

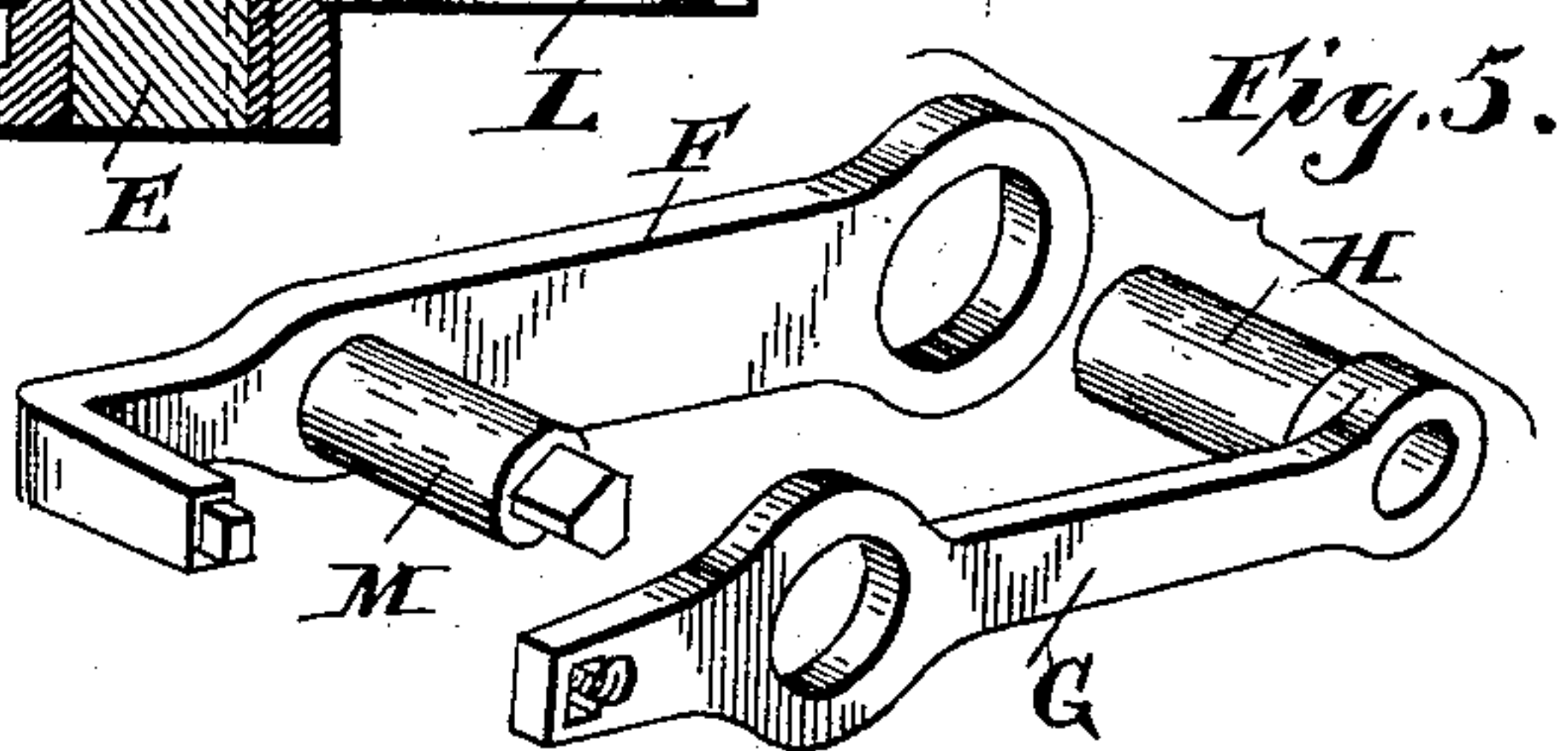
