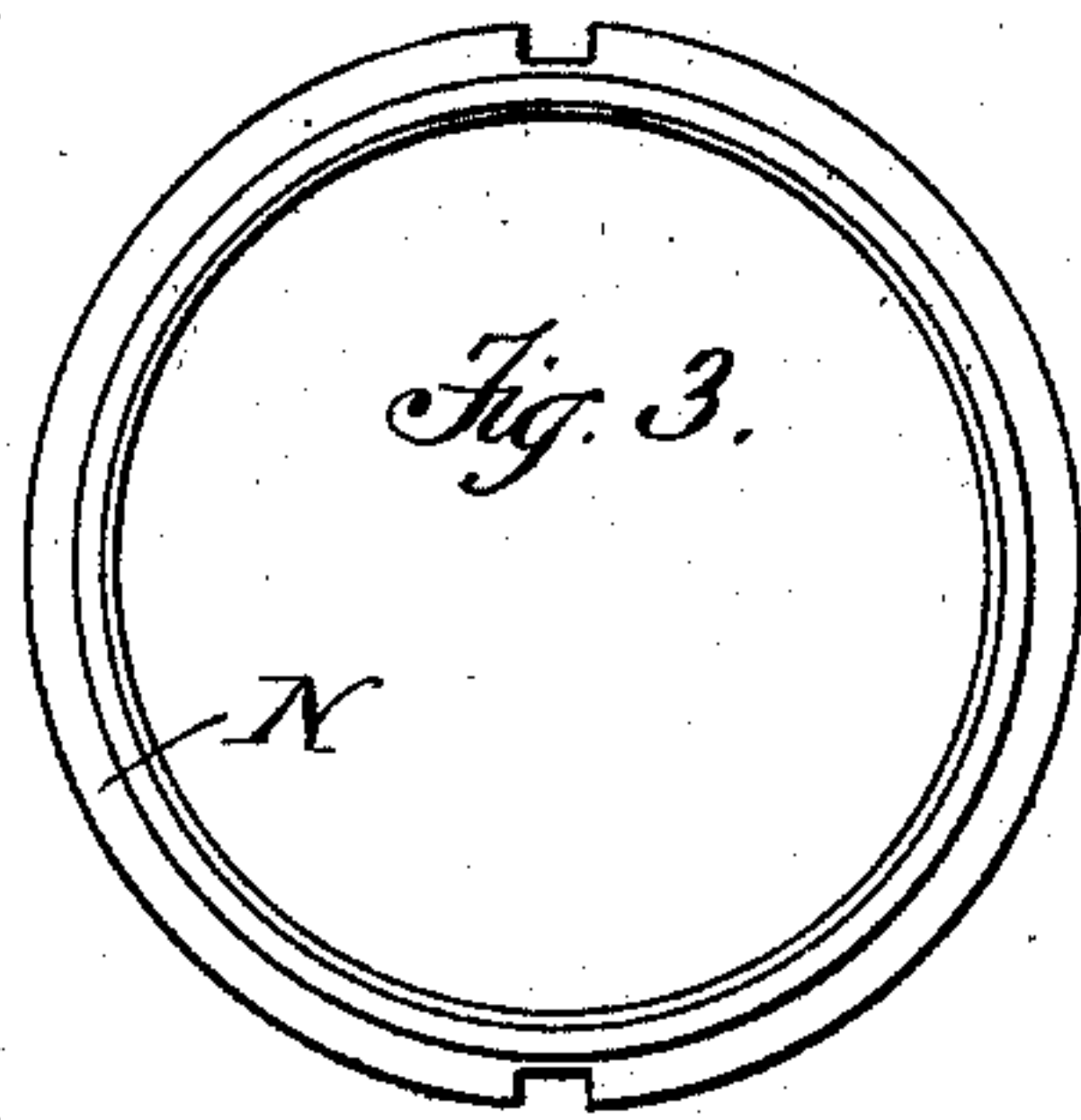
