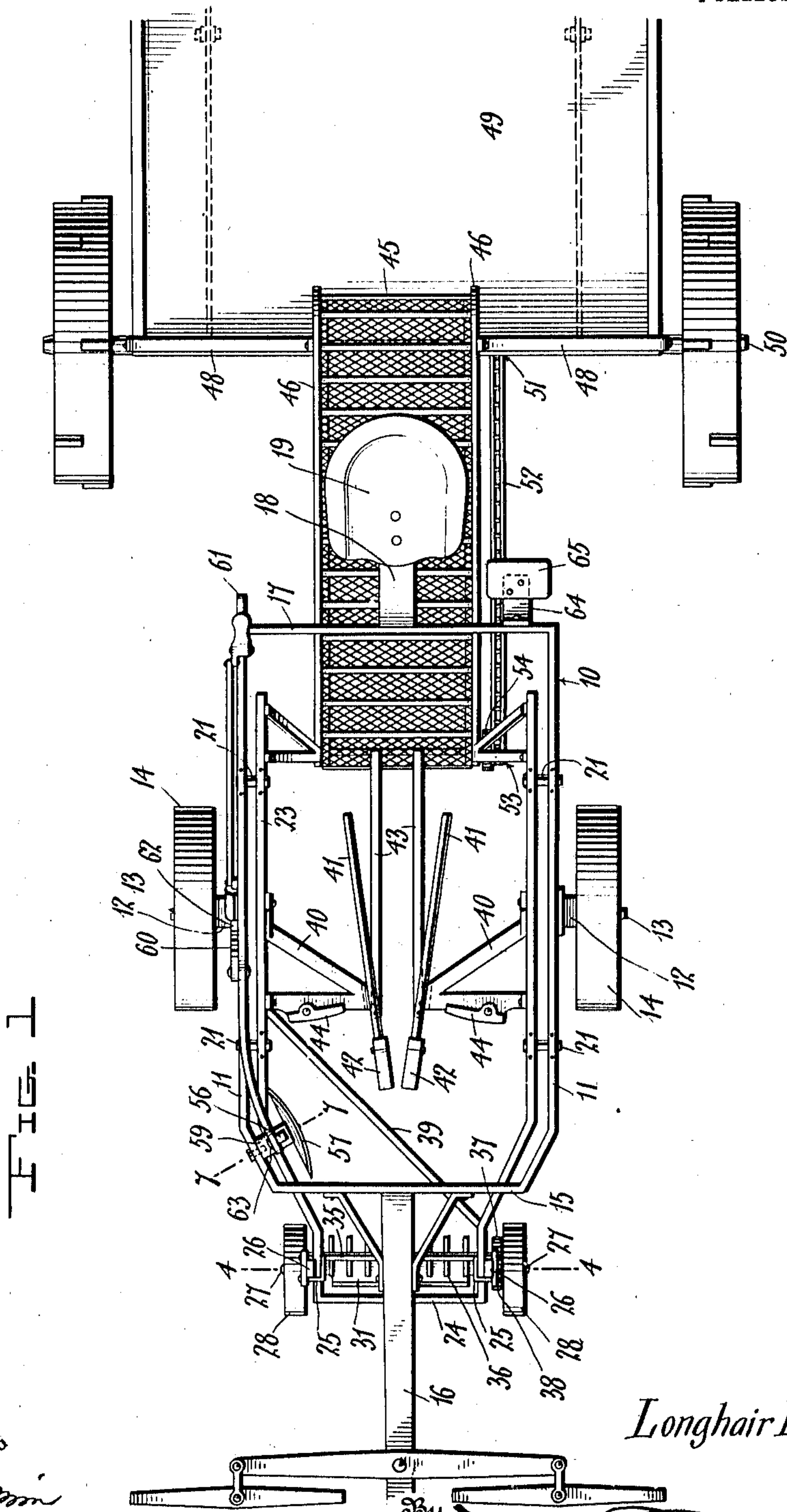


L. I. MINATO.
BEET HARVESTER.
APPLICATION FILED MAY 24, 1910.

993,704.