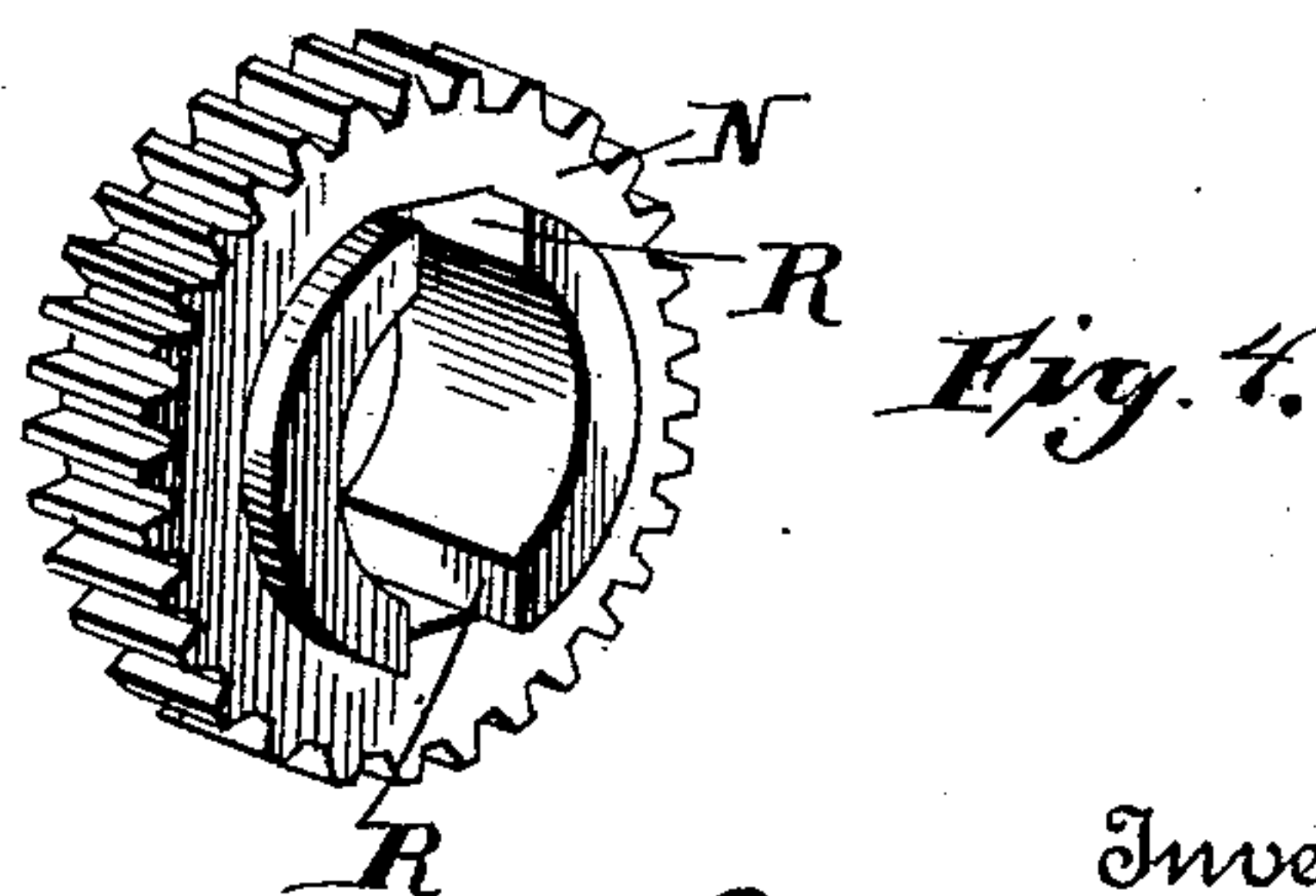
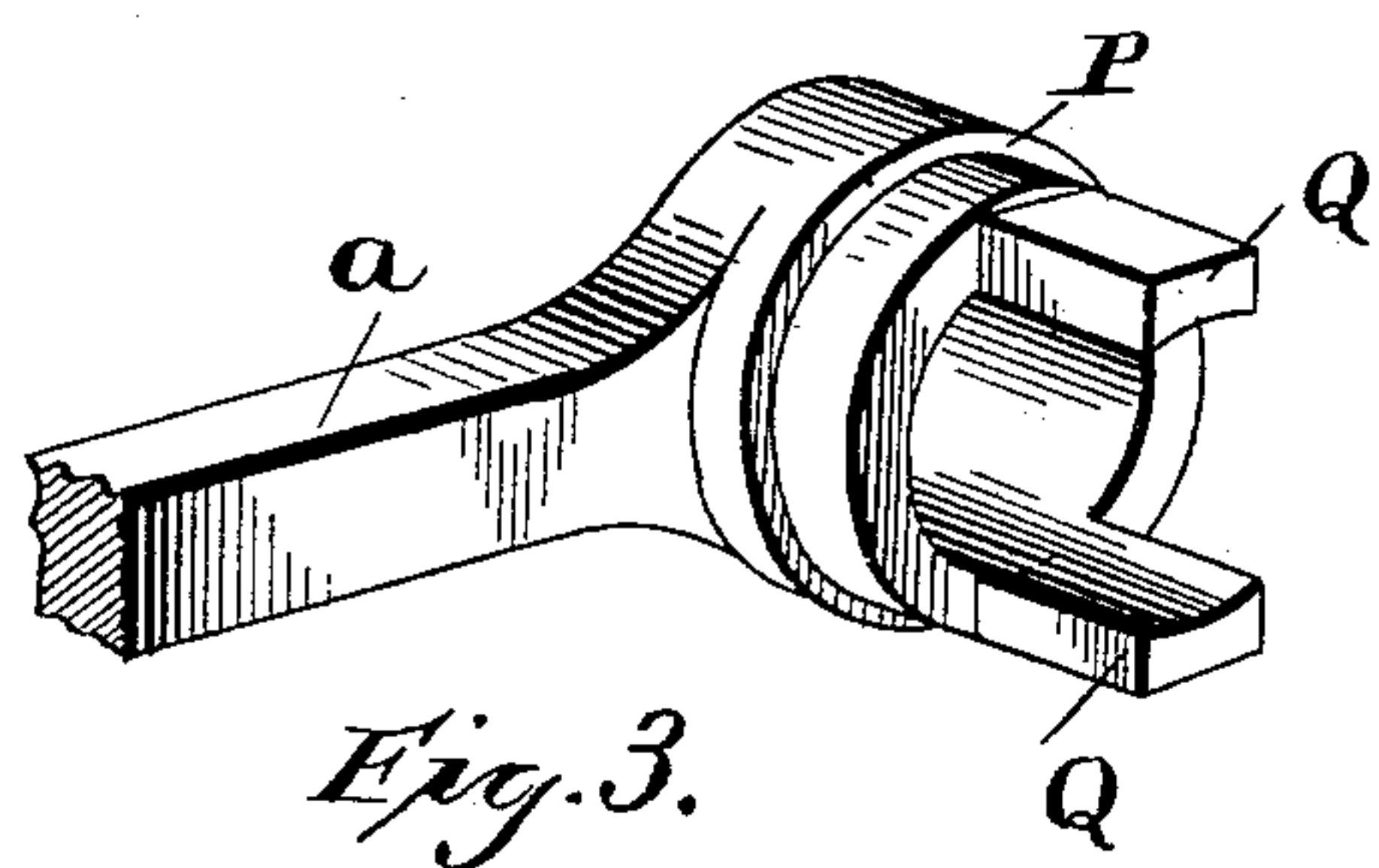
