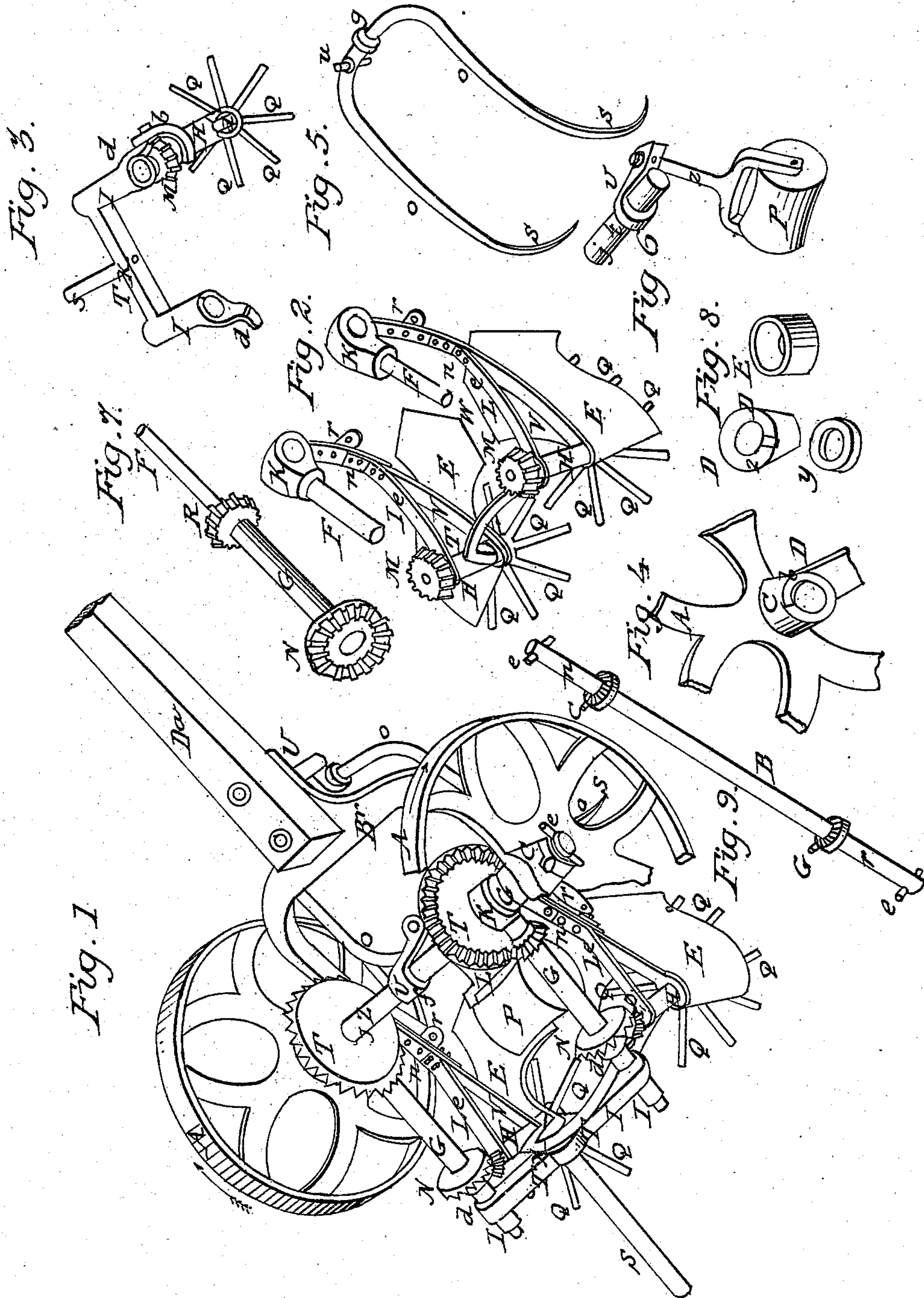


E. T. FORD.
Potato Digger.

No. 81,765.

Patented Sept. 1, 1868.



WITNESSES:
Saml. Eddy
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United States Patent Office.

