

No. 611,170.

Patented Sept. 20, 1898.

J. HOWARD.
DRIVING GEAR FOR BICYCLES.

(Application filed Nov. 16, 1897.)

(No Model.)

FIG. 1.

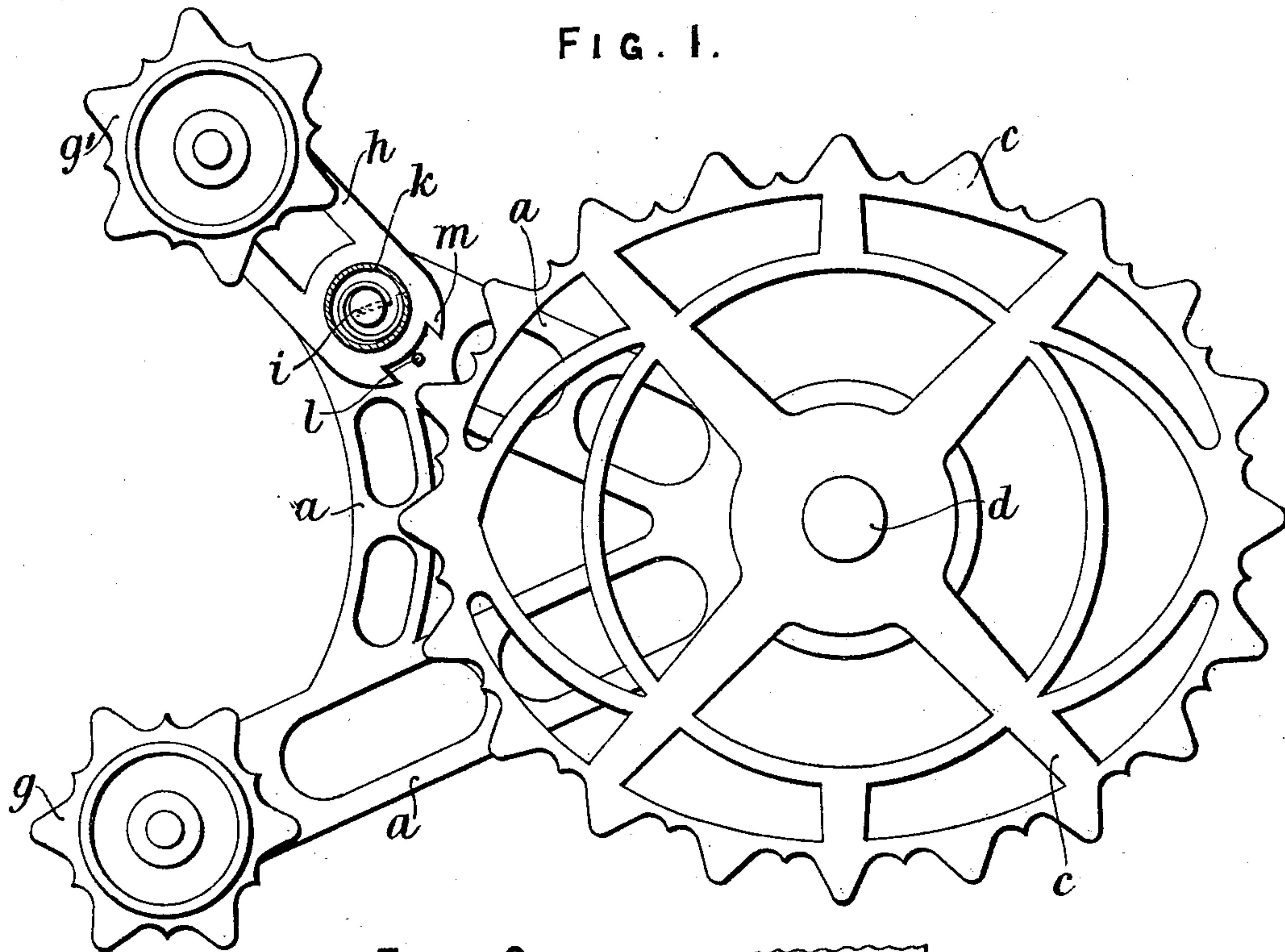


FIG. 2.

