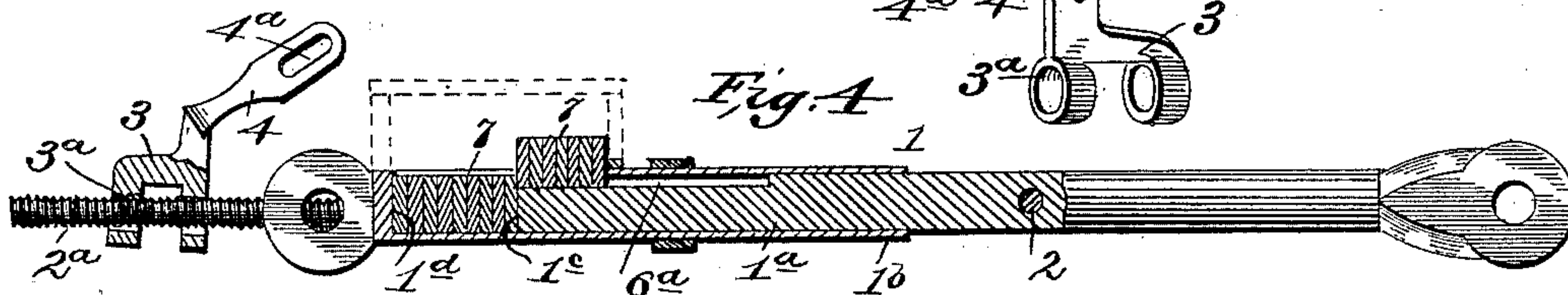
