No. 636,305.

Patented Nov. 7, 1899.

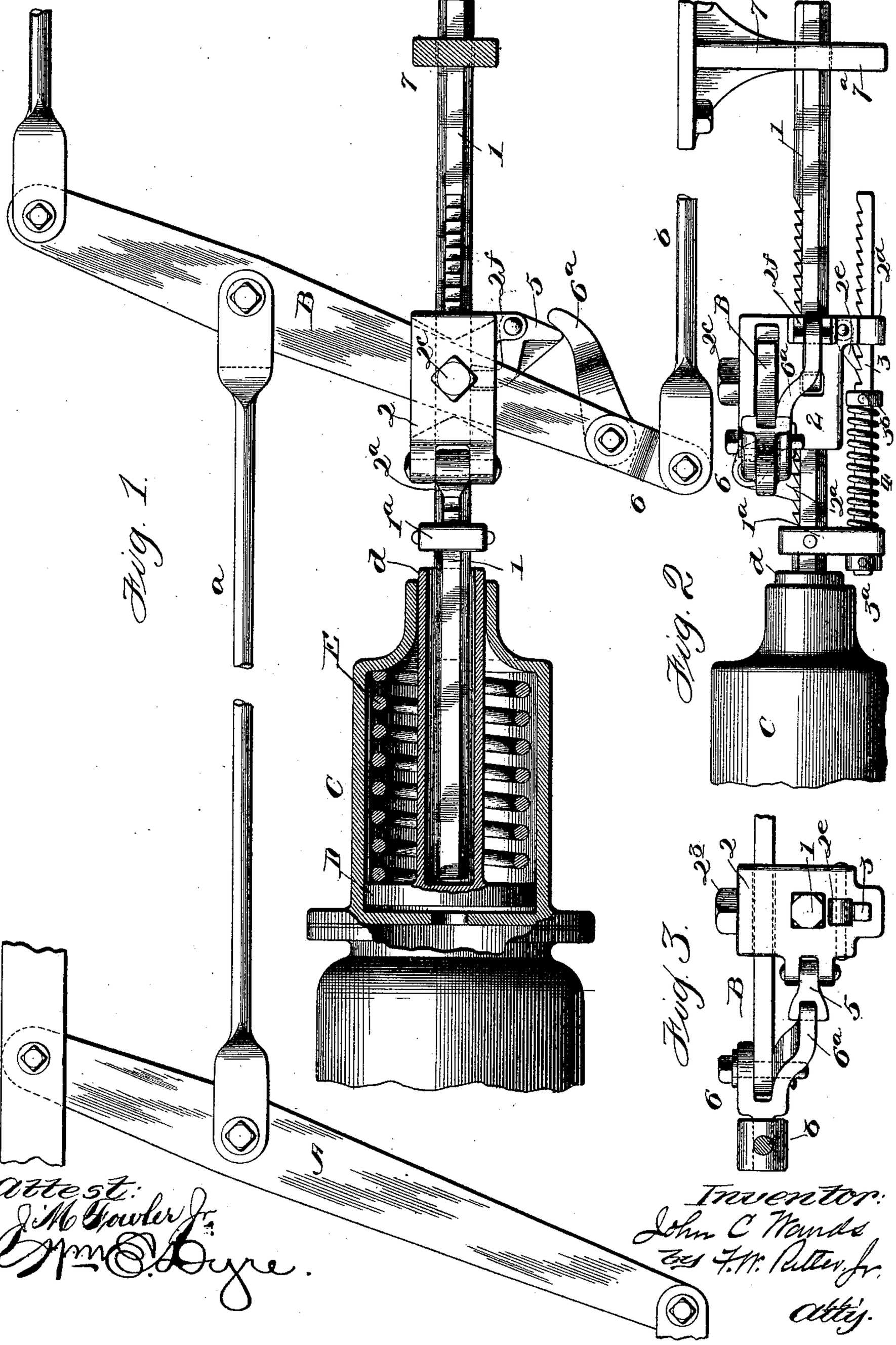
J. C. WANDS.

BRAKE SLACK TAKE-UP.

