

No. 624,285.

Patented May 2, 1899.

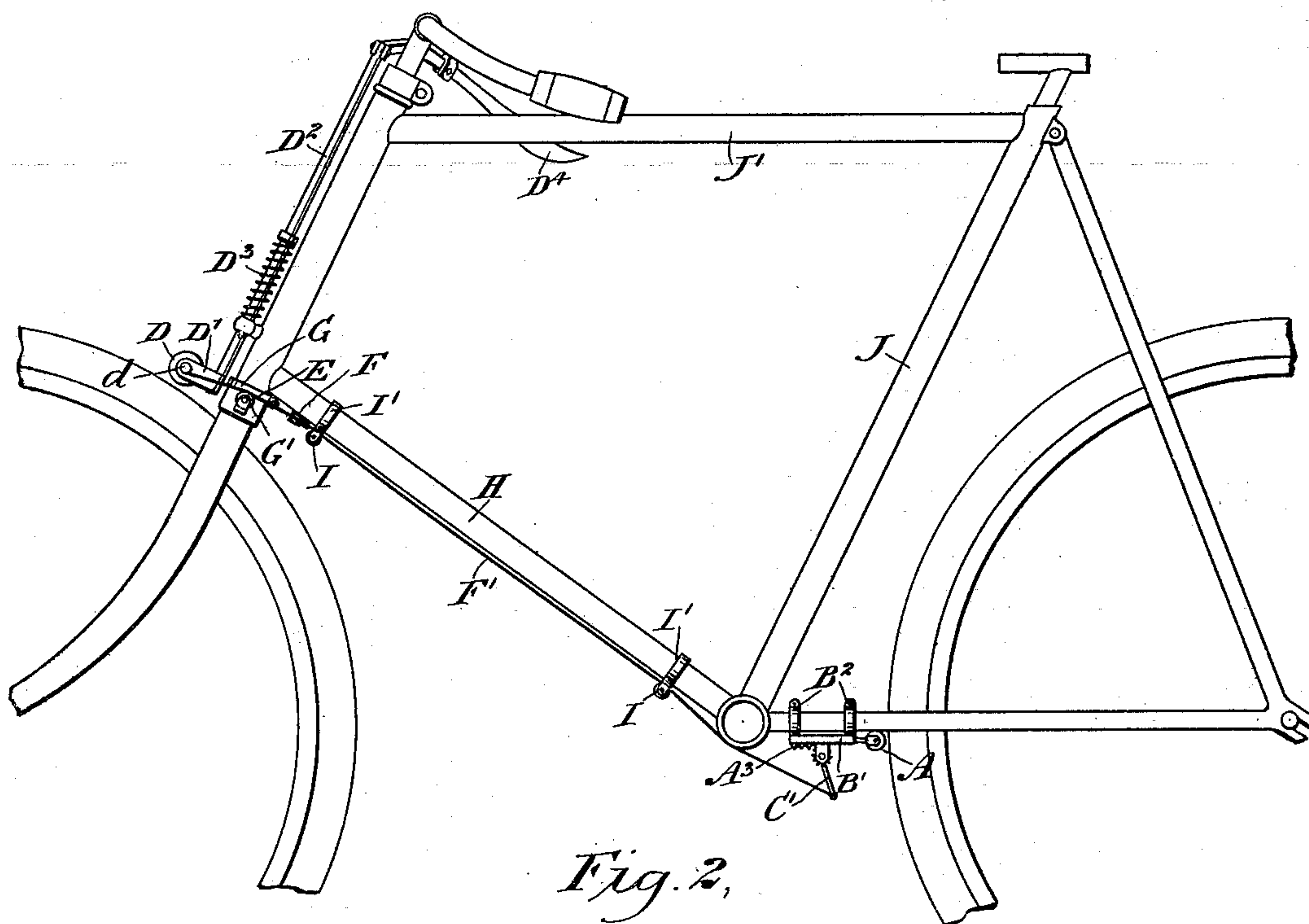
O. O. ZIMMERMAN.  
BICYCLE BRAKE.

(Application filed Mar. 23, 1898.)

