

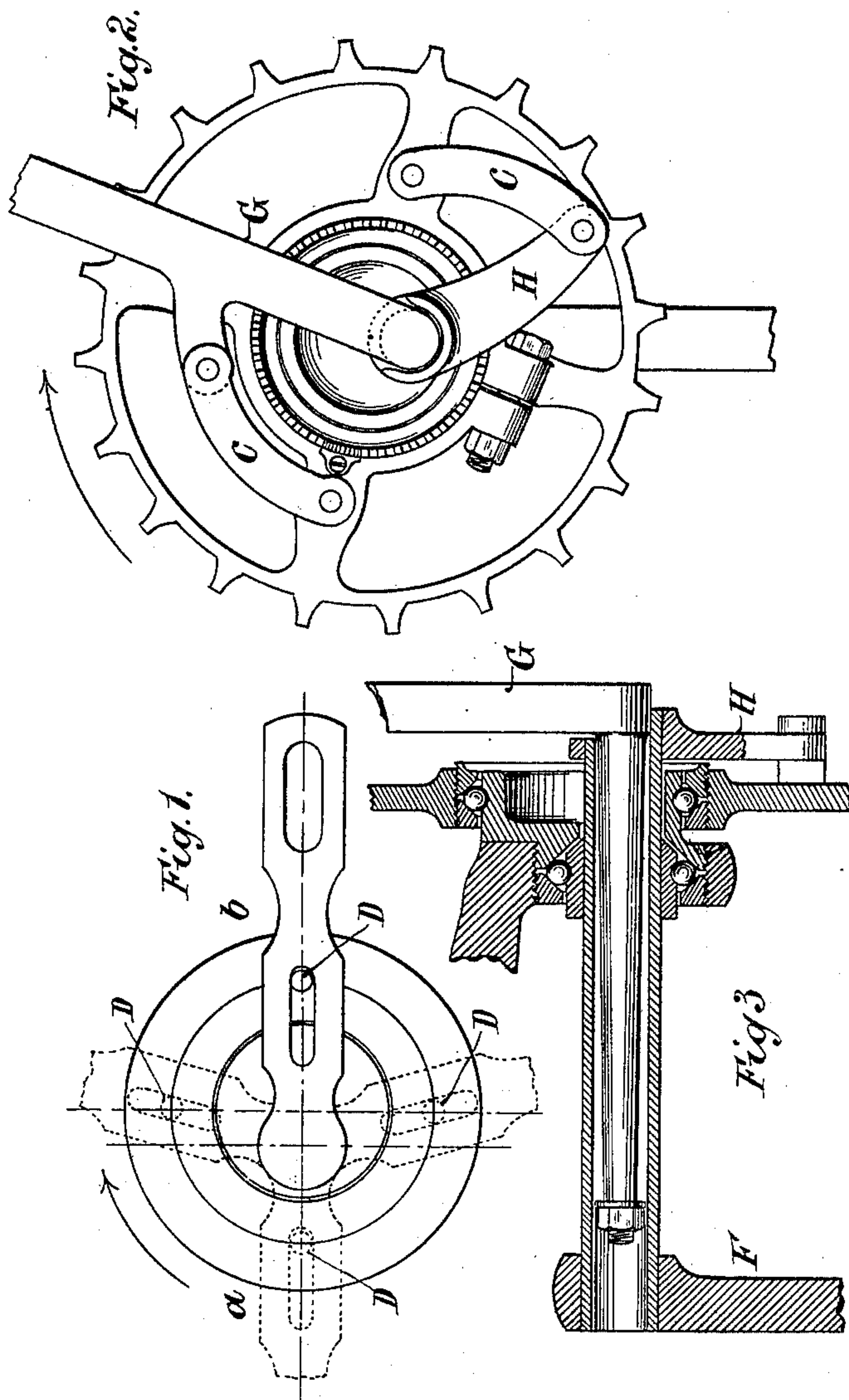
No. 657,859.

