

L. P. NORMANDIN.  
POTATO DIGGER.  
APPLICATION FILED JAN. 11, 1908.

916,479.

Patented Mar. 30, 1909.

3 SHEETS—SHEET 1.

Fig. 7.

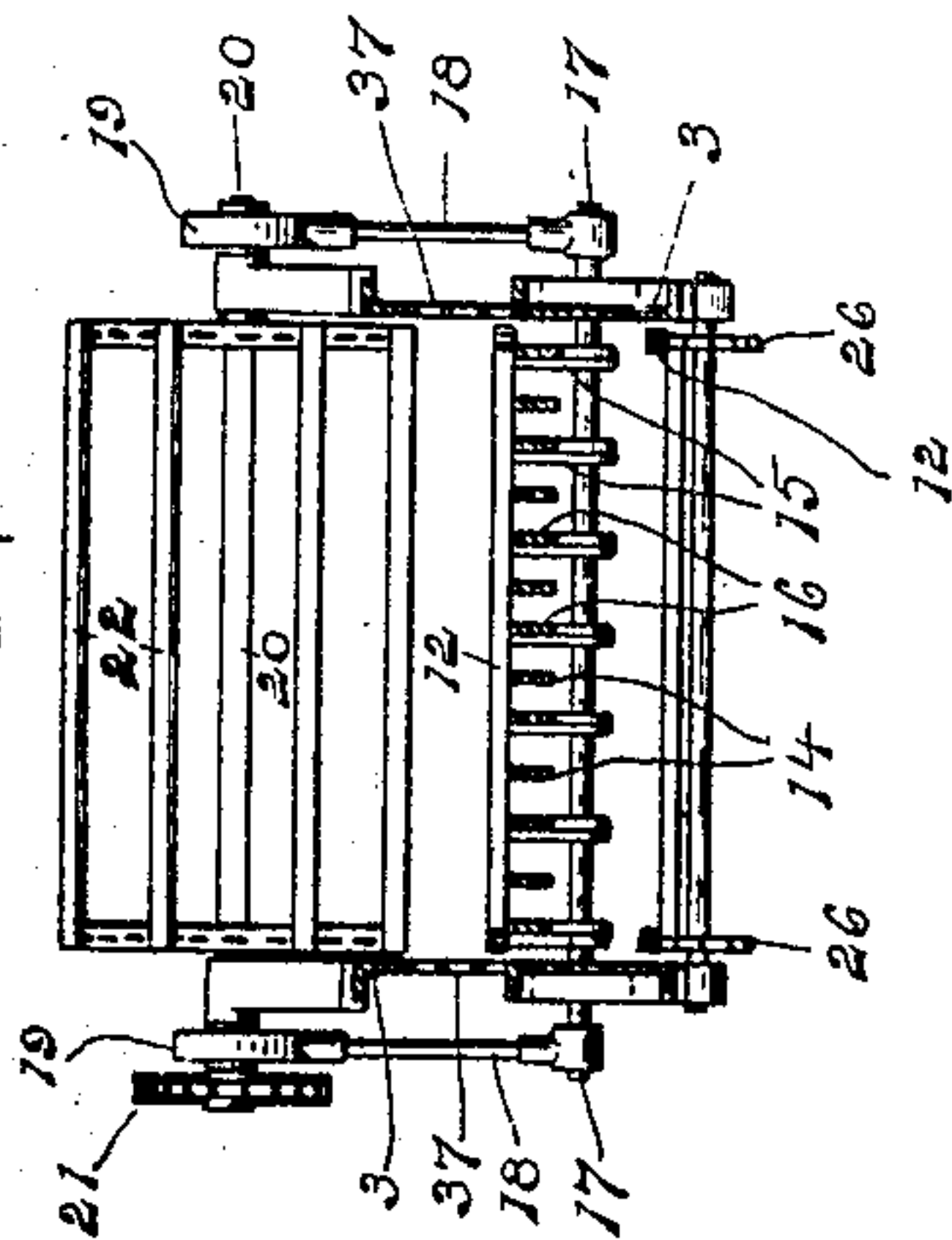


Fig. 9.

