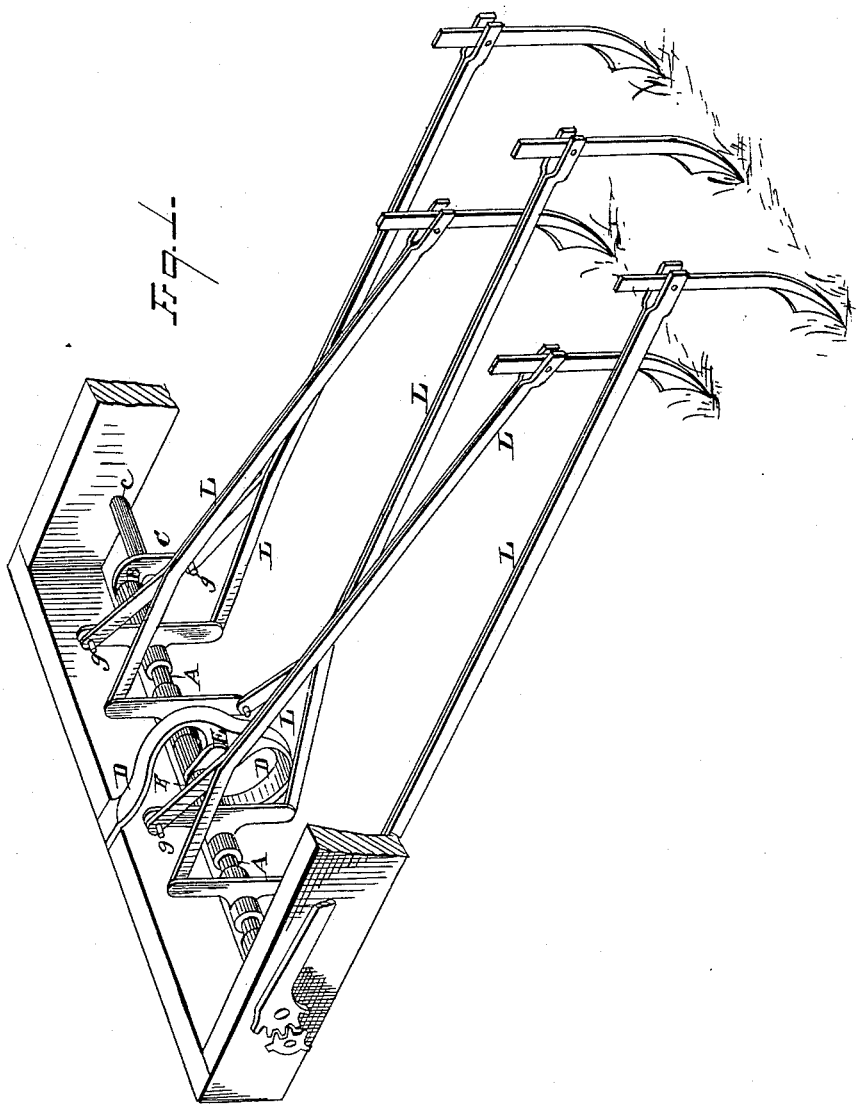
2 Sheets—Sheet 1.

W. A. VAN BRUNT & S. E. DAVIS.

Cultivator.

No. 209,633. Patented Nov. 5, 1878.

Fig. 1.



WITNESSES

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2 Sheets—Sheet 2.

