

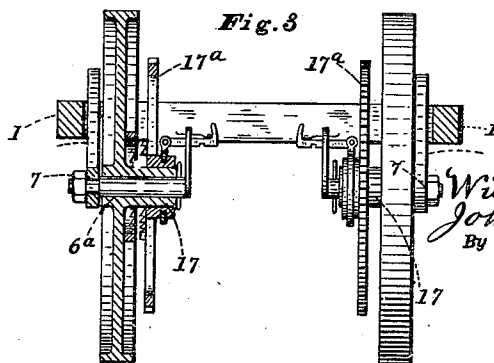
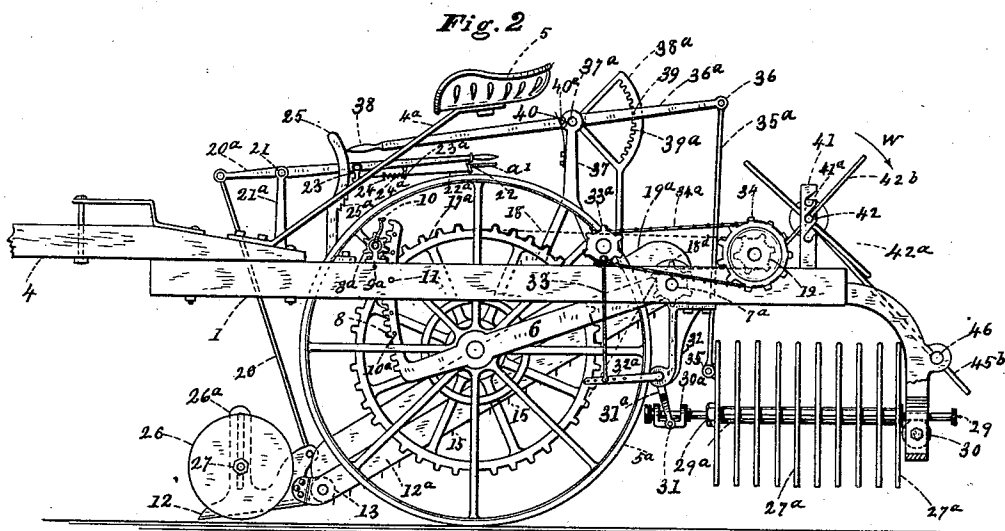
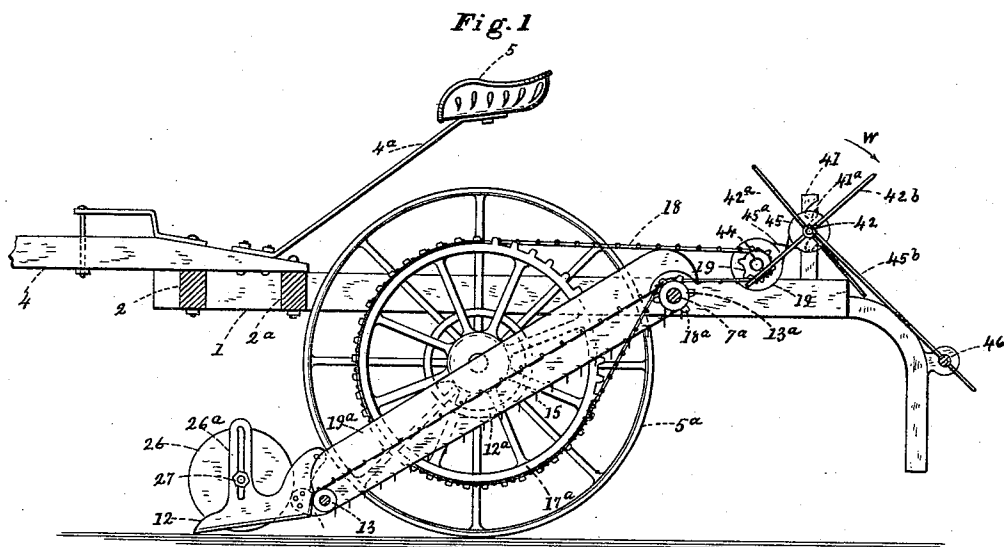
(No Model.)