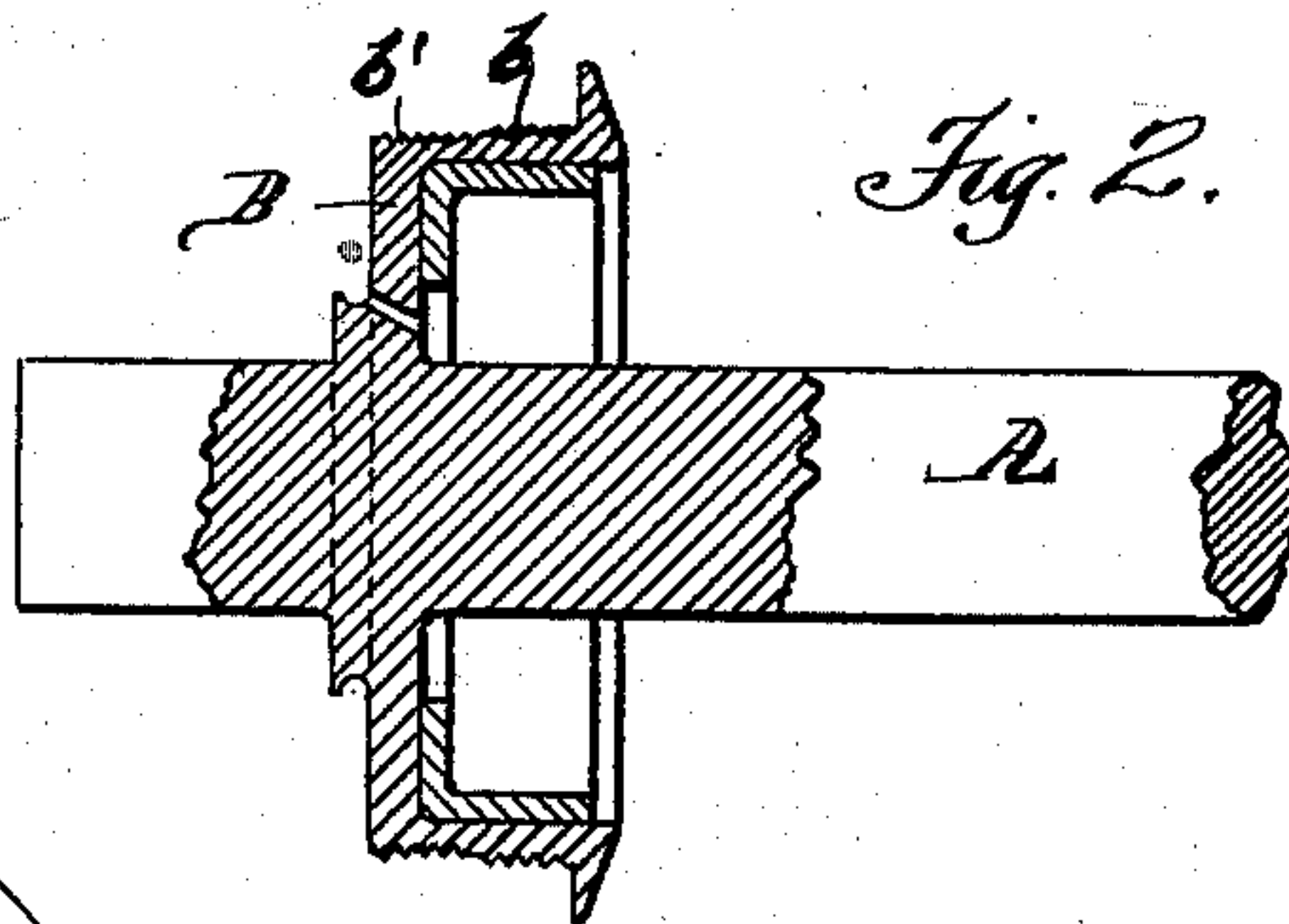