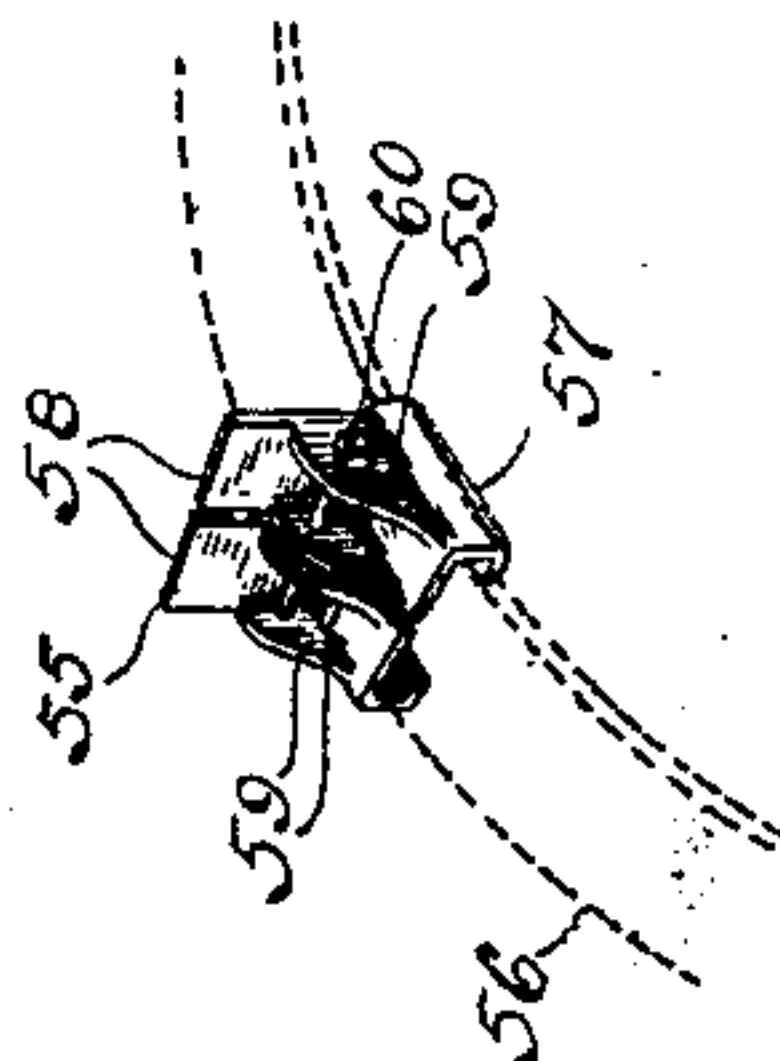


Fig. 8.