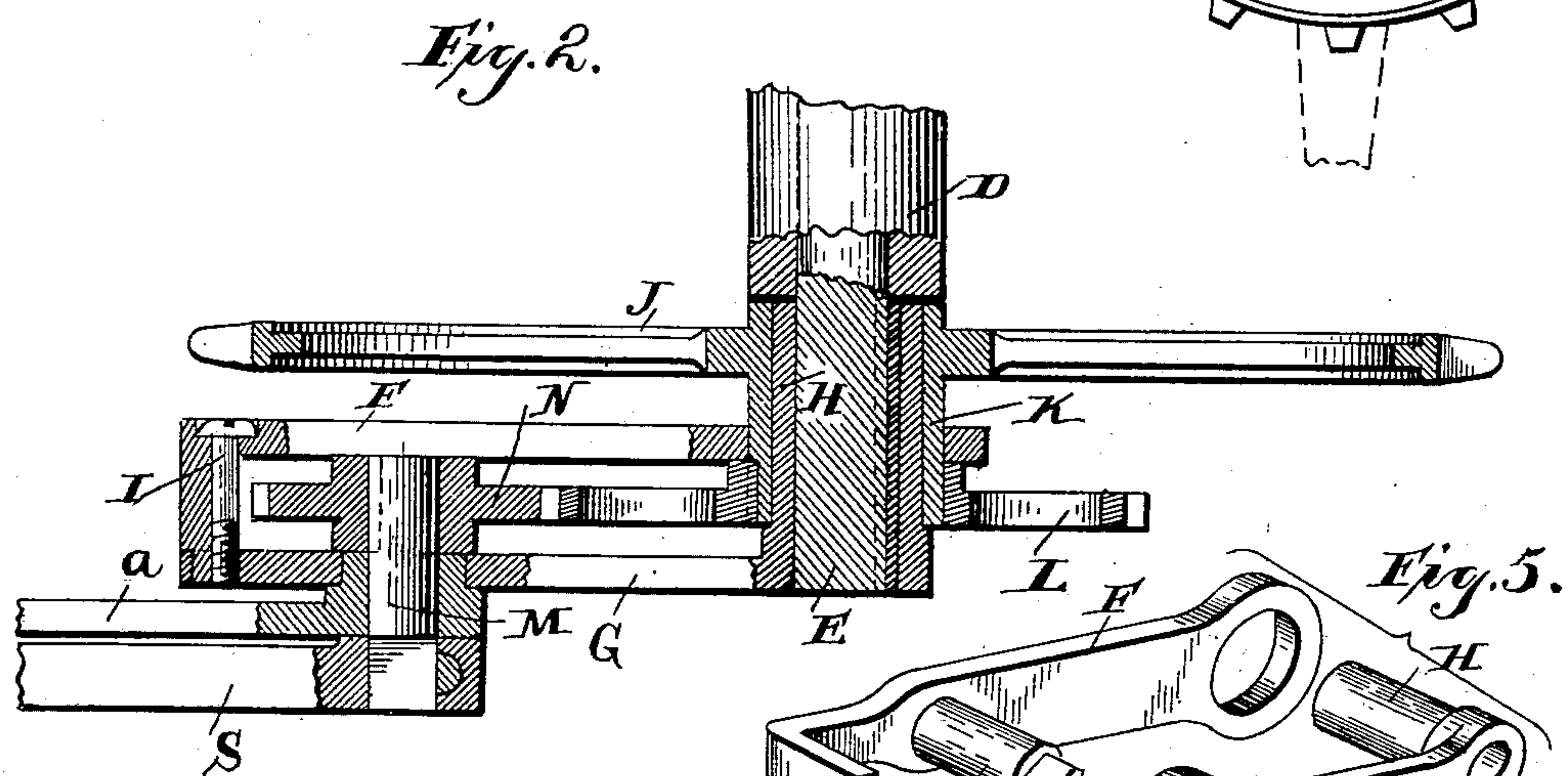
