(No Model.)

2 Sheets—Sheet 1.

I. W. HOOVER.

COMBINED POTATO DIGGER AND SEPARATOR.

No. 348,214. Patented Aug. 31, 1886.

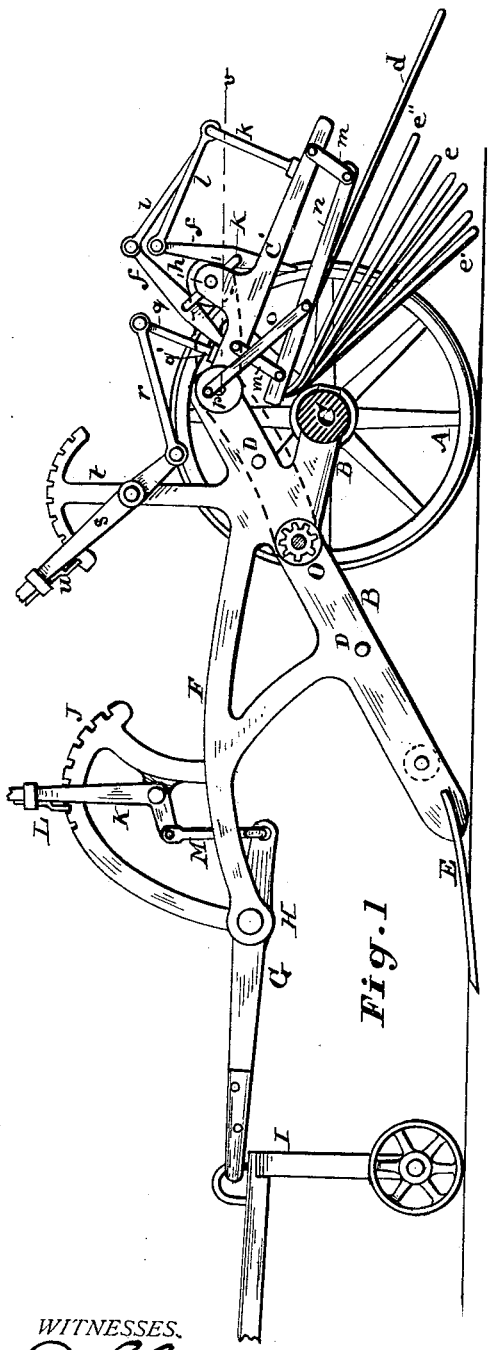

Fig. 1

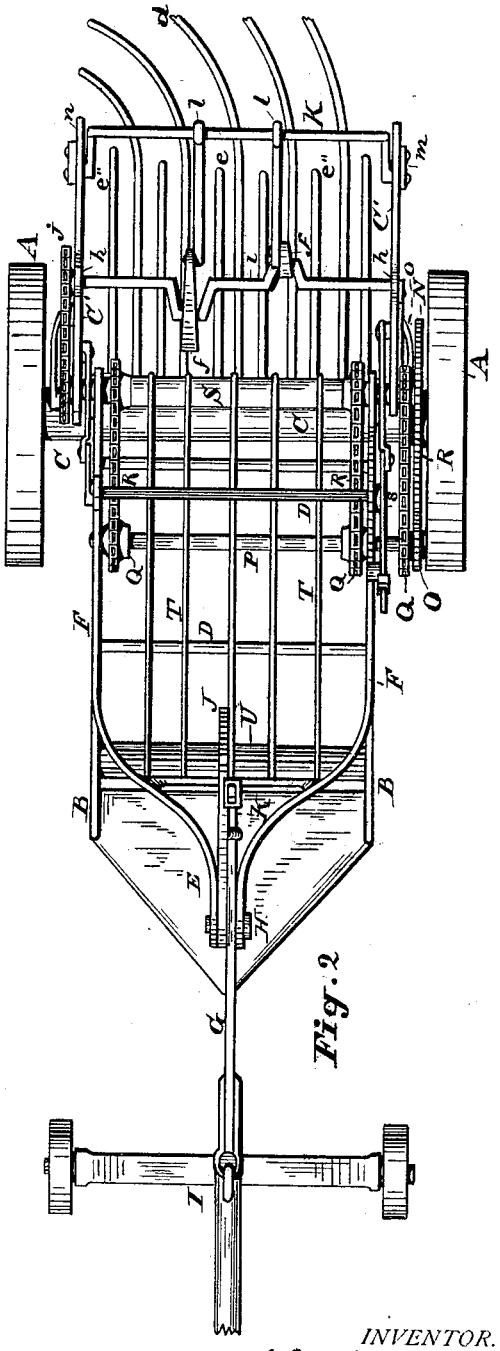

Fig. 2

WITNESSES.

