

No. 843,412.

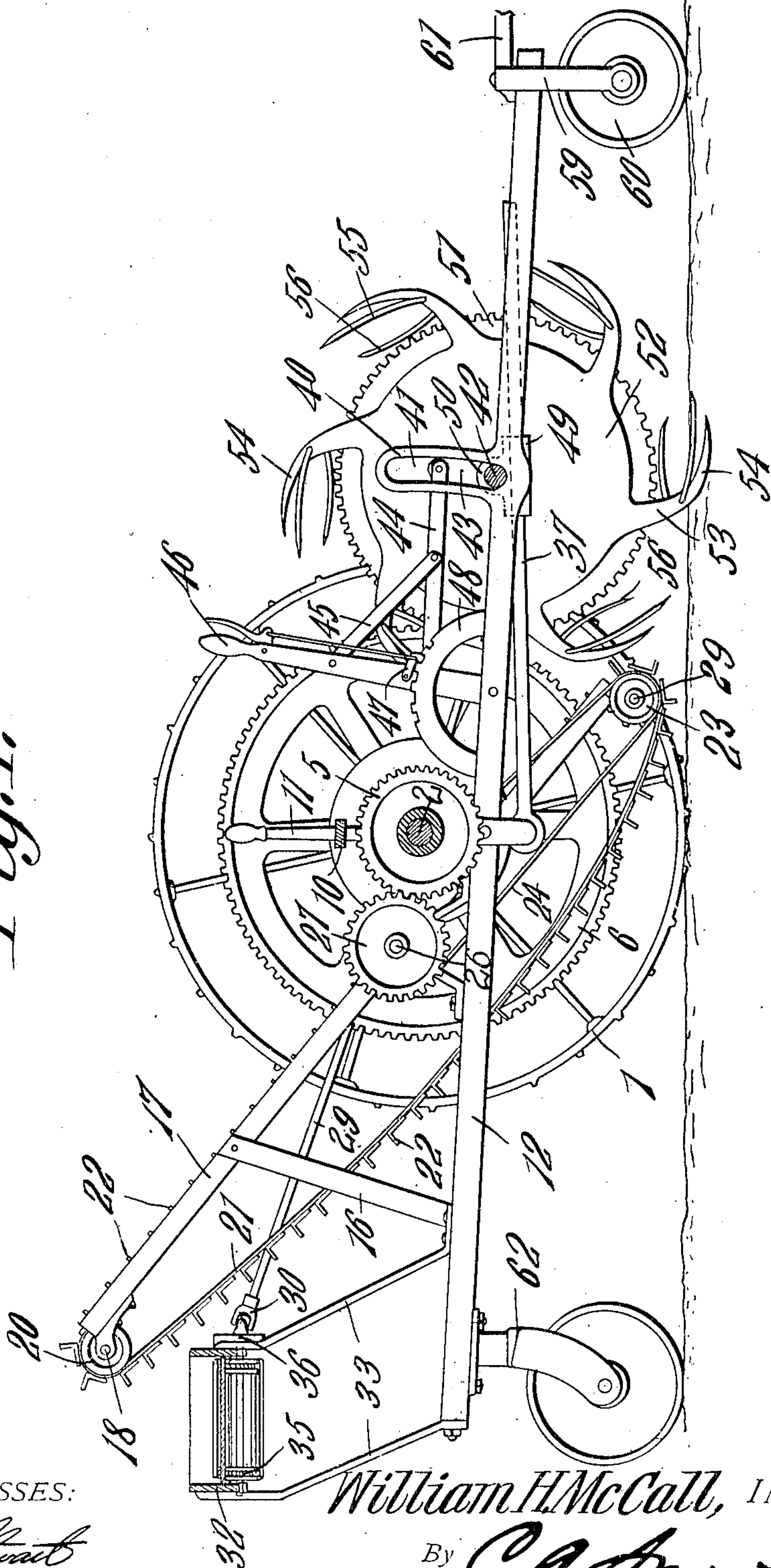
PATENTED FEB. 5, 1907.