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Fig. 2

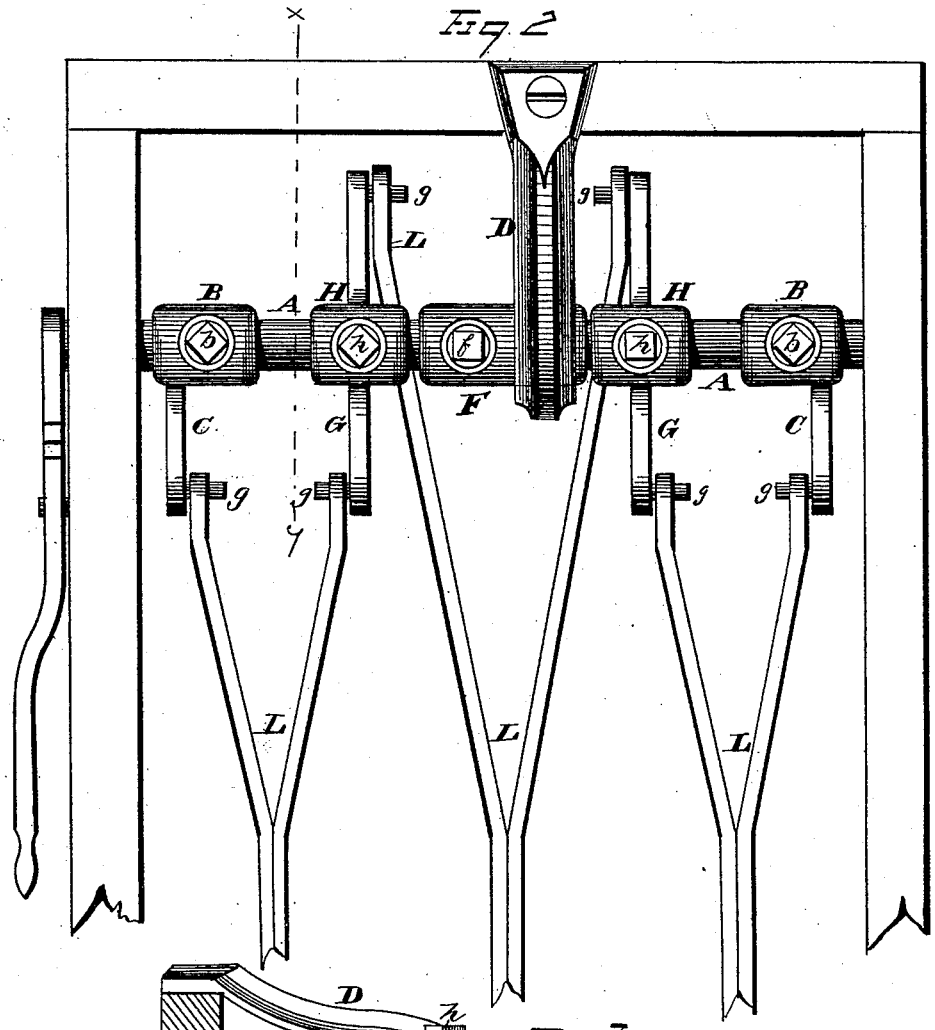
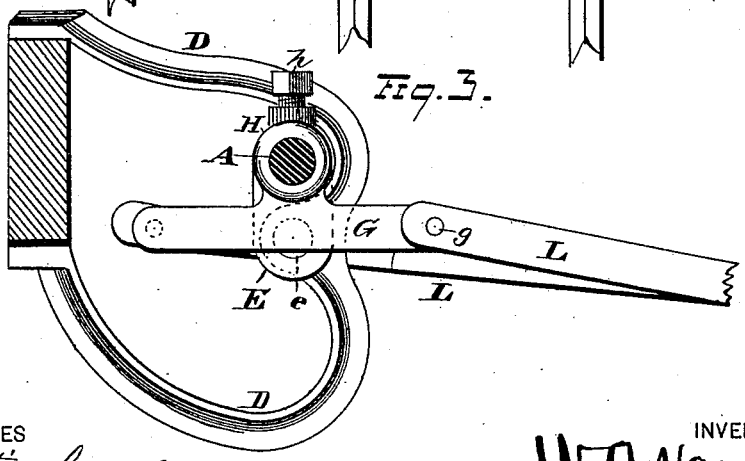


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLARD A. VAN BRUNT AND SPENCER E. DAVIS, OF HORICON, WISCONSIN.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. **209,633**, dated November 5, 1878; application filed August 6, 1878.

To all whom it may concern:

Be it known that we, W. A. VAN BRUNT and S. E. DAVIS, both residents of Horicon, in the county of Dodge and State of Wisconsin, have invented certain new and useful Improvements in Cultivators; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

Our invention relates to cultivators, and is designed to provide improved mechanism for adjusting the teeth or hoes thereof into double or single rank, as desired. Heretofore two different methods have obtained for accomplishing this common purpose, one of which connected part of the drag-bars to one side and the remaining to the opposite side of a straight rock-shaft. The other method provided a zig-zag or crank shaft, to the cranks or wrists of which the drag-bars were connected by means of bows or yokes, each bow engaging with two wrists. Also, heretofore shafts journaled eccentrically to their longitudinal axis have been employed together with suitable connections as a lifting device for seeders and cultivators.