Patented May 30, 1911.

4 SHEETS—SHEET 1.



Witnesses

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4 SHEETS-SHEET 2.

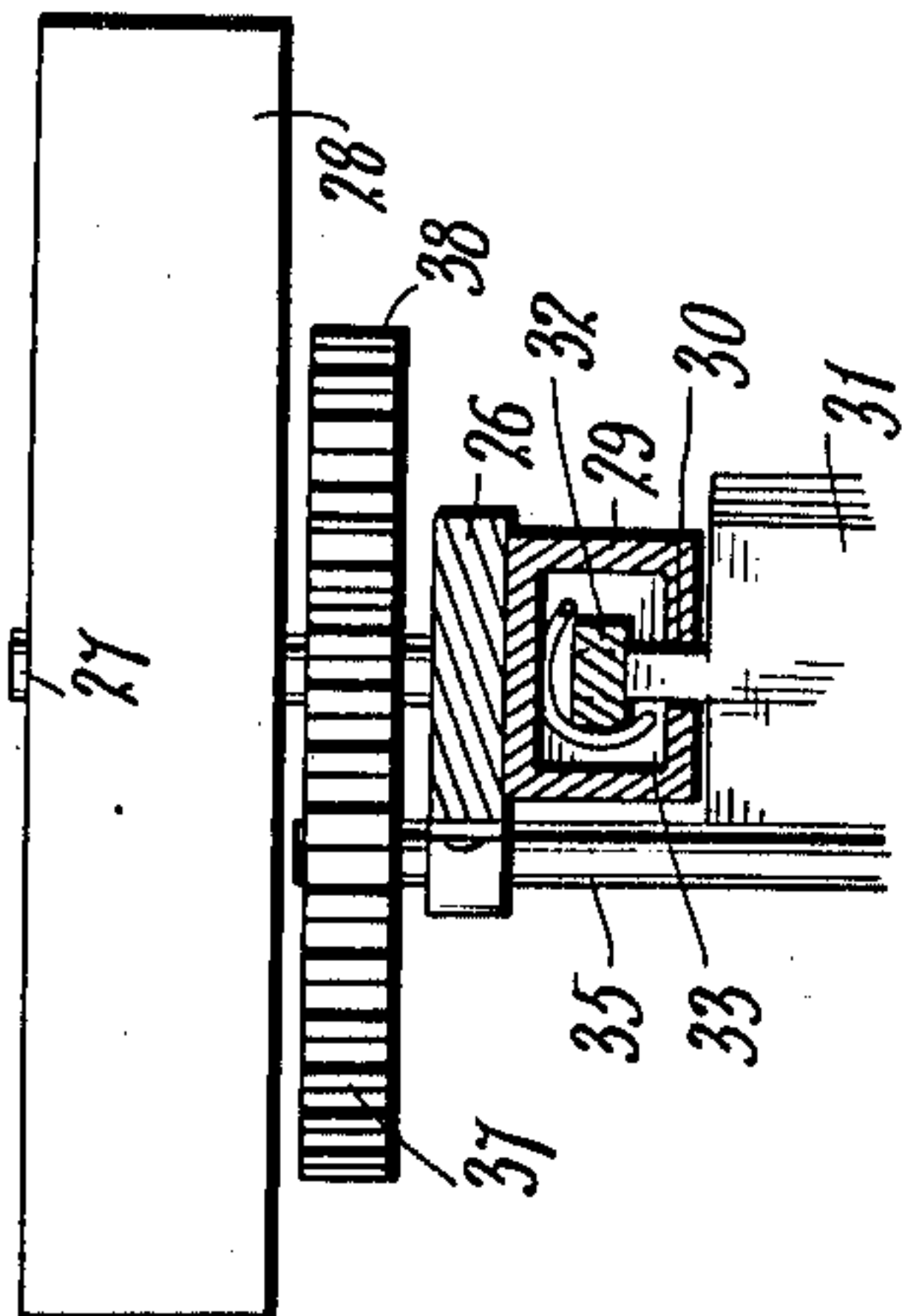


