No. 753,650. PATENTED MAR. 1, 1904.

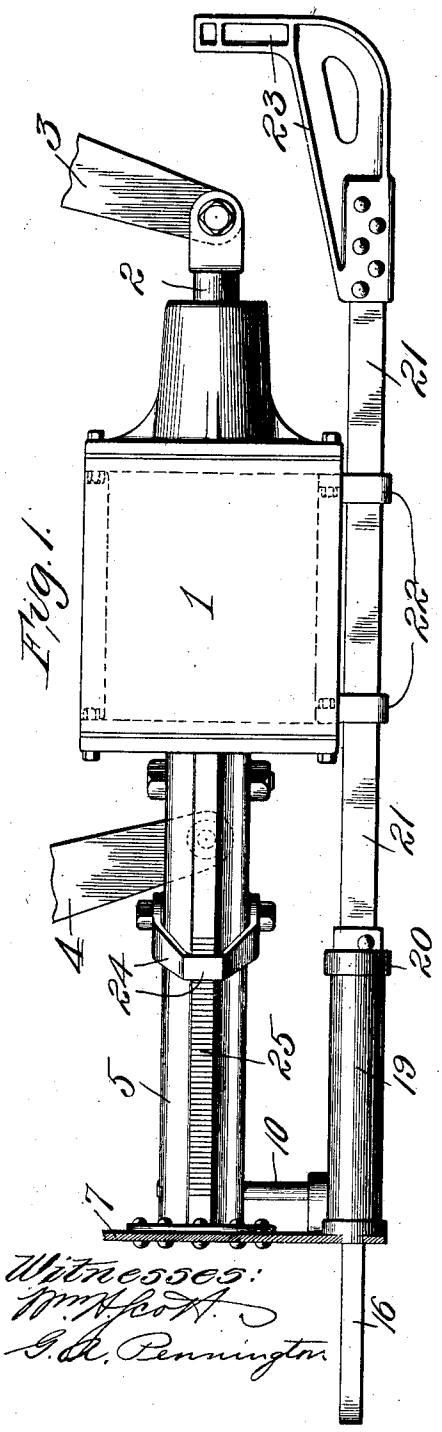
J. C. WANDS.

AIR BRAKE CONTROLLER.

APPLICATION FILED OCT. 21, 1903.

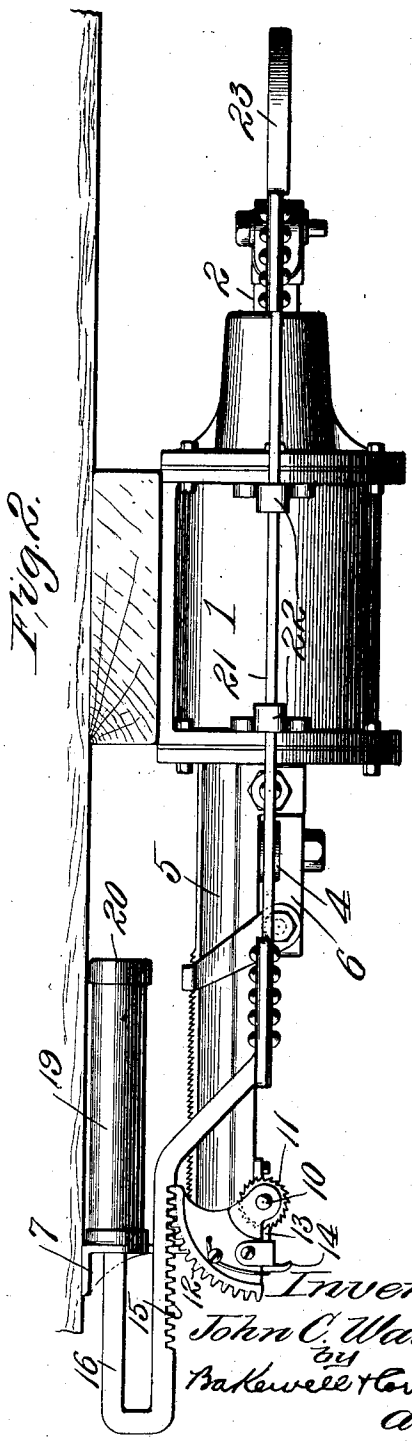
NO MODEL. 3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Wm. A. Scott
G. A. Pennington.

