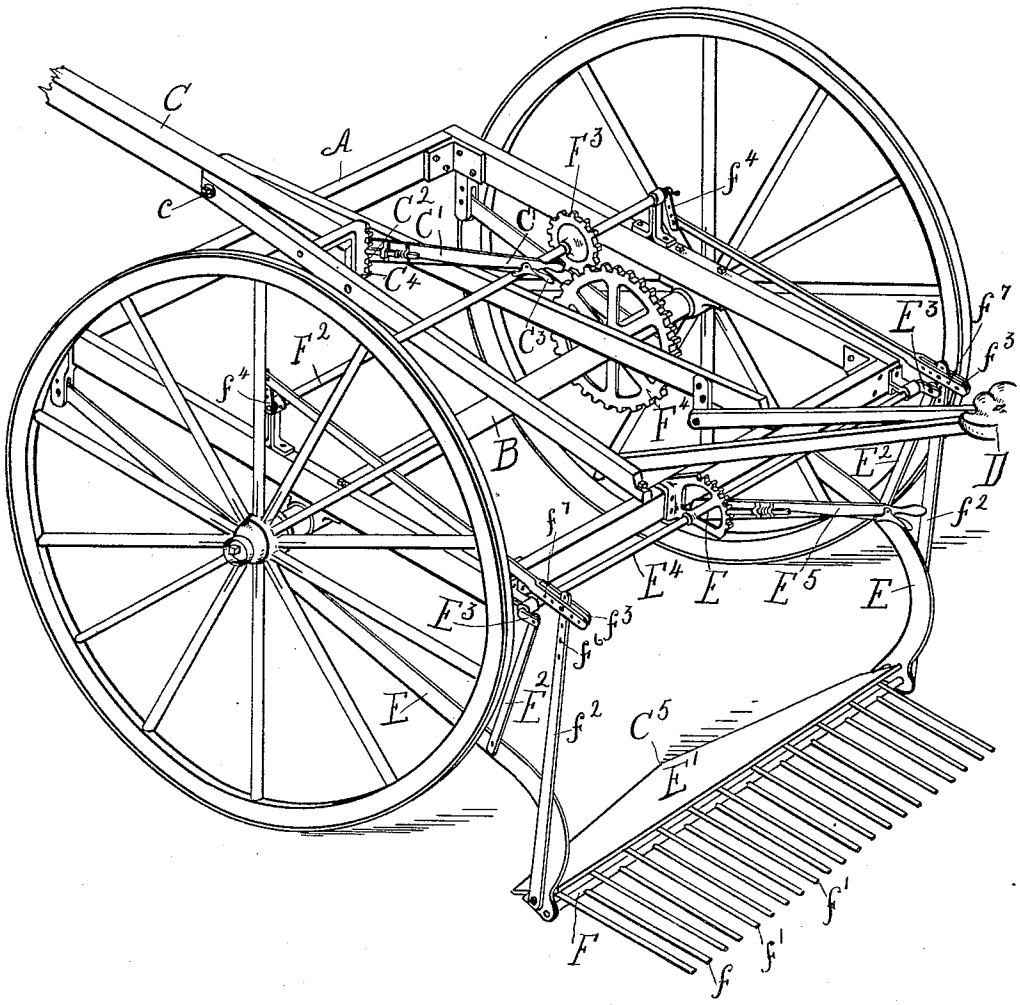
(No Model.)

J. E. KELLY & F. R. HOWELL.

POTATO DIGGER.

No. 480,590. Patented Aug. 9, 1892.



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POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 480,590, dated August 9, 1892.

Application filed May 25, 1891. Serial No. 393,999. (No model.)

To all whom it may concern:

Be it known that we, JOHN E. KELLY and FREEMAN R. HOWELL, citizens of the United States, residing at Highland Station, county of Oakland, State of Michigan, have invented a certain new and useful Improvement in Potato-Diggers; and we declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, which forms a part of this specification.

Our invention relates to finger or grate bars in that form of a potato-digger in which the potatoes after being loosened by the digger pass onto a grate and are there settled and soiled by the agitation of the grate, and more particularly to a grate provided with a series of fingers fixed rigidly thereto, in combination with a rocking grate or finger bar located just back of and a little below the said digger, as further described.

In the drawing is a perspective view of a potato-digger embodying our invention.

In carrying out our invention, A represents the frame of the machine, B the axle, and C the pole. The pole is pivoted at *c*, and at its rear end is a handle C′, attached to the pole and provided with a detent C^2, actuated by a handle C^3.

