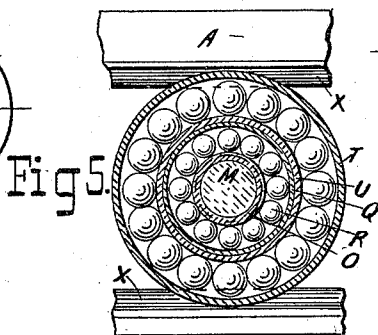
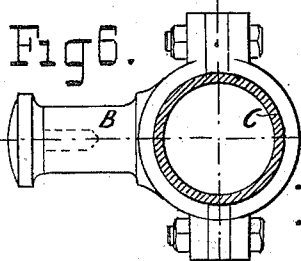
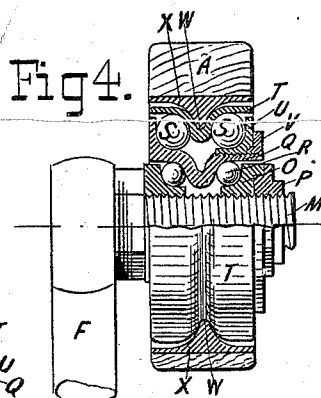
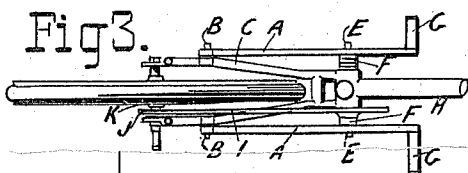
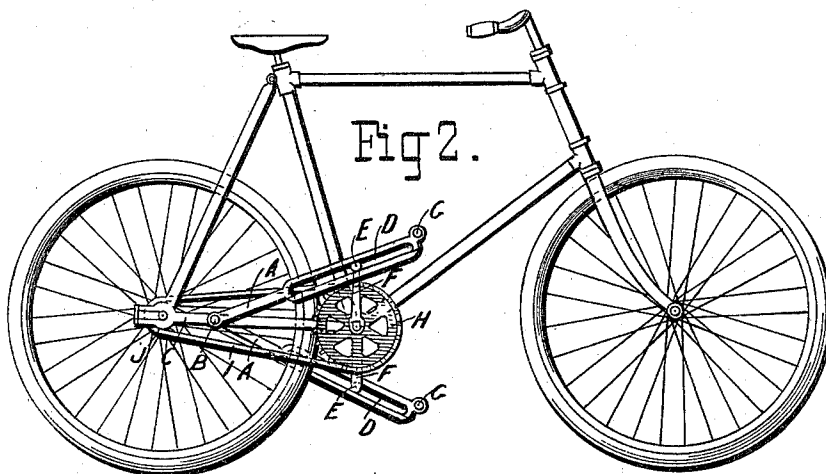
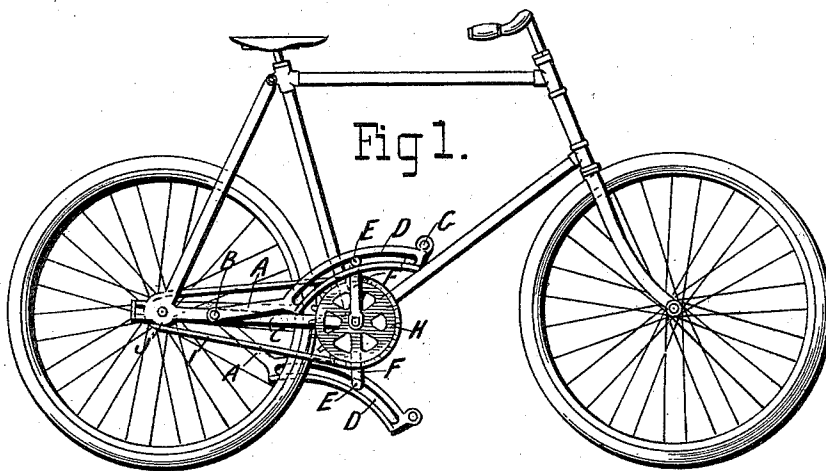


(No Model.)

F. W. QUIN.
CYCLE DRIVING MECHANISM.

No. 586,057.

Patented July 6, 1897.



WITNESS:

Richard W. H. S.
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INVENTOR:

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Atty

UNITED STATES PATENT OFFICE.

FREDERICK WILLIAM QUIN, OF SYDNEY, NEW SOUTH WALES, ASSIGNOR
OF ONE-HALF TO FREDERICK JOHN BIRD, OF SAME PLACE.

CYCLE-DRIVING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 586,057, dated July 6, 1897.

Application filed January 22, 1897. Serial No. 620,263. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK WILLIAM QUIN, musician, a subject of the Queen of Great Britain and Ireland, and a resident of 150 Flinders Street, Sydney, in the Colony of New South Wales, have invented a certain new and useful Improvement in Cycle-Driving Mechanism, of which the following is a specification.

