(No Model.) 4 Sheets—Sheet 1.

J. W. SCOTT.

POTATO DIGGER.

No. 396,433. Patented Jan. 22, 1889.

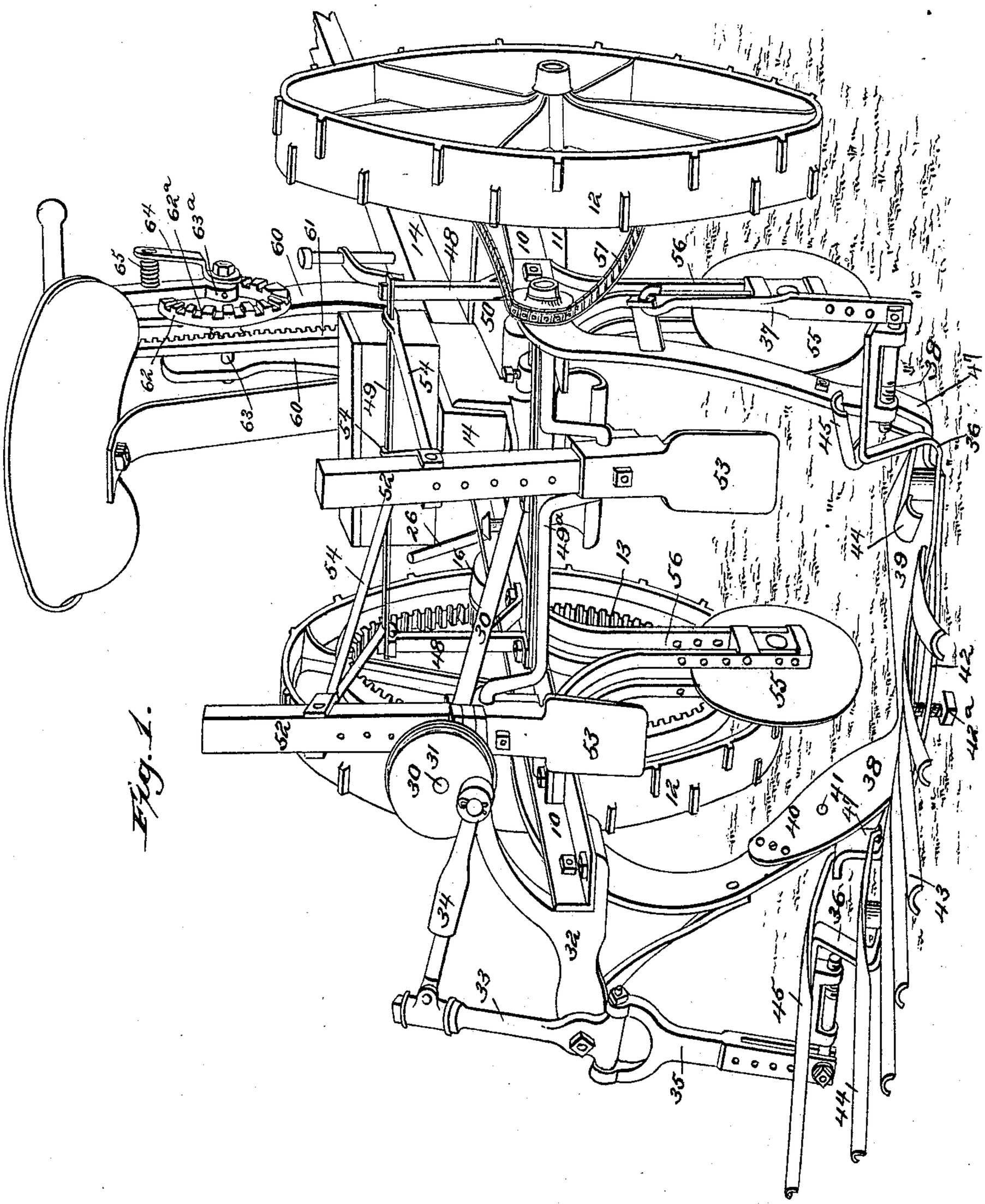


Fig. 1.

WITNESSES:

N. R. Davis.

C. Sedgwick

INVENTOR:

J. W. Scott.

BY Munn & Co.

ATTORNEYS.

(No Model.) 4 Sheets—Sheet 2.

