(No Model.) 2 Sheets—Sheet 1.

I. S. HORNER.

POTATO DIGGER.

No. 536,833. Patented Apr. 2, 1895.

FIG. 1.

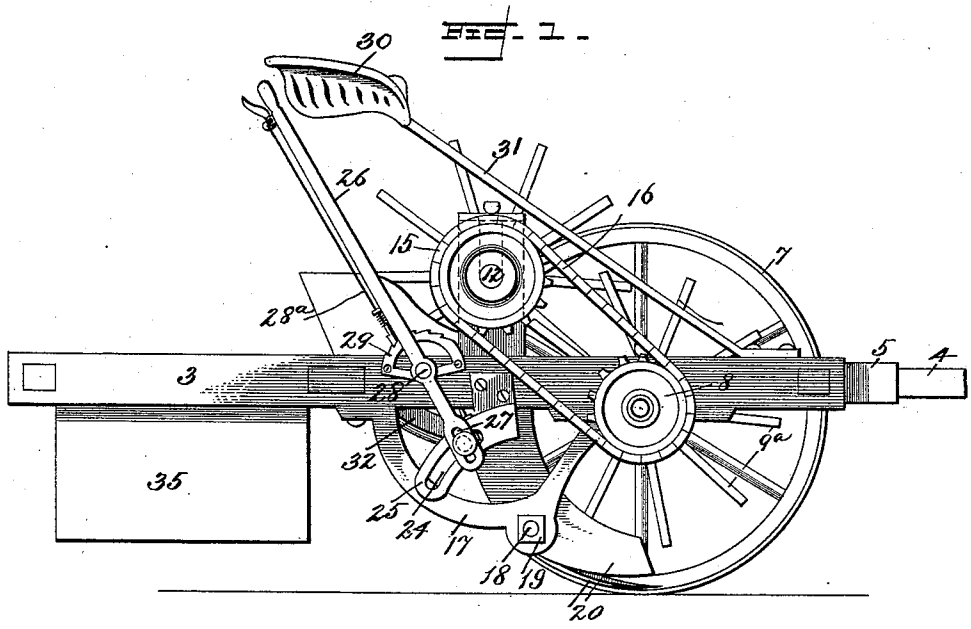
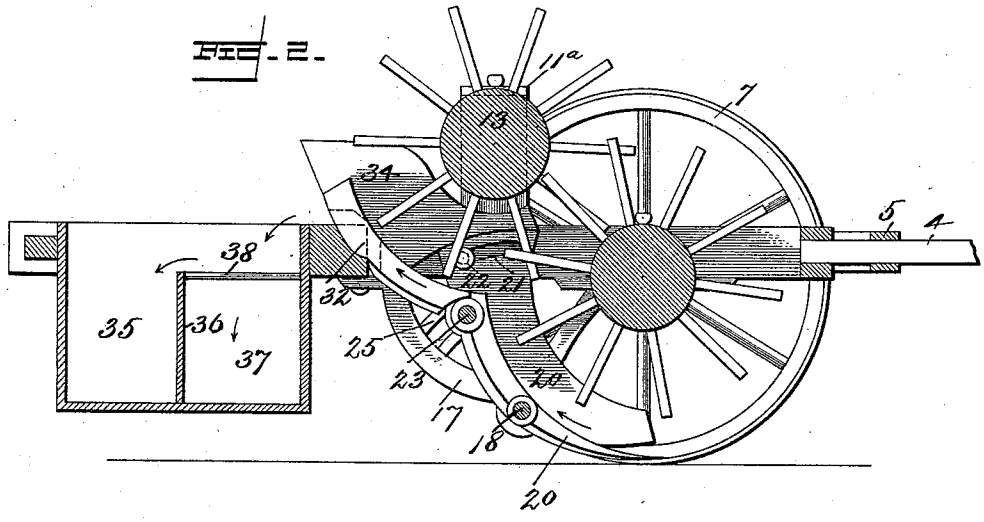


FIG. 2.



