(No Model.)

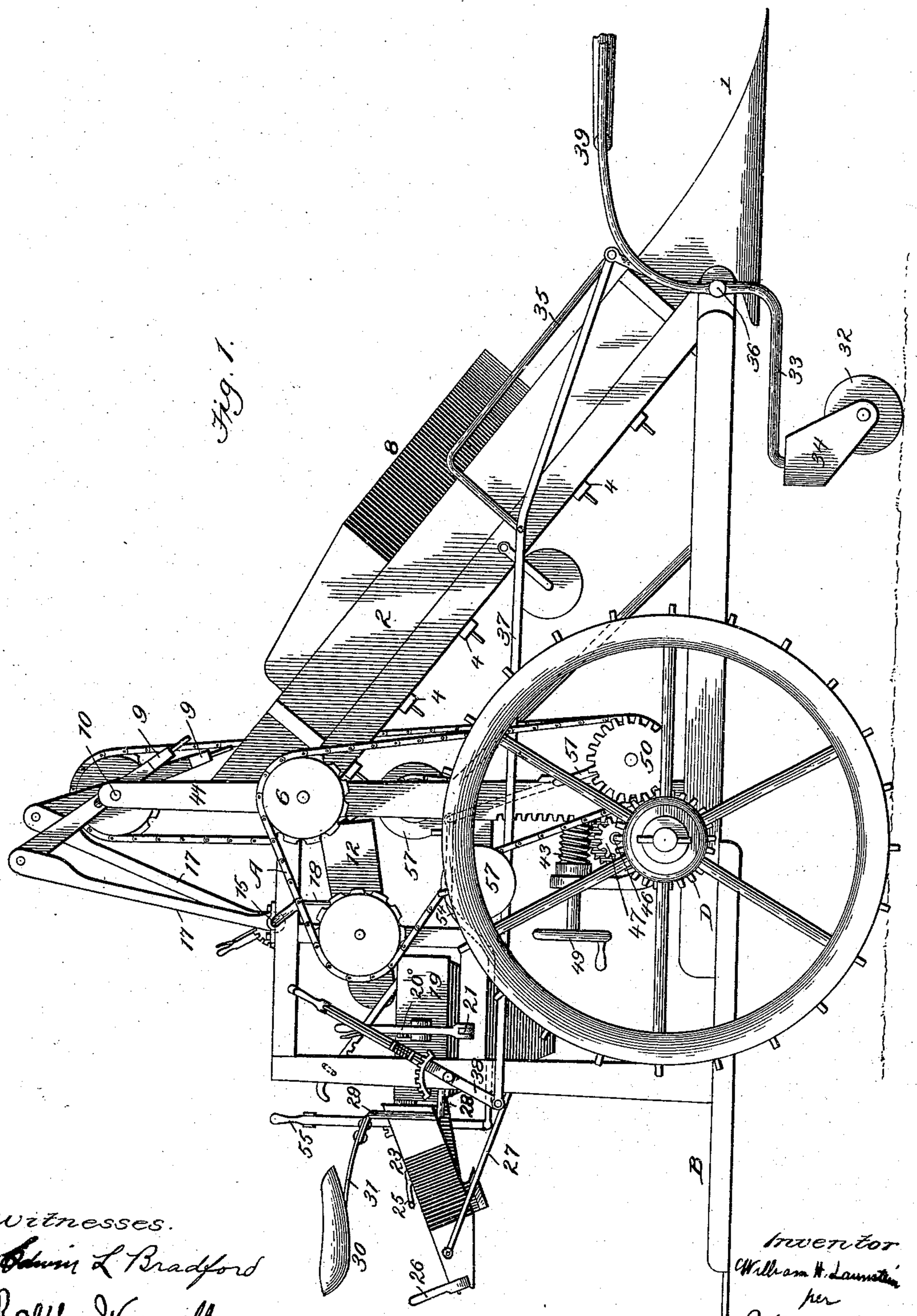
4 Sheets—Sheet 1.

