

(No Model.)

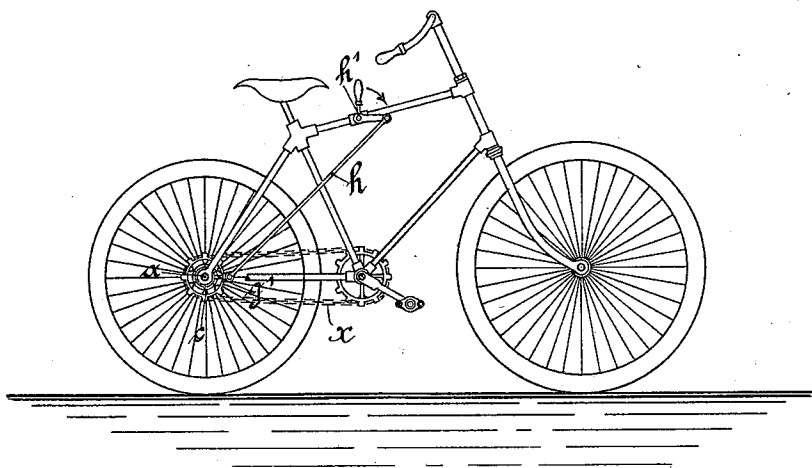
3 Sheets—Sheet 1.

C. H. H. STEUDEL.
DRIVING GEAR FOR CYCLES.

No. 544,239.

Patented Aug. 6, 1895.

Fig. 1.



Witnesses:

W. Voelf
Aug. 6, 1895

Inventor:

Carl H. H. Steudel,
By Wm E. Faulker,
attorney

(No Model.)

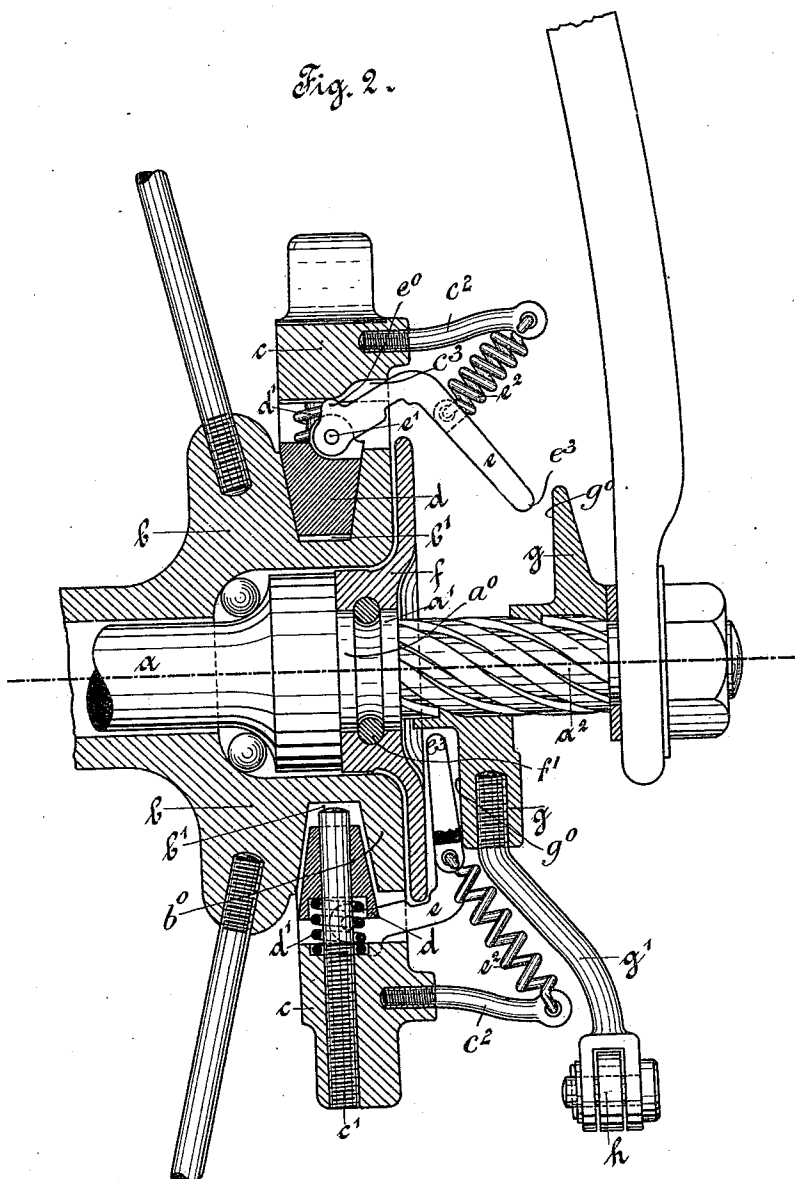
C. H. H. STEUDEL.
DRIVING GEAR FOR CYCLES.