Our invention, however, differs in construction and result from any of the foregoing devices; and consists, first, in the combination with drag-bars provided with suitable teeth or hoes, of a supporting-shaft journaled eccentrically to its longitudinal axis, and provided with transverse arms, part of which extend on one side and part on the opposite side of said shaft, the same being adapted to cause said drag-bars to be moved so as to adjust the several teeth or hoes in single or double rank; second, in the combination, with the drag-bars of a cultivator, of an eccentric-journaled shaft provided with transverse arms, part of the latter extending on one side and the remaining on the opposite side of the shaft, said arms being adapted by the rocking movement of said shaft to be all placed in the same vertical or in the same horizontal plane with each other, and at the same time out of alignment with the supporting-shaft; third, in the combination, with the drag-bars of a cultivator, of connecting-arms secured transversely to an eccentrically-journaled shaft, said arms extending at equal distances, part of them on one side and part on the opposite side of a straight line passing through the bearings of said shaft; fourth, in the combination, with a series of cultivator drag-bars, of a supporting-shaft journaled eccentrically at its opposite ends, and provided with single transverse arms extending on opposite sides of the same, said drag-bars being pivoted to the arms at points equidistant from a straight line passing through the bearings of said shaft; fifth, in the combination, with a series of cultivator drag-bars, of a supporting-shaft journaled eccentrically at its opposite ends, and provided with arms axially adjustable on said supporting-shaft, said arms having the drag-bars pivoted thereto at points equidistant from a line passing through the eccentric bearings of the supporting-shaft; sixth, in the combination, with a series of cultivator drag-bars formed with bifurcated ends, of a supporting-shaft journaled eccentrically at its opposite ends, said shaft provided with a series of arms, each of which projects on opposite sides of the shaft, the bifurcated ends of the drag-bars being pivoted to the ends of adjacent arms on the supporting-shaft; seventh, in the combination, with a series of drag-bars for a cultivator formed with bifurcated ends, of a supporting-shaft journaled eccentrically at its opposite ends and supported by a bracket-bearing located between its end bearings, said shaft provided with a series of arms, each of which projects on opposite sides of the shaft, the bifurcated ends of the drag-bars being pivoted to the ends of adjacent arms on the supporting-shaft; eighth, in the combination, with a series of cultivator drag-bars formed with bifurcated ends, of a supporting-shaft journaled eccentrically at its opposite ends, and provided with an adjustable collar having an arm formed therewith which has a rocking bearing on a bracket located between the end bearings of the supporting-shaft, the latter provided with a series of arms, each of which projects on opposite sides of the shaft, the bifurcated ends of the drag-bars being pivoted to the ends of adjacent arms on the supporting-shaft.

Referring to the drawings, Figure 1 is a view, in perspective, of a detail part of a cultivator

representing one form of mechanism for carrying out the principles of our invention, as above set forth, the same showing the parts in position such as to place the several teeth or hoes in double rank. Fig. 2 is a plan view of the same mechanism, showing the parts in the position they assume when the cultivator teeth or hoes are in single rank. Fig. 3 is a detail view in vertical sectional elevation through line *x y* of Fig. 2.

The supporting-shaft A is adapted by any suitable means to be journaled in bearings, which are formed eccentrically with its longitudinal axis, and have rocking bearing therein, so that the shaft may be moved by mechanism, and placed in either the same vertical plane or the same horizontal plane with that of its bearings, and yet not be in alignment therewith. One form of mechanism for accomplishing this result is shown by the two collars B, in which the ends of the shaft respectively are fitted, and which are each formed with an arm, C. On the outer side of each of these arms a journal, *c*, is formed, which has bearing in the cultivator-frame, and which are formed at any desired definite distance from the longitudinal axis of the shaft, as hereinafter referred to.

At any point between these two journal-bearings of the shaft one or more supplemental bearings may be provided, to aid in supporting the same, to prevent any tendency of sagging, and to prevent undue strain from being brought upon the shaft. Preferably we provide a brace or bracket, D, whose upper and lower horizontally-curved arms are secured to the cultivator-frame, while its central body is adapted to give bearing to a journal, *e*, formed in line with the two end journals *c*. This supplemental journal is formed on an arm, E, which is secured to the shaft by a collar, F, formed in same piece therewith.

A set-screw, *f*, adjustably clamps this collar to the shaft, the same as the screws *b* clamp their respective collars to the same. It is, however, optional whether such form of attachment of said journal-arms to the shaft is used or not. We show the same as our preferable manner of construction; but instead thereof other mechanism may be employed.

We would say the same as regards the manner of securing the arms G, which we are now about to describe, as we desire to be understood in that we do not restrict ourselves to the collars H and clamping-screws *h* as means for securing said arms G to the shaft. These arms can be engaged with the drag-bars L in any form of pivotal connection, that form preferred by us at present consisting of horizontal pivots *g* formed on the sides of the several arms, and which pass through corresponding openings made in the bifurcated forward extremities of the drag-bars. These pivotal points of attachment are all placed at equal distance from a line which passes through the respective centers of the eccentric bearings of the supporting-shaft; but the several arms G are made to extend part on one side and part on the opposite side of said line, so that these pivotal points of attachment are in corresponding position.