WITNESSES

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By W. T. S. Duvall Attorney

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

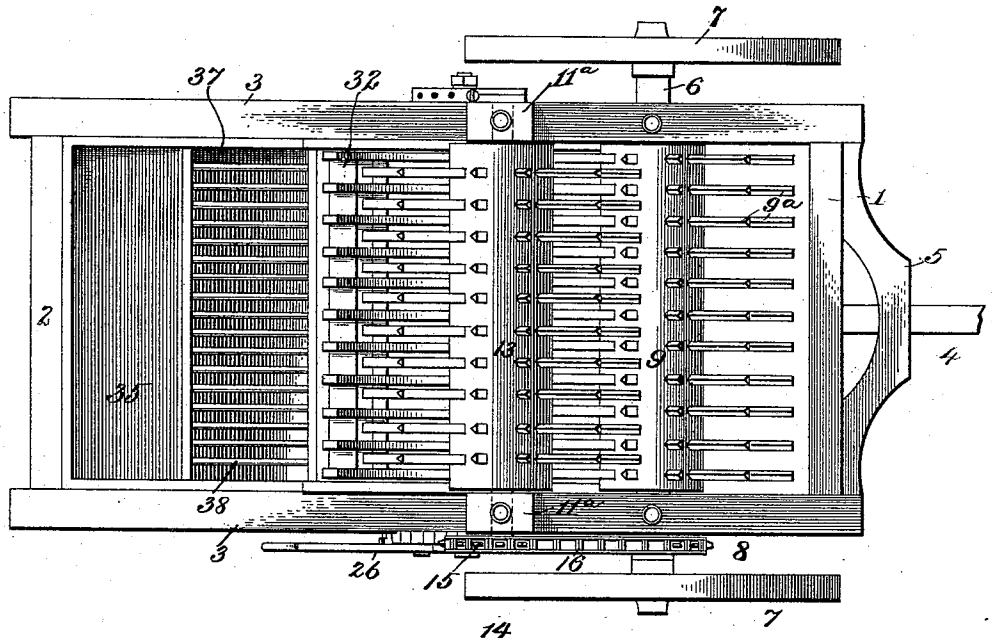
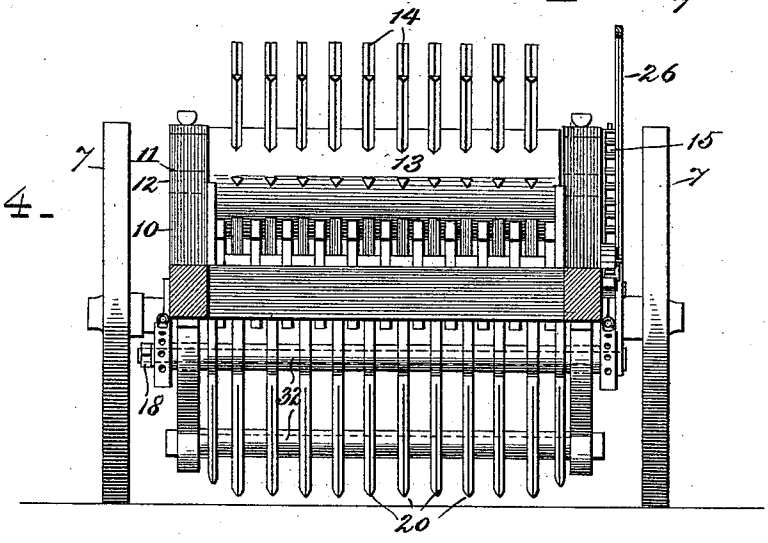


Fig. 4.



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UNITED STATES PATENT OFFICE.

ISAAC S. HORNER, OF FELIX, PENNSYLVANIA.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 536,833, dated April 2, 1895.

Application filed June 26, 1894. Serial No. 515,715. (No model.)

To all whom it may concern:

Be it known that I, ISAAC S. HORNER, a citizen of the United States, residing at Felix, in the county of Somerset and State of Pennsylvania, have invented certain new and useful Improvements in Potato-Diggers; 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.

This invention relates to improvements in potato-diggers; and the objects in view are to produce a simple and inexpensive machine adapted to be drawn over the hills of potatoes and without previous treatment of the hills to raise therefrom the potatoes, dislodging most of the adhering soil, and to subsequently deposit the potatoes into receptacles with which the machine is provided, during which operation the large potatoes are divided and separated from the small.

