

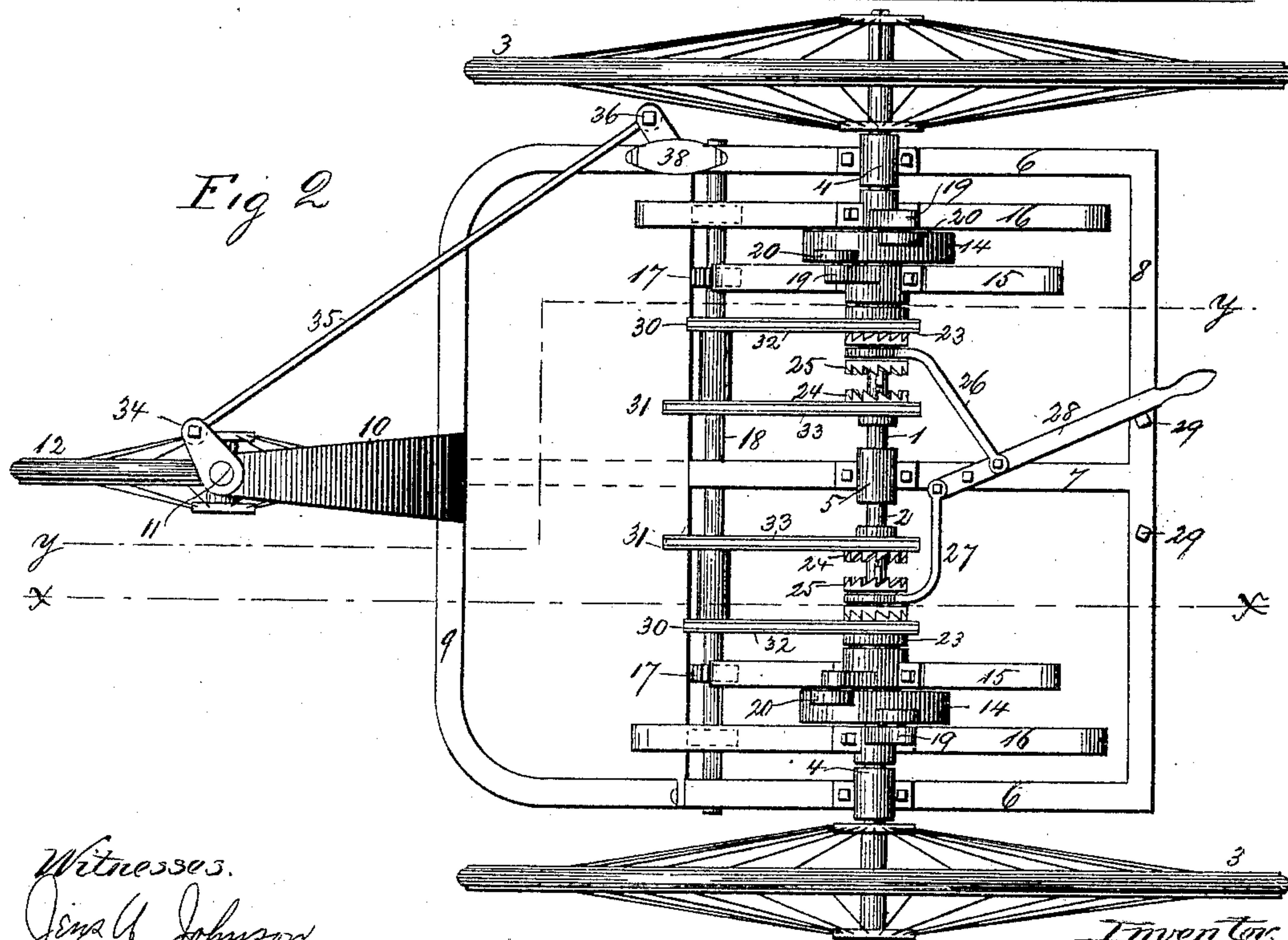
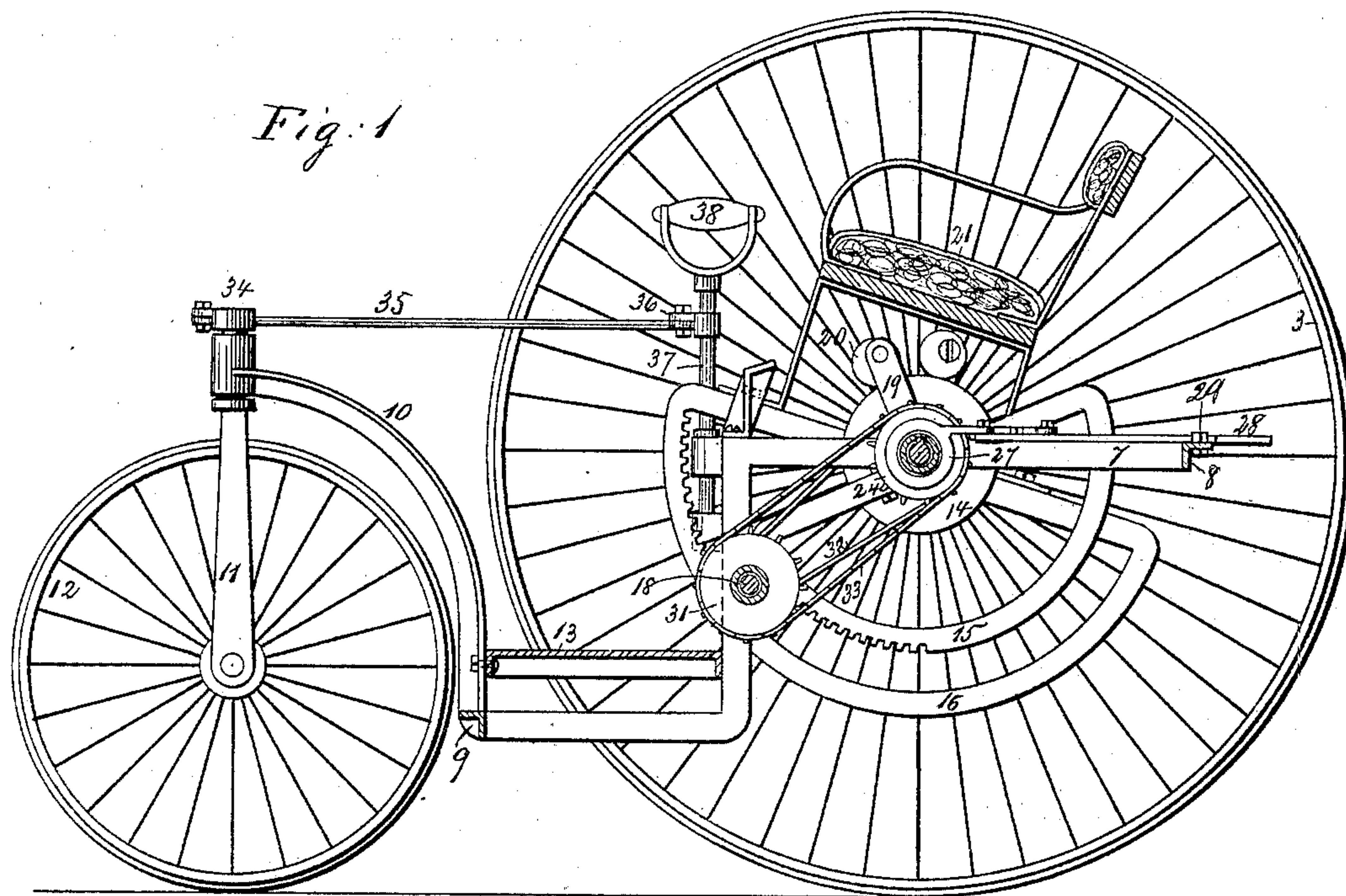
(No Model.)