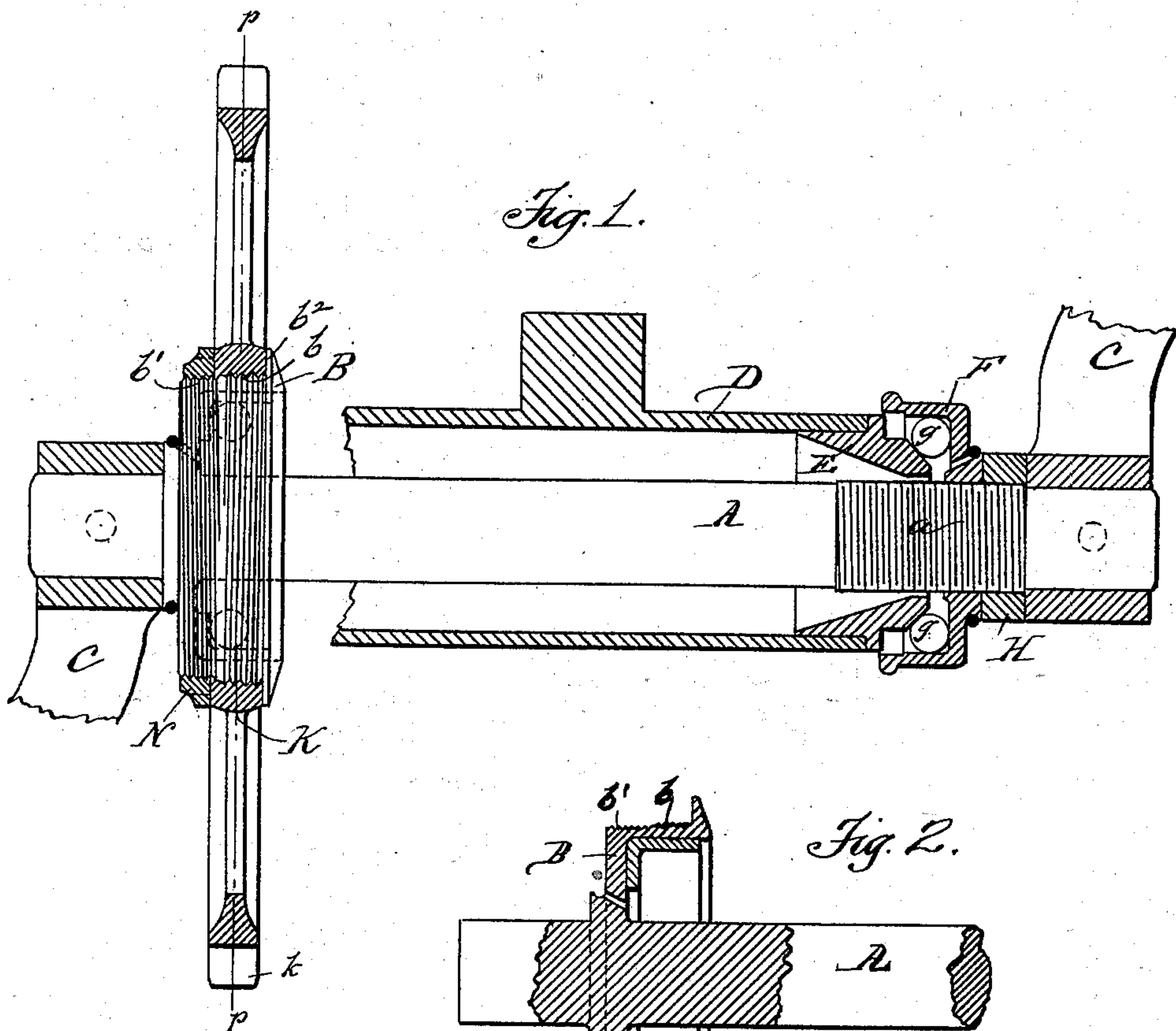


