

(No Model.)

5 Sheets—Sheet 1.

C. E. HIESTER.  
VELOCIPÈDE.

No. 285,130.

Patented Sept. 18, 1883.

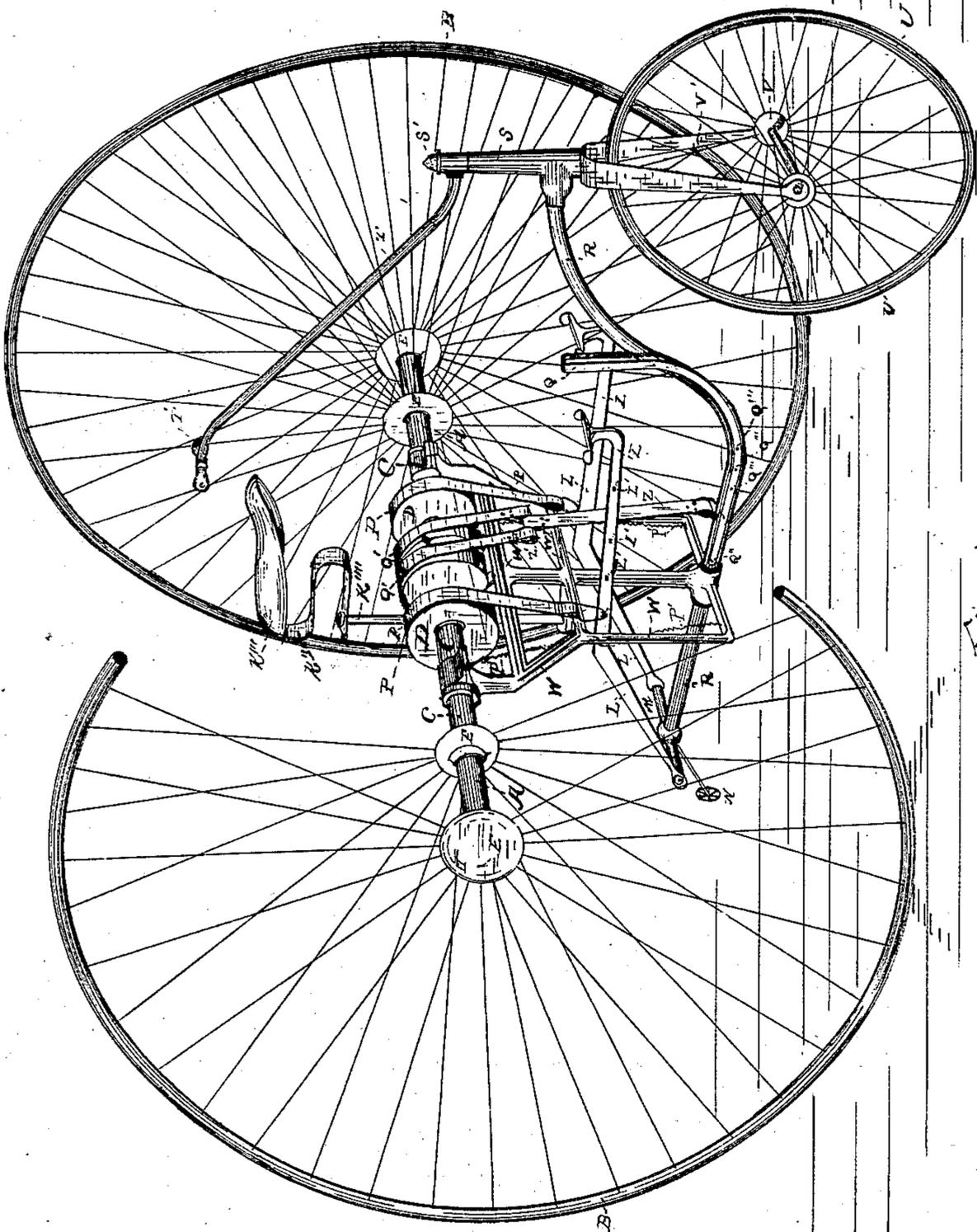


Fig. 1

Witnesses.  
*E. F. Murdock*  
*M. H. Deane*

Inventor:  
*Chas. E. Hiester*  
by *J. N. Adriaans*  
Atty.

