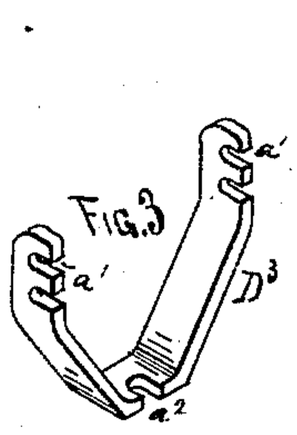
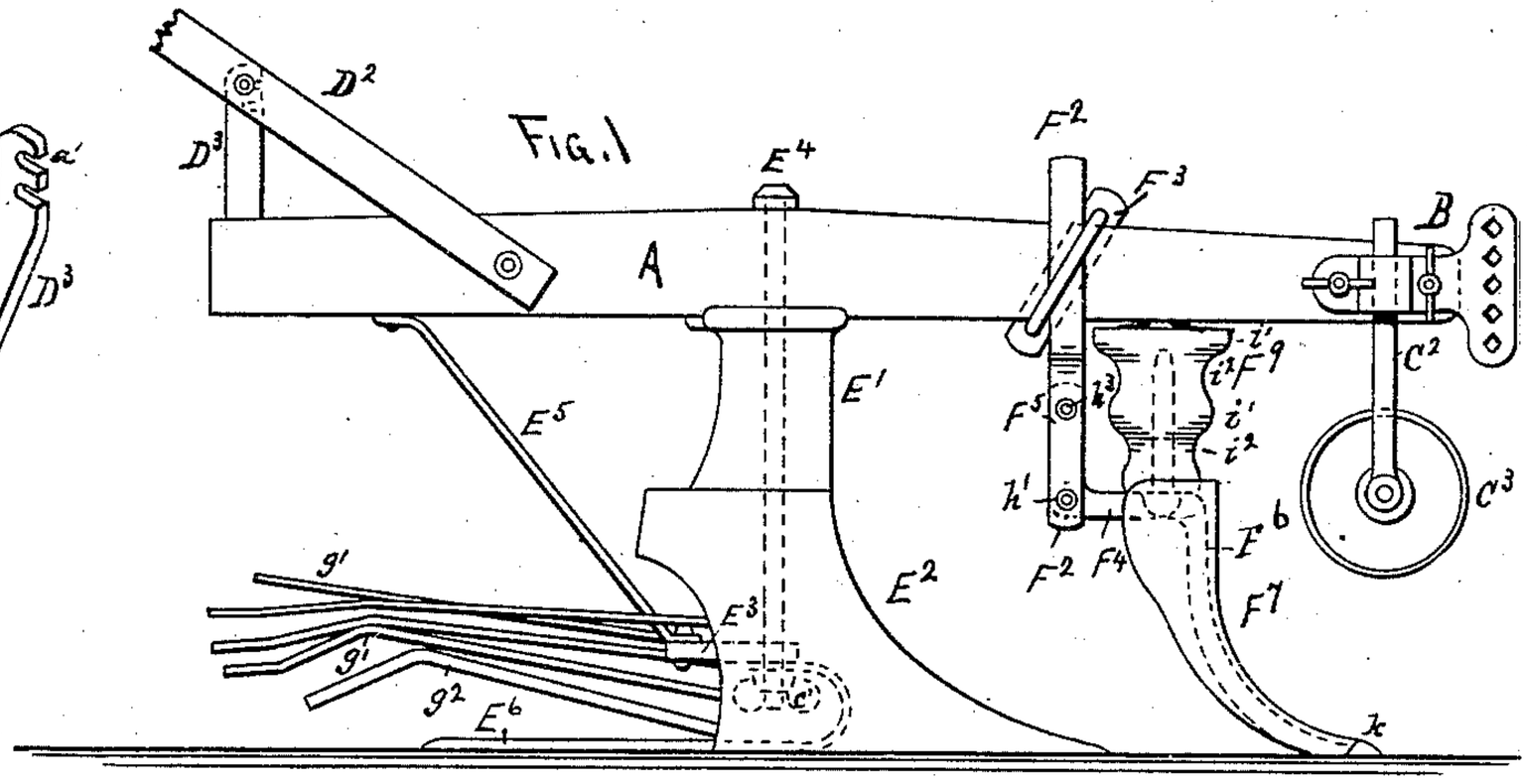
(No Model.) 2 Sheets—Sheet 1.

