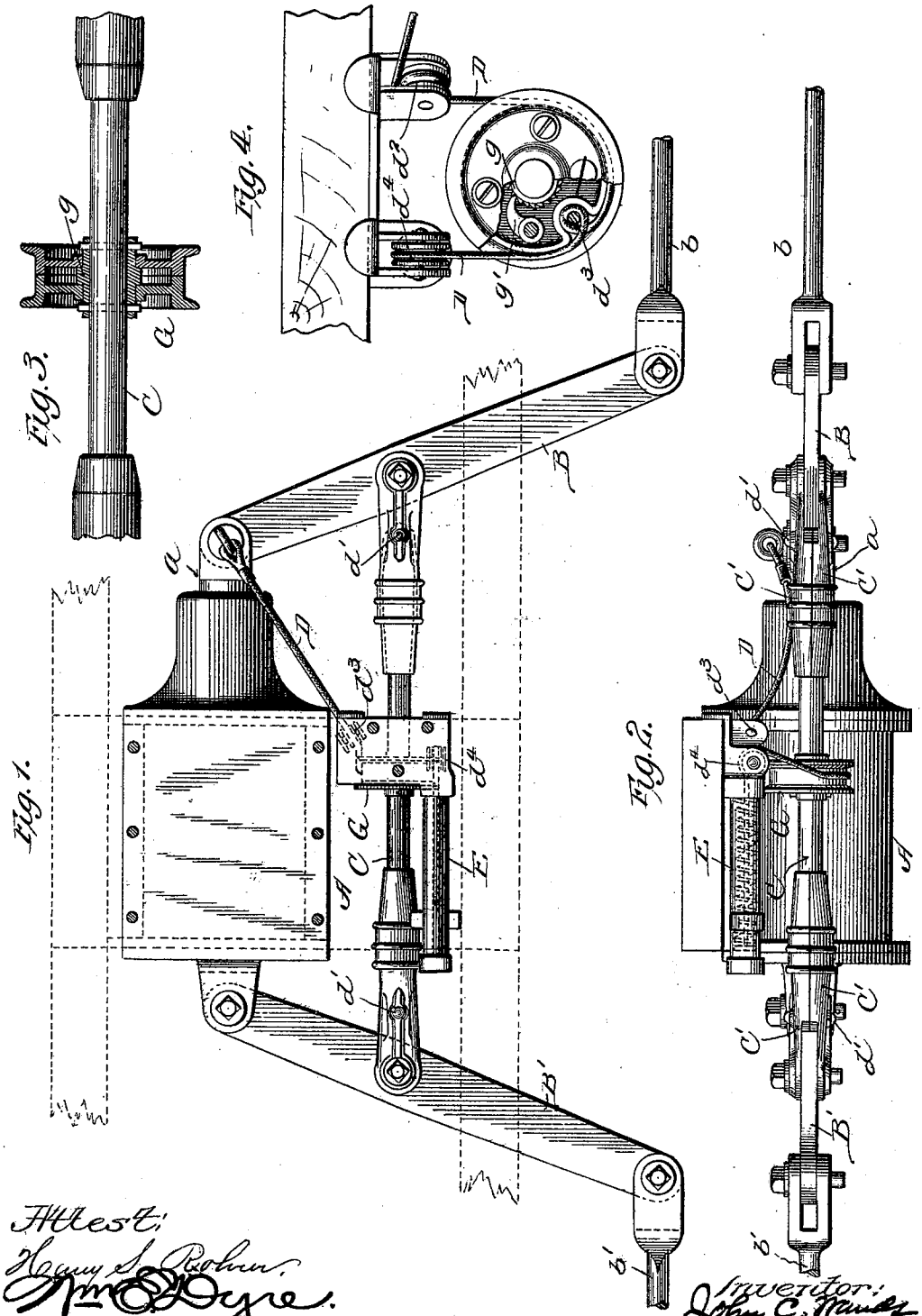
No. 636,874. Patented Nov. 14, 1899.

J. C. WANDS.

BRAKE SLACK TAKE-UP.

(Application filed Mar. 25, 1898.)