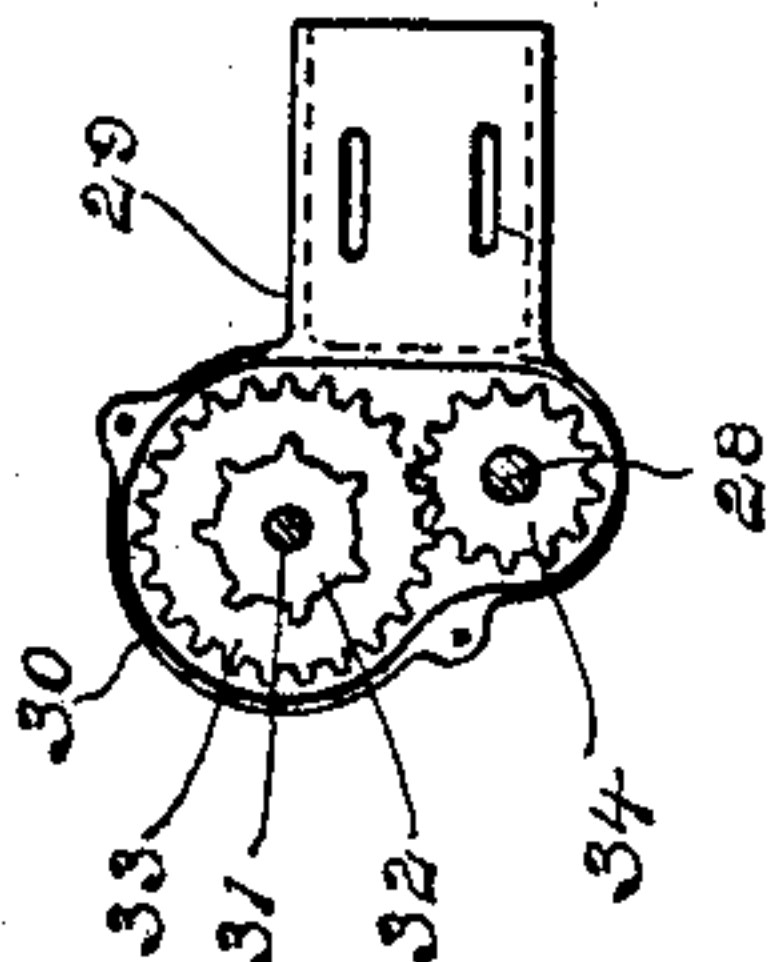