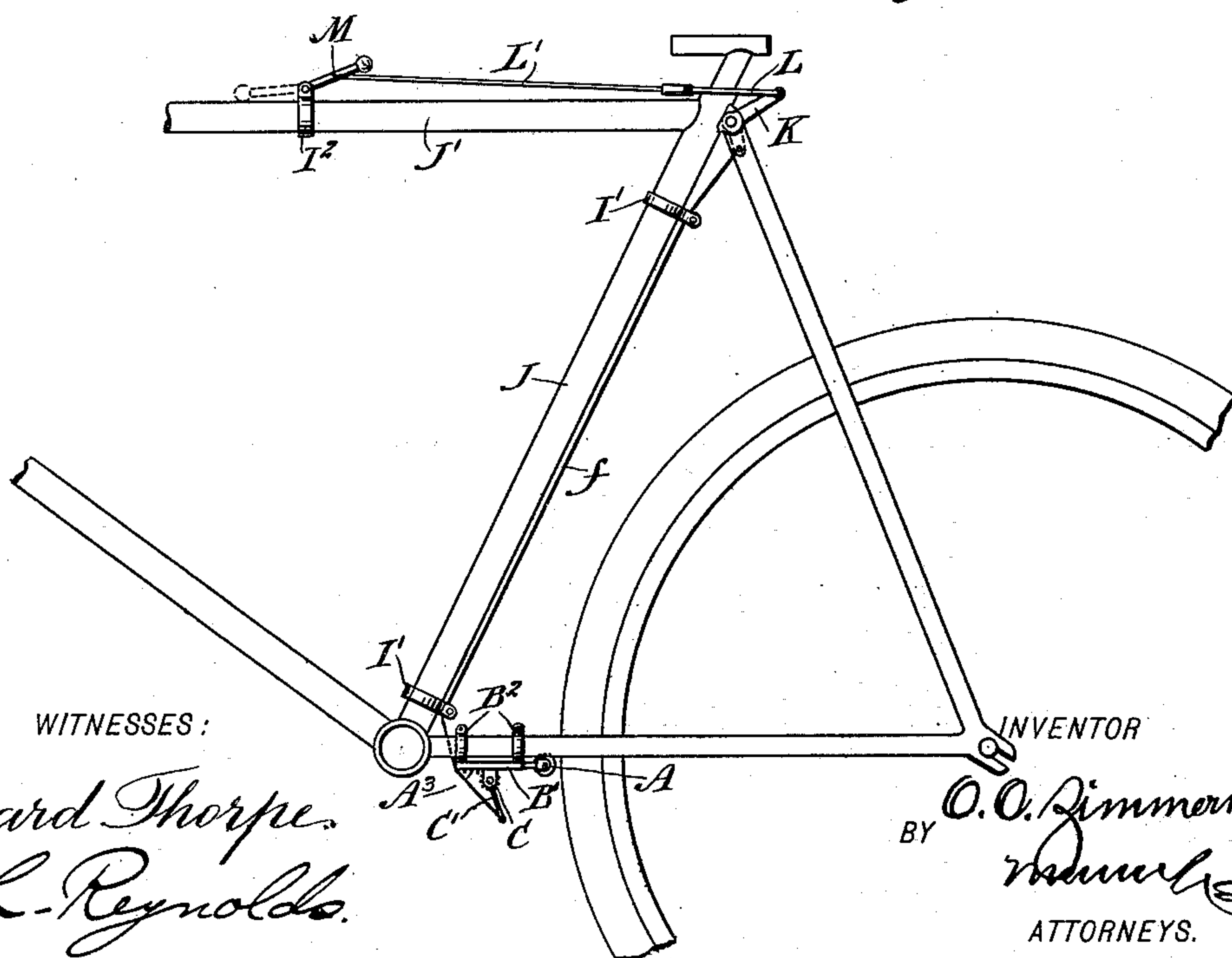
(No Model.)

2 Sheets—Sheet 1.

*Fig. 1.*



*Fig. 2.*



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2 Sheets—Sheet 2.

