

UNITED STATES PATENT OFFICE.

JOSEPH ROE PARK, OF NORWICH, ENGLAND.

PEDAL-CRANK DRIVING-GEAR FOR VELOCIPEDES.

SPECIFICATION forming part of Letters Patent No. 642,874, dated February 6, 1900.

Application filed August 8, 1899. Serial No. 726,607. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ROE PARK, a subject of the Queen of Great Britain, residing at Norwich, in the county of Norfolk, England, have invented a new and useful Improvement in Pedal-Crank Driving-Gear for Velocipedes, (for which I have obtained a patent in Great Britain, No. 625, bearing date the 10th of January, 1899,) of which the following is a full and complete specification.

This invention relates to an improved pedal-crank driving-gear for velocipedes; and it has for its object to automatically increase the effective throw of the cranks during a part of each revolution, so as to obtain an increased leverage during the operative part of the stroke.

In the accompanying drawings, which illustrate one method of carrying this invention into practice, Figure 1 is a view in side elevation. Fig. 2 is a view in front elevation. Fig. 3 is a view showing a modification, and Fig. 4 is a diagrammatic view showing the approximate positions of the pedal during a complete rotation of the crank.

Similar letters refer to similar parts throughout the several views.

On the end of each of the cranks A, which are of the ordinary type, is fixed a pin B, on which is rigidly mounted a cam C, forming an extension of the crank. On the pin B are loosely mounted, preferably by means of ball-bearings, as shown, a pair of arms or links D D, which are pivotally attached directly or indirectly at their other ends *d* to a plate E, forming the pedal. This plate is provided with side guides *e*, a rear toothed plate *e'*, and front toe-guard *e''*. The pedal-plate E takes a bearing and rests on the cam C or on a renewable plate *e'''*, so fixed on the under side of the said plate that it may be renewed when worn.

At present I am making the cam E of hard wood; but it will be obvious that it may be

made of other material without departing from the spirit and scope of my invention. The cam may be formed of a single plate or block C, as shown in Fig. 1, or it may be formed of a series of blocks 'C', as shown in Fig. 3, arranged so as to form a cam. In Fig. 3 the blocks C' are rollers, which revolve on their axes, so as to reduce the friction as much as possible.

It will be seen from Fig. 4 that at the beginning of the operative part of the stroke the pedal-plate E bears on the cam C in such a position as to give the greatest leverage of the crank and that at the end of the effective part of the stroke the said pedal-plate bears on the cam, so as to give the least leverage of the crank, the intermediate positions being gradually obtained by reason of the curved parts of the cam between these two points.

It will be obvious that the exact position of the cam with respect to the crank will vary according to the increased amount of leverage desired during the operative part of the stroke of the crank and also that the exact shape of the cam will require to be varied according to the amount of ankle action employed by the rider. In the diagram shown by Fig. 4 the pedal-plate is shown in the approximate positions it will assume if the rider uses his ankle action most effectively.

What I claim, and desire to secure by Letters Patent, is—

The combination, with a crank-arm provided with a laterally-projecting pin at its free end, of a cam secured to the crank-arm eccentric of the said pin, a link journaled on the said pin, and a pedal-plate pivoted to the free end portion of the said link and bearing on the said cam, substantially as set forth.

JOSEPH ROE PARK.

Witnesses:

ROBERT E. PHILLIPS,
A. KNIGHT CROAD.