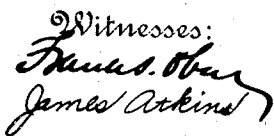


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4 SHEETS—SHEET 1.



Alexis C. Lindgren, Inventor
By his Attorney, J. P. Dodge

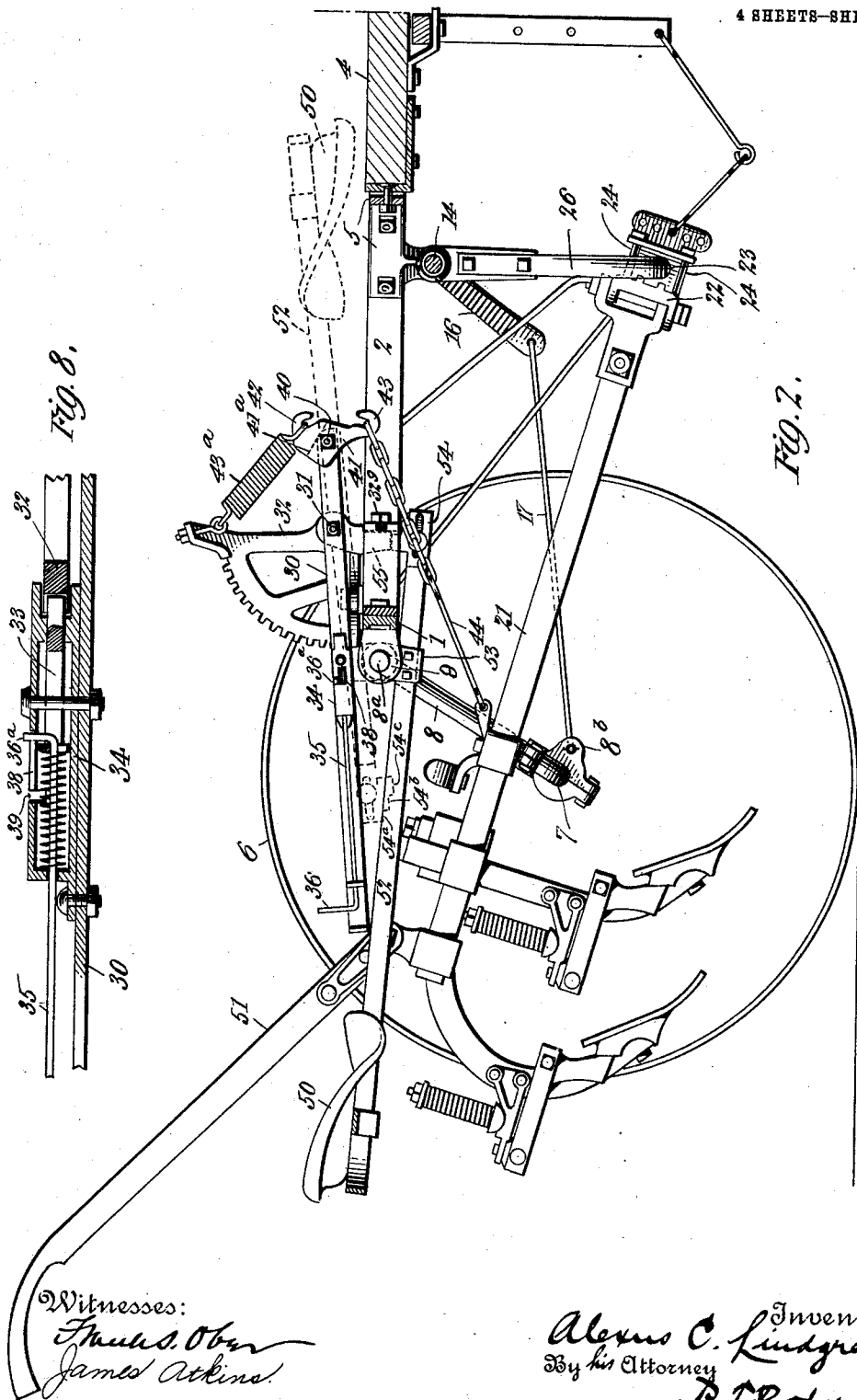
A. C. LINDGREN.
CULTIVATOR.

