

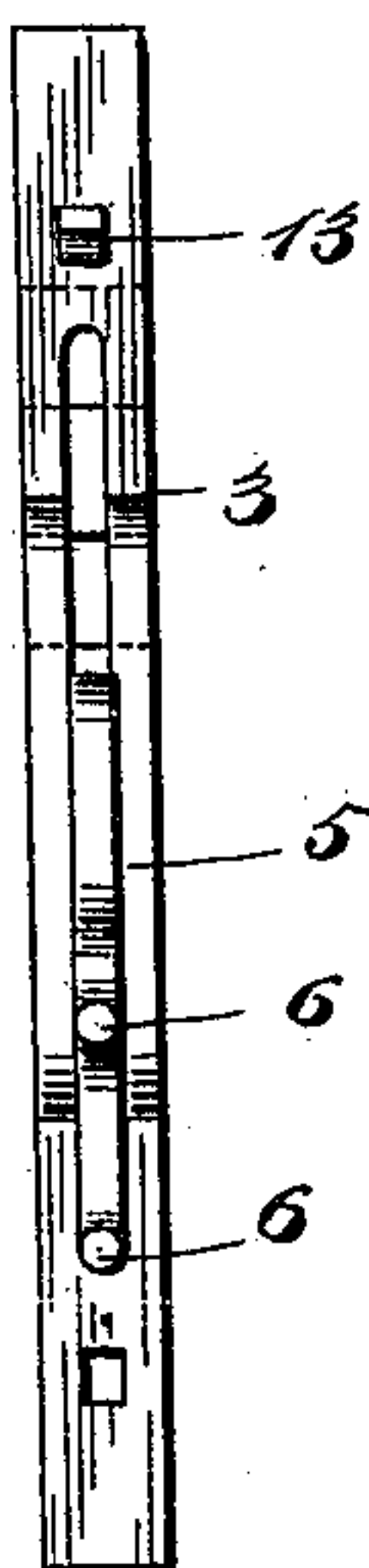
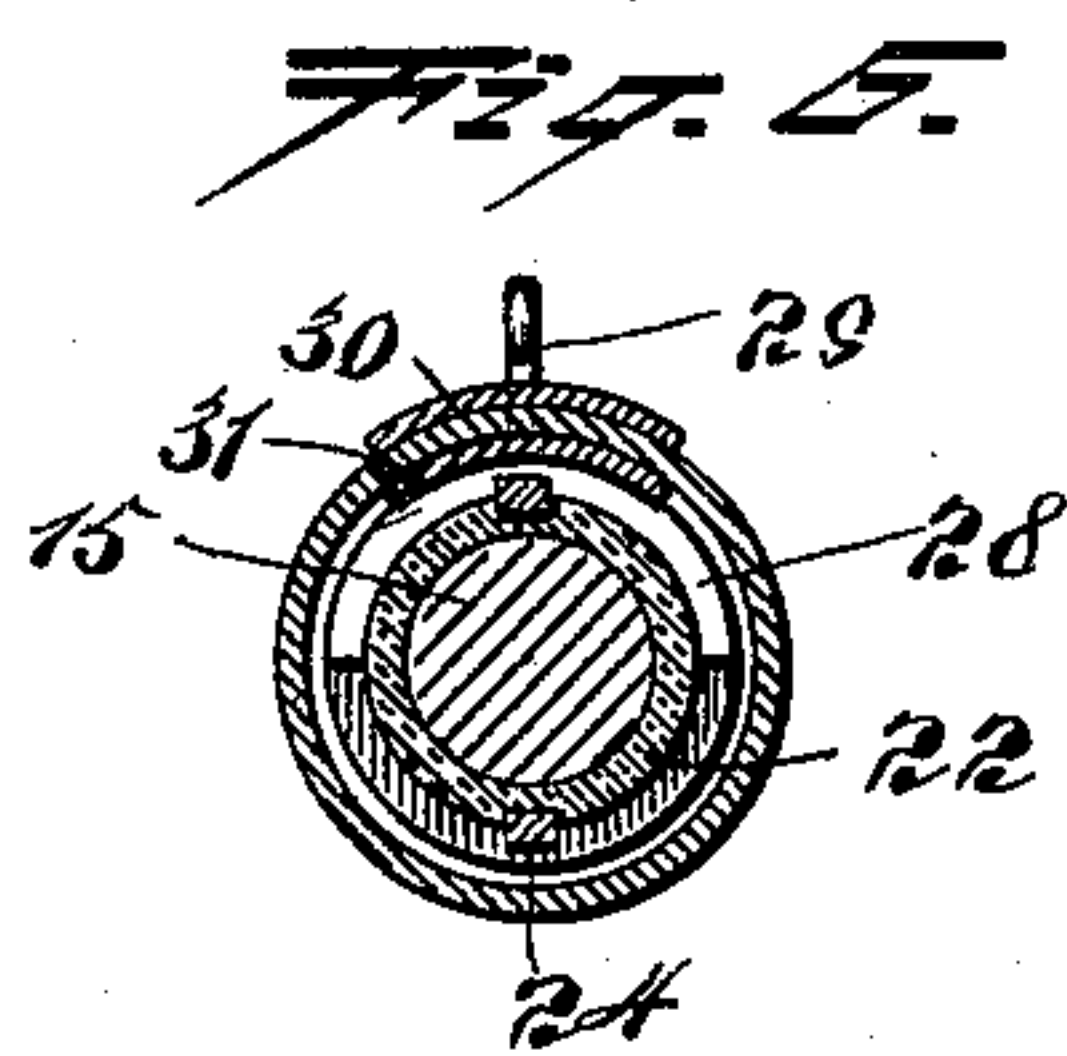
