J. NORTON.

POTATO DIGGER.

No. 193,542. Patented July 24, 1877.

Fig. 1.

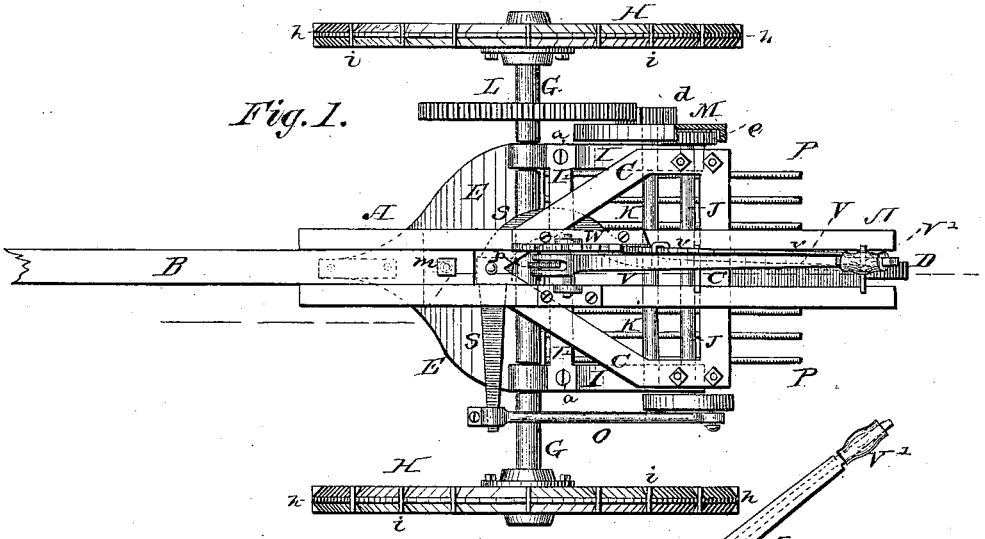


Fig. 2.

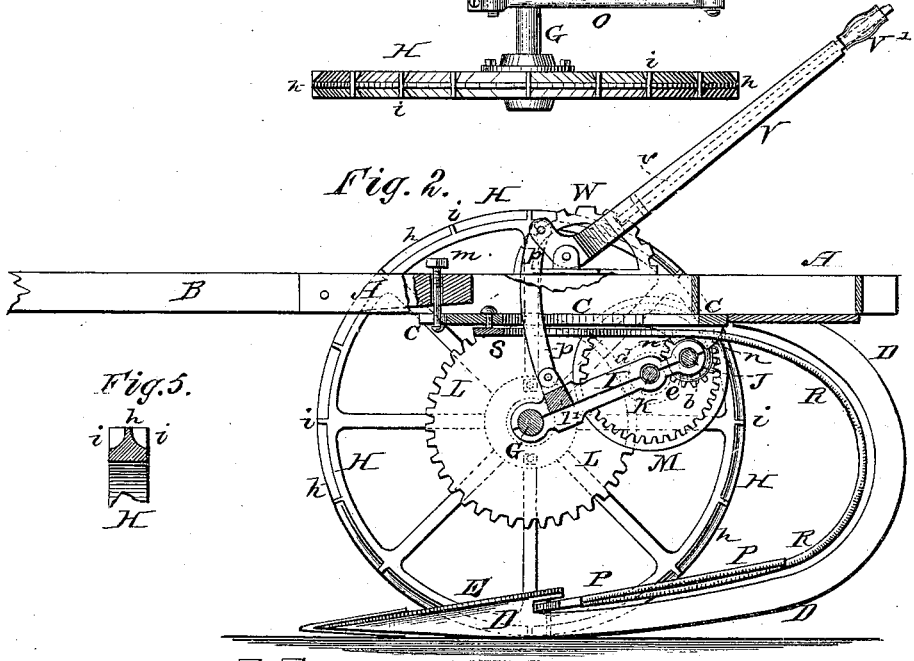


Fig. 5.

Fig. 3.

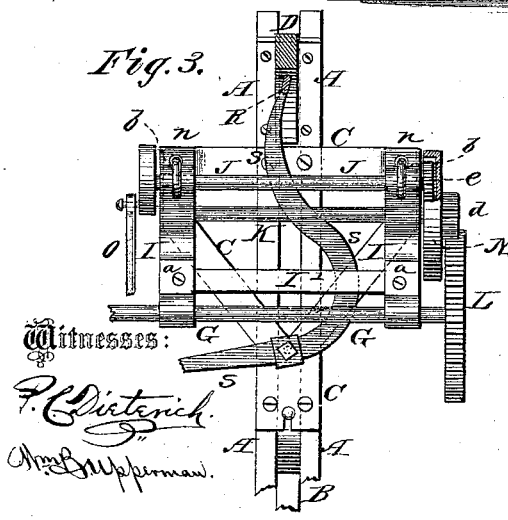
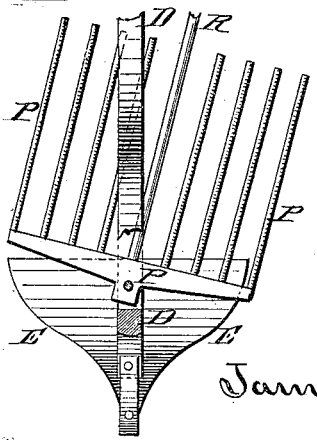


Fig. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

JAMES NORTON, OF HIGHTSTOWN, NEW JERSEY.

IMPROVEMENT IN POTATO-DIGGERS.

Specification forming part of Letters Patent No. **193,542**, dated July 24, 1877; application filed May 28, 1877.