C. L. Burridge

M. H. Stern

INVENTOR.

I. W. Hoover

W. A. Burridge

ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

I. W. HOOVER.

COMBINED POTATO DIGGER AND SEPARATOR.

No. 348,214. Patented Aug. 31, 1886.

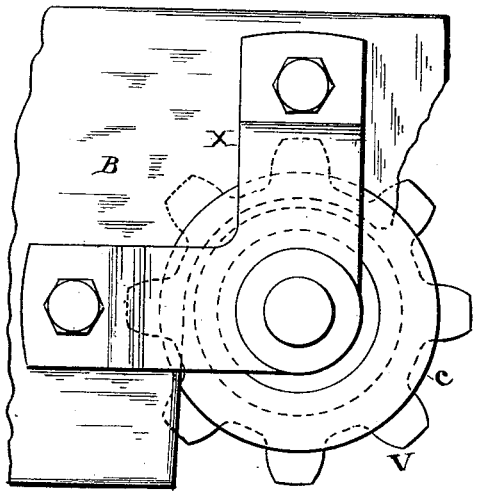

Fig. 3

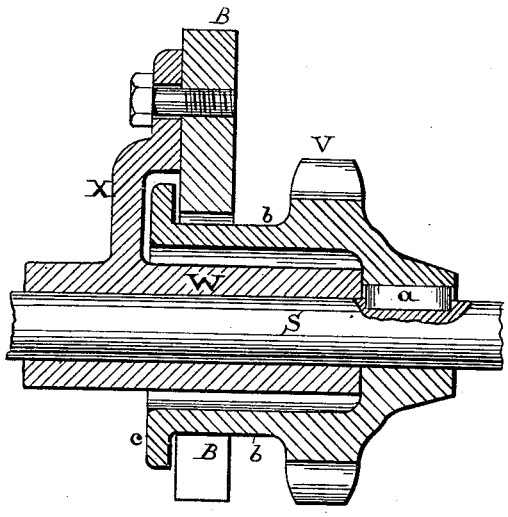

Fig. 4

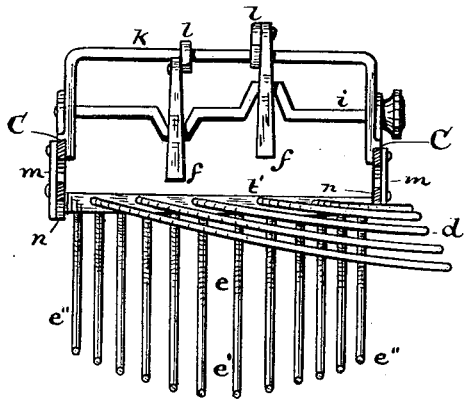

Fig. 5

WITNESSES.

C. L. Burridge

M. H. Kent

INVENTOR.

J. W. Hoover

W. H. Burridge

ATTORNEY.

UNITED STATES PATENT OFFICE.

ISAAC W. HOOVER, OF MILAN, OHIO.

COMBINED POTATO DIGGER AND SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 348,214, dated August 31, 1886.

Application filed May 12, 1886. Serial No. 201,968. (No model.)

To all whom it may concern:

Be it known that I, ISAAC W. HOOVER, of Milan, in the county of Erie and State of Ohio, have invented a certain new and Improved Potato Digger and Separator Combined, being an improvement on a patent granted to me May 19, 1885, No. 318,254, which improvements, hereinafter set forth, relate to the means employed for adjusting the mechanism for removing the potatoes according to the condition of the ground.

The improvement also relates to the means of sifting and separating the tubers from the earth, stones, weeds, and stalks and discharging the potatoes in the rear, and the refuse at the side, of the machine.

The improvement further relates to the journaling device of the main shaft of the elevator, which is for the purpose of a journal-bearing to protect the bearing from dust and dirt and to form a sprocket-wheel.

The general construction of the machine is designed to be more simple and effective than that set forth in the patent aforesaid.

As the machine herein set forth is in its general construction similar to the aforesaid Patent No. 318,254, of May 19, 1885, it is not deemed necessary to give a detailed description, but only of the parts which are held to be an improvement. However, sufficient reference will be made to the old part of the machine as to fully set forth the corelation of the new with the old machine described in said patent.

