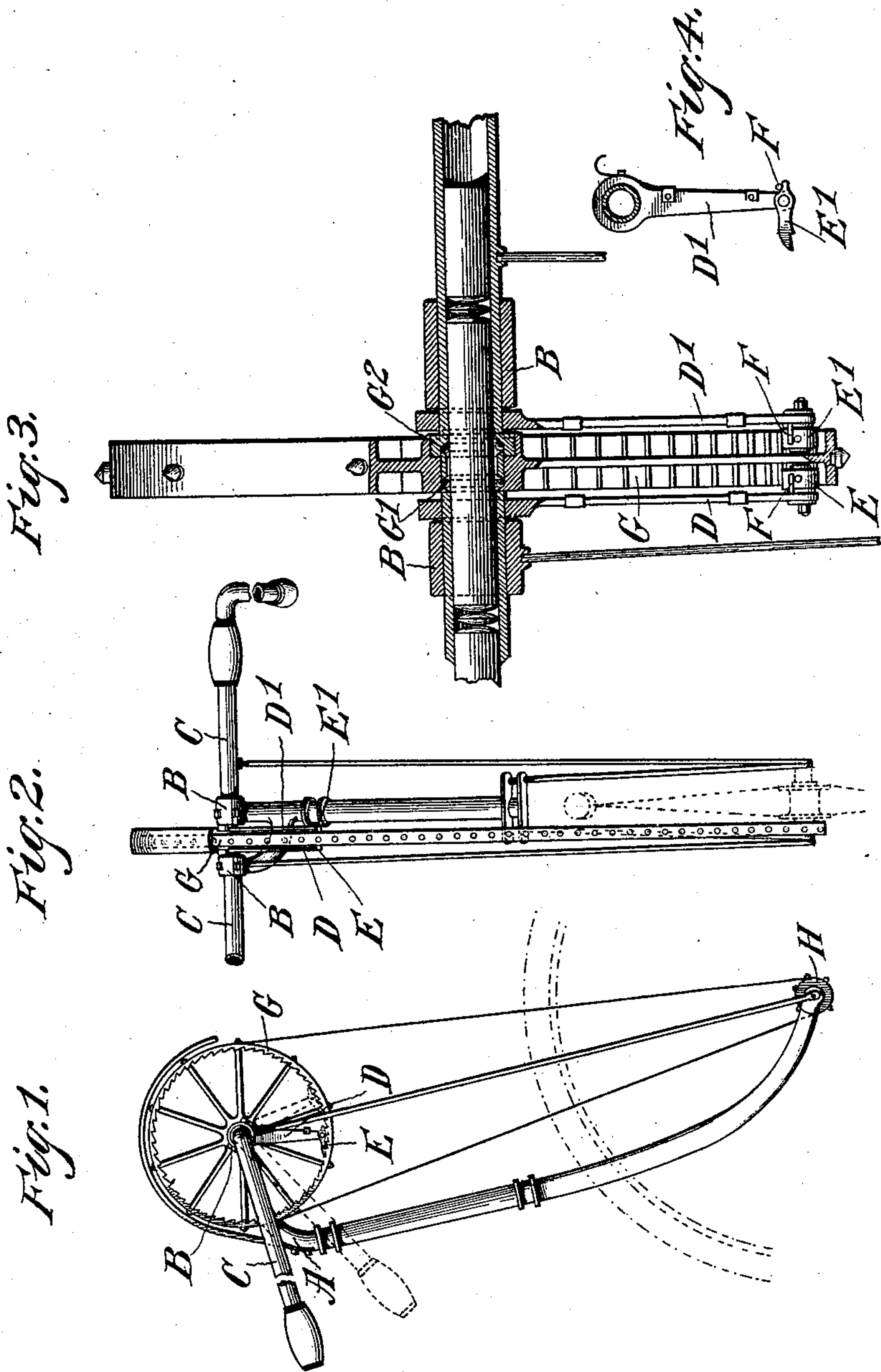


(No Model.)

C. E. BECKMAN.
VELOCIPEDÉ.

No. 587,051.

Patented July 27, 1897.



Witnesses:

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UNITED STATES PATENT OFFICE.

CHARLES EDWARD BECKMAN, OF BRISBANE, QUEENSLAND.

VELOCIPEDÉ.

SPECIFICATION forming part of Letters Patent No. 587,051, dated July 27, 1897.

Application filed June 18, 1896. Serial No. 596,023. (No model.) Patented in England August 22, 1896, No. 18,611.

To all whom it may concern:

Be it known that I, CHARLES EDWARD BECKMAN, mechanical engineer, a citizen of Queensland, and a resident of 14 Queensland Deposit Bank Chambers, Adelaide Street, Brisbane, in the Colony of Queensland, have invented certain new and useful Improvements in Velocipedes, (for which I have obtained Letters Patent in Great Britain, dated August 22, 1896, No. 18,611,) of which the following is a specification.

It is well known among cycle-riders that when racing or climbing hills great strain is put upon the handles, so much so that it not unfrequently happens that the handles are wrenched asunder. This strain is to a certain extent waste power; and the object of my invention is the production of means for the utilization of this power in the arms of the rider for the purpose of assisting his legs, or it may even be used as a substitute for the legs.

More particularly stated, my invention consists in driving the front wheel (and also in some cases hereinafter explained the back wheel) by means of a band or chain from a small sprocket-wheel on the front wheel to a larger sprocket-wheel running with ball-bearings on a shaft forming part of the handle-bar. This wheel is driven by means of ratchet-teeth on the inside rim, into which engage pawls carried on short levers secured to the ends of the handle-bar, which in my invention is made in two pieces. On raising and lowering the handles the levers and pawls cause the sprocket-wheel to revolve and so drive the front wheel.

