

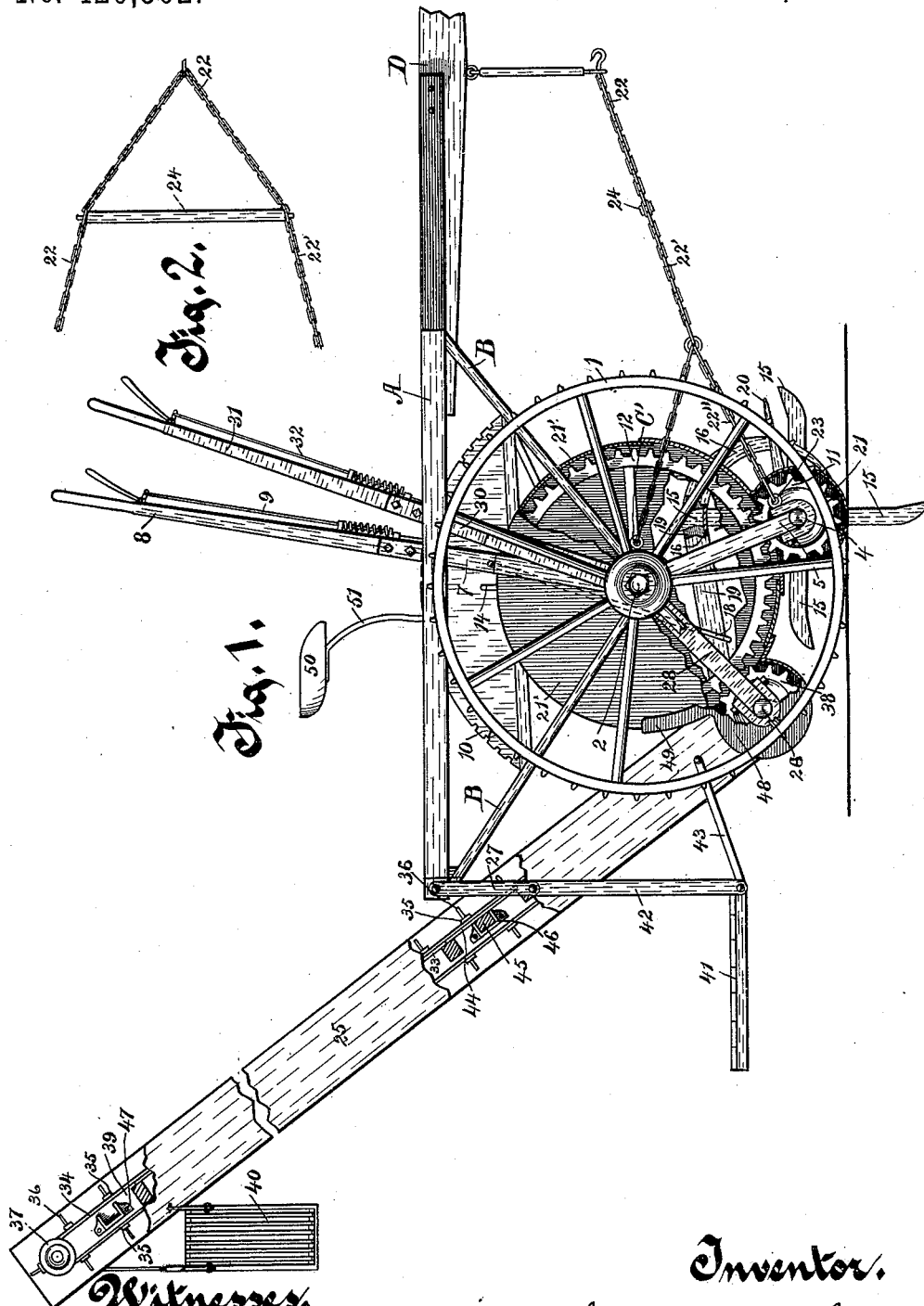
(No Model.)

3 Sheets—Sheet 1.

C. H. THOMAS.
POTATO DIGGER.

No. 420,502.

Patented Feb. 4, 1890.