Fig. 3,

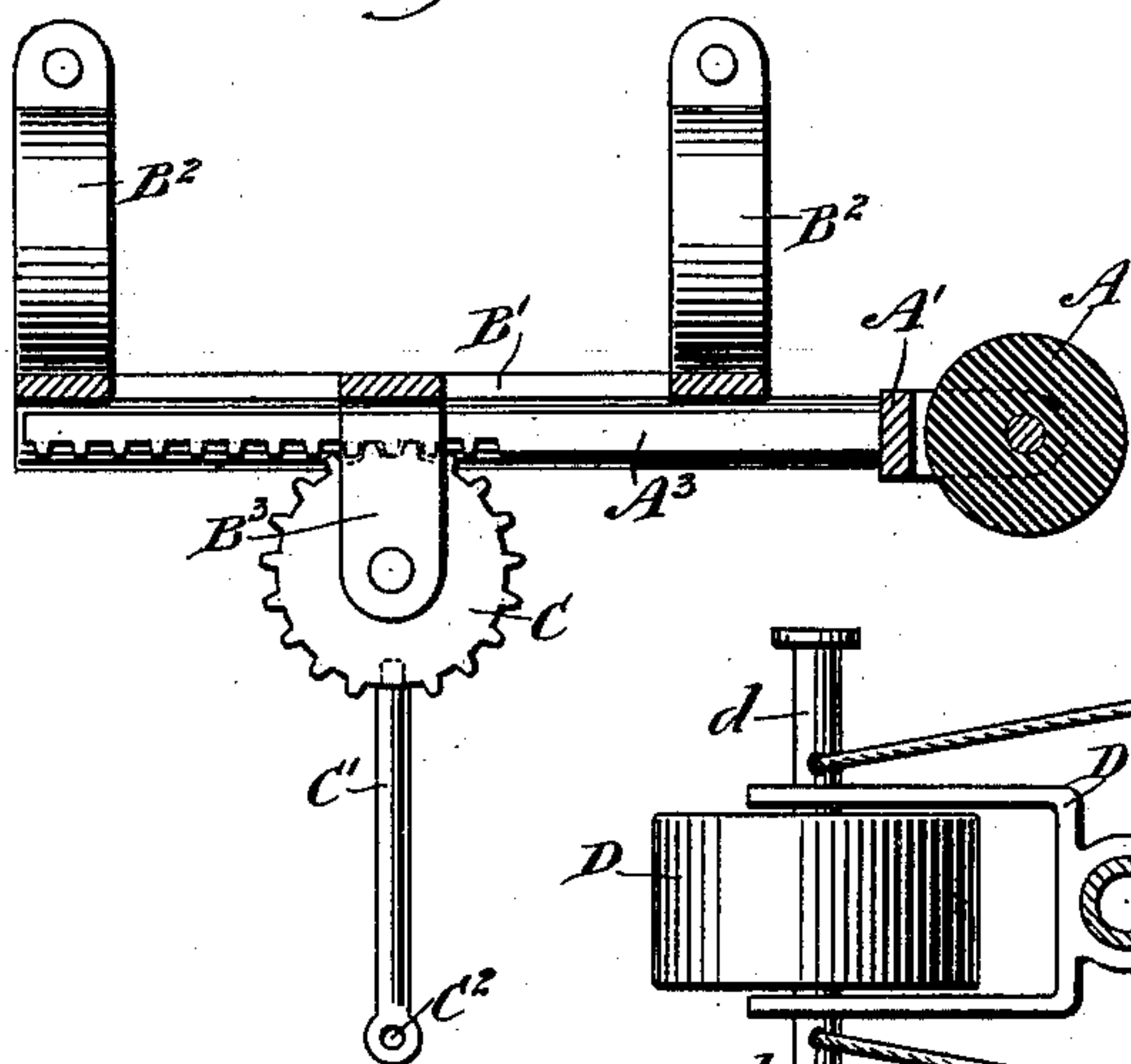


Fig. 5,

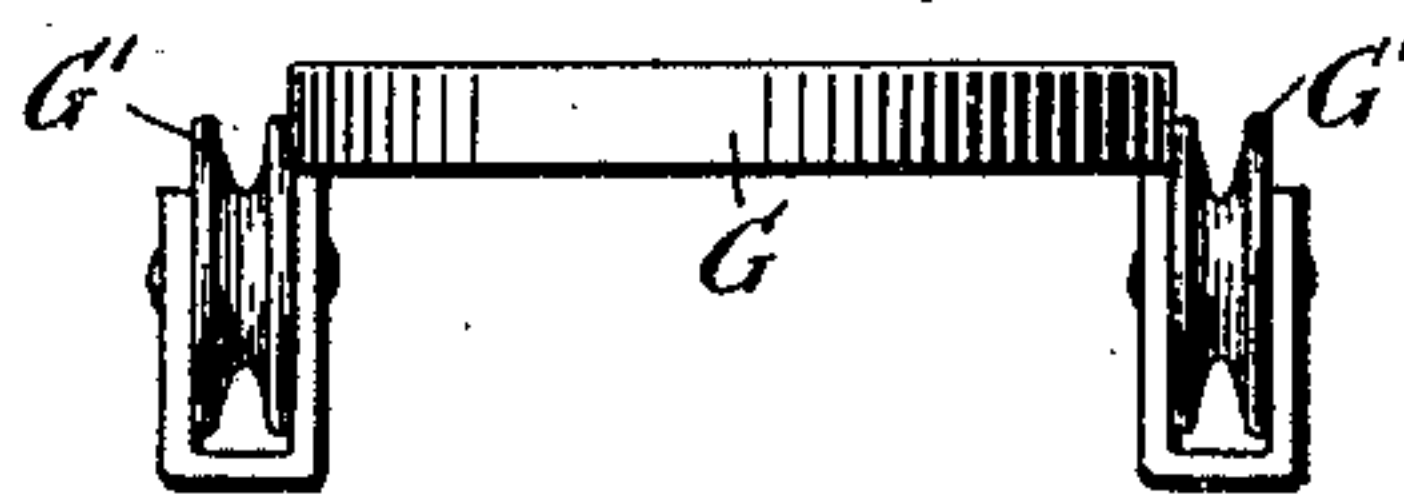


Fig. 6,

