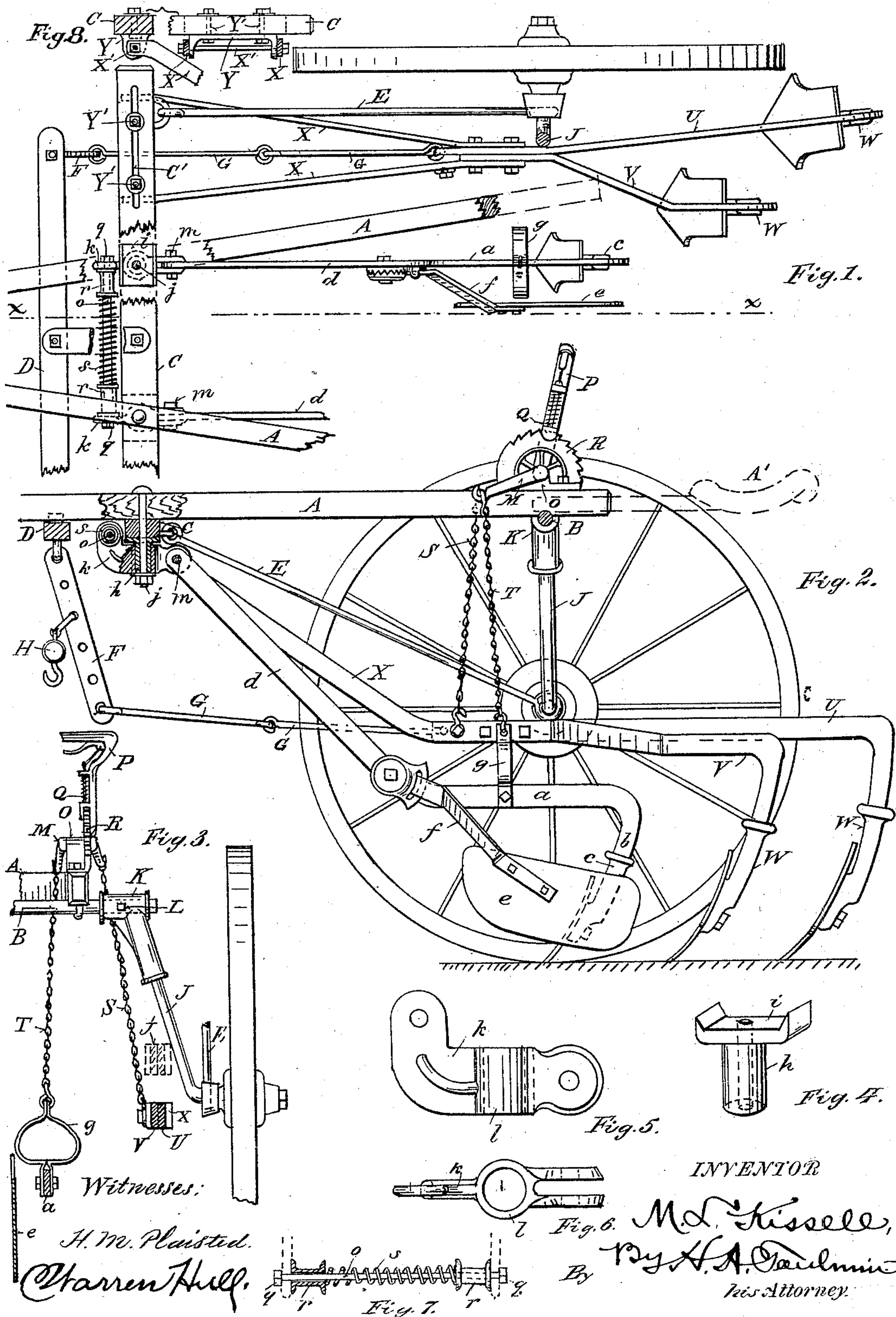


(No Model.)

M. L. KISSELL.  
CULTIVATOR.

No. 424,316.

Patented Mar. 25, 1890.





# UNITED STATES PATENT OFFICE.

MARTIN L. KISSELL, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE P. P. MAST & COMPANY, OF SAME PLACE.

## CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 424,316, dated March 25, 1890.

Application filed January 16, 1890. Serial No. 337,075. (No model.)

*To all whom it may concern:*

Be it known that I, MARTIN L. KISSELL, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Cultivators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in riding-cultivators.