3 Sheets—Sheet 1.

P. SCHAEFER.
VELOCIPÈDE.

No. 433,542.

Patented Aug. 5, 1890.



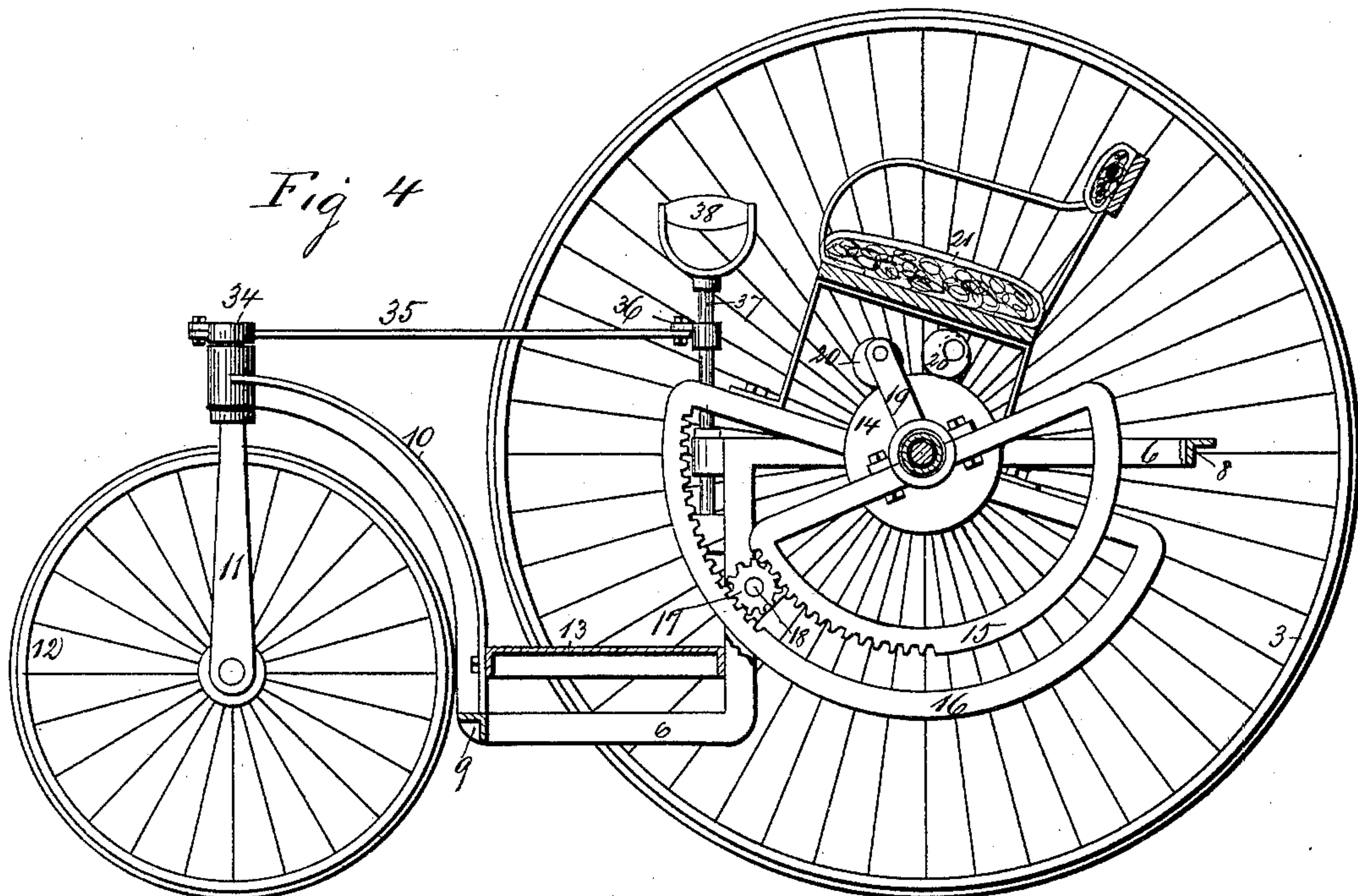