C^4 is a segment connected with the frame, the construction being such that the operator can at will engage the detent, raise or lower the rear end of the pole, and re-engage the detent with the segment, thus locking the pole in its new position, thereby giving any desired general set to his frame and through it to the digger.

D is the driver's seat.

E represents the draft-bars, which are curved downward at their rear ends and support the digger or blade E′, provided with fingers at its rear, and also the rocking finger-bar *f*. The said blade projects forward at its middle point C^5, so that it enters and passes through the ground with more or less of a drawing cut, and this construction also stiffens the blade. This blade may be either rigid or adapted to rock, as may be desired.

The advantage in a rocking blade is that the potatoes are to a great extent thoroughly loosened from the dirt, even before they have reached the fingers at the rear of the blade or the finger-bar still farther back by the continuous prying of the blade as it passes through the ground, thereby thoroughly loosening and breaking the dirt about the potatoes. Another advantage of the rocking blade is that it frees itself readily from all small roots, grass, straw, &c.; also, the advantages of combining the fingers with the blade are that by so doing one finger-bar is dispensed with, thereby not only cheapening the machine, but materially decreasing its load and weight; also, the blade and rear finger-bar can be employed in a much flatter position, and they also cause less friction in the dirt than a rigidly-inclined blade and two finger-bars, and also the fingers, extending beyond the pivotal point at the rear of the blade and over which dirt must pass, form a balance finger or grate bar—that is, such a construction permits the dirt in passing over the fingers at the rear of the bar to overcome to a certain extent the force brought to bear upon the point of the digger which is in the ground, and thereby to a certain extent balances the digger. When the digger-blade, with its fingers, is made rigid, then the potatoes are separated from the dirt by means of the fingers of the rear finger-bar interacting between the fingers at the rear of the blade.

E^2 represents links rising from the draft-bar E and engaging with the projections or cranks E^3 upon the tilting shaft E^4. A handle E^5 is located adjacent to the rider, which sweeps over the segment E^6, by which the rider may raise or lower the digger, lifting it entirely out of the ground or giving it any desired depth of cut, and may secure the same in any position of adjustment through the medium of the segment.

F represents the rear rocking finger-bar. It may be arranged in the same or substantially the same horizontal plane with the digger-blade, so as to occupy as little vertical space as possible. Each alternate finger *f* is attached to the rocking shaft F, while the remaining fingers *f*′ are attached to the rear of the digger-blade.

f^2 represents levers, of which one rises from

the axle of the digger-blade and the other from the axle of the rear rocking finger-bar. The top of each lever is connected by a rod or pitman f^3 with the crank f^4 on the ends of the crank-shaft F^2. These cranks f^4 may be provided longitudinally with orifices adapted to receive the wrist-pins of the pitman f^3. They also may be adapted to be turned upon the said shaft F^2 at quarters or any other desired position in respect to each other and to be fixed in such positions by set-screws or any desirable means. Upon this crank-shaft F^2 is a gear-wheel F^3, which engages with a gear-wheel F^4 on the axle of the machine, so that as the machine is drawn along the motion of the axle is transmitted through the crank-shaft F^2 to the rocking shaft F and the rocking blade, causing them to rock back and forth, giving to the fingers f and f' a rising-and-falling motion. It is apparent that if the cranks f^4 are similarly located at both ends of the crank-shaft the fingers f and f' will be maintained always in the same plane and caused to rise and fall together; but if these cranks are upon diametrically-opposite sides of the crank-shaft then as the fingers f rise the fingers f' fall and their relative motions vary as the relative position of the cranks vary. Again, the amount of the vibration will be determined by the distance of the wrist-pins from the center of motion of the crank-shaft, and this distance may be varied as desired by adjusting the wrist-pin of the pitman f^3 in the orifices longitudinally of the cranks f^4; also, the ordinary adjustment of the throw of the fingers can, if preferred, be made by means of the series of holes f^6 in the upper part of the levers f^2, and the pitch or angle of the fingers can be adjusted by means of the hole f^7 in the connecting-rod f^3.

What we claim is—

1. In a potato-digger, the combination, with a rocking digger-blade provided at its rear with a series of fingers, of a rocking finger or grate bar provided with fingers adapted to interact between the fingers of the said blade, substantially as described.

2. In a potato-digger, the combination, with a balance rocking digger-blade provided at its rear with a series of fingers, of a rocking finger or grate bar provided with fingers adapted to interact between the fingers of the said blade, substantially as described.

In testimony whereof we sign this specification in the presence of two witnesses.

JOHN E. KELLY.
FREEMAN R. HOWELL.

Witnesses:
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