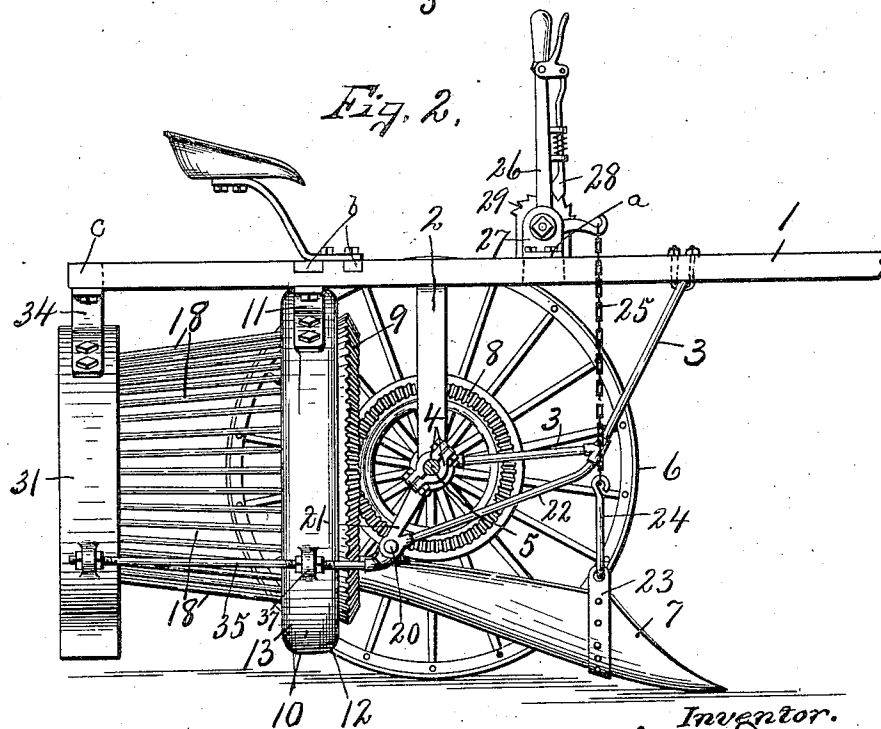
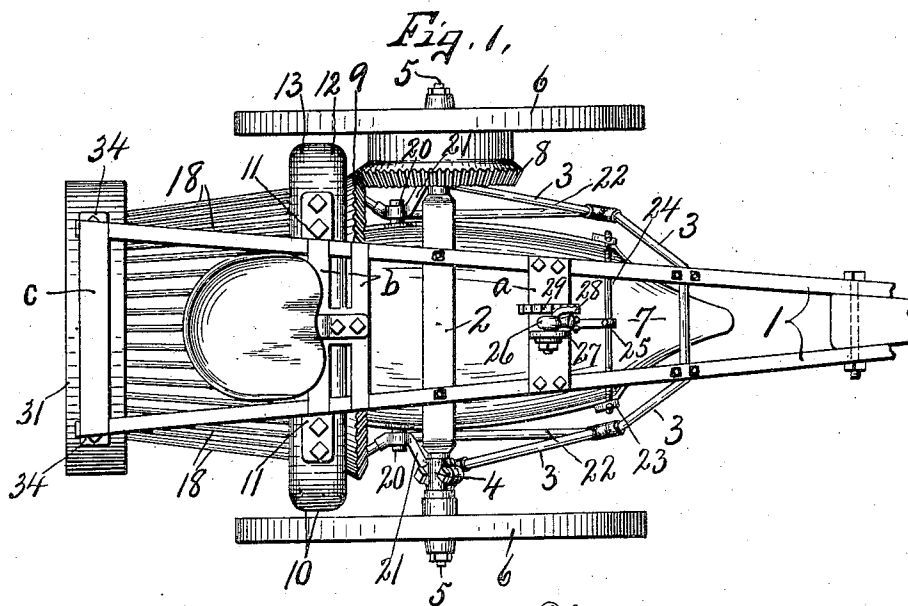


No. 844,106.

PATENTED FEB. 12, 1907.

I. A. DODGE.
SULKY POTATO DIGGER.
APPLICATION FILED NOV. 6, 1906.

2 SHEETS—SHEET 1.



Witnesses.

A. Thomas
W. C. Chare

Inventor.

