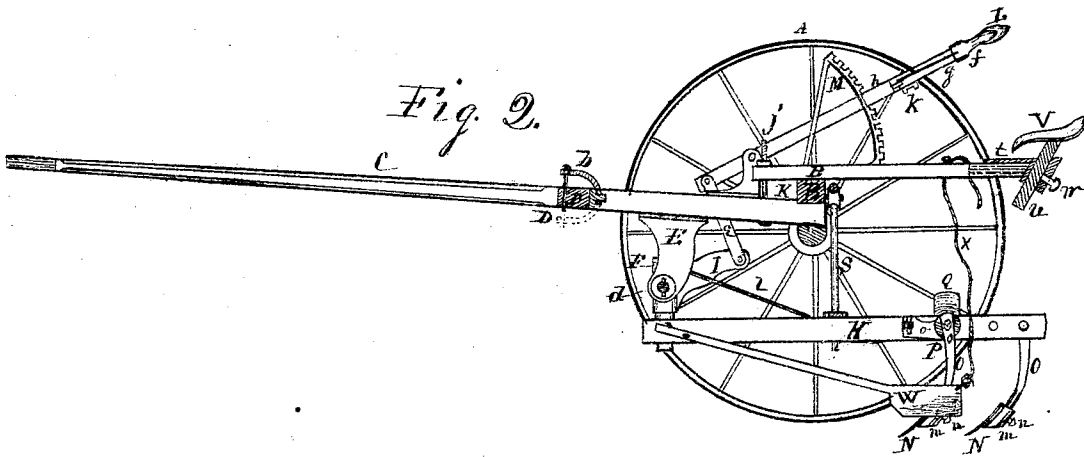
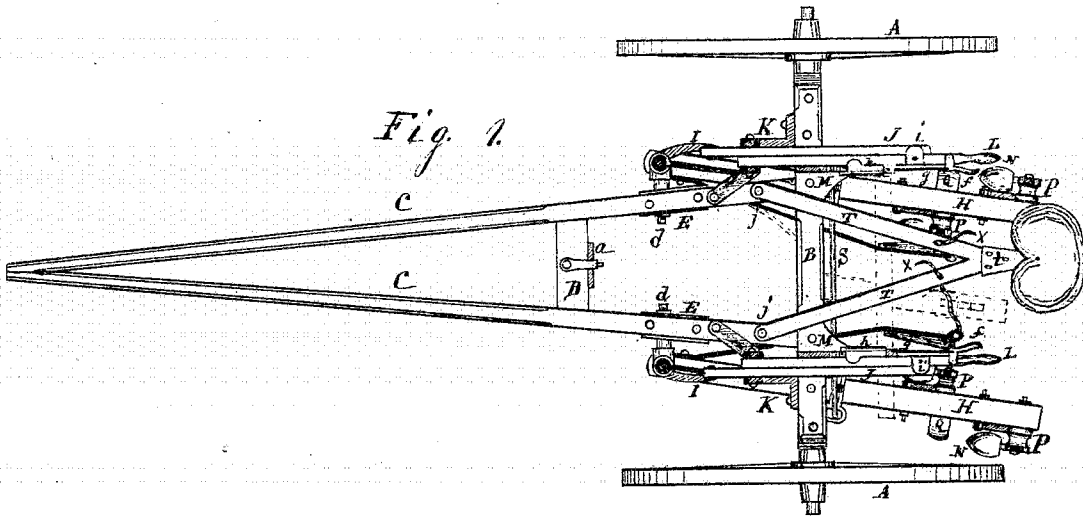


M. L. GORHAM'S.

Improved Cultivator

No. 121,613.

Patented Dec. 5, 1871.



Witnesses.
S. L. Taylor
J. Behel

Inventor
M. L. Gorham

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Fig. 6.