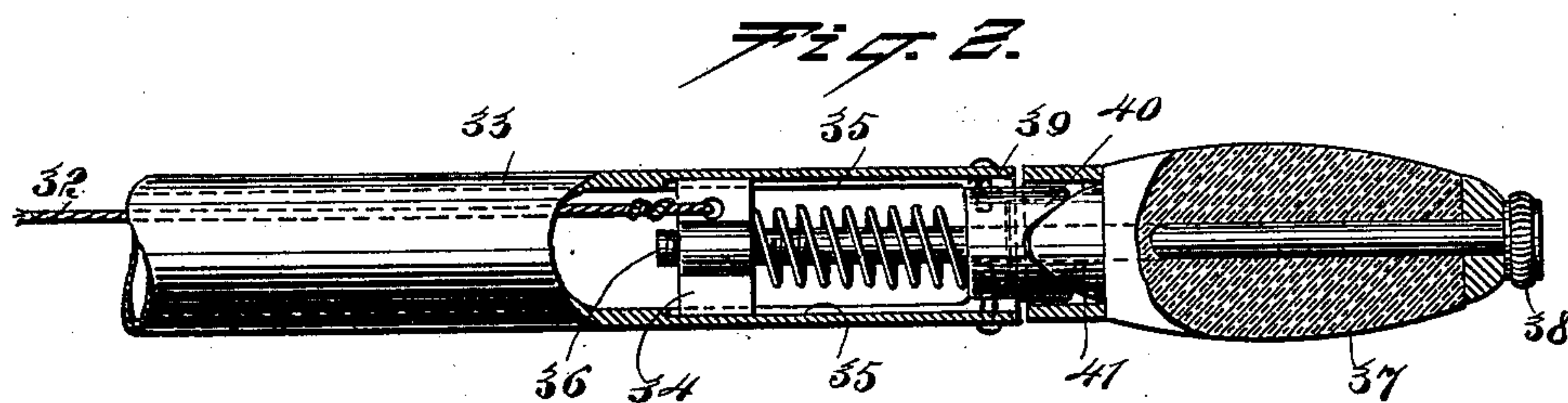
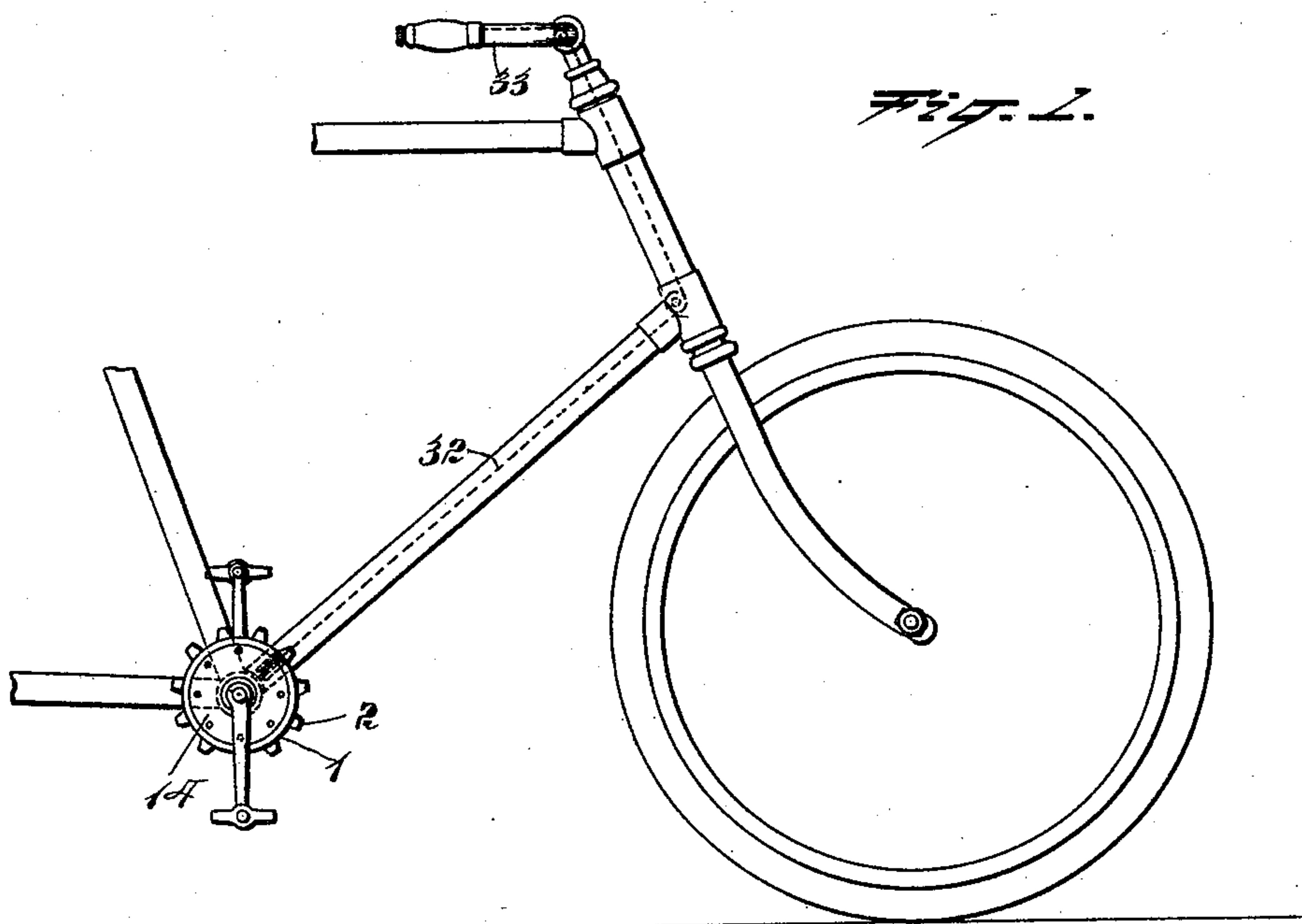
(No Model.)