J. W. SCOTT.

POTATO DIGGER.

No. 396,433. Patented Jan. 22, 1889.

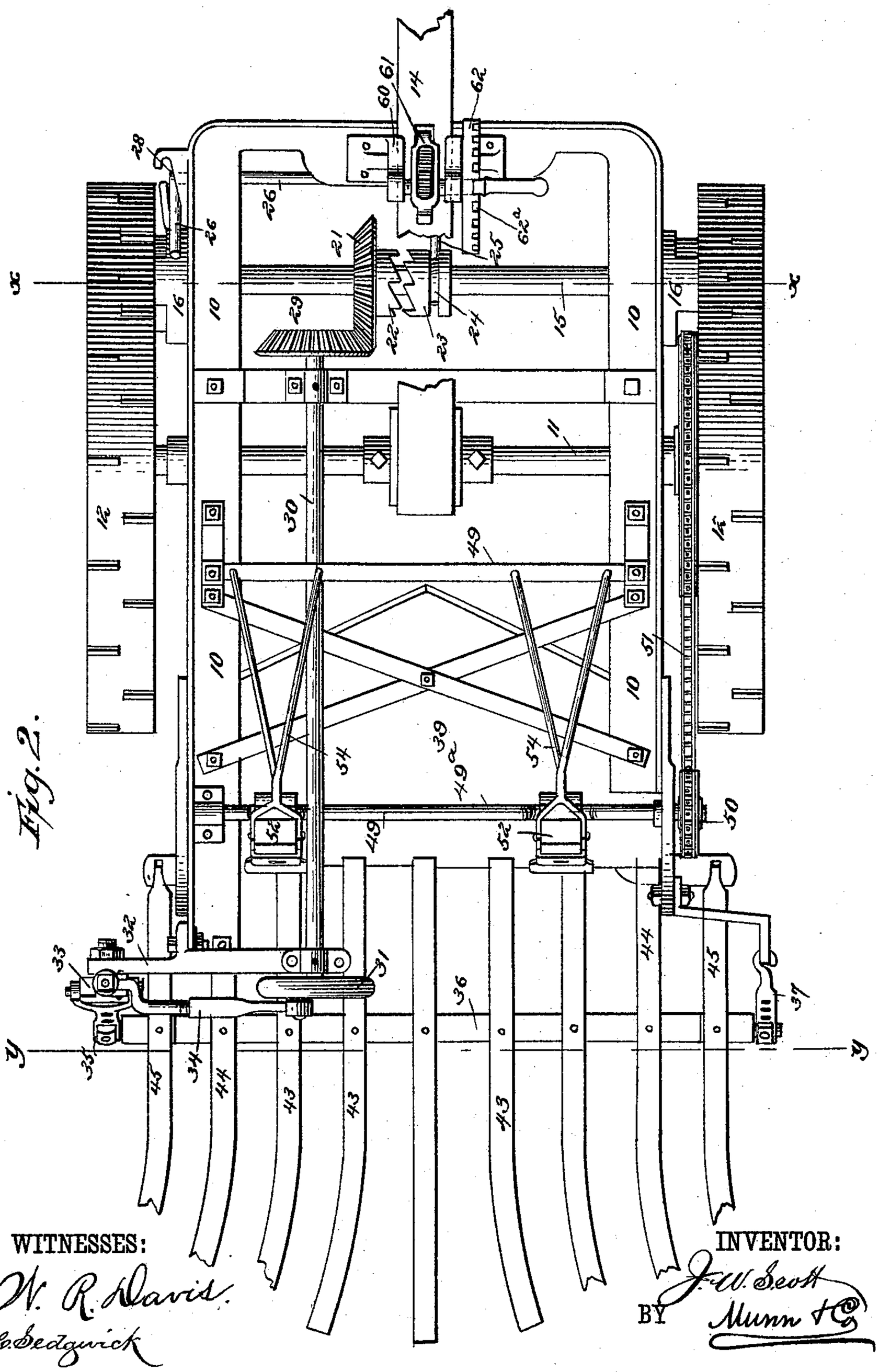


Fig. 2.

WITNESSES:

W. R. Davis.

C. Sedgwick

INVENTOR:

J. W. Scott

BY Munn & Co

ATTORNEYS.

(No Model.) 4 Sheets—Sheet 3.

J. W. SCOTT.

POTATO DIGGER.

