

No. 639,890.

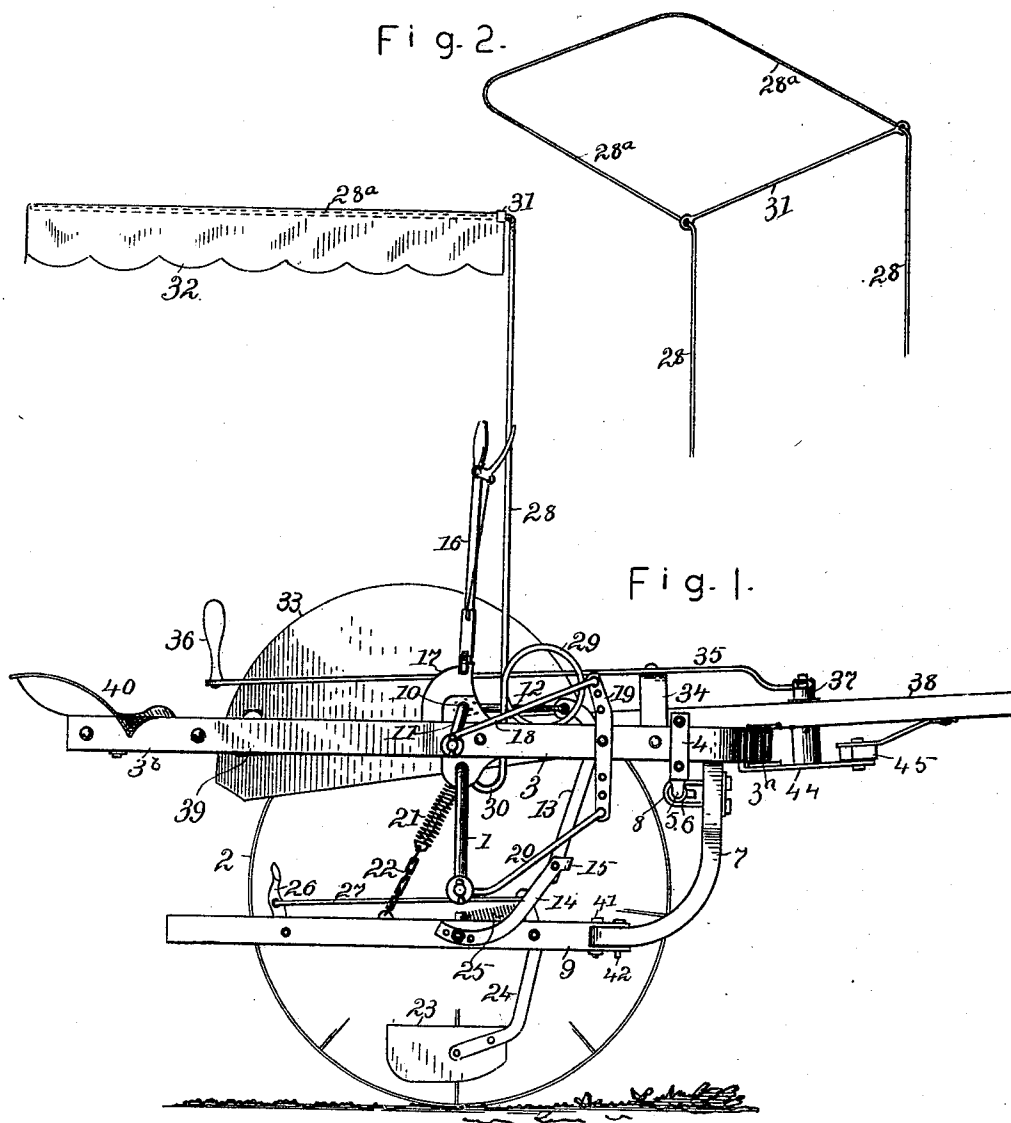
Patented Dec. 26, 1899.

N. DELANEY.
CULTIVATOR.

(Application filed July 10, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Attest

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Nora Graham.

