(No Model.) 2 Sheets—Sheet 1.

I. W. HOOVER.

COMBINED POTATO DIGGER AND SEPARATOR.

No. 382,363. Patented May 8, 1888.

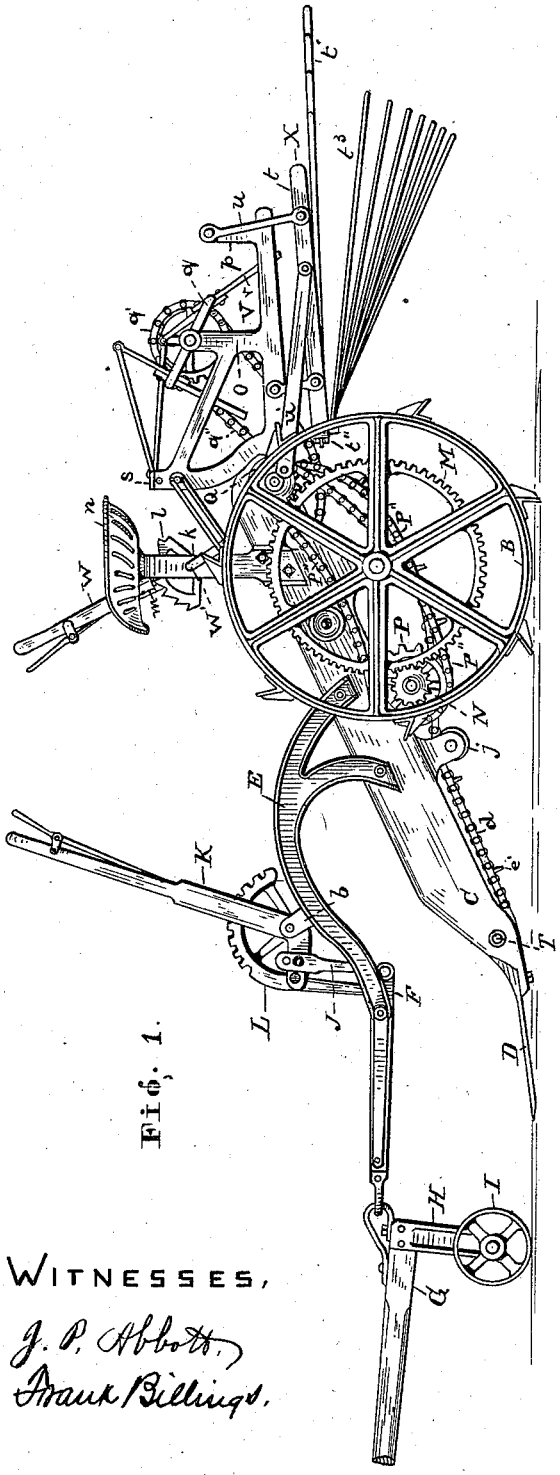

Fig. 1.

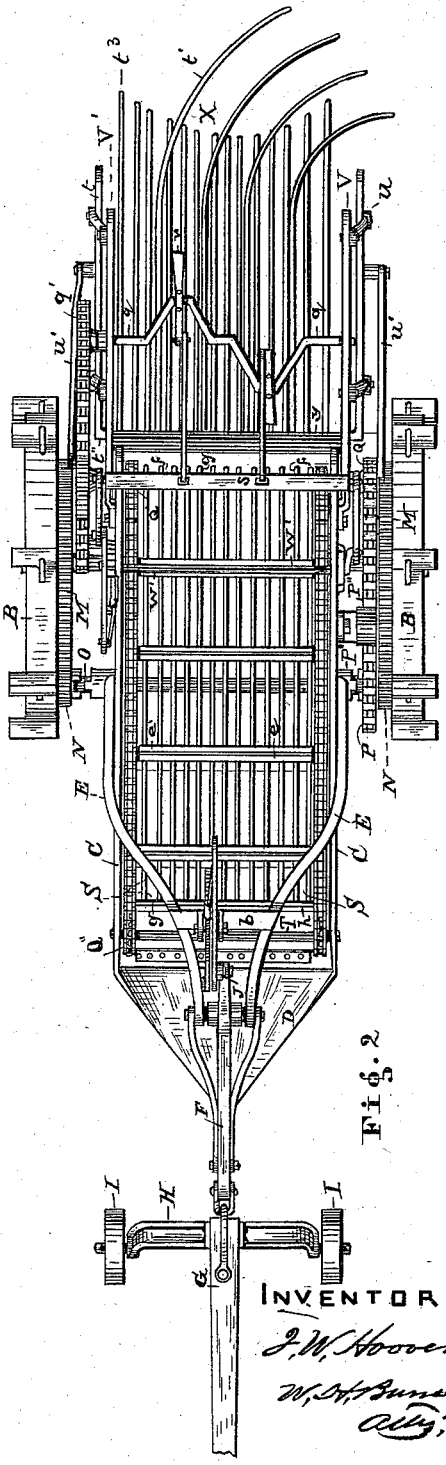

Fig. 2.