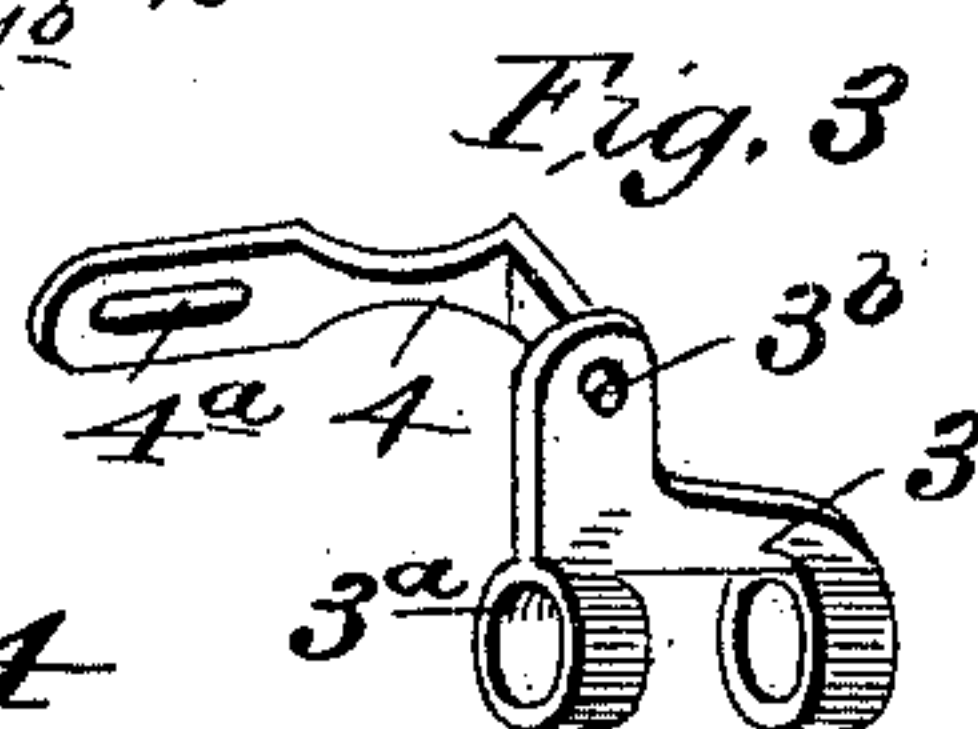
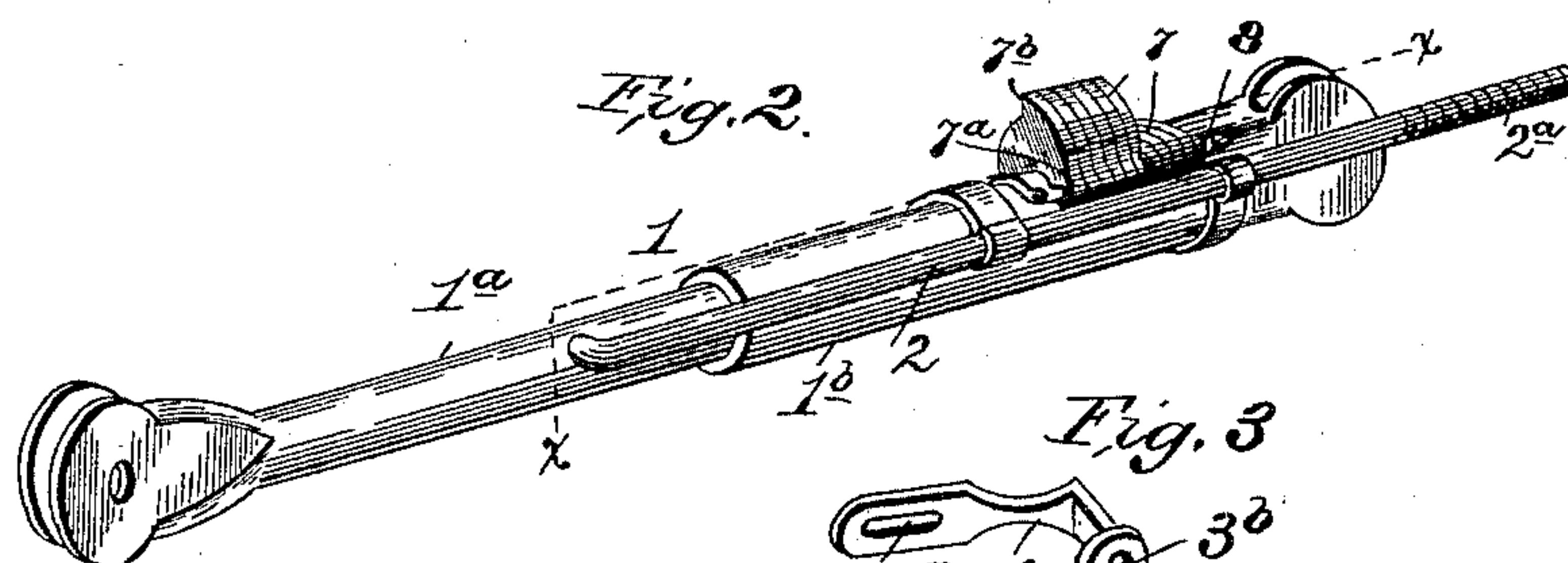