ELIAS T. FORD, OF STILLWATER, NEW YORK.

Letters Patent No. 81,765, dated September 1, 1868.

IMPROVEMENT IN POTATO-DIGGER.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ELIAS T. FORD, of the town of Stillwater, in the county of Saratoga, and State of New York, have invented new and useful Improvements in a Potato-Digger; and I do hereby declare that the following is an exact and full description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in the arrangement of the several parts with the angle of the dividers E E and shafts J J, armed with teeth Q Q Q Q, rotating within the tubes H H, used for digging potatoes.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I now locate the tube J z, with frame Z, roller P, shank v, seen in Figure 6, with the bevel-gears T T upon the main axle B of the drive-wheel A A, seen in Figure 1. The tubes G G, with the rear bevel-gear N N, are inserted upon the extremities of the tubes G G, and the tubes with the gear are located upon the shafts F F, as seen in Figure 7, and a portion of each shaft F is seen in Figure 2, attached to the shanks K K permanently.

To the rear portion of the dividers E E, I erect the tubes H H, with arch-section T, and further connect the tubes H H, with arch T, to the axle-shanks K K by the flat draught-bars V V, which are in two parts each, and are connected at the point n n in front of the brace-bars L e L e, which extend to the rear and embrace the upper portion of the tubes H H.

Through the tubes H H, I insert the shafts J J, armed with teeth Q Q Q Q, and projecting through the tubes, so as to receive the two bevel-pinions M M upon their top extremities, as seen in fig. 2 and Figure 3. Above the braces L e L e, are two bent sections b b, located upon the top extremities of the tubes H H. One may be seen in fig. 3, and fig. 3 farther represents the section T z, with the sleeves I I and the arms or centres d d, attached to the front extremities of the sleeves I I.

I now locate the sections K K and attachments, with the dividers E E, upon the main axle B, as seen in fig. 1 and Figure 9, outside of the bevel-gear T T, and the tubes G G being upon the bearing-shafts F F; they answer also for a portion of the frame with the other attachments.

The section T z with sleeves I I, is located upon the rear extremities of the shafts F F, and is made fast thereto, the arms or centres d d resting within the section b b, as seen in fig. 1 and fig. 3.

The flat bars V V with brace-bars L e L e are adjustable by means of the connections at the points n n, connecting them with bolts.

The rear extremities of the pole-section B, as seen in fig. 6, extend to the rear underneath the main axle, and are connected to the lugs r r, formed with the front portion of the flat bars V V, and secured by pivot-bolts, and may be adjustable by altering the location of the lugs r r upon the bars V V, thereby producing more or less draught and pitch upon the dividers E E. Underneath the pole-section B, I locate the swivel U within the lug v, and through the swivel U the vine-cutter o o is inserted by removing the pin u, as seen in Figure 5, after which the pin u is replaced, that with the fixed collar g holds the cutter in position, and extending back underneath the axle B, so that the curves with the knives S S are upon a perpendicular line with the main axle, or nearly so, and the swivel U permits the vine-cutter o to move, and corresponding to the uneven surface of the hill of potatoes or ground. There may be devices used for elevating and controlling it in other respects.

Fig. 9 illustrates the main axle B, with the fixed collars G G. They may be secured to the axle by set-screws.

Figure 4 represents a portion of one drive-wheel, A, with the form of the cam 3 D cast with the hub C.

Figure 8 shows the conical section D, with the corresponding cam 2 D belonging to the cam 3 D of hub C. The section E is the hollow sleeve E, the interior surface corresponding to the exterior surface of the conical section D turned and fitted to each other.

I now locate the drive-wheels A A, as seen in fig. 1, upon the axle-bearings r r, the inner surface of their hubs being adjacent to the fixed collars G G, as also seen in fig. 9. The sections D D are now inserted upon the axle B, the corresponding cams 3 D and 2 D come together, forming a lock. Next in order, the sleeves E E

are inserted upon and over the sections D D. Fourthly, the rings or loose collars Y Y are placed upon the axle-bearings *r r*, and all of which are retained upon the main axle B by means of nuts or the pins *e e*.

