

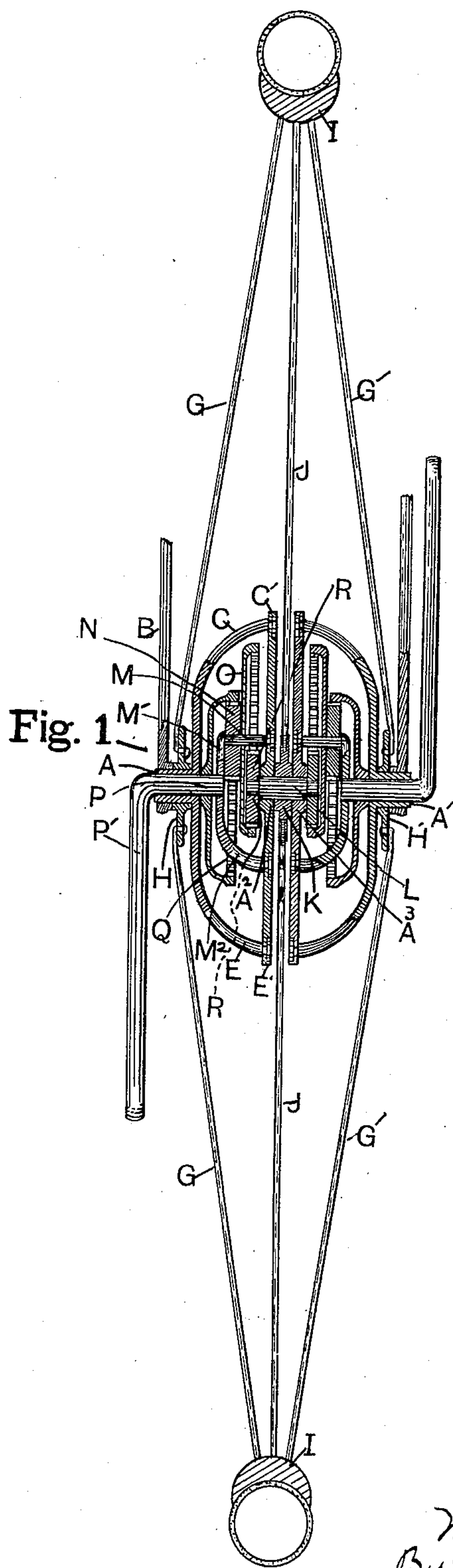
No. 607,218.

Patented July 12, 1898.

N. P. COBB.
GEARING FOR BICYCLES.
(Application filed Dec. 29, 1897.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:
H. H. Hale.
R. O. Wright.

INVENTOR:
Norman P. Cobb,
By his atty. Oscar Snell.