Inventor,
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his attorney

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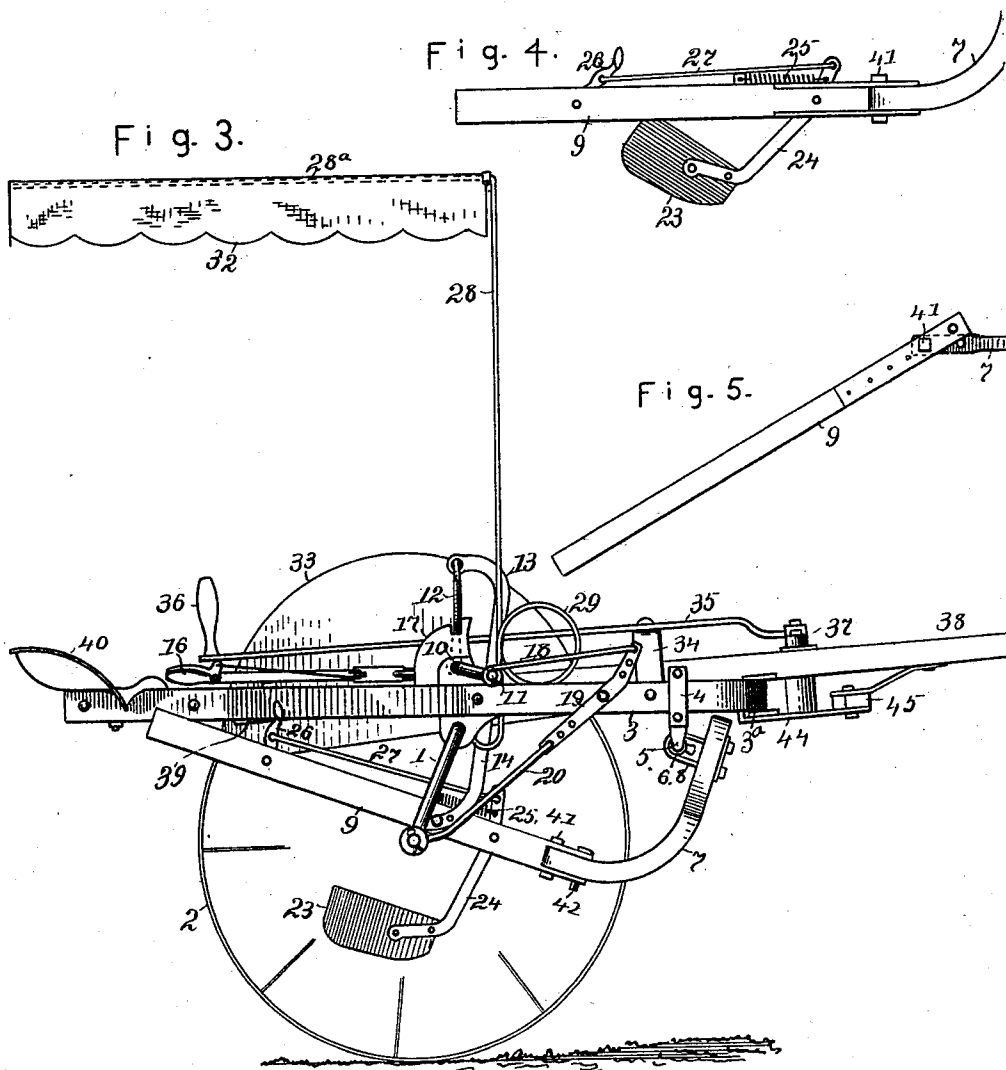
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Fig. 6.