2 Sheets—Sheet 1.

F. J. COOMBS.
BICYCLE BRAKE.

No. 587,185.

Patented July 27, 1897.



WITNESSES:
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3.

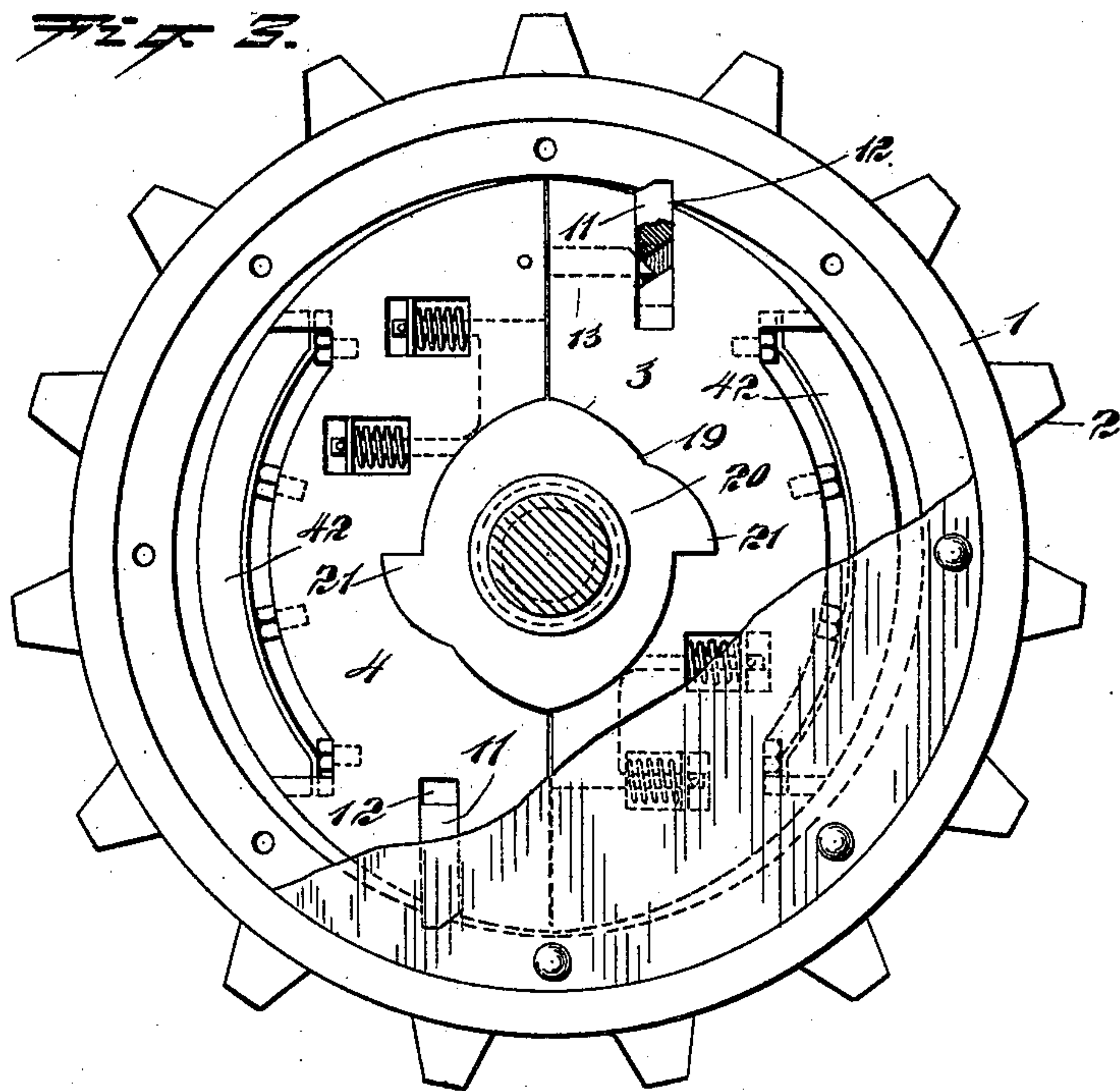


Fig. 4.