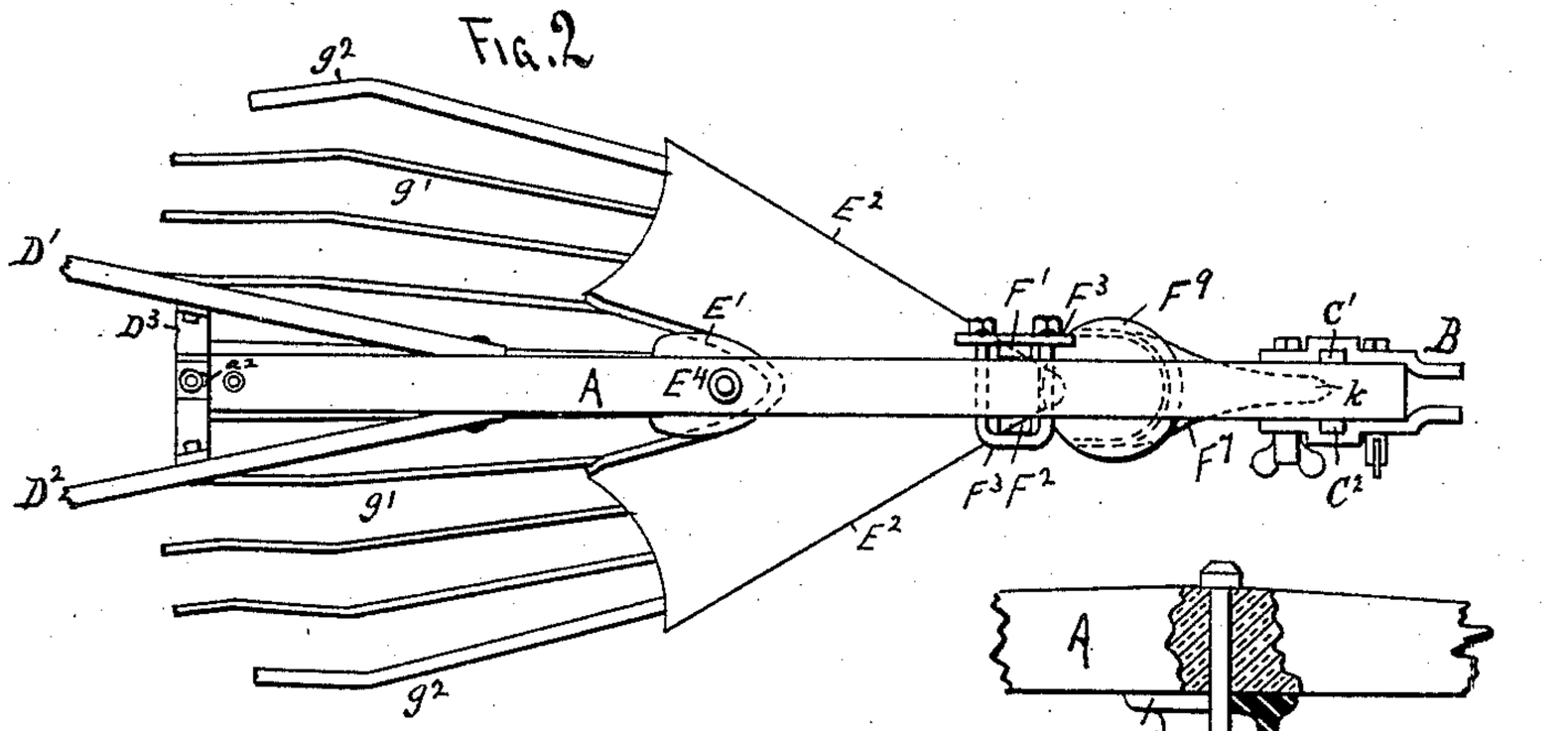
K. ÖHRLEIN.