2 Sheets—Sheet 1.

W. & J. REUTHER.
POTATO DIGGER.

No. 473,083.

Patented Apr. 19, 1892.



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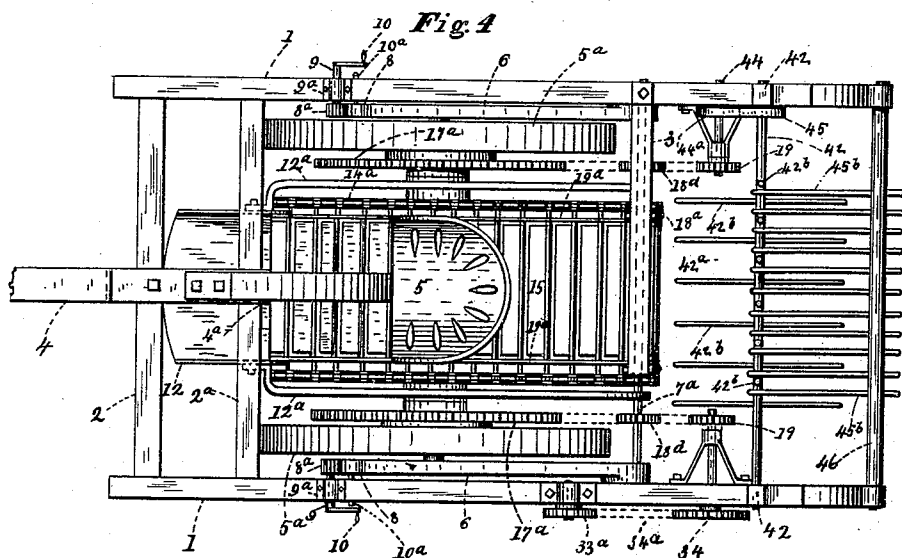


Fig. 5

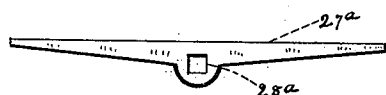


Fig. 6

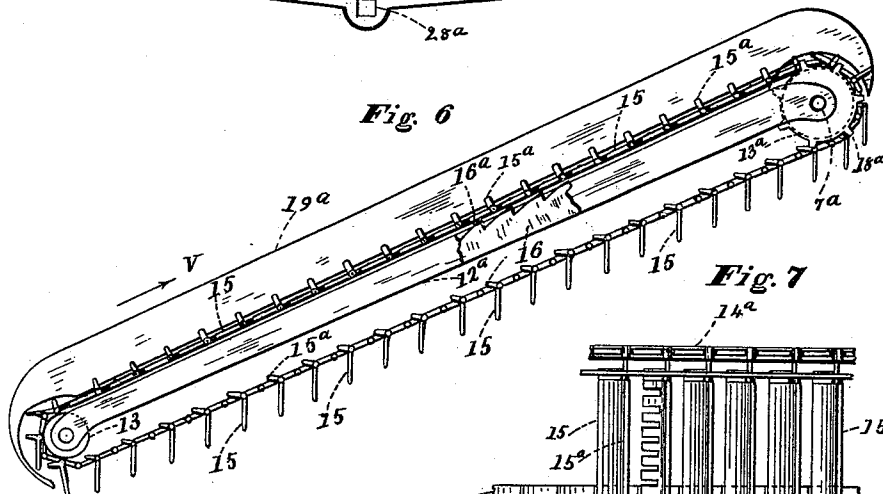
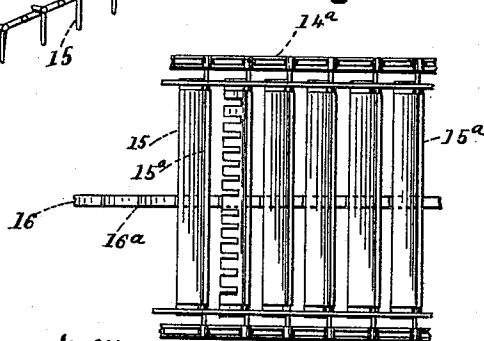


Fig. 7



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UNITED STATES PATENT OFFICE.

