

No. 653,452.

Patented July 10, 1900.

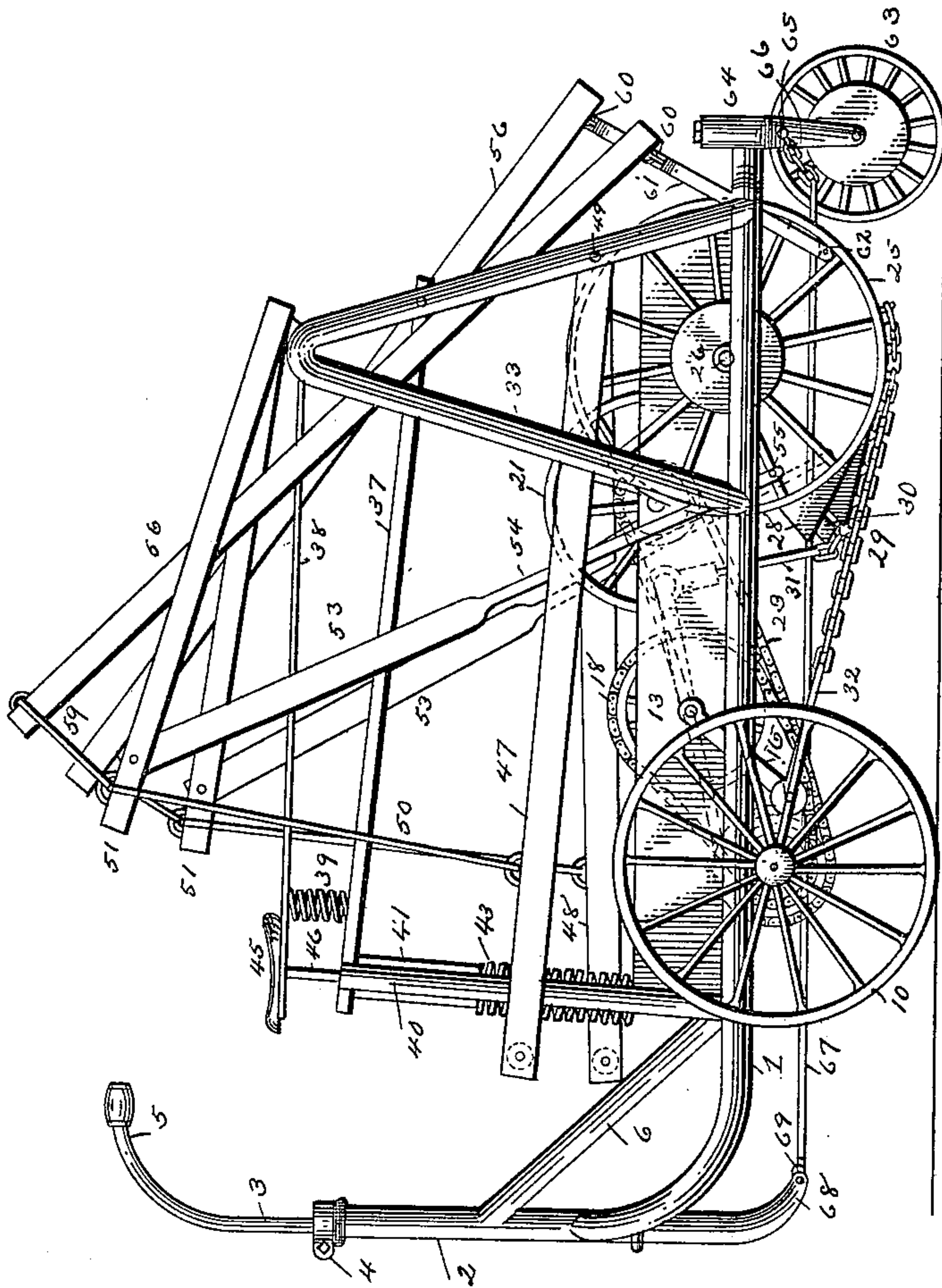
F. KLEINVOGEL.
LEVER DRIVEN MECHANISM.

(Application filed Jan. 30, 1900.)

(No Model.)

2 Sheets—Sheet. 1.

Fig. 1.



WITNESSES

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Fig. 2.