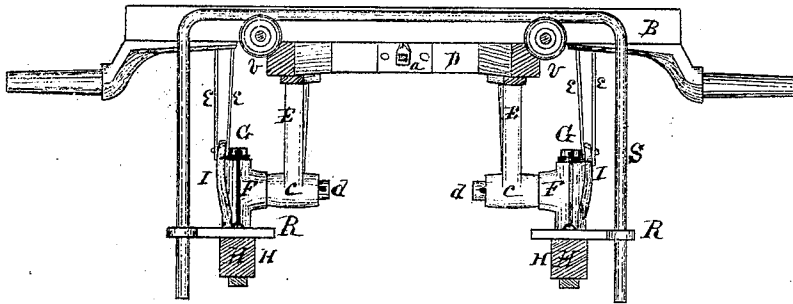


Fig. 5.

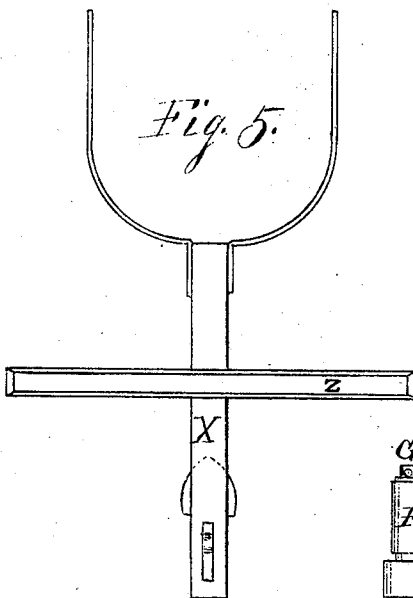
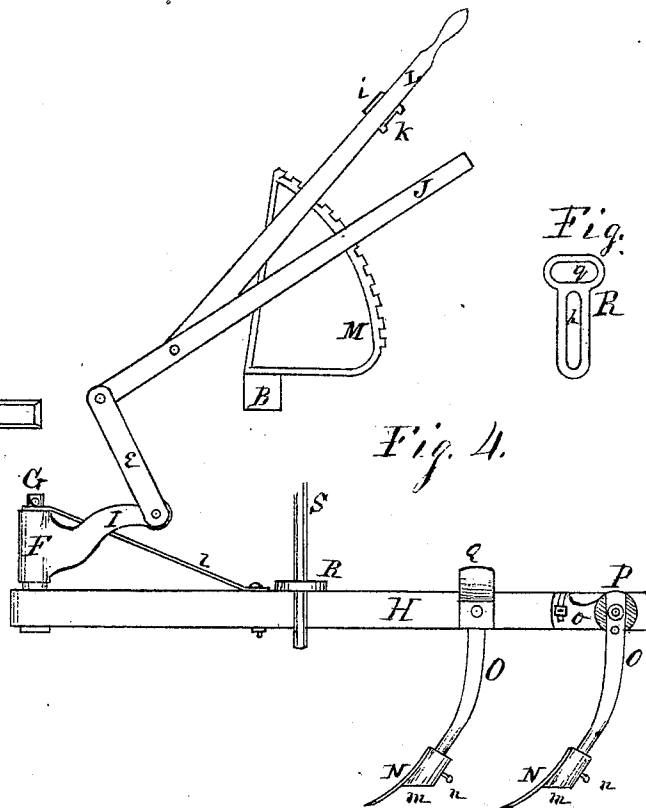


Fig. 6.



Fig. 4.



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UNITED STATES PATENT OFFICE.

MARQUIS L. GORHAM, OF ROCKFORD, ILLINOIS.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. 121,613, dated December 5, 1871.