No. 396,433. Patented Jan. 22, 1889.

Fig. 3.

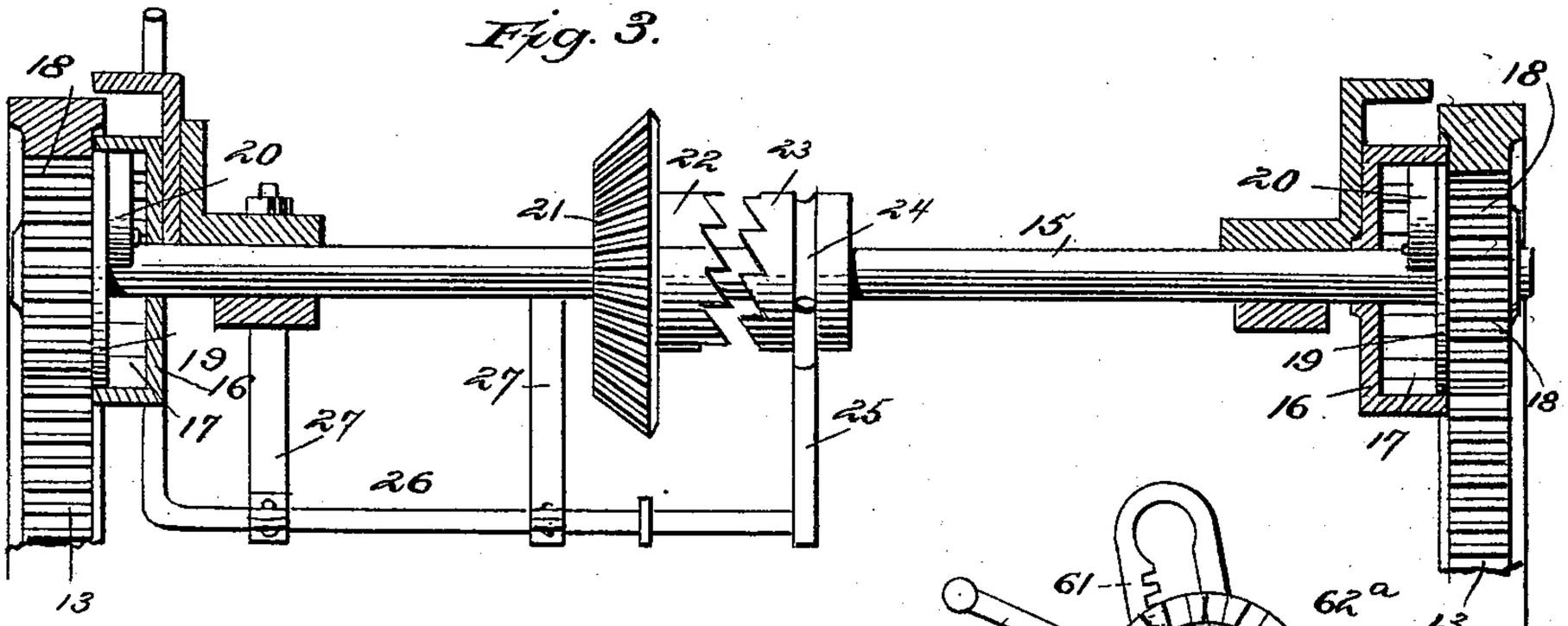


Fig. 4.

Fig. 5.

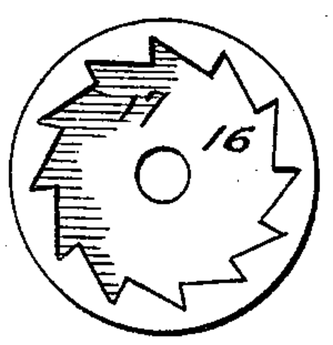
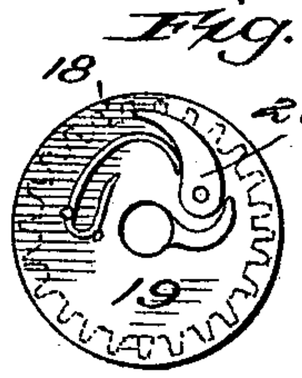


Fig. 6.



WITNESSES:

H. R. Davis

C. Sedgwick

INVENTOR:

J. W. Scott

BY Munn & Co

ATTORNEYS.