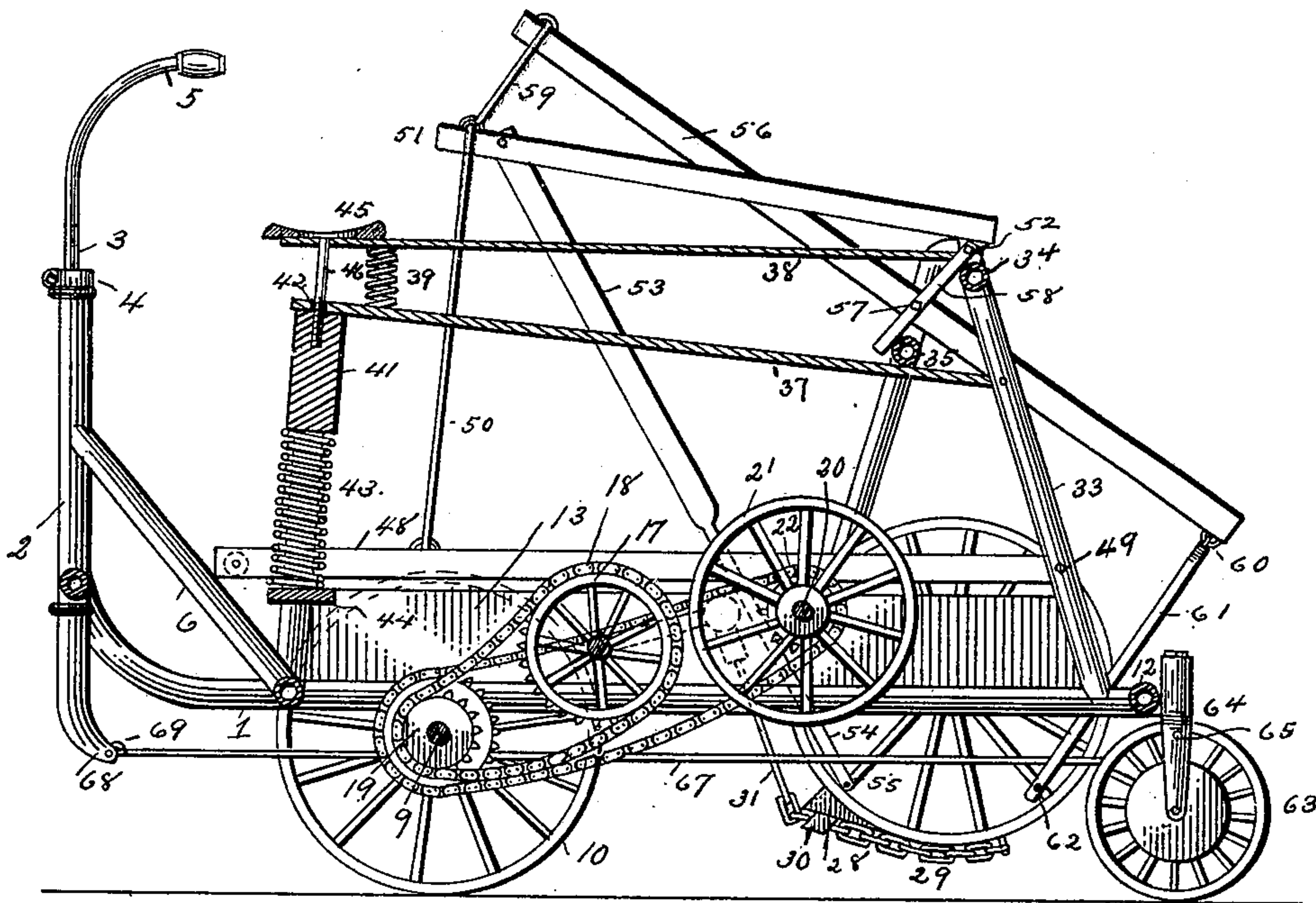
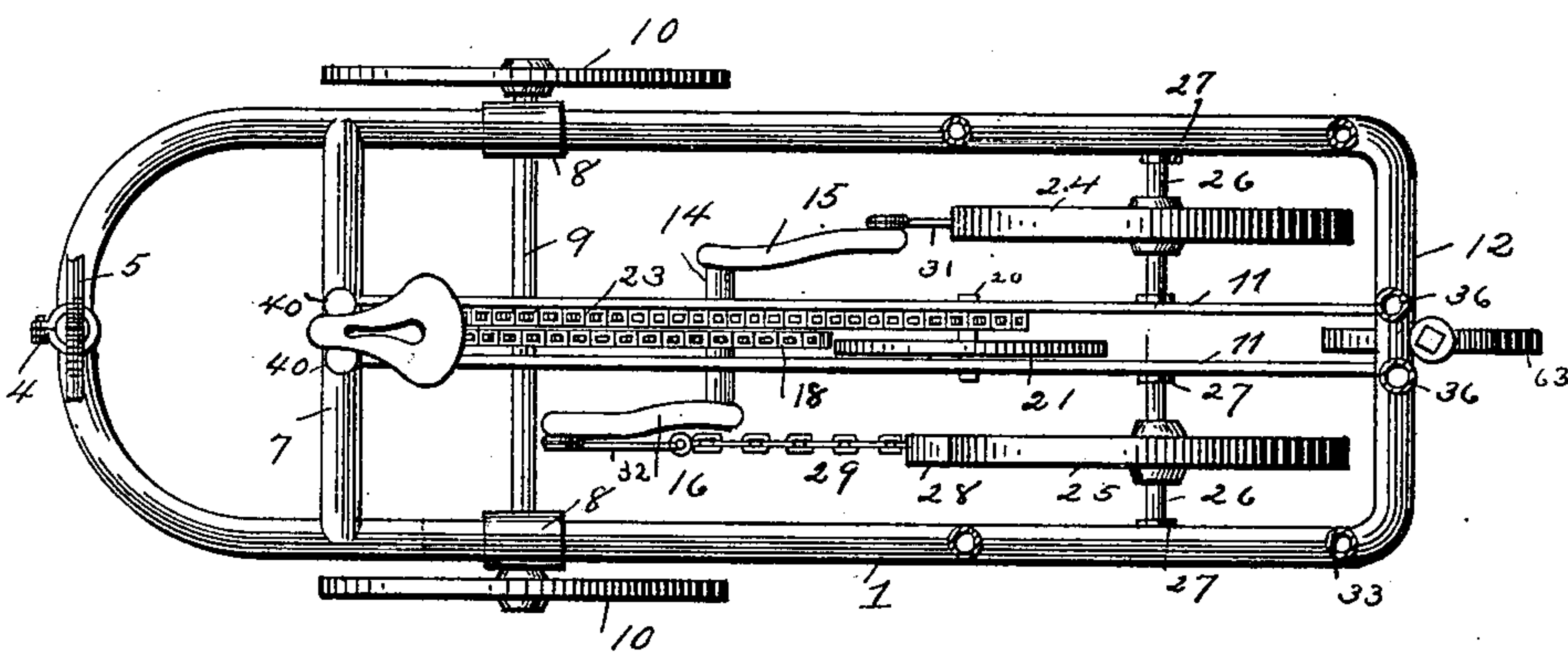