Fig. 6

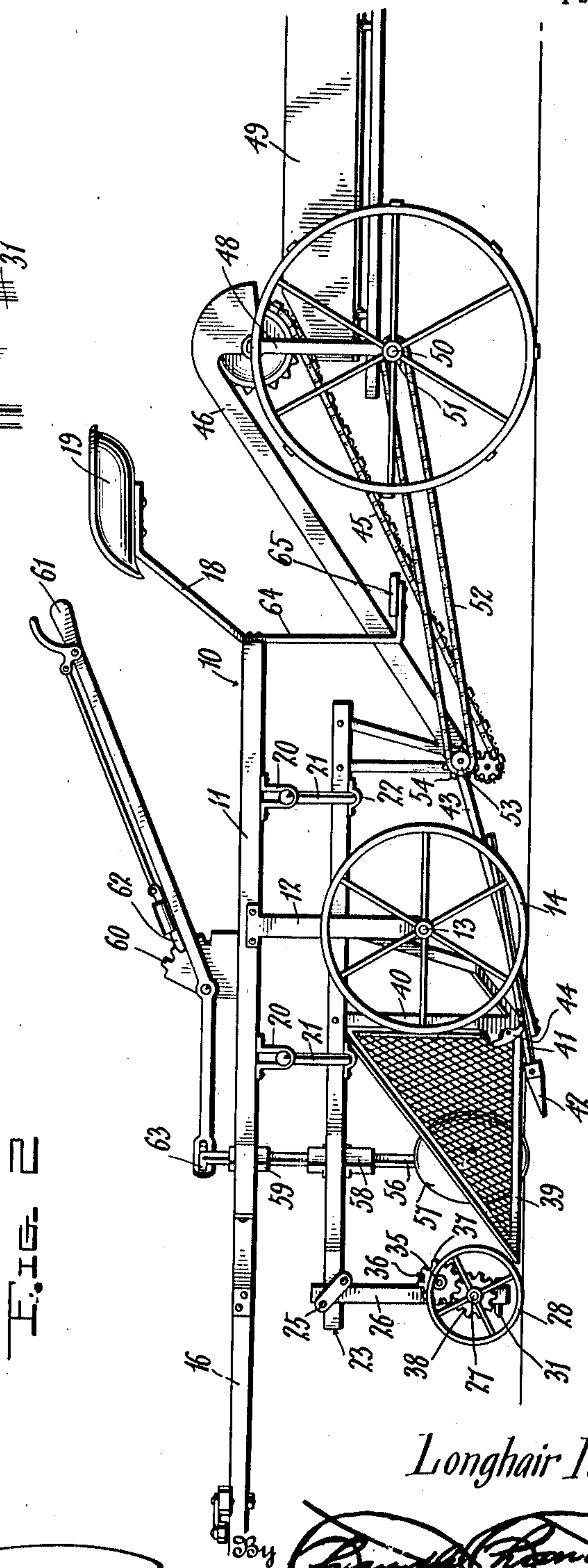


Fig. 2

Witnesses

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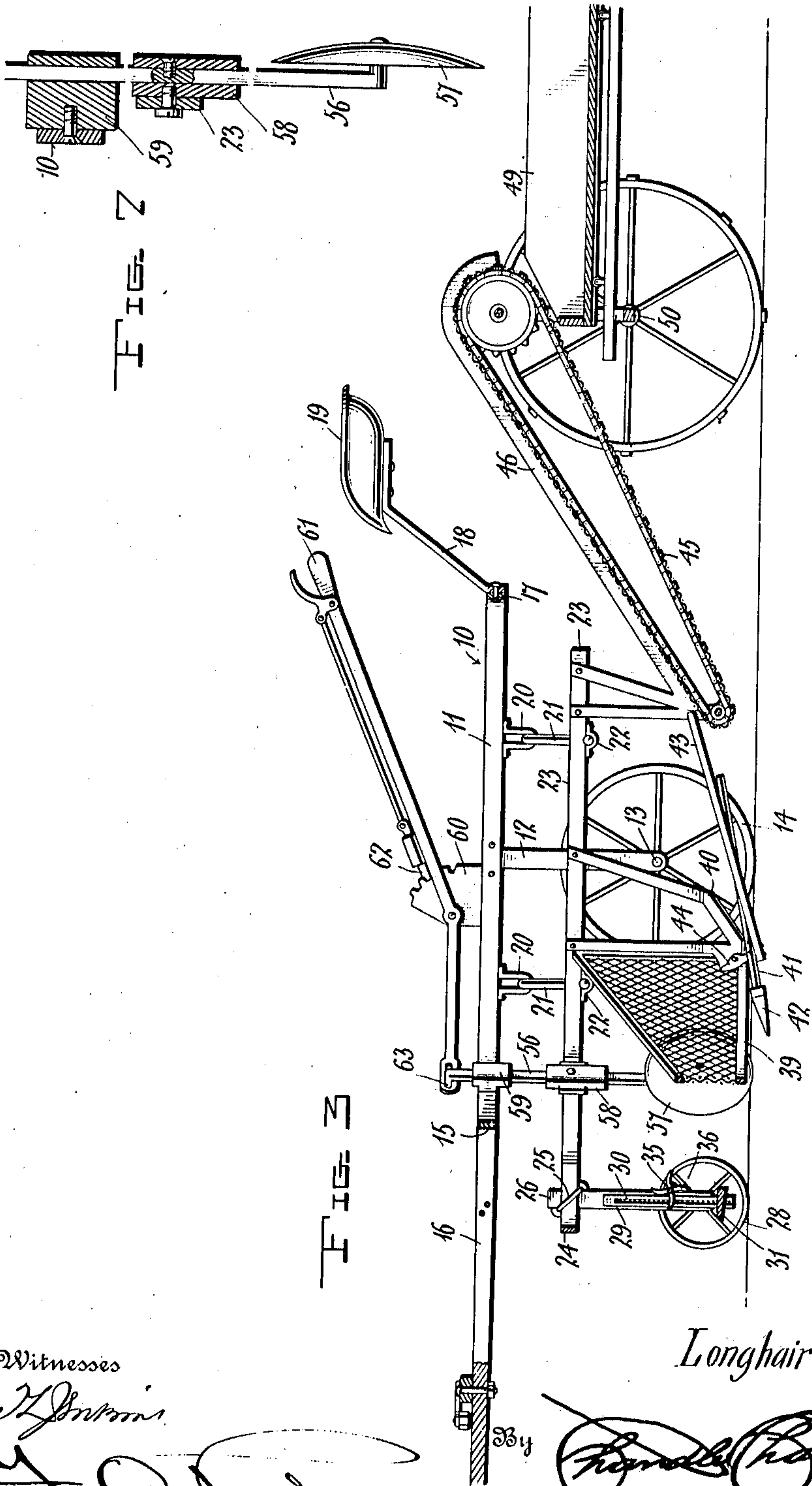
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4 SHEETS-SHEET 3.



Witnesses
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4 SHEETS—SHEET 4.