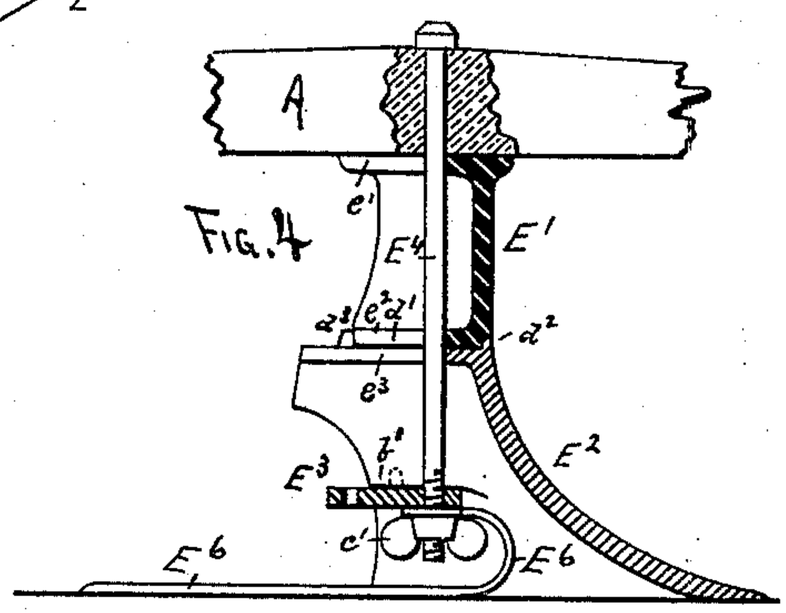
POTATO DIGGER.

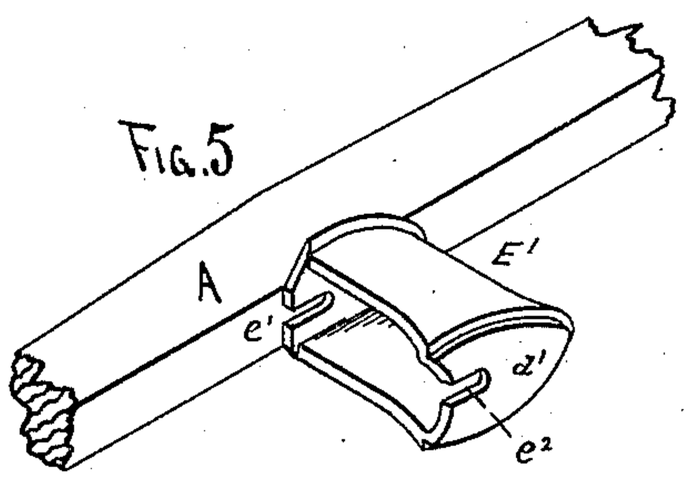
No. 307,578. Patented Nov. 4, 1884.