(No Model.)

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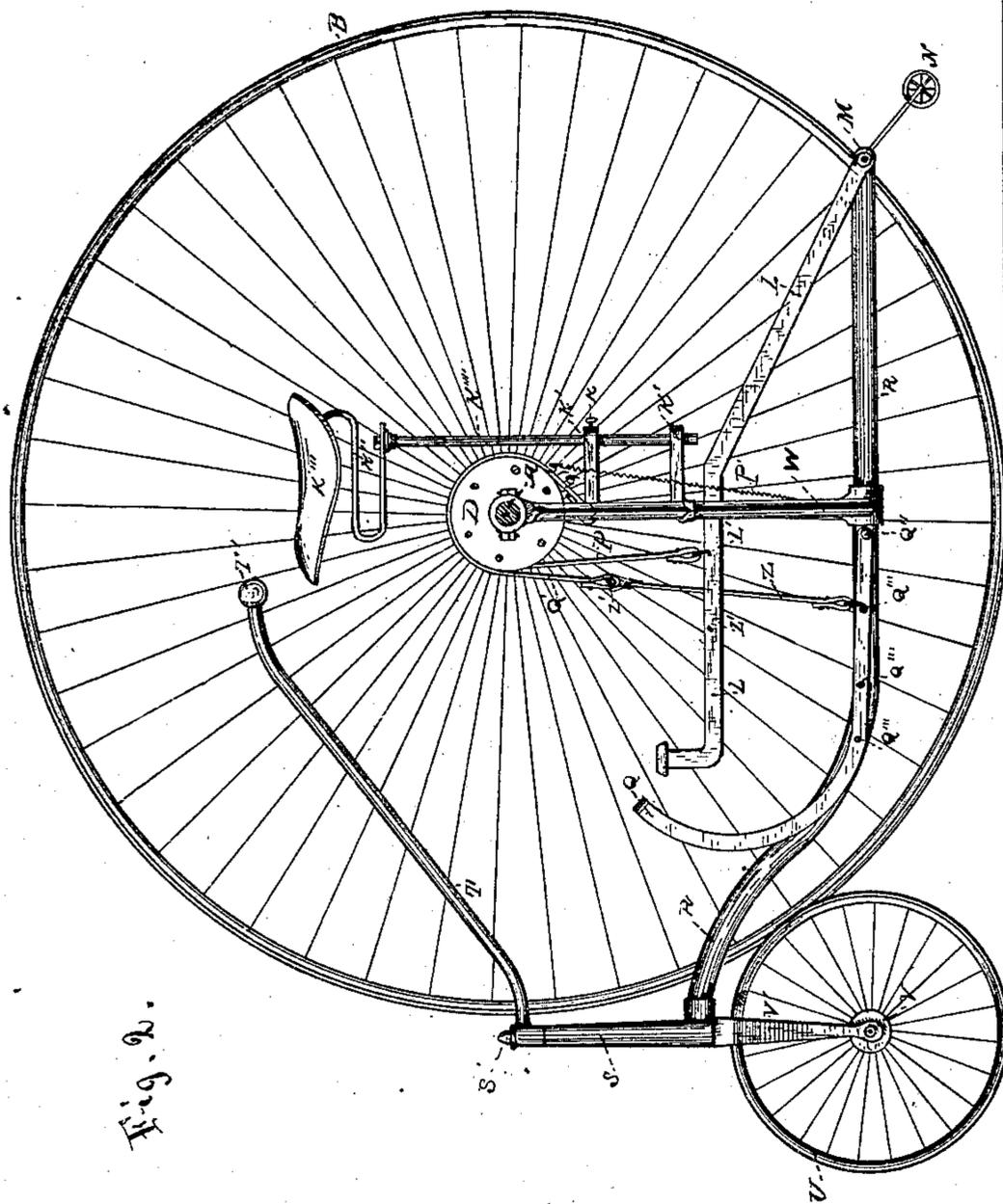


Fig. 2.