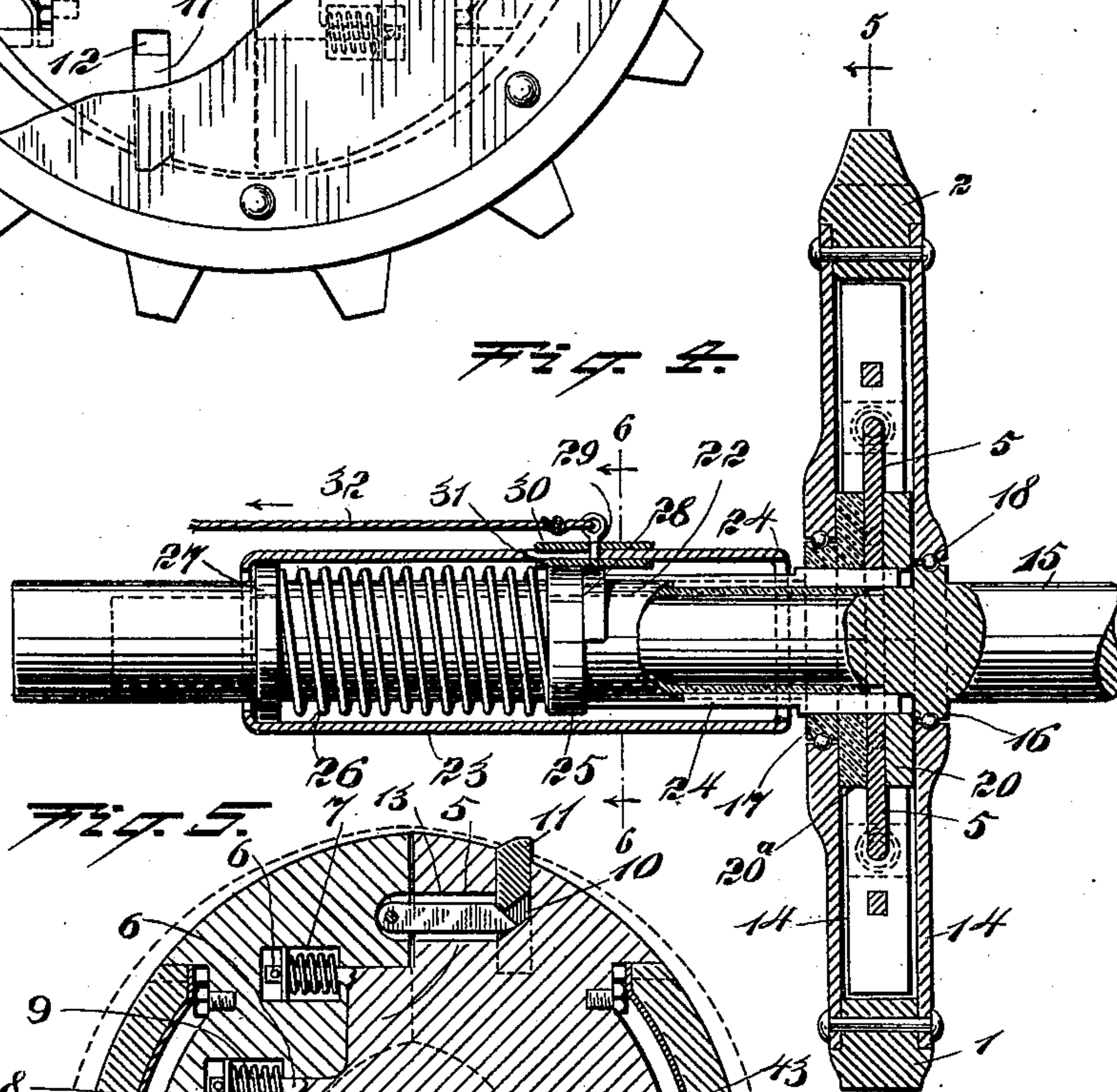