(Application filed May 5, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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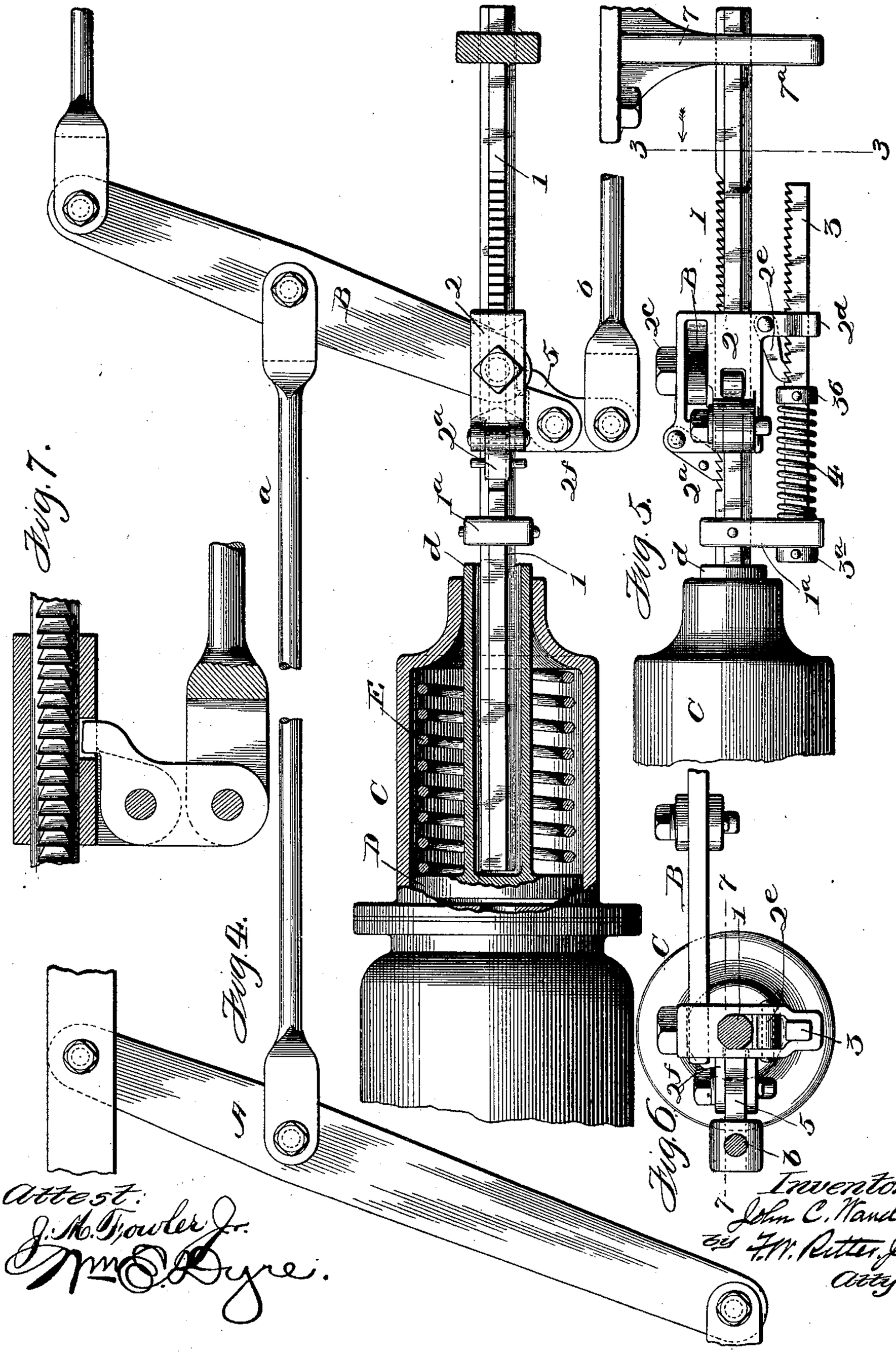

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UNITED STATES PATENT OFFICE.

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

BRAKE-SLACK TAKE-UP.

SPECIFICATION forming part of Letters Patent No. 636,305, dated November 7, 1899.

Application filed May 5, 1898. Serial No. 679,846. (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 Brake-Slack Take-Ups; 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 shown in connection with an air-brake cylinder, the air-brake cylinder being in section. Fig. 2 is a side elevation of the devices shown in Fig. 1. Fig. 3 is an end view thereof, the air-brake cylinder being omitted. Fig. 4 is a plan view of a modification of the take-up devices shown in Fig. 1. Fig. 5 is a side view of the modification shown in Fig. 4. Fig. 6 is a sectional end view on the line 3 3, Fig. 5, looking in the direction of the arrow; and Fig. 7 is a horizontal section on the line 7 7, Fig. 6, showing the lever-block in section and the pinch-dog and portions of the push-bar and hand-brake pull-rod in elevation.

Like symbols refer to like parts wherever they occur.

My invention relates to the construction of that class of devices employed in conjunction with brake-rigging for eliminating from the system any slack arising therein from wear of the brake-shoes or any of the many other well-known causes. This class of devices is more especially intended for use with power or air brakes where the travel of the (piston or) push-bar is limited for effective work and where any excess of travel caused by lost motion results in a material loss of power.

