

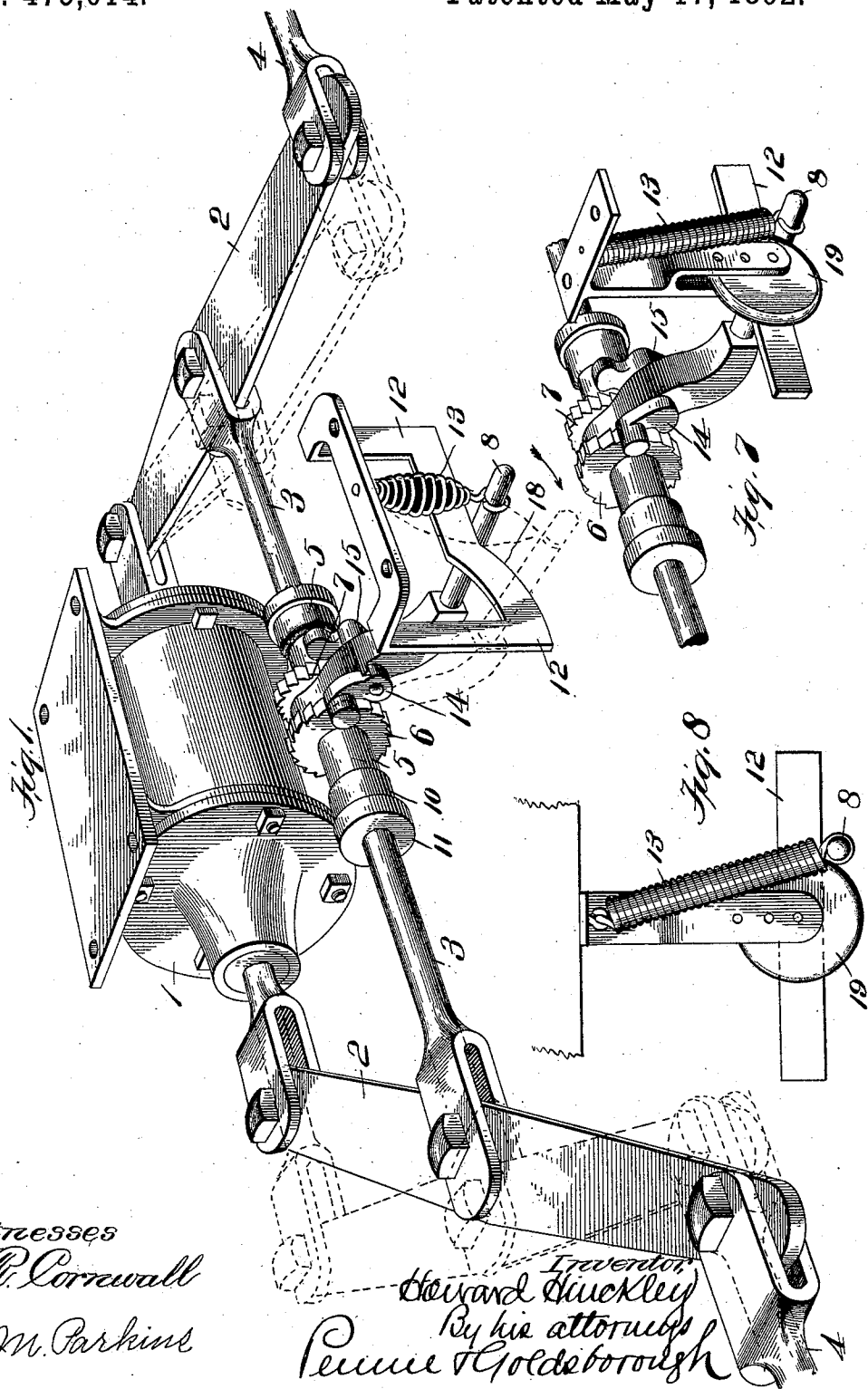
(No Model.)