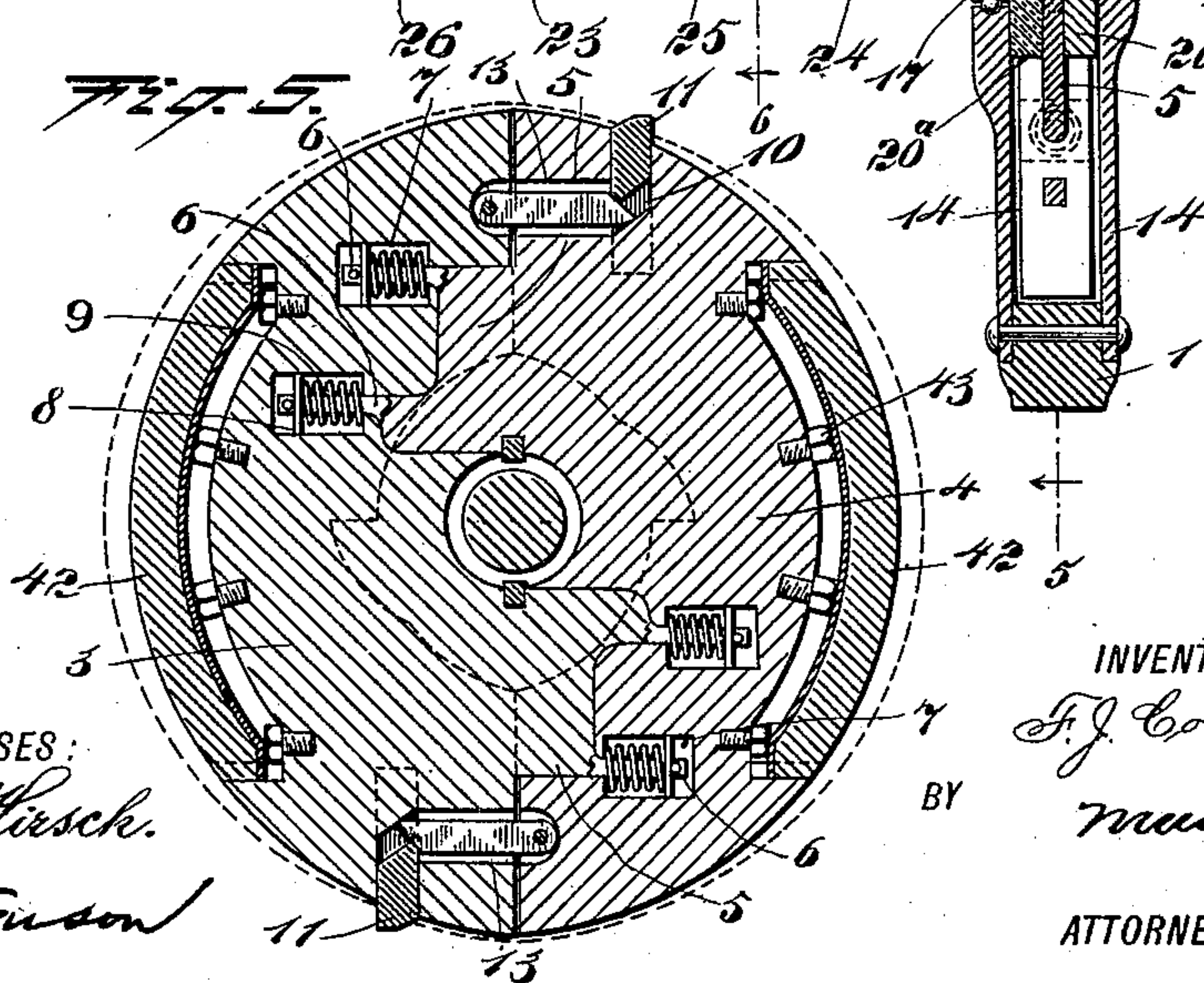