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1,005,242.

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4 SHEETS—SHEET 2.



Witnesses:

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4 SHEETS—SHEET 3.

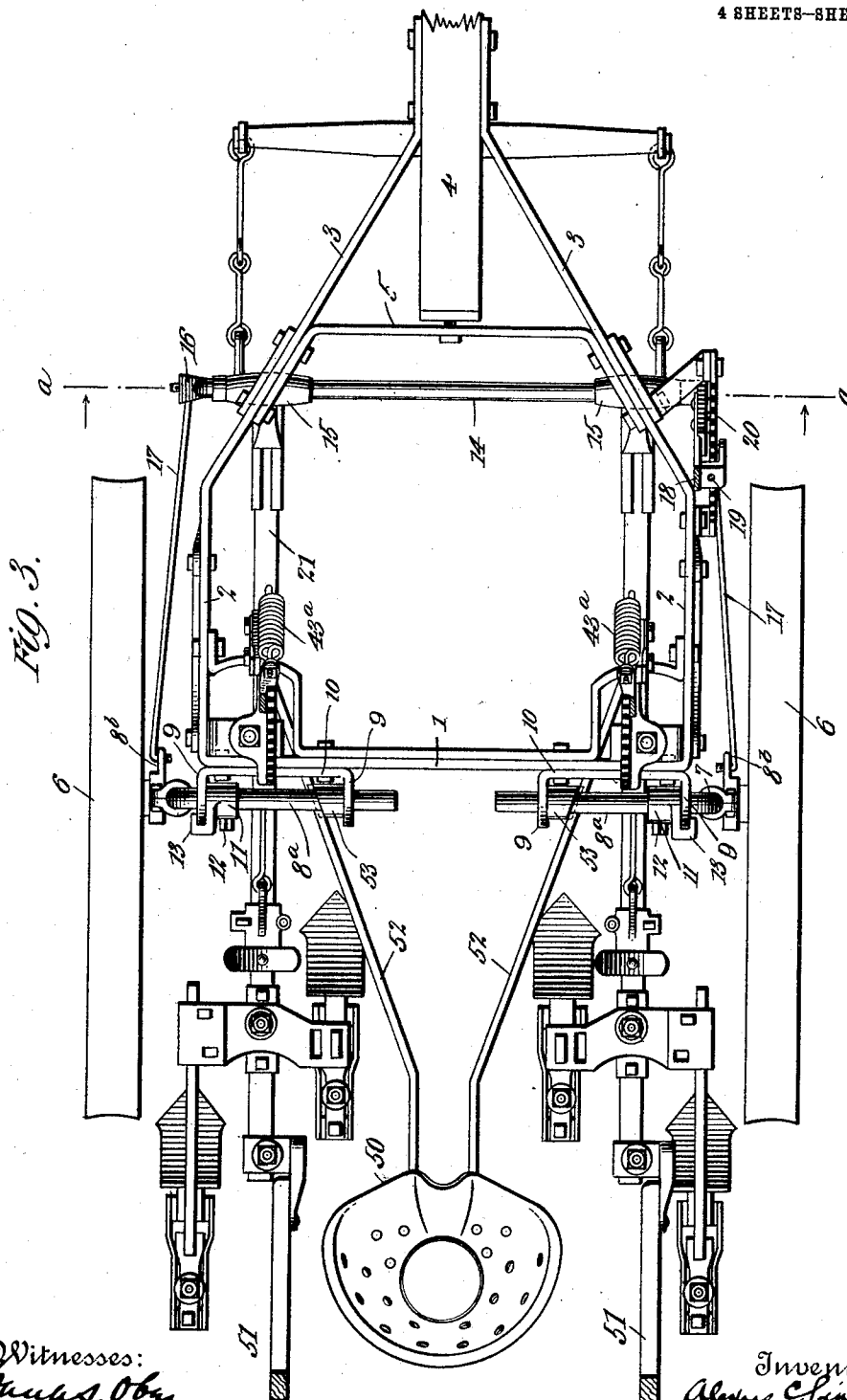


Fig. 3.