Witnesses.
C. H. Kuehn.
Anna Faust.

Inventor.
Charles H. Thomas
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Attorney.

(No Model.)

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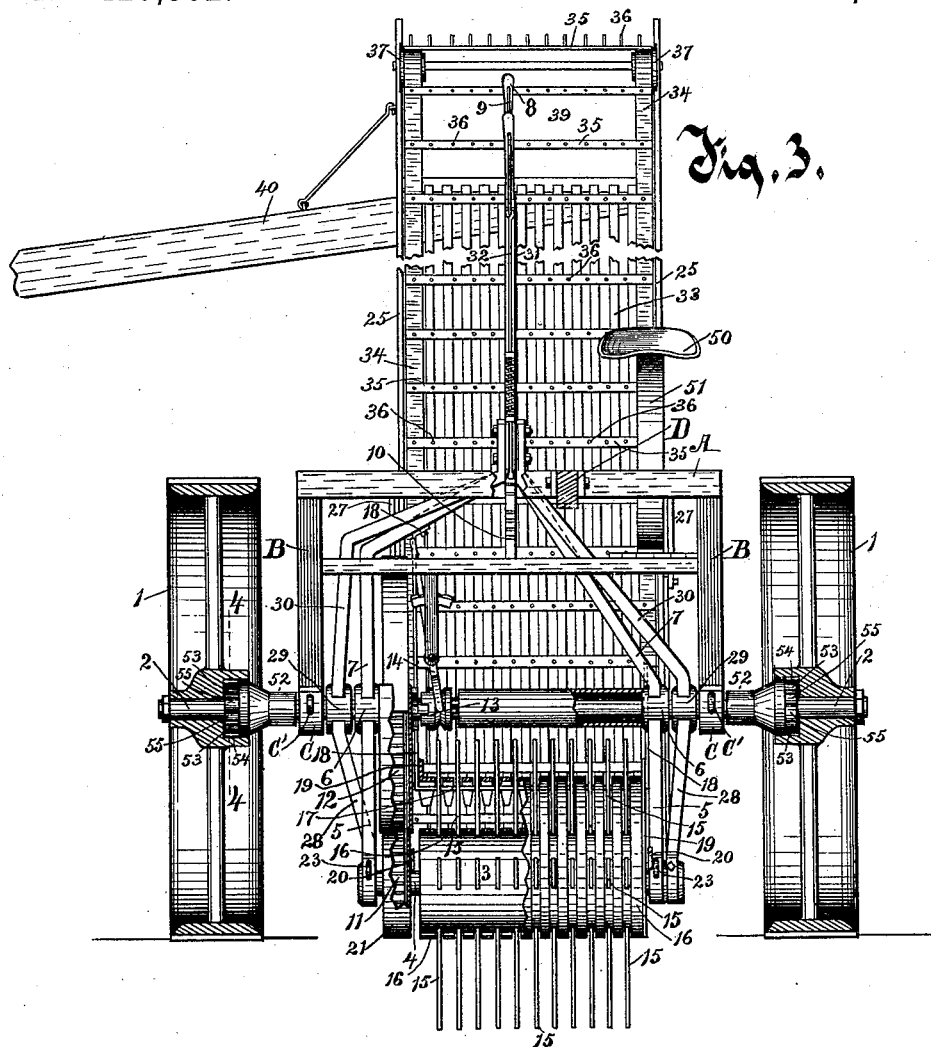
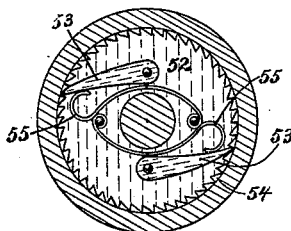


Fig. 3.

Fig. 4.



Witnesses.

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(No Model.)