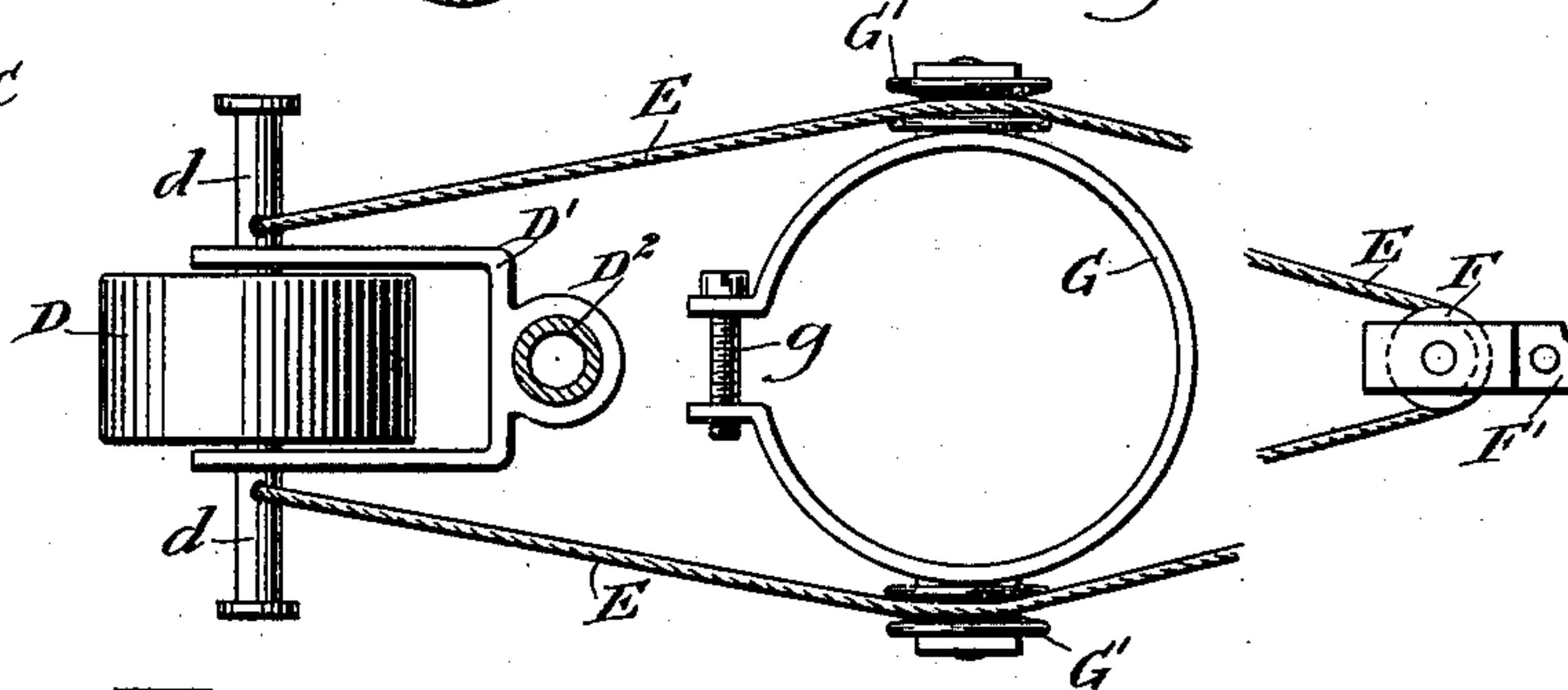


Fig. 4,

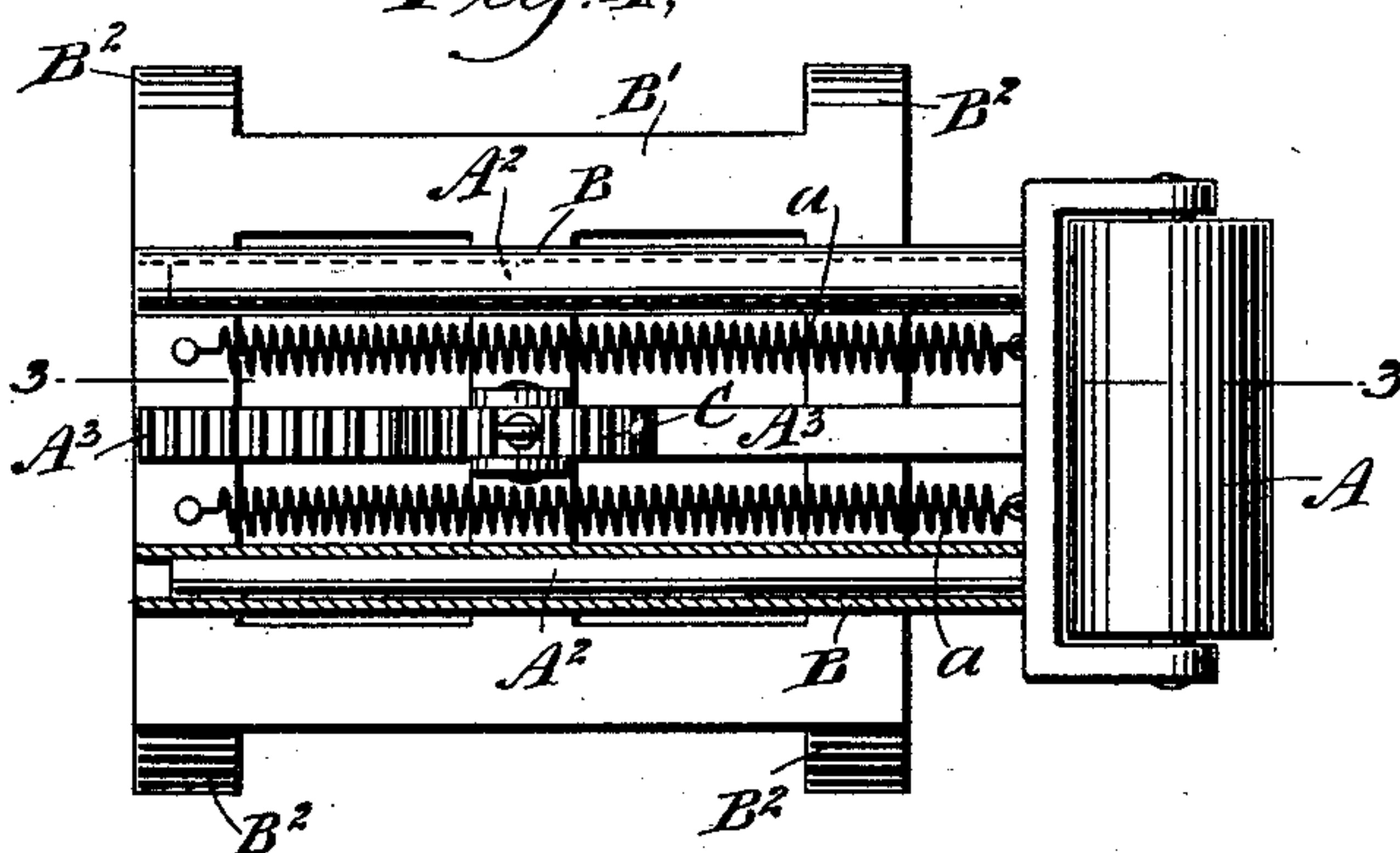


Fig. 7,