(No Model.) 4 Sheets—Sheet 4.

J. W. SCOTT.

POTATO DIGGER.

No. 396,433. Patented Jan. 22, 1889.

Fig. 7.

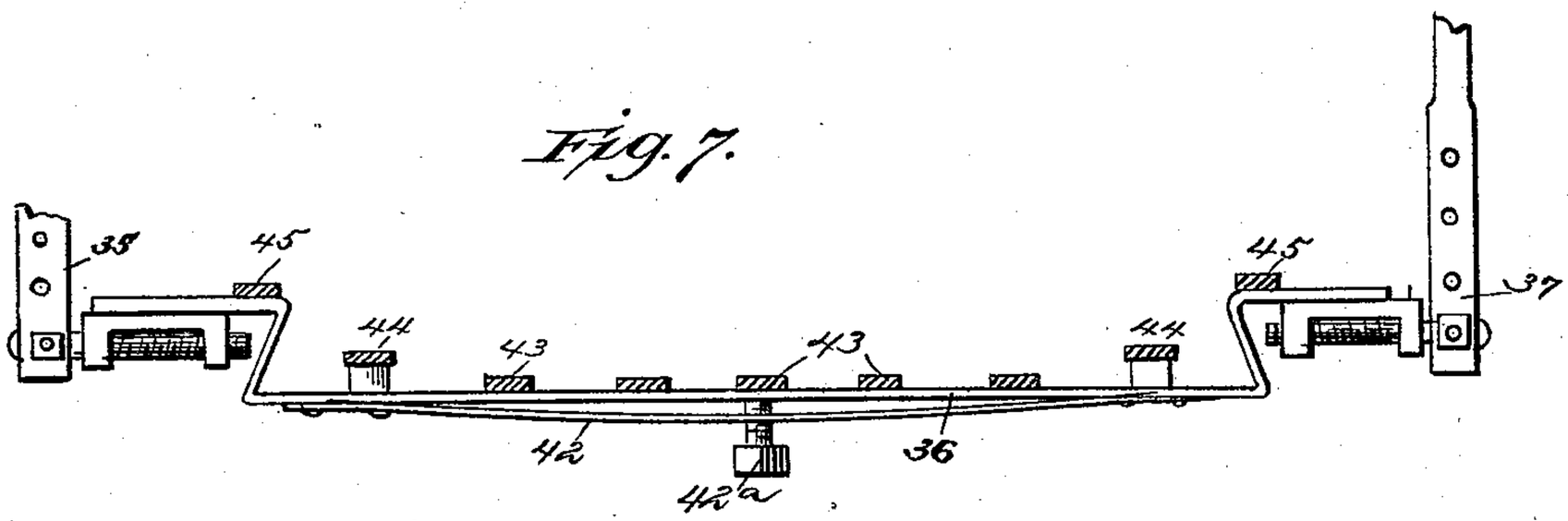


Fig. 8.

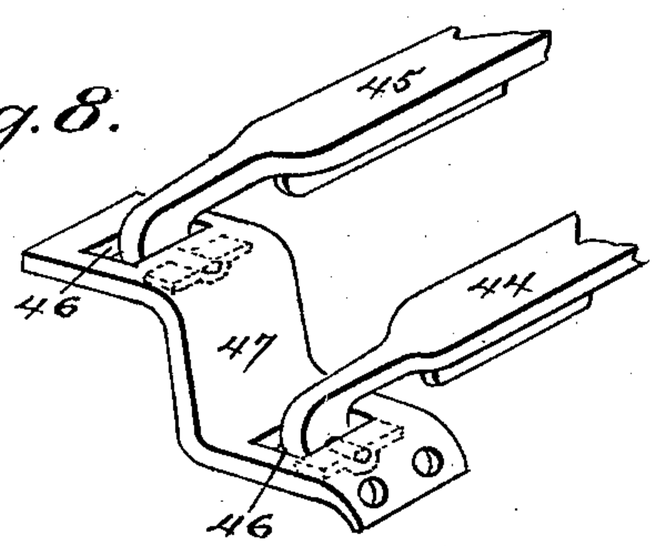


Fig 9

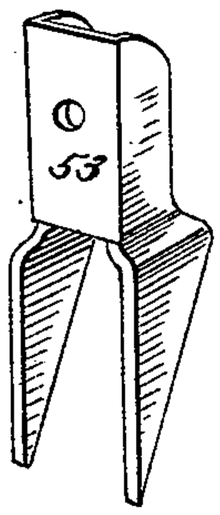
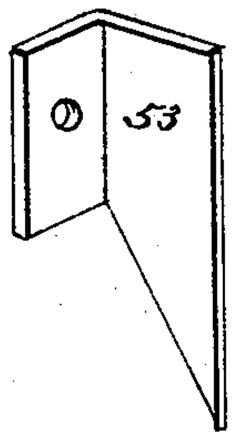


Fig. 10.