With these and various other objects in view, the invention consists in certain features of construction hereinafter specified and particularly pointed out in the claims.

Referring to the drawings: Figure 1 represents a side elevation of a potato-digger embodying my invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a top plan view. Fig. 4 is a vertical transverse sectional view.

Like numerals of reference indicate like parts in all the figures of the drawings.

In practicing my invention I employ an oblong framework, the same consisting of the front and rear cross-bars 1 and 2, and the opposite side connecting-bars 3, the ends of said bars being rigidly connected and secured in any suitable and well-known manner. To the front bar is secured the usual draft-pole 4, the same being set in a socket formed in the hound-frame 5, likewise connected to the front bar 1.

Journaled in suitable bearings with which the side-bars 3 are provided and which are situated in advance of the longitudinal center of the frame, is the transverse axle 6, whose opposite ends projecting beyond the frame are provided with ground-wheels 7, arranged fast upon and adapted to rotate with the axle. At the inner side of one of the ground-wheels 7 the axle also carries and has adapted to revolve therewith a sprocket-wheel 8. Between the side-bars 3 of the frame, the axle has mounted thereon and adapted to revolve therewith a roll 9, from whose periphery there radiates several annular series of rods or arms 9^a, the same preferably being triangular in cross-section, the apices of the angles being reverse to the direction of rotation of the roll.

In rear of the shaft or axle there surmounts the side-bars 3 slightly in rear of the longitudinal center of the frame, a pair of short vertical standards 10, in whose opposite upper ends open bearings 11 are formed, the same being closed by blocks 11^a. Mounted for rotation in these bearings is a transverse shaft 12, whose ends project beyond the bearings for their accommodation. Between its bearings, the shaft carries a roll 13, similar to the roll 9, and rods or arms 14 radiate in annular series therefrom. These rods or arms 14, like the rods or arms 9^a are triangular in cross-section, the object being to prevent obstructing the free passage of any foreign object between the arms or rod and that is sufficiently small to fall between the arms.

On one end of the shaft 13 is located a sprocket-wheel 15, the same being connected to and operated by the sprocket-wheel 8 through the medium of an intermediate sprocket-chain 16.

A pair of segmental brackets 17 have their upper ends bolted to and depend from the under sides of the opposite side-bars 3 below the standards 10, and said brackets support a transverse rod or shaft 18, the opposite ends of which are preferably threaded and provided with nuts 19. The rod or shaft 18 passes through intermediate points of a series of curved tines 20, the end tines of the series being wider than the intermediate tines and thus forming guards or sides. The end tines also extend above the intermediate tines, and are provided near their upper ends with segmental slots 21, which are concentric with the rod or arm 18 and engage with headed pins 22 projecting from the inner surfaces of the opposite side-bars 3. The upper ends of the several tines 20 are connected by an upper cross-rod 23, whose ends project beyond the tines and through the slots 24, formed in segmentally curved guides 25. At one end the

rod is preferably nutted, while the opposite end is provided with a hand-lever 26, loosely connected thereto, for which purpose it is slotted as at 27, above which point it is fulcrumed as at 28. This hand-lever is provided with a locking-pawl 28ª, the lower end of which is designed to engage with any one of a series of teeth formed on a curved locking-standard 29, arranged at the side of the machine.

A seat 30, for the accommodation of the driver is supported contiguous to the hand-lever 26, by means of an inclined standard 31, bolted to the front cross-bar of the frame.

A series of curved tines 32, are like the tines 20, spaced apart by means of a series of space-blocks 33, and are secured to the rear cross-bar 2 of the frame. The tines 32 however alternate with the tines 20, and at their lower ends are cut away on their under sides so as to take over and rest upon the space-blocks 33 of the tines 20. Side-pieces or guards 34 are arranged at the ends of the upper tines 32 and are at their lower ends recessed so as to form continuations of the end tines 20.

In the rear end of the frame is supported a box or receptacle 35, though the same may be omitted if preferred. This box or receptacle is subdivided transversely by a partition 36, thus forming a front compartment 37, over which is arranged a series of longitudinally disposed rods 38.