Fig. 3.



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UNITED STATES PATENT OFFICE.

FRIEDRICH KLEINVOGEL, OF NEWPORT, KENTUCKY.

LEVER-DRIVEN MECHANISM.

SPECIFICATION forming part of Letters Patent No. 653,452, dated July 10, 1900.

Application filed January 30, 1900. Serial No. 3,315. (No model.)

To all whom it may concern:

Be it known that I, FRIEDRICH KLEINVOGEL, a citizen of the United States, residing at No. 738 Central avenue, Newport, Kentucky, have invented certain new and useful Improvements in Lever-Driven Mechanisms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to lever-driven mechanisms mainly intended for the propulsion of vehicles.

It comprises a crank-shaft, pedal-levers, a means for imparting motion from said pedal-levers to the crank-shaft, a means for returning said levers to their operative position, and means for transferring motion from the crank-shaft to a driven shaft.

It further consists in certain details of construction, all as hereinafter described and claimed.

In the drawings which accompany and form a part of this specification, and to which reference will be had in the course of the following description, I have shown a preferred embodiment of my invention.

Figure 1 is a side elevation of a lever-propelled vehicle, showing its general arrangement. Fig. 2 is a vertical section through the same; and Fig. 3 a top plan view, the lever system being omitted for clearness.

Like reference-numerals denote like parts throughout the several views.

1 designates a rectangular tubular frame curved and bent upwardly at its forward end and supporting the head-post 2, in which turns the steering-rod 3, retained in its seat by clamp 4, and having the handle-bar 5. The head-post is braced by rods 6, connecting with the cross-rail 7.

8 8 are journals connected with the frame, in which is adapted to rotate the axle 9, bearing the traction-wheels 10. Two parallel rods 11 are arranged midway of the frame and connect the cross-rods 7 and the rear extremity 12 of the frame and serve to carry the superstructure carrying the gearing. This may comprise the plates 13 13, bolted or otherwise secured to rods 11 and united at their extremities. In the front portion of said plates

is mounted the crank-shaft 14, carrying the cranks 15 16 and also the sprocket-wheel 17, located between said plates and connected by chain 18 with sprocket-wheel 19, mounted upon the axle 9. An additional shaft 20 is mounted in said plates and carries the balance-wheel 21 and sprocket-wheel 22, connecting with sprocket-wheel 19 through the medium of chain 23, as clearly shown in Figs. 2 and 3.

