

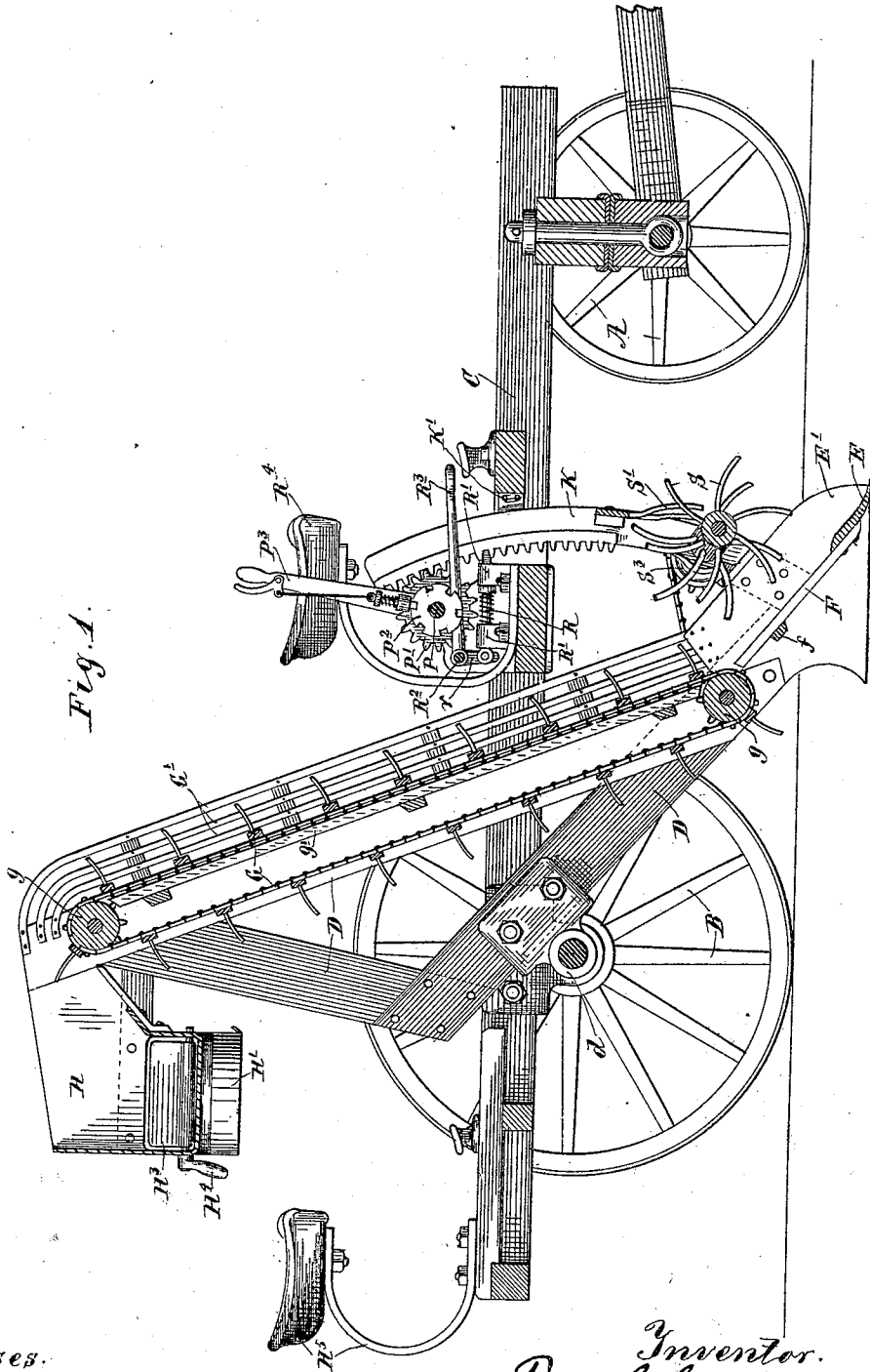
(No Model.)

3 Sheets—Sheet 1.

F. SCHAEFER.
POTATO HARVESTER.

No. 515,171.

Patented Feb. 20, 1894.



Witnesses.
A. H. Opsahl
E. F. Elmore.

Inventor.
Fred Schaefer
By his Attorney.
Jas. F. Williamson

(No Model.)

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Fig. 2.



Witnesses.

A. H. Osahl,
E. F. Moore

Inventor.

