

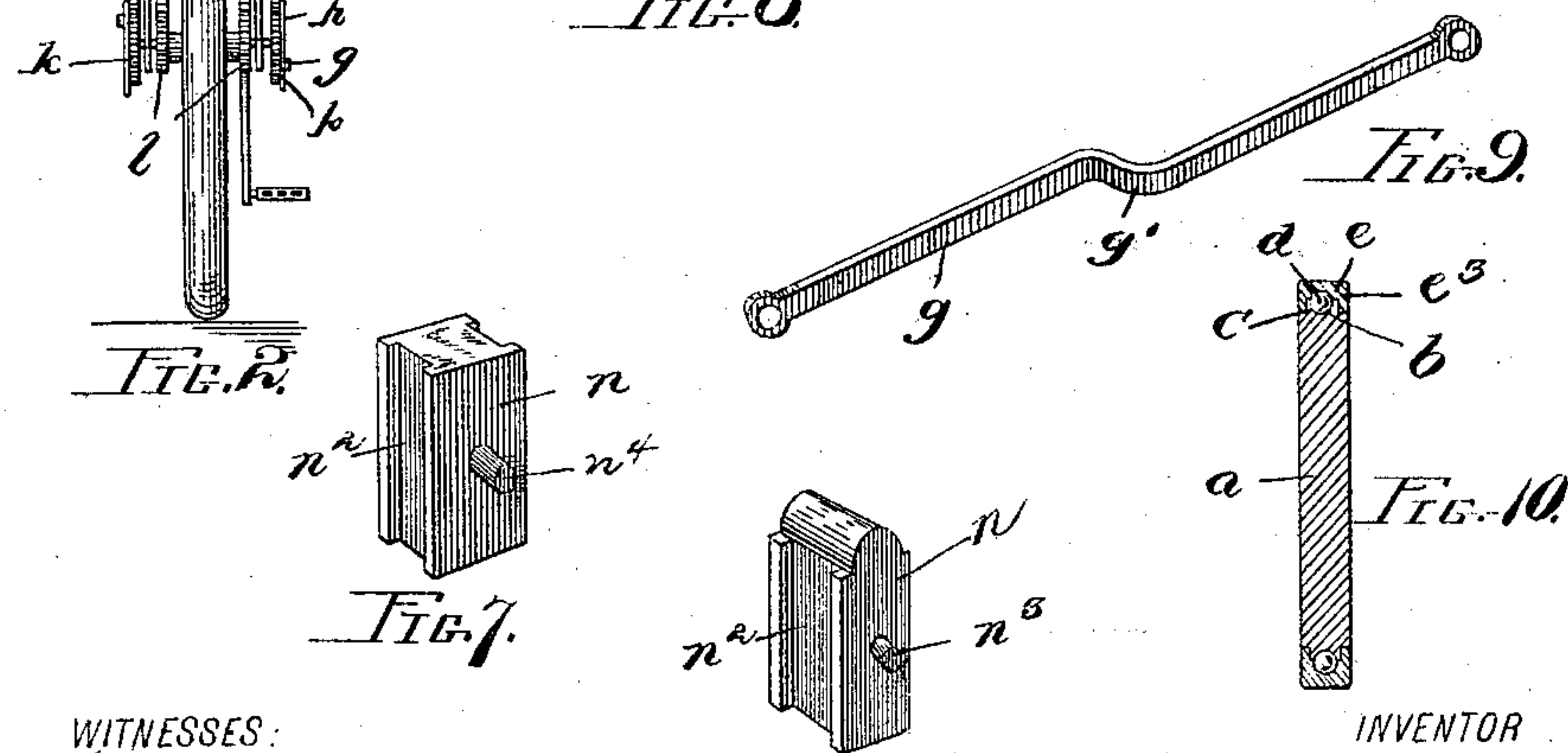
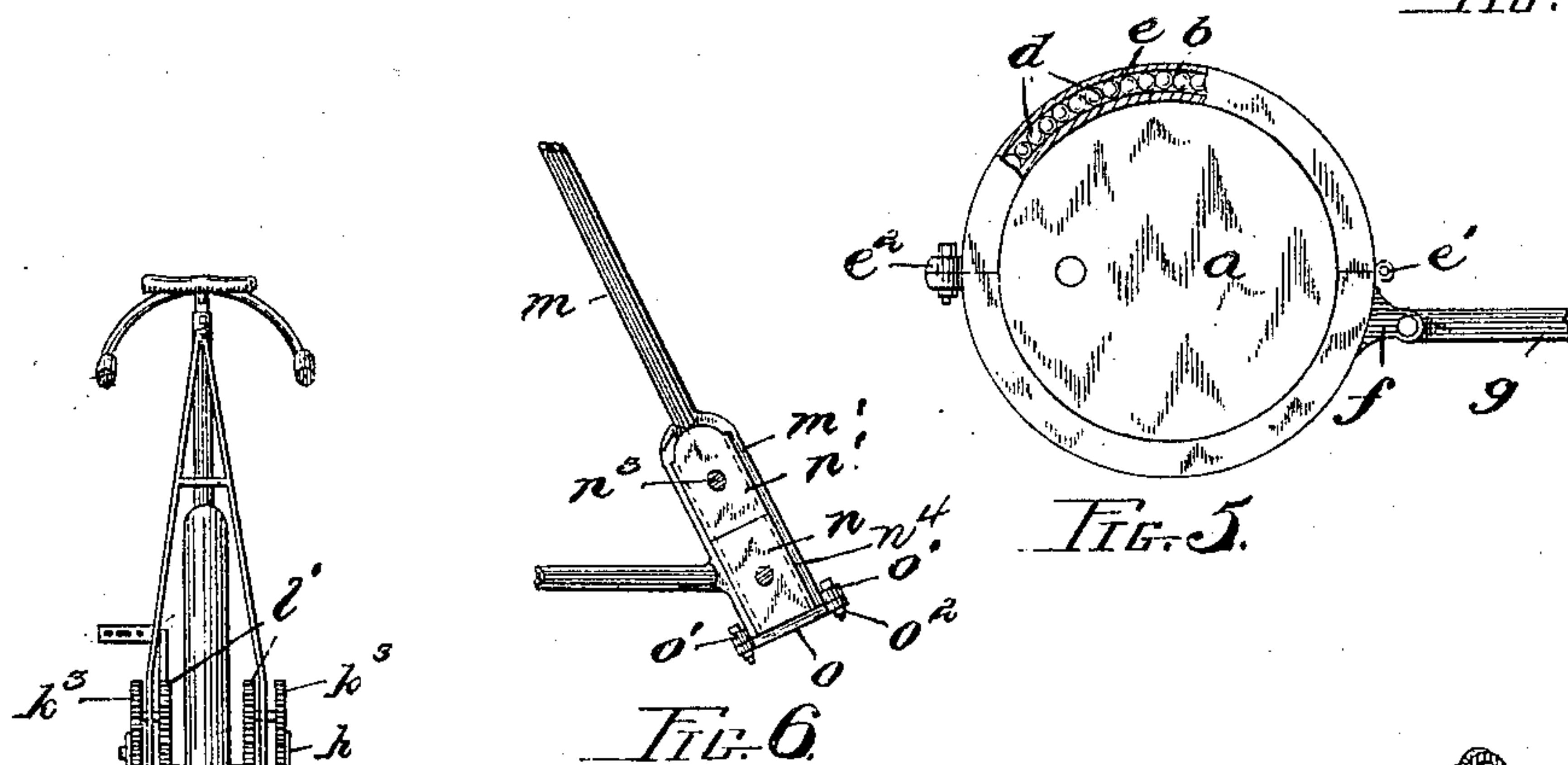