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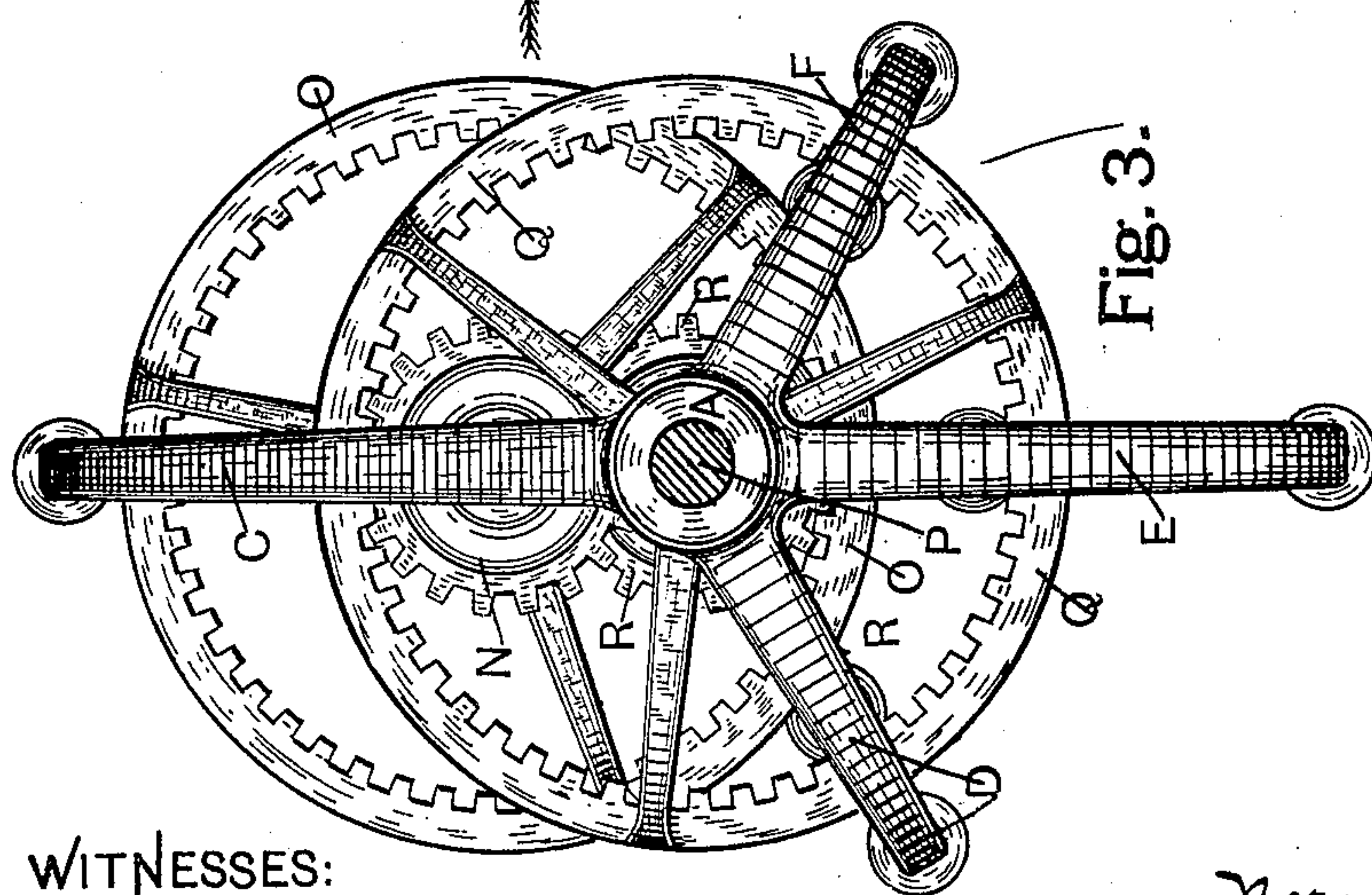
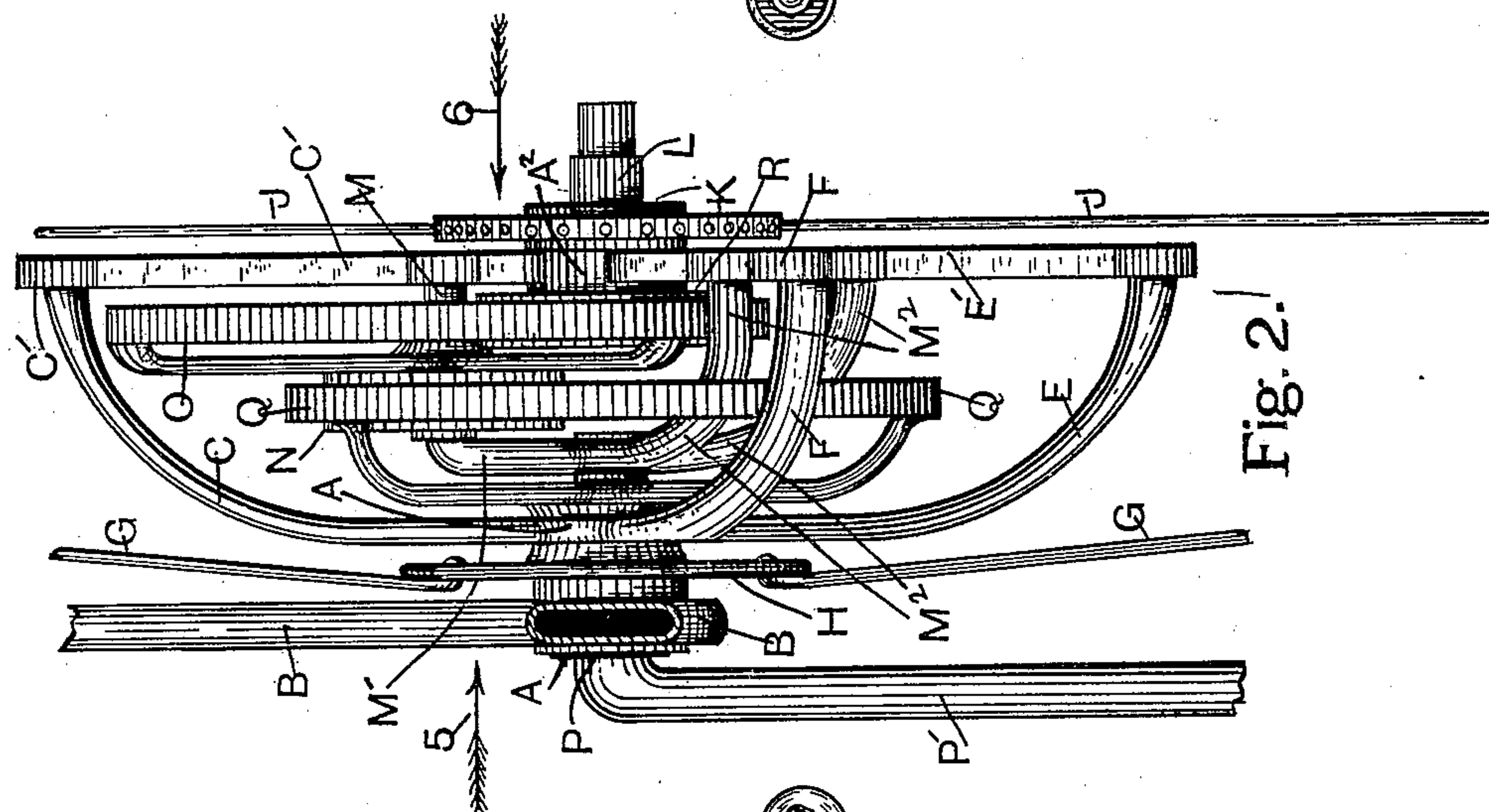