Witnesses.  
*E. J. Murdock*  
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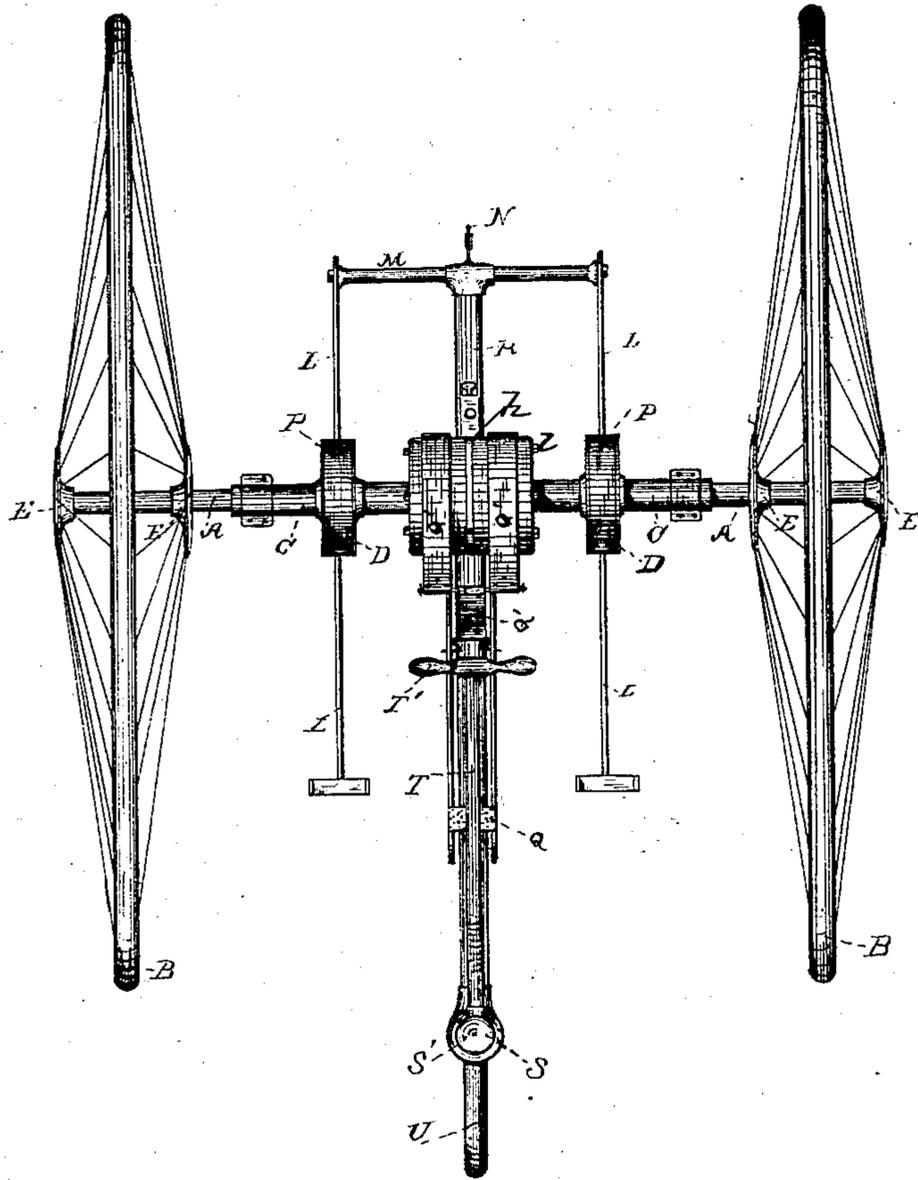
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VELOCIPÈDE.

No. 285,130.

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Fig. 3.



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(No Model.)

5 Sheets—Sheet 4.

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VELOCIPEDA.