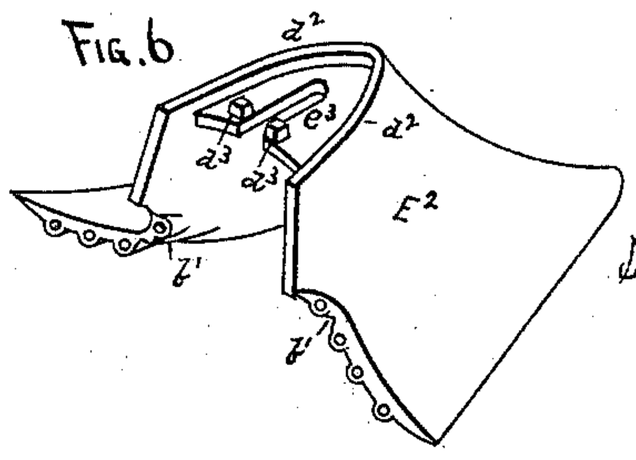


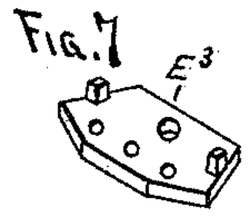


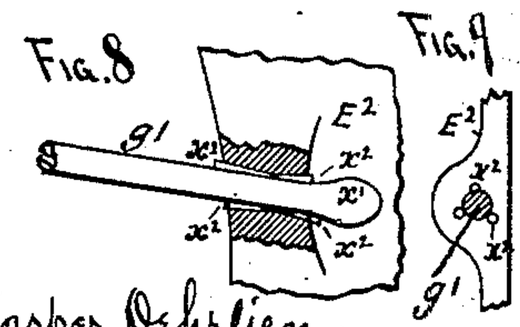












WITNESSES.
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Louis Feeder Jr.

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Atty's.

(No Model.) 2 Sheets—Sheet 2.

K. ÖHRLEIN.

POTATO DIGGER.

No. 307,578. Patented Nov. 4, 1884.

FIG. 10

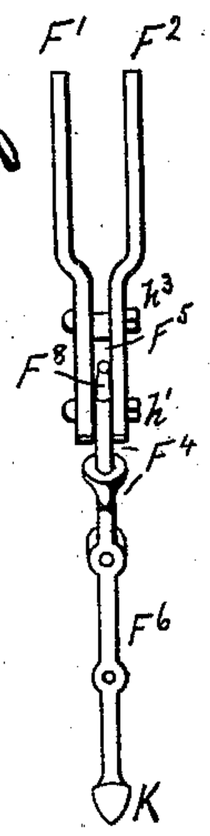
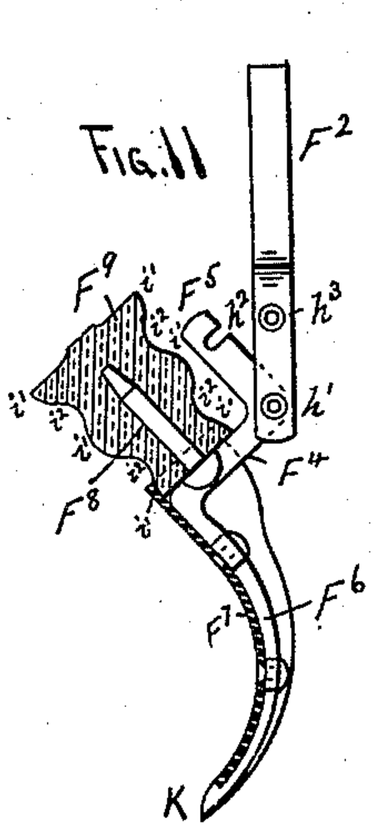


FIG. 11



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UNITED STATES PATENT OFFICE.

KASPAR ÖHRLEIN, OF NEW CANADA, MINNESOTA.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 307,578, dated November 4, 1884.

Application filed July 30, 1883. (No model.)

To all whom it may concern:

Be it known that I, KASPAR ÖHRLEIN, a citizen of the United States, and a resident of New Canada, in the county of Ramsey, in the State of Minnesota, have invented certain new and useful Improvements in Potato-Diggers, of which the following specification is a full, clear, and exact description, reference being also had to the accompanying drawings, in which—

Figure 1 is a side view, and Fig. 2 is a plan view, of the machine. Fig. 3 is a detached perspective view of the adjustable handle-bracket. Fig. 4 is a sectional elevation of the mold-board and standard. Fig. 5 is a perspective view of the standard and a portion of the beam. Fig. 6 is a perspective view from the rear of the mold-board detached. Fig. 7 is a detached perspective view of the clamping-plate. Figs. 8 and 9 are enlarged details illustrating the manner of securing the spring-fingers into the rear of the mold-board. Fig. 10 is a front view of the colter and its supporting-bars, showing the colter tilted backward. Fig. 11 is a side view of the same, corresponding in position with the view in Fig. 10, showing also the ribbed drum in place.