W. H. LAUNSTEIN.

POTATO DIGGER.

No. 551,864. Patented Dec. 24, 1895.

Fig. 1.



Witnesses.
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per
Patrick O'Farrell
Attorney

(No Model.) 4 Sheets—Sheet 2.

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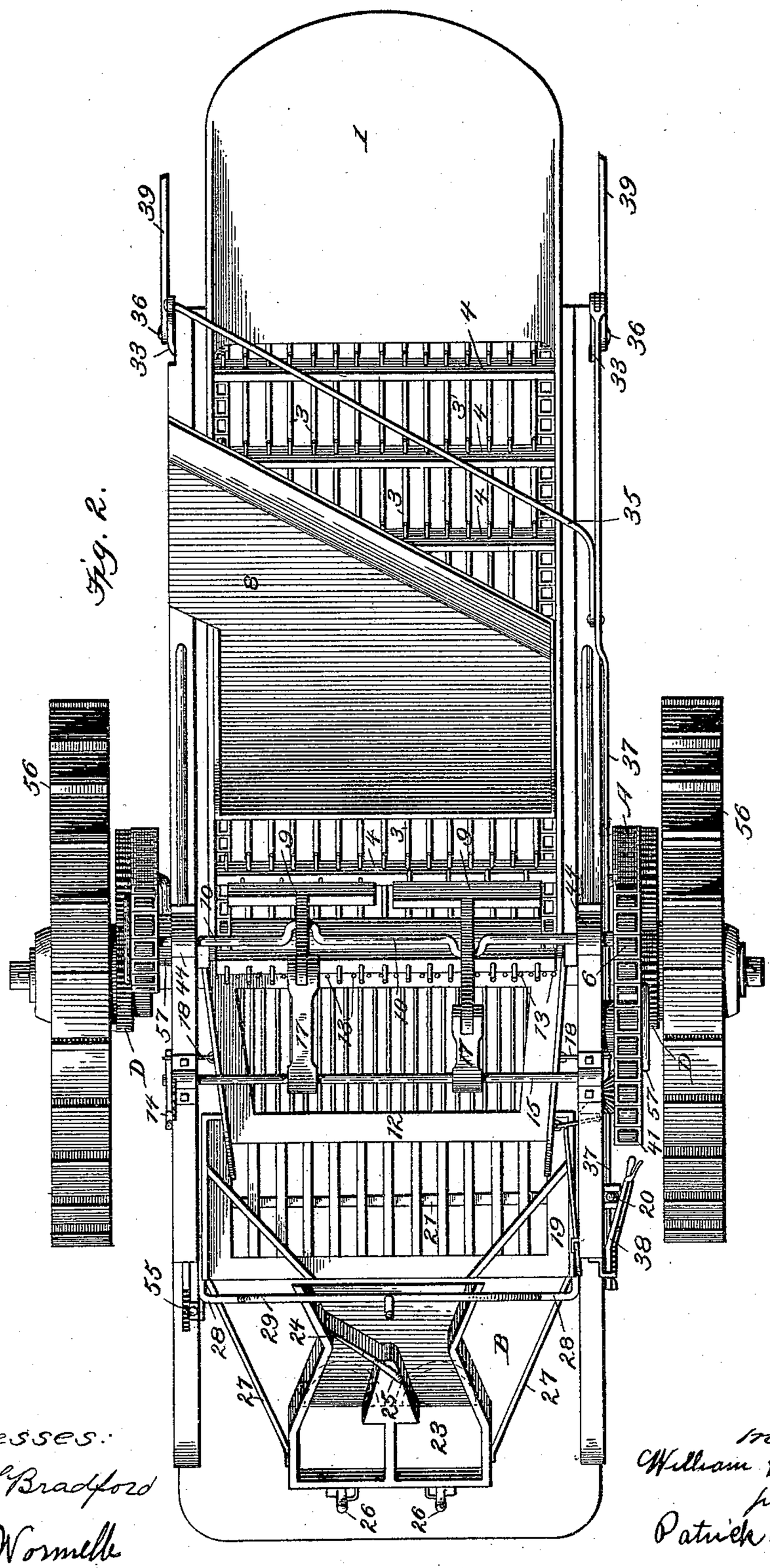
Fig. 2.