Reference will be had to the following specification, and the annexed drawings, making part of the same, for a full and complete description of the construction and operation of the said invention.

In the drawings, Figure 1 is a side view of the machine; Fig. 2, a plan view; Fig. 3, an enlarged detached section and side view of the journal-box, sprocket-wheel, and bracket of the main shaft of the elevator. Fig. 4 is an enlarged longitudinal vertical section of the journal-box, sprocket-wheel, and main shaft of the elevator. Fig. 5 is a detached section, showing a part of the rear end of the machine with the sifter and rakers, which will be referred to more fully in description hereinafter.

Like letters of reference denote like parts in the several views.

The machine is mounted upon two driving-wheels, A A, by attaching the side pieces, B B, of the frame to the axle C, as seen in Figs. 1 and 2. These sides are secured together by bolts or braces D D, which extend from one side to the other, as shown in the drawings. Between the sides at the front end is attached a scoop shovel, E. From each side piece, B, extends a brace-arm, F, which arms curve together at their outer ends with the lever G between them, and secured by a screw bolt or pin, H, which forms the pivot of the lever G. The outer end of this lever is jointed to the truck I, provided with two wheels, as shown. To this truck is attached a pole for the team to draw the machine.

Attached to the brace-arms F is a transverse brace, to which is secured the ratchet J by an arm connecting the ratchet with the transverse brace. The ratchet curves down, and is fastened to the end of the brace-arm F by the bolt H. The right-angled lever K has a jointed connection with the frame of the ratchet J. At the upper end of the lever is a pawl, L, Fig. 1, arranged to engage the notches in the ratchet. To the lower arm of the lever is jointed a link, M, which link is connected with the short arm of the lever G. By this arrangement of devices connected with the pawl and ratchet and the attachments with the truck I the front end of the machine may be raised and lowered, so that the scoop E will dip more or less into and out of the ground, as may be required in gathering up the tubers and in drawing the machine from place to place.

On the driving-axle C, to which the wheels A are attached, is a master gear-wheel, N, which meshes into the pinion O, Fig. 2. The pinion O is keyed to the shaft P, and also the sprocket-wheels Q, over which run the sprocket or link belts R. These link-belts connect with sprocket-wheels on the shaft S. By means of this connection of the gearings N O and the sprocket-wheels and the connecting link-belts the shaft S, by this double gearing, is rotated, and in its rotation the endless apron, connected with the endless apron belt or conveyer T, is caused to pass around the shaft S and the shaft U at the lower end of the frame, Fig. 2. Thereby the potatoes, weeds, and stalks, as fast as they are gathered up from the ground by the

scoop as the machine traverses over the potato-field pass from the scoop to the conveyer T, and are carried up and discharged upon the sifter and separator to the rear of the machine, from thence to the ground, to be picked up.

To the shaft S, on one or both ends, is keyed a sprocket-wheel, V, as shown in the enlarged sections, Figs. 3 and 4. This sprocket-wheel is in connection with the link-belts R R. The box W, in which the shaft revolves, is bolted, by the bracket X, to the side of the frame-pieces B, as shown in Figs. 3 and 4, enlarged views. The shaft S is keyed to the sprocket-wheel V at *a*, Fig. 4. From this sprocket-wheel extends a sleeve, *b*, which incloses the journal-box W. One end of the sleeve terminates in a flange, *c*, and the other end—wheel V and hub—keyed to the shaft S by the key *a*. The shaft S extends through the box to admit of a sprocket-wheel being attached thereto for a connection of a chain belt, as at *j*, Fig. 2. This construction of the box in relation to the shaft S and sprocket-wheel V effectually excludes all dirt and dust from the journal and bearing, as the sleeve *b* covers over the journal and its bearing, which is secured in position by means of the bracket X, as shown. This attachment may be arranged to connect with either the outside or inside of the frame or sides and at one or both ends of a shaft.

To the shaft S is hinged the frame or side pieces, C′, of the separator, which separator in part consists of the agitating-screens *d* and *e*, one above the other, and the raking arms *f* and crank-shaft *i*, with their connections, as hereinafter fully described.

Projecting up from the side pieces, C′, are bearings *h*, for the journals of the crank-shaft *i*, Figs. 1 and 2. At the end of this shaft is keyed a sprocket-wheel, to which is connected the link-belt *j*, which extends to and engages a sprocket-wheel on the end of the shaft S, the crank-shaft *i* by this means being revolved for operating the rakes *f f*. The upper ends of these are connected with the bar *k* by means of the links *l l*, which are jointed to the upper ends of the rakes, and also have a free movement upon the bar *k*. The lower ends or foot of the rakes are free, and have also a free connection with the cranks on the crank-shaft *i*, Figs. 1 and 2.