FIG. 5

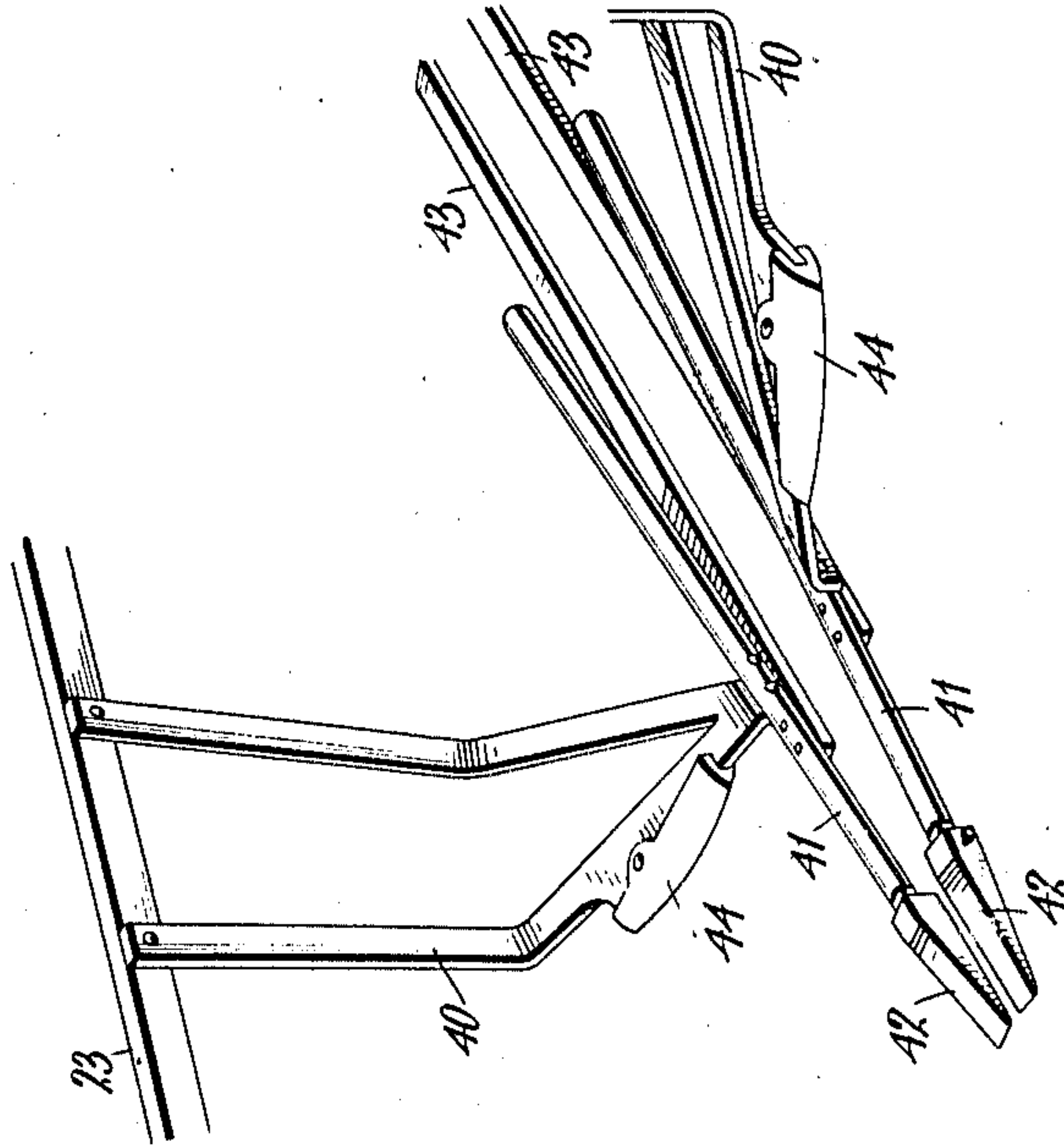