By means of this invention provision is made for operating the cranks and driving-gear of cycles where such cycles are driven by means of cranks, sprocket-wheels, and chain bands or in cases where the cranks are the prime movers and gearing interposed between such prime movers and the main driving-wheel, so as to dispense with the pedals usually attached to the crank-pins and in lieu thereof provide short pins with friction-rollers running thereon, specially constructed so as to be dust-proof, such rollers being confined within the guide-bars of a pair of slotted levers, so as to travel freely therein, one end of each lever being pivoted to the framework of the machine and the other end having the pedal attached thereto. These levers are so situated that the pressure of the driver's foot exerts a greater force or leverage upon the cranks as they rotate and changes the pedaling motion from a rotary to a rectilinear. By this action a more effective force is applied to carry the cranks over the dead-center and to give increased momentum to the driving-gear. In consequence of the increased power thus obtained the gearing may be increased and a proportionately higher rate of speed obtained by the same expenditure of power as was necessary when operating the cranks with the pedals in the ordinary manner.

This invention may be adapted to existing cycles without removing the existing system of gearing.

The invention is also specially applicable to ladies' cycles, as the use of it, it will be found, does not result in such disarrangement of the dress as in the existing system of pedaling.

Referring to the drawings which form part of this specification, Figure 1 is a side elevation of a bicycle, showing these improvements

attached thereto. Fig. 2 is a similar side elevation showing straight levers used in lieu of curved. Fig. 3 is a plan showing the levers attached to fork. Fig. 4 is a detail, part section and part elevation, of friction-roller and crank-pin. Fig. 5 is a sectional elevation of Fig. 4. Fig. 6 is a detail of a clip suitable for securing the stud-pins to the fork of existing machines.

The levers A are pivoted to the stud B, which may form part of an ordinary clip and be secured by it to the fork C, as shown in Fig. 6. These studs may also be made an integral part of the framework of the machine. The slot D receives the friction-roller E, which traverses therein as the crank F rotates. This is accomplished by the driver pressing his foot upon the pedal G, the angle at which the levers are set insuring the proper motion. As the cranks F are rotated the driving sprocket-wheel H, carrying the chain I, also rotates and operates the smaller sprocket-wheel J, secured to the hub K of the driving-wheel L. When either of the cranks F are upon the bottom center and its associated lever at the downward stroke, the slot D is so located as to offer little or no resistance to the traversing movement of the friction-roller E. This facilitates the downward movement of the crank on the top center and allows of its easy operation by its associated lever.

The position of the pedals G being in advance of the point where the power operates the cranks, as shown in Figs. 1 and 2, gives an increased advantage to the operator and insures greater momentum in the transmission of the force to the associated gearing.

The friction-rollers (marked E on Figs. 1, 2, and 3) are shown in Figs. 4 and 5 in detail. The crank-pin M is provided with the screwed inner and outer cones N and O, which are secured in position with the clamping-nut P, and, together with the treble-seated cone Q, form channels for the friction-balls R R. Other friction-balls S S, of larger diameter, are also held in position by means of the double-seated collar T and the outer cone U with its clamping-nut V. The aforesaid collar T is provided with the groove W to receive the V-shaped guide-plates X, which are the upper and lower plates forming the slot

D. This peculiar construction of the outer and inner ball-bearings admits of a contrary motion being imparted to the two sets of balls, which has the effect of reducing the friction incidental to the rotary movement of the cranks, and the rectilinear movement within the slots D and the V-shaped guide-plates X, moving in the groove W, prevents lateral movement and the displacement of the levers during the pedaling action.

The two forms of levers shown in Figs. 1 and 2 serve to illustrate the manner in which this invention may be modified, but in either case it is to be observed that the construction is almost analogous and the results obtained are approximately the same.

This invention is alike applicable to bicycles and tricycles whether driven by chain and sprocket-wheel or a train of wheels or where motion is imparted to the driving-wheel by means of bevel wheels and pinions.

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

1. In combination in a cycle, the cranks, the bearing, the pins, the slotted pedal-levers, the guiding-rib X projecting inwardly from the walls thereof, the collar T having a circumferential groove fitting said guide-rib, the collar Q between the collar T and the crank-pin, and the balls interposed between the collars T and Q and between the collar Q and the crank-pin, substantially as described.

2. In combination in a bicycle-gearing, the cranks the slotted levers, the crank-pins, the guide-rib X on the levers, the collar formed to fit the rib and having balls S on each side of its interior rib, the collar Q having sides to hold the balls S S and the balls between the collar Q and the crank-pin, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

FREDERICK WILLIAM QUIN.

Witnesses:

HARRY A. SMEDLEY,
LESLIE F. PHILLIPS.