Fig. 2.



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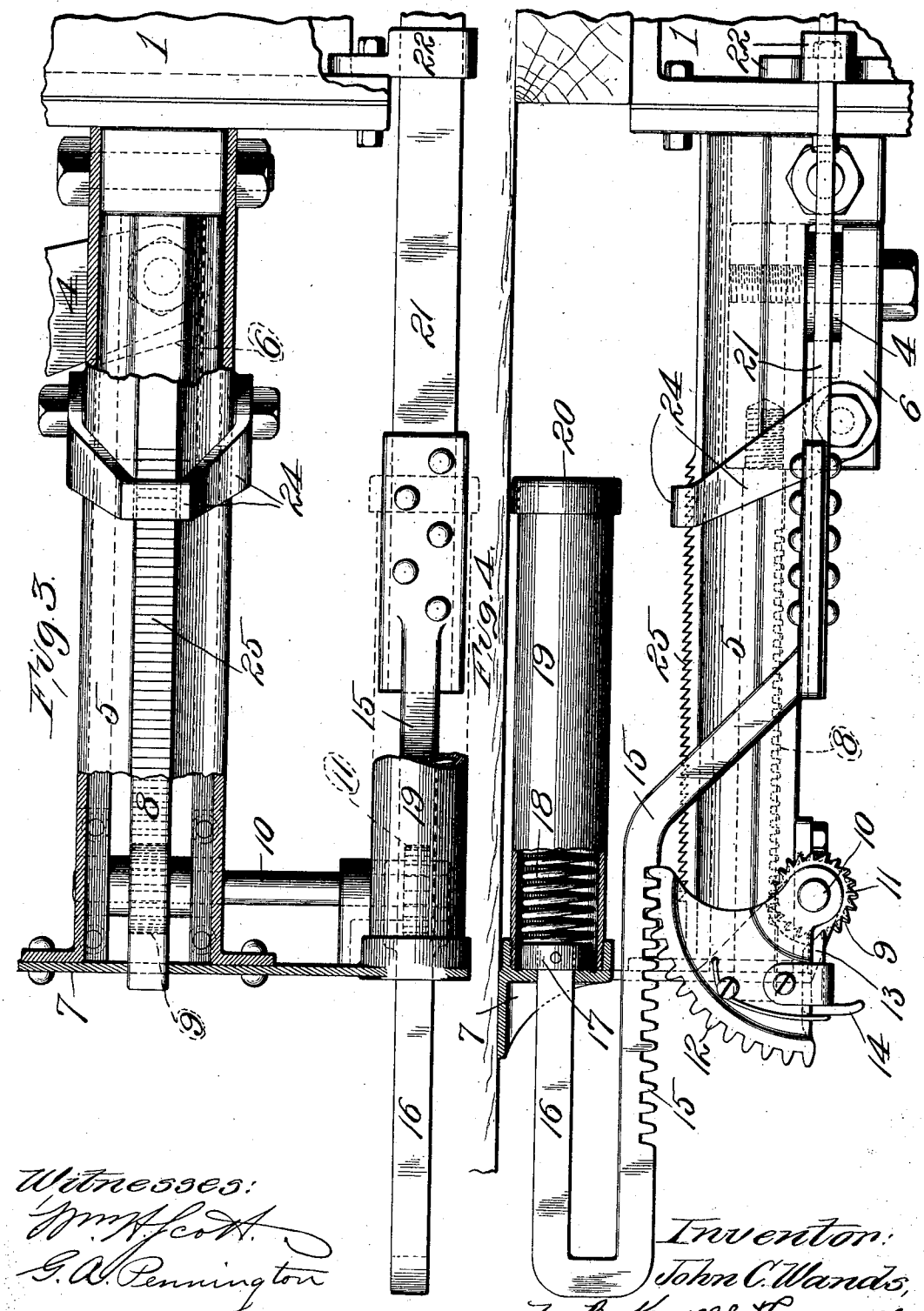
NO MODEL. 3 SHEETS—SHEET 2.