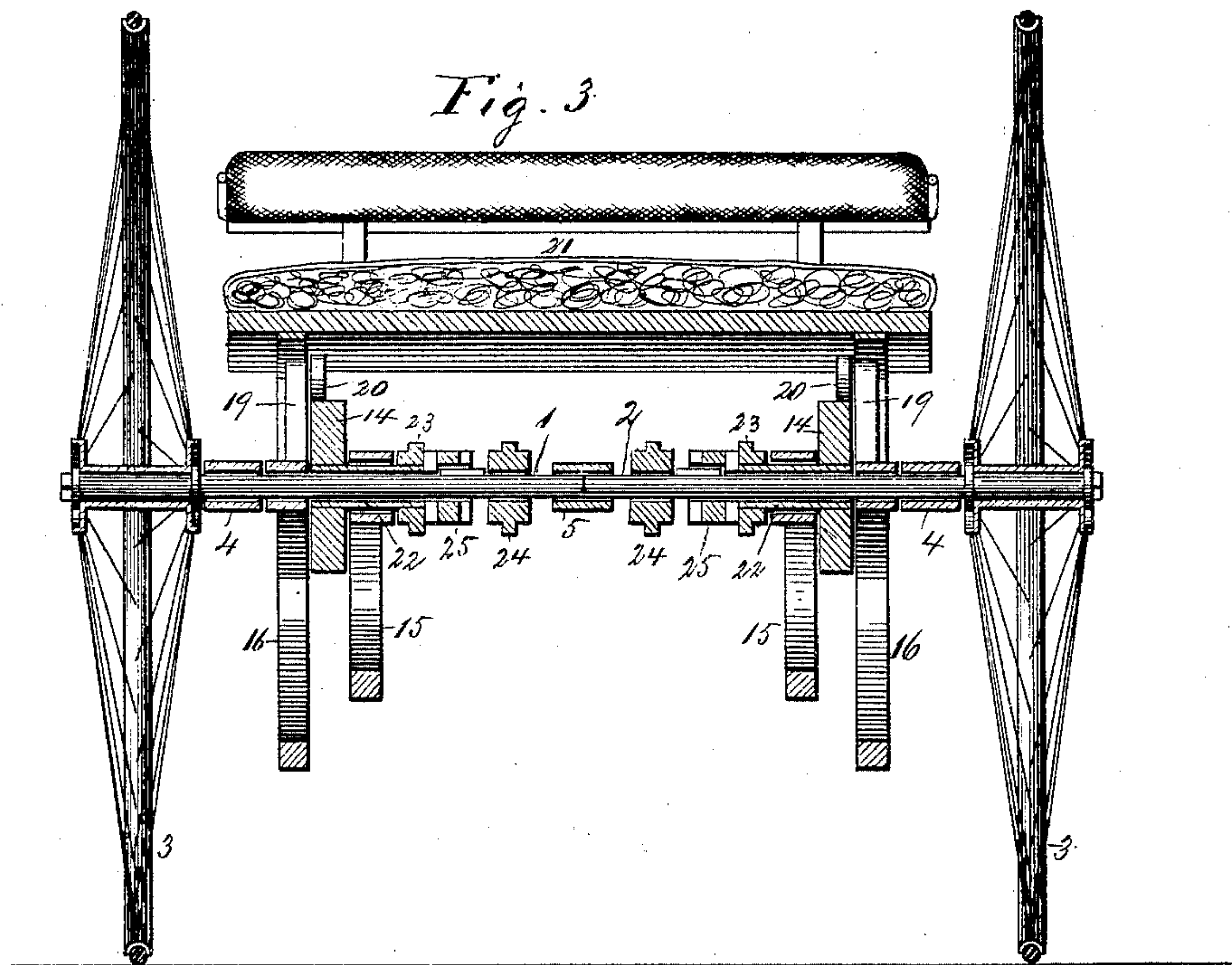
Witnesses.
Jesse H. Johnson
Otto E. Schubert