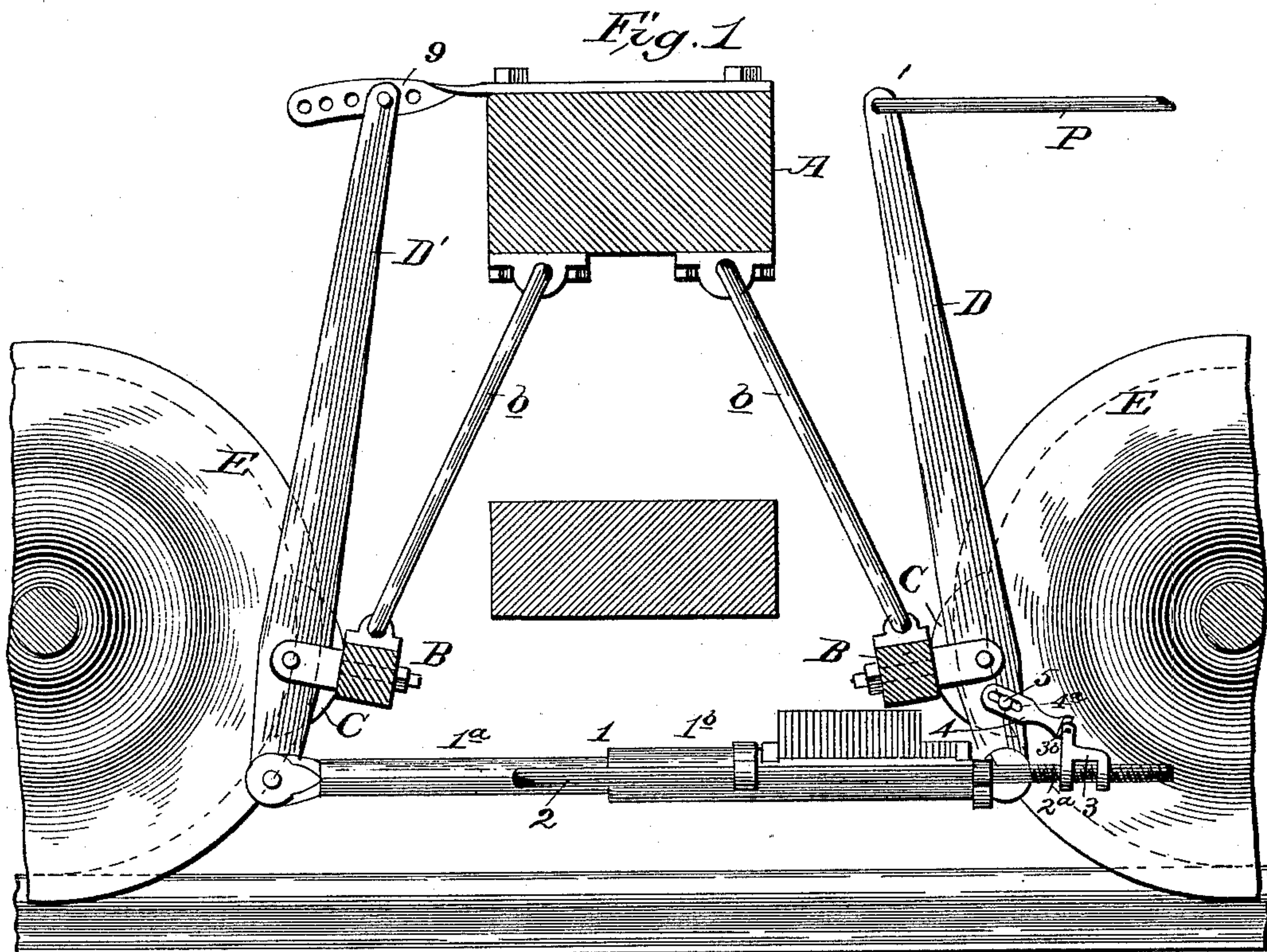