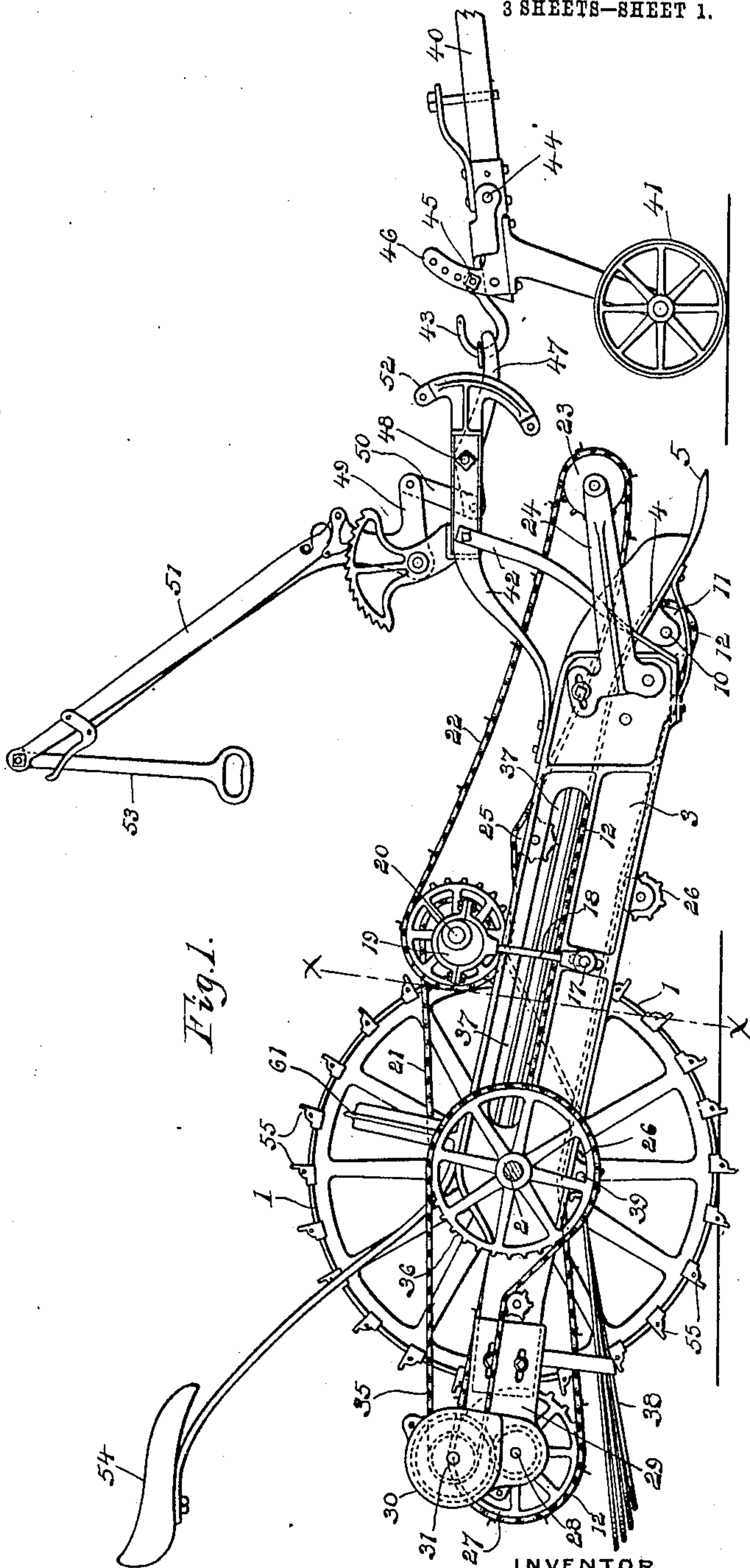