To all whom it may concern:

Be it known that I, MARQUIS L. GORHAM, of Rockford, in the county of Winnebago and State of Illinois, have invented certain Improvements in Cultivators, of which the following is a specification:

The object of this invention is to improve the sulky-cultivator in the construction of its parts; in its workings; in its adjustability and adaptation to varying modes of cultivation of different crops in their various stages and to adapt it to all the uses for which a cultivator is employed in the cultivation of crops or in the tillage of the soil preparatory to the planting or sowing of seeds, and to accomplish these ends with the fewest number of parts, in their simplest and most reliable form. To this end I have constructed and arranged the machine represented in the accompanying drawing, in which—

Figure 1 is a plan view. Fig. 2 is a central longitudinal elevation. Fig. 3 is a transverse rear-sectional view cut through in rear of the axle, with some of the parts omitted. Fig. 4 is an outside elevation of the drag-bar and its connection with the levers; Fig. 5, a plan view of fifth or center shovel-frame; Fig. 6, a plan view of the adjustable slide-plate.

Similar letters represent similar parts in all the figures.

Carrying-wheels A receive and revolve on arms of raised axle B. To the under side of axle B, at suitable intervals, are secured beams C, the forward ends of which meet and are secured together and fitted to receive the neck-yoke. D is a cross-piece framed into and secured between beams C forward of the axle. These parts constitute the main supporting-frame of the cultivator. *a* is a plate fitted with a stud extending rearward, and is secured centrally to the rear edge of the cross-piece D. *b* is a hammer-strap, fitted to receive the stud on plate *a*, from which it curves upward and forward in such a manner as to receive the evenner between it and cross-piece D, where it is secured in place by a suitable bolt being passed through the forward end of the hammer-strap and through the evenner and cross-piece, suitable holes being provided for its reception. These parts are so constructed that they can be changed from the upper to the under side of the cross-piece, as represented in dotted lines, for the purpose of balancing the

draft of the machine. E are hangers secured to the under side of beams C, between the axle B and cross-piece D. Each hanger is fitted at its pendent end with a suitable transverse horizontal socket, *c*. F are vertical sockets, each provided with a stud, *d*, on its inward side, projecting at right angles thereto, and are fitted to enter the socket *c* in the pendent end of hanger E, and are held in place by pin or otherwise. G are vertical studs secured in place in the forward ends of drag-bars H, and are fitted to enter socket F. These parts furnish the double right-angle hinge on which the drag-bars H vibrate both vertically and laterally, F being the intermediate or connecting portion thereof. I are arms, which may be either a part of the intermediate or connecting portion of the hinge, or may be separate pieces secured thereto, and extend rearward in the same direction of and above the drag-bars H. These arms, in connection with other suitable devices, furnish the means through which the shovels are raised and lowered, or held in any required position vertically, and in such a manner that the lateral movements of the shovels will always be in a plane. The projecting ends of arms I are connected to levers J by links *e*. These levers are pivoted on fulcrum-supports on angle-brackets K, which are secured to the front side of axle B and on the upper side of beams C. Levers L have their fulcrum-supports in common with levers J, and their free ends are fitted in handle form, and are provided with levers *f*, draw-rods *g*, and spring-bolts *h*, which engage in the teeth of ratchets M, which are secured in place on axle B. These levers are also provided, near their free ends, each with an outward-projecting lip, *i*, secured to their upper sides, which controls the upward movements of levers J, and are also provided, on their under sides, each with a button, *k*, which, when turned under levers J, confine them together, as at Fig. 2, in such a manner that their movements will be in unison; and when the spring-bolts engage with the teeth in the ratchets the drag-bars H will be locked and held in a fixed position, so as not to rise or sink, and at the same time will be untrammelled in their lateral movements; and when the buttons *k* are turned so as to permit the levers to move independently, as at Fig. 4, then the drag-bars H will be free to rise, but cannot sink below the depth at which they may be set, by means of the spring-