Inventor.
Peter Schaefer
By Wm. B. Lotz, Atty.

P. SCHAEFER.
VELOCIPEDÉ.

No. 433,542.

Patented Aug. 5, 1890.



Witnesses:
Jens A. Johnson
Otto Luebkert

Inventor
Peter Schaefer
By Wm. B. Lotz
his attorney

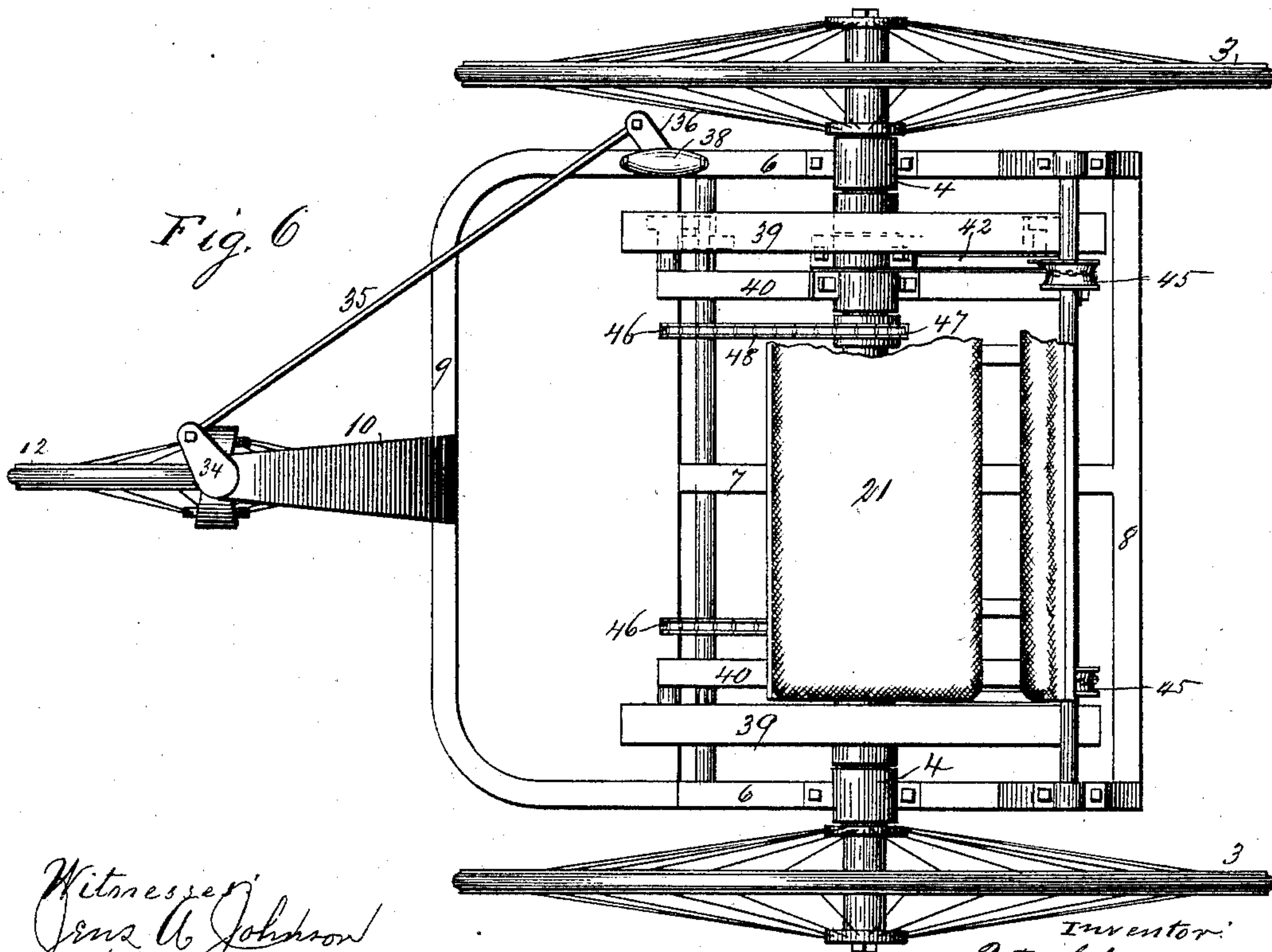
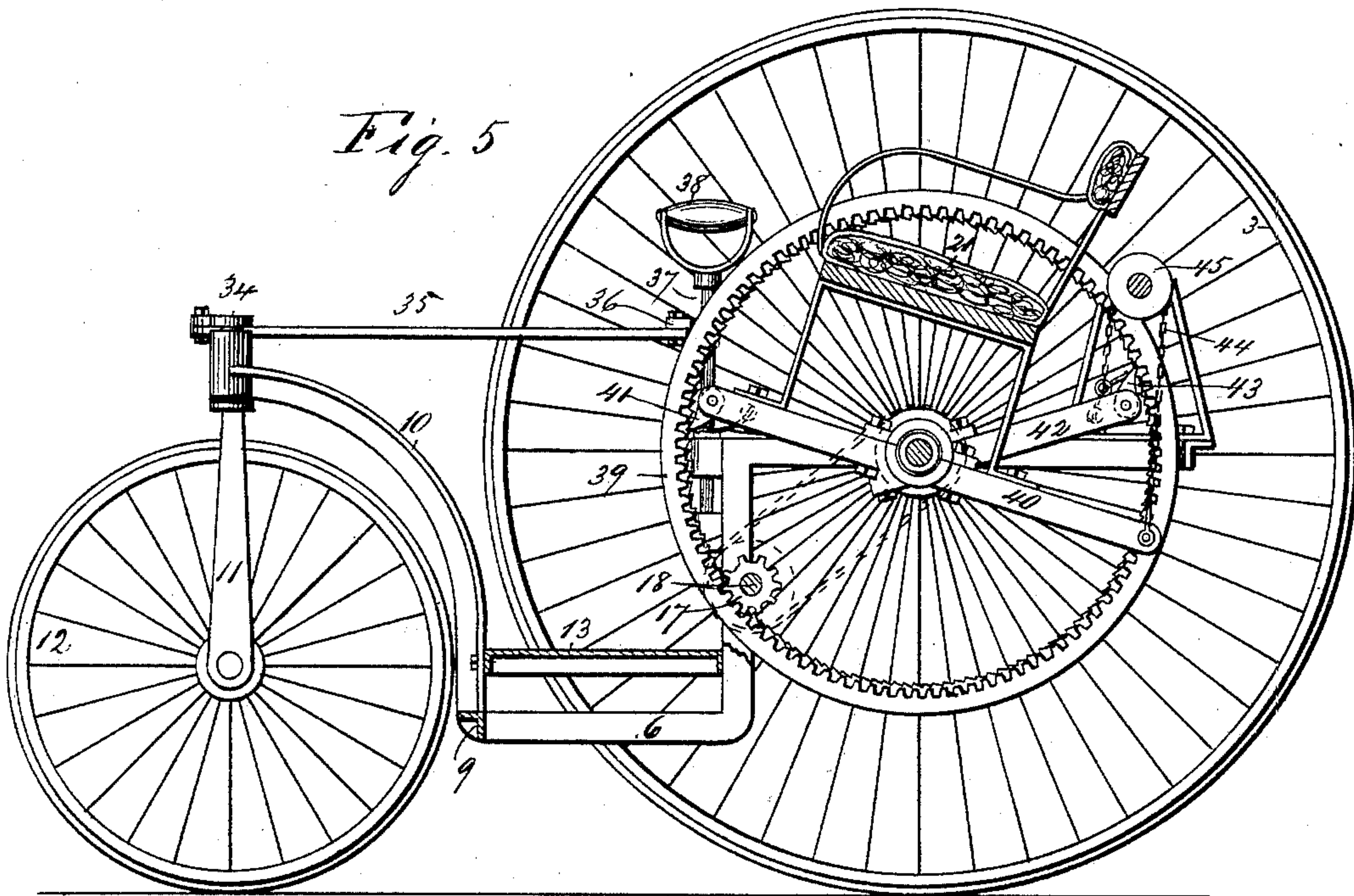
(No Model.)