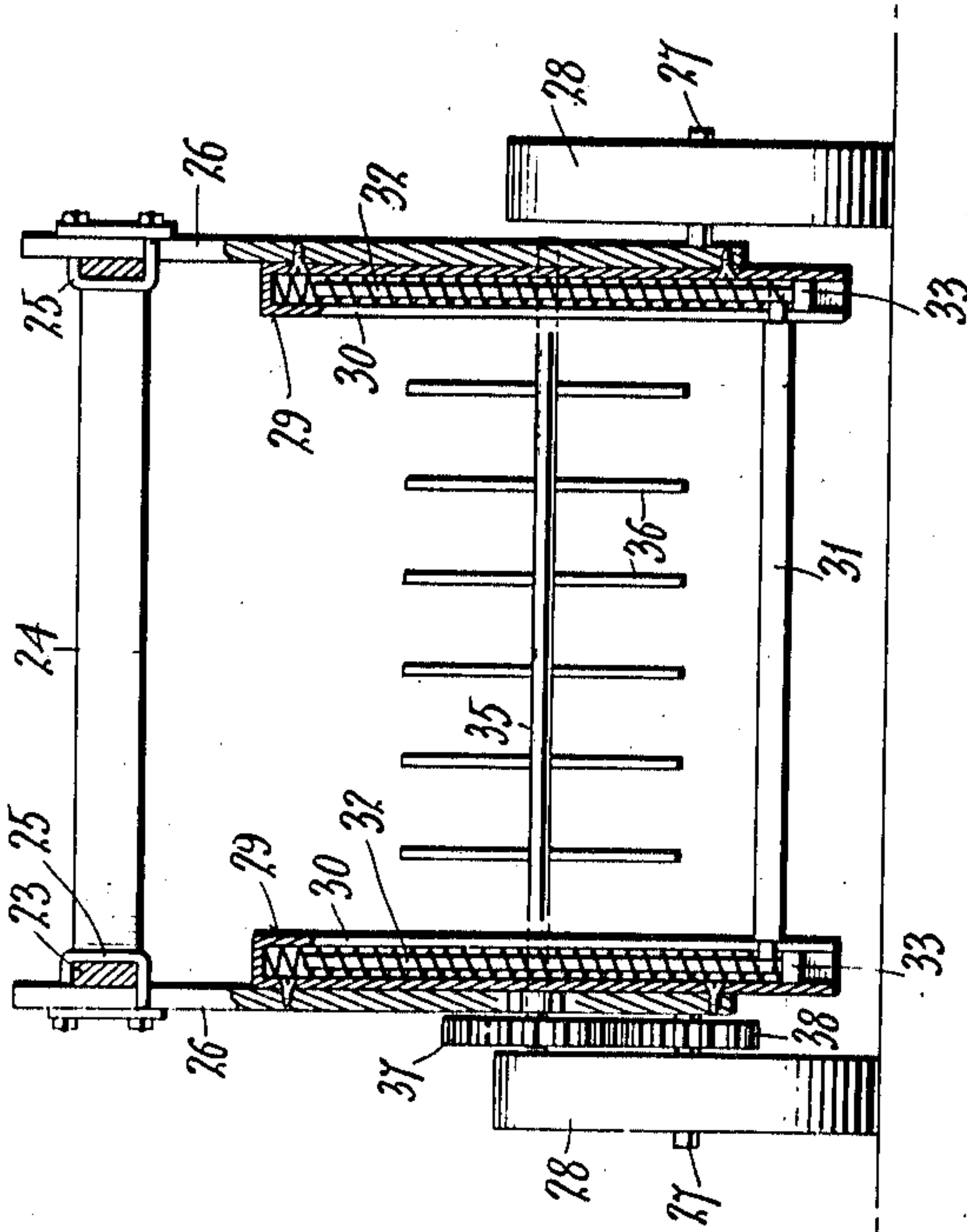