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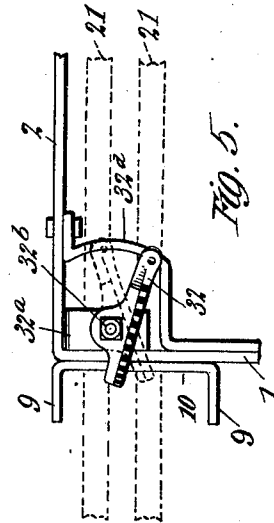
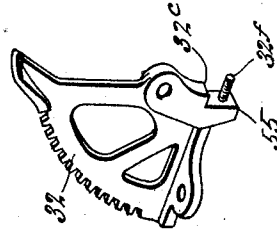
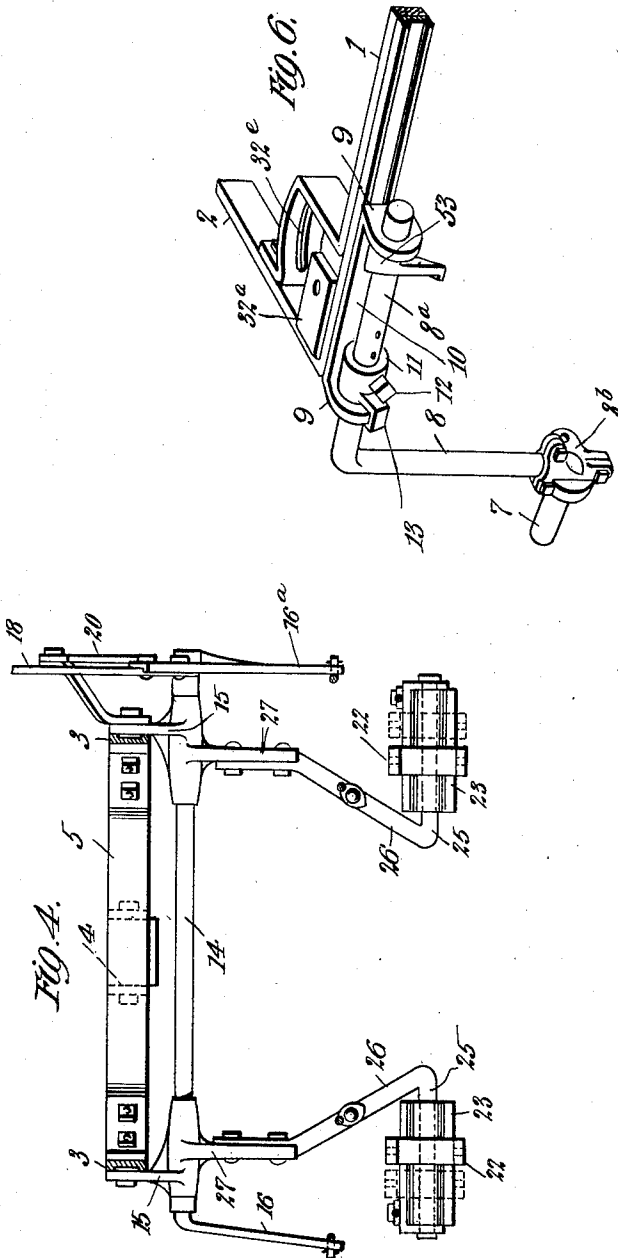
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1,005,242.

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4 SHEETS-SHEET 4.



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UNITED STATES PATENT OFFICE.

ALEXUS C. LINDGREN, OF MOLINE, ILLINOIS, ASSIGNOR TO MOLINE PLOW COMPANY,
A CORPORATION OF ILLINOIS.

CULTIVATOR.

1,005,242.

Specification of Letters Patent.

Patented Oct. 10, 1911.

Application filed November 11, 1910. Serial No. 591,787.

To all whom it may concern:

Be it known that I, ALEXUS C. LINDGREN, of Moline, county of Rock Island, and State of Illinois, have invented a new and useful
5 Improvement in Cultivators, of which the following is a specification.

This invention relates to cultivators, and has reference more particularly to wheeled cultivators in which the frame of the machine straddles the rows of plants and gives
10 support to cultivator beams on opposite sides of the rows.