(No Model.)

E. D. EAMES.  
SLACK ADJUSTER FOR BRAKES.

No. 453,062.

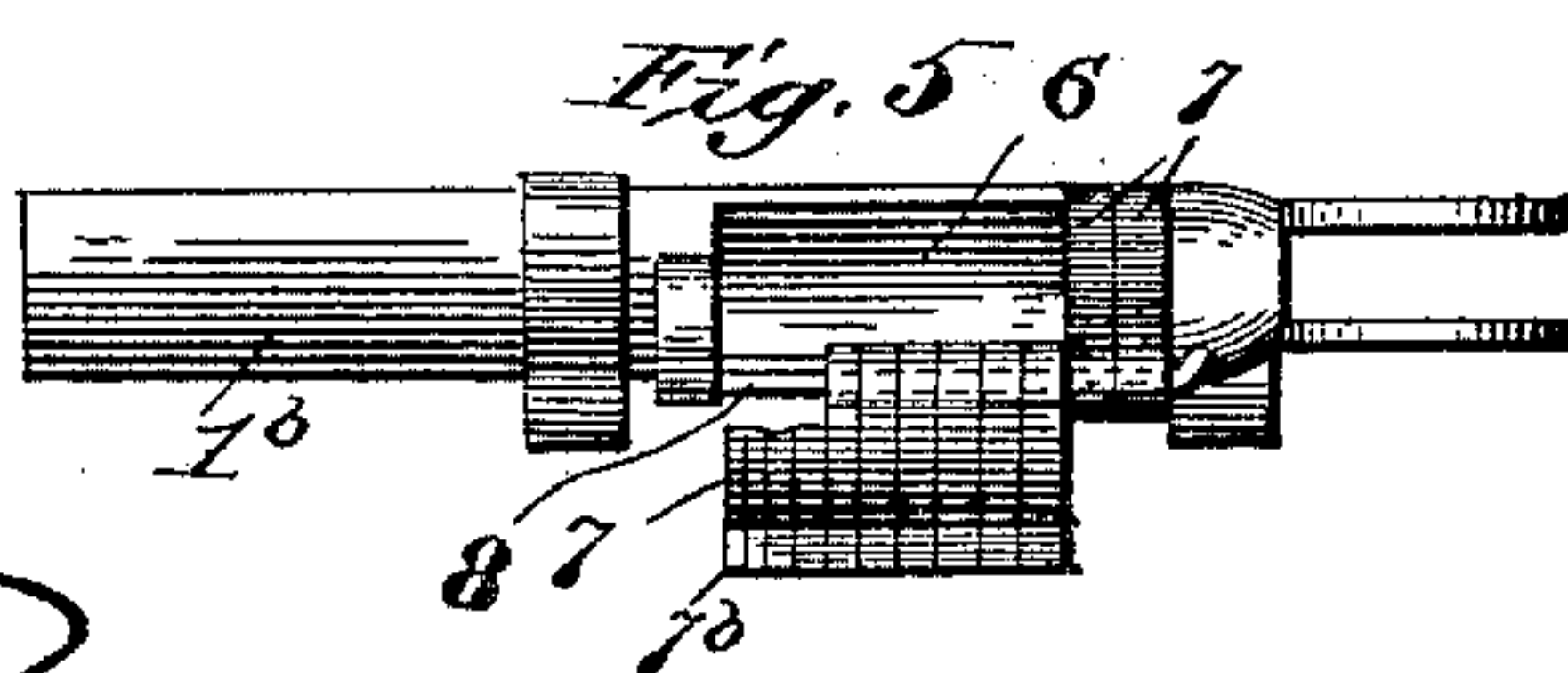
Patented May 26, 1891.



Witnesses:

J. H. Cornwall

Alex. Scott



Inventor,

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by F. W. Ritter Jr  
att'y



# UNITED STATES PATENT OFFICE.

ELISHA D. EAMES, OF WATERTOWN, NEW YORK, ASSIGNOR TO THE CONSOLIDATED BRAKE ADJUSTER COMPANY, OF CHICAGO, ILLINOIS.

## SLACK-ADJUSTER FOR BRAKES.

SPECIFICATION forming part of Letters Patent No. 453,062, dated May 26, 1891.

Application filed January 5, 1891. Serial No. 376,764. (No model.)

*To all whom it may concern:*

Be it known that I, ELISHA D. EAMES, a citizen of the United States, residing at Watertown, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Automatic Slack-Adjusters for Brakes; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, wherein—

Figure 1 is an elevation of the slack-adjusting mechanism with the brake-levers and so much of a truck and wheels as is required to illustrate the application of my invention. Fig. 2 is a detached perspective view of mechanism embodying the invention. Fig. 3 is a detached perspective view of the link and shackle portion of the mechanism, and Fig. 4 is a longitudinal central section of the devices embodying my invention on the line *xx*, Fig. 2. Fig. 5 is a detached plan view of the sleeve-section of a telescoping or extension connecting-rod.

Like symbols refer to like parts wherever they occur.

My invention relates to the construction of that class of devices termed "slack-adjusters," and which are employed in conjunction with brake mechanism for the purpose of preserving the proper relation of the brake-heads to the wheels when the brakes are off, so that only a given or defined movement of the power mechanism is required to apply the brakes. The change of relation between the brake-heads and wheels arises principally from wear of the brake-shoes, and the slack-adjuster to be efficient must not only be of a character to automatically and from time to time take up the slack due to the wear of the shoe and from any other cause, but must accomplish the same by a positive means simple in construction and not liable to displacement or derangement.

My present invention, generally stated, consists in the combination, with the brake-levers, of an extension connecting-rod, (preferably telescoping,) a series of liners or shims adapted to be interposed between the sections of the telescoping connecting-rod, and means for automatically moving one telescop-

ing section on the other to compensate for wear or slack.