2 Sheets—Sheet 1.

H. HINCKLEY.
SLACK TAKE-UP FOR CAR BRAKES.

No. 475,014.

Patented May 17, 1892.



Witnesses

J. P. Cornwall

A. M. Parkins

Inventor,
Howard Hinckley
By his attorneys
Pierce & Goldborough

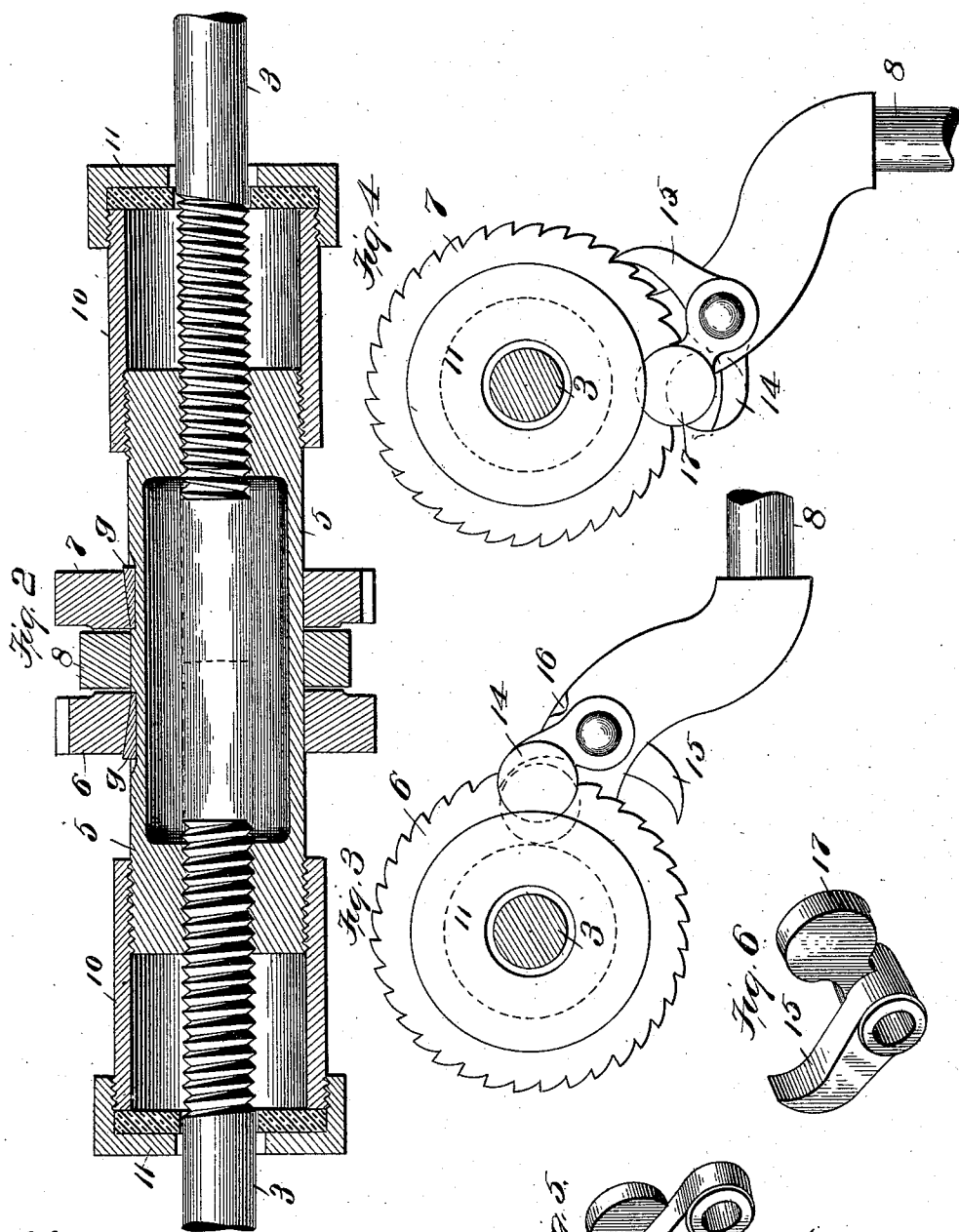
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2 Sheets—Sheet 2.