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NO MODEL. 3 SHEETS—SHEET 3.

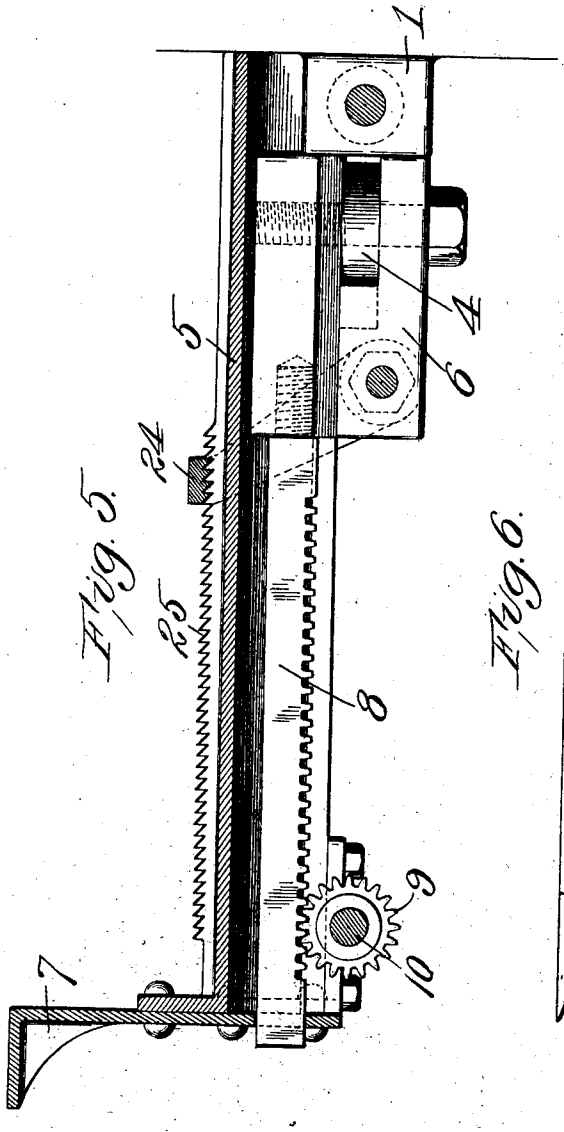

Fig. 5.

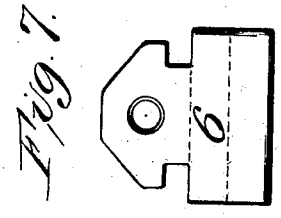

Fig. 7.

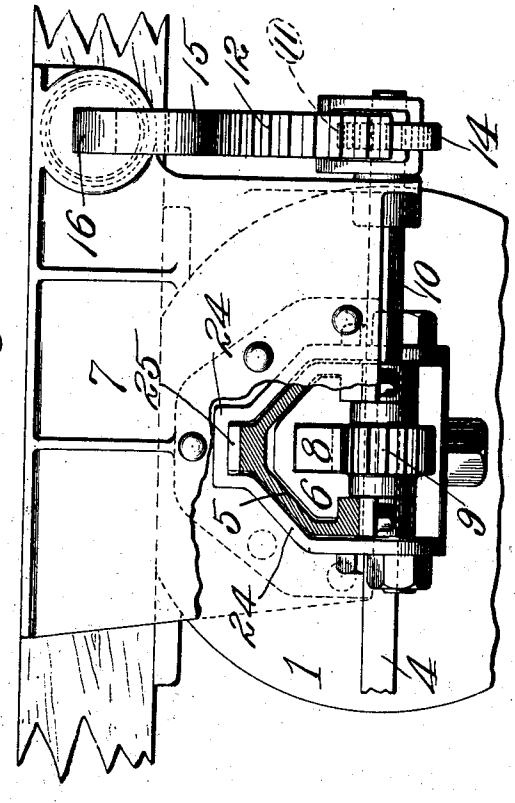

Fig. 6.