WILLIAM REUTHER AND JOHN REUTHER, OF ELMA, NEW YORK.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 473,083, dated April 19, 1892.

Application filed May 6, 1891. Serial No. 391,752. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM REUTHER and JOHN REUTHER, citizens of the United States, residing at Elma, in the county of Erie and State of New York, have invented certain new and useful Improvements in Potato-Diggers, of which the following is a specification.

Our invention consists in certain improvements in the mechanism for digging potatoes and depositing them free from dirt, and also in other details of construction, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional side elevation, certain portions of the mechanism being omitted. Fig. 2 is a side elevation of the machine complete. Fig. 3 is a front sectional elevation showing the device for engaging or disengaging the operating mechanism to or from the driving and supporting wheels. Fig. 4 is a top plan view of the machine, some of the less important parts being omitted. Fig. 5 is a detached side elevation of one of the shaker-bars. Fig. 6 is an enlarged detached side elevation of the endless carrier, one of the side pieces being omitted, so as to show the construction more clearly. Fig. 7 is a top plan view of a portion of the endless carrier.

In said drawings, 1 represents the side frame-pieces of the machine, 2 and 2^a the front cross-pieces, and 3 is an arched rear cross-piece. (Shown in Fig. 4.) The parts 1, 2, and 2^a are preferably made of wood, and the rear arched cross-piece of iron. They are secured rigidly together in the well-known way.

The draft-pole 4 is provided with the usual draw-clip, and to the rear of the pole is secured by bolts and the spring-bar 4^a the seat 5, which may be of ordinary construction.

The driving-wheels 5^a are each secured to a bar 6 (made sufficiently strong for the purpose) by means of a bolt 6^a, having a reduced portion, which passes through the bar 6 against a shoulder and is rigidly secured by a nut 7. (See Fig. 3.) These bars 6 (one at each inner side of the frame) are secured to the frame by a shaft 7^a, which passes through the ends of both bars 6 and is then mounted in bearings in the side frames 1.

At the front end of each of the bars 6 is an upwardly-projecting curved rack-bar 8, having teeth adapted to gear in with the pinions 8^a. These pinions are secured to a shaft 9, mounted in bearings 9^a at the top of the frame, and are each provided with a handle 10, by which it is operated. The curved rack-bars 8 are each provided with a series of holes 10^a, into which a pin 11 may be passed through a hole in each side of the frame and then through the rack-bars when adjusted to the point desired. (See Figs. 2 and 4.) It will be noticed that each driving-wheel is thus made independently adjustable, so that the machine may be adjusted to run on the side of a hill.

To each side of the scoop or plow 12 is rigidly secured by bolts or rivets a side bar 12^a, having holes in their opposite ends, through which the shaft 7^a passes, and a collar on each side of the side bars 12^a on the shaft 7^a keeps all in place. At the foot of the side bars is a central opening, in which is mounted a roller 13, and at the head of said bars is another roller 13^a, mounted on the shaft 7^a, having a sprocket-wheel 18^a at each end. On each sprocket-wheel 18^a is an endless chain 14^a, which passes around the sprocket-wheels and around the roller 13. In the center, or thereabout, of each link of the chain is a bearing, in which is mounted a series of angle cross-bars 15, which are pivoted so as to turn easily in their bearings. These cross-bars 15 are so formed that the angle-piece 15^a is made narrower than the angle-piece 15, so that as the wide portions 15 lie flat or substantially flat on the carrier they leave comparatively a small space between them, (see Fig. 6, where this is more plainly shown,) while, when the carrier is in motion, in the direction of the arrow *v*, as they pass over and around the head of the carrier the wide portions fall over (turning on their pivots) and hang vertically, or substantially so, as they pass back under the carrier, thereby leaving a greater distance between them. This construction provides a much greater opening for the dirt carried up with the potatoes to fall out from between the angle-pieces, and thereby insures the freeing of the carrier from dirt, stones, &c.