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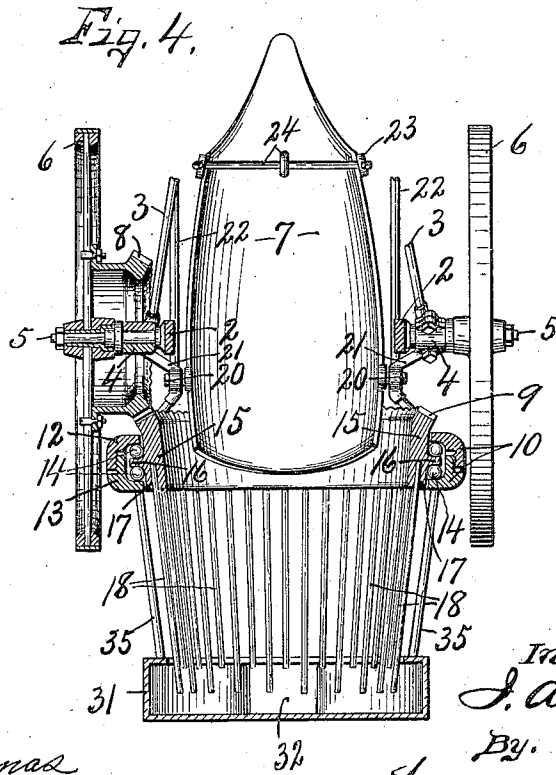
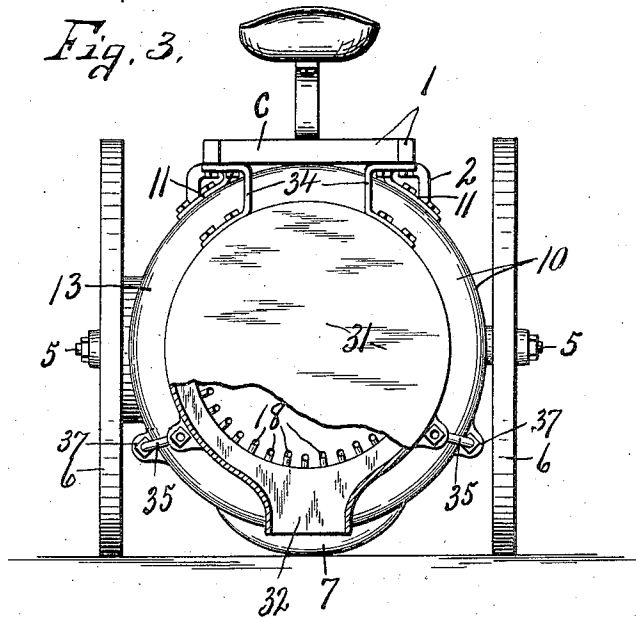
Howard P. Smith
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2 SHEETS—SHEET 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

ISAAC A. DODGE, OF FAYETTEVILLE, NEW YORK.

SULKY POTATO-DIGGER.

No. 844,106.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed November 6, 1906. Serial No. 342,218.

To all whom it may concern:

Be it known that I, ISAAC A. DODGE, of Fayetteville, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Sulky Potato-Diggers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in sulky potato-diggers, and refers more particularly to that class in which the potatoes are unearthed by a suitable plow and diverted thereby upwardly into a rotary separator, where the potatoes are separated from the refuse and finally discharged at the rear of the machine.

One of the main objects of my invention is to accomplish the above result with the least possible mechanism consistent with efficiency and durability and at the same time to provide for necessary adjustment of the plow and other elements of the machine.

In all machines of this class with which I am familiar the rotary separator is provided with a series of slats or fingers arranged concentrically about and parallel with the axis of revolution and all of substantially the same length. In the practical operation of this particular form of rotary separator having the slats or fingers parallel with its axis of revolution I have found that more or less refuse adheres to and discharges with the potatoes at the rear of the machine. I have discovered that by arranging these separator-fingers in the form of a truncated cone, so as to converge rearwardly, with the axis substantially horizontal, the dirt and other refuse which are elevated and thrown into the separator are more or less retarded in their travel and are therefore carried upwardly by the fingers and agitated to a greater degree than would be possible in a separator having the fingers parallel with the axis of revolution. This increased agitation is due to the fact that the lower side of the separator, upon which the potatoes and other refuse are delivered directly from the plow, is inclined upwardly and rearwardly, thereby affording an increased resistance to the free discharge of the potatoes and refuse by the force or pressure of the potatoes and other material which is being continuously picked up by the shovel and forced into the separator, so that the potatoes and other material instead of discharging freely are thrown forward more or less by the upward inclination of the bottom, and at

the same time they are being carried up by the sides and thoroughly agitated or overturned before finally discharging at the rear of the machine. The particular effect of this specific conical structure of cage or separator is to increase the agitation and separation of the refuse from the potatoes.

Another object is to make the alternate slats or fingers of unequal lengths, so that their rear ends terminate in different vertical planes, the purpose of which is to afford a more or less broken surface over which the vines travel, so that the latter will be more liable to be caught up by the longer fingers and drawn away or separated from the potatoes. In other words, by allowing some of the fingers to project beyond others it is found that the vines and weeds are more positively entangled in said ends and carried upwardly away from the other finer refuse and potatoes, the dirt, stones, and the like sifting through and between the fingers, and although the vines, weeds, and the like are discharged at the rear end of the separator and at the same place where the potatoes are discharged such vines and weeds instead of being scattered are more or less bunched and discharged in this condition, which enables them to be readily removed or brushed aside when gathering the potatoes.