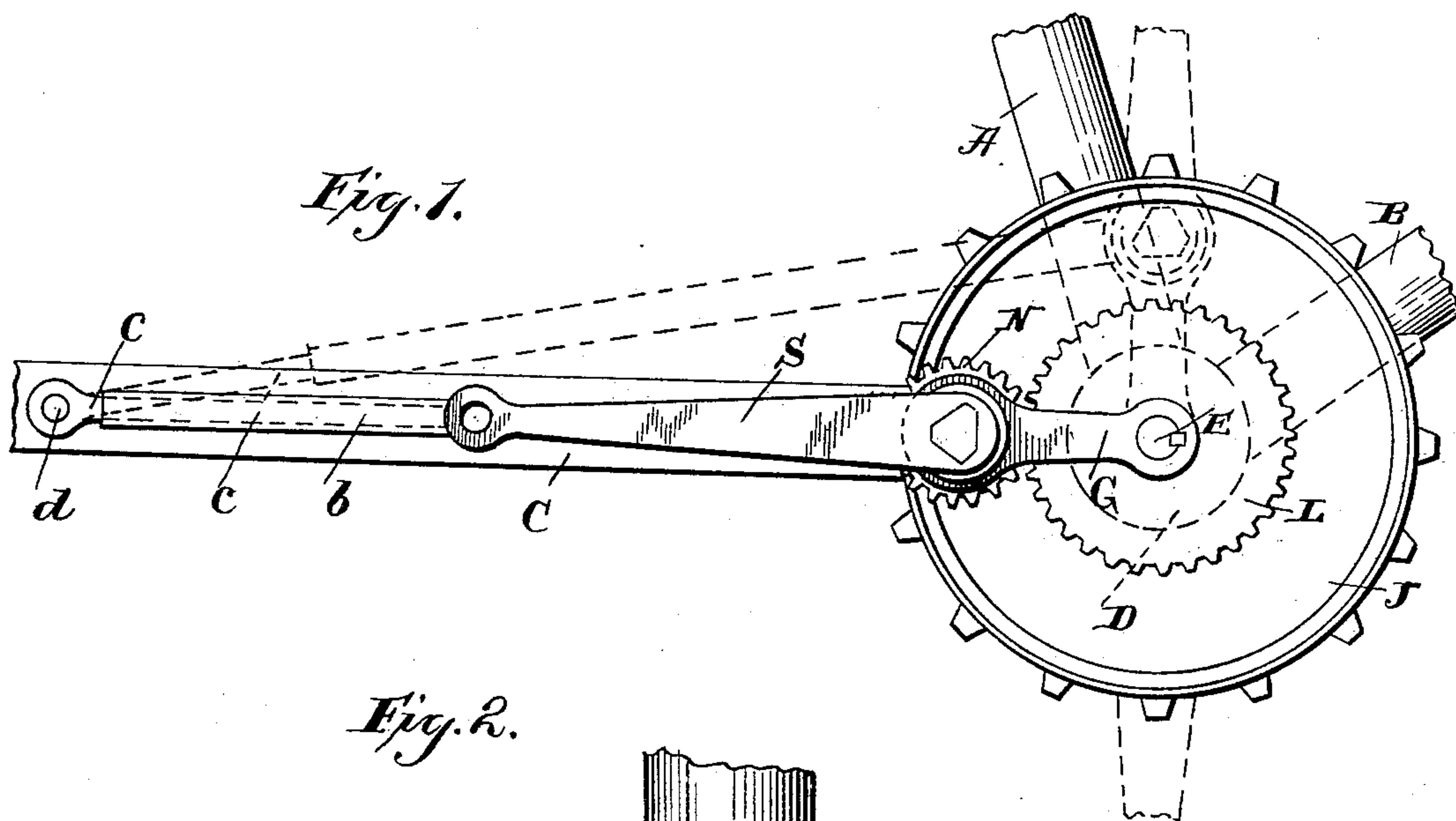
No. 631,208.