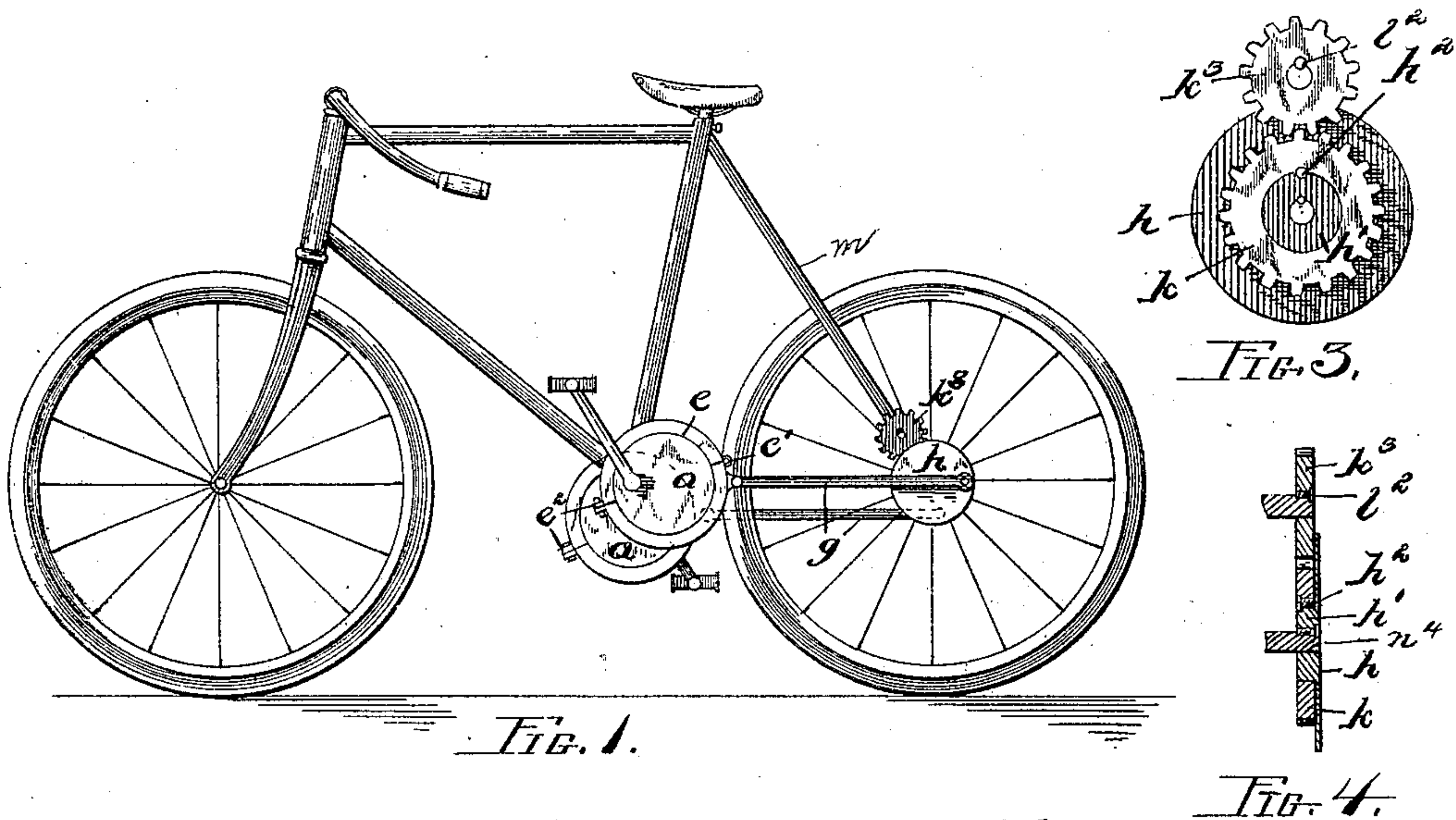
No. 607,710.