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

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

In the drawings, A indicates that portion of a truck from which the brake-beams B B are usually suspended by hangers *b b*.

C C indicate brake-heads, D D' brake-levers, and E E car-wheels, all of which may be of the ordinary or any approved form and arrangement, as the construction thereof forms no part of the present invention, and the devices, as shown, are only used to indicate elements essential to brake mechanism in general.

Instead of the common form of connecting-rod usually pivoted by its opposite ends to the lower ends of the two brake-levers D D', I connect said levers by an extension-rod 1, one section of which has a second connection with or is operated independently and automatically from one of the brake-levers whenever said lever exceeds its usual or normal movement. This extension-rod is composed of sections, as at 1<sup>a</sup> 1<sup>b</sup>, adapted to move one on or in the other, and preferably said sections are telescoping, as shown, the rod-section proper 1<sup>a</sup> being pivoted to the lower end of the "lazy" lever or "dead" lever D', while the sleeve-section 1<sup>b</sup> is pivoted to the "active" lever or "live" lever D.

Secured to the rod-section 1<sup>a</sup> at any point which will not interfere with the telescoping of the sections 1<sup>a</sup> 1<sup>b</sup> is a minor rod or supplemental rod 2, of such length as to project beyond the main connecting-rod 1 and in a line parallel therewith. As no great force is exerted on this supplemental rod 2, it may be of small diameter. The free end of said supplemental rod is threaded or otherwise roughened for some distance, as at 2<sup>a</sup>, for the grip of a loose sliding shackle 3, which shackle is in turn roughened at one or more points 3<sup>a</sup> on its inner surface to grip the said supplemental rod 2.

The shackle 3 is connected with the lever D by means of a link 4, pivoted on the shackle



3, as at 3<sup>b</sup>, (see Figs. 3 and 4,) said link having at its opposite end a slot 4<sup>a</sup>, corresponding in length to the normal movement of lever D, which slot receives a pin 5 on the lever D. The supplemental rod 2, shackle 3, and slotted link 4 constitute the secondary connection between the telescoping connecting-rod 1 and the lever D, and, as will hereinafter appear, this or its equivalent are necessary to cause the excessive movement of the brake-lever to extend the rod and take up the wear of the brake-shoes.

As hereinbefore specified, the preferred form of the extension connecting-rod is telescopical, one section 1<sup>b</sup> being of sleeve or tubular form. This tubular form 1<sup>b</sup> is slotted, as at 6, or otherwise formed to admit a series of liners 7, and the end of section 1<sup>a</sup> of the extension-rod is or may be flattened, as at 6<sup>a</sup>, to securely support the said liners.

7 7, &c., indicate a series of liners or shims so arranged with relation to the sections of the extension connecting-rod as to fall by gravity and successively between the abutting portions 1<sup>c</sup> 1<sup>d</sup> of said sections as the same are gradually separated by increased excessive movements of the brake-levers. It is evident that these liners or shims might be simply housed in a box projection on the sleeve 1<sup>b</sup>, as indicated in dotted line, Fig. 4, and many other ways may be employed by the skilled mechanic to maintain the proper relation of the liners to the abutting portions of the two sections 1<sup>a</sup> 1<sup>b</sup>; but I prefer to form the liners or shims with offsets 7<sup>a</sup>, having eyes through which passes a pintle-rod 8, by which the said levers are pivoted to the sleeve opposite the slot 6, and in order to facilitate the withdrawal of the liners when desired I prefer to provide them with projections 7<sup>b</sup> opposite the pivots.