To the sides C′ is hung, by hinged or pivotal links *m m*, on each side the screen-frame *n*, and to this frame is jointed a link, *o*, which is loosely fitted at the other end to a wrist-pin in the wheel *p*, which forms a crank, and by which the screen-frame and screens attached thereto are agitated as the machine traverses over the ground in practical use.

To the screen-frame is attached a post, *q*, to the upper end of which is jointed a connecting-rod, *r*, which is also jointed to the lever *s*, pivoted to the standard *t*, attached to the side pieces, B. The upper end terminates in a ratchet, which is arranged in combination with the pawl *u*, at the upper part of the lever *s*, to hold the screen-frame and its attachments in position when raised more or less from the ground by the lever *s*, linked to the post *q*, attached to the screen-frame or separator at *q′*. It will be noted that this frame, by means of the lever *s* and its connections, will raise up the screen-frame and its attachments from the ground to about the line *v*, Fig. 1, or to an intermediate point, and hold in such position by the pawl and ratchet in connection with the lever *s*. The frame of screens being pivoted to the side pieces, C′, by the links *m m*, Figs. 1 and 5, receives an agitating movement by the rotation of the wrist on the wheel *p*, transmitted by the link O to the screen-frame.

To the cross-bar *t′*, Fig. 5, are attached the screens *d* and *e*. The screens *d* are curved around to carry off and discharge the refuse at the side of the machine. The lower screens, *e*, extend in an angular line or dip in the direction of the ground, as seen in Fig. 1, the central rods being nearer to the ground-line than the upper side ones, so that the central part of this screen is lower than the sides thereof, as shown in Fig. 1—that is to say, the rods at *e′* are lower or nearer the ground than the rods at *e″*—so that they form a gradual curve or angle from *e″* to *e′*. The sides of this screen convey to the center at *e′*, thence to the ground. By means of this peculiar arrangement of the rods of the screen *e* the potatoes are discharged therefrom, after being sifted in the rear of the machine, into a provided receptacle, or are concentrated or so directed by the rods of this screen as to be delivered from the center in a continuous line without being scattered or spread over the ground at the sides of the machine. The tubers being delivered up in a continuous line by the screen *e* admits of their being more readily collected than when spread or discharged at the sides, as in my former patent referred to.

This construction and arrangement of mechanism herein described admits of the potatoes being scooped up by the scoop E, and then moved back onto the conveyer T by the force of the potatoes as they are gathered up by the scoop and carried up to the sifter and screened, whereby the weeds, dirt, and refuse are sifted from them, first, by the open conveyer, then by the agitating-rakers *f f*, and by means of the screens *d e*, Figs. 1 and 2. The refuse is discharged to the side of the machine, and the potatoes separated therefrom are deposited in a row in the rear, to be gathered up.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The journal-box W, the sprocket-wheel keyed to the shaft S, and a flanged sleeve, *b*, extending from the said sprocket-wheel and inclosing the journal-box, in combination with a potato-digger, as and for the purpose set forth.

2. In combination with a potato-digger, the screens *d* and *e*, extending from the head *t′*, one above the other, the upper screen arranged to curve around and discharge the refuse at the side of the machine, and the lower one hav-

ing its side rods higher from the ground than the central rods, forming a convexity in the upper line or face of the screen *e*, to cause a central discharge therefrom, as and for the purpose set forth.

3. The combination, with a potato-digger, of the screens *d e*, arranged with the screen *d* curved around to the side of the machine, and the lower screen, *e*, having the rods extending longitudinally with the central ones thereof in proximity to the ground, and the side ones gradually rising therefrom to form a converging screen from the sides to the center, co-operating in connection with the vibrating screen-frame, and rakers *f f*, by the means and in the manner substantially as and for the purpose set forth.

4. The combination, with a potato digger and separator, of pawl-and-ratchet mechanism, in connection with the lever *s*, link *r*, and standard *q*, arranged to operate in conjunction with the hinged separator-frame, and screen-frame *n*, having screens *e*, substantially as described, and for the purpose set forth.

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

ISAAC W. HOOVER.

Witnesses:
C. L. BURRIDGE,
M. H. KERN.