Fig. 1.



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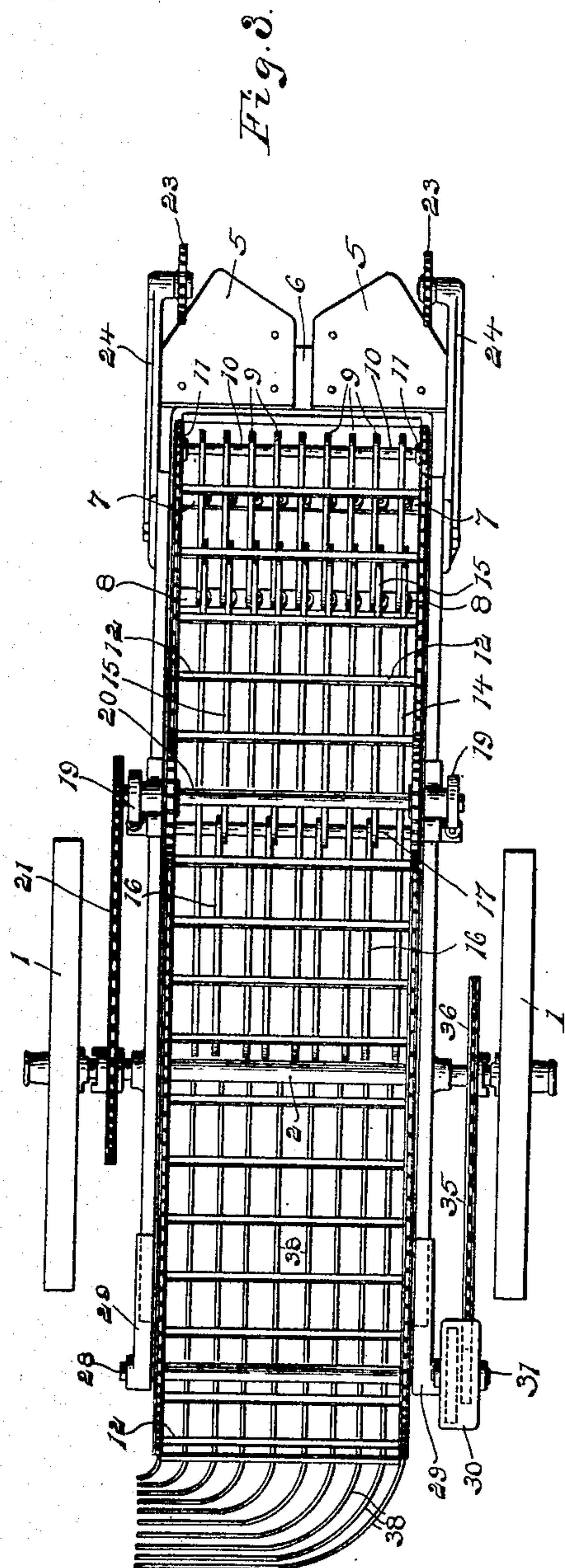
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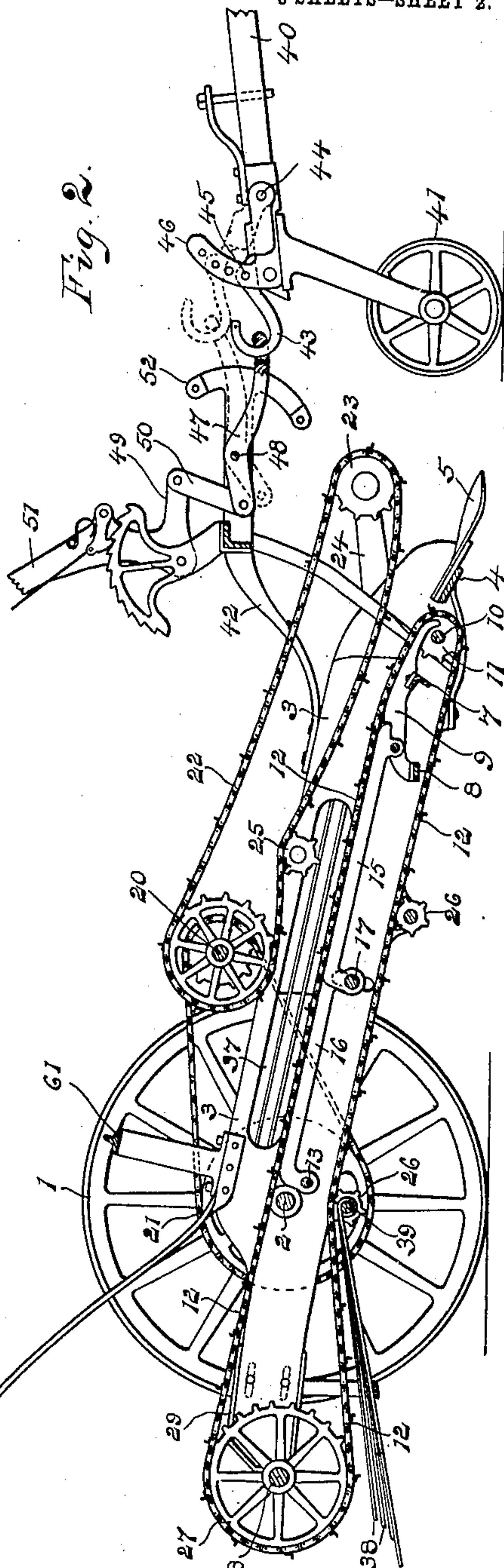
Patented Mar. 30, 1909.

