D. M. KING.

POTATO DIGGER.

No. 190,971. Patented May 22, 1877.

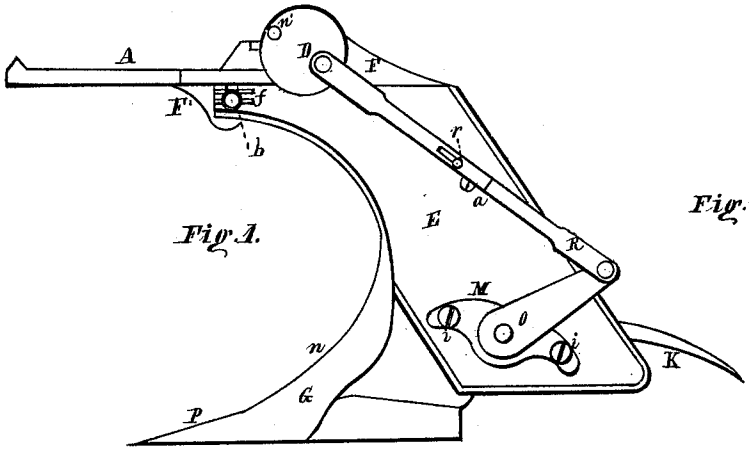


Fig. 1.

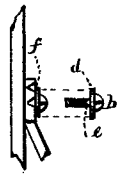


Fig. 7.

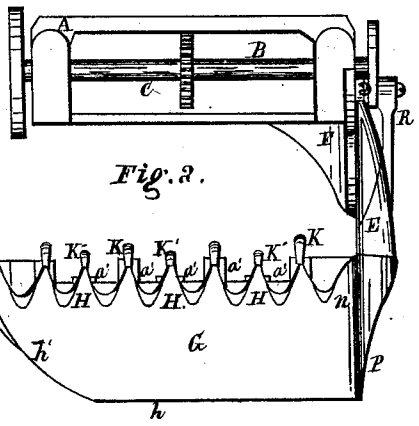


Fig. 2.

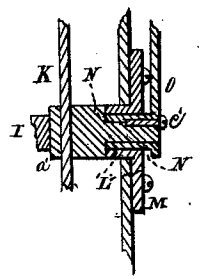


Fig. 3.

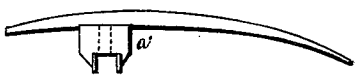


Fig. 4.

Fig. 5.

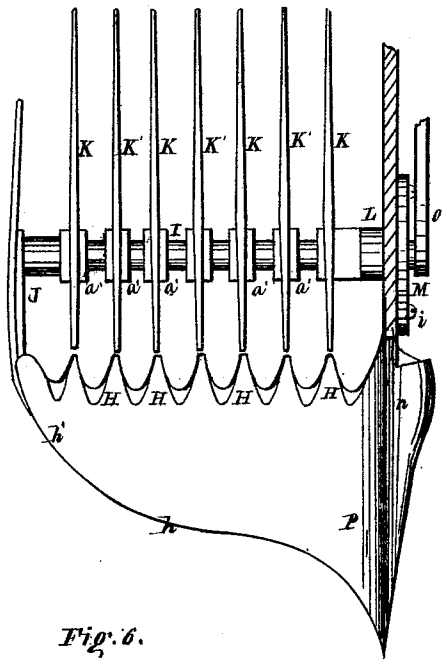
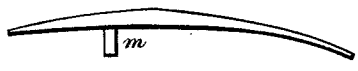


Fig. 6.



Witnesses:
H. C. Rose
Julius Scheldt

Inventor:
D. M. King
Per Burridge & Co.
Attys.

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DAVID M. KING, OF MANTUA STATION, OHIO.

IMPROVEMENT IN POTATO-DIGGERS.

Specification forming part of Letters Patent No. **190,971**, dated May 22, 1877; application filed February 26, 1877.