A still further object is to inclose the free ends of the fingers by a suitable chute or compartment having a constricted opening in its bottom, whereby the potatoes are confined and discharged close together in a row as the potato-digger is drawn along the ground.

Other objects and uses relating to the specific mechanisms will appear in the following description.

In the drawings, Figures 1, 2, and 3 are respectively top plan, side elevation, and rear elevation of a sulky potato-digger embodying the various features of my invention, one of the wheels being removed in Fig. 2 and a portion of the hopper being shown in section in Fig. 3. Fig. 4 is a horizontal sectional view of the potato-digger shown in Figs. 1, 2, and 3, except that one of the wheels is shown in elevation.

The main supporting-frame comprises a horizontal top frame or pole section 1 and a vertically - arched axle - section 2, secured thereto and braced in the direction of the line of draft by side braces 3, having their front ends secured to the pole-section and their

rear ends secured to the lower ends of the axle-section by split bearings 4. The opposite ends of the axle-section 2 constitute horizontal studs 5, upon which the traction-wheels, as 6, are journaled.

The top frame or pole section 1 preferably consists of a pair of wood bars diverging rearwardly and reinforced by cross-bars *a*, *b*, and *c*, the frame 1 being centrally balanced upon the upwardly-arched central portion of the axle-section 2, which latter is substantially symmetrical, leaving a clear open space between the opposite sides of the arch, and also between the said brace-bars 3, for the free travel of the material which is taken up by the plow or scoop, as 7, presently described.

Secured to one of the wheels is a circular toothed rack, consisting, in this instance, of a beveled gear 8, which meshes with and transmits rotary motion to a second beveled gear 9, the latter being journaled in a fixed annular frame 10, which is secured to the under side of the top frame 1 by suitable braces or brackets 11. This annular frame 10 and the gear 11, which is journaled therein, are coaxial and are disposed in a substantially vertical plane, with their axes at substantially right angles to and in about the same horizontal plane as the axis of the wheel 6, said annular frame and gear 9 being located at the rear of the axle-section 2.

As best shown in Fig. 4, the annular frame 10 is composed of telescoping annular sections 12 and 13, having internal annular ball-races for the reception of antifriction ball-bearings 14. The gear 9 is provided with a hub 15, extending through the annular sections 12 and 13, and is provided with an annular rib 16, forming opposed bearings for the opposite balls 14 and serving to keep the balls of each series apart. One of the annular frame-sections is adjustable relatively to the other to take up wear and to facilitate the placing of the balls in operative position. The rear end of the hub 15 of the gear 9 is provided with a series of sockets 17 opening from its rear end face for receiving the front ends of a series of rearwardly-projecting separating-fingers 18, which, together with the hub 15, constitute what may be termed a "rotary separator," said fingers being spaced a suitable distance apart to allow the sifting of the dirt and small stones therethrough, but prevent the discharge of the potatoes between the fingers. This rotary separator is preferably made in the form of a truncated cone, with the fingers converging rearwardly from the hub 15 and concentrically around the axis of rotation, alternate fingers being of unequal length, so that their rear ends terminate in different vertical planes to afford a more or less broken surface, over which the vines and weeds travel.

The plow 7 is located centrally between the wheels 6 and below their axes of revolution, and its rear end is pivotally connected at 20 to the lower ends of the side arms 21, which are secured to and depend from the lower ends of the axle-sections 2 just inside of the wheels, said arms being braced by braces 22 to the side braces 3.

The front end of the plow is adjustable vertically to vary the depth of its entrance into the ground and for this purpose is supported upon a bail 23, which is connected by links 24 and a chain 25 to a lever 26, the latter being pivoted upon a bracket 27 on the upper frame 1 and is provided with a hand-operated pawl 28, adapted to engage a toothed rack 29 for holding the plow in its adjusted position.