This completes the construction of the machine, and the operation thereof is as follows: In going to and coming from the field of operation, the driver so operates the hand-lever 26 as to elevate the lower tines above the ground so that they cannot become injured by striking obstructions in the road. When the field has been reached, the driver reverses the hand-lever so as to lower the tines and cause them to penetrate the hills of potatoes. As the machine advances the tines gather up the potatoes until they are caught by the revolving roll, whereby they are caused to travel up said tines. They thus reach the upper tines and are caught by the arms of the upper roll, which it will be understood alternate with those of the lower roll, and are carried by the said arms of the upper roll up the upper tines and finally discharged over the rear end of the same onto the screen or rods 38. The small potatoes fall between the rods 38 while the larger or select potatoes roll over the same and fall into the receptacle 35. In this manner the potatoes are assorted as to size.

It will be apparent that the tumbling the potatoes are subjected to during their travel up the two series of tines while insufficient to cause an injury thereto, yet is sufficient to remove the major part of the adhering soil, so that the potatoes are comparatively clean when they reach their proper receptacles.

From the forgoing description in connection with the accompanying drawings, it will be seen that I have produced a machine of very simple and durable construction and one which may be placed upon the market at a very reasonable cost.

It is to be understood that I do not limit my invention to the precise details of construction herein shown and described and that I may make such changes therein as come within the knowledge of the skilled mechanic without departing from the principle or sacrificing the advantages of the invention.

Having described my invention, what I claim is—

1. In a potato-digger, the combination with the frame-work, ground-wheels and axle therefor, of the series of tines arranged below the frame-work, a shaft passing intermediately through said tines and serving as a bearing for the same, a lever for tilting the tines, means for locking the lever, a roll journaled above the tines and provided with radial arms, and means for rotating the roll, substantially as specified.

2. In a potato-digger, the combination with a frame-work, and supporting-wheels and axle for the same, of a series of curved tines arranged below the frame-work and spaced apart, a transverse shaft extending through the tines at intermediate points of the same, an upper transverse shaft connecting the upper ends of the tines, space-blocks arranged between the tines upon the rod, a lever fulcrumed at the side of the machine and loosely engaging the end of the upper rod and means for locking said lever, of a rotatable arm carrying roll arranged above the tines, and means for operating the roll, substantially as specified.

3. In a potato-digger, the combination with a frame-work, and supporting wheels and axle for the same, a series of spaced apart curved tines below the frame-work, the end tines being wider to form guards and at their upper ends provided with curved slots, pins extending from the frame-work and passing through the slots, an intermediate transverse shaft passing through the tines, and means for raising and lowering the tines, of a superimposed roll having radial arms, and means for operating the roll, substantially as specified.

4. In a potato-digger, the combination with a frame-work upper and lower series of alternating tines curved as shown, and means for supporting the same, of an axle and ground-wheels for the frame-work, upper and lower rolls arranged over the frame-work and tines, alternately located radial arms extending from the rolls, and means for operating the rolls, substantially as specified.

5. In a potato-digger, the combination with the frame-work, the roll, means for operating the same and the series of arms radiating therefrom and triangular in cross-section, of the subjacent curved tines, the axle, and ground-wheels, substantially as specified.

6. In a potato-digger, the combination with the rectangular frame-work, the axle, the

ground-wheels arranged thereon, the arm carrying roll carried by the axle, the sprocket-wheel also carried by the axle, the vertical standards rising from the frame-work and provided in their upper ends with bearings, the rotatable shaft arranged therein, the arm carrying roll located on the shaft, the sprocket-wheel arranged on one end of the shaft, the sprocket-chain connecting the two wheels, of the lower and upper series of curved alternately arranged tines, the latter being supported by the cross-bar of the frame-work, the upper and lower rods passing the lower tines, the space-blocks arranged on the rods, the depending brackets receiving the ends of the lower rod, the slotted segmental guides receiving the ends of the upper rod, the lever loosely engaging the end of the latter rod, and fulcrumed on the frame-work, and the locking-standard, substantially as specified.

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

ISAAC S. HORNER.

Witnesses:
W. H. LING,
EPHRAIM SEESE.