Near the center of the endless carrier, located at the proper distance below the pivoted angle-pieces 15 15^a, is a rack-bar 16, hav-

ing inclined teeth 16^a, over which the cross-bars 15 15^a pass as they move up the incline. This construction gives them all a rapid rocking motion as they pass over the rack-bar teeth 16^a, and tends to free the potatoes carried up with it (while in action) from dirt or other matter taken up with them. (See Figs. 6 and 7, a portion being broken away in Fig. 6 to show it.)

The endless carrier receives its proper movements by means of a chain-gear, as follows: On each inner side of each of the driving-wheels 5^a is a long hub 17, (shown in Fig. 3,) on each of which is mounted a large sprocket-wheel 17^a. (Shown in Figs. 1, 2, 3, and 4.) On this sprocket-wheel is mounted an endless-chain gear 18, which passes down around the sprocket-wheel 17^a. From thence it passes up and over the sprocket-wheel 18^a, (shown in Fig. 4,) which is rigidly secured to the shaft 7^a. From thence it passes to and over the sprocket-wheel 19, and from thence it passes to the starting-point. This mechanism gives the necessary movement to the endless carrier as the machine is moving forward. On each side of the endless carrier is a side protecting-piece 19^a, the object of which is to keep the potatoes and dirt from running off from the sides. It also acts to keep the cross-bars 15 down flat as they move along up on the top of the incline, the under sides resting a very little above the flat sides of the ends of the wide portions of said bars. (See Fig. 7.)

At one side of the plow 12 is jointed a connecting-rod 20, having its opposite end pivoted to the end of a lever 20^a, pivoted by a pin 21 to a standard 21^a, (see Fig. 2,) which is rigidly secured to the top of the frame. The opposite end of the lever 20^a is provided with a handle, having an angle-piece 22 pivoted thereto and connected by a connecting-rod 22^a, which is connected to a pivoted hook 23, pivoted to the lever, and projecting down from the lever is a piece 23^a, through which the connecting-rod passes and is provided with a collar 24. On the connecting-rod is a spiral spring 24^a, interposed between the collar 24 and the piece 23^a. From this construction it will appear that the tendency of the spring is to keep the hook 23 against a vertical curved bar 25, rigidly secured to the side frame. (See Fig. 2.) The curved bar 25 is provided with a series of ratchet-teeth 25^a, so that when the hook catches into said teeth it suspends the shovel above the ground, so that the machine can be driven along without operating the plow, when required. When it is desired to disengage the hook, all that is necessary is to take hold of the handle and press on the portion a' of the pivoted angle-piece 22, and thereby draw the hook out of said notches.

On each side of the plow or scoop 12 is an adjusting-wheel 26, which is secured to a bolt passing through an upright slotted portion 26^a at each side of the plow, and rigidly se-

cured by a nut 27. The slot through which the bolt passes affords the means for adjustment.

The potatoes as they are carried up on the endless carrier fall over onto a reciprocating screen 27^a. (See Fig. 2.) This screen consists of a series of bars, substantially like that shown in Fig. 5. They are each provided with a square hole 28^a, adapting them to slip over a square bar having a round portion at each end. As each bar is slipped on in place a washer of the required thickness is slipped on between each bar, so as to keep said bars the required distance apart. The first bar rests against a shoulder on said bar 29 and the last one is secured by a screw and nut 29^a.

