

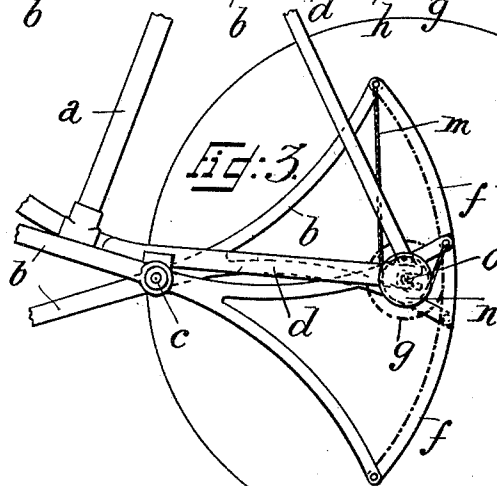
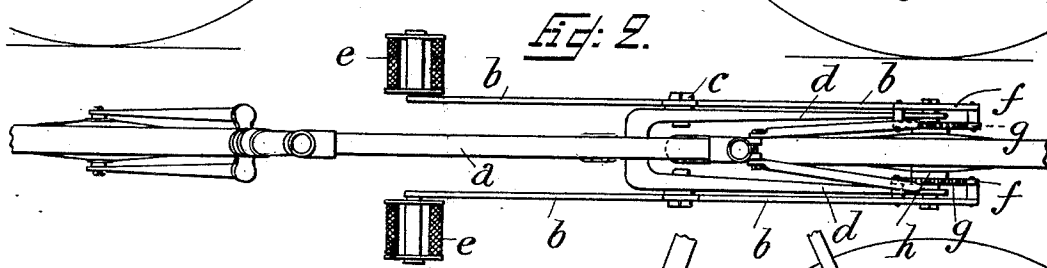
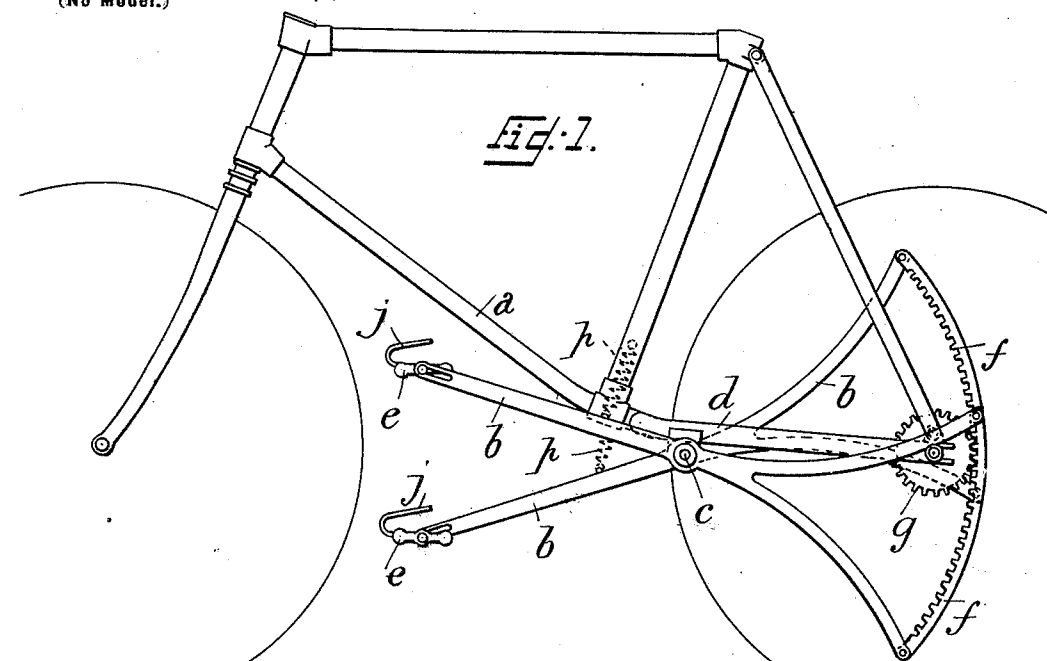
No. 713,867.

Patented Nov. 18, 1902.

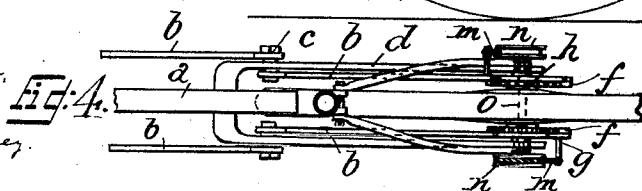
J. B. FORSTER.
CYCLE DRIVING GEAR.