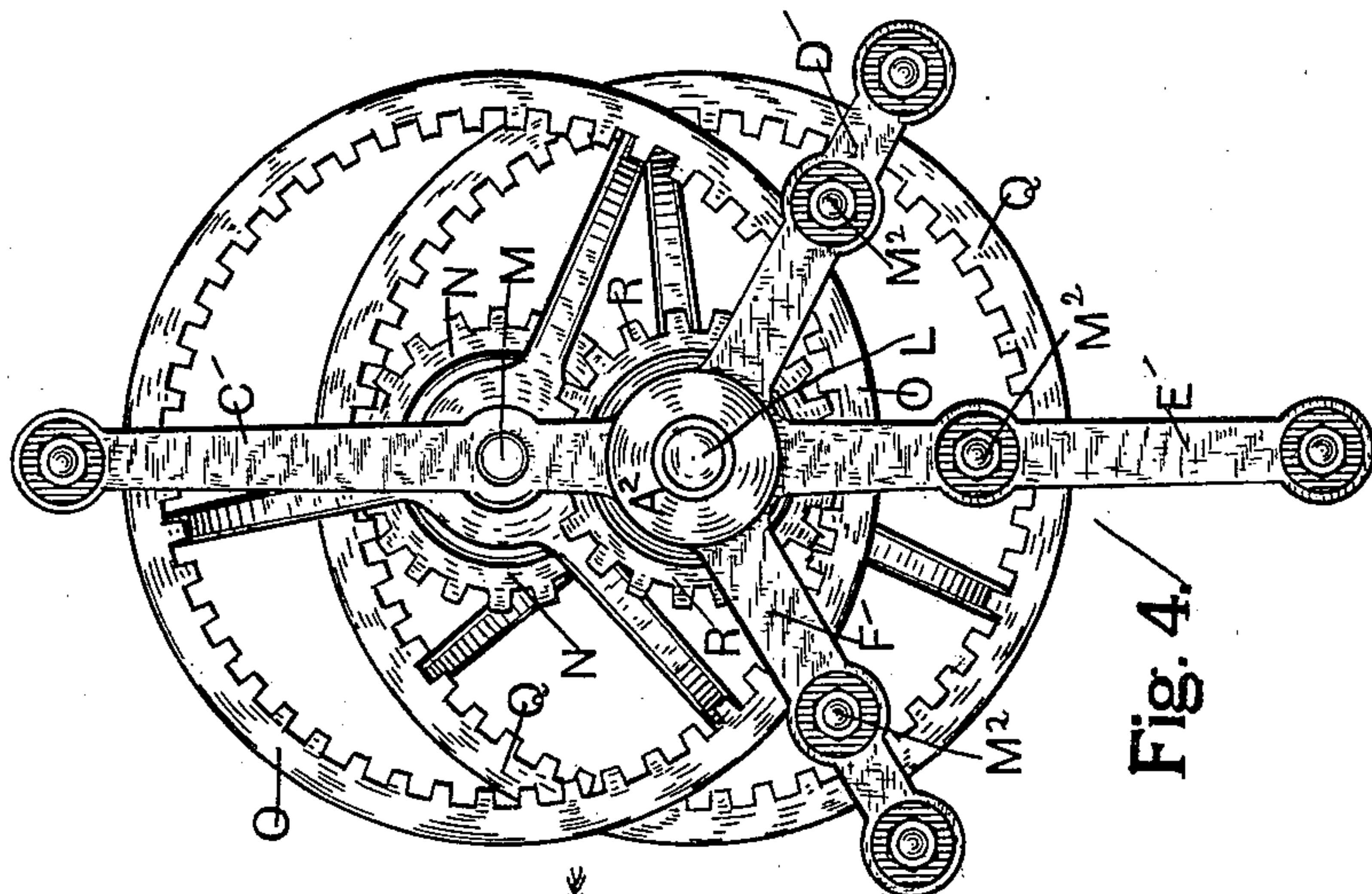
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UNITED STATES PATENT OFFICE.