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Witnesses:
F. R. Cornwall
Levy B. Hills.

Fig. 5.
Fig. 6.
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UNITED STATES PATENT OFFICE.

HOWARD HINCKLEY, OF TRENTON, NEW JERSEY.

SLACK-TAKE-UP FOR CAR-BRAKES.

SPECIFICATION forming part of Letters Patent No. 475,014, dated May 17, 1892.

Application filed January 12, 1892. Serial No. 417,876. (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 Car-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.

In an application for a patent filed by me October 11, 1889, Serial No. 327,307, I have shown, described, and claimed an efficient mechanism for automatically taking up what is known as the "slack motion" occasioned in the lever systems of car-brakes by the wearing away of the brake-shoes against the wheels. The invention therein embraced consists generally in interposing in the lever system a device for automatically shortening the connections as an increased throw of the brake-levers is necessitated, and the mechanism illustrated and described comprises a turnbuckle working on the threaded end of one of the connecting-rods, an oscillating arm for screwing up the turnbuckle, and a fixed guide acting on the arm as it travels to and fro, whereby it is caused to actuate the turnbuckle. In the construction shown in the drawings of the above application the actuating-arm for the turnbuckle is operated positively in both directions by the cam-guide, which is formed of parallel rods between which the arm works. Furthermore, there is no means provided for restoring the connections to their original length or resetting the same when it is found necessary to renew the brake-shoes. I have found, however, by practical experience with this construction that it is better to have the arm work on the outer edge of a cam and to operate it in one direction by a spring; also, that in renewing the brake-shoes some inconvenience and delay are occasioned by having to disengage the actuating-arm and slowly screw the turnbuckle back by hand or with a wrench.

The present invention is designed as an improvement upon that covered by the application above referred to, with particular reference to the features just explained, and I will

first describe the improvements in connection with the accompanying drawings, and will afterward point out the features more particularly in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of the entire apparatus. Fig. 2 is a longitudinal section of the connecting-sleeve. Figs. 3, 4, 5, and 6 are detail views of the pawl-and-ratchet mechanism for operating the sleeve, and Figs. 7 and 8 are different views of a modification of the actuating-cam.

The brake-cylinder is denoted by 1. 2 indicates the brake-levers; 3, the rod forming the connection between the levers, and 4 the rods or links connecting these levers with the brake-beam levers in the usual manner. These parts are common to the well-known Westinghouse system, in connection with which the invention is herein illustrated, though it is obviously adapted for use with any other system.

The rod 3, forming the connection between the brake-levers 2, is divided into two parts, as shown, and the adjacent ends are provided with screw-threads running in reverse directions. The ends of the rods are connected together by an adjustable connection, consisting in this instance of a tubular rod or sleeve 5, having its ends provided with internal reversely-set screw-threads corresponding with those on the ends of the parts of the rod proper. This connected sleeve is in effect a double turnbuckle. Fixed upon the sleeve are the ratchets 6 and 7, the former being the advancing or screwing-up ratchet and the latter the reversing or unscrewing ratchet. They are shown as rigidly connected to the sleeve by a key 9.

As a protection to the threaded portions of the rods 3 I have shown in the drawings short tubular pieces, collars 10, secured to the ends of the sleeve 5 and covered by caps 11, these caps having central openings permitting the free passage of the rods. Rubber or leather washers 25 are interposed between the caps and the ends of the protecting-pipes, which, fitting the plain portions of the rods closely, effectually prevent the entrance of dust, dirt, &c., to the screw-threaded portions.