Wheels 24 25 are rigidly mounted on rocking shafts 26 26, carried in suitable bearings 27 upon the frame 1 and plates 13 13. Each of said wheels is provided on its lower periphery with an angular block 28, the baseline of which is tangent to the periphery of the wheels, as seen in Figs. 1 and 2. A chain 29 or its equivalent is connected at one end to the periphery of said wheel at a point in rear of the angular block 28 and is always guided upon the latter by lugs 30, the chains being connected at their opposite ends to links 31 32, engaging, respectively, with crank-arms 15 16. The frame 1 is further provided on either side thereof, near its rear portion, with inverted-V-shaped frames 33 33, which are braced and connected with each other by transverse rods 34 35, Fig. 2. The rod 34 is connected to the rear portion 12 of the frame 1 by parallel rods 36. The latter serve to carry the rear ends of the seat-support, consisting of two forwardly-extended members 37 38, separated at their front ends by a coil-spring 39 provided. The lower member 37 is stationary upon the saddle-post, the latter consisting of two vertically-extended rods 40, borne upon rods 11. The top member 38 carries the saddle 45 and below the same a bolt 46, which passes loosely through the bore 42 and carries upon its lower threaded portion a block 41, adapted to be vertically reciprocated upon the spring 43, between the rods 40. The spring 43 is mounted upon the block 44, secured between the rods 40 to the lateral plates 13.

The pedal-levers 47 48 are pivoted, as at 49, upon pins connecting the V-frames 33 and rods 36 and are connected by links 50 to levers 51, fulcrumed at 52 upon transverse rod 34. Each of levers 51 has pivoted at its forward end a downwardly and rearwardly extended lever 53, having an arm 54, pivoted at

55 to one of the spokes of wheels 24 25, contiguous the angular blocks 28. Another lever 56 is pivoted substantially at its middle upon a pin 57, carried in rods 58, connecting the transverse rods 34 35. The same construction is duplicated upon the other side. The obliquely - extended levers 56 are connected at their upper ends by links 59 to levers 51 and are connected at their respective lower ends by staples 60 to forked members 61, which in turn are pivoted, as at 62, to the peripheries of wheels 24 25, respectively, the last connection being in a horizontal plane with the pivot connection 55.

The machine may be provided with any suitable steering-gear. In the present instance I have shown a steering-wheel 63, mounted in a caster 64, centrally of the rear portion 12 and having a laterally-extended pin 65, connected by chains 66 with rods 67, which cross each other and extend to the forked end 68 of steering-rod 3, to which they may be connected by links 69.

It will be seen that upon depressing one of the pedal-levers 47 48 the respective top lever 51 will be drawn down and will operate to transmit motion through the medium of lever 53 to wheel 24, giving the same a forward rocking motion, whereby the crank-shaft 14 is rotated through its arm 15 and chain 18, the rotation being made continuous by the crank-arms 15 16 being arranged at an angle of ninety degrees to one another. This results in an opposite rocking motion of wheels 24 25. Motion is transferred from crank-shaft 14 to the axle 9 through the medium of sprocket-wheel 17, chain 18, and sprocket-wheel 19, the movement being regulated by balance-wheel 21, operated by sprocket-wheel 22, connected with sprocket-wheel on axle 9 by chain 23.

While I have described my improved mechanical movement as associated with a vehicle which may take the place of a bicycle or similar machine, especially where intended for travel on badly-graded roads or

which may have attached thereto any well-known means for use as a cultivator, it is obvious that its use is not restricted to any special mechanism or devices.

Having thus described my invention, I claim—

1. In mechanism such as described, a crank-shaft, wheels mounted upon separate axes and having a partial rotatory or rocking movement in opposite relation to each other, segments secured to the lower peripheries of said wheels, and chains guided upon said segments and connecting the crank-shaft and wheels, pedal-levers pivoted at their rear extremities to a stationary part, a series of levers operatively connecting said pedal-levers and wheels for imparting a rocking movement to the latter, means for transferring motion from the crank-shaft upon a driven shaft, and including a balance-wheel to regulate the movement, substantially as specified.

2. In a vehicle, a frame for the vehicle, a revoluble front axle, traction-wheels upon said axle, a crank-shaft, shafts journaled in bearings near the back of the frame, a wheel upon each shaft, having each a partial rotatory or rocking movement in opposite relation to the other, segments secured to the lower peripheries of said rocking members or wheels, and chains guided upon said segments and connecting the crank-shaft and wheels, pedal-levers pivoted to the rear of the frame, a series of levers operatively connecting said pedal-levers and wheels for imparting a rocking movement to the latter, and means for transferring motion from the crank-shaft upon the front axle, including a balance-wheel to regulate the movement, substantially as described.

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

FRIEDRICH KLEINVOGEL.

Witnesses:

JAS. A. RICHMOND,
R. LATZEL.