Patented Sept. 11, 1900.

J. COTTRELL.
DRIVING GEAR FOR VELOCIPEDES.

(Application filed Dec. 28, 1897.)

(No Model.)



Witnesses.

Robt A. Blake.

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James Cottrell,
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UNITED STATES PATENT OFFICE.

JAMES COTTRELL, OF LONDON, ENGLAND, ASSIGNOR OF ONE-HALF TO
ALFRED HENRY SMITH, OF SAME PLACE.

DRIVING-GEAR FOR VELOCIPEDES.

SPECIFICATION forming part of Letters Patent No. 657,859, dated September 11, 1900.

Application filed December 28, 1897. Serial No. 664,071. (No model.)

To all whom it may concern:

Be it known that I, JAMES COTTRELL, a subject of the Queen of the United Kingdom of Great Britain and Ireland, formerly of No. 5 26 Mansion House street, Kennington Park road, S. E., in the parish of Lambeth, in the county of Surrey, but now of 168 Upper Kennington Lane, London, in the county of Surrey, England, have invented certain new and useful Improvements in Driving-Gear for Velocipedes, (for which I have obtained a patent in Great Britain and Ireland, No. 468, dated January 10, 1889;) and I do hereby declare that the following is a full, clear, and exact 15 description of the invention, reference being made to the accompanying drawings, which are to be taken as part of this specification and read therewith, and one which will enable others skilled in the art to which it appertains to make and use the same.

The purpose of my invention is to give the rider of velocipedes greater control over the action of the cranks used for propelling, whereby a continuous driving power can be transmitted; and it consists in giving a slower downward stroke to the cranks in proportion to the upward stroke, by which means I obtain a longer period or time for the pressure of the foot or power to be exerted and a shorter 30 period or time for the upward or unused stroke. The upward stroke being the faster it will travel through a greater arc or distance in the same time than the downward or slower stroke travels and will thereby overlap what are termed the "dead-centers" and get in a position for use before the downward stroke is completed, Figure 1, faster stroke *a*, slower stroke *b*, allowing the use of a continuous propelling power and enabling the velocipede 40 to be started in motion at any part of the stroke.

In carrying my invention into practice I connect the action of the cranks and other fittings, hereinafter described, to the hub of the "ordinary" or the chain-wheel of a 45 "safety" type of machine by links, Fig. 2, *c c*

or by studs traveling in slots, as in Fig. 1, D, as the case may be, and by placing the spindle and bearings of the cranks out of line with the true center of the hub or chain-wheel cause when in motion the half of one revolution to have a different proportion to the opposite half the one with the other, the difference being more or less, according as the centers are placed more or less out of line, 55 the variation in the radius requiring the use of slots or connecting-links, as before described. I make the hub of the ordinary or the chain-wheel of a safety type of machine to turn on a bearing of diameter large enough 60 to admit of the crank-spindle passing through at about half an inch, more or less, out of the true center of the said hub or chain-wheel, Fig. 3, the cranks to be fitted one on a tube, Fig. 3, F, and the other to a taper-spindle to 65 allow of adjustment, Fig. 3, G. Attached to the tube is an arm H, Figs. 2 and 3, to connect the action of the crank F with the chain-wheel by the aforesaid links *c*, Fig. 2.

Fig. 3 gives a general section showing how 70 the bearings, tube, and spindle are placed and fitted.

Although no part of the invention, ball-bearings may be fitted to the wearing parts, as shown in the drawings. 75

I claim—

A driving-gear for velocipedes consisting of the combination with the hub of the driving-wheel of the bearing therein situated out of the true center of the driving-wheel, the 80 crank-spindles arranged one within the other and pivotally mounted therein, and links connecting the cranks with the hub of the driving-wheel, substantially as described.

In witness whereof I have hereunto affixed 85 my signature, in presence of two witnesses, this 16th day of December, 1897.

JAMES COTTRELL.

Witnesses:

ROBT. A. BLAKE,
R. A. SMITH.