WITNESSES:

N. R. Davis.

C. Sedgwick.

INVENTOR:

J. W. Scott

BY Munn & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES W. SCOTT, OF UHRICHSVILLE, OHIO.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 396,433, dated January 22, 1889.

Application filed April 18, 1888. Serial No. 271,031. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. SCOTT, of Uhrichsville, in the county of Tuscarawas and State of Ohio, have invented a new and Improved Potato-Digger, of which the following is a full, clear, and exact description.

My invention relates to potato-diggers, and has for its object to improve the construction of the apparatus secured to myself by Letters Patent No. 364,443, dated June 7, 1887, whereby the same will be more durable in construction and effective in operation.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a perspective view of the apparatus. Fig. 2 is a plan view of the same with the seat removed. Fig. 3 is a transverse section on line *x x* of Fig. 2. Figs. 4, 5, and 6 are detail views. Fig. 7 is a transverse section on line *y y* of Fig. 2; and Figs. 8, 9, and 10 are detail views.

In carrying out the invention an essentially U-shaped frame, 10, is mounted upon an axle, 11, upon which axle drive-wheels 12 are secured provided with an internal gear, 13. The tongue 14 is pivoted upon the axle and projected forwardly across the frame. Between the axle and the forward end of the frame, and in hangers secured to the under face of the latter at the sides, a transverse shaft, 15, is journaled, as shown most clearly in Fig. 3.

Upon the shaft 15, at each side outside the frame, an annular box, 16, is keyed or otherwise attached, having produced upon its inner side wall a series of ratchet-teeth, 17, as shown in Figs. 3 and 5. Outside of the said box a pinion, 18, is loosely mounted upon the extremity of the shaft 15, meshing with the internal gear of the drive-wheels, which pinion upon its inner face is provided with an attached or integral disk, 19, carrying a spring-actuated pawl, 20, adapted to engage the ratchet-surface in the box 16.

When the drive-wheels are revolved in direction of the tongue, the pawls 20 engage the ratchets in said boxes and revolve the shaft. When, however, the drive-wheels are propelled in direction of the rear, the pawls cease to act.

A miter-gear, 21, is loosely mounted upon the shaft 15, provided upon one face with a clutch, 22, adapted for engagement with a second clutch, 23, attached to and sliding upon the shaft. The clutch 23, as best shown in Fig. 3, is provided with a peripheral groove, 24, in its hub, in which the bifurcated end of a shifting-rod, 25, is held. The shifting-rod extends forward beneath the front member of the frame, and is attached to the horizontal member of an angle shifting-lever, 26, held to turn in brackets 27, the vertical member of which angle-lever is adapted to enter and project fron a recess, 28, in the outer side of the frame.

The recess 28 is provided with forwardly-inclined walls, as shown in Fig. 2. Thus, when the vertical member or handle of the lever 26, which is convenient to the driver's seat, is thrown to the rear, the clutches will be disengaged, and when the lever is thrown forward the clutch 23 is drawn in direction of the lever-handle and made to mesh with the loosely-mounted clutch 22.

The movement of the combined clutch and miter gear is limited in one direction by the sliding clutch and in the opposite direction by a miter-gear, 29, meshing therewith, carried by a shaft, 30, held to revolve in bearings upon and longitudinally of the frame.

The rear end of the shaft 30 is provided at its rear extremity with a disk, 31, and supported at that point by a bracket, 32, secured to one side bar of the frame, which bracket is cast with an outwardly-extending arm, and upon this arm a lever, 33, is pivoted at its lower end to have lateral reciprocating motion conveyed from the shaft 30 by an adjustable connecting-rod, 34, united to the disk 31 at one end by a wrist-pin and to the said lever at the opposite end, as illustrated in Fig. 1. To the lower end of the said lever 33 a second lever, 35, is pivoted, capable of an independent forward and rearward movement, and to the lower end of the second lever, 35, one extremity of an essentially U-shaped shaker-bar, 36, is adjustably connected. The shaker-bar extends transversely the rear of the apparatus a suitable distance from the

ground, the other end being adjustably secured in a hanger, 37, suspended from one side bar of the frame and having lateral play.