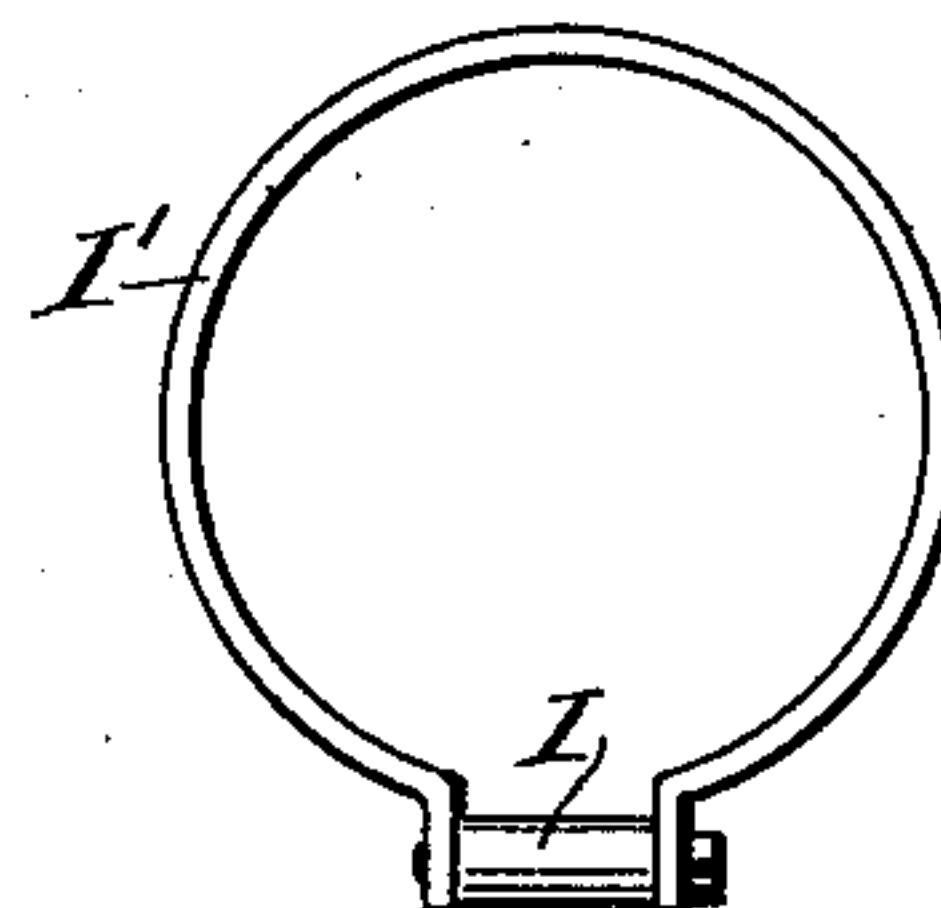


Fig. 8,

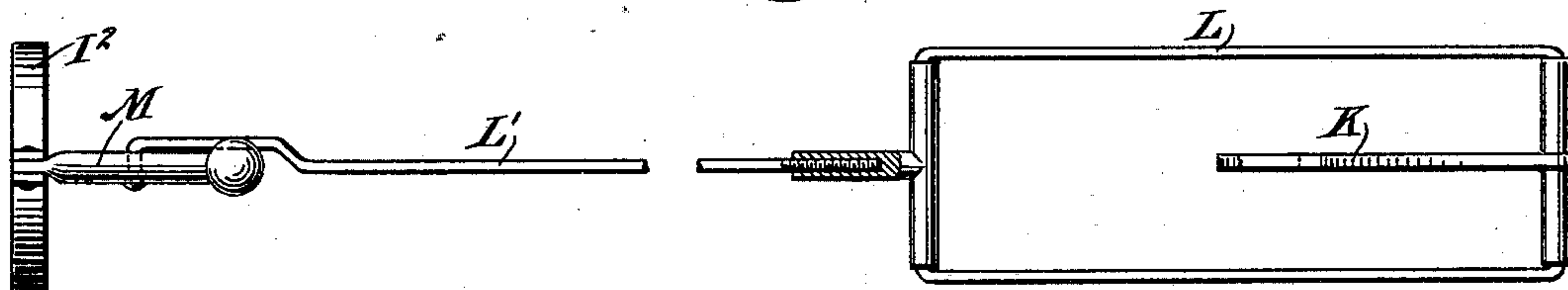
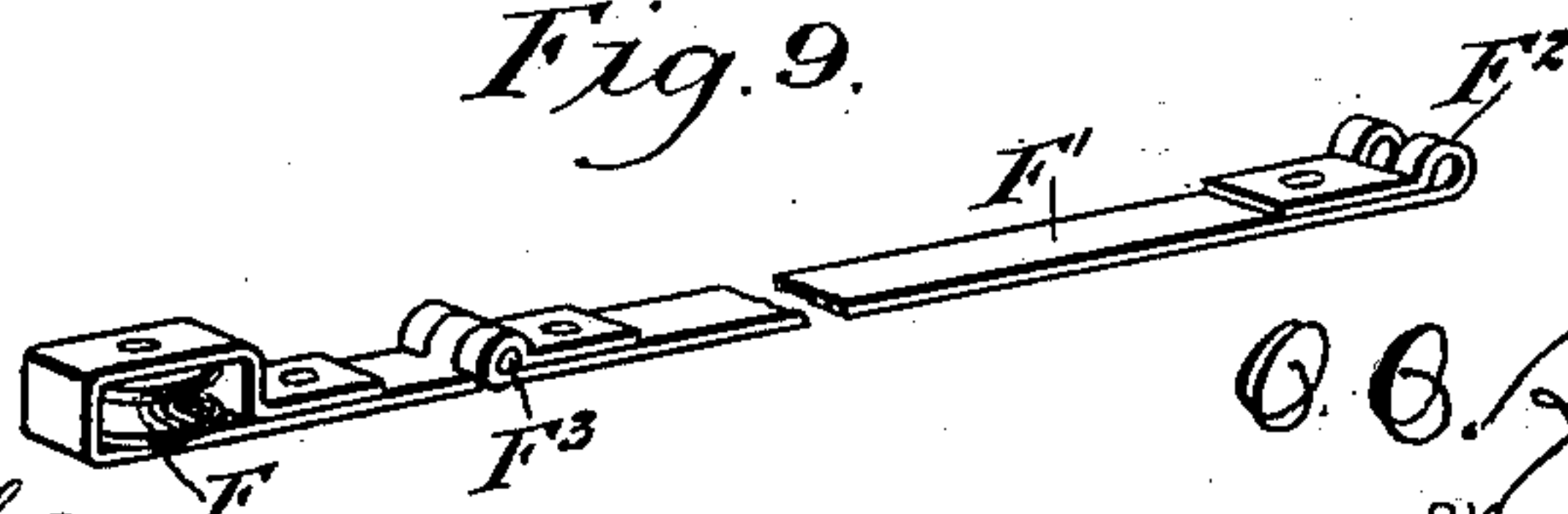


Fig. 9,



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# UNITED STATES PATENT OFFICE.