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(No Model.) 4 Sheets—Sheet 3.

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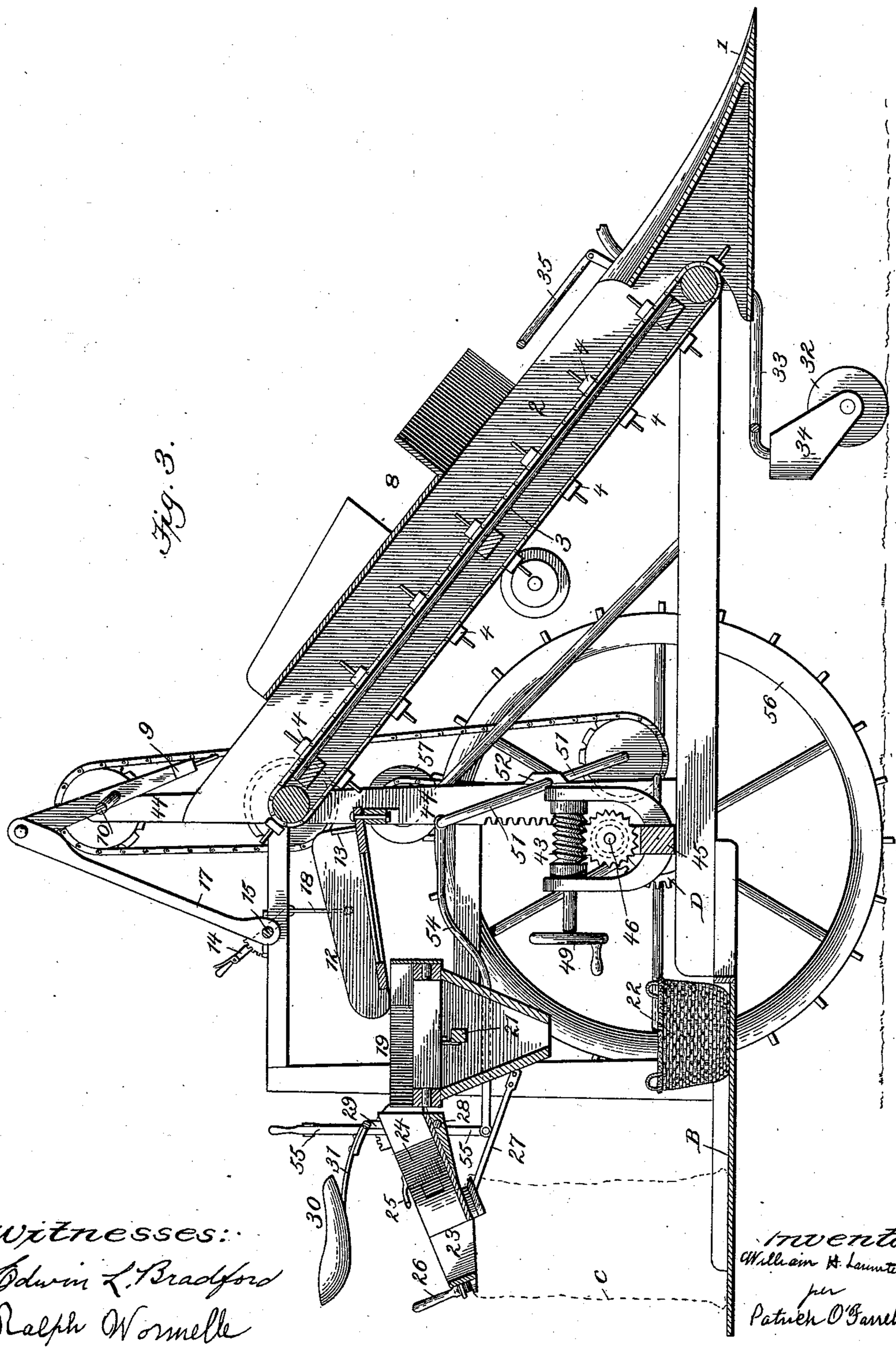
Fig. 3.