A is the beam, and B the clevis attached to its forward end, these parts constructed in the ordinary manner, except that the rear part of the clevis by which it is connected to the beam is formed with recesses, in which the arms $C'C^2$, for supporting the ground-wheel C^3, are held. By this means the ground-wheel and clevis are held in place by one set of bolts. The arms C' C^2 are adjustable up and down by loosening the bolts which hold the clevis in place. The holes in the clevis in which the bolts for supporting the draft-hooks are inserted are made square or diamond shape, as shown, so that a larger extent of the surface of the bolt is in contact with the metal to prevent rapid wear, and to reduce the friction caused by the rolling of the bolt in the holes.

D' D^2 are the handles, bolted at their lower ends to the sides of the beam, and connected to the rear end of the beam by a metal frame, D^3, constructed, as shown in Fig. 3, with a series of notches, a', for the bolts by which the handles are secured, so that the inclination of the handles may be adjusted at will by setting the bolts higher or lower in the notches. The lower part of the frame D^3 is also provided with a notch, a^2, by which it is secured to the beam, so that the frame may be cast with the notches in it and avoid the necessity of boring holes therein, the notches thus taking the place of holes.

Beneath the central part of the beam A is secured a hollow metal standard, E′, to whose lower end is fitted a mold-board, E^2.

Upon the interior of the mold-board notches or lugs b' are formed, beneath which a plate, E^3, fits to support a thumb-nut, c', on a bolt, E^4, passing down through the beam A, standard E′, mold-board E^2, and plate E^3, by which all the parts are firmly held together. The lower surface of the standard E′ is formed with a projecting central surface, d', and the upper part of the mold-board is provided with a rib, d^2, on its outer edge, inside of which the projecting surface d' of the standard fits, to prevent the parts sliding away from each other sidewise or forward, while studs d^3 upon the upper part of the mold-board prevent any backward movement of the standard. The openings for the bolt E^4 in the standard and mold-board will be open-ended slots e' e^2 e^3, (see Figs. 5 and 6,) to render the parts more easy to cast and avoid the necessity for drilling holes.

E^5 is a brace connecting the plate E^3 with the beam A, to stiffen and support the standard and mold-board.

Let into the rear edge of the mold-board E^2 are a series of backwardly-projecting intermediate steel rods, g', and outer rods, g^2, the latter being larger and stiffer than the former. The rear ends of these spring-fingers are bent downward and outward, as shown, and serve to catch the potatoes, earth, and vines as they pass over them, and sift the earth and vines loose from the potatoes. By bending the rear ends of the fingers downward and then outward again, they retain the earth, vines, and potatoes a short time, and cause the fingers to shake the earth loose from the potatoes much more thoroughly than if the fingers were straight. By forming the outer pair of fingers, g^2, of heavier metal than the intermediate ones, they will not be forced inward by the pressure of the earth upon them, but will retain their proper positions, and thereby catch all the potatoes and vines that pass over the mold-

board. The intermediate fingers, g', are formed of spring-steel, flexible enough to be agitated by the weight of the potatoes and the movement of the plow, to thereby more thoroughly shake the earth loose from the potatoes.

Attached by one end to the lower side of the plate E^3 is a spring sole-plate, E^6, adapted to rest upon the earth in the bottom of the furrow, to support the rear part of the mold-board and cause it to run more steadily.

F' F^2 are two perpendicular bars, secured by a colter-clamp, F^3, to the beam A, and having pivoted at h', between their lower ends, an angular bar, F^4, as shown in Figs. 1, 10, and 11. One part, F^5, of this bar is bent upward between the bars F' F^2, while the other end, F^6, is bent downward and curved forward, and provided with a shoe, F^7. The upper end of the part F^5 is provided with an open slot, h^2, adapted to fit over a bolt, h^3, through the bars F' F^2. By this means the bars F^4 F^5 F^6 will be held sufficiently firm to cause the shoe F^7 to pass through ordinary soil; but the open slot h^2 will leave the shoe and its frame free to give and tilt backward, as shown in Fig. 11, and prevent breakage should any solid obstructions—such as stones, roots, &c.—be met with.