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## BICYCLE-BRAKE.

SPECIFICATION forming part of Letters Patent No. 624,285, dated May 2, 1899.

Application filed March 23, 1898. Serial No. 674,915. (No model.)

*To all whom it may concern:*

Be it known that I, OTTO O. ZIMMERMAN, of New York city, borough of Manhattan, in the county and State of New York, have invented a new and Improved Bicycle-Brake, of which the following is a full, clear, and exact description.

My invention relates to improvements in bicycle-brakes; and it consists of the novel features of construction which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a bicycle, showing the manner of attaching my brake thereto. Fig. 2 is a similar view showing a modified construction of the same. Fig. 3 is a sectional side elevation showing the rack-bar, a pinion, and the brake-shoe. Fig. 4 is a bottom plan view of the same. Fig. 5 is a front elevation of the idler-pulleys over which the flexible connector passes and by which the brake is operated. Fig. 6 is a top plan view showing the pulley by which the brake is operated and its connections. Fig. 7 is a band which is secured through the seat-mast for the modified form of construction shown in Fig. 2. Fig. 8 is a top plan view of the levers for operating the brake in the form shown in Fig. 2, and Fig. 9 is a broken perspective view of the steel band used as a connection between the power-pulley and the brake.

My invention consists of two principal parts—first, the brake mechanism proper, which is located upon the forward portion of the lower rear braces, and the operating mechanism, which in the preferred form consists of the roller adapted to be engaged with the tire of the front wheel.

The first part—namely, the brake mechanism proper—will be first described. This consists of a roller A, which is mounted loosely upon a spindle and supported in a frame A'. This frame has rods A<sup>2</sup> extending forward within guides B, said guides being mounted upon a plate B', adapted to be secured to the forward end of the lower rear braces by clamps B<sup>2</sup>, which surround said braces. This plate B' is secured to the under side of these braces

and so that the guides B, which contain the rods A<sup>2</sup>, extend forward and rear of the bicycle. Between the rods A<sup>2</sup> upon the frame A' is a rack-bar A<sup>3</sup>, which is provided with teeth upon the lower side thereof. This is engaged by a pinion C, which is mounted upon lugs B<sup>3</sup>, extending downward from the plate B'. To this pinion is attached an arm or lever C', provided with a hole C<sup>2</sup> in its outer end, adapted to receive a pin and by which the operative connection is made. Connected to the frame A' and to the forward end of the frame B' are springs a, which are adapted to draw the friction-roller A away from the tire of the rear wheel. It is evident that if the lower end of the arm or lever C' be drawn forward its engagement with the rack-bar A<sup>3</sup> will force the friction-roller A into engagement with the tire of the rear wheel, and thus act as a brake. This brake mechanism may be operated by a number of different devices. The preferred form is shown in Fig. 1. This form comprises a roller D, which is mounted in a frame D', said frame being attached to the lower end of a plunger-rod D<sup>2</sup>, mounted in the usual manner upon the head of the bicycle-frame. This is normally held raised from the tire of the front wheel by means of a spring D<sup>3</sup> and is depressed by means of a lever D<sup>4</sup>, the same being of the construction common to the ordinary plunger-brake.

The exact mechanism by which the roller is operated to be brought into engagement with the front-wheel tire is immaterial. This roller has spindles d, projecting from one or both sides thereof. To these spindles is attached a flexible connector E, of any suitable construction, so that when the roller is revolved this connector is wound upon the spindles d, and is thus drawn forward. As shown in Fig. 6, this connector is doubled, with the ends attached to the ends of the spindles and with the center thereof passing over a roller F, mounted in the forward end of a steel ribbon F', which extends along the under side of the lower angle member H of the bicycle-frame. Fastened to the lower end of the said steering-head is a ring G, which is open at one side and is secured in place by a bolt g. Pivoted upon this ring, so as to lie one upon each side of the head, are the idler or guide



rollers G', over which the cord or connector E passes. The steel ribbon F', to which the cord E is attached, is held in place close against the under side of the rod H of the frame by means of pulleys I, mounted upon bands I', which are secured to each end of the member H. The lower end of the ribbon F' is provided with eyes F<sup>2</sup>, adapted to embrace the end of the operating-lever C' and to be secured thereto by a pin passing through said eyes and the hole C<sup>2</sup> in the end of the lever. The ribbon F' may, if desired, be provided with a hinged joint, as shown at F<sup>3</sup>, located near the forward end thereof.