FIG. 4



Witnesses

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BEET-HARVESTER.

993,704.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed May 24, 1910. Serial No. 563,199.

To all whom it may concern:

Be it known that I, LONGHAIR INAO MINATO, a citizen of the United States, residing at Plano, in the county of Fremont, State of Idaho, have invented certain new and useful Improvements in Beet-Harvesters; 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.

The invention relates to a harvesting machine and more particularly to the class of beet harvesting machines.

The primary object of the invention is the provision of a machine of this character in which the tops of beet plants will be cut off and removed from the row as the machine is being advanced through a crop.

A further object of the invention is the provision of a machine of this character in which the parts thereof are automatic in their action and cooperate with each other to facilitate the proper working of the machine as the same is being advanced through a field.

With these and other objects in view, the invention consists in the construction, combination, and arrangement of parts, as will be hereinafter more fully described in detail, illustrated in the accompanying drawings, which disclose the preferred form of embodiment of the invention, to enable those skilled in the art to practice the same, and as pointed out in the claims hereunto appended.

In the drawings:—Figure 1 is a top plan view of a machine constructed in accordance with the invention. Fig. 2 is a side elevation thereof. Fig. 3 is a longitudinal vertical sectional view through the machine. Fig. 4 is a transverse sectional view on the line 4—4 of Fig. 1. Fig. 5 is a detail perspective view of the plow frame and its plows for removing the beets from the ground, the said frame being removed from the machine. Fig. 6 is an enlarged transverse sectional view through one of the vertical standards supporting the cutting blade and the adjunct parts. Fig. 7 is a sectional view on the line 7—7 of Fig. 1.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings by numerals, 10

designates generally the main frame of the machine which is preferably of rectangular-shape and has fixed to its side beams 11, centrally thereof, depending legs 12, provided at their lower ends with laterally projecting stud axles 13, supporting rotatable ground wheels 14, and projecting forwardly from the front cross beam 15, of this main frame is a central draft tongue 16, to which may be hitched draft animals for conveying the machine through a field. Mounted centrally upon the rear cross beam 17, of the main frame is a seat post 18, carrying a seat 19, to be occupied by an operator of the machine.

Fixed to the main frame 10, on its side beams 11, are spaced alining bearings 20, in which are journaled the ends of crank shafts 21, which latter have connected thereto by bearings 22, a supplemental frame 23, the latter being supported in a plane below the main frame and this supplemental frame has its side beams at their forward ends forwardly converging as at 24, to form a contracted front end to the supplemental frame, and to the forward portions of the side beams of the latter are adjustably connected by clips 25, vertical standards 26, the lower extremities of which are formed with laterally projecting stud axles 27, supporting ground wheels 28, and to the inner faces of these standards 26, are fixed hollow guide tubes 29, which contain elongated guide slots 30, in which are slidably mounted the reduced extremities of a beet topping knife blade 31, disposed horizontally between the standards. When the plow points meet with a boulder the supplemental frame will give so as to elevate the points but the supplemental frame will not move when the plow points engage with the soil as the weight of the frame and the members carried thereby would overcome the resistance of the soil or ground.

Located within the tubes 29, are plunger rods 32, to the lower ends of which are fixed the reduced extremities of the cutting blade 31, the lower ends of the plunger rods being enlarged to form annular shoulders 33, serving as bearings for the lower ends of coiled expansion springs surrounding the plunger rod 32, and having their upper ends bearing against the upper closed terminals of the guide tubes 29, supported by the standards.

Mounted in suitable bearings upon the

standards 26, above the plane of the blade 31, is a horizontally disposed beater shaft 35, having a plurality of rows of beater fingers 36, and fixed to one end of this shaft 35, is a gear wheel 37, meshing with a gear 38, fixed to or integral with one of the ground wheels 28, so that motion from the latter will be imparted to the beater shaft.

Diagonally disposed across the supplemental frame 23, in rear of the knife blade 31, is a fender or guard plate 39, the latter being vertically disposed and adapted to act upon the severed beet tops to disperse the same to one side of the machine during its advancement through a field.

Depending from and fixed to the side beams of the supplemental frame 23, are downwardly converging supporting brackets 40, the latter having fixed to their lower ends forwardly converging inclined plow beams 41, to the forward extremities of which are detachably fixed plow points 42, the latter adapted to cut into or penetrate the earth for lifting or removing beets therefrom, the said shares being disposed in rear of the fender or guard plate 39, carried by the supplemental frame of the machine. Secured to the plow beams 41 and extending rearwardly thereof are rearwardly converging and forwardly inclined extension pieces 43, forming beet puller means, which latter terminate in rear of and slightly above the forward extremity of an endless elevator or conveyer 45, the side boards 46, of its frame being fixed at their forward ends to depending brackets secured to the rear extremities of the supplemental frame, while the opposite rear ends of these side boards 46, are secured to braces 48, rising from a body forming a receiver 49, which is supported at its forward end by a wheeled axle 50, the same having fixed thereto a sprocket wheel 51, over which is trained a sprocket chain 52, which is also trained over a sprocket wheel 53, the latter actuating a gear 54, which imparts movement to the endless elevator or conveyer 45, during the forward travel of the machine.