The several drag-bars are made in two sets of lengths. Those bars provided with teeth or hoes or shovels which are to be in the rear rank, when a double line is formed, are made of length correspondingly greater than those bars which are provided with teeth, hoes, or shovels which are to constitute the forward rank when a double line is formed.

The several different drag-bars are connected to these arms, part of them to the arms on one side of said imaginary line and part to the arms on the opposite side of the same, so that the drag-bars may alternate in consecutive order, every other bar being respectively a front-rank bar or a rear-rank bar, as the order may be optionally taken. The supporting-shaft may be caused to move by mechanism of any desired character in adjusting these drag-bars and intermediate connecting-arms, so that the latter may all be placed in either the same horizontal or same vertical plane.

The above-described construction permits the shovels, teeth, or hoes to be shifted from single to double rank, or the reverse, when in or when out of the ground, and with the least possible resistance, and the eccentric position of the supporting-shaft relative to its journal-bearings adapts it to raise and lower the drag-bars, as desired, in order to accomplish such result; and, as heretofore stated, we are not limited in the mechanism for carrying out the several main principles of our invention to the specific forms of construction herein described, and which are shown in the drawings; but the same may be substituted by other mechanical parts, as desired.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with drag-bars, provided with suitable teeth or hoes, of a supporting-shaft journaled eccentrically to its longitudinal axis, and provided with transverse arms, part of which extend on one side and part on the opposite side of said shaft, the same being adapted to cause said drag-bars to be moved so as to adjust the several teeth or hoes in single or double rank, substantially as set forth.

2. The combination, with the drag-bars of a cultivator, of an eccentrically-journaled shaft provided with transverse arms, part of the latter extending on one side and the remaining part on the opposite side of the shaft, said arms being adapted by the rocking movement of said shaft to be all placed in the same vertical or in the same horizontal plane with each other, and at the same time out of alignment with the supporting-shaft, substantially as set forth.

3. The combination, with the drag-bars of a cultivator, of connecting-arms secured trans-

versely to an eccentrically-journaled shaft, said arms extending at equal distances, part of them on one side and part on the opposite side of a straight line passing through the bearings of said shaft, substantially as set forth.

4. In a cultivator, the combination, with a series of drag-bars, of a supporting-shaft journaled eccentrically at its opposite ends, and provided with single transverse arms extending on opposite sides of the same, said drag-bars being pivoted to the arms at points equidistant from a straight line passing through the bearings of said shaft, substantially as set forth.

5. In a cultivator, the combination, with a series of drag-bars, of a supporting-shaft journaled eccentrically at its opposite ends, and provided with arms axially adjustable on said supporting-shaft, said arms having the drag-bars pivoted thereto at points equidistant from a line passing through the eccentric-bearings of the supporting-shaft, substantially as set forth.

6. The combination, with a series of cultivator drag-bars formed with bifurcated ends, of a supporting-shaft journaled eccentrically at its opposite ends, said shaft provided with a series of arms, each of which projects on opposite sides of the shaft, the bifurcated ends of the drag-bars being pivoted to the ends of adjacent arms on the supporting-shaft, substantially as set forth.

7. The combination, in a cultivator, with a series of drag-bars formed with bifurcated ends, of a supporting-shaft journaled eccentrically at its opposite ends, and supported by a bracket-bearing located between its end bearings, said shaft provided with a series of arms, each of which projects on opposite sides of the shaft, the bifurcated ends of the drag-bars being pivoted to the ends of adjacent arms on the supporting-shaft, substantially as set forth.

8. In a cultivator, the combination, with a series of drag-bars formed with bifurcated ends, of a supporting-shaft journaled eccentrically at its opposite ends, and provided with an adjustable collar, having an arm formed therewith, which has a rocking bearing on a bracket located between the end bearings of the supporting-shaft, the latter provided with a series of arms, each of which projects on opposite sides of the shaft, the bifurcated ends of the drag-bars being pivoted to the ends of adjacent arms on the supporting-shaft, substantially as set forth.

In testimony that we claim the foregoing we have hereunto set our hands this 24th day of July, 1878.

WILLARD A. VAN BRUNT.
SPENCER E. DAVIS.

Witnesses:
C. L. BUTTERFIELD,
HIRAM LAKE.