The object of the present invention is to adapt machines of this type particularly for
15 the cultivation of corn and cotton planted in rows very close together, and the invention consists in various improved features of construction relating to the form and construction of the frame and the manner
20 of attaching the ground wheels to adapt the latter to be adjusted in or out to vary the width of the machine as a whole; to the form and construction of the beam supporting member or parts to adapt the beams to
25 be adjusted close together in the cultivation of high and bushy plants; to the means for raising and lowering and suspending the beams, and balancing the frame; to the means for changing the position of the
30 driver's seat to adapt the machine to be used as a walking cultivator, and to various other features of detail and construction which will be fully pointed out in the specification, and the novel parts set forth in the claims.

In the accompanying drawings: Figure
35 1 is a side elevation of my improved machine with the beams lowered in action. Fig. 2 is a similar view showing the beams raised out of action and held suspended.
40 Fig. 3 is a top plan view of the machine with the beams lowered and with certain parts in section. Fig. 4 is a transverse sectional elevation on the line *a-a* of Fig. 3,
45 looking in the direction of the arrow in said figure. Figs. 5, 6 and 7 are views of details. Fig. 8 is a sectional view of one of the beam
lifting levers on the line *a-a* of Fig. 1.

Referring to the drawings: The frame of the machine may be of any appropriate
50 form and material to adapt it to give support to the parts hereinafter described. In the present instance, the frame is shown as being constructed mainly from a single section of metal bar bent to form a rear
55 frame bar 1, forwardly extending side bars

2—2 which converge at their forward ends as at 3—3 and are connected firmly to the rear end of a draft tongue 4. Between the converging portions of the side bars is applied a transverse spreader bar 5, which
60 braces and stiffens the frame at this point, and affords a means for the support of the rear extremity of the tongue which is firmly attached to the spreader bar in any suitable manner.

The frame is supported by ground wheels
65 6—6 mounted on horizontal stub axles 7—7 on the lower ends of vertical stems 8—8, whose upper ends are extended inwardly horizontally toward each other, forming
70 arms 8^a—8^a mounted in bearing openings in lugs 9—9, projecting rearwardly from bracket plates 10—10 fixed to the rear side of the rear frame bar 1, respectively at opposite ends of the same. The laterally extending arms 8^a of the axle stems are so
75 mounted in the lugs 9 that the arms may rock therein so as to shift the wheels back and forth to balance the frame of the machine, and these arms are held from endwise movement in their bearing openings, by
80 means of a sleeve 11, which is connected adjustably with the arm by means of an adjusting bolt 12, and which is provided with a lip 13 which extends around and embraces
85 the edge of the outer lug 9. This sleeve, while it permits the arm to rock on a horizontal axis, holds the same against endwise movement, and thus maintains the two wheels in their proper spaced relations. By
90 loosening the adjusting bolts and shifting the arms in or out, the distance between the wheels may be adjusted so as to set them closer together or farther apart, according to the conditions encountered in the practical operation of the machine.

The ground wheels may be shifted forwardly and backwardly with reference to the frame in any appropriate manner under the control of the driver, but I prefer to
100 adopt for this purpose the construction shown in the drawings in which it will be seen that a horizontal transverse rock shaft 14 is mounted in the front portion of the frame in bearings in brackets 15—15 applied respectively to the outer sides of the converging portions 3—3 of the frame, and firmly bolted thereto by the same bolts which connect the spreader bar 5 to the frame. At its opposite ends the rock shaft
105 110

is provided with depending crank arms 16—16^a, the lower ends of which are connected with the axle stems by connecting rods 17—17 having their forward ends 5 jointed to the crank arms respectively, and their rear ends jointed to lugs 8^b—8^b, on the lower ends of the axle stems. The stem arm 16^a has extending upwardly from it a hand lever 18 provided with a locking dog 10 19 adapted to engage teeth in a segment frame 20 fixed to the main frame, so that by swinging the hand lever back and forth the ground wheels may be shifted correspondingly relatively to the frame, and in 15 this way the balance of the frame may be preserved.

The wheel frame carries cultivator beams 21—21 jointed at their forward ends on a vertical axis to crossheads 22—22, which latter are applied to the rear side of sleeves 20 23—23, and fastened thereto by bolts 24 in such manner that the crossheads may be adjusted on the sleeves transversely of the machine in order to vary the distance between 25 the beams. The sleeves 23 are mounted loosely, so as to rock on horizontal supporting arms 25—25 connected to and sustained at their inner ends by the lower ends of hanger bars 26—26, which latter extend upwardly 30 and outwardly in opposite directions from their point of connection with the supporting arms, and are connected at their upper ends to depending extensions 27—27 on the brackets 15 before alluded to.