(No Model.)

W. I. GRUBB.
VELOCIPÈDE.

No. 559,281.

Patented Apr. 28, 1896.



Witnesses
Caleb J. Bieber
David Levan

W. I. Grubb Inventor
By Attorney *W. H. Smith*

UNITED STATES PATENT OFFICE.

WILLIAM I. GRUBB, OF POTTSTOWN, PENNSYLVANIA.

VELOCIPEDÉ.

SPECIFICATION forming part of Letters Patent No. 559,281, dated April 28, 1896.

Application filed November 12, 1894. Serial No. 528,492. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM I. GRUBB, a citizen of the United States, residing at Pottstown, county of Montgomery, State of Pennsylvania, have invented certain Improvements in Velocipedes, of which the following is a specification.

This invention relates particularly to that class of velocipedes in which the power is transmitted from the crank-shaft to the driving-wheel through the medium of a sprocket-wheel and connecting-chain; and it consists, mainly, in the novel form and arrangement of the sprocket-wheel with relation to the shaft-bearings, whereby the strain upon the sprocket-wheel is brought within the plane of the bearings, while at the same time the sprocket-wheel is capable of being readily reversed when desired, so as to present the unworn faces of the teeth thereon to the action of the chain.

The invention is fully described in connection with the accompanying drawings, and is specially pointed out in the claim:

Figure 1 of the drawings shows an elevation, partly in section, of my improved crank-shaft and sprocket-wheel mechanism as applied to the bottom barrel of a safety-bicycle. Fig. 2 is a separate sectional view of a portion of the shaft, and Fig. 3 is a separate view of the jam-nut or collar.

A represents a crank-shaft, which is mounted in the bottom barrel D of a bicycle-frame and provided at either end with cranks C C, fixed thereto, as shown in the drawings. One cup-piece, B, for the ball-bearings is formed integral with the shaft and is provided with a hardened bushing as a seat for the balls, while the other, E, is screwed upon the threaded portion *a* of the shaft and fastened thereon in proper relation to the cone-bearings E on either end of the barrel D and to the balls *g*, which ride upon said bearings, by means of a jam-nut H. Only one of the ball-bearings is seen complete in the drawings, and the particular construction shown forms no part of my invention, which consists in the arrangement of the sprocket-wheel in connection with the rigid cup-bearing B of the shaft, whereby I am enabled to bring the line of strain upon the chain-wheel within the plane of the ball-bearings and at the same time provide for the reversal of said wheel, as before stated. This I accomplish, as shown in the drawings, by screw-threading

the periphery of the cup B, as indicated at *b* and *b'*, and providing the same with a collar *b*² and then forming the sprocket-wheel K with a hub lying in the same plane *p p* as the teeth *k* thereof and internally screw-threaded to correspond with the threaded portion *b* of the cup, so that the said wheel may be screwed upon the cup until either face of the hub comes in contact with the collar *b*² without shifting the plane in which the teeth rotate. I then employ a nut or screw-collar N, adapted to fit the portion *b'* of the cup B B, which portion is screw-threaded reversely to the portion *b* to more effectually avoid loosening of the sprocket-wheel.

It will be readily understood that by means of my construction I am enabled to spread the plane of the adjacent ball-bearing out to or beyond the plane *p p*, passing through the center of the sprocket-teeth, thus avoiding any overhanging strain, and also that the sprocket-wheel may be easily reversed, so as to present the unworn faces of the teeth to the action of the chain. The relatively large diameter of the wheel-hub K and cup B at the point of attachment insures a strength and rigidity of connection which could not be otherwise secured with a removable wheel.

While I prefer to form the cup B integral with the shaft A for the sake of rigidity, yet it may be formed separately, like the cup F, if desired. Also, it is evidently not essential that the sprocket-wheel shall be screwed upon the cup B, as above; but it may be secured upon the bearing-cup in any preferred manner which will permit of its removal. These and other variations may be readily made, and I do not therefore desire to limit myself to the exact construction shown; but

What I claim is—

The combination with the frame of the crank-shaft provided with a cup-bearing inclosing the cone-bearing on the frame, and exteriorly screw-threaded as described, the sprocket-wheel being interiorly screw-threaded to engage the periphery of said cup-bearing and reversible thereon in the same plane of action, and a lock-nut to secure the same, substantially as set forth.

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

WILLIAM I. GRUBB.

Witnesses:

W. G. STEWART,
ADAM L. OTTERBEIN.