Fred Schaefer
By his Attorney.

Jas. P. Williamson

(No Model.)

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Fig. 3.

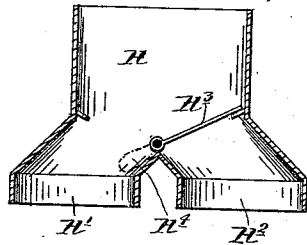
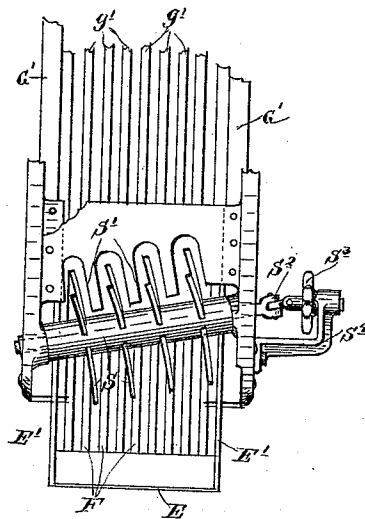


Fig. 4.



Witnesses
A. B. Opsahl.
E. F. Elmore.

Inventor.
Fred Schaefer
By his Attorney.
Gas. F. Williamson

UNITED STATES PATENT OFFICE.

FRED SCHAEFER, OF MINNEAPOLIS, MINNESOTA.

POTATO-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 515,171, dated February 20, 1894.

Application filed May 9, 1892. Serial No. 432,238. (No model.)

To all whom it may concern:

Be it known that I, FRED SCHAEFER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Potato-Harvesters; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to potato harvesters; and has for its object to provide an improved machine for this class of work.

To this end, the invention consists of certain novel devices and combinations of devices, which will be hereinafter fully described and be particularly defined in the claims.

A machine, constructed in accordance with my invention, is illustrated in the accompanying drawings, wherein, like letters referring to like parts throughout the several views—

Figure 1 is a longitudinal vertical section through the entire machine. Fig. 2 is a plan view of the same, some parts being broken away. Fig. 3 is a transverse vertical section of the receiver detached, looking toward the rear; and Fig. 4 is a front view of a part of the digger proper and of the vine clearer.

A B C represents a four wheeled truck; of which A are the front wheels, B the rear wheels, and C the truck frame.

D is a triangular frame for supporting the digger proper and its immediately connected parts. This frame extends upward through the truck frame and is pivoted on the rear truck axle as shown at *d*. At its lower end, this frame carries a shear or shovel E set between vertical side mold boards E'. These parts constitute the digger proper and serve to turn up the ground and unearth the potatoes, under the forward motion of the machine, the shovel being of a width equal to that of the row of potatoes. Directly back of the shovel, extending at an upward incline, is located a grating F, which is conveniently made of iron bars arranged lengthwise of the frame; which bars, as shown, are secured at their lower ends to the back of the shovel, and at their upper ends project over and are

secured to a cross-bar *f*, which is fixed to the digger frame. The bars of the grating are spaced apart sufficiently far to permit the free passage backward through the openings of the loosened up earth and the small, worthless potatoes.

Directly back of the grating, and extending upward therefrom, is located an elevator, which consists of a chain and toothed slat, endless carrier G, sprocket wheel drums *g* supporting and driving the carrier, and the slatted elevator deck *g'*. The elevator is so related to the grating, at its lower end, that the teeth on the slats of the endless carrier will work through the slots or spaces between the bars of the grating. The elevator is also provided with slatted side boards G'. The openings between the slats of the elevator deck and of the side boards, permit the free passage therethrough, of any loose dirt or small, worthless potatoes which may be carried upward by the endless carrier, while retaining the potatoes of the desired grade.

H is a receiver secured to the digger frame at the head of the elevator, and receiving from the endless carrier. This receiver is provided with two discharge chutes or bagger heads H' H²; and a shunt valve H³ with hand lever H⁴, located at the angle of the bagger heads, for alternately discharging the potatoes through one or the other of the said heads at will.

H⁵ is a seat fixed to the rear end of the truck frame in convenient position for a workman to handle the bags or other receptacles into which the potatoes are discharged from the bagger heads.