To all whom it may concern:

Be it known that I, DAVID MILES KING, of Mantua Station, in the county of Portage and State of Ohio, have invented new and useful Improvements in Machines for Digging Potatoes, of which the following is a description, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a side view of a detached section of the machine, to which are applied the improvements referred to. Fig. 2 is a front view of Fig. 1. Figs. 3, 4, and 6 are detached sections. Fig. 5 is a sectional plan view of Fig. 1. Fig. 7 is a detached section.

Like letters of reference refer to like parts in the several views.

The nature of this invention pertains to certain improvements on a potato-digging machine, by which said machine is rendered more durable in its construction and more efficient in its operation than a machine for the same purpose for which a patent was granted to me March 31, 1874.

The improvements referred to and the operation of the same are substantially as follows:

The power for operating the digging mechanism herein described is obtained by a pair of driving-wheels, on which is supported, in part, the frame of the machine, together with an arrangement of gearing for operating the said mechanism, which, however, is not shown in the drawings, it being substantially the same as that described and shown in a former patent, and forming no part of, nor essential to a full understanding of, the improvements herein set forth.

In the drawings, A represents the rear section of the frame of the digging mechanism, and by which it is attached to the front or power section of the frame alluded to. B is a shaft, journaled in suitable bearings across the top of the frame, and carrying a cog-wheel, C, whereby the digging mechanism is put in connection with the operative power referred to.

On the end of said shaft is a crank-wheel, D, to which reference will hereinafter be made. E is a standard, attached to the frame as follows: At the rear end of the frame A is a flange, F, to the lower end of which the standard is secured by a screw, *a*, Fig. 1, and to the upper part of the flange at F′ by a set-screw, *b*, inserted in a slot made in the standard, and screwed into the flange of the frame, as shown in the drawing.

By means of the slot in the standard said frame and standard can be adjusted in respect to each other, for a purpose presently shown. To prevent the screw *b* from slipping in the slot—that is to say, to hold the standard in its connection with the frame from slipping—a washer, *d*, Fig. 7, is placed under the head of the screw. Said washer is provided with a nib, *e*, which, when the washer is screwed up against the slot, fits in a groove, *f*, Fig. 7, made across the slot, as shown in Fig. 1.

To the front edge of the lower part of the standard is secured a share, G, having a curved cutting edge, *h*, Fig. 5. Along the rear edge of the share is a series of teeth, H, as shown in the drawing. I, Fig. 5, is a rock-shaft, having bearings in the standard and in the arm J. To said shaft is secured a series of teeth or fingers, K and K′. The fingers K, as will be seen in the drawings, are higher above the shaft at their junction therewith than the fingers K′, they being in alternate relation in respect to height, as shown in Fig. 2. The arrangement of the fingers on the shaft is such as to place them in a right line, respectively, with the teeth H of the share, and near to them, but not so close as to touch, as will be seen in Fig. 5. Said fingers are not secured to the shaft by one end, but at some distance back therefrom, so that a portion of the length of the fingers project forward beyond the shaft, and the remaining part toward the rear; hence, when the shaft is rocked, there will be a vibration of both ends of the fingers.

Said fingers are secured to the shaft as follows: On the shaft are gain blocks or cheeks *a′*, between which are placed the fingers, the pin *m*, Fig. 6, of which passes into a hole in the shaft, and projects through to the under side, as indicated by the dotted lines in Fig. 4. The pin is then riveted down in a groove, as shown in the drawing. In this way the

fingers are firmly secured to the shaft, and held from a lateral vibratory movement by the cheeks a', which serve as braces to hold the fingers firmly in place.

The crank end of the rock-shaft has not a direct bearing in the standard, but is held therein by a bush or sleeve, L, Figs. 3 and 5, projected through the standard, and secured to the same by a flange, M, and screws i, Fig. 1. Said sleeve forms the journal-seat of the shaft. In said sleeve is fitted loosely the hub N, Fig. 3, of the crank O, and in the hub is tightly fitted the end of the rock-shaft, and which is prevented from turning therein by a pin or screw, c', inserted partially in the hub and partially in the end of the shaft, as shown in Fig. 3.

