

No. 607,968.

Patented July 26, 1898.

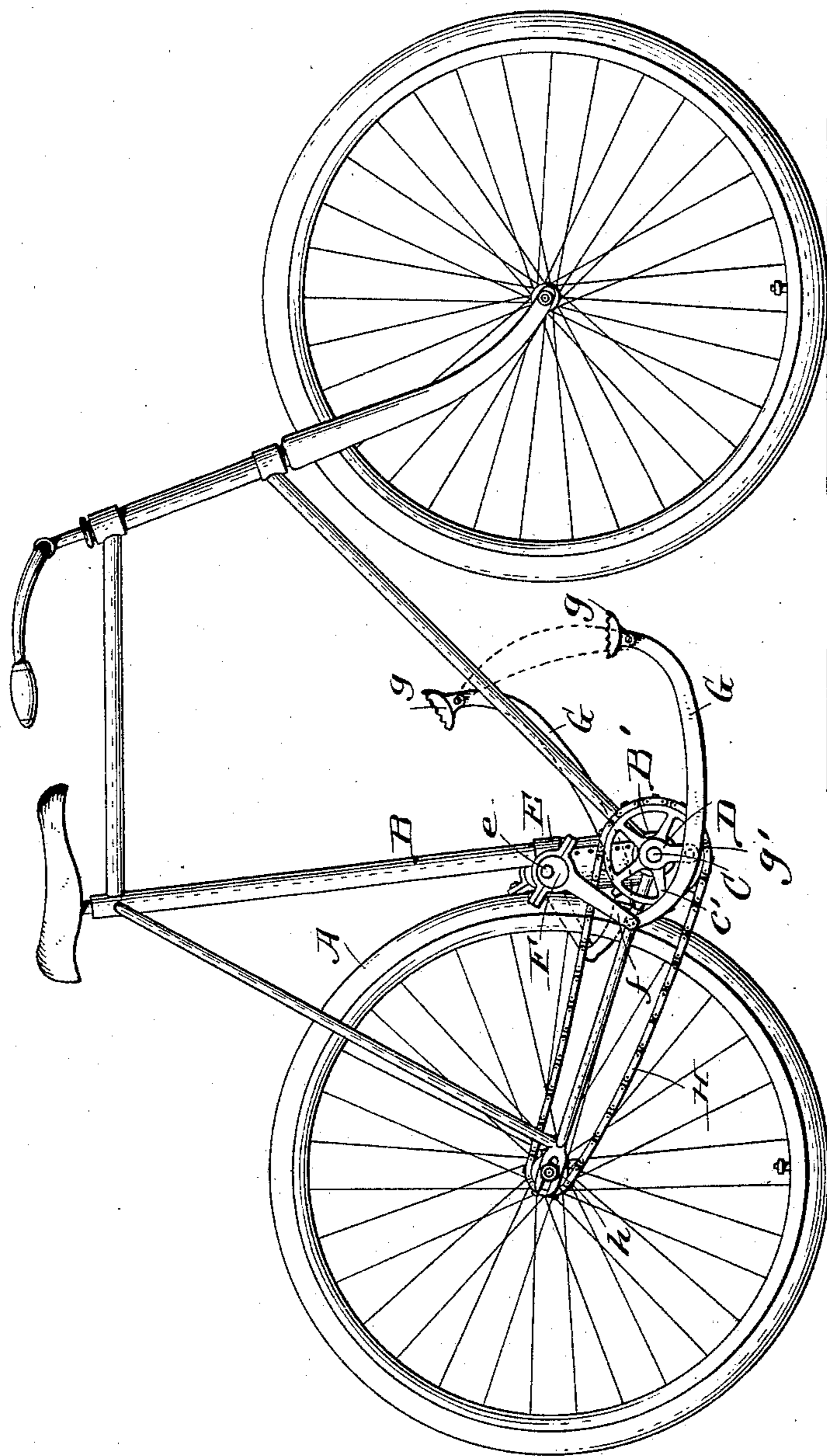
R. THOMPSON.
BICYCLE DRIVING MECHANISM.