3 SHEETS—SHEET 2.



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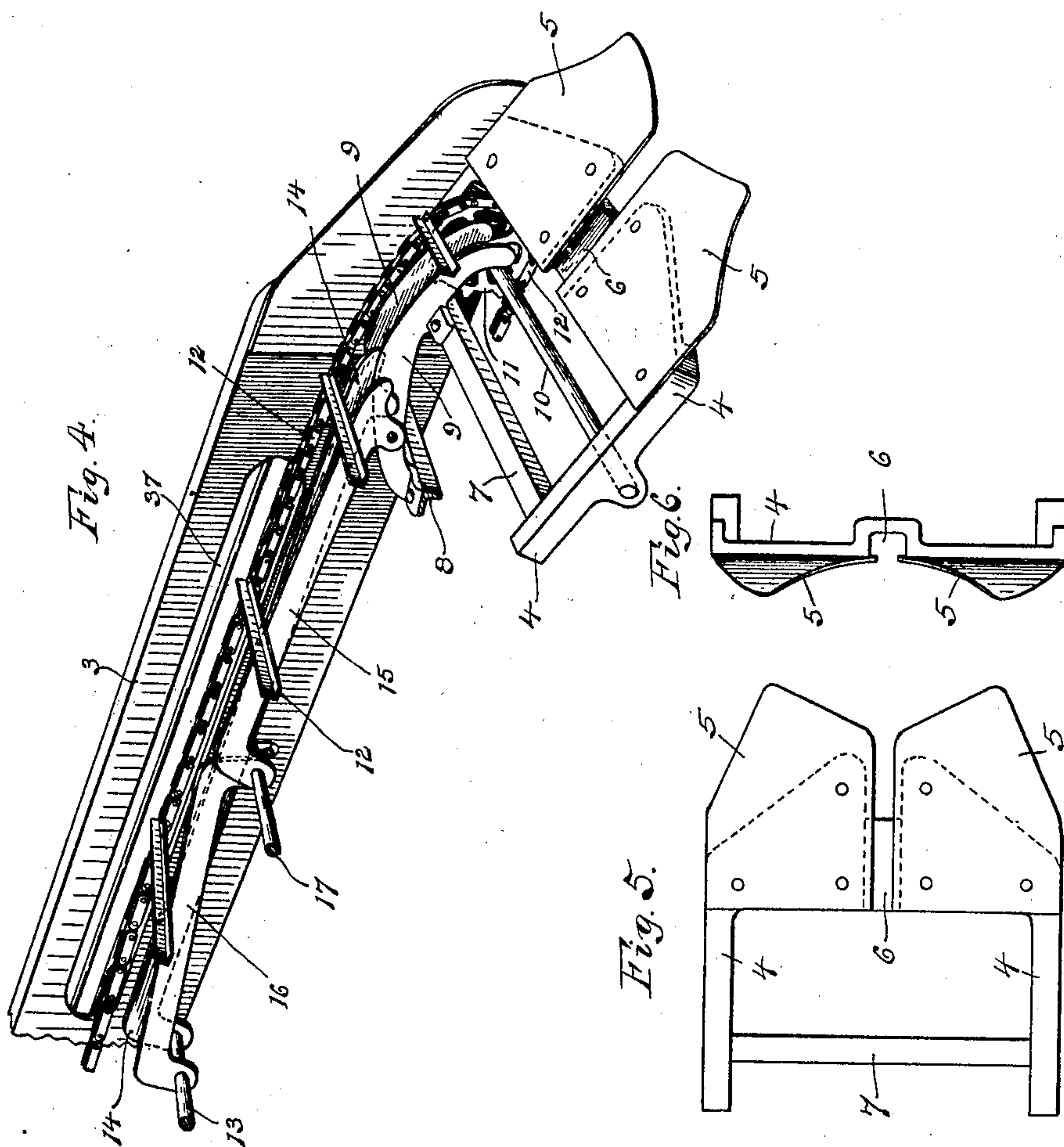
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

LEVI P. NORMANDIN, OF JACKSON, MICHIGAN.

## POTATO-DIGGER.

No. 916,479.

Specification of Letters Patent.

Patented March 30, 1909.

Application filed January 11, 1908. Serial No. 410,317.

*To all whom it may concern:*

Be it known that I, LEVI P. NORMANDIN, a citizen of the United States of America, residing at Jackson, in the county of Jackson and State of Michigan, have invented certain new and useful Improvements in Potato-Diggers, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to improvements in potato diggers and its object is to provide an efficient horse-drawn machine embodying certain new and useful improvements in the construction, arrangement and combination  
15 of parts all as hereinafter more fully described and particularly pointed out in the claims, reference being had to the accompanying drawing in which:—

Figure 1 is a side elevation of a machine  
20 embodying the invention; Fig. 2, a longitudinal, vertical section of the same; Fig. 3, a plan view with parts removed; Fig. 4 is a perspective detail showing shovel and arrangement of grate bars; Fig. 5 is a plan view of the  
25 shovel supporting casting with blades attached; Fig. 6, an end view of the same; Fig. 7 is a transverse section of the machine substantially on the line  $x-x$  of Fig. 1; Fig. 8 is a detail of the driving mechanism for the elevator chain; and Fig. 9 is a perspective view  
30 of one of the detachable drive wheel lugs.

1, 1 are drive wheels, 2 a drive axle, 3 side boards having bearings for an axle and tied together near said axle by a yoke 61 to form  
35 the machine frame. 4 is a casting connecting the sides 3 at their forward ends and forming a rigid support for the shovel blades 5 which are bolted thereto with a space or slot between their adjacent edges, the casting being  
40 provided with a groove or depression 6 over which said edges project a short distance as shown in Fig. 6, so that roots and weeds will not catch. Each blade is formed at its forward end with two slanting edges, one slanting  
45 toward the slot and the other of greater inclination extending toward the outer edge of the blade and this portion bounded by the edges or point, is turned or curved upward slightly. This shape of shovel gives better  
50 cutting and plowing effect and prevents breakage by doing away with the ordinary long flat point.