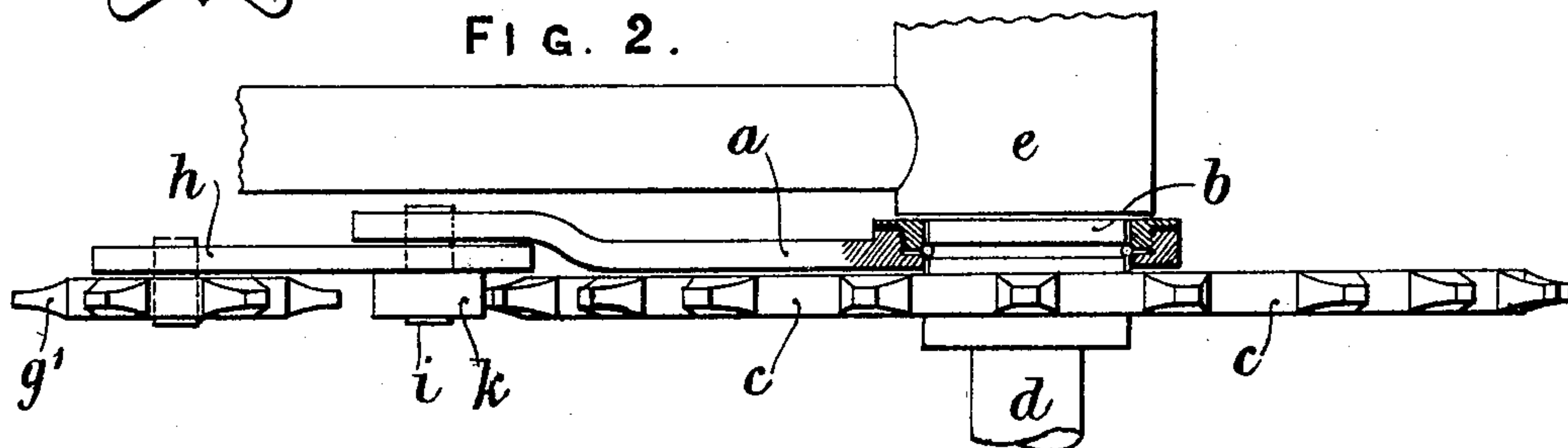


FIG. 3.

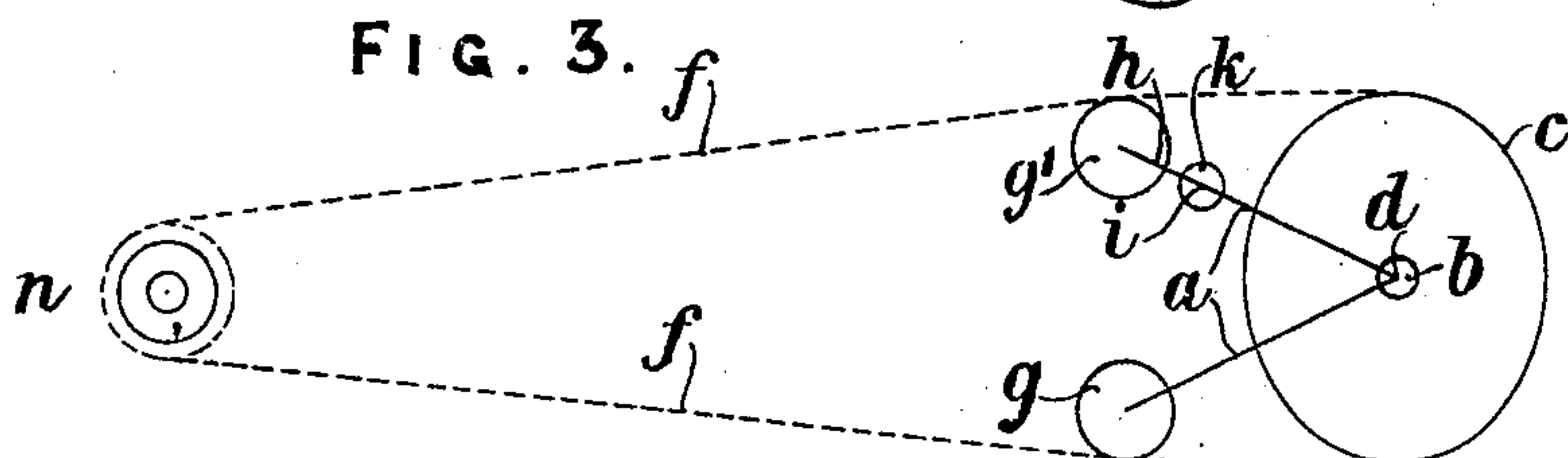
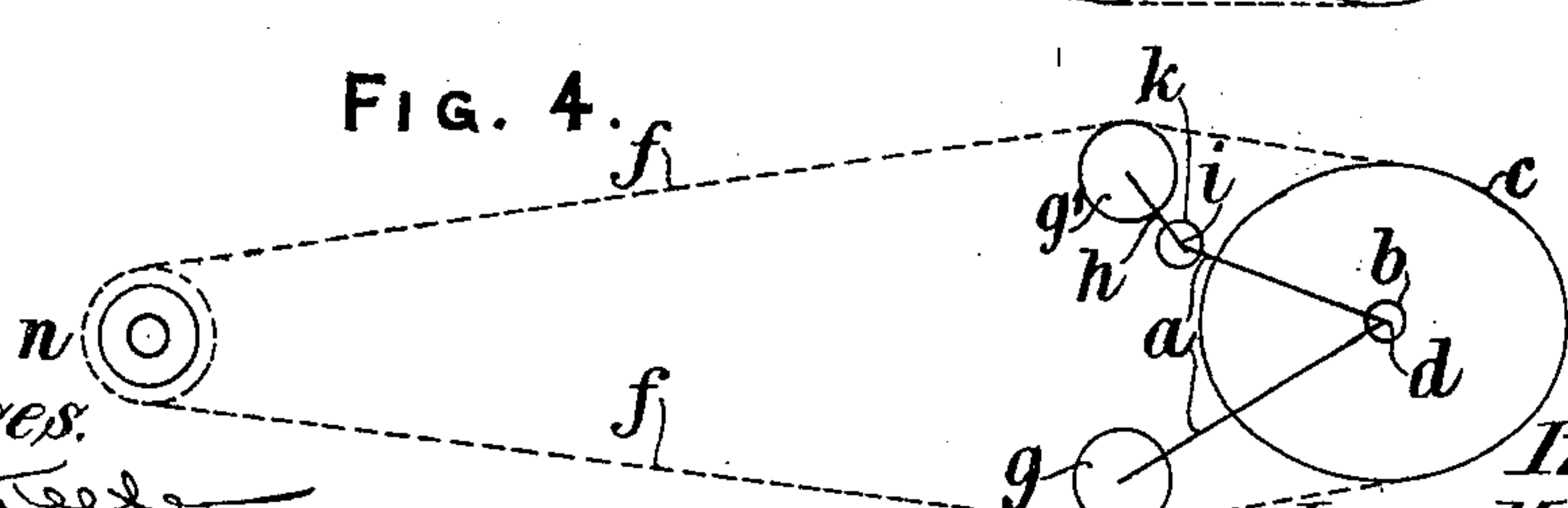