(Application filed July 31, 1897.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



Witnesses: Richard Thompson Inventor.
Daniel Fuhr. By E. Neuhart & Co.,
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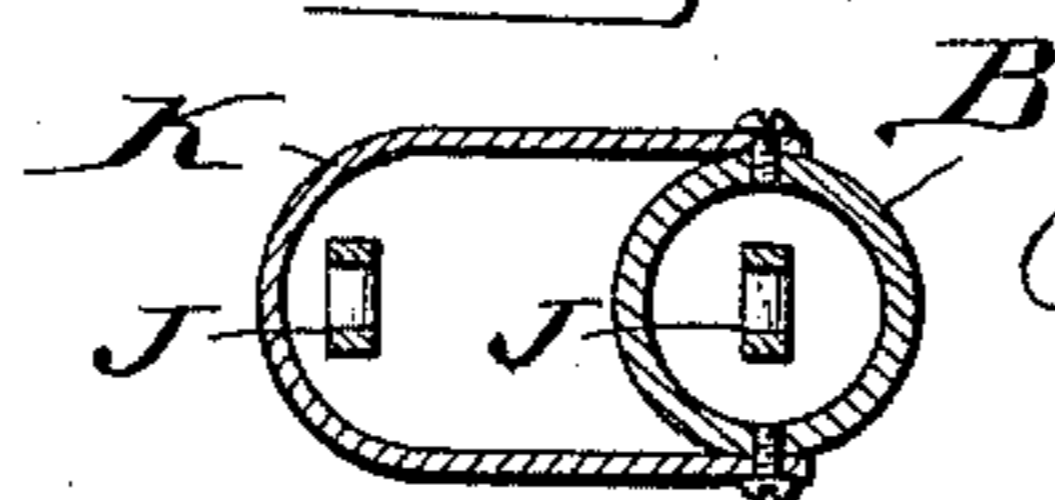