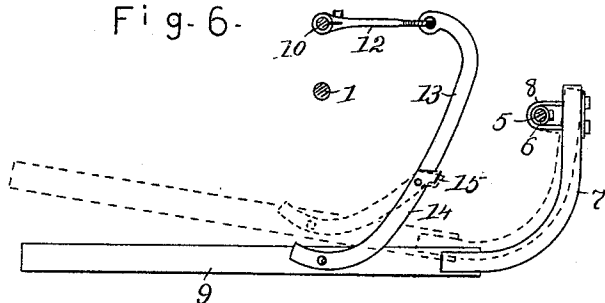
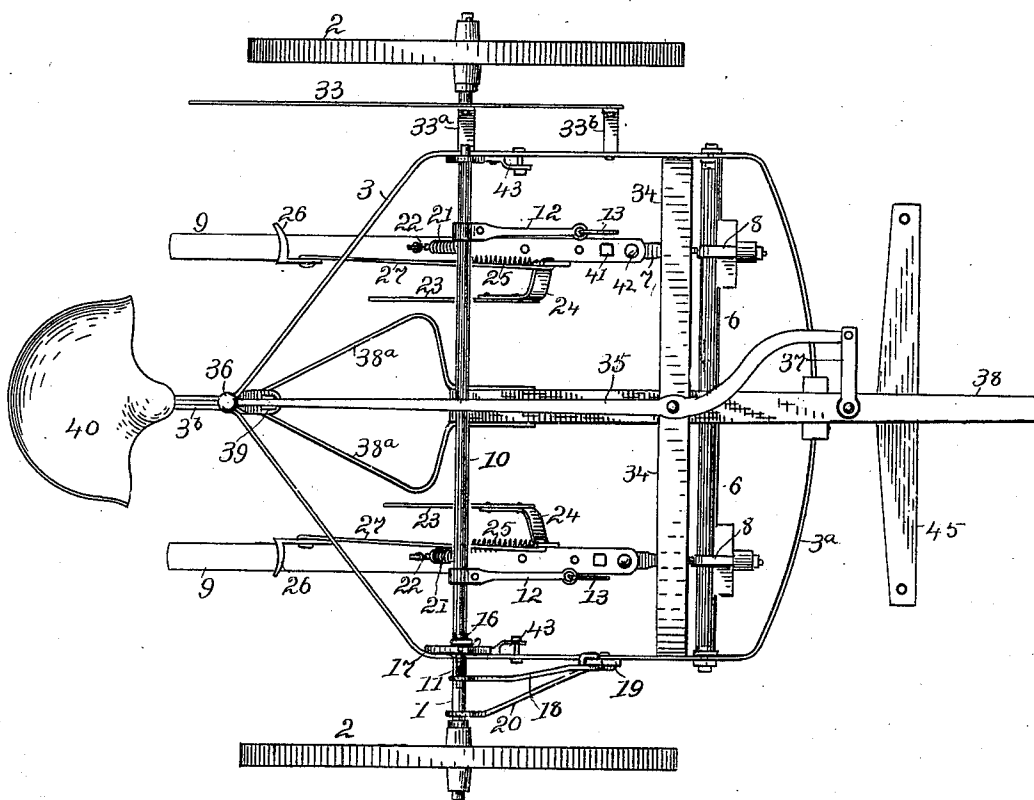


Fig. 7.



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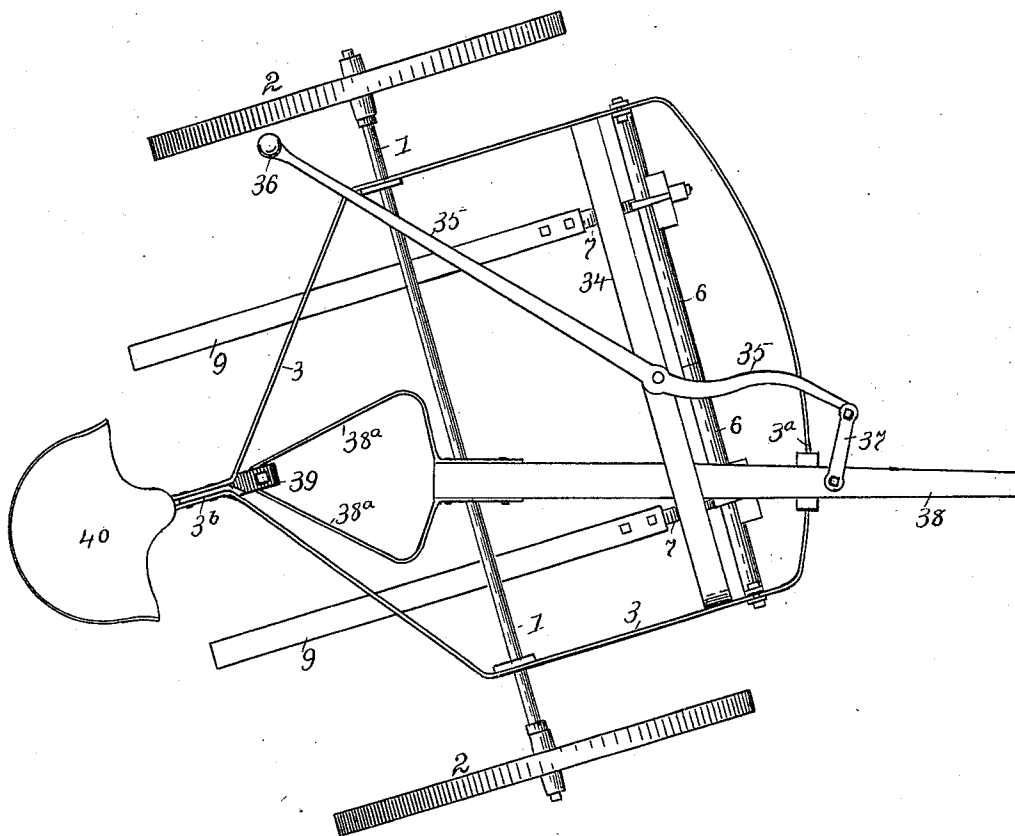
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Fig. 8.