W. H. McCALL.
BEET HARVESTER.

APPLICATION FILED SEPT. 28, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



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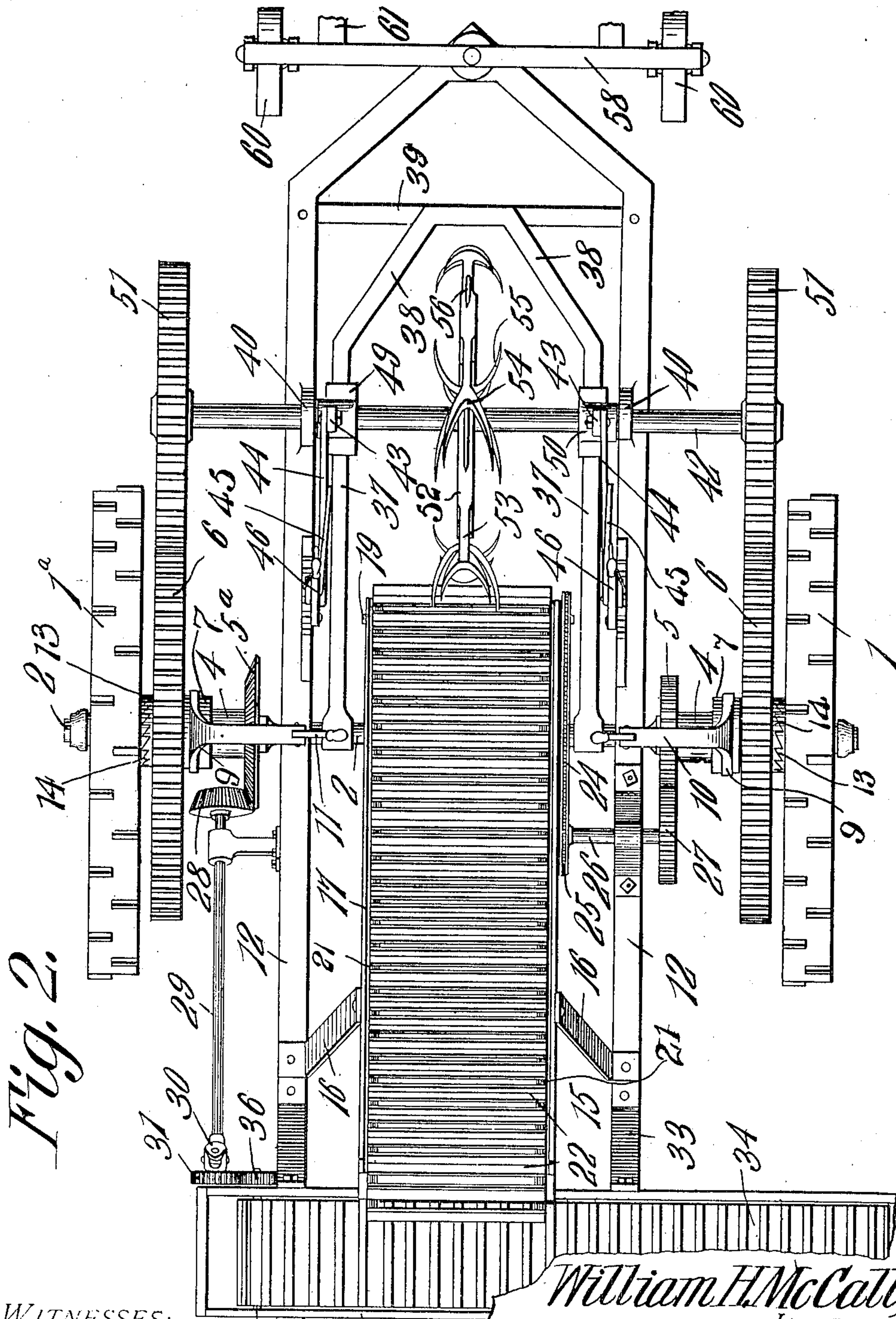
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3 SHEETS—SHEET 2.