The several side bars of the frame have attached thereto arms which are curved downward at the rear, and to the extremities of these curved extensions the ears 38 of a shovel, 39, are adjustably secured. The ears of the said shovel are provided at their outer ends with a diagonally-arranged series of apertures, 40, and below said series with a single aperture, 41.

In attaching the shovel a bolt is passed through the aperture 41 into the frame and likewise in one aperture of the series 40. By this means it will be readily understood that by loosening the bolt at the aperture 40 and withdrawing that in the apeiture 41 the shovel may be given any desired inclination.

Beneath the body of the shaker-bar an auxiliary bar, 42, is extended, united thereto at its ends, the lower bar being provided centrally with a threaded aperture, through which a set-screw, 42^a, is passed to a bearing upon the shaker-bar, whereby the said shaker-bar may be centrally concaved, convexed, or made straight, as found expedient. A number of fingers, 43, are secured upon the shaker-bar, the forward ends whereof rest upon the shovel, the rear ends projecting outward beyond the shaker-bar. The center finger is straight, and the rear end of the fingers upon each side of the center are made to curve outward in opposite directions, as illustrated in Fig. 2.

The two outer fingers, 44 and 45, are elevated above the others, the extreme outer finger, 45, being the highest, the purpose of which construction is to prevent potatoes from working off sidewise.

A bar is riveted or otherwise attached to the rear edge of the shovel, the ends of which bar are curved upwardly, as shown at 47, the said curved ends being provided with slots 46, as shown in detail in Fig. 8, which slots are adapted to receive the downwardly-curved forward ends of the fingers 44 and 45, the remaining fingers being pivoted or hooked at their forward ends to the body of the bar. The object of said slots is to neutralize the tendency of the shaker slats or fingers to bind when the shaker-bar is raised or lowered through the pin-connection with the bar 35.

Standards 48 are projected upward from the frame at each side, connected by a cross-bar, 49, and in the rear end of the frame a crank-shaft, 49^a, is journaled, provided at one end with a sprocket-wheel, 50, connected by an endless chain belt, 51, with a similar wheel fast to the drive-wheel.

To the crank-arms of the shaft 49^a posts 52 are pivoted, adapted to carry detachable spades, spurs, or cutters 53, which may be shaped, as in Fig. 1, like a spade, or like a double tooth, as shown in Fig. 9, or a single tooth, as in Fig. 10. The object of the spades is to assist sandy or loamy soil, clods, weeds, &c., in passing back on the shaker.

The spades are shaped differently to suit different soils, and the posts are pivoted to the cross-bar 49 by horizontal arms 54.

In front of the spades or cutters colter-wheels 55 are mounted in hangers 56, projected downward from the sides of the frame, as best shown in Fig. 1. These colters assist in dividing the soil and cutting the weeds.

To raise and lower the apparatus upon the front of the frame centrally the same at each side of the tongue, a perpendicular standard, 60, is secured, and to the tongue, which passes over the front of the frame, a slightly rearwardly-inclined bar, 61, is secured, which bar, extending up between the standards 60, is provided with a longitudinal slot, and one perpendicular wall thereof is toothed, as best illustrated in Figs. 1 and 4. A disk, 62, is cast integral with the outer side of the right-hand standard 60, having produced upon its face at its periphery a series of notches, 62^a. In the standards 60 a spindle, 63, is journaled, passing centrally through the disk 62, upon which a pinion is keyed, meshing with the teeth in the slotted tongue-bar 61. Upon the outer end of the shaft 63, in front of the disk 62, a crank, 63^a, is secured, which is held in engagement with the notches upon the said disk by means of a plate, 64, held upon the extremity of the said spindle and outwardly and upwardly curved, and a spring, 65, attached to the inner upper end of the plate bearing upon the crank, as fully shown in Fig. 1. The crank 63^a being convenient to the driver's seat, in order to raise or lower the shovel the driver need only reach over, grasp the crank 63^a, and manipulate the same, whereupon the pinion traveling up or down on the racked surface of the slotted bar 61 carries with it the body of the apparatus, the tongue remaining in a horizontal position.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the frame, the axle, the drive-wheel, a transverse shaft rotated from the drive-wheels, a longitudinal shaft driven from said transverse shaft, and a shovel adjustably secured to the frame, of a reciprocating shaker-bar hinged at one side to the frame, a lever-connection between the shaker-bar and the longitudinal shaft, substantially as shown, fingers attached to said shaker-bar and graduated from the center, an auxiliary bar attached longitudinally to the shaker-bar at its ends, and a set-screw passing through the auxiliary bar in engagement with the shaker-bar, substantially as shown and described, whereby the shaker-bar may be more or less straightened, concaved, or convexed, as set forth.