The operating-lever for the ratchet is denoted by 8. It may be of any form or construction preferred, and is preferably pivoted

concentrically with the ratchets, being shown in the drawings as journaled upon the sleeve and playing freely between them. The cam-guide for operating the lever is shown at 12.

5 It is secured to a beam or block on the under side of the car, and is arranged parallel with the divided rod 3. A spring 13 is connected with the bracket of the cam-guide at its upper end, and is releasably connected at its opposite end with the operating-lever 8. The action of this spring is to hold the arm up to its cam as it travels to and fro, causing the arm to be restored to and held in its original position when not working on the inclined portion of the cam-guide. Actuating-pawls 14 and 15 are pivoted to the lever in operative relation to the ratchets, the former acting upon the ratchet 6 to turn the sleeve, so as to shorten the connections and take up the slack, and the latter being adapted to be thrown into engagement with the ratchet 7 when it is desired to turn the sleeve back, so as to restore the connections, as will be hereinafter described.

25 In the construction herein shown the actuating-arm is preferably arranged in a substantially horizontal position, though it may be set, if desired, vertically, as in my former application. The pawl 14 is weighted at a point inside of its pivot, as shown clearly in Figs. 1 and 5, so that when the operating-arm is in operative position it will stand normally in engagement with its ratchet 6. A stop 16 is formed on the arm just back of the pawl to prevent the oscillation of the arm from throwing the pawl out of operative position. The pawl 15, which is pivoted on the opposite side of the arm in position to engage the ratchet 7, is provided with a weight 17 beyond 40 or outside of its pivot, whereby the pawl, when the operating-arm 8 is held up in operative relation with the cam-guide, is held normally out of engagement with the reversing-ratchet 7, so that the arm may oscillate freely within certain limits without throwing the pawl onto the ratchet. It will be understood that as the brake-levers move in the application and release of the brakes the connecting-rod and its adjusting mechanism, including the arm 8, pass to-and-fro parallel with the cam-guide 12, the arm 8 traveling over and upon the edge of the cam. In the application of the brakes the operating-arm moves in the direction of the arrow in Fig. 1, traveling 55 upon the inclined part 18 of the guide a greater or less distance, according to the amount of slack motion in the system, and correspondingly lowering the end of the arm, as denoted in dotted lines in Fig. 1. As the shoes wear 60 away the extent of movement of the arm 8 upon the incline of the guide increases, and the arm descends far enough to allow the weighted pawl 14 to fall into a new tooth on the ratchet 6. Upon the release of the brakes 65 the arm 8 travels back, as before explained, and the spring 13 pulls upon the arm and turns the ratchet and sleeve a distance equal

to one tooth of the ratchet. This operation is repeated upon successive applications of the brakes.

70 So far as this operation is described the action of the mechanism is similar to that embraced in my former application above referred to, except that the connecting-sleeve or turn-buckle has an adjustable connection with the rod at each end in the present construction, making the action of the parts quicker and requiring less throw of the operating-arm for a given shortening of the connections.

80 It will be understood that when the brake-shoes are worn out and it becomes necessary to renew them the connections must be restored to their original position. In order to accomplish this easily and quickly and without the use of special tools, I make the connection between the arm 8 and the spring releasable, so that the arm may be disengaged from the cam guide 12 and allowed to fall into a vertical position. The pawls being 90 weighted, as above described, this change in the position of the operating-arm of course changes their positions relative to their respective ratchets, the advancing or screwing-up pawl 14 falling out of engagement with 95 its ratchet 6 and the unscrewing or reversing pawl 15 gravitating into engagement with its ratchet 7. With the arm and pawls in this position it will be seen that by oscillating the arm on its pivot the connecting-sleeve 100 will be turned in a reverse direction to that caused by the oscillation of the arm when in horizontal position. This will be clearly understood upon reference to Figs. 3 and 4 of the drawings, where the operating-arm is 105 shown in its different positions. The necessary readjustment in the connections required to apply the brakes with the proper throw of the piston of the brake-cylinder having been made, the operating-arm is raised in a horizontal position and again connected with the spring, when the weighted pawls resume their former position with respect to their ratchets.