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(No Model.) 4 Sheets—Sheet 4.

W. H. LAUNSTEIN.

POTATO DIGGER.

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Fig. 4.

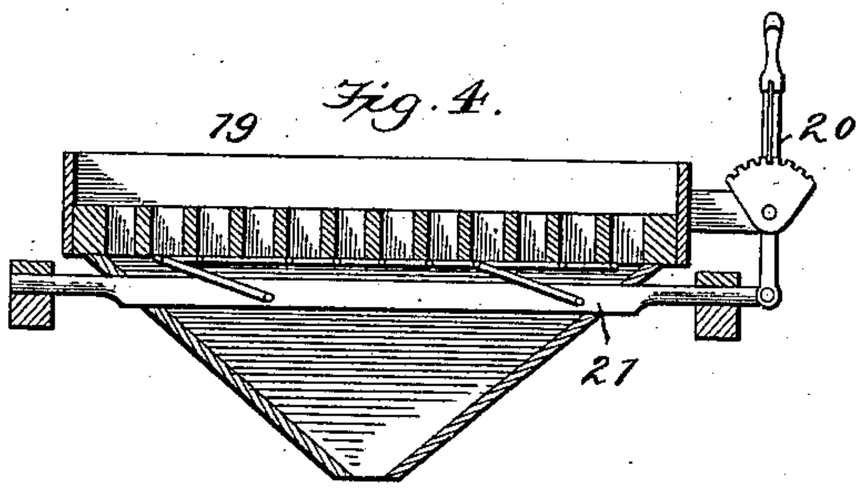


Fig. 5.

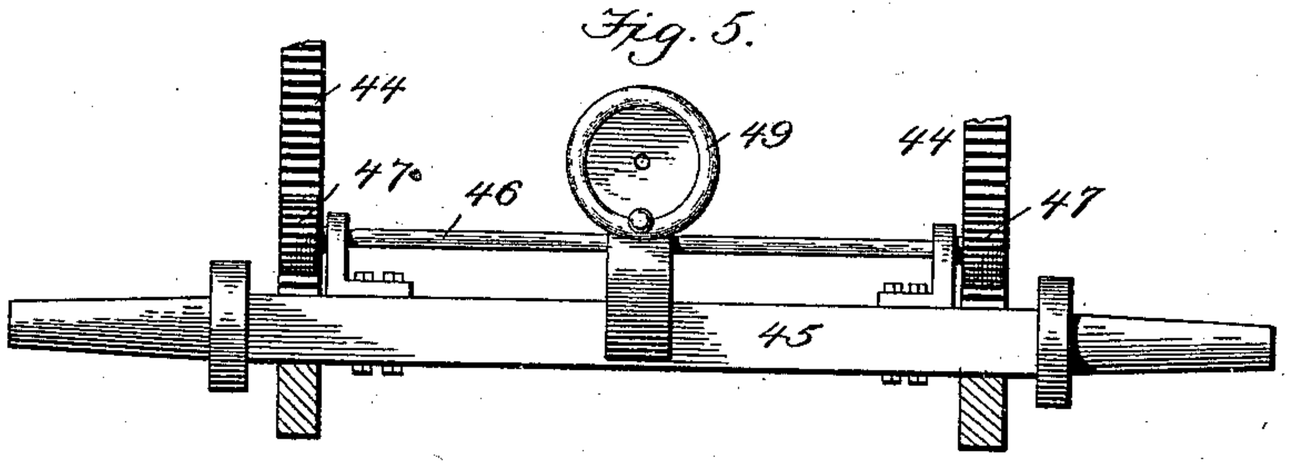


Fig. 6.