FIG. 4.



Witnesses.

J. B. Teale
Robert G. Smith

Inventor.

James Howard,
By James L. Norris,
Atty.

UNITED STATES PATENT OFFICE.

JAMES HOWARD, OF LONDON, ENGLAND.

DRIVING-GEAR FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 611,170, dated September 20, 1898.

Application filed November 16, 1897. Serial No. 658,752. (No model.) Patented in England April 10, 1897, No. 9,167.

To all whom it may concern:

Be it known that I, JAMES HOWARD, engineer, a subject of the Queen of Great Britain, residing at 2 Sandfield Terrace, Guildford, London, in the county of Surrey, England, have invented certain new and useful Improvements in Driving-Gears for Cycles or the Like, (for which I have obtained a patent in Great Britain, No. 9,167, dated April 10, 1897,) of which the following is a specification.

The invention relates to means for taking up the slack of driving-chains when used with elliptical chain-wheels, such slackness of the chain occurring when the longer axis of the ellipse is in a horizontal position.

In order that my said invention may be particularly described and ascertained, reference is hereby made to the accompanying drawings, in which similar letters of reference indicate corresponding parts.

Figure 1 is a front elevation of an elliptical chain-wheel fitted with my improved means for taking up the slack of the chain, Fig. 2 is a sectional plan view of same. Figs. 3 and 4 are diagrams serving to illustrate the action of the improved apparatus.

According to my invention I provide a triangular oscillatory frame *a*, suitably mounted loosely on the boss *b* of the elliptical chain-wheel *c* or on the axle *d* in such a manner that the chain-wheel *c* and the axle *d* are free to revolve in bearings in the crank-bracket *e* without causing a similar action on the frame *a*, which remains in position between forward and backward moving portions of the chain *f*, Figs. 3 and 4.

The frame *a*, which can oscillate on the boss *b* of the chain-wheel, is provided with a small chain roller or wheel *g*, suitably mounted on ball-bearings, and is also provided with a short arm *h*, carrying a small chain-guide wheel *g'*, also mounted on ball-bearings. The short arm *h* is pivoted to the frame *a* at *i*, the short arm *h* being controlled in its movement

by a coil-spring in the box *k*, which is arranged to exert its power outward and against the under side of the chain, the construction being such that the arm *h*, carrying the guide-wheel *g'*, can yield on the oscillatory frame *a*. The motion of the short arm is limited by a pin *l*, fixed in the frame *a* within the recess *m*, formed in the short arm *h*.

The elliptical wheel may be set at any angle relatively to the cranks as desired, and may be constructed on any of the well-known detachable chain-wheel principles.

The action of the frame and its wheels *g g'* is illustrated by the diagrams Figs. 3 and 4. When the longer axis of the ellipse is vertical, the spring in the box *k* is compressed or wound up, the chain *f* running over the wheels *g* and *g'* freely between the chain-wheel *c* and *n*. When the longer axis of the ellipse is horizontal, the short arm *h* is forced outward by the spring, whereby the slack of the chain is taken up, the spring also forcing the arm *h* to assume its relative position at all other points of the revolution. The frame *a* also accommodates itself to the action of the small wheels *g g'*.

I claim—

1. The combination with an axle, and an elliptical wheel, of an oscillatory frame carrying two chain-guide wheels, one of which is yieldingly mounted thereupon, substantially as described.

2. The combination with an axle, and an elliptical chain-wheel, of an oscillatory frame loosely mounted in operative relation to the chain-wheel and provided with a chain-guide wheel *g* and a pivoted spring-yielding arm *h* carrying a chain-guide wheel *g'*, substantially as and for the purposes described.

Dated the 24th day of September, 1897.

JAMES HOWARD.

Witnesses:

GEORGE C. DOWNING,
WALTER I. SKERTEN.