The outer end of the reciprocating-screen shaft 29 rests in a bearing at the rear of the machine upon a friction-roller 30, so as to allow it to reciprocate easily back and forth. The opposite end passes through a double bearing-piece 30^a, and the piece 30^a is pivoted by pins 31 to a swinging forked arm 31^a, (adapted to be pivoted to both sides of the piece 30^a), which is mounted on a pin in the downwardly-projecting bearing-piece 32. At the opposite side of the pin is an arm 32^a, connected by a connecting-rod 33 with a sprocket-wheel 33^a. The sprocket-wheel 33^a receives its proper rotary movements by means of a sprocket-wheel 34, rigidly secured to the shaft, and a chain-gear 34^a.

The reciprocating screen is adapted to be turned on its supporting-shaft so as to incline downward from either side of the machine, and thus provide the means for throwing the potatoes and depositing them at either side of the machine, at the will of the operator, by mechanism constructed as follows: To the inner side of the reciprocating screen is secured by a ball-joint 35 a connecting-rod 35^a, having its upper end connected by a ball-joint 36 to a hand-lever 36^a. This hand-lever 36^a is pivoted to an upright supporting-piece 37 by a pin 37^a, and is provided with a handle 38 at its opposite end for operating it. (See Fig. 2.) A stationary curved toothed bar 38^a is rigidly secured to the frame of the machine and to the upright piece. The pin 37^a passes through an elongated hole, so that the lever has a slight longitudinal movement. On the lever is a pin 39, which projects forward so as to engage with either of the teeth 39^a when required. A spring 40, secured to the upright and pressing against the pin 40^a, keeps the lever forward and the pin 39 in engagement with the teeth 39^a. By the above-described construction it will be seen that the shaking screen may be made to swing either way and fastened at any incline desired and as quickly released or changed when required.

At the rear of the frame are two uprights, rigidly secured to the side frame-pieces, in which are several open bearings 41^a. In

either of these bearings is mounted the shaft 42 of the reel 42^a, which reel consists of a series of radiating bars 42^b, secured to said shaft. This reel receives its motion in the direction of the arrow W by means of a sprocket-wheel 18^d on the shaft 7^a, a sprocket-wheel 19, mounted on the shaft 44, (see Fig. 4; also Fig. 1,) a pulley 44^a on the same shaft, a pulley 45 on the reel, and a cross-belt 45^a, connecting the two pulleys. The object of this reel is to carry off the potato-tops and weeds.

To strip the tops or weeds that may hang to the reel, we employ a series of bars 45^b, secured at the rear of the machine by means of a cross-bar 46, secured to the frame, the upper ends of the bars 45^a being loosely secured to the reel-shaft. The lower ends of these bars 45^b pass loosely through the cross-bar 46, so that the reel and its attachments may be easily removed at any time when required.

We claim as our invention—

1. In a potato-digger, the combination of an endless-chain-gear carrier mounted upon rollers on an incline, a series of angle-bars mounted in bearings, so as to turn easily in said endless chain, each angle-bar consisting of a wide and narrow angle-plate, a guide-piece for keeping the wide portions of the angle-bars substantially in line in their upward movement and allow them to hang vertically in their downward movement, and mechanism, substantially as above described, for operating the chain-gear, whereby the space between the bars is wider at the under side of

the carrier than at the top, for the purposes specified.

2. In a potato-digger, an endless carrier consisting of a chain-gear mounted on rollers at an incline and provided with a bearing in each link, a series of angle-bars mounted in said bearings, each angle-bar having a wide and narrow angle-piece, a guide-bar for keeping the wide portions substantially in line at the top and having a series of inclined teeth for slightly agitating the bars in their upward movement at the top of the carrier, whereby the openings at the top of the carrier are comparatively narrow and widen out at the under side of the same as the bars turn over and the wide sides hang down in their downward movement, substantially as described.

3. In a potato-digger, the combination therewith of a tilting shaking separator or screen mounted on a shaft so as to be turned so as to incline from either side of the machine, a means for giving it a reciprocating motion, substantially as above specified, and a pivoted lever mounted on a support on the machine and connected by ball-joints to a connecting-rod pivoted by a ball-joint to the reciprocating screen, and a means for holding it at any point desired, substantially as described.

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