Fig. 5.



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UNITED STATES PATENT OFFICE.

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BICYCLE-BRAKE.

SPECIFICATION forming part of Letters Patent No. 587,185, dated July 27, 1897.

Application filed February 3, 1897. Serial No. 621,849. (No model.)

To all whom it may concern:

Be it known that I, FRANK J. COOMBS, of Columbia Falls, in the county of Flathead and State of Montana, have invented new and useful Improvements in Bicycle-Brakes, of which the following is a full, clear, and exact description.

This invention relates to brakes for bicycles or similar wheeled vehicles; and the object is to provide a brake mechanism in connection with the pedal-shaft and sprocket-wheel that may be easily and quickly set to braking position by back pressure on the pedals, and, further, to so construct the device that the sprocket-rim may rotate freely relatively to said shaft and of course while the pedals are at rest.

I will describe a bicycle-brake embodying my invention, and then point out the novel features in the appended claims.

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 views.

Figure 1 is a side elevation of a portion of a bicycle and showing a brake mechanism embodying my invention as applied thereto. Fig. 2 is a longitudinal section of a portion of the handle-bar, showing means for disconnecting the brake from the pedal-shaft. Fig. 3 is a side elevation of the sprocket-rim and the brake mechanism therein. Fig. 4 is a cross-section thereof. Fig. 5 is a section on the line 5 5 of Fig. 4. Fig. 6 is a section on the line 6 6 of Fig. 4, and Fig. 7 is an inner edge view of one of the brake-shoes employed.

Referring to the drawings, 1 designates a sprocket-rim having sprocket-teeth 2 thereon, with which the drive-chain leading to the rear wheel is designed to engage. The brake is arranged within the sprocket-rim, and it comprises two shoe-sections 3 4. When these two shoe-sections 3 and 4 are in their normal position or with their adjacent edges close together, the contour will be somewhat elliptical, as plainly indicated in Fig. 5. Each shoe, at its inner edge, has a tongue 5, engaging in a recess formed in the other shoe. The tongue of a shoe is provided with pins 6, which pass through openings in the other shoe and

into an enlarged recess 7. The inner ends of the pins 6 engage with an abutment 8, against which one end of a coiled spring 9 bears, the other end of said spring bearing against the inner end wall of the recess 7. These springs will serve to hold the shoes yieldingly together.

Mounted to slide outward in peripheral recesses 10 in the shoes are dogs 11, designed to engage in notches 12, formed in the inner periphery of the sprocket-rim. These dogs 11 are forced outward to engage in the notches 12 when the shoe-sections are moved together. For this purpose I provide the respective shoes at their inner edges with pivoted pins 13. The pin 13 of one shoe is movable in an opening in the other shoe and has an inclined end to engage against the inner portion of the dog 11 of the other shoe, as plainly indicated in Fig. 5—that is, when the shoes are moved together by means of the springs 7 the pins 13 will force the dogs 11 outward, so that they may engage in the notches 12 of the sprocket-rim. When, however, the dogs are separated, by means hereinafter to be described, the dogs 11 will be moved inward by their contact with the rim.