It is obvious that the cutter blade 31, is held under tension and is capable of vertical adjustment in the guide tubes 29, and in this manner the said blade may adjust itself with respect to the irregularity in the surface of the ground during the operation of the machine. When the blade 31 engages a small hill it will be elevated thereby and after it passes this hill it will be forced into its normal position by the spring in the tube 29 which is secured at its lower end to the plunger rod 32 and at its upper end to the tube 29.

In operation presuming the machine is being advanced through a field along the row of growing beet plants, the cutter blade 31, will sever the tops of the plants which

will be subsequently dispersed to one side of the row by the fender or guard plate 39, and by the disposition of the shares 42, the same will enter the ground to dig up or remove the beets from the same and thereafter the beets will be collected by the endless elevator or conveyer 45, which latter will discharge the said beets into the receiver 49, from which they may be delivered to a wagon or deposited upon the ground.

The brackets 40 support shoes 44 which are located rearwardly of the plow points 42 and which serve to break up earth plowed up by the plow points.

Carried by the supplemental frame 23 near its forward end is a vertical stem 56 supporting at its lower end a rotatable gage roller or disk 57 the stem 56 being suitably fixed in a swiveled sleeve 58 carried by one side beam of the supplemental frame and this stem also passes through a further swiveled sleeve 59 carried by the main frame of the machine. Rising from one side beam of the main frame 10 is a toothed segment 60 to which latter is pivotally connected an adjusting lever 61 the same carrying the usual manually operable spring controlled locking dog or pawl 62 for engagement with the said segment and the forward end of this lever 61 is provided with a slot in which is engaged an outwardly extending pivot 63 fixed to the upper end of the stem 56 so that on movement of the adjusting lever the said stem may be raised or lowered to position the plow points relative to the ground, the adjusting lever being normally locked in adjusted position by the pawl or dog 62. The roller or disk 57 is provided to enable the driver to guide the machine in parallel paths over the ground and said roller or disk penetrates but slightly into the ground so as to offer little resistance to the forward movement of the vehicle.

Secured to the rear end of the main frame is a hanger 64 carrying a step 65 which enables an operator to mount the seat 19 on the main frame.

What is claimed is:—

1. In a beet harvester machine a wheeled main frame, a supplemental frame loosely hung from the latter, vertically adjustable standards mounted at the forward end of the supplemental frame, ground wheels journaled on the standards, guide means fixed to the standards, a cutter blade horizontally disposed between the standards and vertically adjustable in the guide means, and means tensioning the cutter blade.

2. In a beet harvester machine a wheeled main frame, a supplemental frame loosely hung from the latter, vertically adjustable standards mounted at the forward end of the supplemental frame, ground wheels journaled on the standards, cutter means carried by the supplemental frame, and deflector

means in rear of the cutter means and supported by the supplemental frame.

3. In a beet harvester machine a wheeled main frame, a supplemental frame loosely
5 hung from the latter, vertically adjustable standards mounted at the forward end of the supplemental frame, ground wheels journaled on the standards, guide means fixed to the standards, a cutter blade horizontally
10 disposed between the standards and vertically adjustable in the guide means, means for tensioning the cutter blade, deflector means in rear of the blade and supported by the supplemental frame, and plows fixed

to the latter frame in rear of the deflector 15 means.

4. In a beet harvester, a wheeled main frame, a supplemental frame suspended by the main frame, cutter means carried on the forward end of the supplemental frame, and 20 a fender carried by the supplemental frame rearwardly of the cutter means.

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

LONGHAIR I. MINATO.

Witnesses:

TAMI JEO,
K. MOYEDO.