(No Model.)

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T. WARWICK.

VELOCIPEDE.

No. 329,517. Patented Nov. 3, 1885.

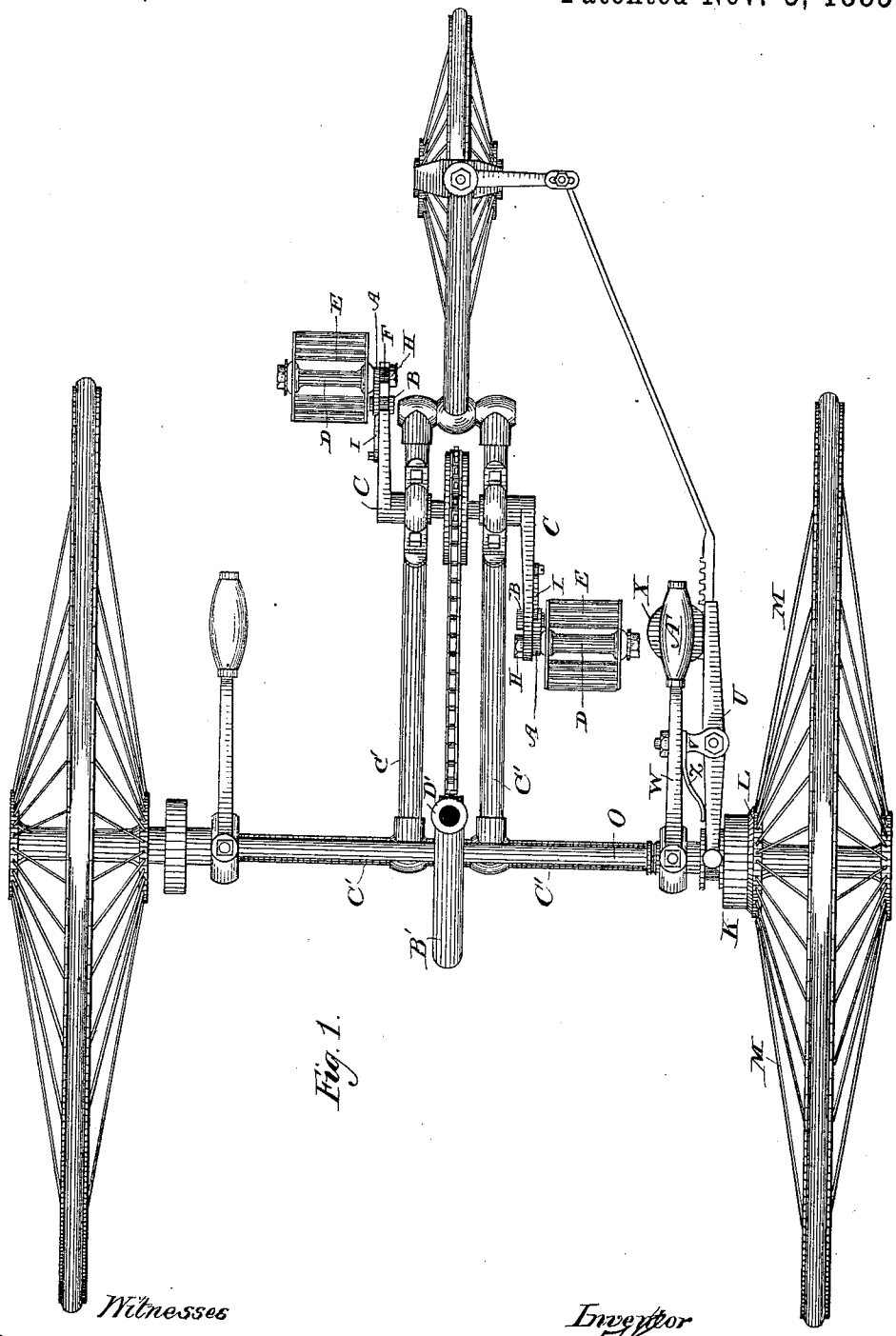


Fig. 1.