The upwardly diverging hanger arms carrying the beam supporting arms at their lower ends, form in effect in connection with the brackets 15—15, an arch for supporting the beams, which arch is contracted at the 40 point where the beams are connected with it, and is widened or enlarged above this point, the result being that in the cultivation of high and bushy plants, the arch will pass around the top and bushy portions without 45 injury to them, while at the same time, and owing to the contraction of the arch at its lower end, the beams may be set close in together and within the wider limits of the arch, and in this way enable the cultivating 50 tools carried by the beams to act close to the sides of the plants.

The beams are raised and lowered and controlled as to their depths of working by a mechanism of improved form and construction, and as the two devices for the 55 beams are identical in form and function, a description of one set will suffice.

30 represents a lifting lever pivoted near its lower end as at 31, to a toothed segment 60 frame 32 mounted and secured on the frame of the machine in a manner more fully described hereinafter. The lever is provided with a locking dog 33 adapted to engage the teeth on the segment and so arranged and 65 constructed that it may be set to an inop-

erative position free of the teeth on the segment to temporarily release the lever. This is effected preferably by mounting the locking dog in a casing 34 on the lever, to which dog the lower end of an actuating rod 35 70 is jointed. The actuating rod extends alongside the lever through a guide near its upper end, where it is extended laterally in the form of a handle 36. Where the actuating rod is jointed to the locking dog, it is provided with a laterally extending finger 36^a 75 which, as the rod is moved endwise, will slide in a longitudinal slot 38 in the casing, the upper end of which slot connects with a lateral branch slot 39, so that by drawing 80 the operating rod endwise to retract the dog and then turning the rod on its longitudinal axis, the finger 36^a will be caused to enter the branch slot and will hold the bolt retracted and temporarily free of the teeth on the segment frame. The purpose of this construction is to enable the lever to be temporarily unlatched from the segment frame in order that when the machine is used as a walking 85 cultivator, as will be presently more fully described, the beams will be free to be raised and lowered by the driver walking behind the machine.

On its lower extremity the lever has pivoted to it on an axis 40 a block 41 provided 95 at opposite ends with hooks 42 and 43. The hook 42 is connected to one end of a spring 43 whose opposite end is connected with the upper end of the segment frame, and this spring tends to hold the block in such position relative to the lever that a shoulder 41^a 100 thereon will abut against the forward side of the lever, the effect of the shoulder being to permit of a rocking motion of the block on the lever only in a direction which will place 105 the spring under tension. The other hook 43 on the block is jointed by a chain and link connection 44 with the beam near its rear end.

As a result of the construction described 110 it will be seen that with the beam down in action as in Fig. 1, and the lever locked to its segment, the spring will be under tension and will hold the shoulder on the block in contact with the side of the lever, thus preventing the spring from shifting the block 115 in such a direction as would tend to lift the beam. In this position, however, the beam may be further depressed by the foot of the driver without unlatching the lever, in order 120 to reach depressions or low places in the surface of the ground being cultivated, the depression of the beam causing the hooked block to shift on its axis against the pull of the spring. On the release of the beam by the 125 foot, the spring will rock the block back to its former position, the shoulder 41^a bringing up against the side of the lever and the parts coming to rest with the beam at its normal depth of working. From this construction 130

and arrangement of the parts it will be seen that when the beams are down and the levers locked, the entire weight of the beams is exerted in holding them in the ground, the springs having no lifting effect under these conditions because of the fact that the pull of the springs is limited and taken off the beams by the contact of the shoulders on the blocks with the levers. If, however, it is desired to elevate the beam by means of the lever, the locking dog is withdrawn from the teeth on the segment frame, and the lever being released, the spring will act in contracting to pull up on the lower end of the lever and will exert its force in raising the beam, thus assisting the driver in this operation. It will be seen, therefore, that the driver occupying the seat 50, is enabled by the two levers 30 to raise and lower the beams and regulate the depth of penetration of the cultivating tools, and by resting his feet in the foot rests on the beams, the latter may be moved laterally to follow the row of plants, and at the same time by means of the lever 18 the balance of the machine may be preserved by shifting the ground wheels back and forth.