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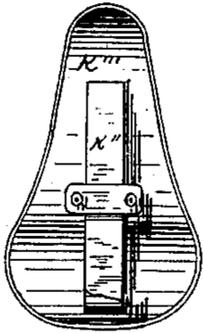


Fig. 8.

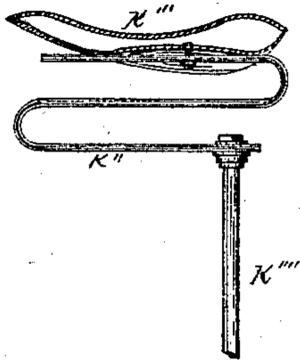


Fig. 9.



Fig. 7.

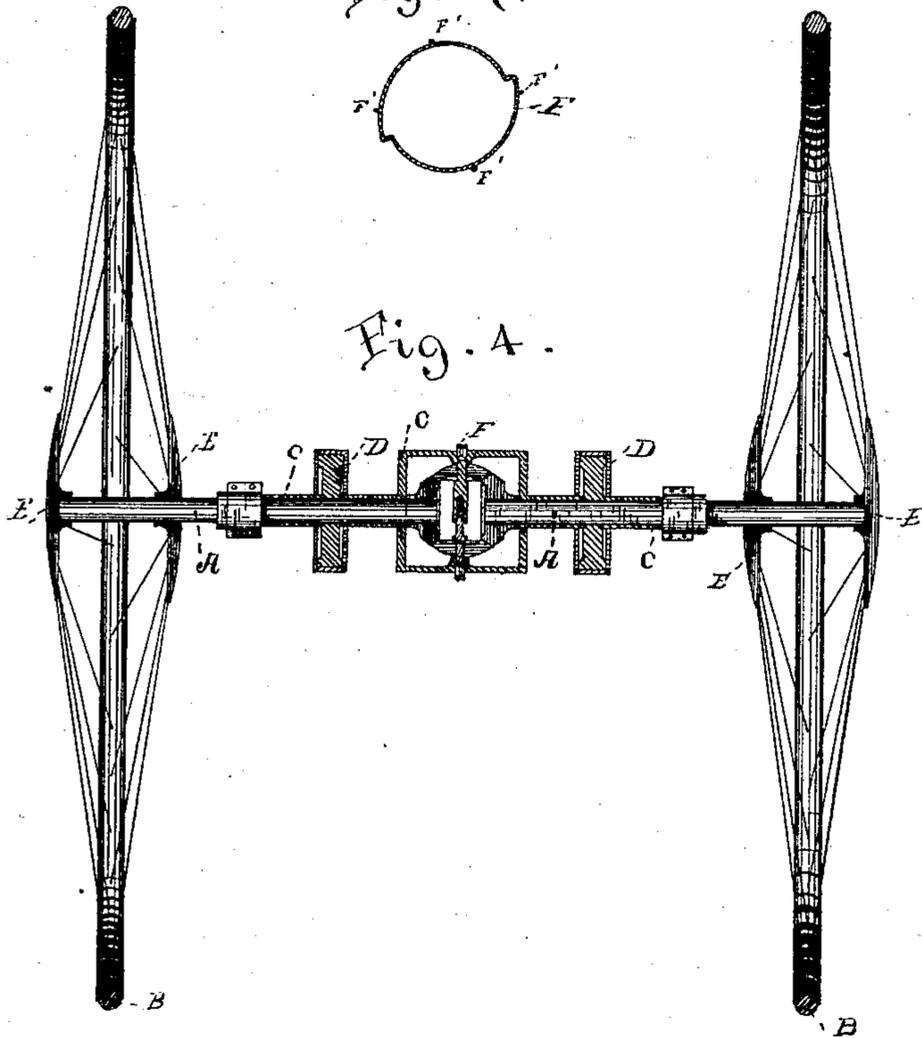


Fig. 4.

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(No Model.)