Patented Aug. 15, 1899.

D. C. FRAZEUR.  
GEARING.

(Application filed Jan. 24, 1898.)

(No Model.)



Witnesses  
*Geo. E. Truch.*  
*B. E. Seitz*

Inventor  
*David C. Frazer,*  
*by A. S. Pattison,*  
Attorney.



# UNITED STATES PATENT OFFICE.

DAVID C. FRAZEUR, OF NEW MARKET, NEW JERSEY.

## GEARING.

SPECIFICATION forming part of Letters Patent No. 631,208, dated August 15, 1899.

Application filed January 24, 1898. Serial No. 667,694. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID C. FRAZEUR, of New Market, in the county of Middlesex and State of New Jersey, have invented certain  
5 new and useful Improvements in Gearing; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the  
10 same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to improvements in gearing, and pertains to an improved gearing  
15 more especially intended for use in connection with bicycles, though it may be used in other connections to which it is adapted, all of which will be described hereinafter and particularly referred to in the claims.

20 In the accompanying drawings, Figure 1 is a side elevation of my invention, showing a portion of a bicycle-frame to which it is applied. Fig. 2 is an enlarged longitudinal sectional view of the gearing. Fig. 3 is a detached perspective view of the inner end of the  
25 pitman which coacts with the pinion. Fig. 4 is a detached perspective view of the pinion. Fig. 5 is a detached perspective view of the U-shaped frame.