The rear ends of the fingers 18 are inclosed by a circular hopper 31, having its lower end contracted, forming a constricted opening 32 for concentrating and discharging the potatoes in a row along the ground as the plow is drawn forwardly. This hopper 31 is rigidly secured to the rear end of the top frame 1 by suitable brackets 34 and is additionally supported against forward and rearward movement by tie-bars 35, which are rigidly secured to the lower ends of the brace-bars 21 and are in this instance clamped to suitable eyes 37 on the periphery of the annular frame 10 for the purpose of holding the latter more firmly against lengthwise vibration. It is now apparent that the annular frame 10 and also the hopper 31 are rigidly secured to the main supporting-frame and that the plow 7 is adjustable vertically, but is held against lengthwise movement by its pivotal connection 20 with the main frame, which serves to force the plow into the earth as the machine is drawn forwardly in the operation of unearthing the potatoes. During this operation the potatoes are forced upwardly and rearwardly into the plow, which discharges into the front end of the separator and upon the lower fingers. These fingers at the lower side of the separator are inclined upwardly at a slight angle from the horizontal plane and serve to retard the progress of the potatoes and refuse through the separator, causing such material to be carried upwardly by the side fingers during the rotation of the separator, which agitates such material and causes a more thorough separation of the refuse from the potatoes than would be possible if the fingers were parallel with the axis of rotation, it being understood, of course, that during this agitation the potatoes are moved gradually toward the rear end and are finally discharged into the hopper 31, where they fall through the constricted bottom opening 32 upon the ground. This hopper is a particularly important feature of my invention, in view of the fact that the potatoes instead of being scattered over a wide area are concen-

trated in a straight narrow row centrally of the line of travel of the machine, which allows the driver to return over the next row without liability of crushing the potatoes in the previously-unearthed row.

Having described my invention, what I claim is—

1. In a sulky potato-digger, the combination with the frame and wheels, of a rotary separator actuated by one of the wheels and provided with fingers arranged concentrically around the axis of rotation and converging rearwardly, and a hood surrounding the rear ends of the fingers and having an opening in its bottom.

2. In combination with the frame and wheels of a sulky potato-digger, a rotary frusto-conical separator actuated by one of the wheels, said separator having alternate fingers of unequal lengths and terminating at their rear ends in different vertical planes.

3. The combination with the frame and wheels of a sulky potato-digger, of a rotary frusto-conical separator actuated by one of the wheels and provided with rearwardly-projecting fingers terminating at their rear ends in different vertical planes, and a hopper inclosing the rear ends of the fingers and having a constricted opening in its bottom.

4. In combination with the frame and wheels of a sulky potato-digger, a rotary separator actuated by one of the wheels and provided with rearwardly-projecting fingers, and a hopper rigidly secured to the frame and inclosing the rear ends of the fingers, said hopper having a constricted opening in its lower side.

5. In combination with the frame and wheels of a sulky potato-digger, an annulus rigidly secured to the frame and composed of telescoping annular sections and a rotary separator journaled in said annulus and provided with rearwardly-converging fingers.

6. In combination with a frame and wheels of a sulky potato-digger, an annulus rigidly secured to the frame and composed of telescoping annular sections, and a rotary separator journaled in said annulus and provided with rearwardly-converging fingers, alternate fingers terminating at their rear ends in different planes, and a plow discharging into the front end of the separator.

7. In combination with the frame and wheels of a sulky potato-digger, a gear secured to one of the wheels, an annulus rigidly secured to the frame, a rotary separator journaled in the annulus and provided with a gear meshing with the first-named gear, said

separator having rearwardly-converging fingers of different lengths, and a plow pivotally connected to the frame and discharging into the front end of the separator.

8. In combination with the frame and wheels of a sulky potato-digger, an axle-section having its central portion arched upwardly and secured to the frame, brace-bars secured to and depending from opposite sides of the axle-section, a plow having its rear end pivoted to the brace-bars below the axis of the wheels, a hand-lever pivotally mounted upon the frame, connections between the hand-lever and front end of the plow for raising and lowering the digging-point of the plow as the lever is adjusted, means for holding the lever and plow in its adjusted position, a rotary separator actuated by one of the wheels, an annulus secured to the frame and supporting the separator, said separator having rearwardly-projecting fingers and a hopper inclosing the rear ends of the fingers and having a constricted discharge-opening in its lower side.

9. In combination with the frame and wheels of a sulky potato-digger, an annulus rigidly secured to the frame at the rear of the axis of the wheels, a rotary separator journaled in the annulus and provided with rearwardly-projecting fingers of different lengths, and a hopper rigidly secured to the frame and inclosing the rear ends of the fingers, said hopper having a constricted opening in its lower side, and a plow pivotally mounted upon the frame and having its front end adjustable vertically, and means for holding the plow in its adjusted position.

10. In combination with the frame and wheels of a sulky potato-digger, an axle for the wheels having its central portion arched upwardly and secured to the frame, the opposite sides of said arch having depending braces, an annulus rigidly secured to the frame, a rotary separator journaled in the annulus, and actuated by one of the wheels, said separator being provided with rearwardly-converging fingers, a plow pivoted to said braces below the axis of the wheel, means for raising and lowering the front end of the plow, and additional means for holding the plow in its adjusted position.

In witness whereof I have hereunto set my hand this 23d day of October, 1906.

ISAAC A. DODGE.

Witnesses:

H. E. CHASE,
M. M. NOTT.