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UNITED STATES PATENT OFFICE.

NELSON DELANEY, OF MAROA, ILLINOIS.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 639,890, dated December 26, 1899.

Application filed July 10, 1899. Serial No. 723,327. (No model.)

To all whom it may concern:

Be it known that I, NELSON DELANEY, of Maroa, in the county of Macon and State of Illinois, have invented certain new and useful Improvements in Cultivators, of which the following is a specification.

This invention relates to means for swinging the beams of riding-cultivators from side to side to follow crooked rows and to compensate for downslide on hillsides, to means for raising and lowering the beams, to means for swinging the wheels backward as the beams are raised, so as to balance the load, to fenders for protecting the corn or other plants, and to certain details of construction hereinafter appearing. It is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of so much of a cultivator as is needed to explain my invention, showing the cultivator-beams lowered to operative positions. Fig. 2 is a perspective representation of the upper part of the shade-frame. Fig. 3 is a side elevation of the essential features of the cultivator, showing the beams raised and the wheels thrown back to balance the load added to the rear part of the cultivator by raising the beams. Fig. 4 is a detail in side elevation of a fender used to protect the growing plants, the view being introduced for the purpose of showing how the fender may be raised clear of accumulated trash while the cultivator is moving. Fig. 5 is a detail plan of the cultivator-beam, showing how the beam may be held stiff with regard to horizontal swing or be permitted to swing freely from side to side. Fig. 6 is a detail elevation of a beam and raising mechanism therefor, showing how the beam may swing freely up and down after being lowered without disturbing the rock-shaft and adjuncts used to raise and lower the beams. Fig. 7 is a plan of the cultivator without the shade-frame. Fig. 8 is a plan of so much of the cultivator as is needed to illustrate the side swing of the beams, the beams being shown thrown to one side of the center of draft.

The carrying-wheels 2 of the cultivator are mounted on a cranked axle 1, and the principal part of the frame in which the axle is

swung consists of the bar or bars 3, which extend forward from the axle in parallel lines, traverse the front of the cultivator in an arc of a circle, as shown at 3^a, and converge rearward and extend beyond the meeting-point to form a seat-support, as shown at 3^b. A rod 5 is clamped at opposite ends to the front portions of the side bars of the frame, and on the rod are mounted tubes 6, which collectively extend from side to side of the frame. Curved upward extensions 7 of beams 9 are clamped to the tubes by means of U-bolts 8 or other suitable mechanical appliances, and the connections between the parts of the beams are made by means of vertical bolts 41 and 42, one in front of the other and one removable, which form a rigid connection when both are in place and provide a vertical pivot when one is withdrawn, as suggested in Fig. 5.

A rock-shaft 10 is journaled in the frame crosswise thereof above the axle 1, and a crank 11 is formed on one of its ends. A hand-lever 16 is fastened onto the rock-shaft in position to extend upward when the beams are lowered, and arms 12 are also fastened to the rock-shaft above the beams at approximately right angles with the hand-lever. A compound link consisting of members 13 and 14 connects each of arms 12 with one of the beams 9, and the cranked end of the rock-shaft connects with a cranked end of the axle through rods 18 and 20 and lever 19. The lever 19 is fulcrumed on one of the side bars of the frame in front of the axle. In this instance rod 18 extends from the crank-arm of the rock-shaft to the upper end of lever 19 and rod 20 extends from the lower end of the lever to the depressed end of the cranked axle. The arms 12 extend forward when lowered, in this instance, at least, and they are approximately vertical when the beams are raised. The link members are bent backward, one at its upper end and the other at its lower end, so that points of connection with the beam and arm, respectively, may swing to the rear of the rock-shaft when the beams are raised and form an automatic dead-center lock, as shown in Fig. 3. The hinge by which the two members of the link are connected together is in the nature of a rule-joint, so that free swing may be had backward but not forward, and this requirement is based in part