In order, however, that my invention may be clearly understood, I will now describe it, reference being made to the accompanying drawings, of which—

Figure 1 is a side elevation of my invention. Fig. 2 is a front elevation of same. Fig. 3 is an enlarged front sectional view of the sprocket-wheel, more clearly illustrating my invention. Fig. 4 is an enlarged side view of lever, showing device for throwing the pawl out of gear.

As my invention can as readily be applied to an old machine as a new one, I will describe it herein as fitted to an existing machine, in which case the handles are removed and a forked steering-head A, having two

bearings B, fitted with removable caps, is put in its place.

The handles C are cut at their junction and each fitted with a lever D D', having at its lower extremity a pawl E E', with a device with trigger, such as F, for throwing the pawl out of gear. These handles C are placed in the bearings B after the shaft G² and sprocket-wheel G, with ball-bearings G', have been placed in their position, as shown in detail in Fig. 3. The shaft G², besides carrying the sprocket-wheel G, acts as a stiffener for the handles C, into which it extends.

The sprocket-wheel G may be connected to the sprocket-wheel H on the front wheel by any suitable band or chain.

The handles are free to move through an arc of about twenty-six degrees, the amount being made to suit the rider, but the travel of the handles and gearing of the sprocket-wheels should be such that when the rider lifts one handle the full stroke while he depresses the corresponding pedal both wheels of the machine shall be propelled forward an equal distance.

As shown in Fig. 3, the levers D D' are secured to the handle-bars on opposite sides of the sprocket-wheel G within the bearings B, the latter performing the function of abutments that prevent the handles from slipping off the spindle or shaft G², and to prevent end motion of the said shaft I secure in each handle-section an abutment in the form of a cylindrical plug or bolt. To reduce the friction between the end faces of the shaft G and the abutting faces of the plugs P, I give said faces a convex form or the form of segments of a sphere and interpose between them loose lenticular disk washers or bearings b.

The operation of the invention is as follows: As in rowing on a sliding seat the hands and legs reciprocate, so with my invention as the rider depresses the right pedal he lifts up the right hand, at the same time depressing the left hand and raising the left pedal, and so on, the hand working in concert with the corresponding foot and so enabling the rider to put forth his utmost power in propelling his machine. As the handles are lifted in turn the pawls on the levers in turn engage in the teeth of the sprocket-wheel, so that practically a continuous motion is obtained. Should the

rider not want to use his arms, he depresses the trigger F on each lever and so throws the pawl out of gear. The sprocket-wheel continues to revolve without the pawls touching it.

The invention can of course be modified in its details without departing from the principle; but when the invention is applied to a tandem triplet quodrocycle besides the invention being applied to the front wheel it would also be fitted to the other handles and drive down on the main gearing.

When the invention is applied to a tandem, triple, &c., the fittings on the handle-bar would be modified as to shape and proportion of gearing, so as to allow the back wheel being driven by the rider or riders sitting behind the steerer.

Locking-gear may be fitted to hold the handles when not being used for propelling, but instead thereof a second set of handles can be placed as shown for ordinary use.

Having now particularly described and explained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. The combination with the steering-wheel axle, a propelling-wheel thereon, a steering-fork provided with bearings, and a two-part steering-bar loosely mounted in said bearings; of a shaft to which the steering-bar sections are fitted, a driving-wheel on said shaft between the two parts of the steering-bar, said wheel having internal ratchet-teeth, a power-transmitter connecting the drive and propelling wheels, and pawls operated by the steering-bar sections and engaging the internal ratchet-teeth of the drive-wheel, for the purpose set forth.

2. The combination with the steering-wheel axle, a propelling-wheel thereon, a steering-fork provided with bearings and a two-part steering-bar loosely mounted in said bearings; of a shaft to which the steering-bar sections are fitted, a driving-wheel on said shaft be-

tween the two parts of the steering-bar, said wheel having internal ratchet-teeth, a power-transmitter connecting the drive and propelling wheels, pawls operated by the steering-bar sections and engaging the internal teeth of the drive-wheel, and means for holding said pawls out of engagement with said teeth, for the purpose set forth.

3. The combination with the steering-wheel axle, a propelling-wheel thereon, a steering-fork provided with bearings and a two-part steering-bar loosely mounted in said bearings; of a shaft to which the steering-bar sections are fitted, a driving-wheel on said shaft between the two parts of the steering-bar, said wheel having internal ratchet-teeth, a power-transmitter connecting the drive and propelling wheels, levers rigidly secured to the steering-bar sections between the bearings thereof on opposite sides of the drive-wheel, and pawls pivotally connected with said levers and engaging the internal ratchet-teeth of said drive-wheel, for the purpose set forth.

4. The combination with the steering-wheel axle, a propelling-wheel thereon, a steering-fork provided with bearings and a two-part tubular steering-bar loosely mounted in said bearings; of a shaft to which the steering-bar sections are fitted, abutments in said sections for the ends of the shaft, the abutting faces being convex, lenticular loose washers interposed between said abutting faces, a driving-wheel on said shaft between the two parts of the steering-bar, said wheel having internal ratchet-teeth, a power-transmitter connecting the drive and propelling wheels, and pawls operated by the steering-bar sections and engaging the internal ratchet-teeth of the drive-wheel, for the purpose set forth.

Signed at Brisbane, in the Colony of Queensland, this 5th day of May, 1896.

CHARLES EDWARD BECKMAN.

Witnesses:

ALEXANDER ANDERSON,
FRANCIS HENRY MORROW.