NORMAN P. COBB, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO
ALLIE C. PERRY, OF SAME PLACE.

GEARING FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 607,218, dated July 12, 1898.

Application filed December 29, 1897. Serial No. 664,381. (No model.)

To all whom it may concern:

Be it known that I, NORMAN P. COBB, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Gearing for Bicycles, of which the following is a specification.

My invention relates to means for applying power to bicycles and other foot-propelled vehicles; and my object is to provide a construction which connects the cranks of a bicycle with the drive-wheel axle and multiplies the motion of the cranks through the medium of a duplicate set of simple cog-gearing and thereby avoids the use of the chain and chain-wheels usually employed for this purpose, the same being described herein-after and illustrated in the accompanying drawings, in which—

Figure 1 is an axial section of a bicycle-wheel, showing a central portion of the gear-frame for supporting my new propelling device, together with the cog-wheels therefor, broken away to an axial section, the cranks and the axles thereof and the pivotal shafts, upon which are mounted the cog-wheels, being shown in front elevation. Fig. 2 is a front elevation of one-half of the propelling mechanism similar to what is shown in Fig. 1, but drawn to a large scale, the axial portions only of the bicycle-frame and the drive-wheel spokes being shown. Fig. 3 is a side elevation of what is shown in Fig. 2, looking in the direction indicated by arrow 5, but with the crank and drive-wheel spokes and the axial attachments therefor and the axial portion of the bicycle-frame removed, so as to not obstruct the view. Fig. 4 is an elevation similar to what is shown in Fig. 3, but of the opposite side of the mechanism and frame thereof as seen looking in the direction indicated by arrow 6, Fig. 2, the spokes and spoke-flanges and part of the attached bicycle-frame not being shown as in Fig. 3. Figs. 3 and 4 are drawn to the same scale as Fig. 2.

The propelling-gear consists, essentially, of a duplicate of the parts shown on one side of the driving-wheel, as illustrated in Figs. 2, 3, and 4; but a combination of both trains of gearing comprising the duplicate is necessary to produce the desired results, the novel con-

struction of the driving-wheel being particularly adapted to receive mechanism of this class.

Referring to one side of the mechanism, A is a boss which is firmly secured to the bicycle-frame B or B', Figs. 1 and 2, and radiating from this boss and integral therewith are several front arms C, D, E, and F, whose ends are bent inwardly and the terminals thereof firmly secured to the outer end portions of a series of arms C', D', E', and F', which radiate from an inner boss A², thus inclosing the gearing in a frame, which may be easily covered with thin sheet metal and form a dust-proof box to protect the operative parts, as usual.