(No Model.) 3 Sheets—Sheet 1.



Witnesses:
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Wm. O. Dyer.

Inventor:
John C. Wands
by F. W. Bitter Jr. Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 10.

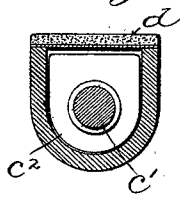


Fig. 9.

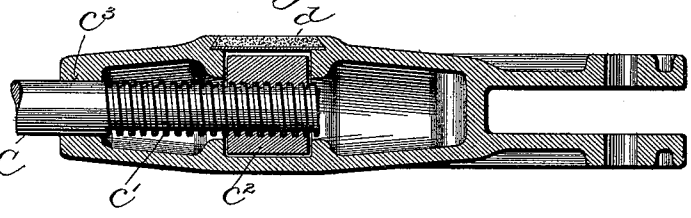


Fig. 8.

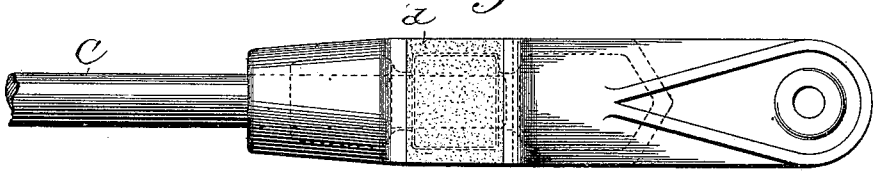


Fig. 7.

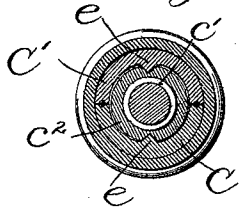


Fig. 6.

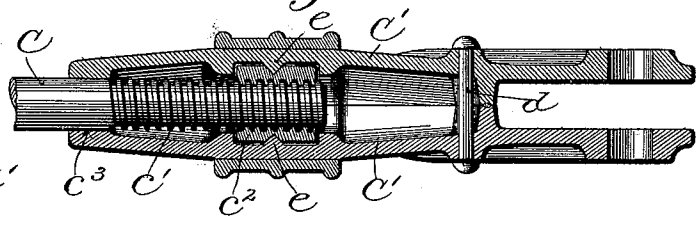
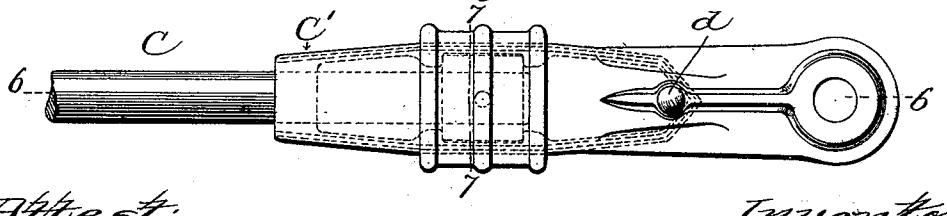


Fig. 5.



Attest:

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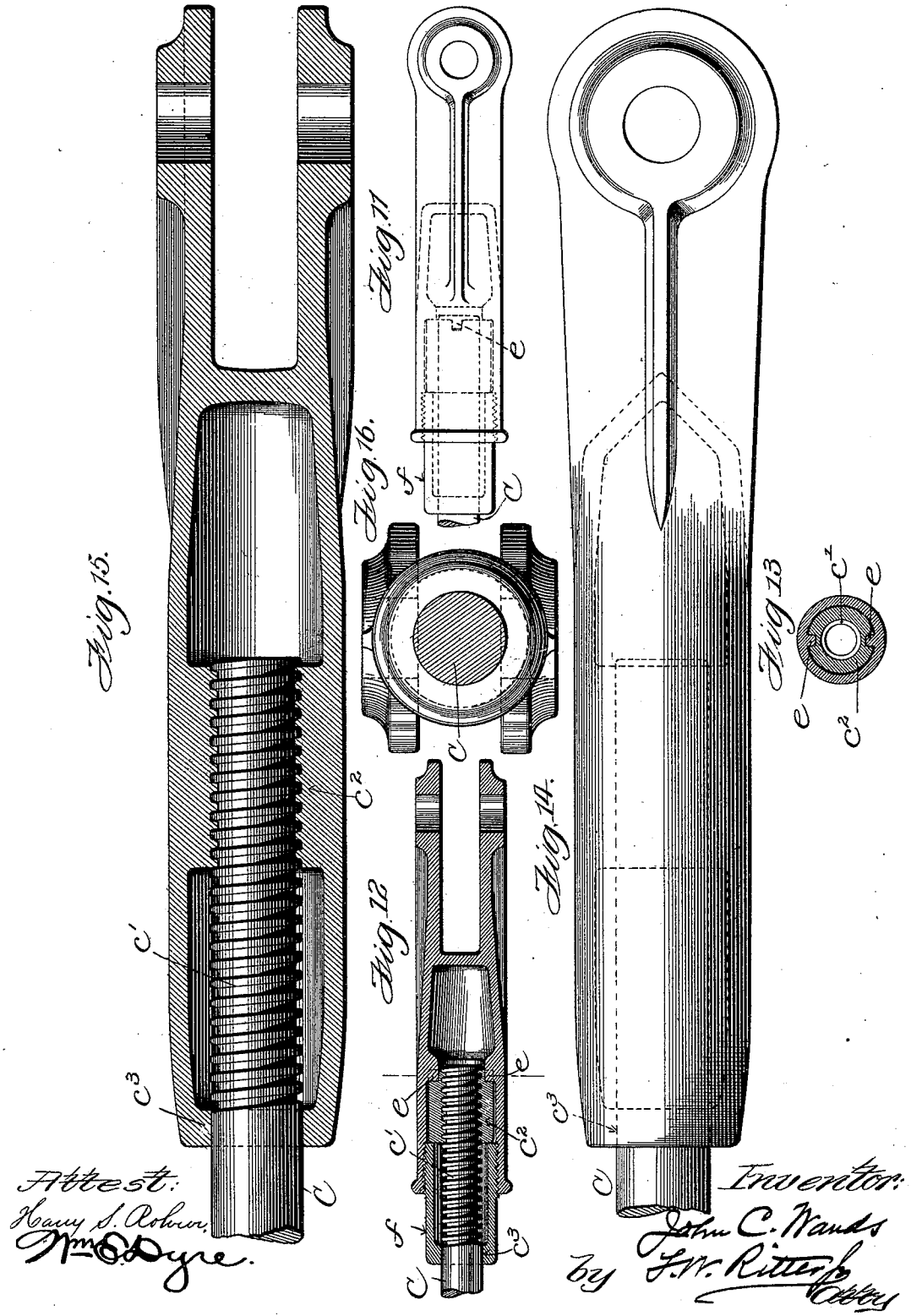
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BRAKE SLACK TAKE-UP.

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(No Model.) 3 Sheets—Sheet 3.



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN C. WANDS, OF ST. LOUIS, MISSOURI.

BRAKE-SLACK TAKE-UP.

SPECIFICATION forming part of Letters Patent No. 636,874, dated November 14, 1899.

Application filed March 25, 1898. Serial No. 675,201. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. WANDS, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Air-Brake Controllers; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a plan view of devices embodying my invention as applied in connection with an air-brake cylinder and the levers of a brake-rigging. Fig. 2 is a side elevation thereof. Fig. 3 is a detached view of the tie-rod with turnbuckle-sheave in section and portions of the clevises or jaws which connect the tie-rod with the levers. Fig. 4 is an end view of the turnbuckle-sheave, partly in section, and the bridle-sheaves. Fig. 5 is an enlarged side view of a clevis or jaw and portion of a tie-rod, as shown in Fig. 1. Fig. 6 is a longitudinal section of the clevis or jaw on the line 6 6, Fig. 5. Fig. 7 is a transverse section on the line 7 7, Fig. 5. Figs. 8, 9, and 10 are views in elevation and section of one modification in the construction of clevis and tie-rod. Figs. 11, 12, and 13 are views in elevation and section of another modification in the construction of clevis and tie-rod; and Figs. 14, 15, and 16 are enlarged detail views in elevation and in section, showing a simplified construction of the clevis and tie-rod connection.