The improvements have reference to the provision of a spring arranged to act against two pivoted gangs or beams, which are supplemental to the main gangs or beams of the cultivator and which are to be manipulated by the feet of the driver, the spring facilitating the lateral adjustments of the auxiliary beams, in the manner hereinafter more fully pointed out; and the improvements further have reference to certain matters of detail and construction hereinafter more fully set forth.

In the accompanying drawings, forming a part of this specification, and in which like reference-letters indicate corresponding parts, Figure 1 represents a portion, in plan view, of a cultivator embodying my improvements, with the arch in section; Fig. 2, a sectional view of the cultivator on the line *xx* of Fig. 1; Fig. 3, a rear elevation of the portion of the cultivator, with a main beam and an auxiliary beam in section; Figs. 4, 5, and 6, detail views of parts used in the spring equipment; Fig. 7, a detail view of the spring equipment, partly in plan and partly in section; and Fig. 8, a detail view of the main-beam connection.

The type of cultivator with which my improvements are especially designed to be used is the riding-cultivator; but they are applicable to the walking-cultivator. The kind in so far as illustrated in the accompanying drawings is of the straddle-row riding-cultivator class, having a split or divided tongue A mounted upon an arched axle B, and having cross-pieces C and D secured thereto, which, with the tongue, compose the frame. The piece C is braced to the lower part of the arch by means of rods E, and the piece D carries suspended draft-links F, which

are coupled with the main beams by the jointed rods G. The singletrees H are carried by the links F, and the line of draft is adjusted up and down by engaging the clevis with one or the other of the holes in the links F. The features so far described are common. The arch is peculiar in regard to the side portions J, which, as seen in Fig. 3, are inclined from the upper end outward. This widens the arch at the lower ends of the sides J and gradually contracts it toward the upper horizontal part. The object of this is to use a narrow arch at the top and yet to have ample clearance within the side pieces J to accommodate the vertical adjustments of the main beams. These beams, when their standards are made long enough to adapt them to use in fields where accumulations of trash are considerable, must be provided with shovel-standards of unusual length or of greater length than those used in clearer fields. When the standards are sufficiently long to meet the former conditions, the beams are about on a line with the spindle portion of the arch when the shovels are at about a level with the ground. Therefore there must be room within the side portions of the arch to accommodate the beams when they are lifted up and suspended in turning the machine around or in transporting it from place to place. The dotted lines at J' in Fig. 3 show the beam in section in its elevated position.

It is preferred to construct the arch of three pieces—the upper part and two side pieces—the latter being turned outward to form the spindle portions. The upper cross-piece and the side pieces are connected together by a cast elbow K, having a horizontal and an inclined socket and held in adjusted positions on the cross-piece by a set-screw L.

The usual or any approved lifting device may be employed to elevate and suspend the beams. A convenient type is shown in which a double crank-arm M is mounted in a block O on the tongue and provided with a handle lever P, having a detent Q, which engages with a notched segment R, conveniently mounted upon the frame. On one arm of the shaft M a chain S is connected, which operates and sus-



pend on one main beam, and on the other arm is secured another chain T, which connects with the stirrup of one of the auxiliary beams. This elevating device is in duplicate, there being one for the main and auxiliary beams at each side of the machine.

While the main beams may be of any type desired, it is preferred to construct them of two pieces U and V, which at their rear ends are bent down to form the shovel-standards and to receive the sleeves W, to which the shovels are attached. These pieces are bolted together, as also to two outwardly-extending diverging draft-pieces X X, the upper ends of which are connected to the cross-piece C by means of a bolt X', carried by a bracket Y. This bracket is laterally adjustable and is connected with the cross-piece C by bolts Y', passing through the slots C'. These main beams are not intended to move laterally, and hence the pieces X X are separated at their upper ends.

Referring now to the auxiliary beams, these consist of pieces a, turned down at their rear ends to form standards b to receive the sleeves c of the auxiliary shovels, and which pieces are carried upward and forward, as shown at d, and arranged to connect to the cross-piece C. At or near the bend in the pieces a d is attached a fender e by an arm f. The connection of the arm f with the beam is preferably adjustable, and any approved device may be used for the purpose. Each auxiliary beam carries a stirrup g, in which the operator places his foot and adjusts the beams laterally to avoid uprooting some plants and to reach others, as occasion may require, in consequence of the sinuosity of the rows. The connection of each auxiliary beam with the frame of the machine involves a horizontal and a vertical pivot, so that the beams may be adjusted up and down and be capable of this lateral movement.