As is well understood by those familiar with railway practice, in "shunting" or making a "running switch" the brakes have to be set by hand, and heretofore the construction of brake-slack take-up mechanism has been such that when combined with and adjusted for operation with power-brakes, especially a freight-car air-brake system wherein a loose push-bar is employed, any operation of the brakes by hand has been attended with liability to such derangement of the take-up devices as rendered them subsequently inoperative by the power-brake until readjusted with relation thereto.

The object of the present invention, therefore, is to provide means for preventing the derangement of the take-up devices with relation to the power devices when the brakes are set by hand.

To this end the main feature of my invention, generally stated, consists in the combination, with a push-bar and lever-block, of a pinch-dog actuated from the hand-brake rod, whereby the push-bar and "take-up" mechanism are locked together when the brakes are applied by hand.

A second feature of my invention consists in the combination, with a push-bar and a lever-block movably mounted thereon, of a pinch-dog mounted on the lever-block and a clevis for actuating the pinch-dog from the hand-brake rod.

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 and B indicate the usual floating levers of a brake-rigging connected by the tie-rod *a* and with one of which, B, the usual hand-brake rod *b* is connected for setting the brakes by hand. To the same lever B the push-bar of air-brake is also connected in power-brakes.

C indicates the cylinder of a freight-car brake, provided with the usual piston D, having the hollow stem *d* for the reception of a push-bar, and surrounded by the return or release spring E.

1 indicates the push-bar, which I preferably form octagonal in cross-section, milling or otherwise forming on its upper surface ratchet-teeth for the reception of a pawl or dog 2^a on the sliding lever-block 2.

2 indicates a sliding lever-block movably mounted on the push-bar 1 and provided with a pawl or dog 2^a, which engages the teeth of the ratchet on the upper surface of the push-bar. With said lever-block 2 the main floating lever B is connected in any suitable manner, preferably by means of a slot 2^b in the block, which receives the lever, and a screw-bolt 2^c, which forms a pivotal connection therefor.

Projecting downward from the lever-block 2 is a perforated lug 2^d, through which passes

one end of a spring-bar 3, the opposite end of said spring-bar being loosely passed through a perforated lug 1^a, pendent from the push-bar 1, so that while said spring-bar is carried by and with the push-bar and lever-block it is capable of longitudinal movement independent thereof.

3 indicates the spring-bar carried by the pendent lugs 1^a 2^d, as above noted. This bar is provided at one end with a collar or head 3^a, which confines it and prevents its escape, and also between said lugs 1^a 2^d with a second collar 3^b, between which and the lug 1^a the spring-bar is encircled by a coiled spring 4, one bearing of which is upon said collar 3^b and the other upon the inner face of lug 1^a, so that the spring-bar is normally held projected forward and parallel with the push-bar 1, as shown in Figs. 2 and 5 of the drawings. The forward portion of spring-bar 3 is provided upon its upper surface with ratchet-teeth, with which a pawl or dog 2^e on the lever-block 2 engages, the ratchet-teeth and dog being so arranged as to resist the spring 4 and prevent the independent forward movement of said spring-bar 3.

Projecting laterally from the lever-block 2 are perforated lugs 2^f, between which is pivoted a pinch-dog 5, one end of which projects through a slot in the lever-block in such manner that said pinch-dog 5 may be made to bind on the push-bar 1 and lock it and the lever-block 2 together, so that they will move as one. There are several methods by which this pinch-dog 5 may be operated from the hand-brake rod *b*, two of which have been chosen for purposes of illustration. In case the floating main lever B is of suitable length I may provide a clevis device 6, pivoted on said lever, (see Figs. 1 and 2,) to which clevis the hand-brake rod *b* is pivotally connected, said clevis being provided with a finger 6^a, adapted to engage the outer arm of the pinch-dog 5. This construction will be found well adapted to many brake-riggings; but inasmuch as there are frequent variations in the length of the floating lever B of different brake-riggings, which would demand different lengths of clevis 6 and clevis-finger 6^a, I prefer where there is an excessive length of lever B to shorten the lever (see Figs. 4, 5, and 6) and connect the hand-brake rod *b* directly to the pinch-dog 5, so that the pinch-dog is actuated directly by the hand-brake rod *b* instead of from the same through an intermediate clevis 6.

7 indicates a carry-iron slotted for the passage and support of the outer end of the push-bar 1, and the lower portion 7^a of said carry-iron constitutes a distance-stop, with which the forward end of the spring-bar 3 engages when the push-bar 1 exceeds its normal or predetermined travel. It will be noted that the location of said combined carry-iron and distance-stop will be determined by the predetermined travel of the piston or push-bar, though in case an independent distance-stop is preferred and employed the location of the independent carry-iron will be immaterial so long as it affords the required support to the push-bar 1 without interfering with the normal travel of said push-bar and the spring-bar.

