connections restored, without the necessity of changing the position of the arm bodily, as in my former arrangements.

In my patents, above referred to, the only mechanism illustrated for operating the adjuster is a cam and spring, though obviously the inventions and patents are not limited to such method of operation. It is sometimes desirable to operate the adjuster by means of a moving part of the rigging, and for this purpose I have devised the arrangements shown in Figs. 5 to 8 of the drawings.

In Figs. 5 and 6, the turn-buckle is of the double form, and is located in the rod connecting the lower ends of the brake lever. In these figures, *e* is the swivel head of the bolt *b*, the same as in Figs. 2 and 3. A rod *f* is adjustably connected with the end of this head, and the opposite end of the rod is extended up to and connected to the rod *i* by means of which the brakes are applied, the connection being made by means of a clevis *j* sleeved upon the rod *i*, the end of the rod *f* being flat and arranged to enter the open end of the clevis. It will be understood, that, as the rod *i* moves much farther than the rod *r* when the brakes are applied, the arm *a* will be raised into a more nearly vertical position, causing the pawl to slip over the teeth of the ratchet if there is any slack in the connection. When the brakes are released, the return movement of the rod *i* forces back the arm *a* and screws up the sleeve. In order to unscrew the sleeve, it is only necessary for the train man to disengage the arm *f* from the clevis *j*, and turn the swivel-head half way round as described in connection with Figs. 2 and 3, in which position of parts the reciprocation of the arm will slacken up the con-

nections. Instead of disconnecting the arm *f* from the clevis, the disconnection may be made between the parts *e* and *f*. In order to prevent the replacing of the arms *f* in the clevis in such position that the ratchet will unscrew the sleeve, I provide a small lug or projection *l* on the upper side of the rod, which projection, should the rod be turned over, would strike the sleeve and prevent the end of the rod from entering the clevis. It is not essential, however, that any device for this purpose be employed, as by proper care the parts can be properly adjusted without it.

In Figs. 7 and 8, I show a single turn-buckle. In these figures, *s* is the sleeve, *c'* the protecting cap or collar for the threaded portion of the rod, *c* the casing and *a* the operating arm. One end of the sleeve *s* is connected with a bracket *t* bolted securely to a part of the truck framing. The opposite end of the sleeve *s* is threaded and receives the end of the rod *r'* connecting with the upper end of the brake lever *k*. A rod *f* is connected with the swivel end *e* of the arm *a*, and extended down and has its opposite end connected by a suitable coupling *m* to the clevis *j* secured on the connecting rod *r'*. The operation of the adjuster in this position is substantially the same as when in the position shown in Fig. 5, except that, instead of shortening the length of the rod between the brakes, it adjusts the position of the fulcrum of one of the brake levers. The effect of this adjustment of the fulcrum is practically the same in its effect on the slack in the rigging as the shortening of the connecting rod would be.

I would have it understood that I am not limited to the above described location or method of working the adjuster, as it may if preferred be operated as in either of my former patents above specified, or in any other manner. Neither am I limited to the specific means herein described and shown for positively throwing one of the pawls out of action, as other mechanism for this purpose may be adapted.

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

1. In a slack adjuster for railway brakes, the combination of a connecting rod, a threaded sleeve, a ratchet on the sleeve, said ratchet having gear or square-faced teeth, and a pivoted operating arm carrying oppositely disposed pawls adapted to engage the ratchet; substantially as described.

2. In a slack adjuster for railway brakes, the combination of a connecting rod, a threaded sleeve, a ratchet on the sleeve, a pivoted operating arm carrying oppositely disposed pawls, and mechanism also carried by the arm for throwing either pawl into engagement with the ratchet; substantially as described.

3. In a slack-adjuster for railway brakes, the combination of a connecting rod, a threaded sleeve, a ratchet on the sleeve, a pivoted operating arm carrying oppositely disposed

spring pawls for engaging the ratchet, and mechanism also carried by the arm for positively throwing and holding either pawl out of engagement with the ratchet; substantially as described.

4. In a slack adjuster for railway brakes, the combination of a connecting rod, a threaded sleeve, a ratchet on the sleeve, said ratchet having gear or square-faced teeth, a pivoted operating arm, spring actuated pawls *p* carried by the arm, said pawls having tail projections *h*, a rotary bolt also carried by the arm, and a cam *d* on the end of the bolt adapted to engage either of the pawl projections *h*; substantially as described.

5. In a brake system, and as a means for automatically taking up slack therein, the combination of the brake levers, the connecting rod there-between, a turn-buckle connected with the rod, a pivoted operating arm for the turn-buckle, the brake-rod, and a rod connected at one end to the turn-buckle operating arm, and at its opposite end to the brake-rod; substantially as described.

6. In a slack adjuster for railway brakes the combination of a two-part connecting rod having threaded ends, a connecting sleeve having correspondingly threaded ends, a ratchet fixed on the sleeve, said ratchet having gear or square-faced teeth; an operating arm having its inner end formed into a box or casing for the ratchet and pivoted or journaled on the sleeve, spring actuated oppositely disposed pawls pivoted in the casing and adapted to engage the ratchet, said pawls having tail projections, as *h*, and a swivel bolt sleeved in the barrel of the operating arm, and having a cam-shaped head or projections, as *d*, adapted to engage either of the pawl projections to disengage and hold the corresponding pawl out of engagement with the ratchet; substantially as described.

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

HOWARD HINCKLEY.

Witnesses:

JOHN WINNBERG,
ALMEDA BERLIN.