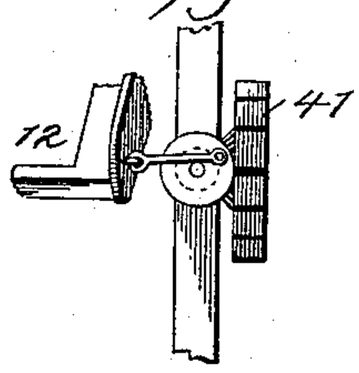
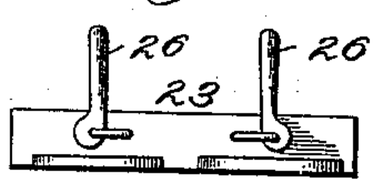


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM H. LAUNSTEIN, OF OWOSSO, MICHIGAN.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 551,864, dated December 24, 1895.

Application filed September 12, 1894. Serial No. 522,784. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. LAUNSTEIN, a citizen of the United States of America, residing at Owosso, in the county of Shiawassee and State of Michigan, have invented certain new and useful Improvements in Potato-Diggers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to machines for digging, cleaning, sorting, and bagging potatoes, and aims to provide a machine which will combine simplicity, compactness, and durability in its organization and which will be efficient, durable and easy of management.

With these and such other ends in view as result from the specific structure of the implement, the invention consists of the novel features and the peculiar construction and combination of the parts which will hereinafter be more fully described and claimed and which are shown in the annexed drawings, in which—

Figure 1 is a side elevation of the machine embodying the invention. Fig. 2 is a top plan view of the machine. Fig. 3 is a vertical central longitudinal section of the machine. Fig. 4 is a detail sectional view on the line *x* of Fig. 3, showing the means for operating the slots of the sorter to regulate the width of opening between the said slots. Fig. 5 is a detail view of the mechanism for raising and lowering the machine. Fig. 6 is a detail view of the mechanism for imparting a lateral movement to the shoe. Fig. 7 is a detail view of the cam-levers for securing the edge of the sack to its supports.

Referring to the drawings, the numeral 2 indicates an elevator of usual construction having sides and a bottom 3 of slats arranged in parallel relation sufficiently close to retain the small potatoes, but will admit the free escape of the earth. The digging-point 1, which enters the earth and excavates the potatoes, is hollow and is attached to the lower end of the elevator-frame. A series of transverse bars 4 having prongs extending approximately at right angles therefrom are attached at their ends to travel-chains, which pass over suitable roller-supports at each end of the elevator-frame and constitute the elevator proper. A sprocket-wheel 6 is attached to the projecting journals of the upper roller-support and is engaged by a sprocket-chain A, by means of which motion is imparted thereto. A shaft 10 having two oppositely-disposed crank portions is arranged above the top end of the elevator and is journaled at its ends in vertical standards 44, to which the upper end of the elevator is attached. Rakes 9 are mounted at points between ends on the crank portions of the shaft 10 and have their upper ends connected by pitmen 17 to a transverse shaft 15. These rakes 9 operate alternately, the one advancing while the other is returning to a starting-point, and serve to separate the vines from the potatoes and throw the vines upon chute 8.

A side delivery-chute 8 is attached to the upper side of the elevator and directs the vines to one side of the machine, where they are delivered out of the way. A cleaner 12 is located in the rear of the delivery end of the elevator to receive the potatoes and remove all loose earth prior to sorting and picking them. This cleaner has a bottom composed of small steel bars placed about three-fourths of an inch apart. A series of prongs 13 project vertically and close the rear end of the device. The cleaner is vertically adjustable and is hung from cranks at the ends of the shafts 15 by rods 18. A lever 14 attached to the shaft 15 serves to turn the latter in its bearings to raise and lower the cleaner. The usual latch and notched segment are provided to hold the lever 14 in its required position.