2. The combination, with the frame, the axle, the drive-wheel, a transverse shaft rotated from the drive-wheel, a longitudinal shaft driven from said transverse shaft, and a shovel adjustably secured to the frame, of a reciprocating shaker-bar hinged at one side

to the frame, a lever-connection between the shaker-bar and longitudinal shaft, said connection consisting of an upper arm, 33, pivoted upon the bracket 32 of the frame, and an adjustable connecting-rod, 34, pivoted to arm 33 and connected at its opposite end to the crank-disk 31 upon the longitudinal shaft 30, and an arm, 35, pivoted upon lateral projections upon the lower end of the arm 33, said arm 35 capable of forward and rearward movement and adjustably connected at its lower end to the shaker-bar, said shaker-bar provided with fingers connected to the shovel, all arranged substantially as and for the purpose described.

3. In a potato-digger, essentially as described, the combination, with the main frame, the vertical standards 48, mounted thereon, the transverse cross-bar 49, connected to said standards, the drive-wheels, the axle, and sprocket-wheels upon the axle adjacent to the drive-wheel, of a crank-shaft journaled in the frame, a sprocket-wheel carried by the shaft, an endless belt connecting the sprocket-wheels of the crank-shaft and axle, alternately vertical reciprocating posts pivoted upon the crank-shaft, and shovels adjustably secured to the lower extremities of the posts, their upper ends pivoted to the cross-bars 49 by means of the horizontal connecting-arms 54, substantially as and for the purpose described.

4. In a potato-digger, substantially as described, the combination, with the frame, the axle, the drive-wheels, the plow secured to the rear end of the frame, and the tongue pivoted upon the axle and extending forward over the front of the main frame, of the means for raising and lowering the frame, said means consisting of a rearwardly-inclined bar, 61, extending upwardly from the tongue 14, provided with a longitudinal slot, one wall of which is toothed, a perpendicular standard, 60, mounted upon the forward end of the frame 10, a notched disk, 62, formed upon the upper outside edge thereof, a spindle, 63, passing transversely through said disk 62, and bar 60, provided at its inner end with a pinion engaging the toothed wall of the standard 61, and a crank-arm, 63^a, mounted upon the outer end of said spindle, said arm adapted to be normally held in engagement with the notched disk by means of the plate 64 and spring 65, all arranged substantially as and for the purpose described.

5. In a potato-digger, the combination, with a reciprocating shaker-bar and fingers secured to the same, of an auxiliary bar attached at its ends longitudinally beneath the main shaker-bar, and a set-screw passing through the auxiliary bar to an engagement with the main bar, substantially as shown and described, whereby the main bar may be straightened, concaved, or convexed, as desired.

6. In a potato-digger, substantially as herein described, the combination, with a shovel, a reciprocating shaker-bar, fingers secured to the same and graduated to ascend from the center, the outermost of which fingers are secured to the shovel, of an auxiliary bar attached at its ends longitudinally beneath the main shaker-bar, and a set-screw passing through the auxiliary bar to an engagement with the main shaker-bar, substantially as and for the purposes specified.

7. In a potato-digger, essentially as herein described, the combination, with a reciprocating shaker-bar, and fingers attached to said bar graduated to ascend from the center outward, of an auxiliary bar attached at its ends longitudinally beneath the main shaker-bar, and a set-screw passing through the auxiliary bar to an engagement with the main bar, substantially as shown and described, whereby the potatoes are prevented from spilling over the sides of the shaker, as set forth.

JAMES W. SCOTT.

Witnesses:
E. A. PARRISH,
CHARLES MCMASTERS.