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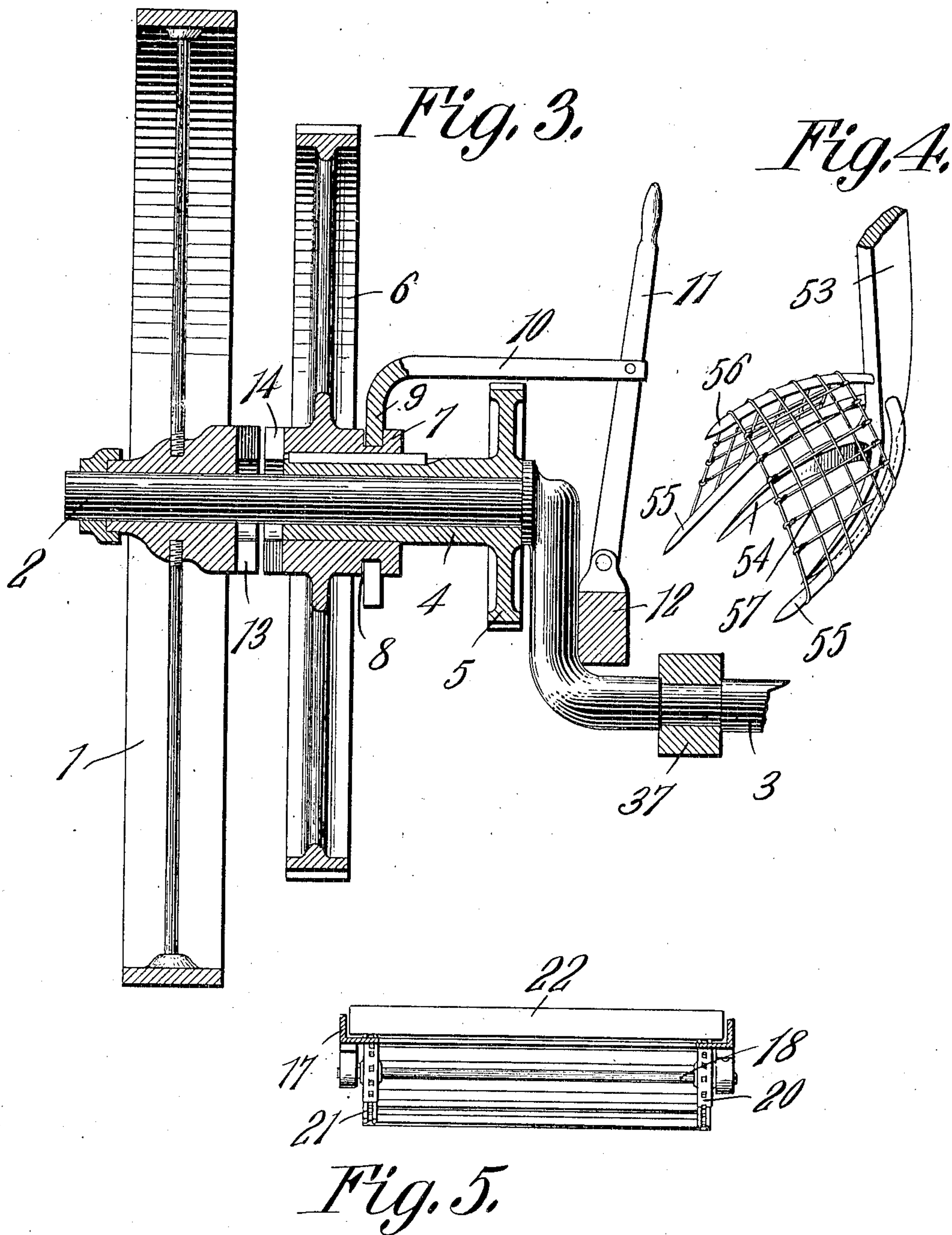
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

WILLIAM H. McCALL, OF NEW WINDSOR, COLORADO.

BEET-HARVESTER.

No. 843,412.

Specification of Letters Patent.

Patented Feb. 5, 1907.

Application filed September 28, 1906. Serial No. 336,656.

To all whom it may concern:

Be it known that I, WILLIAM H. McCALL, a citizen of the United States, residing at New Windsor, in the county of Weld and State of Colorado, have invented a new and useful Beet-Harvester, of which the following is a specification.

This invention relates to beet-harvesters; and its object is to provide a machine of this character having means of novel construction for removing beets one at a time from a row and for hoisting them to a point from which they may be conveniently discharged into an accompanying wagon or receptacle provided for them.

A still further object is to provide a beet-pulling device which can be quickly adjusted in relation to the ground and easily thrown into or out of operative relation with the traction or driving wheels of the machine.

