No. 610,923. Patented Sept. 20, 1898.

H. M. SCHEEREN.

PEDAL CRANK.

(Application filed Feb. 24, 1898.)

(No Model.)

Fig. 1.

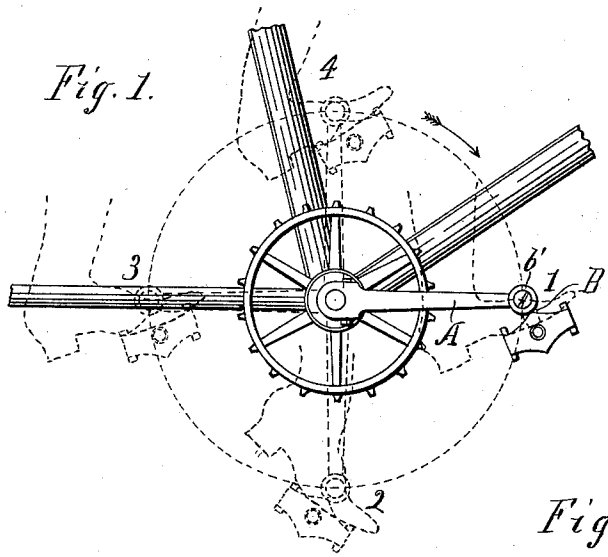


Fig. 2.

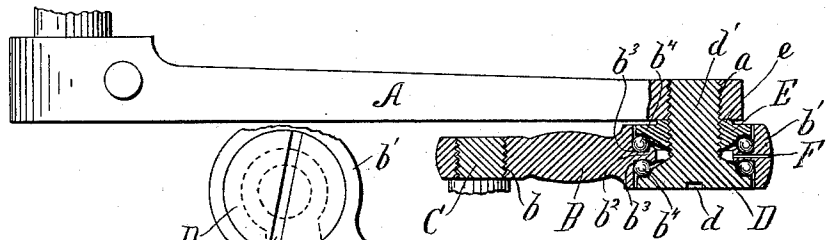


Fig. 3.

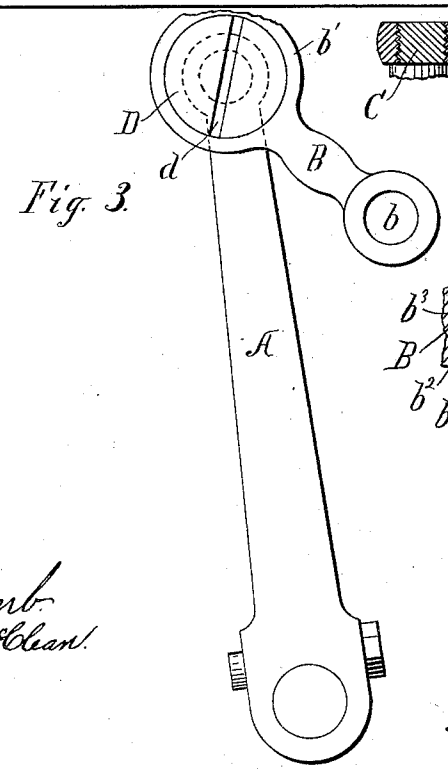
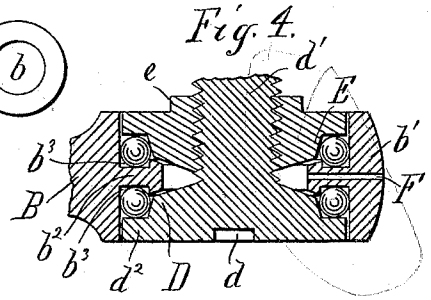


Fig. 4.



WITNESS

R. McComb.

M. J. McClean.

INVENTOR

H. M. Scheeren.

BY

Carr, Deemer & Co

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HUGO M. SCHEEREN, OF NEW YORK, N. Y.

PEDAL-CRANK.

SPECIFICATION forming part of Letters Patent No. 610,923, dated September 20, 1898.

Application filed February 24, 1898. Serial No. 671,453. (No model.)

To all whom it may concern:

Be it known that I, HUGO M. SCHEEREN, a citizen of the United States, and a resident of New York city, county of New York, and State of New York, have invented certain new and useful Improvements in Pedal-Cranks, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts.

This invention relates to an improvement in pedal-cranks for bicycles or other vehicles. The object thereof is to provide a simple device whereby the ankle action of the rider may be made easier and more effectual in propelling the wheel and in providing a device which will obviate the difficulty experienced by riders in overcoming the dead-center when riding in crowded streets where a low rate of speed is necessary.

The invention will be hereinafter fully described, and specifically set forth in the annexed claims.

In the accompanying drawings, Figure 1 is a side elevation of the device, showing the crank-shaft, sprocket-wheel, and the adjacent parts of the bicycle-frame. Fig. 2 is a plan view of the main and auxiliary cranks in horizontal position and partly sectional and on an enlarged scale. Fig. 3 is a side elevation of the crank in the position necessary to overcome the dead-center. Fig. 4 is an enlarged detail view of the bearing shown in Fig. 2.

In applying my invention I employ a crank A, of the type in common use in bicycles. It is obvious that this crank may be varied in form at will. Said crank A is provided at its free end with a threaded hole a, of the usual type.