WITNESSES,

J. P. Abbott.

Frank Billings.

INVENTOR,

J. W. Hoover.

W. H. Bundy

Atty.

(No Model.) 2 Sheets—Sheet 2.

I. W. HOOVER.

COMBINED POTATO DIGGER AND SEPARATOR.

No. 382,363. Patented May 8, 1888.

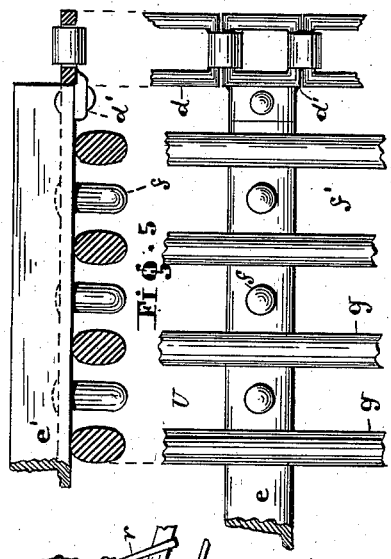

Fig. 5

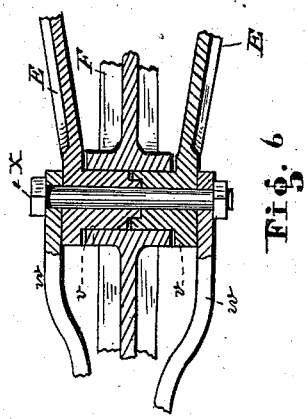

Fig. 6

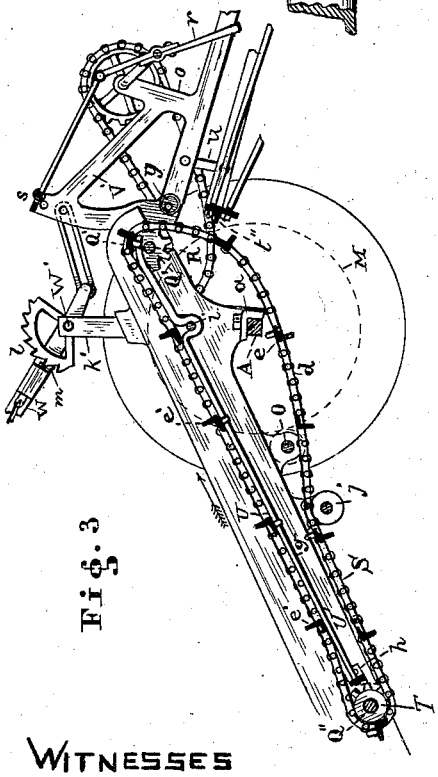

Fig. 3

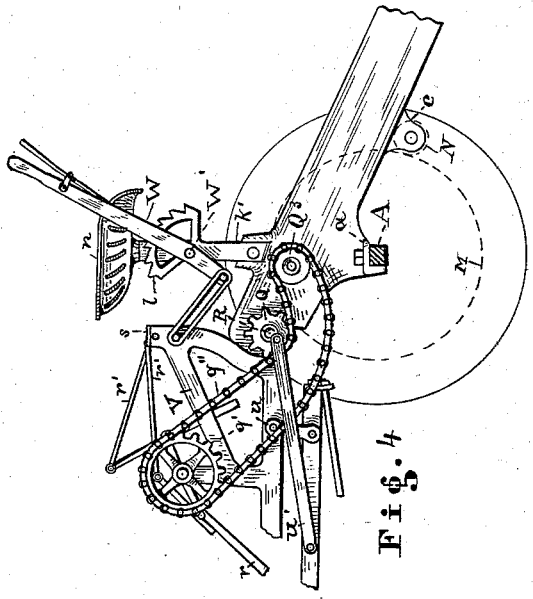

Fig. 4

WITNESSES

J. P. Abbott.

Frank Billings.

INVENTOR.

J. W. Hoover.

W. A. Burridge & Co. Attys.

UNITED STATES PATENT OFFICE.