Witnesses

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(No Model.)

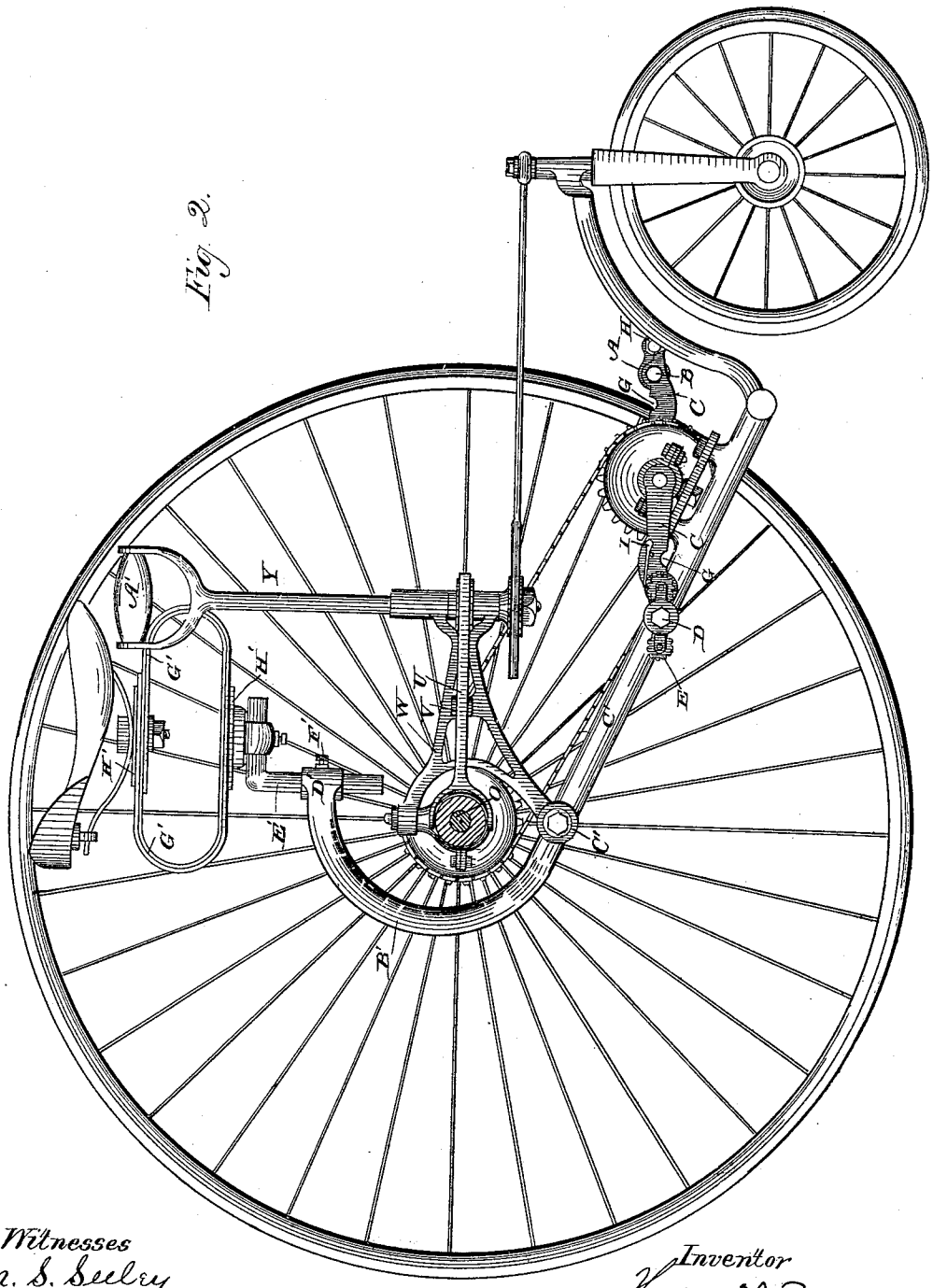
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Fig. 2.