An auxiliary crank B, of any approved design, is provided at one end with a threaded hole b. Preferably this hole is of the same diameter as the hole a in the main crank A and is provided with a thread of equal pitch. Into the hole b is threaded the axle C of the pedal. Said pedal may be of any approved design, and the object of having the hole b and the hole a of the same diameter and each provided with a thread of the same pitch is to enable the rider to attach his pedals directly to the main crank in the usual way without the intervention of the auxiliary crank, if he so desires. It is obvious, therefore, that the use of the auxiliary crank B is entirely optional and may or may not be employed in combination with the main crank A. Said auxiliary crank B is provided at its other end with an enlarged head b'. An annular rib b^2, centrally located on the interior of said enlarged head, is adapted to form a partition-wall between double ball-bearings. The inner and outer walls of said rib b^2 are provided with suitable channels b^3, adapted as ball-races for the antifriction-balls b^4.

An outer adjusting-cone D is provided with an annular flange d^2, which has a suitable slot d on its outer face adapted for use in combination with a screw-driver in turning said cone D. A projection d' therefrom is provided with a suitable thread upon its periphery to fit the threaded hole a of the main crank A. An inner cone E is adapted to thread onto the projection d' and is provided with a hub e upon its rear side, said hub being adapted for contact with the outer wall of the main crank A.

A suitable oil-hole F is provided in the enlarged head of the auxiliary crank, by means of which the ball-bearings contained therein may be lubricated.

In the operation of the device the balls are inserted in the outer grooved channel, the outer cone D placed in position, and the auxiliary crank then reversed. The other balls are then placed in the opposite groove and the cone E threaded onto the projection d' of the cone D until the adjustment of both ball-bearings is made. It is then screwed into the threaded hole a of the main crank A, the cone acting as a lock-nut for preventing the loosening of the several parts as well as acting as a cone. The pedal-axle is then screwed into the free end of the auxiliary crank B. Any form of pedal may be used for this purpose; but it is preferred that a ball-bearing pedal be used in combination with the compound crank. The bearings of the pedal may be so adjusted that the pedal revolves freely upon its axle, or the cones may be screwed up so tightly as to prevent revolution of the pedal, which with the compound crank is not essential.

Should it be desired to dispense with the

compound crank, the same may be screwed from the main crank and the pedal-axle unscrewed from the auxiliary crank and screwed directly into the main crank. The device will then differ in no way from the ordinary pedal-crank.

The action of the device is best shown in Fig. 1. It will be seen that at all times the pedal occupies a position below the free end of the main crank. The arc described by the free end of the main crank is shown by a dotted line, and the crank revolves in the direction shown by the arrow.

It has been found by experience that the action of the ankle (shown in Fig. 1) brings much less strain upon the muscles of the rider than is the case when the ankles are held stiffly and motion derived principally from the muscles at the knees. The relative positions of the pedals and ankles of the rider are shown in Fig. 1 at the four cardinal points of a revolution. At 1 the compound crank is shown in full lines, with the auxiliary crank extended as it would naturally be during action. As the crank revolves the toe of the rider is depressed, bringing the foot and pedal in the position shown at 2. As the crank rises on the rear side of the sprocket the toe is elevated, as shown at dotted lines at 3, and when at the top of the stroke the relative position is shown at 4. If the pedals are connected directly to the cranks while in this position, it will be practically impossible for the rider to start the wheel; but with the compound cranks it will readily be seen that the action of the foot throws the pedal forward of the dead-center line. The natural result is that pressure applied to said pedal starts the crank over the dead-center line when the pedaling action becomes easy.

It is obvious that the auxiliary crank may be of varying lengths, and in rough riding or in climbing a hill, for instance, where more power is required than in ordinary wheeling, the auxiliary crank and pedal may be extended to a greater degree than is shown at 1 in Fig. 1. The result is that the crank is lengthened and becomes more powerful than the ordinary straight crank.

It is obvious that a single ball-bearing or a double ball-bearing of a different type may be substituted for that located in the hub *b'* of the auxiliary crank B. The cones may also be varied in form without departing from the spirit of my invention.

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

1. An improved jointed pedal-crank for bicycles, embodying a main crank, an auxiliary crank pivoted to the free end thereof, and a pedal threaded into the free end of said auxiliary crank and adapted to be threaded into the free end of the main crank in place of the auxiliary crank, substantially as shown and described.

2. An improved jointed pedal-crank for bicycles, embodying a main crank of the ordinary type, a pivot adapted to thread in the free end of said main crank, said pivot being provided with a fixed cone on the outer end thereof, an inner cone threaded upon said pivot, an auxiliary crank provided with a ball-bearing confined between said cones, and a pedal-axle adapted to thread into the free end of said auxiliary crank or into the free end of the main crank in place of said pivot, substantially as shown and described.

3. An improved jointed pedal-crank for bicycles, embodying a main crank having a threaded hole near the free end thereof, a pivot adapted to thread therein, said pivot being provided with an enlarged head forming a cone, a compound lock-nut and adjusting-cone threaded upon said pivot and provided with a hub upon its rear face adapted for contact with the main crank, an auxiliary crank provided at one end with a threaded hole adapted to receive the pedal-axle and at its other end with an enlarged head having a hole therethrough and an integral central annular rib therein, both walls of said annular rib being provided with a suitable channel adapted to act in combination with the said cone as ball-races, a double series of balls running in said channels, and means for lubricating said balls, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 17th day of February, 1898.

HUGO M. SCHEEREN.

Witnesses:
B. McCOMB,
EMILY SEIDLER.