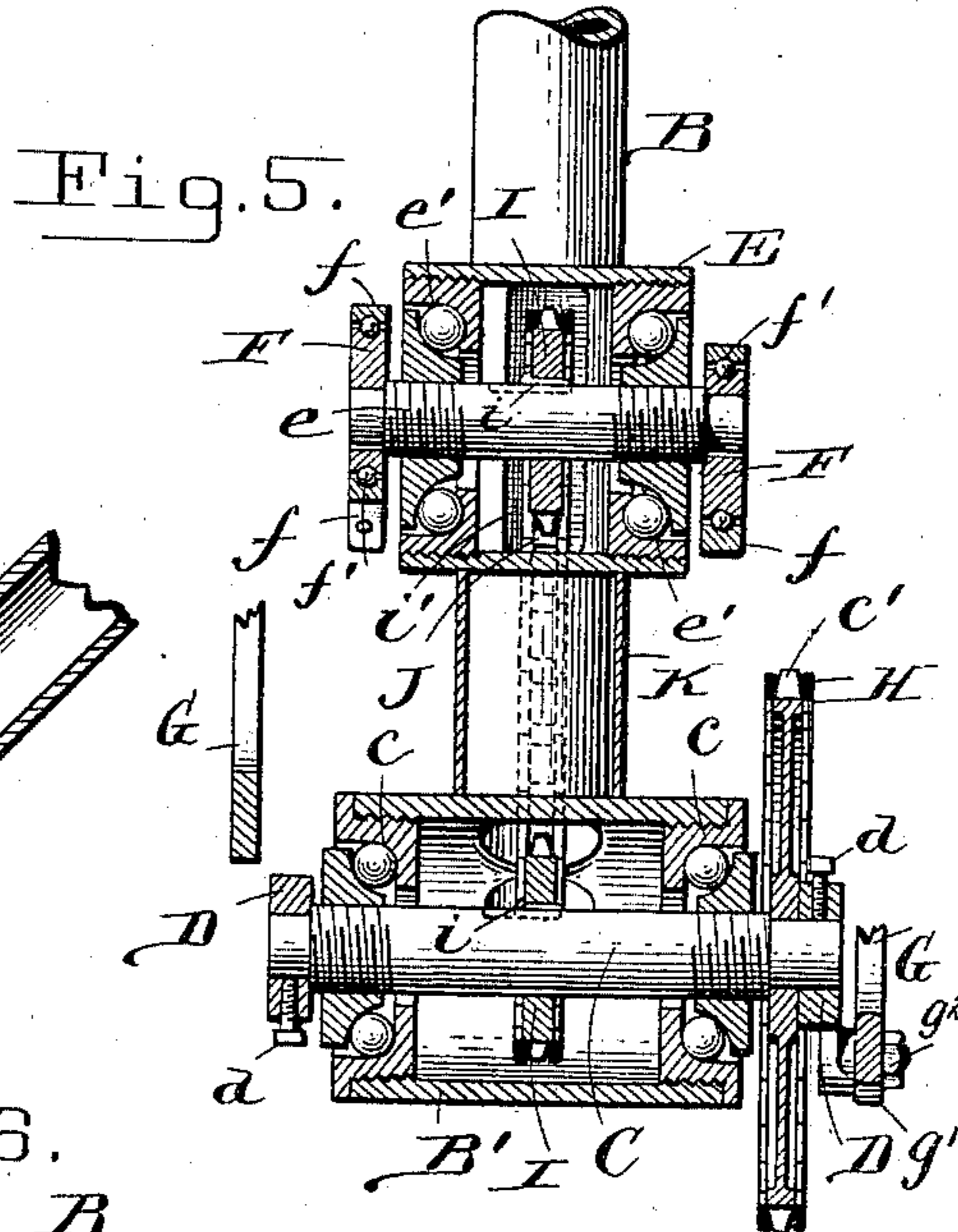
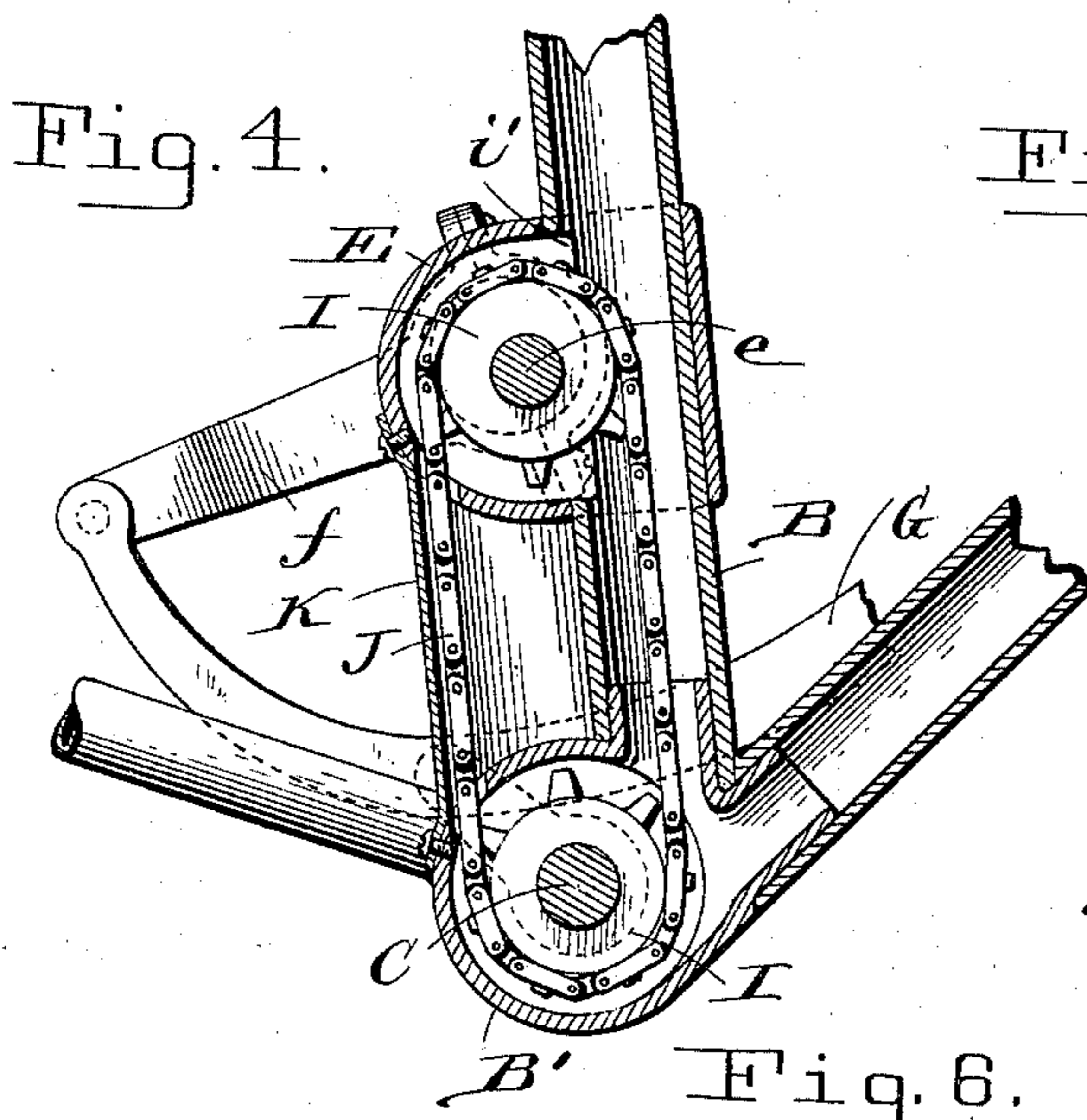
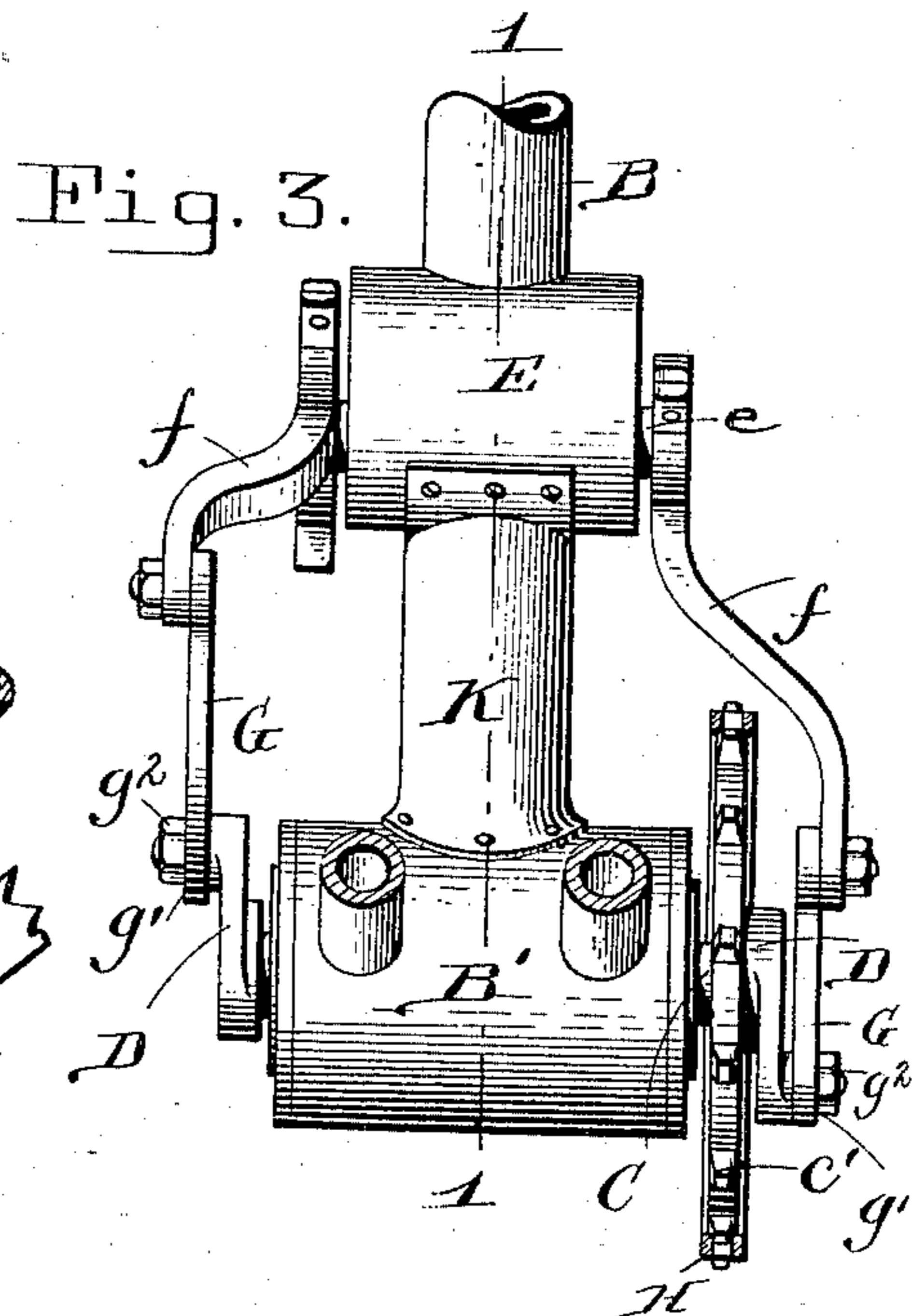
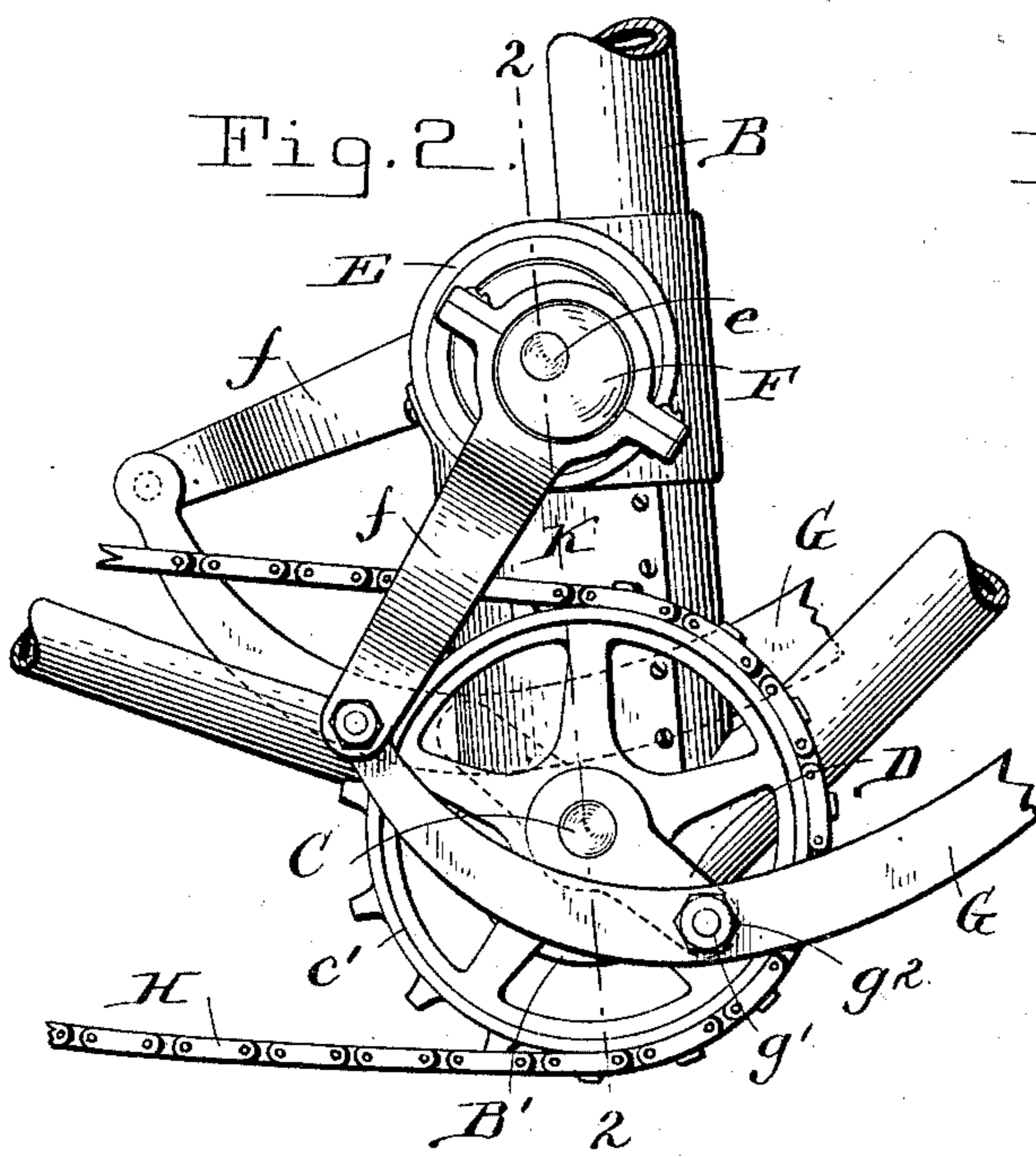
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2 Sheets—Sheet 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