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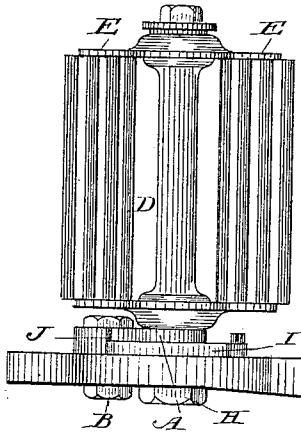


Fig. 3.

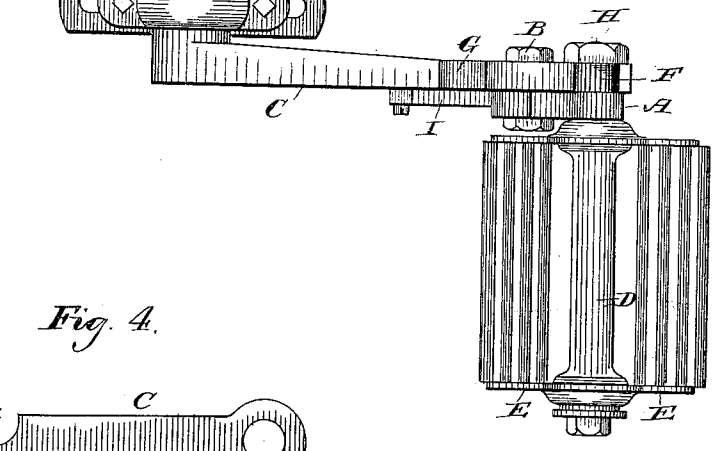


Fig. 5

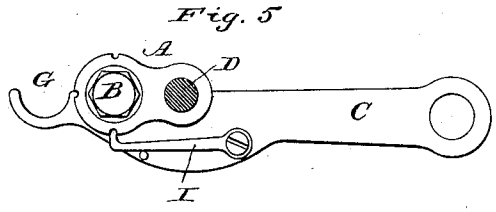
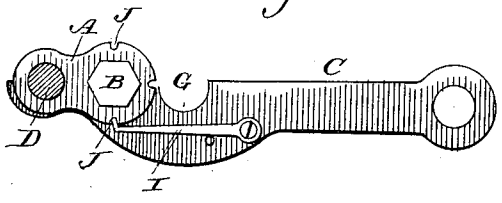


Fig. 4.



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4 Sheets—Sheet 4.

T. WARWICK.

VELOCIPEDE.

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Fig. 6.

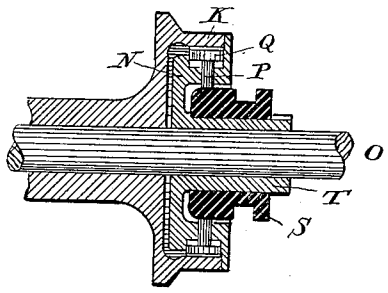
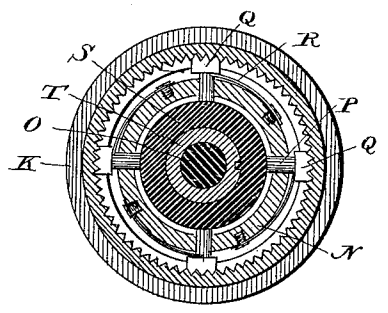


Fig. 7.



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UNITED STATES PATENT OFFICE.

THOMAS WARWICK, OF BIRMINGHAM, COUNTY OF WARWICK, ENGLAND, ASSIGNOR TO THE OVERMAN WHEEL COMPANY, OF CHICOPEE, MASS.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 329,517, dated November 3, 1885.