With the foregoing and other objects in view the invention consists of certain novel features of construction and combinations of parts, which will be hereinafter more fully described, and pointed out in the claims.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings, Figure 1 is a side elevation of the complete machine, one of the traction-wheels and the clutch being removed and the netting being removed from the pulling-arms. Fig. 2 is a plan view of the machine, the netting being removed from the pulling-arms. Fig. 3 is an enlarged section through one of the traction-wheels and the adjoining parts of the mechanism. Fig. 4 is an enlarged detail view of one of the digging devices, and Fig. 5 is an enlarged transverse section through the upper portion of the elevator.

Referring to the figures by characters of reference, 1 1 are traction-wheels loosely mounted on the end portions of an axle 2, the central portion of which is disposed as shown at 3, while the end portions or trunnions formed by said axle constitute supports for sleeves 4, which are mounted to rotate upon the axle between the traction-wheels and the depending portion 3. Each sleeve carries a gear 5 and 5^a, respectively, and has another gear 6 feathered thereon, said last-mentioned gear being formed with a collar 7, in which is arranged an annular groove 8. A forked arm 9 straddles the collar 7 and is

seated within the groove 8, and this arm has a lateral extension 10, which is pivotally connected to a lever 11. This lever is mounted on a skeleton frame 12 of any suitable contour and which constitutes the body of the machine. The hubs of the wheels 1 are formed with clutch-faces 13, adapted to be engaged by corresponding faces 14, formed on the outer ends of the hubs of the gears 6, so that when the levers 11 are shifted in certain directions the gears 6 are moved into operative relation with the traction-wheels, and vice versa. A platform 15 is arranged upon the rear portion of the frame 12, and supported above this platform by standards 16 is a frame 17, preferably made up of angle-irons and having shafts 18 and 19 journaled adjacent the upper and the lower ends, respectively, of said irons. Each of these shafts carries sprocket-wheels 20, on which are mounted chains 21, adapted to ride upon the angle-irons 17 and connected by upstanding slats 22, preferably formed of angle-irons. Another sprocket 23 is arranged on the lower shaft 19 and is driven by means of a chain 24 from a sprocket 25, arranged upon a shaft 26, which is journaled on the frame 12 and carries a gear 27, meshing at all times with the gear 5 on one of the sleeves 4.

The gear 5^a hereinbefore referred to is beveled and meshes at all times with a bevel-gear 28, arranged at one end of a shaft 29, which is connected, preferably by means of a universal joint 30, with a gear 31. This last-mentioned gear is journaled at one side of a frame 32, supported by standards 33 above the rear portion of the frame 12 and extending under the upper end of the elevator-frame 17. An endless belt 34 is mounted within the frame 32 and passes over rollers 35, disposed within opposite portions of the frame and one of which has a gear 36 rotatable therewith and meshing with the gear 31. The conveyer 34 and its frame 32 extend a suitable distance beyond one side of the frame 12, so that material carried by the belt 34 may be discharged into a wagon or receptacle at one side of the frame 12.

It is of course understood that the elevator extends downward to a point close to the ground, and this elevator is adapted to receive beets or other vegetables to be harvested from a pulling device of novel construction. This pulling device consists of paral-

lel arms 37, pivotally mounted upon the axle 2. Said arms are connected at their front ends, as shown at 38, and are adapted to be normally supported by a cross-bar 39, connecting the sides of the frame 12. Standards 40 are arranged upon the sides of the frame 12 and have curved slots 41 therein, the curves of said slots being concentric with the gears 6. Loosely mounted within these slots is a shaft 42, having upstanding arms 43 loosely mounted thereon, each of which is pivotally connected to an arm 44, rigidly connected, as by means of a brace 45, to a lever 46. These levers are fulcrumed upon the sides of the frame 12 and carry pawls 47, which are adapted to engage toothed segments 48, so as to lock the levers in any position to which they may be adjusted. The arms 37 have sleeves 49 slidably mounted on them, and the shaft 42 extends through ears 50, arranged on these sleeves, and the arms 43, hereinbefore referred to, are formed with and extend from these ears. A gear 51 is disposed at each end of the shaft 42, and these gears mesh with the gears 6.

Secured to and rotatable with the shaft 42 is a disk 52, having arms 53 radiating therefrom at desired intervals. Each arm terminates at its outer end in tines 54, which are flattened and pointed, as shown particularly in Fig. 4. Curved guard-arms 55 extend from the sides of the arms 53 at points adjoining the tines 54, and another arm 56 extends forward from each arm 53 at a point equidistant from the arms 55. A coarse metal fabric 57 is secured over the arms 55 and 56 and is for the purpose hereinafter set forth.