on the dead-center lock, wherein the ends of the link are to the rear of the intermediate portion, and in part on the free up-and-down motion given to the beams when the arms are locked down. The effect of the free backward swing of the lower member of the link is illustrated in Fig. 6, and the effect of the stay against forward swing in the joint of the link is shown in Fig. 3, where a curved connection is shown reaching from arm 12 around and under the rock-shaft to the beam. The purpose of the arms 12 and the adjuncts thereof is to raise and lower the beams, while the purpose of the cranked end of the rock-shaft and the connection thereof with the axle is to force the supporting-wheels 2 to the rear as the beams are raised, thus preventing the tongue from being tilted upward by the added weight of the beams without permitting excessive weight to bear on the necks of the team when the rear ends of the cultivator-beams are supported from the ground. Both operations are performed by the simple expedient of rocking the hand-lever, swinging it backward to raise and forward to lower in the shown instance, though it will be seen that by extending the arms and other accessories to the rear of the axle instead of to the front thereof this action would be reversed. When the beams are raised and the wheels swung backward, as shown in Fig. 3, the dead-center lock of the beam-supporting links and the natural tendency of the wheels to lag backward makes a lock on the hand-lever at this point unnecessary; but to hold the parts in the positions shown in Fig. 1 a notch is formed in the upper surface of the arc-formed rack 17 and the hand-lever is provided with a bolt to engage the notch. In this instance the rule-joint hinge between the members 13 and 14 of the beam-supporting link is made by means of a pivot-pin and an extension 15 on one of the members extending in front of the other member; but it is obvious that the joint may be made in various ways.

Cushion-springs 21 are connected with the axle and with the beams by means of chains 22 or the like, the purpose of the springs being to raise the shovels or other cultivating devices of the beams in the soil when foot-pressure is relaxed.

The beams are each provided with a fender, as 23, adapted to be interposed between the cultivator-shovels and young plants, and these are pivotally connected with the beams by means of lever-bars 24. Springs 25 connect with the lever-bars and tend to hold the fenders lowered into operative positions, and rods 27 connect the lever-bars with foot-levers 26. Whenever a fender gathers trash to an extent to interfere with its proper operation, the driver may give the foot-lever a kick, thereby raising the fender against the tension of the spring and permitting the fender to ride over the trash. (See Fig. 4.)

Rods, as 28, extend upward from the cultivator-frame to points above the head of the

driver when he is seated on seat 40 and thence backward and together, as shown at 28^a. (See Fig. 2.) A cross-rod 31 connects the rods 28 at their bends or thereabout, and a canopy or shade is carried on extensions 28^a and rod 31. The canopy is supported at the front end only, and the supporting-rods are elastic, so that the irregularities of surface incident to plowed ground create an up-and-down vibration in the canopy as the cultivator moves across the field. This movement in the canopy creates a corresponding movement in the air, with the result that the driver is fanned by the shade-producing canopy so long as the cultivator is in motion. By forming loops, as 29, in the upright parts of the canopy-supporting rods the elasticity of the rods may be given greater opportunity to act, and a forward-and-back motion may be developed in the flaps of the canopy to add to the up-and-down fanning action. The rods of the canopy are held in clasp-bearings 43, (shown only in Fig. 7,) and they may be turned at their lower ends and hooked over the axle in order to make their connections more secure.

Shield-plates 33 are sustained between the upper parts of the wheels and the driver's seat, as shown in Figs. 1, 3, and 7, the object being to protect the driver from the dirt that is raised and thrown off by the wheels. Bars, as 33^a and 33^b, (shown only in Fig. 7,) connect the shields with the frame, and while for the sake of clearness but one shield is shown it is the intention to have one on each side of the cultivator.

The tongue 38 of the cultivator is pivotally connected with the frame at 39, which is but a short distance in front of the seat, and the rear portion of the tongue is preferably divided and widely separated by means of the strap 38^a to avoid obscuring the driver's view of the row he is cultivating. A cross-bar 34 is attached to the front part of the frame, and it crosses the frame above the tongue. A lever 35 is pivoted to the center of bar 34. It has a handle 36 on its rear end, and it connects with the tongue at its front end by means of link 37. When the lever 35 is swung to one side, as shown in Fig. 8, all of the cultivator in front of pivot 39 is carried bodily sidewise in the same direction. As the pivot is so far to the rear, practically all of the cultivator is carried from side to side as the lever 35 is manipulated, and this gives the driver superior facility for following the rows, as he can get extensive side motion without developing extreme obliquity in the beams. In Fig. 8, wherein an extreme throw is illustrated, the front end of one beam is carried clear to the line of draft—i. e. the tongue—by the side swing of the lever alone, and all of the beam, or practically all, has partaken to some extent of this side movement. This diagram cannot show the effect that results from the travel of the cultivator while the side shift is being made, however, and when

this is added to the demonstrated effect it can be seen that the control of the driver over side swing of the beams is practically unlimited.