3 Sheets—Sheet 2.

No. 544,239.

Patented Aug. 6, 1895.

Fig. 2.



Witnesses:

Wm. H. H. Steudel
Wm. H. H. Steudel

Inventor:

Carl H. H. Steudel
By *Wm. H. H. Steudel*
attorney

(No Model.)

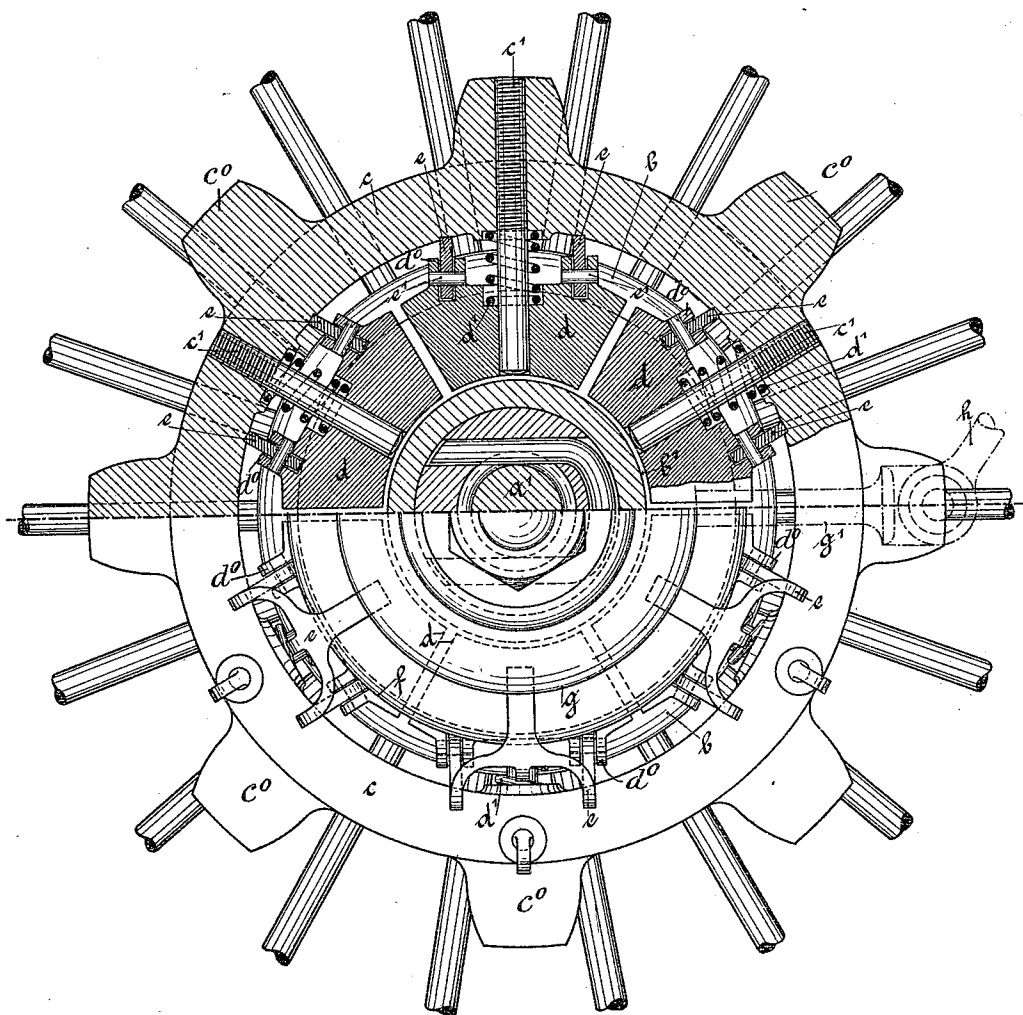
3 Sheets—Sheet 3.

C. H. H. STEUDEL.
DRIVING GEAR FOR CYCLES.

No. 544,239.

Patented Aug. 6, 1895.

Fig. 3.



~Fitnesses:

Otto Koef
Augustin

Inventor:

Carl H. H. Stendel,
By Wm. C. Boulter,
Attorney

UNITED STATES PATENT OFFICE.