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UNITED STATES PATENT OFFICE.

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

AIR-BRAKE CONTROLLER.

SPECIFICATION forming part of Letters Patent No. 753,650, dated March 1, 1904.

Application filed October 21, 1903. Serial No. 177,904. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. WANDS, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Air-Brake Controllers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a top plan view of an air-brake cylinder, showing my improved controller in position thereon. Fig. 2 is a side elevational view of the same. Fig. 3 is an enlarged top plan view of the controller device, parts thereof being in section. Fig. 4 is a side elevational view, partly in section, of the controlling mechanism. Fig. 5 is a longitudinal sectional view through the controlling mechanism. Fig. 6 is an end elevational view partly in section, and Fig. 7 is a detail end view of the fulcrum-block.

This invention relates to a new and useful improvement in air-brake controllers, the object being to take up the wear on the brake-shoes, so that the braking power of the cylinder will be effective. This is accomplished by adjusting the fulcrum of the cylinder-lever, which fulcrum is movable with respect to the cylinder, its movement being controlled by mechanism located in part in the path of the piston, whereby when the piston exceeds its normal stroke devices will be set in operation to cause the travel of a fulcrum-block for the cylinder-lever, which fulcrum-block is mounted in suitable ways.

With these objects in view the invention consists in the construction, arrangement, and combination of the several parts, all as will be hereinafter described and afterward pointed out in the claims.

In the drawings, 1 indicates the brake-cylinder; 2, the piston-rod; 3, the piston-lever, and 4 the cylinder-lever, all of said parts being of usual construction.

5 indicates a casting secured to the rear cylinder-head, which casting forms a housing and provides a way in which the fulcrum-block 6 of the cylinder is mounted. The outer end of this casting may be supported by the bracket 7, bolted to the underframing of the car.

8 indicates a rack extending rearwardly from the fulcrum-block, the teeth of which are preferably on the under face and with which meshes a pinion 9, mounted on shaft 10, arranged in suitable bearings secured to the outer end of casting 5. This shaft 10 extends laterally beyond the casting, as shown in Figs. 1 and 3, and upon the extending portion is secured a ratchet 11.

12 indicates a gear-segment, whose hub is bifurcated to straddle the pinion 9, said segmental gear carrying a spring-pressed pawl 13, which is designed to coöperate with the ratchet-wheel. This pawl preferably has a downward projection 14 to be grasped for the purpose of disengaging the pawl from its ratchet-wheel in restoring the fulcrum-block and its connected rack to normal position.

15 indicates an operating-rack in mesh with the segmental gear, said rack having a rebent portion 16 passing through the bracket 7 and provided with a head 17, designed to bear against a spring 18. This spring is mounted in a tubular housing 19, threaded in the bracket 7, and whose cap-piece 20 acts as a spring-seat, so that when the rack 15 is moved toward the rod in the position shown in Fig. 4 a spring will be compressed, and when said rack is released the spring will act to force the rack to its home position. Rack 15 is preferably a casting which is riveted at its forward end to a bar 21. This bar 21 is mounted in bearings 22, secured to the side of the brake-cylinder, and carries at its forward end a casting 23, having a lateral projection in the path of movement of the piston 2.

24 indicates a yoke pivoted to the fulcrum-block and straddling the casting 5. The connecting-piece of this yoke is provided with teeth on its under face, (see Fig. 5,) which engage with ratchet-teeth 25 along the upper face of the casting 5.

