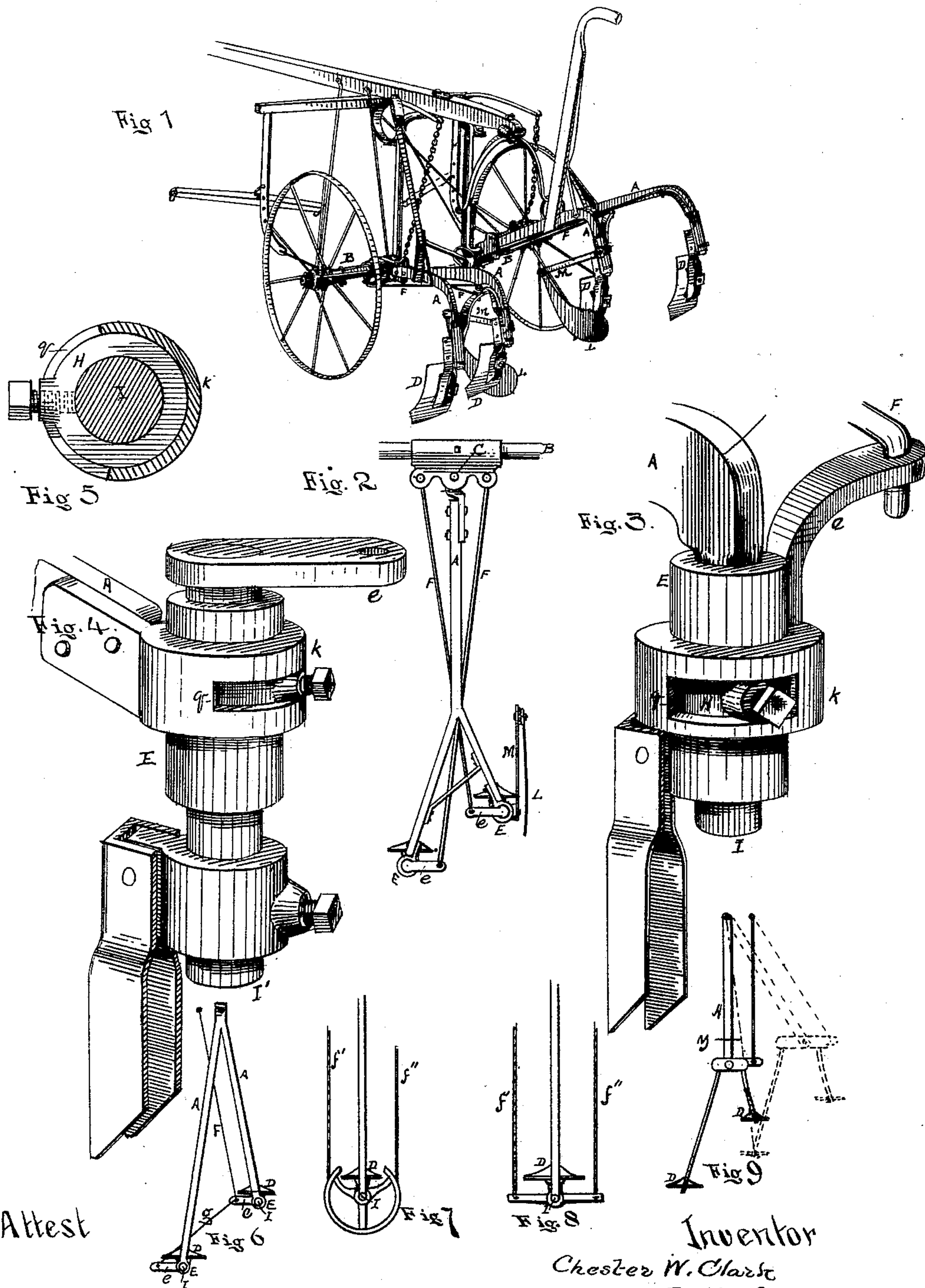


(No Model.)

C. W. CLARK.  
CULTIVATOR.

No. 414,290.

Patented Nov. 5, 1889.



Attest

*W. W. Wix*

Inventor  
Chester W. Clark  
By his Atty  
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# UNITED STATES PATENT OFFICE.

CHESTER W. CLARK, OF MISHAWAKA, INDIANA.

## CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 414,290, dated November 5, 1889.

Application filed June 26, 1889. Serial No. 315,585. (No model.)

*To all whom it may concern:*

Be it known that I, CHESTER W. CLARK, of Mishawaka, in the county of St. Joseph and State of Indiana, have invented new and useful Improvements in Cultivators; and I do hereby declare that the following is a full and accurate description of the same, having reference to the accompanying drawings, wherein—

Figure 1 is a perspective view of a cultivator embodying my invention. Fig. 2 is a plan view showing a modified drag-bar. Figs. 3, 4, and 5 are details of modified swivel-connection. Figs. 6, 7, and 8 represent modified parallel structure. Fig. 9 is an illustrative figure of a form common heretofore.

My invention relates to that class of cultivators wherein the shovels are caused to maintain their position at any desired angle to the line of advance when they are moved laterally.

Heretofore in cultivators of this class the pivot-coupling connecting the rear end of the beam with the shovels has been located some distance in front of the shovels, so that in effect the beam has been jointed in the middle and the portion in rear of said joint has partaken of the parallelism of the shovel; and it therefore follows that the beam proper, being really shortened by the amount of said rear part, is required to swing through a larger arc, and therefore requires greater exertion of the operator to move the shovels a given lateral distance than would be the case if said joint should be placed nearer to the shovels. This is illustrated in Fig. 9 of the drawings, where the lateral movement of the cross-head is shown in dotted lines, and the excess of that motion over what is required by my structure is the difference in angle between the dotted drag-bar and the dotted line *y*. Heretofore, also, the two shovels which constitute the gang on one side of the row have been coupled together rigidly, constituting one member, and have been controlled by the same parallel-motion rod. This necessitates the use of a cross-head and of greater weight and individual strength than if the draw-bars were separate and direct. I obviate these and other objections by extending the drag-bar or beam back to the shovel, and by piv-

oting the shovel independently at or near to its standard, and thereby I decrease the weight of the structure materially and obtain the desired parallel movement of the shovels with the least angular swing of the beam.