The upper end of the lazy lever or dead lever D' may be permanently fixed in the adjustment of the brakes in the usual or any approved manner, but is preferably adjustably secured, as indicated at 9, and the power is connected with the live lever D by the usual pull-rod P or in any other suitable way. The construction being substantially such as hereinbefore specified, the devices will operate as follows:

The initial relation of the parts constituting the adjuster is as follows: The upper end of the lever D' is fixed, as before specified, the inner end 1<sup>c</sup> of the rod-section 1<sup>a</sup> abuts against the bottom 1<sup>d</sup> of the sleeve-section 1<sup>b</sup>, and the liners 7 7, &c., are all elevated and rest upon the flat surface 6<sup>a</sup> near the inner end of rod-section 1<sup>b</sup>. The brake-heads C C are at such distance from the tread of the wheel that the movement of lever D in applying the brakes will cause the pin 5 thereon to traverse only the length of slot 4<sup>a</sup> in link 4 without actuating the link 4 and without rocking or moving shackle 3. So long as there is no slack to be taken up and no material wear of the brake-shoes the parts re-

tain their relative position; but as the wear on the shoes proceeds and slack is formed the live lever D moves through a greater space than its normal movement, in order to bring the shoes up to the wheels. When this excessive movement occurs, the pin 5 on the lever D moves the link 4 just in proportion to said excess, the link 4 rocks the shackle 3, so as to first lift it out of positive engagement with supplemental rod 2, and simultaneously moves it toward the end of said rod a distance equal to said excessive movement of lever D. On the release of the brakes the return movement of the lever D carries the pin 5 to the reverse end of slot 4<sup>a</sup> and at the same time permits the shackle 3 to grip the supplemental rod 2, and the continued movement of the lever D back to its normal position causes the link 4, shackle 3, and supplemental rod 2 (or equivalent secondary connection) to move back with it, thus forcing the sections 1<sup>a</sup> 1<sup>b</sup> of the extension-rod 1 apart until the distance between the abutting parts 1<sup>c</sup> 1<sup>d</sup> will admit a liner or shim 7 to drop between the sections and take up the slack. On the next movement of the lever D in applying the brakes it will only move through the fixed or prearranged distance, and as there is no excessive movement of said lever there will be no increase in the extension of the rod 1. When the wear on the brake-shoes again permits an excessive movement of the brake-lever the operation above recited will be repeated, and a second liner or shim 7 will drop in between the abutting ends of the sections of the extension-rod, and so on until all the liners are exhausted.

Among the advantages of the present invention are the compactness, strength or rigidity, and simplicity of the structure, which especially fits it for inside brakes (which have therefore been chosen for purposes of illustration) where a compact device and one not likely to buckle under compressive force is required.

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

1. In a slack-adjuster for brakes, the combination, with brake-levers, of a sectional extension-rod which connects said levers, a secondary connection between one of the sections of said rod and one of said levers, said secondary connection arranged to extend or draw out the connecting-rod, and liners or shims arranged at the abutting ends of the rod-sections, substantially as and for the purposes specified.

2. In a slack-adjuster for brakes, the combination, with brake-levers, of a telescoping connecting-rod having a sleeve-section slotted near its bottom, a series of liners arranged in the slot and adjacent to the abutting portions of the said telescoping sections, and a secondary connection between one of said telescoping sections and one of the brake-levers, said secondary connection arranged to extend or



draw out the connecting-rod, substantially as and for the purposes specified.

3. In a slack-adjuster for brakes, the combination, with brake-levers, of a telescoping connecting-rod having a slotted sleeve-section, liners or shims pivotally connected with the sleeve-section opposite the slot, and a secondary connection between one of the telescoping sections and one of the brake-levers, substantially as and for the purposes specified.

4. In a slack-adjuster for brakes, the combination, with brake-levers, of a telescoping connecting-rod composed of rod-section and a slotted sleeve-section, a series of liners or shims, and a secondary connection between one of the brake-levers and one of the sections of the connecting-rod, said secondary connection composed of supplemental rod secured to the main rod-section, a shackle, and a slotted link connected with one of the brake-levers,

substantially as and for the purposes specified.

5. In a slack-adjuster for brakes, the combination, with brake-levers, of the sectional extension-rod composed of rod-section and slotted sleeve-section, a series of liners pivotally connected with the sleeve-section adjacent to the slot thereof, supplemental rod secured to the main rod-section, a shackle arranged on the supplemental rod, and a slotted link connection between the shackle and one of the brake-levers, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 1st day of January, 1891.

ELISHA D. EAMES.

Witnesses:

L. C. DOOLITTLE,  
H. H. AYERS.