The bevel-gear T T is fixed stationary upon the axle B, and there is no pressure upon the sections K K caused by the friction-pressure of the drive-wheels A A.

The arch T is connected to each tube H H and rear section T *x*, affording stiffness to the tubes H H. The space W, between the dividers E E, prevents the hill from shoving.

Operation.

As the drive-wheels A A are caused to move in the direction indicated by the arrows, or forward, and by the certain angle of the cams 3 D and 2 D, arranged with the sections or parts D, E, and Y, causing a pressure or friction upon the several parts with the main axle B, also causing at the same time a slight parting of the cams 3 D and 2 D, so that a friction is effected upon and arresting the axle B, compelling it to turn or move with one or both drive-wheels A A; and as the drive-wheels A A are moved or turned backward, the axle B is relieved, for the action of the friction is lost to the axle B by means of the two cams 3 D and 2 D coming together, and the force of the 3 D cam destroys the friction. Now, the extremities of the axle B are simply bearings *r r*, upon which the drive-wheels A A rotate backwards, reverse to the direction indicated by the arrows. Furthermore, as the whole machine continues to move forward, the dividers E E are forced underneath the hills of potatoes by the pitch and draught of the pole-section B *r* elevating the mass of dirt with the potatoes upon the dividers E E, and leaning shafts J J, armed with teeth Q Q Q Q, turn towards the centre, also moving and discharging the mass to the rear, the greater part of the dirt falls between the teeth Q Q Q Q, while the potatoes are kept up longer by the roots and fibres of the vines, and mostly all fall upon the top surface of the pulverized ground.

The shafts J J are put in motion by the pinions R R, one of which may be seen in fig. 7, located upon the tube G, connected to the large bevel-gear T T, and the two pinions N N, connected to the smaller pinions M M, as seen in figs. 1, 2, and 3, moving the leaning shafts J J armed with teeth, as before described. The teeth Q Q Q Q, upon the shafts J J, are arranged underneath the dividers E E, having the same angle or pitch, thereby the position of each with other parts produces the functions necessary to elevate and separate the potatoes from the greater part of the earth. Again, the long potato-vines lying upon each side are cut with the knives S S upon the prongs of the knife-cutter *o o*, seen in fig. 5 and fig. 1. Portions of the vines are held by the continued motion and bearing of the drivers A A, while their opposite extremities are held within the hill of potatoes. The effect of cutting is produced before the hill is disturbed by the dividers E E in the advance movement of the machine; and by the mode of attachment to the swivel U, and peculiar form of the cutters S S, a downward draught is produced, the curves with the knives S S running underneath and cutting the vines in the movement of the machine.

The dividers E E, with tubes H H, shafts J J, teeth Q Q Q Q, may be adjusted to vary the pitch and draught, as may be required, by altering the connection of the draught-bars V V to the draught-sections that are connected to the shanks K K at the points or bolts *n n*, the sections *b b* of the tubes H H, moving upon the centres *d d*, as seen in fig. 3, which does not materially alter the running of the pinions M M and N N. The tubes H H with shafts J J lean forward, and being at right angles with the dividers E E, or nearly so.

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

1. The dividers E E, with the tubes H H, shafts J J, armed with teeth Q Q Q Q, arch T, draught-bars V V, in connection with lugs *r r*, braces L *e* L *e*, the shafts F F hinged to axle B, with tubes G G, the adjustment of the dividers E E varying the line of draught with pole-section B *r*, the section *b b* hinged to centres *d d*, the position of the separating-teeth Q Q Q Q underneath the dividers E E, and the open space W between, substantially as described.

2. The pole-section B *r*, hinged to the lugs *r r* underneath, and in rear of the axle B, in combination with the dividers E E, the lugs *r r* to be adjustable; in the manner and for the purpose specified.

3. The vine-cutter *o o*, with knives S S, plane or sickle-edge, as hinged with swivel U underneath the pole-sections B *r*, substantially as and for the purpose specified.

ELIAS T. FORD.

Witnesses:

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