Patented July 19, 1898.

W. T. SHRYOCK.
CHAINLESS BICYCLE.

(Application filed Nov. 30, 1897.)

(No Model.)



WITNESSES:
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FIG. 8.
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WILLIAM T. SHRYOCK, OF ALLEGHENY, PENNSYLVANIA.

CHAINLESS BICYCLE.

SPECIFICATION forming part of Letters Patent No. 607,710, dated July 19, 1898.

Application filed November 30, 1897. Serial No. 660,201. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. SHRYOCK, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Chainless Bicycles, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in chainless bicycles, and aims to provide a novel and effective means for propelling the wheel by the aid of eccentrically-mounted disks and spur-gears.

15 This invention consists in the novel construction, combination, and arrangement of parts, to be hereinafter more particularly described, and specifically pointed out in the claims.

20 I also arrange an intermediate gear-wheel to mesh with the gear-wheels mounted on the rear axle for the purpose of readily changing and varying the gear of the machine.

25 In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, and wherein like letters of reference indicate similar parts throughout the several views, in which—

30 Figure 1 is a side view of a bicycle equipped with my improved propelling mechanism. Fig. 2 is a rear view of the same. Fig. 3 is a side view of the gears. Fig. 4 is a sectional view of the same. Fig. 5 is a side view of one of the eccentrics, partly in section to show the bearings. Fig. 6 is a side view of a portion of the frame, showing adjusting-blocks for intermediate gears. Figs. 7 and 8 are perspective views of these blocks. Fig. 9 is a perspective view of one of the driving-rods. Fig. 10 is a sectional view of one of the eccentrics.

