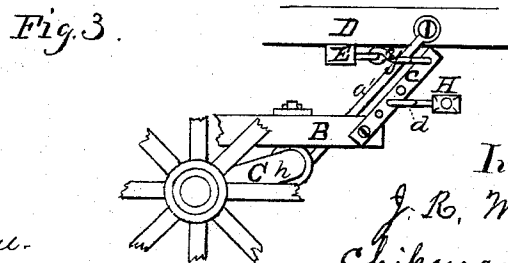
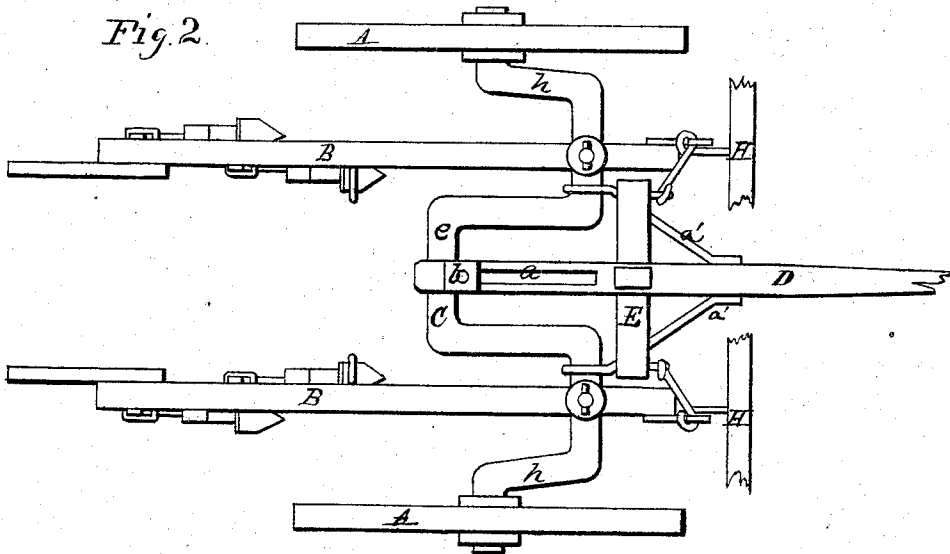
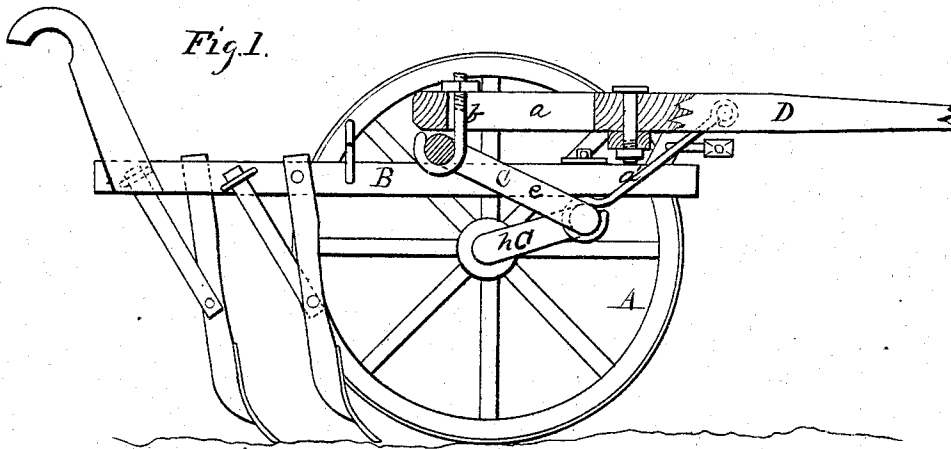


J. R. McDONALD.
Cultivators.

No. 137,703.

Patented April 8, 1873.



Witnesses.
E. A. Bates.
Geo. E. Upham.

Inventor
J. R. McDonald
Chipman Hosmer & Co
Attys

UNITED STATES PATENT OFFICE.

JAMES R. McDONALD, OF NEVADA, IOWA.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. **137,703**, dated April 8, 1873; application filed September 14, 1872.

To all whom it may concern:

Be it known that I, JAMES R. McDONALD, of Nevada, in the county of Story and State of Iowa, have invented a new and valuable Improvement in Corn-Cultivators; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a vertical section of my invention. Fig. 2 is a top view of my invention. Fig. 3 is a detail of the same.

This invention has relation to the frames of wheel-cultivators; and it consists in the construction and novel arrangement of the bent axle, the slotted pole, and, in connection therewith, of the equalizing devices, all hereinafter more particularly described.

In the accompanying drawing, the letter A designates the wheels of a sulky-cultivator; B, the plow beams, connected by suitable clips to the horizontal portions of the bent axle C. D indicates the pole slotted at *a* in its rear end, and connected by means of the adjustable bolt *b*, which passes through this slot, with the middle bend of the axle. E represents the whiffletree pivoted to the pole in front of the slot *a*. The letters *a'* indicate pivoted brace-rods extending from the sides of the tongue or pole to the horizontal portions of the axle, and connecting the same. Bent and perforated draft-plates *c* are securely pivoted at their lower ends to the front ends of the plow-beams, their upper ends being connected to the ends of the whiffletree by links *y*, chains, or other suitable connecting devices, which will allow the plates *c* to swing forward, rearward, or laterally, as may be required by the adjustment of the bent axle and the plow-beams. The letter H designates the single-trees, which are respectively attached to the plates *c* by suitable hooks *d*, which may be adjusted in the perforations of said plates, according to the heights of the

horses. The axle C is provided with an upward bend, *e*, in its middle portion, to which the pole or tongue is connected, as above described. It is also provided at its ends with the cranks or bent arms *h*, to which the wheels are journaled. The angular position of the middle bend *e* with relation to the end cranks *h* and the brace-rods *a'*, and its length in proportion thereto, are designed to be such that the distance of the tongue or pole vertically above the wheels will be about the same whatever be the adjustment of the bent axle and the consequent change in the relative height of the plow-beams. The plow-beams are set for deep plowing by adjusting the middle bend *e* of the axle forward with relation to the pole, and thereby rotating upward the end cranks *h* to which the wheels are journaled. At the same time the line of draft is lowered, the single-trees being depressed by the alteration in the position of the draft-bars *c*. The plow-beams are set for shallow work by adjusting the middle bend *e* of the axle rearward, thereby rotating downward the end cranks *h* to which the wheels are journaled, and raising relatively the plow-beams at the same time the line of draft is raised, the single-trees being elevated by the change in the position of the draft-bars. In the adjustment for deep plowing the plow-beams are brought somewhat forward, closer to the horses.

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

In a cultivator, the combination, with the adjustable pole, the plow-beams, and the pivoted brace-rods, of the adjustable axle bent upward at *e* to connect with the pole, and relatively downward and outward at *h* to receive the wheels, substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

JAMES R. McDONALD.

Witnesses:

J. L. DANA,
S. F. BALLIET.