Secured to each side of the rim 1 is a cover 14 made in the form of a ring and designed to rotate on the pedal-shaft 15. As here shown, I have provided the pedal-shaft 15 with collars 16 and 17. These collars 16 and 17 are each provided with an annular groove, in which is seated a series of antifriction-balls 18, which also engage in annular grooves formed in the ring-shaped covers 14. These covers 14 are designed principally to inclose the brake mechanism, but it is obvious that they will, to a great extent, prevent the entrance of dust and dirt.

The shoes on their opposite faces and at their inner edges are provided with recesses having a cam-shaped wall 19. The recesses of one shoe of course are in alinement with the recesses of the other shoe. In these recesses are seated cam-wheels 20 and 20^a, each having opposite curved or cam-shaped teeth 21. These cam-wheels 20 20^a are designed at certain times to be locked together, so that both will rotate with the pedal-shaft, and at

other times to be disconnected, so that the sprocket-rim may rotate freely with relation to the shaft.

I will now describe the means for locking and releasing these cam-wheels. The inner cam-wheel 20^a is rigidly attached to the collar 17, and extended from this collar 17 is a sleeve 22, which surrounds the shaft 15 and extends inside the hub-lining 23. This tube 22 is in fact a part of the shaft, and it is provided on opposite sides with longitudinal channels in which key-pins 24 are movable. These key-pins are designed to project through openings in the collar 17, the cam-wheel 20^a, the tongues 5, and into holes in the cam-wheel 20. The opposite ends of these pins are attached to a ring 25, mounted to slide on the sleeve 22. A coiled spring 26 surrounds the sleeve 22 and bears at one end against the ring 25 and at the opposite end against a collar or similar device 27, attached to the sleeve 22. This spring, therefore, is designed to force the key-pins into place.

A yoke 28 engages over a portion of the sleeve 22 and bears against the ring 25 at the side opposite that engaged by the spring 26. This yoke 28 has a stem 29, extended outward through a slot formed in the hub-lining 23. I have here shown a plate 30, engaging on the outer side of the hub-lining 23 and a plate 31, engaging against the inner side of the hub-lining, and through these plates the stem 29 is passed. A cord or similar flexible connection 32 is secured at one end to the stem 29 and passes through the tubular portions of the bicycle-frame and into the tubular handle-bar 33, where it is connected to a block 34, designed to slide longitudinally of the handle-bar. This block 34 has lateral projections or wing portions engaging in longitudinally-disposed grooves 35 in the inner surface of the handle-bar, so that said block may be moved longitudinally of the handle-bar, but will be prevented from rotating therein. The block 34 is provided with a tapped hole in which the screw-threaded end of an adjusting-rod 36 extends outward through the hand-grip 37, and is provided with a milled head 38, by means of which it may be rotated to adjust the block within the handle-bar, so that a greater or less pull may be exerted upon the flexible connection 32.

In the end of the handle-bar 33 is a cam-block 39, having a cam-shaped notch 40 in its end, into which a lug 41 on the inner end of the hand-grip 37 engages. By this construction it will be seen that by slightly rotating the hand-grip 37 in either direction the block 34 will be drawn toward the end of the handle-bar, and this, of course, by drawing upon the flexible connection 32, will move the ring 25 along the tube 22 and draw the key-pins 24 out of engagement with the cam-wheel 20, which is rigidly attached to the shaft 15, and also out of engagement with the tongues 5.

A brake-block 42 of suitable material is attached to the periphery of each shoe 34.

As here shown each shoe is provided with a segment-shaped recess in its edge, and in this recess the block 42 is seated and is adapted to move. The ends of the block are provided with grooves which engage over tongues to form the end walls of the segmental recesses. As the outer surface of these brake-blocks 42 is subject to considerable wear, it is necessary that they should be adjusted at times. For this purpose I have shown screws 43 engaging in the shoes and bearing against the inner sides of the brake-blocks. These inner sides will preferably be provided with a strip of hard metal—such, for instance, as steel. Obviously when a brake-block is worn, it may be taken out and the screws 43 turned slightly outward and then the block replaced.