3 Sheets—Sheet 3.

P. SCHAEFER.
VELOCIPEDÉ.

No. 433,542.

Patented Aug. 5, 1890.



Witnesses:
Jens A. Johnson
Peter Schubert

Inventor:
Peter Schaefer
By Wm H. Lotz, Atty

UNITED STATES PATENT OFFICE.

PETER SCHAEFER, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE AMERICAN VEHICLE COMPANY, OF SAME PLACE.

VELOCIPEDE.

SPECIFICATION forming part of Letters Patent No. 433,542, dated August 5, 1890.

Application filed December 28, 1889. Serial No. 335,230. (No model.)

To all whom it may concern:

Be it known that I, PETER SCHAEFER, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Velocipedes, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to velocipedes, and more particularly to tricycles; and it has for its object to provide such a vehicle in which one, two, or more persons seated thereon will transmit motion to the driving-wheels by rock-
15 ing the seat to and fro in a manner to impart a fast speed thereto with an easy movement; and with that object in view my invention consists of the novel devices and combinations of devices hereinafter described, and
20 specifically claimed.

In the accompanying drawings, Figure 1 represents a sectional elevation of the tricycle from line $x x$ in Fig. 2. Fig. 2 is a plan view of the same, the seat being removed. Fig. 3
25 is a transverse vertical section on the line of the main axles; and Fig. 4 is a sectional elevation from line $y y$ in Fig. 2. Figs. 5 and 6 represent a sectional elevation and a plan view of the tricycles, showing a modified device for transmitting motion from the rock-
30 ing seat to the drive-wheel axle.

Corresponding figures of reference in the several figures of the drawings designate like parts.

35 The main axles 1 and 2 have each rigidly mounted upon one end a main drive-wheel 3, and are journaled to be axially in line with each other in the side bearings 4, and with their abutting ends in central bearing 5 of the rear
40 portion of the frame. This frame is formed longitudinally of two side bars 6 and one central bar 7, bent stair-like, to be lower in front, and these three bars are transversely connected by rear bar 8 and front bar 9 to be
45 rigid, and to the front bar 9 is secured the lower end of a goose-neck-shaped bracket 10, having to its upper forwardly-curved extremity a vertical hub bored to receive the upper trunnion of a bifurcated standard 11, into
50 which is pivoted the pilot or steering wheel

12. This frame thus supported on three wheels has secured between the vertical portions of bars 6 and 7 and the bracket 10 a platform or foot-board 13, which may be adjustably fixed for a more or less elevated position to accom-
55 modate different-sized occupants.

Upon each axle 1 and 2 is loosely pivoted a sleeve 22, upon one end of which is rigidly mounted a disk 14, and upon its opposite end is rigidly mounted a sprocket-wheel 23, and
60 upon each sleeve 22, intermediate of disk 14 and sprocket-wheel 23, is loosely pivoted the hub of a semi-wheel 15, and against the opposite side of disk 14 is loosely sleeved upon
65 each axle 1 and 2 a semi-wheel 16, and the semi-wheels 15 being radially smaller have teeth cut in the outward edges of their rims, while the larger semi-wheels 16 have teeth cut in the inward edges of their rims, both
70 engaging with pinions 17, rigidly mounted upon a shaft 18, journaled in suitable bearings against the rear edges of the vertical portion of the frame-bars 6 and 7 in a manner that a rocking movement of one of the semi-
75 wheels 15 or 16 will transmit a reverse rocking movement to the other semi-wheel. The cap portion of the hub of each semi-wheel 15 and 16 is provided with a radial arm 19, having a small disk 20, eccentrically pivoted
80 upon a crank-pin at the upper ends of such arms 19, which moving over disk 14 in a forward direction will take frictional hold on such disk 14 to move with it, but moving
85 in a backward direction such disk 20 will release its hold on disk 14, whereby a noiseless movement is produced that will operate upon disk 14 in the same manner as a pawl upon a ratchet-wheel. It will thus be readily
90 seen that a rocking movement imparted to semi-wheel 16, by means of shaft 18 and pinions 17, will impart a similar movement in an opposite direction to semi-wheel 15, so that the disks 20 of the arms of the two semi-wheels 15 and 16 will alternately grip the disk 14, imparting to it a continuous rotating move-
95 ment in one direction. Upon the diametrical bar of the two semi-wheels 16, at the opposite sides of the tricycle, are secured the legs of a seat 21, provided with a back and with arm-rests, and being of the desired width for one
100