Bolted to a cross bar 7 on the shovel casting 4 and a bar 8 on the frame is a series of  
55 short curved grate bars 9 beneath the down-

wardly curved forward ends of which is a cross shaft 10 provided with a sprocket wheel 11 at each end over which run sprocket chains connected by angle bars and forming an elevator chain 12. A rod 13 extending  
60 across the frame adjacent to the forward side of the axle 2, forms a support for the rear ends of a series of stationary grate bars 14 and these bars are attached at their forward ends to the fixed short bars 9. Intermediate pivoted or shaking bars are provided between the fixed bars and each consists of two short bars 15 and 16, the bar 15 being pivotally attached at its forward end to the bars 9 and its downwardly turned rear  
65 end to a cross vibratory shaft 17. The bar 16 is pivotally attached to the rod 13 at its rear end and provided with a downwardly turned forward end pivoted upon the shaft 17 which shaft is raised and lowered to  
70 vibrate the bars by connecting its outer ends by means of connecting rods 18 to an eccentric 19 on the end of a cross shaft 20 mounted in bearings on the top of the frame above the shaft 17 which shaft is moved up  
75 and down by said eccentrics in slots in the frame sides 3. This shaft 20 is driven by a sprocket chain 21 engaging a large sprocket on the axle and a small sprocket on said shaft. A vine puller 22 consists of sprocket  
80 chains running over sprockets on the shaft 20 and connected by angle bars, said chains also running over sprockets 23 carried by forwardly extending arms 24 adjustably attached to the forward ends of the side  
85 boards of the frame so that said arms may be raised or lowered to cause the vine puller chain to run nearer to or farther from the carrier chain 11. This chain 22 is preferably left slack and idlers 25 support its  
90 lower rim at a short distance above the carrier chain. The vine puller chain is preferably driven at a more rapid rate than the carrier chain and faster than the forward movement of the shovel, and as it is carried  
95 forward and held at the desired height above the shovel by the arms 24, said chain catches the vines just as the potato hill is being lifted and pulls said vines loose from the potatoes which are held by the dirt.  
100

Idlers 26 on shafts extending across the lower side of the frame support the lower rim of the carrier chain and said chain is driven by large sprockets 27 on a cross-shaft  
105 28 mounted in bearing brackets 29 adjust-



ably attached to the rear ends of the sides 3. This shaft 28 is driven in the proper direction and at the desired speed by providing a casing 30 on one of the bearing brackets in which casing is a stub shaft 31 provided with a small sprocket 32 and also with a gear 33 which is in mesh with a smaller gear 34 on the shaft 28. A sprocket chain 35 engages said sprocket 32 and a large sprocket 36 on the axle 2 to transmit motion from said axle.

Openings 37 are provided in the sides 3 adjacent to the grate bars to allow the dirt to escape laterally and a series of rods 38 are pivotally attached at their forward ends to the cross shaft 39 upon which the idlers 26 are secured and extend rearwardly to receive the potatoes. These rods by being curved laterally near the rear ends form a chute to deliver the potatoes at one side of the machine and if desired means may be provided for swinging said rods on the shaft to raise and lower their rear ends.