A cross-beam 58 is pivoted to the front end of the frame 12 and has depending portions 59 at the ends thereof, in which are journaled small traction-wheels 60. Tongues 61 preferably extend forward from the beam 58 to facilitate the attachment of draft-animals to the machine. Casters 62 are connected to the rear end of the frame 12 for supporting the same while the machine is in operation.

It is believed that the operation of this machine will be readily understood from the foregoing description when read in connection with the accompanying drawings. When the machine is drawn forward, the beets, which are planted at regular intervals, will be successively loosened by the tines 54 and the guard-arms 55, and as these tines and arms are disposed at acute angles to each other the beets will be grasped thereby and pulled from the loosened ground and then conveyed upward in a circle, the fabric 57 serving to prevent the beets from dropping out of position between the tines until a predetermined point has been reached. When these tines are brought into position above the lower end of the elevator, the beets will be free to slip therefrom and out of the

fabric guard 57, and as soon as they are deposited upon the elevator they will be conveyed thereby upward to the carrier or conveyer 34, which will in turn discharge the beets at the side of the machine. It will be readily seen that motion is transmitted to the pulling devices through the gears 6 and 51 and that the gears 5 and 27 transmit rotary motion to the elevator, while the gears 5^a and 28 transmit rotary motion from the traction-wheels to the conveyer 34. As heretofore explained, by properly manipulating the levers 11 the clutch members 13 and 14 can be thrown into or out of engagement, so as to control the operation of the entire mechanism. Of course when the clutch members are disengaged none of the mechanism carried by the machine will operate. Either of the clutches can be operated independently of the other, and by manipulating the levers 46 the shaft 42 can be adjusted vertically within the slots 41, this being permissible in view of the fact that the arms 44 are rigidly connected with the levers 46 and the sleeves 49 have a sliding connection with the arms 37.

While this machine has been described as a beet-harvester, it is to be understood that by slightly modifying the construction of the pulling devices it can be used for harvesting potatoes and like vegetable growths.

Having thus described the invention, what is claimed is—

1. In a harvesting-machine the combination with a portable frame; of a rotatable series of pulling devices each comprising diverging tines, and means adjacent and movable with the tines for holding material engaged by the tines.

2. In a harvesting-machine the combination with a portable frame; of a rotatable series of pulling devices each comprising diverging tines, and a screen disposed adjacent and movable with the tines.

3. In a harvesting-machine the combination with a portable frame; of a rotatable series of pulling devices comprising diverging tines, and an arched screen movable with the tines and constituting a guard.

4. A pulling device for harvesting-machines comprising an arm, diverging tines extending from one end thereof, and an arched screen disposed upon said arm adjacent the tines and constituting a guard.

5. In a harvesting-machine the combination with a portable frame; of a rotatable series of pulling devices comprising diverging tines, guard-arms adjacent thereto, and a fabric guard arranged upon the arms.

6. In a harvesting-machine the combination with a portable frame; of a rotatable series of pulling devices comprising diverging tines, guard-arms adjacent thereto, a fabric-guard arranged upon the arms, an elevator carried by the frame, and means operated by

the movement of the frame for actuating the pulling devices and elevator, the fabric guard of said devices being adapted to direct material from the tines onto the elevator.

5 7. In a harvesting-machine the combination with a rotatable disk; of a plurality of arms radiating therefrom, diverging tines extending from the end of each arm, guard-arms extending from opposite portions of
10 each arm and adjacent the tines, and an intermediate guard-arm extending from each radiating arm.

8. In a harvesting-machine the combination with a rotatable disk; of a plurality of
15 arms radiating therefrom, diverging tines extending from the end of each arm, guard-arms extending from opposite portions of each arm and adjacent the tines, an interme-

diate guard-arm extending from each radiating arm, and an open fabric guard arranged 20 upon the arms.

9. A pulling device for harvesting-machines comprising an arm, diverging tines extending from one end thereof, diverging curved guard-arms extending from the first- 25 mentioned arm and adjacent the tines, an intermediate guard-arm, and an open fabric guard disposed upon the guard-arms and open at one end.

In testimony that I claim the foregoing as 30 my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM H. McCALL.

Witnesses:

NORMAN G. HALLEY,
LOUIS B. MOSLEY.