5 Sheets—Sheet 5.

C. E. HIESTER.  
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Fig. 5.

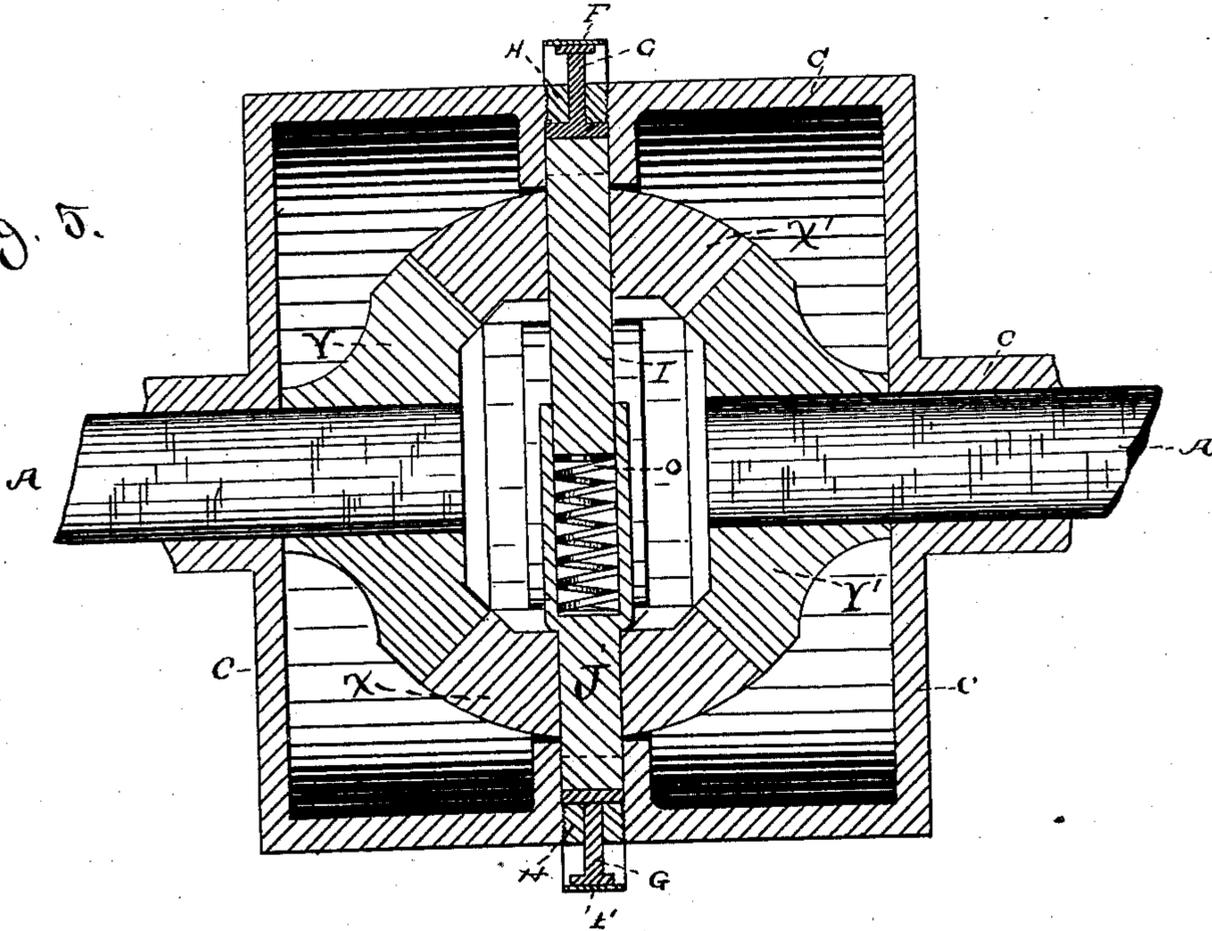
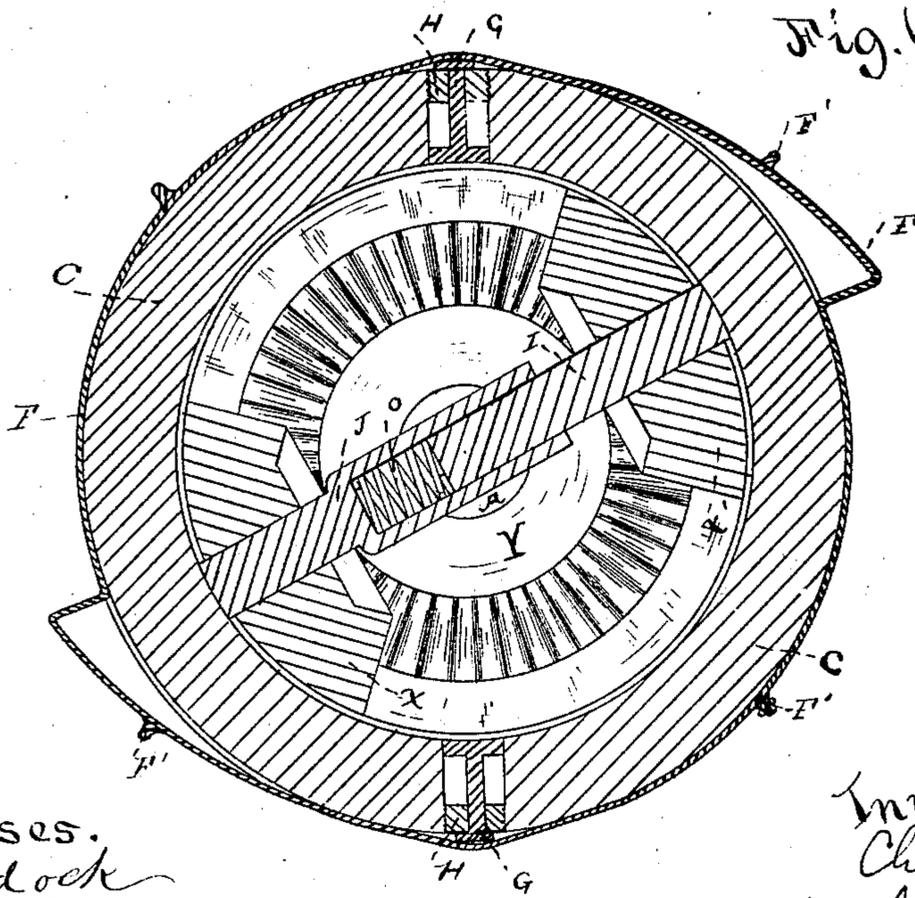