45 Referring now to the drawings by reference-letters, *a* represents the pair of eccentrics that are mounted upon the crank hanger or axle at either side of the frame and which are provided around the edges of their periphery with grooves *b*, thus forming a central flange *c* around the periphery, that is provided with a groove, serving as a race for the balls *d*. These are interposed in the race provided therefor in the periphery of the ec-

centric and in the band *e*, the latter being composed of two halves hinged together at *e'* and fastened at the opposite side at *e''*, which may be by any desired means. This band is provided with projecting flanges *e'''*, that fit in the grooves *b*, thus forming a close bearing to protect the balls *d*. The lower half of the hinged band *e* carries lugs *f*, to which is pivotally attached the driving-rod *g*, bent at right angles at *g'* and having its rear end pivotally attached to a disk *h*, having a central boss *h'* on its inner face. This disk is secured to the rear or driving axle by a screw-key *h''*, while mounted upon the boss is the spur-gear *k*, likewise secured to the said boss by a screw-key *h'''*. These spur-gears *k* are mounted on the axle at the outside of the rear braces, and I have also mounted on the axle, at the inside of the rear braces, spur-gears *l*, which mesh with the intermediate and changeable gears carried by said rear braces.

75 The rear braces *m* are formed at their lower ends with forked ends *m'*, forming jaws, which receive the adjusting-blocks *n* and *n'*, each of which is provided on two sides thereof with grooves *n''* to receive the jaws or forked ends of the braces. These blocks are held within the jaws by means of a clip *o*, secured to lugs *o'* by bolts *o''*.

80 The block *n'* carries an axle *n'''*, extending transversely through the same, so as to project on the two sides, and upon these projecting ends are mounted the gears *k'''*, which mesh with the gears *k*, and on the opposite end of the said axle are mounted the gears *l'*, which mesh with the gears *l*. These gears are secured in position by means of screw-keys *l''*, engaging the gear and axle in the same manner as is employed for holding the gears *h* on the rear or driving-wheel axle. The rear axle *n''* is shown projecting through the block *n*, and upon the same is mounted the disk *h* outside of the brace, and inside of the brace are mounted the spur-gears *l*, that mesh with the gears *l'*.

95 It will of course be understood that the connections on each side of the wheel are the same, and it will also be observed that the driving-rods *g* are attached to the band *e* at a point opposite the center or at the half, while the said rods are attached at their rear

ends to the disk *h* eccentrically to the disk or at the quarter, and through this means a dead-center is absolutely prevented by reason of the rod on one side having a pull while the one on the opposite side is pushing the gear over its center. Should it be desired, however, these rods can be connected at each end, so as to be on the half.

The spur-gears *l'* are made removable, in order that the size of same may be changed for varying the gear of the machine.

By forming the driving-rods with the offset or bend *g'* at a point at or near their center it will not be necessary to increase the width of the tread, that would otherwise be necessitated by the arrangement of gearing on the rear axle.

It will be observed from the foregoing that the construction is extremely simple and cheap, and the disk *h* will serve as a protector for the spur-gears that are mounted upon the driving-axle, and the construction as herein shown appears to constitute the preferable embodiment of my invention.

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

1. In a driving mechanism for bicycles and the like, the combination of a pair of eccentrics mounted upon the crank-axle, a hinged band engaging said eccentrics; a disk mounted on each end of the driving-axle, each disk having a boss formed on its face, a gear-wheel mounted on said boss, braces *m*, terminating at their lower ends in jaws, adjustable blocks,

longitudinal grooves formed in two sides of said blocks, said grooves being adapted to receive the jaws of the brace *m*, axles extending transversely through said blocks, gear-wheels mounted on said axles, clips secured to the lower ends of said jaws whereby the blocks are held in position, substantially as described.

2. In a driving mechanism for bicycles and the like, the combination of the pair of eccentrics mounted upon the crank-axle, and secured to each end of the driving-axle, connections between the eccentrics and the disks, a boss formed on the inner face of each disk, a gear-wheel mounted on each of said bosses, braces *m*, terminating at their lower ends in jaws, blocks *n*, and *n'*, longitudinal grooves *n*², an axle *n*³, extending transversely through the block *n*, intermediate gears mounted on each end of said axle, the driving-axle extending transversely through the block *n'*, gear-wheels *l*, mounted on the hub of the rear wheel, said intermediate gears transmitting motion to the rear wheel, a clip secured to the jaws whereby the blocks *n* and *n'*, are held in position, all parts being arranged and operating substantially as described and for the purpose herein set forth.

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

WILLIAM T. SHRYOCK.

Witnesses:

JOHN NOLAND,
THOS. M. BOYD, Jr.