30 Referring now to the drawings, A indicates the saddle-post of a bicycle-frame, B the front reach-bar, C the rear fork, and D the crank-hanger, all of which are of the ordinary construction, though they may vary without af-  
35 fecting in any manner my invention.

E is the crank-shaft, which is journaled in any desired manner in the crank-hanger. Attached to one end of the crank-shaft E in any suitable manner and made fast thereon  
40 is a U-shaped frame or housing F, the outer portion G thereof being preferably detachable and provided with an inwardly-extending sleeve H, which is keyed to the shaft, its outer end being connected with the inner por-  
45 tion of the frame through the medium of a bolt or screw I, for a purpose to be presently described. The sprocket J is journaled in any suitable way upon the sleeve H of the  
50 said U-shaped frame, and this sprocket is provided with an outwardly-projecting sleeve

or flange K, which passes loosely through the inner end of the inner side of the U-shaped frame F and has attached to its extremity through the medium of a key or otherwise a gear-wheel L. This gear-wheel L is thus sup-  
55 ported and rotates with the U-shaped frame, as clearly illustrated, and being made fast to the sprocket-wheel through the medium of its flange K causes the sprocket to rotate when the wheel is rotated, as will be readily under-  
60 stood. The U-shaped frame is provided with a journal or bearing pin M, projecting, preferably, from the inner side of the frame and through its outer side, as shown. Upon this  
65 pin between the sides of the U-shaped frame is journaled a pin N. Also placed upon this pin or journal M is a sleeve P, provided with inwardly-projecting arms Q, which extend into recesses R of the pinion N, thus locking  
70 the pinion and the sleeve together against relative rotation. The bearing or pin M is made rigid with the U-shaped frame and, as before explained, passes through the pinion and through the sleeve P and projecting outward  
75 beyond the sleeve P, to which the crank S is keyed in the usual or any desired manner, whereby the crank and the U-shaped frame are made rigid, causing the U-shaped frame to form a part practically of the crank from the  
80 action of the shaft E as a lever, so that in practice the leverage obtained is from the center or axis of the shaft E to the outer end of the crank S, which will carry the usual pedal-pin and pedal. Rigidly connected with the sleeve  
85 P is a pitman a, extending rearward and carrying a hollow bar or tube b. A rod c extends within this tube b of the pitman a and is pivoted or swiveled to the rear part C of the bi-  
90 cycle-frame at the point d in any suitable manner. This rod c is made of a length not less than and preferably greater than twice the distance from the center of the bearing or pin M (which is the axis of the sleeve P) to the center or axis of the shaft B. In oper-  
95 ation as the U-shaped frame is carried around through the medium of the crank S the pitman is held against a corresponding revolution through the medium of this rod c, which travels back and forth in the tube b of the  
100 pitman a, as will be readily understood, and,



as will also be readily understood, through the medium of this arrangement the pinion N is held against rotation. By this construction the sprocket-wheel J is given one and a half revolutions to every revolution of the crank-shaft, owing to the fact that the diameter of the pinion N is one-half the diameter of the gear L, which is attached to and rotates the sprocket. This relative movement, however, may be varied at will, as will be readily understood, by a relative increase or decrease of the diameters of the pinion N and the gear L. For instance, instead of having the pinion N one-half the diameter of the gear-wheel L the gear-wheel L and pinion N may be made of the same diameter, and in this case the gear-wheel, and consequently the sprocket J, will be given two revolutions to every one revolution of the crank-shaft.

From this description it will be seen that I am enabled to provide a relative increase in the rotation of the sprocket J as compared to the rotation of the crank S as may be desired. The construction is a simple and yet exceedingly effective way of increasing the relative rotation of the sprocket and the crank-shaft.

While I have described and shown my invention as especially applicable and intended for use in connection with a bicycle, it will be readily understood that it may be used in other connections to which it may be adapted without varying or departing from the spirit or scope of my invention.