bolt on lever K engaging in the teeth of the ratchets. These changes do not in any manner affect the lateral movements of the drag-bars. *l* are brace-rods, fitted to receive the upper ends of studs G, and are held in place by pins, which also hold the studs in place. The rear ends of brace-rods *l* are secured to drag-bars H. Shovels N are provided with metallic sockets *m*, which secure the lower ends of standards O, on which they are adjustable vertically, and can be set at any required angle to throw the earth either to or from the crop, and in every case are held in position by set-screws *h*. Studs P are fitted to receive the upper ends of standards O, and are secured in place on the rear portions of drag-bars H by suitable bolts, which pass through standard O, studs P, and drag-bars H. The studs P are provided with arms *o*, fitted with vertical radial slots to receive tension-bolts, which hold them in place on the drag-bars in such a manner that when the shovels come in contact with unyielding substances the arms will slide from under the tension-bolts and the shovels will be thrown back without injury. Q are foot-rests with curved upper surfaces and right-angled pendants, pierced to receive bolts by which they are secured in place on the outsides of the drag-bars. R are plates, provided with a slot, *p*, to receive a suitable bolt, by means of which they are secured in place on the upper side of drag-bars H, on which they are adjustable transversely by means of bolts and slots *p*. The outer ends of plates R are provided with an elongated hole or slot, *q*, transversely to slots *p*, and secure the pendant ends of a suitable connecting device. Friction-rollers *r*, with grooved peripheries, are secured to the rear side of axle B, and revolve on suitable journals. S is a suitably-bent connecting-bar supported on rollers *r*. The pendant ends of the bent connecting-bar S pass into slots *q* in plates R on drag-bars H and hold the drag-bars in their relative position. The distance between the rear ends of the drag-bars may be increased or diminished, as desired, by means of the slotted plates R and their connection with connecting-bar S and drag-bars H, on which they are adjustable transversely. The seat-frame is composed of beams T, fitted together in V-form, connected at their junction by plate *t*, which is provided with an oblique socket to receive the shank *u* of seat V in such a manner that when the seat is lowered it will also move forward and when raised will move rearward, and may be held in any position by means of set-screws *u*. This seat-frame is supported forward on axle B, the ends of beams T projecting forward thereof, and are connected to beams C by suitable bolts *j*, by means of which the seat may be raised and lowered. In this arrangement of the main frame and seat-frame the center of the frame is left open,

furnishing an unobstructed view of the plants. W are shields connected forward by bolts to drag-bars H and rearward to seat-frame by cords *x*, by means of which they can be raised to free them when clogged. X is a central drag-bar, carrying a center or fifth shovel, and is provided at its forward end with curved braces, the ends of which are pierced to receive the same bolts which connect the shields to the drag-bars, the shield having been previously removed. Z is a transverse bar secured to bar X, and is designed to rest on drag-bars H, for the purpose of supporting the center drag-bar, and is represented in place in dotted lines at Fig. 1. In this machine the drag-bars H, carrying the shovels, are independent of each other in their vertical movements; the sockets *c* and studs *d* furnish the joint on which they vibrate. Sockets F and studs G furnish the hinge employed in the lateral movements of the drag-bars; and when the shovels are at a proper working depth it is designed that the studs G in forward ends of drag-bars shall be as nearly as possible in a vertical position, in which case the lateral movements of the shovels will be in a horizontal plane.

I claim as my invention—

1. The combination of the beams C and cross-brace D with the plate *a* and hammer-strap *b*, constructed in the manner and for the purposes as shown and described.
2. The combination of the slotted adjusting-plate *o* and stud P having a recess to receive the plow-standard with the standard O, constructed as shown and described.
3. The combination of the angular beams T bearing upon axle B with the adjusting screw-bolt *j* and beam C, constructed and arranged in the manner and for the purpose shown.
4. The hangers *z* with sockets *c* connected to vertical sockets F by stud *d*, arms I, and links *e*, in combination with the lifting-levers J and L and fulcrum-bracket K, all arranged to operate in the manner described.
5. The sway-bar S and rollers *r*, in combination with the slotted adjustable plates R and beams or drag-bars H, constructed and arranged to operate in the manner as described.
6. The lever L having lip *i* and button *k* thereon, in combination with lever J and fulcrum-bracket K, as described.
7. The shields W pivoted to the forward end of beams H, and suspended and adjusted by cords *x* passing through the beams T, and by which cords the shields are raised at the will of the operator and independently of the beams H and of each other, as described.

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Witnesses:

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(43)