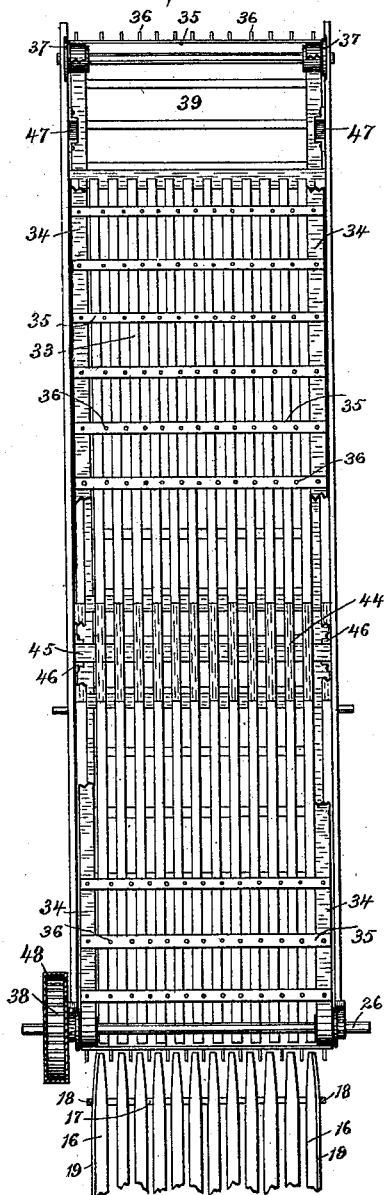
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Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES H. THOMAS, OF HANCOCK, WISCONSIN.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 420,502, dated February 4, 1890.

Application filed July 13, 1889. Serial No. 317,379. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. THOMAS, of Hancock, in the county of Waushara and State of Wisconsin, have invented new and useful Improvements in Potato-Diggers; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to a potato-digger so constructed as to be adapted to be hauled forward by a horse or team of horses, and in which the digging mechanism is operated by power communicated from the traction-wheels which carry the machine, the machine being provided with a conveyer also operated by the supporting-wheels, which conveyer is adapted to convey the potatoes from the digging mechanism to a receptacle therefor, in the meantime separating them from any remaining particles of dirt or foreign matter.

In the drawings, Figure 1 is a side elevation of my complete device, parts being broken away to show interior parts. Fig. 2 is a detail of the chain separating device. Fig. 3 is a front end view of the complete device, parts being broken away to show interior parts, and other parts being broken away for convenient illustration. Fig. 4 is a detail of the ratchet mechanism about the axle of the wheels, taken on line 4 4 of Fig. 3. Fig. 5 is a plan view of the separator.

The same letters and figures refer to like parts in all the views.

The frame A is supported on the axle by the struts B B, which at their lower inner ends are provided with journal-boxes C C, in which the axle is received and rotates. The frame is provided with a tongue D, to which the team for hauling the machine is so connected as to support the forward end of the frame and guide the machine. The machine is supported on two traction-wheels 1 1, which rotate on a common axle 2. A cylinder 3 has the bearings of its fixed axle 4 in the lower end of swinging arms 5 5, which arms at their other extremities are rigid in hubs 6 6, supported loosely on the axle 2. Above the axle are two upwardly-extending arms 7 7, fixed

at their lower ends rigidly in the hubs 6 6, and at their upper extremities coming together and being provided with a rigid handle 8, which is adapted to be thrown forward and back, whereby the cylinder 3 may be raised or lowered, as desired.

The handle 8 is provided with a spring-latch 9, adapted to engage the segment-rack 10, whereby the handle 8 is locked in position either at the front or rear. The segment-rack 10 is rigid on frame A. A pinion 11, rigid on the axle 4, meshes with cog-wheel 12, loose on axle 2. A clutch-hub 13 rides on the axle 2, sliding endwise thereon on a feather or spline, and is adapted to engage projections on the side of the cog-wheel 12, whereby the motion of the axle 2 is communicated, when desired, to the cog-wheel 12. The hub 13 is moved to and from the cog-wheel by means of a lever 14, pivoted on the frame, which is bifurcated at one extremity, its bifurcate ends riding in a groove therefor in the periphery of the hub 13. The cylinder 3 is provided with several rows of teeth 15 15, a corresponding tooth in each row being set in the same vertical plane. These teeth are each preferably bent forward somewhat at the point for better cutting the ground and for holding the potatoes thereon while being raised from the ground and carried up onto an apron 16. This apron 16 is of sheet metal, and is carried around the cylinder 3, so as to be supported thereon at one end, and is curved upwardly and rearwardly above the cylinder, extending therefrom rearwardly and with a downward inclination, and at the rear end is supported by a cross-bar 17, supported at each end by connecting-bars 18 18, attached at their upper extremities to the arms 7 7. This apron 16 is properly slotted to allow the teeth 15 15 to pass through it as they rotate. The apron 16 is also provided with low sides 19 19 to retain the potatoes thereon. Two short arms or knives 20 20, one at each side, are secured to the arm 5 and to the hood 21 over the pinion 11, respectively, which knives are adapted to divide and separate the vines passing onto the machine from the vines alongside on the ground. The hood 20, which covers the pinion 11, projects also a short distance up alongside and in