ISAAC W. HOOVER, OF AVERY, OHIO.

COMBINED POTATO DIGGER AND SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 382,363, dated May 8, 1888.

Application filed August 29, 1887. Serial No. 248,202. (No model.)

To all whom it may concern:

Be it known that I, ISAAC W. HOOVER, of Avery, in the county of Erie and State of Ohio, have invented a certain new and useful Improvement on a Combined Potato Digger and Separator granted to me May, 12, 1886, No. 348,214, of which the following is a specification.

The improvement relates to the construction and arrangement of devices to facilitate the operation of the said machine and to render it more effective.

That the improvements may be fully seen and understood, reference is had to the following specification and to the annexed drawings, in which—

Figure 1 is a side elevation of said machine. Fig. 2 is a plan thereof. Fig. 3 is a partial vertical section of the same. Fig. 4 is a partial elevation of the side opposite that shown in Fig. 1. Figs. 5 and 6 illustrate enlarged detached parts of said machine, to which reference will be made hereinafter.

Like letters of reference refer to like parts in the drawings and specification.

In the drawings, A represents the axle upon which the drivers B B revolve, and to which the side plates, C C, Figs. 1 and 2, are secured, as seen at *a*, Figs. 3 and 4. These plates C C are provided with a scoop-shovel, D, secured between and to the lower front ends thereof. To the sides of the plates C C are attached the arms E, which arms extend up and forward in a sweep to unite at their front ends, forming a pivotal support for the swinging lever F, placed between them, as seen in Figs. 1, 2, and 6, to which figures reference will be made hereinafter. With the outer end of said lever F is connected the pole G and a truck formed by the brackets H and wheels I, by which the machine is drawn by the team. By means of the strap J a hinged connection is had with the short ends of the levers F and K. The lever K is pivoted to a transverse bar, *b*, extending over the arms E, as seen in Fig. 2, and is provided with a spring-latch which engages the notches of the segment L. The segment and lever are for the purpose of setting the scoop D in the various positions necessary in using the machine.

Both the drivers B B are provided with a gear-wheel, M, in which the pinions N engage. Said pinions are fitted to a shaft, O, running across said side plates and journaled within bearings formed in or on said plates, as seen at *c*, Fig. 4. From the gear-wheels motion is imparted to the pinions and shaft when the machine is drawn.

The sprocket-wheel P, Figs. 1 and 2, is loosely fitted to the shaft O, and only tightly coupled to said shaft when the machine is engaged in digging potatoes by means of the coupling P′, which, at will of the operator, can be easily drawn in and out of gear by means of a shifter or other like mechanism. (Not shown in the drawings.) From the sprocket-wheel P runs a link belt or chain, P″, over the wheel Q, which is secured to the shaft R. Suitable bearings are provided for said shaft on or within the side plates, C, to prevent dust from coming in contact with the interior of the bearings. Close to the inner sides of the plates C, on said shaft R, are secured the sprocket-wheels Q′, while near the lower ends of and in the plates C the shaft T is journaled and provided with sprocket-wheels Q″, Fig. 3, which are in line with those of the shaft R, forming guide-wheels, over which the link belts *d* of the elevator S run when driven from the shaft R.

The elevator proper consists of the link belts *d*, which engage in the sprockets of the wheels Q′ Q″, and a number of cross-bars, *e*, as seen in Figs. 2 and 3. Fig. 4 illustrates an enlarged cross-section and an inner side view of a part thereof. For the cross-bars *e* angle-iron is preferably used, and in the link belts a corresponding number of links is provided with lugs *d′*, Fig. 5, which afford by means of a rivet or bolt a simple and strong connection of the parts above described. That side of the angle-iron to which the belts are secured lies flat on the surface of the rack U, and is provided with pins, as seen at *f*, Fig. 5. These pins slide freely within the channels or intervals *f′* of the rack U, preventing said channels from clogging up with earth, small potatoes, or stalks carried up by the elevator S, when the machine is at work. The small parts of earth and stone fall through these channels or intervals *f′*; but the larger parts are carried over said rack by means of the upright sides *e′* of the conveyer-bars *e*, as seen in Fig. 3. The rack U consists of a suitable number of

rods, *g*, which extend longitudinally from the inner side of the shaft T up and over the shaft R and laterally from one link belt to the other, leaving appropriate intervals between them, through which the earth and stones fall. At the lower end the rods *g* are secured to the cross-bar *h*, to which is fastened the side plates, C, as seen in Fig. 3. Near their upper end support is had for them by means of the rod *i* and a loop formed by the rod *g* to encircle the rod *i*, which also is provided with a thimble (not shown in the drawings) to keep the longitudinal rods in their proper position and the required distance apart.

