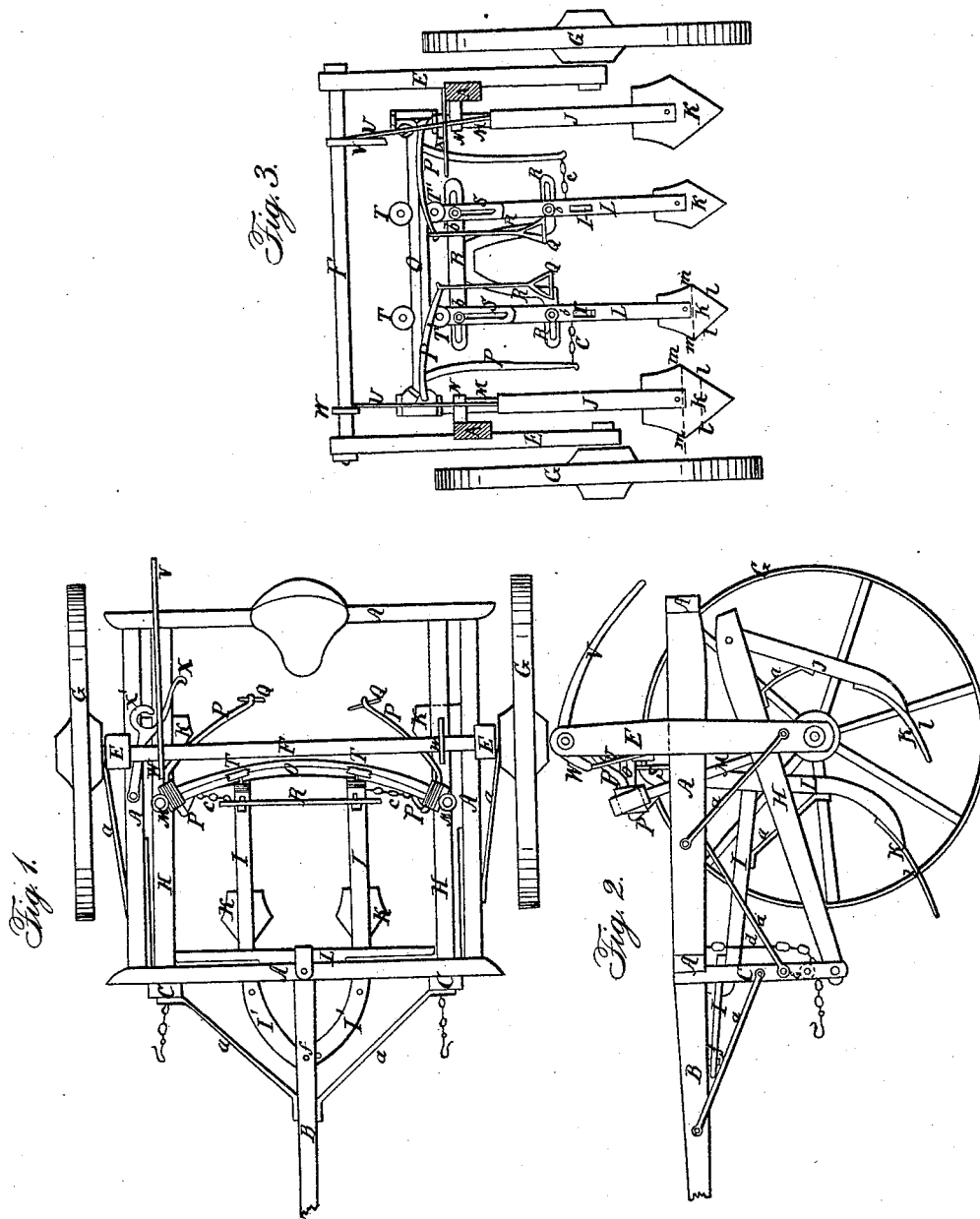


M. H. HULLINGER.

Wheel-Cultivator.

No. 53,303.

Patented Mar. 20, 1866.



Witnesses:

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# UNITED STATES PATENT OFFICE.

M. H. HULLINGER, OF GRANVILLE, ILLINOIS.

## IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. 53,303, dated March 20, 1866.

### *To all whom it may concern:*

Be it known that I, M. H. HULLINGER, of Granville, in the county of Putnam and State of Illinois, have invented a new and useful Improvement in Cultivators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings and the letters and figures marked thereon, which form part of this specification.

The nature of my said invention consists in a novel arrangement for giving a lateral movement to the interior plows to adapt them to any curves or irregularities in the rows of plants to be cultivated; and also in a novel mode of connecting the four plow-beams together, whereby all may be raised or lowered simultaneously, while at the same time the inner plows have a lateral motion independent of the outer plows; and also in a novel arrangement for holding the plows up from the ground; also, in a novel and simple arrangement for equalizing the draft of the machine; and, lastly, in the peculiar construction and configuration of the plows or shovels, all as hereinafter more fully set forth and explained.

To enable those skilled in the art to understand how to construct and use my invention, I will proceed to describe the same with particularity, making reference in so doing to the aforesaid drawings, in which—

Figure 1 represents a plan or top view of my invention; Fig. 2, a side view or elevation of the same, and Fig. 3 a rear elevation thereof in section at *x* in Fig. 1.