I propose to provide for the use of the machine as a walking cultivator, the driver walking behind the machine and by means of handles 51—51 on the beams, controlling the same both as to their lateral guiding movement and as to their elevation and depression. In order that under these conditions there will be no obstruction offered by the seat 50 which is situated at the extreme rear of the machine, I propose to so mount the seat that it may be shifted or moved to an inoperative position and to a point where it will cause no interference. This is conveniently effected by mounting the seat on the rear ends of two seat bars 52—52 which are extended forwardly and outwardly and beneath the horizontal axle arms 8^a, at which points the seat bars are fixed to the outer sides respectively of sleeves 53—53 loosely encircling the axle arms at the inner sides of the inner lugs 9 of the brackets 10. Beyond this point the two seat bars extend forwardly and terminate at their forward ends beneath the toothed segment frames 32, at which point the bars have applied to them longitudinally adjustable bearing blocks 54 provided with a number of stepped surfaces 54^a, 54^b, 54^c, adapted one or the other, according to the longitudinal adjustment of the blocks, to contact with depending fingers 55 on the respective segment frames. By adjusting the blocks on the bars to bring the different stepped surfaces in an operative relation to the extensions on the segment frames, the height of the driver's seat may be varied so as to accommodate different riders. By connecting the seat bars to the loose sleeves as described, the entire seat

frame may be turned on the arms 8^a as an axis, and the seat shifted from its rear position as shown in Fig. 3 to an inoperative forward position as shown by dotted lines in Fig. 2, in which latter position it will offer no interference to the driver walking in rear of the machine in controlling the movements of the beams by the handles. When the cultivator is used in this manner as a walking cultivator, the lifting levers 30 are unlatched from their toothed segment frames by withdrawing the locking dogs 33 and turning the actuating rods on their longitudinal axis to enter the fingers 36 in the branch slots in the casings 43, and as the beams are raised and lowered by the driver grasping the handles 51, the levers 30 will swing freely up and down on their axis on the segment frame.

The form of the lever 30 and the rocking block 41, and their relations to the spring 43, and to the point of connection with the beam and fulcrum of the lever are such that when the beam is raised to the position shown in Fig. 2 it will be held raised and without the use of suspending hooks. When in this raised position the pull of the spring, and weight of the beam will act on the block 41 in such manner that the end of the lever will be raised beyond its fulcrum 31, thus causing the fulcrum of the block to "pass center," and the further descent of the other end of the lever being prevented by contact of the same with the base of the segment frame, the parts will be held in this position and the beam locked raised. To depress the beam from this position it will be necessary to exert some extra force downwardly on the same in order to break the dead center.

In order that under the different adjustments of the beams to and from each other, which adjustments are effected by shifting the supporting heads 22 along the sleeves 23, as before described, the lower ends of the lifting levers will be directly over the beams, to the end that the latter will be allowed to trail truly in the line of draft and be free from any tendency of the link connection with the lever from shifting the beams laterally. I so mount the segment frames 32 on the frame of the machine, that they may be adjusted laterally to preserve the alinement of the lever and the beam-connections, with the beams. This is conveniently effected as shown more particularly in Figs. 6, 7 and 8, where it will be seen that each of the segment frames 32 is seated on a bracket 32^a extending inwardly from the frame bar and is connected with the said bracket by a vertical bolt 32^b in such manner that the segment frames may be shifted laterally to different positions on the axis of the bolt as a center, as indicated by dotted lines in Fig. 5. At its forward end the segment frame is

provided with a shoulder 32^e which rests on a segmental bar or plate 32^d fixed to the main frame, which plate supports the segmental frame in its different lateral adjustments. The segment plate is provided with a slot 32^e through which extends a threaded stem 32^f projecting forwardly from the segment frame, the latter being firmly held in the different positions adjusted, by means of a nut 32^g applied to the threaded stem and bearing against the forward face of the plate 32^d. From this construction it will be seen that when the beams are adjusted to vary the distance between them to accommodate rows of plants of different widths, the ends of the lifting levers and the suspending connections therefrom to the beams, may be maintained vertically over the latter by the lateral adjustment of the vertical ends of the segment frames around their pivotal bolts.