The sorter 19 is in the rear of the cleaner and receives the potatoes therefrom and is a hopper-shaped affair having a bottom composed of slats which are thin and wide, being about one-fourth by two inches and having end journals, said slats being attached to a transverse rod 21 operated by a lever 20 to open the slats more or less or close them entirely when it is required to sack all of the potatoes. The lever 20 is held in the desired position by means of the usual hand-latch and notched segment. The small potatoes escape into a receptacle 22 on a platform B. The large potatoes pass over to the sacks *c* through a chute 23. A wing 24 controlled by lever 25 guides the potatoes through one of the two passages comprising the chute. By this means

the potatoes are delivered into one sack while the other sack previously filled is removed and replaced by an empty one, thus enabling the operation of the machine to be practically continuous. The chute has a small claw in front to which the sacks are attached. An eccentric lever 26 secures the sacks in the rear. The chute is supported on a cross-bar 28 having an arched portion 29 carrying the seat 30 and is braced laterally by stays 27 which run to a fixed point of the frame. A spring 31 is interposed between the seat 30 and its support 29.

The caster-wheel 32 is mounted in a bearing 34 provided at the junction of the oppositely-extending bars 33 which extend up on each side of the elevator-frame and are pivoted thereto by bolts 36. Curved rods 35 connect the rods 33 with a single rod 37 which extends back and has attachment with a lever 38 held into position by the usual latch and segment. By operating the lever 38 the front end of the machine can be raised and lowered as may be desired. The tongue 39 is attached to the machine by the bolts 36 on the rods 33.

The axle 45 is provided with the ground-wheels 56, connected thereto by the ordinary ratchet for the well-known purposes. The gear-wheels D revolving with the ground-wheels mesh into similar gear-wheels 50 on the ends of an arched bar 51, which is journaled in bearings 52 on the standards 44. Sprocket-wheels attached to and revolving with the gear-wheels 50 receive and transmit motion to the sprocket-chains by means of the elevator and the rakes 9 are operated. A lever 55 within convenient reach of the driver's seat is connected by rod 54 with the arched bar 51 to turn the same and throw the machine in and out of gear, as required. The lower ends of the standards 44 have cog-teeth on one side to mesh with pinion 47 on the end of a shaft 46, which is adapted to be rotated to raise and lower the frame. An auger crank-shaft 43 having a hand-wheel 49 is provided to actuate the shaft 46 and raise and lower the frame in the manner set forth.

The driving-chains pass over idlers 57, which are adjustable to take up wear and obtain the required tension on the chain necessary to prevent lost motion. Sprocket-wheels 41 receive motion from the sprocket-chains by direct contact and have waist-pins on their inner sides, to which rods E are connected, by means of which a vibratory motion is imparted to the cleaner.

A machine constructed as herein shown and described will dig, clean, sort, and sack potatoes in a continuous operation, the vines being automatically separated and thrown to one side of the path of the machine.

I claim—

1. In a potato digger, the combination with the digging, elevating and cleaning mechanism, of a sorter having a bottom composed of pivoted slats, and means for turning the slats to vary the size of the opening between them, substantially as and for the purpose specified.

2. A potato digger comprising a frame mounted upon ground wheels and vertically adjustable caster wheels, a vertically adjustable elevator carrying a digging point and a side delivery chute, a vine separator arranged to urge the vines into the said side delivery chute, a vertically adjustable cleaner in the rear of the elevator, a sorter provided with an adjustable bottom formed of pivoted slats, a chute having two passages provided with a controlling wing, and sack retaining devices, one for each passage, substantially as specified.

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

WILLIAM H. LAUNSTEIN.

Witnesses:

CHARLES D. STEWART,

GILBERT L. TAYLOR.