The drive-wheel in a bicycle to which this mechanism is adapted has not only the usual battered side spokes, such as G G', which connect axial flanges H and H', which latter are loosely mounted on bosses A and A' at each side of the wheel, with the rim I, but there is also a series of spokes J, which are attached at the axial end to an axial flange K, which is secured firmly to a short axial shaft L, and the spokes radiate thence, the outer ends being secured to the rim I in any usual manner.

It will be noticed that the boss A, Figs. 1 and 2, from which radiate the arms C, D, E, and F, projects outwardly sufficient to receive the end of a portion of the bicycle-frame B, which is firmly secured thereto and serves to hold the parts of the cog-wheel frame from revolving with the bicycle-wheel.

The spoke-flange H is loosely mounted to revolve on boss A between the attached end of the bicycle-frame B and the boss ends of the outer arms C, D, E, and F.

At M is a stationary pin secured at one end to the upwardly-projecting inner arm C', while the outer end of pin M is integral with or attached to a bracket M', which projects downwardly and is divided into a plurality of branches M², Fig. 2, which serve to brace it laterally, and whose lower end portions are bent inwardly and firmly secured to the inner arms D', E', and F', in this instance by means of screw-threaded nuts, Fig. 4, at points indicated by the projecting ends at M². Bracket M' serves as a support for the outer end of stationary pin M and as a pivotal center for the main crank-shaft, as is described herein-

after. A small spur cog-wheel N and an internal cog-wheel O are firmly secured together and mounted to easily revolve on the stationary pin M. In this instance the crank-shaft P is integral with the crank P' and is mounted to revolve axially within boss A, the inner end of this shaft having also a bearing in a hole at the center of length portion of bracket M', Fig. 1.

Securely mounted upon crank-shaft P is an internal cog-wheel Q, in this instance of the same size as internal cog-wheel O. Internal cog-wheel Q engages the spur cog-wheel N, and internal cog-wheel O, which is attached to spur cog-wheel N, engages a spur cog-wheel R, which latter is firmly attached to the outer end of the short shaft L, which latter is mounted axially at one end portion in the inside boss A², but is of such length that the opposite end is mounted in the inside boss A³ of the inside portion of the cog-wheel frame of the opposite half of the bicycle-wheel, and the opposite end of this shaft is secured within and firmly connected with a spur cog-wheel similar to spur cog-wheel R, which latter is connected with the opposite bicycle-crank and shaft thereof through two internal and one spur gear, as hereinbefore described. It is obvious that power being applied to revolve the crank-shaft P the attached internal cog-wheel Q revolves with an increase of speed the spur cog-wheel N and its attached internal cog-wheel O, which latter will revolve with an additional increase of speed the spur-wheel R engaged therewith, together with the short shaft L and the spoke - flange K, and through spokes J the bicycle-wheel, which, in addition to parts hereinbefore mentioned, comprises the rim and tire at I and I, the side spokes G and G', and the attachment axial

flanges H and H'. Short shaft L, as before stated, being mounted also at one end in a hole in the central boss A³ of the right-hand side train of gearing-frame and having a connection with the right-hand side crank and crank-shaft through a series of spur and internal cog gearing similar to that already shown and described at the left-hand side, Fig. 1, the right series of gearing will be revolved, or if power is applied to the cranks on both sides of the drive-wheel it will be transmitted to the short shaft L, and thence to the drive-wheel through the central series of spokes J, the speed of the drive-wheel being increased over that of the cranks in proportion as the internal cog-wheels are larger than the spur cog-wheels N and R.

I claim as my invention—

In a bicycle, a drive-wheel comprising a series of side spokes on each side with the peripheral ends secured to the felly or rim thereof, and the axial ends of each of the said series of spokes secured to a flange which is revolubly mounted upon a stationary portion connected with the bicycle-frame, in combination with a central series of spokes having the peripheral ends attached to the wheel-rim and the axial ends secured to a flange which is pivotally mounted, axially coincident with and between the said side flanges, and is connected with the cranks outside of the drive-wheel through the medium of a series of external and internal cog-wheels, in the manner substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand this 25th day of October, 1897, in the presence of witnesses.

NORMAN P. COBB.

Witnesses:

H. H. HALE,
SAML. WILSON.