In the foregoing description I have illustrated and set forth my invention in its preferred embodiment as regards the detailed construction of the various operative parts. It will be manifest, however, that the invention in its broader aspects is not limited to such details of embodiment, but that the parts may be variously modified in many particulars which will suggest themselves to the skilled mechanic without departing from the limits of my invention; and it will further be understood that my invention is not limited to any specific form or construction of the parts, except in so far as such limitations are specified in the claims.

Having thus described my invention, what I claim is:

1. In a cultivator, the combination of a frame, a bearing support adjustable laterally thereon and adapted to be locked in its adjusted position, a cultivator beam pivoted to said support and capable of a lateral rocking motion in reference thereto, a lever for raising and lowering said beam and adjustable laterally to correspond to the adjusted position of the beam, means for locking said lever in its adjusted position, and a flexible connection between the lever and beam to permit the latter to be rocked slightly in relation to its support.

2. In a cultivator, the combination of a frame, a bearing support adjustable laterally thereon and adapted to be locked in its adjusted position, a cultivator beam pivoted to said support and capable of a lateral rocking motion in reference thereto, a segment frame mounted on the frame and carrying a lifting lever for the beam and adjustable laterally to correspond to the adjusted position of the beam, means for locking the segment frame in its lateral adjustments, and a flexible connection between the lever and beam to permit the latter to be rocked slightly in relation to its support.

3. In a cultivator, the combination with a frame, a beam movable up and down, a lever mechanism sustained by the frame and connected with the beam for positively raising the latter and holding it in different suspended positions, said lever mechanism including means for permitting the beam to be depressed beyond its suspended position.

4. In a cultivator and in combination with the frame, a vertically movable beam mounted thereon, a suspending device connected with the beam for raising and lowering the same, tension means acting on said suspending device in opposition to the weight of the beam, and tending to lift the beam, and a stop device acting when the beam is in its lowered position to limit the lifting tendency of the tension means; whereby, while the weight of the beam may be exerted to its full extent in holding it down, the beam may be further depressed against lifting action of the tension means, to reach low places in the ground.

5. In a cultivator and in combination with the frame, a vertically movable beam mounted thereon, a suspending device connected with the beam for raising and lowering the same, a spring connected with the suspending device and with the frame and tending when the beam is lowered to lift the beam, and a stop device acting when the beam is in its lowered position to limit the lifting action of the spring.

6. In a cultivator and in combination with the frame, a vertically movable beam mounted thereon, a lifting lever fulcrumed on the frame, a rocking member carried wholly by and movable bodily with the lifting lever, a connection between the rocking member and the beam, and a spring connecting the rocking member with the frame.

7. In a cultivator and in combination with the frame, a vertically movable beam mounted thereon, a lifting lever fulcrumed on the frame, means for locking the lever thereto in different positions, a rocking member fulcrumed on the lifting lever, a connection between said rocking member at one side of its fulcrum and the beam, and a spring connected with the rocking member on the other side of its fulcrum and connected also with the frame.

8. In a cultivator, the combination with the frame, of the beam movable up and down, a lever fulcrumed on the frame, a connection between the lever on the forward side of its fulcrum and the beam, and a spring connected with the lever on the forward side of its fulcrum and with the frame, the relation of said parts being such that when the end of the lever is swung upwardly on the elevation of the beam, the pull of the beam and spring will hold the lever in such position as to lock the beam raised.

9. In a cultivator and in combination with

the frame, a vertically movable beam mounted thereon, a lever fulcrumed on the frame and extending forwardly from its fulcrum, a flexible connection extending from the lever
5 downwardly to the beam, and a tension device connected with the lever and extending upwardly and connected also with the frame, the relation of said parts being such that
10 when the lever is swung upwardly on the elevation of the beam, the leverage through

which the tension device acts will overcome the tendency of the beam to descend, and the parts will be held raised.

In testimony whereof I hereunto set my hand this ninth day of November, 1910, in the presence of two attesting witnesses.

ALEXUS C. LINDGREN.

Witnesses:

L. C. BLANDING,
C. A. BANISTER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."