or two occupants, who when seated will rest their feet upon foot-board 13. This seat 21 is fixed upon semi-wheels 16, sufficiently more toward the front that the weight of the occupant will make such seat rock forward and that by the force of his legs the occupant will recline the seat backward, thus producing a to-and-fro movement of such seat and of the semi-wheels 16 and 15 for rotating disk 14.

Close to the central bearing 5 is loosely mounted upon each axle 1 and 2 a sprocket-wheel 24, and the sprocket-wheels 23 and 24 are provided with clutch-teeth on their opposing sides, and between these sprocket-wheels 23 and 24 is sleeved upon each axle 1 and 2, and upon a feather rigid with the axle, a coupling 25, in a manner to rotate with the axle, but to be free laterally to slide thereon, each end of such coupling 25 being provided with clutch-teeth adapted to engage and couple with either one of the sprocket-wheels 23 or 24, to turn with and drive the axle. Each such coupling of the two axles 1 and 2 is annularly grooved to engage the ring end of a bar 26 or 27, the opposite ends of which bars 26 and 27 are pivotally coupled at opposite sides of its fulcrum-bolt to a lever 28, pivoted upon central bar 7 of the frame, with its rearward handle extending beyond bar 8 of the frame, on which the heads of two bolts 29 are provided for holding such lever 28 in either one of its two positions with the clutch 25, coupling either sprocket-wheels 23 or 24, which simultaneously of both axles 1 and 2 are thus made to move with these axles.

To be in line with sprocket-wheels 23 and 24 are loosely mounted upon shaft 18 sprocket-wheels 30 and 31, both made rigid with each other by a long hub, the sprocket-wheels 31 being of larger diameter than sprocket-wheels 30, and over sprocket-wheels 23 and 30 is stretched an endless chain 32, and over sprocket-wheels 24 and 31 is stretched an endless chain 33, whereby motion imparted to disk 14 and sprocket-wheel 23 will be transmitted to sprocket-wheels 30 and 31 by chain 32, and again will be transmitted at a faster speed to sprocket-wheel 24 by chain 33, in a manner that by shifting the couplings 25 to engage wheels 23 the speed transmitted to the axles will be less than with shifting the coupling to engage wheel 24, so that the occupant can go at a slow speed while riding uphill, and when on a level road he can change the mechanism for a faster speed with the same rocking movement of the seat.

Upon the upper projecting end of the trunion of the bifurcated standard 11 for pilot-wheel 12 is rigidly secured a crank 34, connected by a rod 35 with another crank 36 of a staff 37, pivoted in suitable brackets against the vertical part of one of the side bars 6 of the frame, and this staff 37 has to its upper extremity a handle 38, in easy reach of the occupant, by which he controls the pilot-wheel for steering the vehicle.

Figs. 5 and 6 show a modification of the

driving-gears for transmitting a continuous rotating movement to the axles from the rocking seat. In this device, instead of disk 14 and semi-wheels 15 and 16, is loosely mounted upon each axle an interiorly-toothed gear-wheel 39, meshing with pinion 17 of shaft 18. The seat 21 is secured upon two swinging beams 40, loosely pivoted upon the axles, and the forward ends of these beams 40 have each pivoted a spring-controlled pawl 41, engaging the teeth of wheels 39. Rearwardly-extending arms 42, also loosely pivoted upon the axles and each provided with a spring-controlled pawl 43, are coupled each with the rear end of a beam 39 by chains 44, passed over pulleys 45, whereby a rocking movement of the seat 21 in one direction will transmit a rocking movement to the arms 42 in an opposite direction, and whereby one of the two pawls 41 or 43 will alternately be in engagement with one of the teeth of wheels 39, while the other pawl will be on its return movement sliding over the teeth therein, so as to impart a continuous rotating movement to such wheels. Upon shaft 17 are also rigidly mounted two sprocket-wheels 16, and upon each axle is rigidly mounted a sprocket-wheel 47, and over each pair of sprocket-wheels is stretched an endless chain 48, that will transmit motion from shaft 17 driven by pinion 18, and from wheels 39 to the axles 1 and 2.