It is evident that if the roller D be depressed to engage the forward wheel of the bicycle it will be revolved and the cord E will be wound upon the spindles d. This will result in applying a pull to the ribbon F', and thus to swing the lever C' so as to force the friction-roller A against the tire of the rear wheel. The principal braking action will be upon the rear wheel, although there will be some braking action due to the contact of the roller D upon the tire of the forward wheel. The amount of power necessary to apply this brake is very small, as all that is required is simply enough to hold the roller D in slight engagement with the tire of the forward wheel. The principal power for applying the brake comes from the revolution of the roller D.

A modified construction for operating the brake is shown in Fig. 2. For this case a ribbon f is carried along the rear side of the seat-mast J, being held in place by rollers secured in bands I', similar to that described for the ribbon F'. At its upper end it is attached to a bell-crank lever K, pivoted upon a frame, and this bell-crank lever is connected by a double link L, which extends upon each side of the saddle-post to a wire or similar connector L'. The latter is connected at its forward end with a lever M, pivoted upon a band I<sup>2</sup>, secured on the upper horizontal bar J' of the frame. When in the position shown by full lines in Fig. 2, the brake is not applied. When the lever M is thrown forward to the position shown by the dotted lines in Fig. 2, the bell-crank lever K is operated so as to pull upward upon the band f, and thus to swing forward the rod or lever C' and apply the brake. The pivot for the lever M being located at a slight elevation above the body of the tube J', it will be thrown a little below the line of draft, so that when thrown forward it will retain that position until released by being lifted up.

It is evident that the steel tape or other device used to transmit power from the lever or the roller A to the brake may be carried through the frame-tubing, if desired. This, however, will not affect the principle of my invention, which lies in the operating means described and not in the location of the connecting-bands.

Having thus fully described my invention,

I claim as new and desire to secure by Letters Patent—

1. A brake, comprising a frame provided with clamps for securing it in position and with tubular guides, a frame having a roller mounted in one end and provided with rods working in the tubular guides and with a rack-bar between the said rods, springs having their ends secured to the said frames, a pinion carried by the supporting-frame and meshing with the rack, and an operating-lever secured to the pinion, substantially as described.

2. A bicycle-brake, comprising a supporting-frame provided with means for securing it to a bicycle-frame, and with guideways, a spring-pressed frame mounted to slide in the guideways of the supporting-frame, and provided with a central rack, a braking-surface at one end of the sliding frame, a pinion carried by the supporting-frame and meshing with the rack, a lever secured to the pinion, and means for operating the said lever, substantially as shown and described.

3. In a bicycle-brake, a sliding and spring-actuated frame provided with a roller and adapted to be secured to the bicycle-frame so that the roller may contact with the rear wheel, a rack and pinion for operating the said frame, a lever for operating the pinion, a roller mounted to engage the front wheel and having its spindle extended at each side, means for operating the roller, and a flexible connection connected with the lever for operating the pinion and adapted to be wound on the extensions of the spindle of said roller, substantially as described.

4. A bicycle-brake, comprising a plunger mounted in guides beneath the lower rear braces of the frame and adapted to move toward and from the rear wheel, a brake-shoe and a rack secured to said plunger, a pinion engaging said rack and having a lever attached, a roller adapted to be engaged with the front wheel and revolved thereby, a spindle revolved by said roller, and a flexible connector attached to the said spindle and wound thereon when the roller is revolved, and at its other end attached to the pinion-lever, substantially as described.

5. A bicycle-brake, comprising a plunger mounted in guides beneath the lower rear braces of the frame and adapted to move toward and from the rear wheel, a brake-shoe and a rack secured to said plunger, a pinion engaging said rack and having a lever attached, a plunger mounted upon the steering-head and having a roller attached thereto and adapted to engage the front tire, a brake-lever for operating said plunger, a spindle revolved by said roller and a flexible connector attached to said spindle and wound thereon when the roller is revolved, and at its other end attached to the pinion-lever, substantially as described.

6. In a bicycle-brake, the combination with a sliding and spring-actuated frame provided



with a brake-shoe, said frame being adapted to be secured to the bicycle-frame so that its shoe will engage the rear wheel, and a rack and pinion for sliding said frame, of a roller  
5 mounted to engage the front wheel and having its spindle extended at each side, a sliding bar or ribbon connected with the said pinion and provided with a roller at its forward end, and a flexible connection passed

around the roller of the bar or ribbon and having its ends secured to the projecting ends of the spindle of the said roller, substantially as described.

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Witnesses:

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