front of the cog-wheel 12 and is secured to one of the arms 5, this hood 21 being thereby adapted to protect the pinion 11 from the dirt, and when the cylinder 3 is raised out of the ground by tilting the handle 8 the upper part of it slides upon and over the hood 21', which covers the most of the wheel 12, and which is affixed to the frame of the machine. A draft-chain 22, having two strands or parts 22' 22', is attached at its ends to the journal-boxes C C by means of the rings C' C', fixed in the hubs C C. This chain is also provided with two other strands 22'' 22'', which are attached to the arms 5 5 by means of the rings 23 23, affixed in the journal-bearings of the arms.

It will be understood that the team for hauling this machine is attached to the front end of the chain 22, and that the machine is drawn forward by the draft on the axle through the hubs C C, and that the cylinder 3 will be held up to its work by the branch chains 22'' 22''. A spreader 24 is desirable for holding the parts of the chain at a proper distance from each other in front of the machine. The longitudinal frame 25 of the conveyer is supported pivotally at one end on an axle 26 and at a distance therefrom to the rearward on the thereto-pivoted arms 27 27, which arms at their upper extremities are pivoted on the rear end of the frame A. The axle 26 has its bearings in the lower ends of the swinging arms 28 28, which arms at their upper extremities are fixed in the hubs 29 29, supported loosely on the axle 2. Above these hubs 29 29, and fixed rigidly therein, are the upwardly-extending arms 30 30, which converge, and at the point of coming together are provided with a rigid upwardly-extending handle 31, by the tilting of which handle forward and back the axle 26 and the thereon-supported conveyer are raised and lowered, as desired. The handle 31 is provided with a spring-latch 32, adapted to engage with the segment-rack 10, whereby the handle is locked in position at the front or rear. A longitudinal slatted bottom 33 is permanently fixed in the frame 25, and about this bottom runs an endless conveyer, consisting of the bands 34 34 and cross-bars 35 35, secured fixedly to the bands at distances apart, which cross-bars are provided with outwardly-projecting pins 36 36, which bars and pins serve to retain and carry the potatoes forward with the conveyer as it travels rearwardly on the frame above the slatted bottom 33. The bands 34 34 at their lower extremity run on band-wheels therefor fixed on the axle 26, and at their upper extremity run on loose pulleys 37 37, rotating on an axle supported in the frame 25. The axle 26 is provided with pinion 38, which meshes with the cog-wheel 12, whereby the shaft 26 is rotated and the conveyer operated. The slatted bottom 33 of the conveyer-frame does not extend quite to the rear end of the frame, but there is an open space 39 in the bottom of the frame through which potatoes

drop into the spout 40, supported on the conveyer-frame, in which spout the potatoes may be slid along by hand or by the shaking of the machine into the box of a wagon traveling alongside the machine.

A platform 41 is hung on the frame of the conveyer by means of the rigid uprights 42 42 and the braces 43 43. This platform is adapted to support a box or basket, and the potatoes may be deposited therein by removing a short removable section 44 of the bottom 33 of the conveyer-frame. The slats of this removable section 44 are supported centrally on a removable cross-bar 45, which, when in position, is supported in the brackets 46, secured to the inner sides of the frame 25. The extremities of the slats of this removable section rest on cross-bars of the frame 25. Similar brackets 47 47 are secured to the frame 25 opposite the space 39, whereby the slatted bottom of the frame may be continued to the end of the frame, if desired, so that the potatoes would be carried over the end of the conveyer when such additional section of the slatted bottom is in position.