CARL HERMANN HORST STEUDEL, OF DRESDEN, GERMANY.

DRIVING-GEAR FOR CYCLES.

SPECIFICATION forming part of Letters Patent No. 544,239, dated August 6, 1895.

Application filed April 16, 1895. Serial-No. 545,957. (No model.) Patented in England December 13, 1894, No. 21,940; in Belgium December 15, 1894, No. 112,871, and in Austria January 3, 1895, No. 45/11.

To all whom it may concern:

Be it known that I, CARL HERMANN HORST STEUDEL, a subject of the King of Saxony, residing at Dresden, in Saxony, Germany, have
5 invented certain new and useful Improvements in or Relating to the Driving-Gear of Cycles, (for which I have obtained Letters Patent in England, No. 21,940, dated December 13, 1894; in Belgium, No. 112,871, dated
10 December 15, 1894, and in Austria, dated January 3, 1895, Vol. 45, fol. 11,) of which the following is a specification.

My invention relates to the driving-gear of cycles.

15 To lose foothold or command of the pedals in cycling is greatly dreaded as a danger by riders, for if the cyclist attempts to get his feet again on the pedals he exposes himself, unless he is very dexterous, to the risk of being
20 knocked on the shins by the rapidly-rotating pedals. Moreover, when descending steep hills his safety may depend upon the prompt recovery of command over the pedals of his machine. With a special view to obvi-
25 ating these risks the device hereinafter described has been designed, by means of which the pedal-crank axle and driving-wheel may be thrown in and out of gear with each other
30 at will while the machine is running. By the aid of this apparatus, for example, the rider is enabled while descending a slope to cease rotating the pedals and to keep his feet resting upon them until such time as he again throws
35 into gear a coupling which is employed to connect the driving-gear to the hub of the driving-wheel or disconnect it therefrom.

Although the attempt to restrain or arrest the movement of a swiftly-running machine by means of the revolving pedals should only
40 be made by a skilled and practiced cyclist, and is only practicable for such a one in ordinary cycles, yet it may be quite within the power of a less practiced or even an unskilled rider, with a machine fitted with this inven-
45 tion, to utilize the coupling between the chain-wheel and the hub of the driving-wheel as a means of developing and applying brake-power to the machine to any desired extent.

On the accompanying drawings, Figure 1 is
50 a side elevation of a safety-bicycle fitted with this invention, which is applied to the smaller

or rear wheel. Fig. 2 is a transverse section of part of the rear wheel, showing the hub and the chain-wheel and a friction-coupling employed in the manner hereinafter explained
55 to connect those two parts, the coupling being represented as thrown into gear in the upper half of the view and in the lower half as thrown out of gear. Fig. 3 represents the
60 hub of the rear wheel with contiguous parts of the machine. This view shows the chain-wheel and coupling thrown into gear. The lower half of the view is an elevation, and the upper half is a section, which latter is longi-
65 tudinal as regards the wheel, but transverse in relation to the axle.

On the rear-wheel axle *a*, which, as is usual, is held stationary in the frame of the machine, is mounted in the ordinary manner the rear-wheel hub *b*. In this invention the hub
70 *b* has an outward prolongation or extension *b'*. This extension constitutes a friction-wheel. It has an external annular groove *b'* therein, which is approximately V-shaped—
75 *i. e.*, widened gradually from its inner to its outer circumference. The friction-wheel *b'* of the hub is encircled by a ring *c* having
80 teeth *c'* thereon, and constituting a spokeless chain-wheel, in the present example. *d d* are segmental friction-blocks or wedges arranged to slide on radial guides *c'*, which are
85 bolts screwed into the rings *c* and which extend inward therefrom toward the axis of the friction-wheel into the annular groove *b'*, nearly as far as the bottom thereof. Springs *d'*
90 encircle part of each guide *c'* and are retained thereby between the ring *c* and the outermost parts of the peripheries of the segmental friction-blocks *d* in such manner as
95 to tend to press constantly the friction-blocks inward—*i. e.*, into the grooves *b'*. So long as the friction-blocks *d* are permitted to engage frictionally with the walls of the groove *b'* the chain-wheel *c* is locked by those wedges
100 to the friction-wheel *b'* and the hub, and consequently the driving-wheel can be set in rotation by moving a driving-chain *x*, (shown only in Fig. 1,) which engages with the teeth *c'*.