Similar letters of reference in the different figures denote the same parts of my invention.

A represents the main frame of the machine, B being the guide-pole or tongue, said frame being supported upon the wheels G, which have their bearings in the lower ends of the posts E, attached to the sides of the frame, as shown.

C C represent two upright posts firmly attached to the front of the machine, as shown, to the lower ends of which the outer plow-beams, H, are attached in such a manner as to give them a free vertical movement at the rear ends, as hereinafter specified.

D represents a vibrating bar, pivoted at its center so as to have a free oscillating motion in a vertical plane, to each end of which is attached a cord or chain, *d*, which pass down

around pulleys, at *e*, above the front end of the outer plow-beams, as shown, where the horses are attached to a hook. This arrangement of the chain *d* with the pulley *e*, when arranged above the front end of the inclined plow-beams, affords a very simple and effectual arrangement for equalizing the draft, and also forms a perfect center draft while the vertically-vibrating bar is above the corn, and does not interfere with the operation of the machine.

To the outer plow-beams there is attached the lower end of a post, which passes up through suitable supports attached to the side frame, as shown, M representing the posts, and N the bearings or supports through which said posts pass, and in which they have a free sliding motion. Connecting the upper ends of the said posts M in such a manner as to form suitable boxes or bearings for the bent levers P is the horizontal curved bar O, constructed and arranged as shown. The curvature of said bar O is determined by describing a circumference from *f* as a center, with a radius equal to the distance from said center to the upper ends of the posts M.

To the front ends of the inner plow-beams, I, are attached the arms I', as shown, which have a common pivot at their front ends, at *f*, which is the center which determines the curvature of the bar O, as aforesaid. To the rear ends of said inner plow-beams, I, are attached the standards L, to the lower ends of which, as to the standards J upon the outer beams, are secured the plows or shares K.

The standards L extend up above the beams I, as shown, nearly to the bar O, and to the upper ends of said standards L are attached, by a set-screw, *b*, or its equivalent, the slotted irons, (marked S,) whereby said slotted irons may be adjusted up or down on said standards, as desired. In the upper part of said adjustable irons S the grooved rollers T T' have their bearings, the upper rollers, T, resting upon the curved bar O as a track, and the lower rollers, T', fitting closely up against the lower side or edge of the said bar, secure the upper ends of the standards L to the curved bar, while they have a free lateral movement, said rollers moving along upon the curved track O in either direction.

By means of the adjustable bearings S S the inner plows may be regulated so as to run at any required depth, and at a less depth

than the outer plows, which is very desirable sometimes, especially when cultivating corn for the first time, when it is very small, as otherwise it might be covered up by the furrow. In suitable bearings at the extremities of the curved track O, as aforesaid, are suitable boxes, in which the curved or bent levers P are supported, as shown. To one arm of said levers the chains c are attached, connecting with the rear ends of the beams I or to the standards L, while to the other ends are suspended the stirrups Q for the feet of the driver.

R represents a double-slotted connecting-brace between the standards L, secured thereto by the set-screws b passing through said slots, which firmly braces and strengthens the standards and holds the plows to their work, while at the same time it admits of the plows being adjusted nearer to or farther from the row, as may be desired.

It may be observed that instead of employing the lower rollers, T', to secure the standards L to the bar O, so that the rollers T may not get off from the track, any other suitable device may be employed.

F represents a shaft supported, as shown, by the posts E, to which the rods V are attached by means of arms W, so that, as said rods are connected with the beams H by means of the lever V, the plows may all be raised up at once, and by pressing the lever down upon the self-adjusting hook or catch X said catch adjusts itself so as to bring the hook X' around to clasp and secure the lever, and so hold up the plows as long as may be desired, without troubling the driver to hold the lever.

The shovels or plows are constructed as follows: The points of the shovels are diamond-shaped, and back to the line l there is no curve in the plate. From the line l to the top they are curved in a true circle. From these two points, in the construction of the shovels, the shovels are kept in the ground to their

work, and are also thoroughly scoured and kept clean and bright in all kinds of soil.

Each edge of the shovel is straight back to the line m, and the distance across the large shovels at the line m is nine inches, while the same measurement in the smaller shovels is only seven inches. From the line m upward the width of the large shovels is diminished to six inches, and in the case of the smaller shovels to four inches, thereby greatly reducing the friction.

A cultivator-shovel constructed upon the plan and in the manner above described will work much better than any now in use, and its particular form and curvature is of great importance in the successful operation of the same.

To produce the lateral motion of the inner plows, the driver, seated upon the seat upon the rear of the frame with his feet in the stirrups Q, by simply pressing upon one stirrup or the other, as the case may require, throws the plows one way or the other, and thus readily conforms the machine to any crooks or irregularities in the rows, as desired.

Having described the construction and operation of my invention, I will now specify what I claim and desire to secure by Letters Patent:

1. The combination and arrangement of the curved bar O and the rollers T T', operating substantially as and for the purposes specified.

2. The combination and arrangement of the beams H and I, the posts M, the standards L, curved bar O, and rollers T T', substantially as specified and shown.

3. In combination with the above, the employment of the bent levers P, the chains c, and stirrups Q, as and for the purposes shown and described.

Witnesses:

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