It will be understood that the conveyer-frame 25 may be raised out of the ground rearwardly by tilting the handle 31 forward. The pinion 38 is inclosed by a cover or hood 48, which also has an apron 49 extending upwardly somewhat and adapted to slide upon the surface of the hood 21', the several hoods 21, 21', and 48 being so constructed and arranged that when the cylinder 3 and conveyer are lowered into position for work the cog-wheel 12 and pinions 11 and 38 will be entirely inclosed and protected from the dirt. A driver's seat 50 is supported by a leg 51 on the frame A. The axle 2 is provided with rigid hubs 52 52, to the face of which are pivoted two pawls 53 53, which are adapted to engage in one direction with the rack 54, formed in the hub of the wheels 1 1, the pawls being held yieldingly up to their work by the springs 55 55. By this construction the axle is compelled to rotate with the rotation of the wheels forwardly, but remains at rest when the wheels rotate rearwardly.

I have shown four rows of teeth fixed in the cylinder 3; but a less or greater number of rows of teeth may be used if found better to adapt the digger to any peculiar kind of soil or to any greater or less crop of potatoes.

It will be understood that when the machine is in operation the parts will be located nearly as shown in Figs. 1 and 3, and that as the machine is hauled along the cylinder 3 will be rotated, and the potatoes, with perhaps some lumps of dirt or stones, will be raised out of the ground, and will be carried, with some of the vines, upon the apron 16, and will slide down rearwardly on the apron by the shaking of the machine to the conveyer, which will take them up and carry them along, the dirt in the meantime being broken up and dropped through between the slats of the frame until the potatoes shall

reach an open space in the bottom of the frame, when they will be dropped through, while the vines will be carried by the conveyer over the tail of the machine.

5 What I claim as new, and desire to secure by Letters Patent, is—

1. In a potato-digger, the combination, with a supporting-axle and traction-wheels provided with mechanism adapted to engage and rotate the supporting-axle in one direction and a cog-wheel supported on and adapted to be rotated by the supporting-axle, of a rotating cylinder provided with teeth adapted to enter the ground and remove potatoes therefrom, and a pinion rigid on the toothed cylinder meshing with the cog-wheel on the axle, and swinging arms pivoted on the axle, in which arms the toothed cylinder is supported and rotates, substantially as described.

20 2. In a potato-digger, a cylinder provided with teeth adapted to enter the ground and remove potatoes therefrom and swinging arms pivoted at one end on the machine, which arms carry the toothed cylinder axled therein, in combination with a slotted apron at its front end curved around the toothed cylinder and extending rearwardly from the cylinder with a downward inclination, substantially as described.

30 3. In a potato-digger, a toothed cylinder supported and rotating in bearings in swinging arms pivoted on the axle of the machine, in combination with a slotted apron through

which the teeth of the cylinder pass, the front end of the apron being curved partly around and supported on the cylinder, and a lever-handle 8, rigid to the swinging cylinder-supporting arms, on which handle the rear end of the apron is suspended, whereby the apron is made synchronously movable with the cylinder-carrying swinging arms, substantially as described.

4. In a potato-digger, the combination, with a conveyer-frame, of swinging arms supported pivotally on the axle of the machine and provided with an upwardly-extending rigid handle, on which arms the conveyer-frame is pivotally supported at its lower end, and swinging arms 42, supporting the conveyer-frame, medially movable on the frame of the machine, whereby the conveyer-frame is capable of being elevated and lowered endwise independently of the frame of the machine, substantially as described.

5. In a potato-digger, the combination, with a conveyer-frame having a slotted bottom, of an endless conveyer adapted to force potatoes forward on the slotted bottom of the frame and a removable section of the slotted bottom of the frame, substantially as described.

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

CHARLES H. THOMAS.

Witnesses:

W. H. CAMPFIELD,
F. C. WOOD.