RICHARD THOMPSON, OF BUFFALO, NEW YORK, ASSIGNOR OF ONE-HALF
TO JOHN F. WOLGAST, OF SAME PLACE.

BICYCLE DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 607,968, dated July 26, 1898.

Application filed July 31, 1897. Serial No. 646,640. (No model.)

To all whom it may concern:

Be it known that I, RICHARD THOMPSON, a subject of the Queen of Great Britain, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Bicycle Driving Mechanisms, of which the following is a specification.

This invention relates to driving mechanisms such as are usually employed in bicycles or other foot-driven vehicles.

My invention has for its object to provide a driving mechanism which is reliable and effective in its action and by means of which the space in which the operator's foot is compelled to travel is greatly diminished, at the same time giving increased leverage and consequently increased power.

The invention consists in the novel construction and combination of parts herein-after fully described, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 is a side elevation of a bicycle equipped with my improvements. Fig. 2 is an enlarged side elevation of the driving mechanism attached to a portion of the frame, the outer ends of the foot-levers being broken away. Fig. 3 is a rear view of the driving mechanism. Fig. 4 is a section taken on a plane indicated by line 1 1, Fig. 3. Fig. 5 is a transverse section taken on line 2 2, Fig. 2. Fig. 6 is a horizontal section through the saddle-post and the chain-inclosing chamber.

Reference is to be had to the accompanying drawings, in which like letters of reference refer to like parts in the several figures.

A represents the driving-wheel of the machine, and B the frame, having the usual crank-hanger or bracket B'.

C represents the crank-shaft, extending through the crank-hanger and journaled in antifriction-bearings c.

Secured to the shaft and adjacent to the crank-hanger is the sprocket-wheel c'. Crank-arms D are secured to the ends of the shaft by set-screws d. These crank-arms are arranged to extend in diametrically opposite directions.

Secured to the saddle-post of the frame, a

short distance above the crank-hanger is a bearing-box E, through which a shaft e passes. Eccentrics F are secured to the ends of the shaft e by means of keys or in any other well-known manner. The eccentric at one end of the shaft has its throw-line or largest portion from the center of the shaft arranged to extend in a diametrically opposite direction to the throw-line of the eccentric at the opposite end of the shaft. The shaft e is journaled in antifriction-bearings e', which may be of any approved construction.

Secured to and operated by the eccentrics F are the eccentric-arms f. Antifriction-balls f' are interposed between the working faces of the eccentrics and the eccentric-arms to reduce friction at this point.

Foot-levers G, provided at their outer ends with pedals g, are pivotally secured at their inner ends to the outer ends of the eccentric-arms f. These levers are also connected at a short distance from their inner ends to the outer ends of the crank-arms D, as at g'. This connection is made by means of studs or crank-pins passing through the levers, where they are held by the nuts g².

All moving and revolving parts of my device may be constructed with antifriction-balls in any approved form.