In order to enable the coupling to be thrown out of gear and break the connection between
105 the chain-wheel *c* and the hub *b*, a forked bent lever *e* is pivoted to each segmental fric-

tion-block by pins e' , which engage with the levers, as shown, and with lugs d^o on the segmental blocks d . These levers e are controlled by springs e^2 , which are in tension, each spring being connected at one end with the levers e and at its opposite end with a projection c^2 from the ring c . The springs e^2 , aiding and co-operating with the springs d' , previously mentioned, tend constantly to force under the chain-wheel ring c some projections e^o , one of which is formed on each lever e , close to the pin e' thereof, as shown. So long as these levers e are in the position in which they are shown in Fig. 2, for instance, they contribute to keep the coupling in gear. If, however, the outwardly-projecting ends e^3 of these levers are pressed toward b , the projections e^o move out of contact with the contiguous face of the ring c into clearances c^3 therein, the pressure previously exerted by the levers upon their fulcrums (the pins e') is reduced, and consequently the pressure of the segmental wedge friction-blocks d in the groove b' is lessened, the ring d therefore being unlocked from the hub. The arms e find an abutment against the edge of a disk f , carried on the axle, which edge forms a fulcrum enabling the levers e to lift the friction-blocks d quite clear from contact with the walls of the groove b' . (See Fig. 2.) The disk f turns loosely on shoulders or collars a^o a' of the axle, so that it may be able to rotate when (on the coupling being thrown out of gear) the bent levers e rest upon its edge and the chain-wheel continues to rotate. Provision is made against lateral displacement of the disk f —i. e., displacement in the longitudinal direction of the axle—by means of a splint or cotter f' . In order to enable all these bent levers e to be operated simultaneously from the rider's seat an outer portion of the axle is provided with a screw-thread a^2 of a quick pitch, and a screw-nut g is mounted thereon and has a flange g^o extending sufficiently far outward for the said lever ends e to come well within its range. The pitch of the screw-thread is so proportioned that the rectilinear displacement of the nut and flange consequent upon a quarter-revolution of the same suffices to move the levers e to the desired extent. This rotation is imparted to the nut by means of the bent lever g' , connecting-rod h , and bell-crank-lever handle h' , the latter mounted on a suitable part of the frame within convenient reach of the rider's hand, Fig. 1; but this arrangement may be replaced by any other suitable devices appropriate for the purpose. When, therefore, the rider wishes to bring the pedal-crank axle and chain-wheel to rest, it suffices for him by a suitable manipulation of the lever-handle h' to release or throw out of gear

the coupling between the chain-wheel c and the hub of the rear wheel. Then, holding his feet quietly upon the pedals, he can by suitably limiting the return movement of the lever-handle h' permit the brake-cheeks to penetrate into the groove b' sufficiently far to establish a greater or less amount of brake action, but without communicating motion to the chain-wheel. It will only be when by allowing the handle h' to complete its return movement he allows the full power of the springs d' e^2 to be brought to bear upon the segmental friction-blocks d that they will be so strongly driven into the groove b' as to couple the chain-wheel and the hub firmly together again. He will then be able to propel the machine by working the pedals with his feet.

I claim—

1. In driving-mechanism for cycles the combination with the pedals of a ring in operative connection with said pedals radial guides carried by the ring friction blocks movable on said guides levers e operatively connected with the friction block springs d' and e^2 a friction-wheel b^o in operative connection with a road-wheel of the cycle an axle a a disk f freely rotatable on the axle a nut g movable along the axle and hand-gear for moving that nut substantially as set forth.

2. In driving mechanism for cycles the combination with the pedals of a ring in operative connection with said pedals radial guides carried by the ring friction blocks movable on said guides levers e operatively connected with the friction blocks springs d' and e^2 a friction wheel b^o in operative connection with a road-wheel of the cycle a non-rotative axle partially screw-threaded a disk f freely rotatable relatively to the axle a nut g engaged with the screw-thread of the axle and hand gear for rotating the said nut substantially as set forth.

3. In driving mechanism for cycles the combination with the pedals of a ring in operative connection with said pedals radial guides carried by the ring friction blocks movable on said guides levers e operatively connected with the friction blocks springs d' and e^2 a friction wheel b^o in operative connection with a road-wheel of the cycle a non-rotative axle partially screw-threaded a nut g engaged with the screw-thread of the axle and hand gear for rotating the said nut substantially as set forth.

In testimony whereof I have hereto set my hand in the presence of the two subscribing witnesses.

CARL HERMANN HORST STEUDEL.

Witnesses:

OTTÓ WOLFF,

HUGO DUNMER.