To all whom it may concern:

Be it known that I, JAMES NORTON, of Hightstown, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Potato-Diggers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The nature of my inventien consists in the construction and arrangement of a potato-digger, as will be hereinafter more fully set forth.

In the annexed drawings, which fully illustrate my invention, Figure 1 is a plan view of my improved potato-digger. Fig. 2 is a longitudinal section of the same. Figs. 3, 4, and 5 are detailed views of parts thereof.

A A represent two parallel hounds, between the front ends of which the tongue B is pivoted. C is a metal frame of any suitable form, fastened to the under sides of the hounds A. To the rear ends of the hounds, on the under side, is secured the plow-beam D, which is curved substantially as shown, and has the plow E secured to its lower front end.

G represents the main shaft or axle, and H H are the wheels placed on the ends thereof. Both of these wheels may be made fast on the axle, or they may be connected with it by an ordinary pawl-and-ratchet device located in the hub of the wheel, and so arranged that when the machine moves forward the axle will be turned by the wheel; but when the wheel turns backward it will turn on the axle.

To connect the iron frame C with the main shaft or axle, and transmit the revolving motion of the latter—increased in speed—to the crank located in the frame, which frame is raised or lowered, as occasion requires, to avoid digging at the ends, and dig just deep enough when at work, I have constructed a double parallel link-box, consisting of double boxes I I, connected by one or more cross-bars, I′, carrying at their outer ends the main shaft or axle G. At their inner ends they carry the crank-shaft J, and between these two shafts they carry the speed-shaft K.

The double boxes are connected near their ends by bolts *a*, and are attached to the frame C by clips *b b*, surrounding that part of the boxing in which the crank-shaft J is placed, so that the center of said shaft forms the axis on which the frame turns in raising and lowering the same.

On the axle G is a large spur-wheel, L, which drives a pinion, *d*, on the speed-shaft K, and on this shaft is secured an internal gear-wheel, M, which drives a pinion, *e*, on the crank-shaft J.

The driving-wheels H H serve three purposes, viz., to carry the machine from place to place, often over hard roads and even pavements, to drive the shaker, and to regulate the movement of the plow or shovel.

To secure these objects I raise a thin flange, *h*, in the center around the outer rim of the wheel, and also provide the same at proper internals with a series of teeth, *i*, transversely across the rim. The flange *h* is made as high as the teeth, thereby protecting the latter from breakage, strengthening the rim in the best possible manner, and giving the machine a smooth passage over hard roads and stony places. It also causes the raw earth to scour and slip off the rim, which would otherwise fill up the spaces wanted to be kept open.

The sides of the rim *h* are made concave, as shown Fig. 5, whereby the dirt much more easily clears itself, and the lateral movement of the plow is regulated even if the land is more or less siding.

P represents the shaker pivoted through its center at the front end beneath the plow or shovel E. One of the prongs R of the shaker is extended forming a light bow upward, and attached to one arm of an elbow-lever, S, pivoted to the under side of the frame C, and the other arm of this lever connected by a pitman, O, with the crank-shaft J, the said prong R thus conveying motion to the shaker.

The shaker thus has one center below and one above, on which it oscillates, which works lighter and easier, and is less liable to get out of repair than where the shaker works alone on centers or guides in the frame above, while the rapid vibration of the bow R prevents the lodgment of the vines on the bow or the beam

behind it. The bow R is also bent to one side to facilitate the dislodgment, and the beam D may also be bent in like manner, if desirable.

In the rear end of the tongue B is a single set-screw, *m*, operating against the frame C for raising or lowering the tongue, so as to keep the hounds level and the plow and shaker in the proper pitch with large or small teams.

By the swinging parallel boxing I, as above described, I save the trouble of setting six boxes, for they set themselves around the shaft G, that carries them at one end, while the other end sets in cast sockets *n*, formed in the metal frame C above, to which it is attached by the clips *b*. And while I transmit an accelerated speed through this movable link-boxing, it allows the plowing apparatus to be raised or lowered without changing the distance of the crank from the shaker and plow. Thus it is cheap, simple, efficient, and obviates the difficulty of keeping the plowing parts firmly to the tongue, while the plows may be raised or lowered without affecting the necessary length of the crank-pitman, or interfere with the revolution of the shafting.

I do, however, not confine myself to the particular arrangement of the gearing shown and described, nor to having two shafts besides the axle, for the gearing may be changed at pleasure, and I may sometimes dispense with the intermediate or speed shaft K.

Babbitt metal or other soft-metal filling may be used in the boxes, if desired. The connection I′ between the double boxing I I may also be arranged in any suitable manner, and one or more of such connecting-bars may be used as deemed most advantageous.

The parallel boxing I I is held in position by a connecting-link, *p*, attached to the connecting-bar at some place near the main axle, and the other end attached to an adjustable lever, V, working in connection with a notched segment, W, in the following manner: On the outer end of the lever V is a loose handle, V′, which the operator will grasp firmly with one hand. (He drives with the other hand.) He then presses his thumb on the end of the lever, which slips the handle toward the thumb, thereby withdrawing the pawl or dog *v* (connected to said handle) from the notch in the segment W, and said dog is then carried above said segment until the proper position of the lever is attained, when the thumb is lifted and the dog falls into the selected notch again. Though no spring is necessary, still one may be applied to hold the dog in the notch.

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

1. The oscillating bow R, carrying a shaker, P, and swinging on one center beneath the plow, and another in the frame above it, in combination with a fixed plow or shovel, substantially as and for the purposes herein set forth.

2. The parallel swing-boxes I, axle G, frame C, and shafts K and J, in combination with the oscillating bow R, carrying the shaker P, constructed and arranged substantially as and for the purpose set forth.

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

JAMES NORTON.

Witnesses:

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