The digger frame carries, near its lower end a pair of segmental racks K, which extend upward through the truck frame. As shown, these lifting racks work between keepers K' fixed to the side bars of the truck frame. On the top of the truck frame is located, a cross shaft P, which is provided with a pair of pinions P' which engage with the said racks. This shaft, which for distinction may be called the lifting shaft, is also provided with a notched disk P², with which engages the latch of a hand-latch lever P³. This latch-lever is loosely pivoted on the lifting shaft, and by means of the same, in co-operation with the notched disk, the shaft may be

turned and through the pinions and racks, the lower end of the digger frame may be raised to any desired level. Spring seated lock bolts R are mounted in suitable bearings R' on the truck frame, which under the action of their springs normally engage with the racks, and serve to hold the same in whatever position they may be set by the lifting shaft and pinions. Both of these lock bolts are connected through bell cranks r, with a rock shaft R², mounted in bearings on the truck frame and provided with a forwardly extended foot lever R³. The driver's seat R⁴ is located on the truck within convenient reach of the hand lever P³ and the foot lever R³. By the coincident use of the foot lever and the hand lever, the operator may raise or lower the shovel end of the digger frame at will.

Directly above the shovel and grating, in position for action on the vines, as the earth is lifted and loosened up by the shovel, is located a vine clearer S. This vine clearer consists of a drum like shaft and radial spring fingers. The shaft is journaled in suitable bearing lugs projecting from the lifting racks. The vine clearer is set at an oblique angle to the line of draft so as to conduct the vines to one side of the machine. The teeth of the vine clearer work through a clearing comb S' which is fixed to the lifting racks above the vine clearer. The vine clearer shaft is connected at its left end by a knuckle joint S², with the hub of a sprocket wheel S³ which is journaled in a bearing bracket S⁴, projecting from the left hand lifting rack. This vine clearer sprocket is connected by a chain S⁵ with a sprocket S⁶ on the left end of the lower elevator drum shaft. At its right end this elevator drum shaft is connected by a pair of miter gears T, with the main driving shaft T', which is mounted in suitable bearings T² projecting from the side of the digger frame, and is provided at its upper end, with a bevel pinion T³ in engagement with a bevel gear T⁴ cut on the hub of the right hand member of the rear truck wheel. Through this train of gearing, motion is imparted from the drive wheels of the truck to the endless carrier of the elevator and to the vine clearer.

The operation of the machine is obvious. The lower end of the digger frame is lowered so as to set the shovel to the desired depth of cut; and, under the forward motion of the machine, the earth and potatoes will be forced upward over the grating; and as the earth is loosened up, the vine clearer will catch the vines and throw the same forward and outward to one side of the machine. In other words, the clearer works against the top of the furrow as lifted up and loosened by the

shovel. The loosened dirt and the small potatoes will, for the most part, pass directly backward through the grating. The desirable potatoes and some of the dirt will be forced upward onto the endless carrier and be thereby elevated over the carrier deck. In this part of the travel, the balance of the dirt and the small potatoes will be dropped out or through the elevator and the desirable potatoes will be delivered at the head of the elevator into the receiver K. From this receiver they are discharged into bags or other receptacles, as hereinbefore stated.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. The combination with the truck, of the digging-frame carried thereby, the shovel at the lower end of said frame and a vine clearer, located for action on the ground or vines as lifted by the shovel, said vine clearer comprising a revoluble drum provided with projecting fingers, the said drum being arranged with its axis at an oblique angle to the direction of the machine's travel, whereby the vines will be thrown forward and toward one side, under the action of the clearer, substantially as described.

2. The combination with the truck, of the digging-frame carried thereby, the shovel at the lower end of said frame and a vine clearer located for action on the ground or vines as lifted by the shovel, said vine clearer comprising the revoluble drum provided with projecting fingers, and the fixed comb through which the fingers of said drum work, the parts being arranged and operating, substantially as described.

3. The combination with the truck, of the digger-frame, the shovel on the lower end of the frame, and the vine-clearer consisting of a shaft or drum located at an oblique angle to the line of the machine's travel and provided with radial spring-arms for engaging the vines and removing the same out of the way as the furrow is lifted by the shovel, substantially as described.

4. In a potato digger, the combination with the elevator D. G, pivoted on the truck axle, of the receiver H, rigidly secured to the head of the elevator and provided with the pair of projecting divergent chutes H' H², and the shunt valve H³ and lever H⁴ at the convergent angle of the said chutes, substantially as, and for the purpose set forth.

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

FRED SCHAEFER.

Witnesses:

JAS. F. WILLIAMSON,
E. F. ELMORE.