Like symbols refer to like parts wherever they occur.

My invention relates to that class of devices which may be termed "air-brake controllers," inasmuch as they have for their function the automatic elimination of slack from the brake system, thus limiting and controlling the working stroke of the air-brake piston.

As is well understood by those skilled in the art, any slack or lost motion in the brake-rigging arising from wear of the brake-shoes or other cause is multiplied by the lever system, so that a greatly-increased movement of the air-brake piston is required to apply the brakes, and said increased movement of the piston is not only attended with proportionate loss of power, but in case the movement is excessive the piston of the air-cylinder may bottom in the cylinder before the brakes are effectively applied.

As generally constructed this class of devices commonly depend on utilizing the excessive movement of some portion of the brake-rigging to actuate the mechanism whereby the slack is eliminated from the system; but I prefer to actuate the slack-eliminating mechanism directly from the piston-rod of the air-brake, and in carrying out my invention I combine or connect the piston-rod of the air-brake cylinder and the tie-rod of the brake system by means of a bridle, means for retracting the same, and an interposed turnbuckle.

The main feature of my present invention embraces the combination, with said bridle and means for retracting the same, of a turnbuckle composed of a tie-rod having threaded ends and clevises threaded to receive the threaded ends of the tie-rod, whereby a stiffer and stronger connection between the brake-levers is secured and cross strains and vibration of the tie-rod are lessened.

A second feature of the invention embraces the combination, with the tie-rod, of a turnbuckle-sheave, said tie-rod having threaded ends, clevises having nut-cavities, and inserted nuts adapted to receive the threaded ends of the tie-rod and provided with means for preventing the rotation of the nut in the barrel of the clevis, whereby the wear in the turnbuckle may be reduced to a minimum and repair thereof greatly facilitated.

There are other minor features of invention, all as will hereinafter more fully appear.

I will now proceed to describe my invention more fully, so that others skilled in the art to which it appertains may apply the same.

In the drawings, A indicates an air-brake cylinder, (in the present instance such as is used on passenger-coaches,) *a* the piston-rod thereof, and B B′ levers of a brake system, one of said levers B being pivotally connected at one end with the piston-rod *a* and the other pivoted at one end to the head of cylinder A or other fixed point, as the case may be, while to the opposite ends of said levers B B′ are attached the pull-rods *b b′*.

C indicates the tie-rod, (or fulcrum-rod,) which connects the two levers B B′, and G the turnbuckle-sheave journaled thereon. This

tie-rod is composed of the main or rod section C, threaded right and left at its ends, as at c' c', and the clevis or jaw sections C' C', which are pivotally connected with the respective levers B B', the bores of said clevises C' C' being provided internally with nuts c^2 for the reception of the threaded ends of the rod-section and at their outer ends with smooth guide-orifices c^3 of substantially the diameter of the unthreaded portion of the tie-rod C, so as to embrace the tie-rod, obviate vibration, and relieve the threaded portions of the tie-rod of cross-bending and breaking strains incident to the vibration due to the location and use of the tie-rod or fulcrum-rod C.

Where simplicity is desired, the nut c^2 may be formed integral with the jaw, as indicated in Figs. 14, 15, and 16 of the drawings; but as in such case the nut must be of the same material—and maleable-iron casting is most desirable for the clevis or jaw, while such material is not so desirable for the nut—I prefer to make the nut separable from the clevis and of such shape as will prevent its rotation when inserted in the bore of the jaw or clevis, which may be accomplished in various ways. In Figs. 8, 9, and 10 of the drawings this is accomplished by forming the nut polygonal or with parallel sides and the nut-seat of corresponding form, the nut being introduced into the bore of the clevis through a side opening, which may be subsequently closed and cemented, as at d, to prevent the entrance of dust, dirt, and moisture, or, if preferred, the nut c^2 may be of less diameter than the bore (see Figs. 11, 12, and 13) through which it is introduced, being prevented from rotation by means of lugs or projections e on the interior of the clevis, which enter corresponding indentations in the nut c^2, the bore being closed after the introduction of the nut by a screw sleeve or cap f, in the end of which the guide-orifice c^3 is formed for the passage of the tie-rod C.