While a single axle may be efficient, I prefer to provide an independent axle to each drive-wheel, whereby the tricycle will move over a curved road with more ease than with both wheels rigidly mounted upon a single axle.

What I claim is—

1. In a tricycle, the combination, with the frame, the axles pivoted thereto, and the drive-wheels rigidly mounted upon these axles, of a rocking seat pivotally supported on the axles, sprocket-wheels mounted upon such axles and upon a shaft journaled to the frame parallel with the axles, a pawl-and-ratchet movement in connection with a suitable gear-wheel transmission to the sprocket-wheels on the shaft, converting the rocking movement of the seat into a rotary movement of these sprocket-wheels, and an endless chain stretched over the sprocket-wheels for transmitting such motion to the axle, all substantially as set forth.

2. In a tricycle, the combination, with the frame, the axles pivoted thereto, and the drive-wheels rigidly mounted upon these axles, of externally and internally toothed semi or segmental wheels loosely pivoted upon these axles, all meshing with pinions mounted upon a shaft pivoted to the frame parallel with the axles, the seat secured upon two of the semi or segmental wheels, eccentric disks or pawls pivoted to the semi or segmental wheels, and disks or ratchet-wheels mounted upon the axles in position for engagement with the eccentric disks or pawls of two opposing semi

or segmental wheels, all substantially as set forth.

3. In a tricycle, the combination, with the frame provided with a foot-board, the axles 5 pivoted to such frame, and the drive-wheels rigidly mounted upon these axles, of externally-toothed semi or segmental wheels loosely pivoted upon these axles, pinions mounted upon a shaft pivoted to the frame parallel with the 10 axles and meshing with the semi or segmental wheels, eccentric disks or pawls pivoted to the semi or segmental wheels, and disks or ratchet-wheels loosely mounted upon the axles in position for engagement with the eccentric disks 15 or pawls, a sprocket-wheel rigid with the disk or ratchet-wheel, and a sprocket-wheel loosely mounted upon the axles both with clutch-teeth, a clutch-coupling interposed between said sprocket-wheels to engage either one and 20 operated and held in gear by a suitable lever device, two sprocket-wheels rigid with each other and of different diameters and loosely mounted upon the pinion-shaft, endless chains connecting the sprocket-wheels of the axles 25 with the sprocket-wheels of the pinion-shaft, and a rocking seat secured upon two of the semi or segmental wheels, all substantially as set forth.

4. In a tricycle, the combination, with the 30 frame provided with a foot-board, the axles pivoted to such frame, the drive-wheels rigidly mounted upon these axles, and the pilot-wheel journaled in a bifurcated standard pivoted in the front of the frame with suitable 35 connections for steering the same, of semi-wheels 15 and 16, one with external and the other with internal teeth, loosely mounted upon the axles, seat 21, secured upon semi-

wheels 16, pinions 17, mounted upon shaft 18 and meshing with the semi-wheels, disks 14, 40 mounted upon the axles, and eccentric disks or friction-pawls 20, pivoted to arms of semi-wheels 15 and 16, alternately gripping the disks 14, substantially as set forth.

5. In a tricycle, the combination, with the 45 frame provided with a foot-board, the axles pivoted to such frame, the drive-wheels rigidly mounted upon these axles, and the pilot-wheel journaled in a bifurcated standard pivoted in the front of the frame, with suitable 50 connections for steering the same, of semi-wheels 15 and 16, one with external and the other with internal teeth, loosely mounted upon the axles, seat 21, secured upon semi-wheels 16, pinions 17, mounted upon shaft 55 18 and meshing with the semi-wheels, disks 14, loosely mounted upon the axles and each having coupled a sprocket-wheel 23, eccentric disks or friction-pawls 20, pivoted to arms of semi-wheels 15 and 16 to engage disks 14, 60 sprocket-wheels 24, loosely mounted upon the axles, and the sprocket-wheels 23 and 24 provided with clutch-teeth, clutch-coupling 25, feathered and laterally sliding upon the axles, sprocket-wheels 30 and 31, rigid with each 65 other and loosely sleeved upon shaft 18, and endless chains 32 and 33, stretched over the sprocket-wheels 23 and 30 and 24 and 31, all substantially as specified.

In testimony whereof I affix my signature in 70 presence of two witnesses.

PETER SCHAEFER.

Witnesses:

WILLIAM H. LOTZ,
I. N. KALB.