While I here show a crank S attached to the journal or pin M, carried and made fast to the frame F, for increasing the leverage, it will be readily understood that a pedal or handle may be connected directly with the sleeve P of the pitman. In this event, however, should the pinion and gear remain of the size here shown the leverage of course would not be as great as the attachment of a pedal or handle to the crank S. However, in order to provide for this the diameters of the pinion and gear L may be increased and thus increase the length of the frame F, and in this event the connection of the pedal or handle directly to the sleeve P of the pitman will give the desired leverage according to the length of the frame F, as will be readily understood. In this construction as in the other construction here shown and before fully described the relative size of the pinion and gear may be varied at will for the purpose of increasing or decreasing the relative rotation of the frame and the sprocket-wheel.

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

1. An improved gearing comprising a sprocket or drive-wheel having a laterally-extending sleeve, a gear made fast to said sleeve, a rotating frame or arm concentric with the drive-wheel or sprocket and rotating independent thereof, a pinion journaled upon

the said frame or arm, the journal of the pinion extending through the frame or arm, a sleeve upon the pinion-journal engaging the pinion and holding it against rotation, a pitman connected with the sleeve at one end and having its other end held against rotation, and means connected with the pinion-journal or frame for rotating the said frame, substantially as described.

2. An improved gearing comprising a sprocket or drive-wheel, having a laterally-extending sleeve, a U-shaped frame having its outer side provided with an oppositely-extending sleeve projecting within the sleeve of the sprocket, a drive-shaft made fast to the frame-sleeve, a gear made fast to the sprocket-sleeve at a point between the sides of the U-shaped frame, the inner ends of the inner sides of the frame rotating loosely around the sleeve of the sprocket, a pinion carried by and loosely journaled upon the U-shaped frame and meshing with the gear, a pitman holding the pinion against rotation, and means for revolving the frame around the said gear, substantially as described.

3. A gearing comprising a drive-shaft, a frame made fast to said drive-shaft, a sprocket loose in relation to the drive-shaft and having a laterally-projecting sleeve, a gear rigidly connected with the said sprocket-sleeve, a pinion loosely mounted upon and carried by said frame, the pinion having a rigid shaft projecting through the frame, a sleeve upon the pinion-shaft independent of but interlocking with the said pinion, a pitman connected rigidly to said sleeve and having a pivotal and sliding connection at its opposite end, and an operating member rigidly connected with the pinion-shaft at a point outside of said sleeve, substantially as described.

4. A gearing comprising a drive-shaft, a U-shaped frame having its outer wall provided with an inwardly-projecting sleeve rigidly connected with said drive-shaft and passing through the inner wall of said frame, a sprocket loose upon said frame-sleeve and having an outwardly-projecting sleeve passing through the inner wall of the U-shaped frame, a gear connected with the sprocket-sleeve between the walls of the said frame, a pinion loosely journaled upon and carried by said frame, said pinion having a shaft passed there-through and extending through the outer wall of the said frame, a sleeve loose upon the projecting portion of the pinion-shaft, the abutting faces of the sleeve and the pinion having interlocking members, and an operating member rigidly connected to the projecting ends of the pinion-shaft outside of said sleeve, a pitman rigidly connected with the sleeve at one end and its opposite end having a pivotal and longitudinal connection, substantially as described.

5. A gearing comprising a drive-shaft, a U-shaped frame having a removable outer wall, the end of said removable outer wall having an inwardly-projecting sleeve passing



through the inner wall of the frame, a sprocket  
loose upon the inner projecting end of said  
sleeve and itself provided with an outwardly-  
projecting sleeve passed through the inner  
5 wall of said frame, a gear fast upon the  
sprocket-sleeve at a point between the inner  
and outer walls of the frame, a pinion jour-  
naled upon and carried by the said frame,  
the pinion having a rigid shaft projecting  
10 through the outer removable wall of said U-  
shaped frame, a pitman having one end loose  
upon the projecting end of the pinion-shaft,  
and having an inwardly-projecting member

interlocking with said pinion, the opposite  
end of the pitman having a pivotal and lon- 15  
gitudinal supporting connection, and an op-  
erating member rigidly secured to the pro-  
jecting end of the pinion-shaft at a point out-  
side of said pitman, substantially as described.

In testimony whereof I affix my signature 20  
in presence of two witnesses.

DAVID C. FRAZEUR.

Witnesses:

A. S. PATTISON,  
GEO. E. FRECH.