Fig. 6



Witnesses.  
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Inventor.  
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Atty.

# UNITED STATES PATENT OFFICE.

CHARLES E. HIESTER, OF HARRISBURG, PENNSYLVANIA.

## VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 285,110, dated September 18, 1883.

Application filed June 25, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. HIESTER, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain  
5 new and useful Improvements in Tricycles; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying  
10 drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to improvements in tri-  
cycles in which driving-disks are employed to  
15 convert the power of the feet into a rotary motion of the driving-axle and the wheels attached thereto; and the objects of my improve-  
ments are, first, to effectually distribute the  
power applied for propulsion and retardation  
20 to the source of motion directly; second, to provide for a backward movement of the tri-  
cycle; third, to obviate tipping due to loss of  
equilibrium; fourth, to provide for variable  
and unequal motion of the driving-wheels;  
25 fifth, to provide readily for changing to speed  
or power, according to the requirements of the  
road; sixth, to provide means whereby the  
seat may be adjusted vertically and horizon-  
tally; and, seventh, to accomplish these ends  
30 with simplicity of construction. I attain these  
objects by the mechanism illustrated in the ac-  
companying drawings, in which—

Figure 1 represents a perspective view of  
my improved tricycle, partially broken to illus-  
35 trate the relative location of the parts. Fig. 2  
is a side elevation, having one wheel entirely  
off the axle. Fig. 3 is a plan view of the com-  
plete tricycle. Fig. 4 is a sectional elevation  
through the axle. Fig. 5 is a section parallel  
40 to the axle, through the central portion of the  
sleeve concentric with the axle, illustrating  
the balance-gear or compensating mechanism  
by which variable motion to the wheels is im-  
parted. Fig. 6 is a section perpendicular to  
the axle through the center of the sleeve. Fig.  
45 7 illustrates the steel or metallic band whose  
rotation depresses releasing-pins in the sleeve.  
Fig. 8 is an elevation of the bottom of the sad-  
dle, and Fig. 9 is a longitudinal section of the  
same.