The construction of the take-up mechanism and pinch-dog and their combination being substantially such as hereinbefore pointed out, the operation thereof will be as follows: Air being admitted to the cylinder C in the usual manner, the piston B and its stem *d* will be forced outward, carrying with them the push-bar 1, and through the medium of pawl or dog 2^a the lever-block 2, to which the floating main lever B is attached, thus applying the brakes by power. In this outward movement of the push-bar 1 and lever-block 2 they will carry with them the spring-bar 3, which will remain inoperative so long as there is no slack in the system and the travel of the piston and push-bar remain normal. When, however, any slack or lost motion arises from shoe wear or otherwise, the piston and push-bar 1 will exceed the normal travel in proportion to the slack in the system and in so doing will bring the leading end of spring-bar 3 in contact with distance-stop 7^a, whereupon the forward travel of the spring-bar 3 with the push-bar 1 and lever-block 2 will cease and the spring 4 will be compressed, while the pawl 2^e, traveling with the lever-block 2, will ride forward on the upper ratchet-face of the spring-bar, measuring thereon the extent of slack in the system, and as soon as the brakes have been applied and the forward motion of push-bar 1 and lever-block 2 ceases the pawl or dog 2^e will engage the corresponding notch in the ratchet-face of the spring-bar 3. When the brakes are released, the piston-spring E will restore the piston D to its first position, and at the same time the reaction of spring 4 will return the push-bar 1 to its first position and simultaneously move the lever-block 2 outward a distance equal to that measured off on the spring-bar 3—in other words, sufficient to eliminate the slack from the system. During the outward movement of the lever-block 2, caused by the reaction of spring 4, the pawl or dog 2^a will drag over the ratchet-face of the push-bar 1, reëngaging therewith when the movement of the lever-block 2 ceases, so that on the next outward thrust of the push-bar in applying the brakes the lever-block, &c., will again move with the push-bar, and the devices will thereafter have only the normal or predetermined travel until such time as slack again occurs in the system, when the several steps hereinbefore noted will be repeated.

When the brakes are to be set by hand in shunting or making a "flying switch," the power will be applied to the floating lever B through the medium of the hand-brake rod *b*, which operating either directly on the pinch-dog 5 (see Figs. 4 and 7) or through the medium of clevis 6 and clevis-finger 6^a

said pinch-dog 5, which is mounted on the lever-block 2, will bind on the push-bar 1 and cause the push-bar 1 to bind in and move with the lever-block 2 and floating lever B both in the application and release of the brakes by hand. As the push-bar and lever-block are thus caused to move in unison when applying the brakes by hand, the spring-bar 3 necessarily travels with them, as in the power application of the brakes, and if there shall be any slack in the system requiring an excessive movement of the lever B, lever-block, and push-bar the forward end of the spring-bar will come in contact with the distance-stop 7^a and the take-up devices will be operated to eliminate the slack precisely as in the case of a power application of the brakes.

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

1. In a brake-slack take-up, the combination with a push-bar, of a lever-block movable thereon, pawl and ratchet devices whereby the lever-block is prevented from moving inward on the push-bar, a pinch-dog whereby the lever-block may be prevented from moving outward on the push-bar, and means for actuating the pinch-dog from the hand-brake rod, substantially as and for the purposes specified.

2. In a brake-slack take-up, the combination of a push-bar, a movable lever-block mounted on the push-bar, a lever connected with the lever-block, a pinch-dog to lock the push-bar to the lever-block, and a clevis device pivoted on the lever and which engages the pinch-dog, substantially as and for the purposes specified.

3. In a brake-slack take-up, the combination of a push-bar, a lever-block, a resilient device interposed between the push-bar and lever-block and having means to engage the lever-block, and a pinch-dog adapted to lock the push-bar to the lever-block, substantially as and for the purposes specified.

4. In a brake-slack take-up, the combination of a push-bar, a lever-block, an interposed spring-bar having means to engage the lever-block, a pinch-dog adapted to lock the push-bar to the lever-block, and a distance-stop arranged in the path of the spring-bar, substantially as and for the purposes specified.

5. In a brake-slack take-up, the combination of a push-bar, a lever movably connected therewith, a pinch-dog, and a hand-brake rod for actuating the pinch-dog and causing it to lock the lever to the push-bar, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 25th day of April, 1898.

JOHN C. WANDS.

Witnesses:
HUGH K. WAGNER,
F. R. CORNWALL.