110 In Figs. 7 and 8 I have shown a modification of the cam, designed with a view to reduce the amount of friction between the same and the operating-arm to a minimum. In this form the guide-bracket carries a roller 19, having its periphery depending below the straight portion of the cam and corresponding to the inclined part 18 of the cam-guide shown in Fig. 1. The action of this roller on the arm 8 is essentially the same as the inclined cam part 18 in the other form of guide.

125 I would have it understood that I do not regard the invention as limited to the construction of the parts herein illustrated and described; nor do I intend to be restricted to the use of all the parts together, as the form and arrangement of the parts may be considerably varied without departing from the spirit of the invention, and some of the features and combinations are capable of use in other relations.

Having thus described my invention, what I claim is—

1. In a brake system, the combination of a connecting-rod, a turnbuckle connected therewith, a pivoted operating-arm for the turnbuckle, a cam acting on the arm to move it in one direction, and a spring to move the arm in the opposite direction, substantially as described.
2. In a brake system, the combination of a connecting-rod, a turnbuckle connected therewith, and a pivoted operating-arm connected with the turnbuckle, so that it may be operated to turn the latter in either direction at will, substantially as described.
3. In a brake system, the combination of a connecting-rod, a turnbuckle connected therewith, a pivoted operating-arm for the turnbuckle, a cam acting on the arm to move it in one direction, a spring to move it in the opposite direction, and a ratchet or clutch connection between the arm and the turnbuckle, whereby when the arm is in operative position with relation to the cam its action will be to screw the turnbuckle in one direction, but when released from the cam it may be actuated to reverse the turnbuckle, substantially as described.
4. In a brake system, the combination of the two-part rod having reversely-threaded ends, the connecting-sleeve with correspondingly-threaded portions, and a pivoted arm adapted to operate the sleeve in either direction, substantially as described.
5. In a brake system, the combination of the two-part rod having reversely-threaded ends, the connecting-sleeve with correspondingly-threaded portions, the reversely-set ratchets fixed on the sleeve, and the pivoted operating-arm carrying oppositely-disposed pawls, substantially as described.
6. In a brake system, the combination of the two-part rod having reversely-threaded ends,

the connecting-sleeve with correspondingly-threaded portions, the reversely-set ratchets fixed on the sleeve, and the pivoted operating-arm carrying oppositely-disposed pawls, the pawls being weighted, so that only one ratchet is engaged at a time, substantially as described.

7. In a brake system, the combination of the two-part rod having reversely-threaded ends, the connecting-sleeve with correspondingly-threaded portions, the reversely-set ratchets fixed on the sleeve, the pivoted operating-arm carrying oppositely-disposed pawls, and a cam acting on the arm, the pawls being weighted, as described, so that when the arm is in operative position with relation to the cam the ratchet acting to screw up the sleeve shall be engaged, the reversing-pawl being meanwhile normally out of engagement, as and for the purpose set forth.

8. The combination of the two-part rod having reversely-threaded ends, the connecting-sleeve, with correspondingly-threaded portions, and reversely-set ratchets, the pivoted operating-arm carrying oppositely-disposed pawls, the cam, and the spring for releasably holding the arm up to the cam, substantially as described.

9. The combination of the connecting-sleeve having reversely-threaded ends, the screw-threaded rods working therein, the protecting-collars on the ends of the sleeve, the centrally-perforated caps on the collars, and the washers, the latter being held in place by the collars or caps and fitting the rods, substantially as described.

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

HOWARD HINCKLEY.

Witnesses:

F. C. LOWTHORP, Jr.,
F. W. GRUCHTEL.