50 Similar letters refer to corresponding parts  
throughout the several views.

A A are the axles.

B B are the driving-wheels.

C is the sleeve concentric with the axles, and  
serving to unite them. 55

D D are the driving-disks, mounted on the  
sleeve. Their preferable construction is to  
employ rollers whose binding contact between  
the axles and the walls of the disk causes the  
60 motion, as fully explained in Letters Patent  
No. 271,583, granted to me January 30, 1883.

E E E E are the hubs of the driving-wheels,  
directly attached to the axles A A.

F is the steel band encircling the sleeve C,  
whose rotation operates releasing-pins G G. 65

F' F' are lugs by which the revolution of the  
steel band F is effected.

G G are pins in the sleeve C, which are nor-  
mally pressed by spring O beyond the surface  
of the sleeve. When the band F is revolved 70  
so as to depress the pins, the pinion-shafts I  
and J compress the spring O and cause these  
shafts to clear their bearings in H H.

H represents the space through which the  
pin G reciprocates. 75

I and J are the shafts, respectively, of the  
pinions X' X.

K is a hand-screw regulating the vertical  
adjustment of the seat K''' by means of guid-  
80 ing-bearings K' K'.

K'' is a laminated S-spring, one of whose  
ends is secured to the standard K''', while the  
other end is removably fastened under the sad-  
dle K''', whereby horizontal adjustment there-  
of is permitted. 85

L L are the pedal-levers, pivoted at M to the  
curved bar R.

L' L' are holes in the pedal-levers, in which  
flexible connections P P are fastened. By  
means of these holes the machine may be geared 90  
for power or speed, to suit the conditions of the  
road.

M is a cross-bar serving as a pivot to the  
levers L L and as a support to the wheel N.  
It is held in position by the curved bar R. 95

N is a small wheel sustained in position by  
the bar M. Its purpose is to prevent the tri-  
cycle from tipping backward.

O is a spring in the sleeve C, serving nor-  
mally to express the pins G G and to keep the 100  
pinion-shafts I J to their bearings.

P P are the flexible connections, serving to

impart the motion received by the pedal-levers L L to the driving-disks D D.

Q is the braking-pedal, pivoted at Q' to the curved bar R.

5 Q' Q' are the straps connecting the lever Q with the frame, beneath the drum of the sleeve C, by means of the strap Z and cross-bar Z', thus checking the rotation of the drum. These straps Q' Q' are preferably made to have an  
10 inner face of leather, while the outer one is of steel. When the lever Q is applied, the friction upon the sleeve-drum effectively and instantaneously stops the rotation of the sleeve, and hence of the driving-axle.

15 Q''' are holes in the pedal-lever, which permit of fastening the strap Z in different positions, thereby varying the intensity of the braking force.

R is a curved bar subserving various functions, as follows: At the forward end it supports the bearing S for the yoke S', which terminates in a bifurcated lever, V', carrying the axle V of the guiding-wheel U. Then near its  
20 junction with the frame W it forms a pivotal bearing for the lever Q and guides the oscillation of this lever, and at the rear end it holds in place the cross-bar M.

S is a bearing in which the yoke S' is revolved by lever T.

30 T is a steering-lever, having preferably a Bath handle, T'. It is obvious that this handled lever is not essential to the successful operation of this machine, and that well-known equivalents may be substituted therefor without injuriously affecting the operation of the  
35 apparatus; also, that the location of the guiding-wheel in the center, as shown, is not necessary, and that such small mechanical changes do not interfere with the operativeness of the  
40 machine as a whole.

U is the guiding-wheel.

V is the axle of the guiding-wheel.