The preferred type of coupling consists of a stud h, having a flanged plate i, which is fitted to the cross-piece C. The stud is held by a bolt and nut j, and receives a plate k, which has a sleeve l adapted to fit upon the stud h. To the rear end of this plate, which is preferably bifurcated, as seen in Fig. 6, the upper end of the auxiliary beam is pivoted by a bolt m. Each coupling of an auxiliary beam consists of these parts. By the forward end of each plate a rod o is carried, with a nut q at either end to adjust the plates toward each other. On this bolt are placed collars r, one adjacent to each plate. Between these collars is placed a spiral spring s, the spring being slipped over the rod. The spring exerts an outward pressure against the forward ends of the plates k. If one of the auxiliary beams be moved outward at the stirrup end, the spring will be compressed more or less. As the operator in moving the beam in this direction has an advantage by reason of his position, which is over and between the auxiliary beams, and as he has great leverage over the

spring, its resistance is not felt. In drawing the beam back into the line of draft or inside of that line he has not the same purchase or advantage. The spring, however, gives its assistance and aids him in this latter movement. Either beam may be operated independently of the other, or both beams may be swung in the same direction at the same time. If the latter be done, the outer pressure of, say, the right-hand beam, which is done with the advantage of position before referred to, will assist in moving the left-hand beam inward, in which inward movement the driver needs assistance. The action of the spring therefore assists the driver, whether the beams are moved together or independently. It gives to these pivoted suspended beams a quickness and readiness of articulation which is peculiarly advantageous in the practical use of the machine. The principle or mode of operation involved in this feature of my invention may be said to consist in a spring force exerted against two pivoted beams whose points of articulation are more or less remote in such wise that the lateral manipulation of the beams is aided by the action of the spring, and particularly in the direction in which the operator works with disadvantage, and this irrespective of which side of the pivot the spring exerts itself, and whether it be an expansive or a contracting spring. The position of the spring with respect to the pivots will determine whether it shall be an expansive or a contracting spring.

In Fig. 2 the seat is shown in dotted lines at A'. It is mounted upon the machine in any desired manner.

I have shown one spring as applied to do the work; but should its labor and offices be divided up between a plurality of springs my invention will not thereby be departed from.

By adjusting the nuts q on the rod o the normal position of the auxiliary beams with respect to each other and the line of draft or progression may be determined at pleasure. In practice it is often desired to adjust them farther apart or closer together, as the character and condition of the work to be done may require.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a cultivator, the combination, with the frame, of auxiliary beams carrying shovels and pivotally connected with the frame by remote pivots, and a spring applied to said beams and exerting a pressure against them in a transverse direction.

2. In a cultivator, the combination, with the frame, of auxiliary beams carrying shovels and connected to the frame by independent pivots remote from each other, and a spring applied to said beams and exerting a lateral pressure against them in an outward direction.

3. In a cultivator, the combination, with the frame, of auxiliary beams carrying shovels and connected to the frame by pivots remote



from each other, and a spring applied to said beams forward of their pivots and exerting a pressure against each of them in an outward and lateral direction.

5 4. In a cultivator, the combination, with the frame, of auxiliary beams carrying shovels and connected to the frame by pivots remote from each other, a part of the pivot-coupling extending forward of the pivots, a rod extend-  
10 ing from one coupling to the other, and a spring about the rod exerting an outward pressure in both directions.

5 5. In a cultivator, the combination, with the frame, of auxiliary beams carrying shovels  
15 and connected to the frame by remote vertical pivots, a part of the pivot-coupling extending forward of the pivots, and a rod carried by the extended portions, having a nut, a collar on the rod, and a spiral spring about the  
20 rod and extending outward.

6. In a cultivator, the combination, with the

frame, a hollow stud secured thereto by a bolt, a plate having a collar fitted upon said stud, an auxiliary beam pivoted to the plate to the rear of the stud, and a rod carried by the for- 25 ward end of the plate and adapted to receive pressure from a spring carried by the rod.

7. In a cultivator, the combination, with a frame, of auxiliary beams carrying shovels and connected to the frame by vertical pivots 30 remote from each other, a spring exerting a pressure on the beams, and nuts on the rod to adjust the beams to different positions with respect to each other in which they are held by the spring. 35

In testimony whereof I affix my signature in presence of two witnesses.

MARTIN L. KISSELL.

Witnesses:

OLIVER H. MILLER,  
WARREN HULL.