When a rider is pedaling to move the bicycle forward, the parts will be in the position indicated in Fig. 3—that is, the dogs 11 will be in engagement with the shoulders formed on the inner side of the sprocket-rim and the key-pins 24 will be in engagement with the cam-wheel 20. Therefore all the parts will move with the rotary movement of the pedal-shaft. When it is desired to apply the brake, the rider will draw the pins 24 out of engagement with the wheel and give a back pressure to the pedals, and this will cause the cam projections 21 to force the shoes outward and the blocks 42 against the inner periphery of the sprocket-rim. When the shoes are thus spread apart, the pins 13 will release the dogs 11, and as their outer ends are slightly beveled the momentum of the rim will force the dogs inward and the increased back pressure on the pedals will gradually stop the rim. When a rider desires to coast down a hill, he will draw the key-pins 24 out of engagement with the wheel 20 in the manner before described and hold the shaft still by means of his feet on the pedals, and then the rim may rotate relatively to the shaft; but in this case there should be no back pressure on the pedals sufficient to apply the brake.

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

1. A brake for a bicycle or similar wheeled vehicle, comprising a sprocket-rim having shoulders formed on its periphery, brake-shoes arranged in said rim and having recesses on opposite sides provided with cam-walls, a pedal-shaft, a cam secured to said pedal-shaft and engaging in the recesses at one side of the brake-shoes, a tube mounted to rotate on the shaft, a cam carried by said tube and engaging in the recesses of the opposite side of said brake-shoes, dogs carried by the brake-shoes, means for moving the same outward to engage notches formed in the sprocket-rim when the brake-shoe sections are moved together, and means for locking and releasing the cams, substantially as specified.

2. A brake for a bicycle or similar vehicle, comprising a sprocket-rim, brake-shoes ar-

ranged within the rim, a pedal-shaft, a cam on the pedal-shaft, for moving the shoe-sections apart, dogs movable in recesses formed in the periphery of the shoe-sections, pins on the shoe-sections, the pins of one section being adapted to engage with the dogs of the other section, for moving the same outward, and springs for drawing the said sections toward each other, substantially as specified.

3. A brake for a bicycle or the like, comprising a sprocket-rim, two shoe-sections arranged therein, each shoe-section having a tongue portion to engage in a recess formed in the other section, pins extended from said tongue portions into enlarged recesses in the shoe-sections, springs for drawing said pins inward, segmental brake-blocks on the shoe-sections, means for adjusting said blocks, and means for moving the shoe-sections from each other upon the movement of the pedal-shaft of the bicycle, substantially as specified.

4. A brake for a bicycle or the like, comprising a sprocket-rim, brake-shoe sections arranged in said rim, a pedal-shaft, a cam on the pedal-shaft engaging with cam portions of the shoe-sections, a tube mounted to rotate on the pedal-shaft, a cam carried by said tube and engaging with cam-surfaces on the shoe-sections, a ring movable on said tube, key-pins attached to said ring and movable through openings formed in the two cams, a spring rearward of the ring, and a connection between said ring and the hand-grip of a handle-bar, by means of which the ring may be drawn in one direction on the tube, substantially as specified.

5. A brake for a bicycle or the like, comprising a sprocket-rim, brake-shoes arranged therein, a pedal-shaft, collars on the pedal-

shaft, ring-shaped side plates secured to the sprocket-rim and having antifriction-bearings on the collars, one of said collars being movable on the shaft and the other being fixed thereto, a cam on the shaft, a cam on the movable collar, the said cams being adapted to move the shoe-sections from each other, a sleeve extended from the movable collar and engaging around the shaft, a ring movable on said sleeve, a spring for forcing the ring forward, key-pins extended from the ring and designed to engage through openings in the movable collar and the two cams, a yoke engaging against one side of the ring, a stem extended from said yoke through a slot-opening in the hub, a tubular handle-bar, a hand-grip mounted to rotate relatively to the handle-bar, and a connection between the stem of the yoke and said hand-grip, substantially as specified.

6. The combination with a pedal-shaft, of a brake mechanism comprising shoes and means for forcing the same against the interior of a sprocket-rim, a sprocket-rim around said shoes, a tubular handle-bar, a block mounted to slide therein, a block secured in the end of the tubular handle-bar and having a cam portion, a hand-grip having a cam portion engaging with the cam portion of the block secured in the end of the handle-bar, a locking mechanism for the brake, and a connection between said locking mechanism and the sliding block in the handle-bar, substantially as specified.

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Witnesses:

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MAIE VALENTINE.