Application filed April 11, 1884. Serial No. 127,525. (No model.) Patented in England September 27, 1882, No. 4,597.

To all whom it may concern:

Be it known that I, THOMAS WARWICK, residing at Birmingham, in the county of Warwick, England, have invented certain new and useful Improvements in Velocipedes; and I do declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improvement in velocipedes, the object being to provide vehicles of this class with improved auxiliary cranks for changing the leverage or throw of rotary main cranks, with improved mechanism for disconnecting one of the driving-wheels to facilitate the turning of the vehicle, and with improved seat-supports.

With these objects in view my invention consists in certain details of construction and combinations of parts, as will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of a tricycle to which my several improvements have been applied. Fig. 2 is a view of the vehicle in side elevation with the separable wheel removed and with the taper sleeve of the disconnecting mechanism in section. Fig. 3 is a plan view of the main and auxiliary cranks and the pedals, the auxiliary cranks being respectively shown in their forward and rear adjustments. Figs. 4 and 5 are detached views in side elevation, respectively, showing the auxiliary cranks in the said adjustments. Fig. 6 is a detached broken view in transverse section through the hub of the separable wheel and the disconnecting mechanism of the same, and Fig. 7 is a view in longitudinal section of the said mechanism.

My improved auxiliary cranks A are fulcrumed by bolts B or equivalent means upon the outer faces and near the outer ends of rotary main cranks C, which operate upon the rotary principle. The spindles D of the pedals E are mounted in the outer ends of the said auxiliary cranks, and provided with extensions F, which engage with and rest in bearings G, formed in the upper faces of the main cranks and located upon opposite sides of the fulcra of the auxiliary cranks. By virtue of this arrangement the said extensions limit the play of the auxiliary cranks and support them during the downstrokes of the main cranks. Nuts H, secured to the said extensions and adapted to engage with the inner faces of the main cranks, are employed for binding the outer ends of the auxiliary cranks to the main cranks when the former are in their working adjustments. Spring-arms I, secured to the outer faces of the main cranks, are arranged to engage with beveled notches J, located, as shown, in the inner ends of the auxiliary cranks for supporting the same in their working adjustments during the upstrokes of the main cranks, and also for temporarily supporting them in intermediate positions for facilitating the operation of shifting them by the feet. The said spring-arms should be stiff enough to sustain the auxiliary cranks in their working adjustments under the ordinary pressure or weight of the feet during the upstrokes of the main cranks, but yet not so stiff but that by the application of light pressure upon the pedals the auxiliary cranks may first be thrown into their intermediate positions, and then forward or back, according as it is desired to increase or decrease the throw or leverage of the main cranks.

The shifting of the auxiliary cranks as described is effected entirely by the feet and without lifting them from the pedals during the upstroke of the main cranks and while the vehicle is running. The leverage or throw of the main cranks is always increased or decreased to the same extent, and is confined in range to what may be termed a "long throw" and a "short throw." This will be clearly understood by reference to Figs. 3, 4, and 5 of the drawings, in which both adjustments are represented. When the vehicle is being backpedaled, the auxiliary cranks are operated from their fulcra or the points of purchase and with good effect.

My improved mechanism for disconnecting one of the driving-wheels for the purpose specified consists, essentially, of a box, K, having its inner face serrated and formed upon the inner end of the hub L of the driving-wheel M, which is contiguous to the steering apparatus of the vehicle, of a skeleton hub, N, secured to the axle O of the vehicle and located within the box K aforesaid, of reciprocating