In operation the parts are set originally as shown in Fig. 1, wherein the fulcrum-block is adjusted close to the cylinder. In applying the brakes the piston 2 in practice has a movement of about six inches, and if in service this movement is not exhausted the piston will not operate the controlling devices. However, should this movement be exceeded by the piston it will contact with the lateral projection of casting 23 in its path and move the bar 21 and its connected rack 15 longitudinally. As soon as the brakes are released by the exhaust of pressure from behind the piston and the piston returns the spring 18 exerts its power to restore the parts to normal position, which means that the rack 15 is forced rearwardly. We will assume that the piston 2 comes in contact with casting 23 and moves the same forwardly. The rack 15 will rock the segmental gear 12, and if the movement is sufficient the pawl 13 will ride over one or more teeth of the ratchet 11. When the rod 21 is released and the spring 18 restores the same to its normal position, the pawl 13 will engage the ratchet 11 and cause said ratchet to make a partial revolution, which being communicated to the pinion 9 will move the fulcrum-block 6 outwardly. This movement of the fulcrum-block in an outward direction takes up the wear of the brake-shoes or lost motion in the brake system, and consequently the movement of the piston is reduced to its normal travel.

The movement of the fulcrum-block 6 occurs only when the brakes are released and is effected by the yielding power stored up in the spring 18. To hold the fulcrum-block in its new position, the yoke 24 is relied upon. It will be seen that as the fulcrum-block moves outwardly this yoke takes a new bite on the rack-teeth 25, it dropping into position behind the teeth by gravity, and when the brakes are again applied the pull is on this yoke, and therefore is not transmitted back through the pinion and segmental gear to the rod 21.

In the event that it is desired to restore the fulcrum-block to its inner position, as when new brake-shoes are applied, it is only necessary to raise the pawl 13 by grasping the projection 14 and also raise the yoke 24, when the fulcrum-block can be pushed back to its original position by hand.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. In an air-brake controller, the combination with a movable fulcrum, of a brake-lever mounted therein, a threaded rod for causing the travel of said movable fulcrum, a contact connection arranged in the path of the piston-rod and which is actuated by the excessive travel of the piston, a yielding medium for restoring the parts to normal position during which restoration, the threaded rod is rotated and the position of the fulcrum-block is changed, and independent means for holding the fulcrum-block in its adjusted position so as to relieve its actuating connections from strain; substantially as described.

2. In an air-brake controller, the combination with a cylinder and its piston, of a fulcrum-block, a brake-lever mounted therein, a rack-and-pinion mechanism for moving said fulcrum-block, a pawl-and-ratchet mechanism for imparting motion to the rack-and-pinion mechanism, a yielding driver for the pawl-and-ratchet mechanism, and means controlled by the excessive movement of the piston for storing up power in said yielding driver; substantially as described.

3. In an air-brake controller, the combination with a cylinder and its piston, of a fulcrum-block, a brake-lever mounted therein, a rack-and-pinion mechanism for moving said fulcrum-block, a pawl-and-ratchet mechanism for imparting motion to the rack-and-pinion mechanism, a yielding driver for the pawl-and-ratchet mechanism, and means controlled by the excessive movement of the piston for operating said pawl-and-ratchet mechanism; substantially as described.

4. In an air-brake controller, the combination with a cylinder and its piston, of a casting forming a guideway, a fulcrum-block mounted in said casting, a brake-lever mounted in said block, a rack extending from said fulcrum-block, a pinion meshing with said rack, a ratchet-wheel movable with said pinion, a segmental gear carrying a pawl coöperating with said ratchet-wheel, a rack meshing with said segmental gear, a spring coöperating with said rack, and means connected with the rack and in the path of movement of the piston whereby excess movement of the piston will operate said rack; substantially as described.

5. In an air-brake controller, the combination with an air-brake cylinder and its piston, of a casting forming a guideway, a fulcrum-block mounted in said casting, a brake-lever mounted in said block, means for moving the fulcrum-block when the piston exceeds its normal stroke, and a yoke connected to said fulcrum-block and engaging teeth on said casting for holding the fulcrum-block in adjusted positions; substantially as described.

6. In an air-brake controller, the combination of a cylinder and its piston, of a casting 5 having teeth 25 on its upper face, a fulcrum-

block guided in said casting, a gravitating yoke 24 having teeth coöperating with the teeth 25 whereby the fulcrum-block is held in adjusted positions, and means for moving the fulcrum-block in the casting, said means being rendered operative by an excessive stroke of the piston; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 22nd day of September, 1903.

JOHN C. WANDS.

Witnesses:
F. R. CORNWALL,
GEORGE BAKEWELL.