To the rear ends of a draft tongue 40 are secured downwardly and rearwardly extending arms each provided with a journal for a supporting wheel 41 and the forward end of the frame is carried by these wheels by providing a bracket 42 on its forward end having means for adjustably attaching it to the rear end of the tongue. A hook 43 is pivotally attached at 44 to the tongue and may be adjusted relative to the tongue by turning it on its pivot and securing it in its adjusted position as shown in dotted lines in Fig. 2, by a pin 45 which passes through one of the openings in a sector 46 secured to the tongue and through an opening in a boss on the hook. A lever 47 pivoted intermediate its ends at 48 to the bracket 42 has an eye in its forward end to receive the hook and its rear end is pivotally connected to the forwardly extending arm 49 of a bell crank lever by a link 50. The other arm of the bell crank forms a lever handle 51 and a segment alongside the handle is engaged by a dog carried by the handle to hold the same in any position to which it may be adjusted. A segmental guide 52 on the forward end of the bracket 42 embraces the forward end of the lever 47 and prevents any lateral movement of said lever, taking the lateral strain off its pivot which is some distance to the rear of the point of engagement of the arm with the guide. A pivoted extension 53 on the lever handle is provided to aid the operator sitting in the seat 54 to pull the lever toward him and raise the shovel out of the ground.

55 are spuds or lugs detachably secured to the rims 56 of the drive wheel 1. Each of these spuds is made in two parts, each part being provided at one edge with an angle flange 57 to engage and receive the edges of the wheel rim, and with an outwardly ex-

tending integral blade 58 to engage the ground. These blades are strengthened by integral brace flanges 59 having openings to receive a securing bolt 60 adapted to draw the two parts of the spud toward each other and clamp the rim of the wheel. By taking out this one bolt each spud may be detached, thus facilitating their removal to permit the machine to be drawn from place to place without cutting up the road.

What I claim as my invention is:—

1. In a potato digger, the combination with a frame and a shovel secured to the forward end of said frame, of grate bars extending rearwardly from said shovel and each consisting of two short bars, one pivoted at the forward end and the other at its rear end, a transversely extending member engaging the adjacent ends of the short bars, and means for raising and lowering said member to vibrate said bars.

2. In a potato digger, the combination with a frame and a shovel attached to the forward end of said frame, of a series of fixed grate bars extending rearwardly from the shovel, and a series of vibratory bars alternating with the fixed bars and each consisting of two bars pivotally supported at opposite ends and having downwardly turned adjacent ends, a transverse member engaging guide slots in the frame and attached to the downturned ends of the bars, and means attached to said member to move the same up and down in its slots and vibrate the bars.

3. In a potato digger, the combination with traction wheels and a frame supported by said wheels, of a shovel secured to the forward ends of the frame, sprockets on the frame at the rear of said shovel and sprockets on the rear end of the frame, a carrier chain engaging said sprockets, means for transmitting motion from said traction wheels to actuate the carrier chain, vibrating grate-bars extending rearwardly from the shovel, a transverse shaft supported in bearings on the frame, a transverse member engaging the grate-bars, means on the shaft connected to said member for actuating the same and vibrating said bars, sprockets on said transverse shaft, adjustable arms on the forward end of the frame, sprockets on said arms, a vine-puller chain engaging the sprockets in the transverse shaft and said arms, and means for transmitting motion from the traction wheels to said transverse shaft.

4. In a potato digger, the combination with traction wheels, of a frame supported by said wheels consisting of sides each provided with a longitudinal opening, a shovel secured to the forward end of the frame, grate-bars arranged longitudinally of the frame at the rear of said shovel with their upper surface in the plane of the openings in the frame sides, a carrier chain running over said bars, and means supported upon the frame inter-



mediate the ends of the opening in the sides thereof for vibrating said bars.

5 In a potato digger, the combination with a frame consisting of sides provided with bearings, an axle in said bearings and traction wheels on said axle, of a supporting casting secured to and uniting said sides at their forward ends, a shovel secured to said casting, a series of short stationary grate-bars  
10 secured to said casting and having downwardly curved ends, sprockets carried by said casting at the forward ends of said bars, a series of fixed grate-bars attached at their forward ends to the short bars, a series of vibrating grate-bars between the fixed bars,  
15 each consisting of two bars having down-

turned adjacent ends, a transverse shaft engaging said downturned ends and movable in slots in the sides of the frame, bearings on the frame sides, a transverse shaft in said bearings, eccentrics on the ends of said last named shaft, connecting rods connecting said eccentrics and the ends of the first named transverse shaft, and means for actuating said eccentrics to vibrate the bars. 25

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

LEVI P. NORMANDIN.

Witnesses:

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