Upon the upper side of the bar F^4, and at right angles to it, is secured a pin, F^8, upon which a circular-ribbed drum, F^9, is set, and adapted to revolve freely thereon. The upper surface of this drum comes just beneath the beam A, as shown in Fig. 1, so that the latter prevents the drum from being lifted up off from the pin F^8. The central part of the upper surface of this drum is raised slightly, so that only the raised portion comes in contact with the beam, whereby the friction is reduced. A washer will also be interposed between the drum and the bar F^4, to reduce the friction at this point. The drum F^9, as shown, is formed of alternate ribs i' and depressions i^2, so that when the shoe F^7 is drawn through the soil in advance of the mold-board (thereby serving as a colter) the potato-vines, weeds, &c., will be caught by the drum F^9 and rolled off to one side and prevented from catching upon the mold-board or standard. The alternate ribbed and channeled form of the drum prevents the vines running upward upon the drum and thereby becoming clogged upon the beam, but will catch them and spread them out in a thin sheet as they pass from the drum. The lower end of the part F^6 is formed into an enlarged point, k, to add strength thereto, as well as to form a shoulder behind which the lower end of the shoe will fit, so as to form an unobstructed surface-connection between the shoe and the arm F^6.

In Figs. 8 and 9 an enlarged section of the mold-board E^2 is shown, with a portion of the butt-end of one of the fingers g' arranged therein.

In securing the fingers in place the butt-ends are first flattened out by hammering in a cold state to enlarge them, as shown at x' and then the fingers thrust from the rear through the holes made for them in the mold-board, and small iron wedges x^2 driven in between the steel fingers and the metal of the mold-board, to hold them firmly in place. The enlarged ends x' prevent them being pulled from the mold-board. This forms a very cheap and easy method of securing the fingers in place, and requires no skilled workmanship; but broken or loosened fingers may be quickly replaced or tightened at any time. Another advantage gained by this method is that no heating of the fingers is required; hence their temper will not be injured.

Having described my invention and set forth its merits, what I claim is—

1. The combination of the beam A, hollow standard E′, provided with open-ended slots e' e^2 in its upper and lower surfaces, mold-board E^2, having an open-ended slot, e^3, in its upper surface, clamping-plate E^3, and bolt E^4, substantially as herein specified.

2. The combination of the beam A, hollow standard E′, provided with open-ended slots e' e^2 in its upper and lower surfaces, mold-board E^2, having an open-ended slot, e^3, in its upper surface, and provided with fingers g' g', attached to its rear edges, clamping-plate E^3, and bolt E^4, substantially as and for the purpose herein specified.

3. The combination of the beam A, standard E′, mold-board E^2, bolt E^4, clamping-plate E^3, fingers g', and spring-sole E^6, substantially as shown.

4. The combination of the beam A, hollow standard E′, provided with open-ended slots e' e^2 in its upper and lower surfaces, mold-board E^2, having an open-ended slot, e^3, in its upper surface, clamping-plate E^3, bolt E^4, and brace E^5, substantially as and for the purpose herein specified.

5. In a potato-digger, the combination, with the mold-board E^2, of a series of flexible elastic fingers, g' g', bent downward and then outward near their rear ends, and rigid outer fingers, g^2 g^2, bent downward near their rear ends, substantially as and for the purpose herein specified.

6. The combination, with a potato-digger, of a colter consisting of a clamping-frame, F' F^2, pivoted angular bar F^4 F^5 F^6. shoe F^7, and revolving channeled and ribbed drum F^9, substantially as described.

7. In a potato-digger, the combination of the mold-board E^2, having a series of finger-holes therein, fingers g' g', having flattened rear ends, x' x', and wedges x^2 x^2, substantially as and for the purpose herein specified.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

KASPAR ÖHRLEIN.

Witnesses:
C. N. WOODWARD,
LOUIS FEESER, Sr.