bolts P, mounted, as shown, in the skeleton hub N, and provided with serrated heads Q, and of means for operating the said bolts to interlock their heads with and retract them from the inner face of the said box. The said means for operating the bolts as described consists of springs R, connected with them and secured to the periphery of the skeleton hub and exerting a constant tendency to retract the bolts, of a taper sleeve, S, mounted upon and keyed to the bearings T of the said hub and arranged and adapted to be engaged with the inner ends of the bolts and to force the same outward, and of a shipping-lever, U, for operating the sleeve, the said lever being pivoted to an arm, V, projecting from the outer face of the bracket W, and operated by a cam, X, secured to the steering-handle post Y, and by a spring, Z, arranged as shown. In virtue of the described construction and arrangement of parts any turning of the steering-handle A′, and hence its post Y, for turning the vehicle to the right or left, will, through the cam X and lever U, move the taper sleeve inward and release the bolts P, which will be at once retracted by the springs R, thus disconnecting the box and hub, and hence the wheel and axle. When, however, the steering-handle and post are again turned to set the steering apparatus for steering the vehicle straight ahead, the spring Z will at once operate through the lever U to force the taper sleeve inward and re-engage it with the bolts P, which will be forced outward and interlocked with the box K, thus coupling the same and the skeleton hub together, and hence the wheel and axle. It will thus be seen that the separable wheel will be disconnected from the axle and connected therewith in complete harmony with the handling of the vehicle, and with no extra effort or care on the part of the driver.

My improved seat-support consists of an arm, B′, preferably made of tubing, and secured to the frame C′ of the vehicle at a point below the axle O thereof, and curving rearward, upward, and forward, as shown. The upper end of the support is provided with a sleeve, D′, to receive the seat-rod E′, which is secured in place by a set-screw, F′, or equivalent means.

Although the several features of my invention have been shown herein as applied to a tricycle, it is apparent that they may be applied to all classes of velocipedes where available.

I would have it understood that I do not limit myself to the exact construction and arrangement of parts herein shown and described, but hold myself at liberty to make such slight changes and alterations as fairly fall within the spirit and scope of my invention.

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

1. Auxiliary cranks fulcrumed upon rotary main cranks and having pedals mounted in their outer ends, and means for holding the pedals in front of, behind, and above the fulcra of the auxiliary cranks, substantially as set forth.

2. Auxiliary cranks fulcrumed upon rotary main cranks and having pedals mounted in their outer ends, and spring-arms secured to the rotary main cranks for engaging with notches formed in the auxiliary cranks, substantially as set forth.

3. Auxiliary cranks fulcrumed upon rotary main cranks and having pedals mounted in their outer ends, and spring-arms secured to the rotary main cranks for engaging with notches located, as shown, in the auxiliary cranks for holding the pedals in front of, behind, and above the fulcra of the auxiliary cranks, substantially as set forth.

4. Auxiliary cranks fulcrumed upon rotary main cranks and having pedals mounted in their outer ends, and extensions from the pedals for engaging with the upper faces of the rotary main cranks at points on opposite sides of the fulcra of the auxiliary cranks, substantially as set forth.

5. Auxiliary cranks having pedals mounted in their outer ends, and fulcrumed upon rotary main cranks having bearings located upon opposite sides of the fulcra of the auxiliary cranks, substantially as shown.

6. Auxiliary cranks fulcrumed upon rotary main cranks and having pedals mounted in their outer ends, and means for binding the outer ends of the auxiliary cranks to the rotary main cranks, substantially as set forth.

7. Means for disconnecting one of the driving-wheels of a velocipede from the axle thereof, to facilitate the turning of the vehicle, consisting of a box formed integral with the hub of the vehicle and having a serrated inner face, a skeleton hub secured to the axle of the vehicle and located within the box aforesaid, radial reciprocating bolts mounted in the skeleton hub and having serrated heads, a taper sleeve, and springs for operating the bolts, as described, and means for operating the said sleeve, substantially as set forth.

8. A seat-support for a velocipede, consisting of an arm secured to the frame of the vehicle at a point below the axle thereof, and thence curving rearward, upward, and forward, as shown, substantially as set forth.

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

THOMAS WARWICK.

Witnesses:
RICHARD SKERRETT,
ARTHUR J. POWELL.