As shown in Figs. 1 to 7, inclusive, the clevis or jaw is made of lateral separable sections having on their interior pointed lugs e, which engage in corresponding indentations in the periphery of the nut c^2, the lateral separable sections being held together by the ring or collar, which is forced into position, and, if desired, by a suitable bolt or rivet d'.

Keyed or otherwise firmly attached to the tie-rod C at or about its middle is a ratchet-ring g, and journaled loosely thereon is the turnbuckle-sheave G, composed of separable sections adapted to inclose the pawl or dog g', which engages the ratchet-ring g on the tie-rod C.

D indicates a flexible connection or bridle connected at one end to the piston-rod a of the air-brake cylinder A, passing thence over bridle-sheave d^2, thence around turnbuckle-sheave G, to which it is connected in a suitable manner, as at d^3, and thence up and over bridle-sheave d^4 and into spring-box or casing E, where its opposite or free end is connected with a spiral or other suitable spring or equivalent means of applying tension to the free end of the bridle. The length of bridle D from the point of its attachment to the piston-rod a to its point of attachment to the turnbuckle-sheave G is such as will provide sufficient slack for the normal travel of piston-rod a, and from the point of its attachment to the turnbuckle-sheave G to the point of its attachment to the spring within spring-box or casing E its length is such that the spring will be at the limit of its expansion when the turnbuckle-sheave is at rest.

The controller devices being constructed substantially as hereinbefore specified will operate as follows: Until such time as the wear on the brake-shoes or other causes produce an increase of slack or lost motion in the brake-rigging the travel of the air-brake piston will of course be normal and only take up the provided slack in the bridle D, and the turnbuckle-sheave G will remain stationary; but so soon as increased slack occurs in the system the slack in the bridle D will not be sufficient to accommodate the excessive travel of the piston necessary to take up the lost motion in the brake system. Consequently the draft on the bridle will cause the rotation of the turnbuckle-sheave G, which motion, however, will only cause the travel of the dog or pawl g' over the ratchet-ring g without causing the rotation of the tie-rod C. When, however, the brakes are taken off or upon the inward travel of the piston-rod a, the bridle will be allowed to slacken, and the reaction of the spring in casing e, which has through the means of the bridle D been compressed by the rotation of turnbuckle-sheave G, will cause the reverse rotation of turnbuckle-sheave G, which, acting through pawl g' on ratchet-ring g, will cause the rotation of the tie-rod C. As the clevises or jaws C' C' are connected to the levers B B', and therefore cannot rotate, the rotation of the rod acting through the right and left hand threads will cause the jaw or clevis sections to travel toward each other or inward on the tie-rod C, thus shortening the connection and eliminating the lost motion or slack from the system, so that the next outward travel of the piston-rod will not exceed its normal movement.

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

1. The combination with an air-brake cylinder and its piston, of levers one of which is connected with the piston of the air-brake cylinder and with a pull-rod, a tie or fulcrum rod comprising internally-threaded clevises connected with the levers and an intermediate rod threaded at its ends, pawl-and-ratchet devices mounted on the tie-rod, means for actuating the pawl-and-ratchet devices from the piston of the air-brake cylinder, and means for reversing the movement of the pawl-and-

ratchet devices when released by the air-brake piston; substantially as and for the purposes specified.

2. In a tie-rod, the combination with clevis-sections composed of separable sections, of a separable inserted nut for each section, means for preventing the rotation of the nuts, and an intermediate rod reversely threaded at its ends, substantially as and for the purposes specified.

3. In a tie-rod, the combination of an intermediate rod-section, tubular clevises arranged to swivel on said rod-section, one of said clevises having a nut within its bore, the rod threaded at its end to engage said nut, a sheave journaled on said rod-section, and means whereby the sheave rotates the rod in one direction, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 12th day of March, 1898.

JOHN C. WANDS.

Witnesses:
JOE O'DONNELL,
WM. H. SCOTT.