5 The hand-lever 35 is a very desirable and possibly indispensable element of the side-shifting mechanism of the beams; but it is possible to control the shift by the feet alone under ordinary circumstances. This is done
10 by pressing downward on the beam on the side of the cultivator toward which it is desired to turn, and the extra resistance so developed will tend to retard the depressed beam and cause the frame to swing on pivot 39 in
15 a direction to carry the favored beam in advance of the depressed one. This is illustrated in Fig. 8 if the beam to the left side of the figure is supposed to have received the extra downward pressure, and it is obvious
20 that extra pressure applied to the right-hand beam would reverse the side shift.

To facilitate the turning of the frame with relation to the tongue, a strap 44 is fastened to the tongue and passed under the front bar
25 of the frame in a manner to form a bearing therefor. This strap also provides a connection for doubletree 45.

Ordinarily the beam 9 is connected stiffly to the upturned extension 7; but the joint
30 may be limbered up whenever it is desired to use the feet in developing or aiding side motion in the frame.

The distance between beams is regulated by shifting the connections with tubes 6 and by shifting the arms 12 on the rock-shaft, and
35 extra holes are provided in other shiftable members to give required adjustment.

What I claim is—

1. A riding-cultivator in which the frame
40 extends to the rear of the axle and the tongue is pivotally connected with such rearward extension.

2. In a riding-cultivator the combination of a frame extended to the rear of the axle, a
45 tongue divided at its rear end, diverged in the rear of the axle to form a sight-space and converged to form a pivoted bearing and means for swinging the tongue sidewise, the tongue being pivotally connected with the
50 rear extension of the frame, substantially as described.

3. In a riding-cultivator, the combination of a frame the sides of which converge rearward beyond the axle, a tongue pivotally connect-
55 ed with the frame at the intersection of the converging side bars, and means for swinging the frame with relation to the tongue.

4. In a riding-cultivator, the combination of a frame the front bar of which is arc-formed
60 and the sides of which converge rearward and extend beyond the point of intersection to

form a seat-support, a tongue pivotally connected with the frame at the intersection of the converging side bars, and means for swinging the frame with relation to the tongue. 65

5. In a cultivator, the combination of a frame, a pair of beams pivotally connected with the frame at their front ends, a rock-shaft journaled in the frame crosswise there-
70 of, a lever to rock the shaft, arms on the shaft above the beams, and curved links connecting the arms with the beams and forming dead-center locks when the beams are raised.

6. In a cultivator, the combination of a frame, a pair of beams pivotally connected
75 with the frame at their front ends, a rock-shaft journaled in the frame crosswise thereof, a lever to rock the shaft, arms on the shaft above the beams, and curved links connecting the arms with the beams, such links be-
80 ing each composed of two members hinged together in joint fashion.

7. In a cultivator, the combination of a frame a cranked wheel-axle journaled in the frame, a beam-raising rock-shaft having a
85 hand-lever, and a connection between the rock-shaft and cranked axle whereby the wheels are thrown backward as the beams are raised.

8. In a cultivator, the combination of a
90 frame, a cranked wheel-axle journaled therein, a beam-raising rock-shaft having a hand-lever and a cranked end, an intermediate lever, a rod connecting one end of the intermediate lever with the cranked end of the rock-
95 shaft, and another rod connecting the other end of the intermediate lever with a cranked end of the axle.

9. In a cultivator, the combination of a fender pivoted on a beam, a spring to hold
100 the fender in operative position, and a foot-lever by means of which the fender may be raised against the tension of the spring.

10. In a cultivator, the combination of a lever pivoted to a beam, a fender attached to
105 the lower end of the lever, a spring connected with the upper end of the lever and exerting its force to hold the fender depressed, and a foot-lever pivoted on the beam and connected with the fender-carrying lever. 110

11. A cultivator-beam comprising a forward part and a rear part joined to the forward part by two vertical pins one in the rear of the other and one at least removable, where-
115 by the beam may be made stiff or limber with regard to horizontal swing.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

NELSON DELANEY.

Witnesses:

LIDA M. DELANEY,
JOHNIE F. DELANEY.