The machine shown in Fig. 1 is to be regarded as typical only, because the gist of the invention may be represented in a great many ways, too numerous for detailed description herein, although I have shown several modifications. I therefore do not intend to confine myself to the details as shown.

A A are the drag-bars or beams of the shovels of one gang. They may be made in any convenient form and of any suitable material. The form shown is that which is generally adopted for ordinary cultivators, as it combines cheapness, lightness, and efficiency.

The beams A may be coupled together, as shown in Figs. 1 and 6, and connected to the axle B with coupling C, common to both of them, or they may be separately coupled, as preferred.

The upright portion of the drag-bar, which constitutes the standard of the shovel, may be an integral part of said drag-bar, or may be a separate piece rigidly secured thereto. The shovel D is attached to its standard by a swiveling joint, which permits the shovel to partly rotate to preserve its parallelism when it moves laterally. The required parallelism of the shovel may be secured in a variety of well-known ways. The swivel-joint between the standard and shovel may be constructed in a variety of ways—as, for instance, the standard may be made straight and cylindrical, as at I, Fig. 3, and the shovel fitted thereto directly by clips, boxes, or a sleeve, as shown in Fig. 3; or the standard may be tubular, as shown in Fig. 4, and the shovel may be then provided with a shank I' or wrist to pass through said tubular standard. In every case the pivotal axis for the shovel will be close to the shovel and preferably in rear of it.

The shovel-holder is provided with a lateral arm *e* and a member connecting the extremity of said arm with a point on the axle lateral as to said joint C, so that said member will be parallel with the draft-line, and the movements of said member being coin-



cident with the movements of the beam and always in parallelism therewith, it follows that the shovel will maintain its parallelism also. The member referred to may be a rigid rod F, or by duplicating the arm *e*, as in Fig. 8, or by employing a circular segment, as shown in Fig. 7, flexible cords or chains *f' f''* may be employed instead of rigid rods. The two independently-pivoted shovels may also be coupled together by a pivoted brace or rod, like *g*, as shown in Fig. 6, and then both controlled by a single parallel member F.

In operation the attendant frequently rides on the wheeled portion of the machine and governs the cultivators with his feet. This requires that the feet shall act upon that beam A which is nearest the middle of the machine, and it will in that case be more convenient to have the parallel rods F arranged as far as possible between the beams and protected by the same. This may be accomplished by arranging the arms *e e* as shown in Fig. 2, or by projecting said arms in the same direction, so that both rods F may work from the same center of the axle.

In Fig. 2 the shovels are shown attached to a single drag-bar, which is forked near its rear end.

In Figs. 3, 4, and 5 a very convenient way of securing the rotating part in place is shown. This is by means of a collar H, which is interiorly fitted to the wrist and secured thereon by a set-screw or other convenient means, and is placed in a gap *q*, made in the enlargement *k* of the holder E. By this means the shovel is made adjustable up or down on the wrist or as to the drag-bar, and rendered free to rotate through any desired angle to maintain parallelism when moved laterally. The shield L is attached to the forward end of an arm M, which is at its rear end secured to the shovel-carrier, and is thereby retained in its position parallel with the shovel through all the movements of said shovel.

Having described my invention, I claim as new—

1. In a wheeled cultivator, a drag-bar hinged at its front end to the axle, shovels each independently hinged or pivoted to its standard or beam, and connecting members whereby said shovels are automatically maintained in parallelism at any desired angle to the line of draft, substantially as described.

2. In a cultivator, beams or drag-bars pivoted at their front ends to the axle and at their rear ends, shovels independently pivoted to said drag-bars, and parallel members to maintain the parallelism of said shovels when they are moved laterally.

3. In a cultivator, beams or drag-bars pivoted at their front ends to the axle and at their rear ends provided with standards pivoted to the shovels in rear of said shovels, and parallel members, substantially as set forth.

4. In a cultivator, the shovels D, provided on the rear side with sockets, and the drag-bars or beams provided at the rear end with standards fitted to said sockets to act as pivots for said shovels, and parallel members, substantially as set forth.

5. The bifurcated drag-bar or beam A A, pivoted at the front end to the axle B by means of the joint C, the shovels D, pivoted to their standards at the rear ends of said beams, and the parallel rods F direct from said shovels to the axle, as set forth.

6. The bifurcated drag-bar or beam A A, pivoted at the front end to the axle B by means of the joint C, the shovels D, pivoted to the standards at the rear ends of said beams, and the rods F, located between said beams, substantially as set forth.

7. The drag-bar A, provided at its rear end with the holder E, having an enlargement *k* and gap *q*, and the collar H, fitted to the wrist, substantially as and for the purpose set forth.

8. In a cultivator having shovels independently pivoted to the rear ends of the drag-bars and parallel members to maintain said shovels in parallelism when moved laterally, combined with the arm M, attached at its rear end to the shovel-carrier, and the shield L, attached to said arm at its front end.

9. In a cultivator, the combination, with the drag-bar pivoted to the axle and provided with pivotal bearings at its rear end for the shovels, of the holders E, the lateral arm *c*, and the parallel members, substantially as set forth.

CHESTER W. CLARK.

Witnesses:

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PETER VAN HUFFEL.