The conveyer runs in the direction of the arrow, Fig. 3, and after leaving the sprocket-wheels Q′ in its return course it passes below the axle A and over the guide-wheels *j*, as seen in Figs. 1 and 3. Said guide-wheels *j* assure a closer contact of the belts and wheels and prevent the dragging of the belt near the front part of the machine.

In the rear part of the machine above described is arranged a combination of devices by means of which the potatoes and weeds carried up by the elevator are so separated and delivered from the machine as to require but little labor to gather up the potatoes as the machine moves along, as hereinafter more fully set forth. To the shaft R are hinged the brackets V V′, as seen in Figs. 1 and 2, which are connected by means of links to the short end of the lever W on one side and to the arm of the rod W′ on the other side of the machine. The rod W′ has its bearings in the standards *k k′*, which standards project up from the side plates, C C, Figs. 1, 3, and 4. To the standard *k′* is attached the segment *l*, in the teeth of which the pawl *m* of the lever W is supported in holding up said brackets and their attachments in any position required in the practical use of the machine. To the standards *k k′* is also, in any convenient manner or by any suitable means, attached the seat *n*, as seen in Figs. 1 and 4 only. To avoid obstructing the view of other parts this seat is removed in Fig. 2.

The seat for the use of the operator is intended to give him a suitable position for controlling the operation of the machine and directing the team.

The brackets V V′ are provided with arm-like projections *o* and *p*, whereof the termination of the arms *o* are provided with bearings for the crank-shaft *q*, (see Figs. 1 and 2,) to which motion is imparted by means of sprocket-wheel *q′* and link belt *q″*, held in gear with the wheel Q by the aid of the guide-pulley Q^3. With the crank-shaft *q* are pivotally connected the rakes *r*, Figs. 1, 2, and 3, the upper ends of which have a loose connection with the transverse bar *s* by means of the rods *r′*. Said bar *s* is attached to the brackets V V′, the rods being hinged to the bars, Figs. 2 and 3. The rakes are for the purpose of drawing along and discharging out at the side the weeds and stalks elevated onto the separator X, Figs. 1 and 2, which separator consists of the frame *t* and a number of curved rods, *t′*, inserted into the end bar, *t″*, of said frame. (See Fig. 3.) Said rods extend out in line, or nearly so, with the side bars of the frame *t;* but laterally they are curved to one side of the machine for the purpose of discharging the refuse to one side when moving along in the field.

The frame of the separator X is hinged to the brackets V V′ by means of the hangers *u u* and agitated by the straps *u′*, which have a pivotal connection with the wrist-pins of the wheels Q Q, as seen in Figs. 1, 2, and 4. To free the potatoes from the earth still adhering to them, a screen is placed directly below the rods *t′*, consisting of a series of rods, t^3, Figs. 1 and 2, which are also inserted or attached to the bar *t″*, but in much closer relation to each other than the rods *t′*. Owing to the peculiar manner in which this screen of rods is formed, the potatoes are delivered therefrom to the ground in a concentrated row or continuous line. Between the brackets V V′, and close to the elevator S, is arranged the roll Y, the purpose of which is to facilitate the conveyance of the potatoes and stalks onto the separator and prevent them from falling down between said elevator and separator.

Fig. 6 illustrates an enlarged sectional view of the means by which the arms E are held in line with each other, and for that purpose each end of said arms is provided with a boss, *v*, whereof one is provided with a projection which fits into the countersink of the other. Externally the bosses serve as a pivot for the lever F, which in turn, by the aid of the braces *w*, assure a most rigid and durable connection when united by the bolt X, running centrally through them. The braces *w* extend and are connected with the front end by the lever, as seen in Figs. 1 and 2, as before described.

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

1. In a potato digger and separator, the elevator S, consisting of the endless link belts *d*, and angular cross-bars *e*, provided with pins to move in between the spaces of the rack U, underlying said elevator S, substantially as described, and for the purpose set forth.

2. The combination of the arms E, provided with bosses *v*, the lever F, pivotally connected with said bosses, the braces *w*, and the bolt *x*, uniting them with said arms and lever, substantially as shown and set forth.

3. In combination with the potato digger and separator combined, the truck I, lever F, and braces *w*, pivotally attached with the arms E and lever K, substantially as described, and for the purpose specified.

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

ISAAC W. HOOVER.

Witnesses:
W. H. BURRIDGE,
B. F. EIBLER.