It will be obvious that in securing the shaft in the hub so that it cannot turn therein, the hub, in consequence, becomes the bearing of the shaft, the sleeve being a journal box or seat, in which the hub revolves when actuated by the crank O.

The object in thus isolating the shaft from an immediate contact with a journal-box is to prevent that end of the shaft from rapid wearing, to which it is liable in consequence of dirt, sand, &c., finding its way to the journal by reason of its nearness to the ground, where it is loosened up by the share.

In the event of the bush or sleeve and the hub of the crank wearing out, they can be more readily and cheaply replaced than a new shaft. Hence the expense in keeping the machine in working condition will be much less than if the shaft ran directly in a journal box or seat, as did the shaft in my patented machine alluded to. In said machine were two sets of fingers, termed "shakers," two standards, and a double share.

The two standards and shares were found objectionable, for the reason that the shares threw the dirt toward the center between the standards, and said standards would not allow an immediate escape of the dirt thrown up between them by the shares. Hence a packing of the dirt and a lodgment of it in and about the machine prevented it from working as well as could be wished.

In this present machine one standard, one share, and one shaker only are used, which permit the earth, vines, weeds, &c., to pass off readily from the machine, and not lodge in and about it. Hence the machine works with less draft and without clogging.

The machine having but one share, the dirt is not thrown toward the middle, but lies loosely upon it, and slides back onto the shaker without packing.

In my former machine the fingers composing the shaker were secured to the shaft by one end instead of back therefrom, as in this new machine, also, there were no teeth at the rear of the share.

In this particular a great advantage is had over my former machine, as the dirt is immediately shaken on leaving the share, and more thoroughly for sifting the potatoes therefrom. The dirt is broken and shaken up by the front ends of the fingers before passing over the shaft to the rear part of the fingers, where the dirt is fully sifted.

The purpose in having some of the fingers higher than others, as above described, is to facilitate the breaking up of the dirt as it slides back from the share onto them. The spaces between the elevated fingers cause the dirt to break up more readily than if the fingers were all of equal height at their junction with the shaft. Hence the separation of the potatoes from the dirt is more immediate and complete when agitated by the rear end of the shaker, both the extreme ends of the fingers of which are of equal height.

It will be observed that the cutting or dividing line n of the share is in a right line with the inner side of the standard; therefore the dirt raised by the share will pass directly back onto the shaker without being crowded toward the middle—a fault in my former machine, for the cutting or dividing lines of the shares were not straight or in line with the inner side of the standards, but, on the contrary, the mold-boards of the shares were mainly on the inner side of the dividing line or edge of the shares, instead of on the outer side, as in this improved machine, the result of which was, as above said, a crowding of the earth toward the middle of the shares. As a consequence, the earth became more or less packed, and, therefore, more difficult to break up and sift. This difficulty is avoided in this machine, as the upturned dirt is not crowded in that direction.

It is necessary to run the share deeper in some grounds than in others. To adjust the machine to this end is the purpose of the adjustable connection of the standard with the frame above described, which, by slackening the set-screw b and shifting the position of the frame upward or downward in its relation to the share, will cause said share to run deeper or less deep in the ground, as the case may be.

In the event it may be required to change the elevation of the shaker, it can be done by shortening or lengthening the pitman R. To this end said pitman is made in two sections, and connected to each other by a set-screw, r, inserted in a slot for the adjustment of the pitman, for the purpose aforesaid.

The vibratory action of the shaker may be increased or diminished by shifting the wrist-pin in the crank-wheel from its present place to the hole n', or from the hole n' to its present place, as the case may be.

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

1. The fingers K and K′ and pin m, in combination with the shaft I and gain-blocks a', substantially as described, and for the purpose set forth.

2. The standard E, arranged in relation to the dividing-edge *n* of the share G, so that the inner side of said standard shall be in a right line with the dividing-edge *n*, as described, and for the purpose specified.

3. The sifting-fingers K and K′, arranged in an alternating relation to each other in respect to height, and projecting from each side of the shaft I, as herein set forth, and for the purpose specified.

DAVID MILES KING.

Witnesses:

J. H. BURRIDGE,

HENRY WELLINGTON.