V' is the bifurcated lever, carrying the axle V and supported by the yoke S'.

45 W W' is the frame-work of the machine.

X X' are pinion-wheels mounted on sliding shafts J I, respectively.

Y Y' are cog-wheels in gear with the pinion-wheels X X'.

50 Z is the strap connecting the brake-pedal Q with the flexible connections Q' by means of a small cross-bar, Z'.

h represents the inward projection of the sleeve C, which guides the revolution of the  
55 cog-wheels Y Y' and pinion-wheels X X' and their shafts J I.

i represents the bolts by which the two portions of the sleeve C are fastened.

The operation is as follows: When the tri-  
60 cycle pursues a straight path, the two axles A A revolve simultaneously and synchronously. The pinions X X' and the bevel-wheels Y Y' do not revolve, except the rotation common to all the moving parts, which is accomplished in  
65 a line parallel to that of the motion of the axles. When the guiding-wheel U is diverted either to the right or left by the handle T', an

unequal motion of the wheels B B results, which is transmitted to the balance-gear. As one wheel must of necessity go faster than the  
70 other while obeying the diversion of the guiding-wheel, this difference is absorbed by the pinions X X', whereby the wheel attached to the other end of that axle correspondingly  
75 slackens its speed. By this means not only is the tricycle rendered capable of turning a small curve, but by the disengagement of the axles the machine may be drawn backward, as is frequently desirable in narrow passages, and  
80 which cannot be done with any type of disk machine now in use. This disengagement of the axles is only necessary when it is desired to draw the machine backward, and is effected by depressing the pins I J by rotating the steel  
85 band F. This permits the pins to clear the bearing and disconnect the axles from the sleeve, by which means the backward motion is permitted.

By applying retarding-power directly to the sleeve C, which is normally locked to the driv-  
90 ing-axles by pinion-shafts I and J, impelled outward by spring O, a better effect is produced than by the transmission through various means of this power to the driving-  
95 wheels.

By employing a seat capable of horizontal and vertical adjustment—the former on a laminated S-spring and the latter on the rod  
100 K'''—the rider can readily secure a position for ease or work, as necessity or inclination directs. It is obvious that by this adjustment, the effective distribution of power, and the relative lightness of the tricycle as a whole  
105 it is specially adapted for tourists, invalids, and ladies.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a tricycle propelled by power applied to driving-disks, a sleeve, C, contain-  
110 ing concentric telescoping shafts I J, carrying pinions X' X, bevel-wheels Y Y', pins G G, reciprocated in slots H H by the rotation of band F, and spring O, for the purpose herein described.

2. In a tricycle propelled by power applied to driving-disks, the combination, with  
115 the drum of the sleeve C, of pedal Q, having holes Q''', straps Z, cross-bar Z', and flexible connections Q' Q', whereby the inner surface of the drum serves as a containing-wall for the  
120 compensating-gear, and the outer as a point of application of the braking force.

3. In a tricycle propelled by power applied to driving-disks, the combination, with  
125 the sleeve C, containing concentric telescoping shafts I J, carrying pinions X' X, bevel-wheels Y Y', pins G G, and slots H H, of a steel band, F, concentric with the axle, having lugs F' F', by which its rotation is effected,  
130 substantially as shown, and for the purpose specified.

4. In a tricycle propelled by power applied to driving-disks, the curved bar R, hav-

ing cross-bar M, whose ends serve as pivotal bearings for the levers L L, and whose middle portion supports a rod carrying the small wheel N, substantially as and for the purpose  
5 described.

5. In a tricycle propelled by power applied to driving-disks, the combination of the sleeve C, axles A A, on which suspension-wheels B B are mounted, frame W W', curved  
10 bar R, guiding-wheel U, having axle V, carried

by bifurcated lever V', terminating in bar S', lever T, having handle T', and bearing S, substantially as and for the purpose specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two  
15 witnesses.

CHARLES E. HIESTER.

Witnesses:

PARIS LISHTENBERGER,  
JOHN P. MELICK.