(Application filed June 26, 1902.)

(No Model.)



Witnesses:
D. W. Williams, John B. Forster,
A. Kitt, By H. Adams, Attorney.



UNITED STATES PATENT OFFICE.

JOHN BURNIP FORSTER, OF BELFAST, IRELAND.

CYCLE DRIVING-GEAR.

SPECIFICATION forming part of Letters Patent No. 713,867, dated November 18, 1902.

Application filed June 26, 1902. Serial No. 113,242. (No model.)

To all whom it may concern:

Be it known that I, JOHN BURNIP FORSTER, a subject of the King of Great Britain and Ireland, and a resident of Belfast, Ireland, have invented certain new and useful Improvements in Cycle Driving-Gear, (for which I have filed an application for British patent, No. 19,205, dated September 26, 1901;) and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to an improved arrangement of treadle-driven-cycle driving-gear designed to avoid the disadvantages incidental to crank-and-chain-driven cycles and adapted to enable the cyclist to exert a continuous application of power and a more direct propelling action than is attainable with crank-and-chain-driven gear with a more convenient motion and more powerful action and to have his feet forward when free-wheeling and to exert more or less power at will by varying the forward position of the feet along the treadles.

On the accompanying drawings, Figure 1 represents a side elevation of part of a bicycle, showing the improved gearing in position, with one treadle in its normal raised position and the other treadle in its depressed position. Fig. 2 represents a plan of Fig. 1. Figs. 3 and 4 represent side and plan views, respectively, of the rear portion of the cycle, showing certain parts hereinafter described.

a is a cycle-frame, at each side of which a treadle-lever *b* is centered on a pivot *c*, secured at any convenient point along the driving-wheel stays *d*. Each treadle is provided at its fore end with a foot-plate *e* for depression by the cyclist and at its rear end, which may be arranged within or without the stays *d*, with a toothed sector *f*. The sectors *f*, respectively, engage with one of a pair of sprocket free wheels *g*, mounted on the driving-wheel hub *h*, one on each side thereof, free to rotate thereon in a backward direction, but adapted to engage therewith and actuate the same when driven in a forward direction by the depression of the treadles. The sectors are maintained in constant engagement with the sprocket-wheels by the motion of their supporting-levers being limited by the driving-wheel axle or any other

convenient stop. After each depression of the treadle-lever by the foot it is raised to its normal position ready for renewed actuation. This may be effected by the counterweight of the sector end of the treadle-lever or by the foot by means of toe-clips *j*, applied to the foot-plates *e*, Fig. 1, or in connection with the same by means of flexible attachments *m*, connecting the sectors to pulleys *n*, fast on an axle *o*, passing through the driving-wheel hub, Figs. 3 and 4, so that the depression of each lever causes the raising of the other, or automatically by springs *p*, connecting the respective levers with the cycle-frame, which may be used in connection with the pulleys *n*. By such mechanism the power exerted on the treadles by the cyclist is transferred by the sectors to the sprocket-wheels on the driving-wheel hub directly and without loss of leverage, and during the return motion of the treadles the sprocket-wheels run back free on the driving-wheel hub. Thus the full amount of power exerted on the treadles by the cyclist, less only the loss due to friction, is utilized in propelling the cycle, whereby the cyclist is enabled to exert his power to the best advantage. The said driving mechanism also permits in addition to said advantage of the cycle being used as a free wheel for coasting runs, during which the feet may be set in a sitting position supported by the treadles, and of the power exerted being increased or diminished at will upon shifting the feet more or less forward on the treadle-levers.

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

In combination with a cycle-frame and a driving-wheel mounted therein, a pair of treadles arranged one at each side of the driving-wheel and centered, between their ends, on a pivot supported by the frame, and having a foot-plate at its fore end and a toothed sector at its rear end, a pair of sprocket free wheels mounted on the driving-wheel hub one on each side thereof free to rotate thereon in a backward direction but adapted to engage therewith and to drive the same when driven in a forward direction and each engaging with one of the sectors so as to be driven by the depression of the treadle-levers, means

for preventing the disengagement of the sectors from the sprocket-wheels, and an axle passing through the driving-wheel axle, a pair of pulleys on the through-axle one at each
5 side of the driving-wheel and a flexible connection from each pulley to the top side of the sector at the same side of the driving-wheel, the two connections rising from different sides of the two pulleys for returning the

treadles to their normal position, after each depression of the foot, as set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN BURNIP FORSTER.

Witnesses:

JANE ELIZABETH FORSTER,
ELIZABETH MURPHY.