H is the driving-chain, which transmits motion from the sprocket-wheel e' to a sprocket-wheel h, secured to the hub of the driving-wheel A in the usual manner.

I I represents sprocket-wheels which are secured to the crank-shaft C and the eccentric-shaft e by means of keys i. The saddle-post is provided with a slot or opening i', through which the upper sprocket-wheel I projects. J is an endless transmission-chain which passes around the sprocket-wheels I I and transmits motion from the crank-shaft C to the eccentric-shaft e. This chain travels partly in the saddle-post and partly in rear of the same. This is done to bring the mechanism within a small compass.

K represents an inclosing chamber which is U-shaped in cross-section and which is adapted to inclose that portion of the chain J which is in rear of the saddle-post. By this construction the chain is unseen and a neat and compact structure is obtained.

The throw-lines or largest sides of the eccentrics extend in the same direction as the crank-arm D on the same side of the machine, as shown in the drawings.

5 By the construction of the device as above described increased leverage is obtained. Therefore a high-gear bicycle with this device can be operated with as much ease as a low-gear machine with the ordinary re-
10 volving pedal-cranks. It also brings the movement of the operator's legs more in the natural walking position. The operator's foot travels through less space for one revolution of the crank-shaft and the shaft can
15 be placed closer to the ground, thereby making the machine easy to mount and dismount and safe to ride.

The operation of this device is as follows: The foot-levers are fulcrumed to the outer
20 ends of the eccentric-arms and operate the crank-shaft. The crank-shaft by means of the endless chain revolves the eccentric-shaft and the eccentrics secured thereto, which latter turn in the upper ends of the eccentric-
25 arms. Said eccentric-arms receive a constantly-changing center from the eccentrics on which they rock, the chain passing around the sprocket-wheels on the crank-shaft and the eccentric-shaft keeps the throw-lines of
30 the eccentrics and the crank-arms in proper relation to each other.

Having thus described my invention, what I claim is—

35 1. In a bicycle, the combination with the machine-frame and the wheels, of a crank-shaft journaled in said frame, means for transmitting motion from the crank-shaft to one of said wheels, a shaft having eccentrics se-
40 cured thereto and journaled in bearings secured to the frame above said crank-shaft, eccentric-arms secured to and operated by said eccentrics, means for transmitting motion from the crank-shaft to said eccentrics, and foot-levers connected to the outer ends

of the crank-shaft and the eccentric-arms, 45 substantially as set forth.

2. The combination with the frame having a crank-hanger formed thereon, of a driving and driven wheel secured in said frame, a sprocket-wheel secured to said driving-wheel, 50 a crank-shaft having two sprocket-wheels secured thereon and journaled in said crank-hanger, an endless chain passing around one of the sprocket-wheels on the shaft and the sprocket-wheel on the driving-wheel, a shaft 55 located above said crank-shaft and having eccentrics and a sprocket-wheel secured thereon, an endless chain passing around the second sprocket-wheel on the crank-shaft and the sprocket-wheel on the eccentric-shaft, 60 arms connected to and operated by said eccentrics, and foot-levers provided with pedals secured to the outer ends of said arms and the crank-arms, substantially as set forth.

3. In a bicycle, the combination with the 65 frame having a crank-hanger secured thereto, of a shaft journaled in bearings located in said hanger, crank-arms secured to each end of said shaft, a sprocket-wheel secured to said shaft intermediate of said crank-arms, a bearing-box secured to the frame above said crank-hanger, a shaft journaled in said bearing-box 70 and having eccentrics secured to each end, a sprocket-wheel secured to said shaft intermediate of said eccentrics, an endless chain passing around said sprocket-wheel and the sprocket-wheel on the crank-shaft, eccentric-arms secured to and operated by the eccen- 75 trics, and foot-levers connected to the outer ends of the crank-arms and the eccentric-arms, 80 substantially as set forth.

In testimony whereof I have hereunto subscribed my signature on this 26th day of July, 1897.

RICHARD THOMPSON.

Witnesses:

DANIEL FUHR,

FRANK HOFFMANN.