

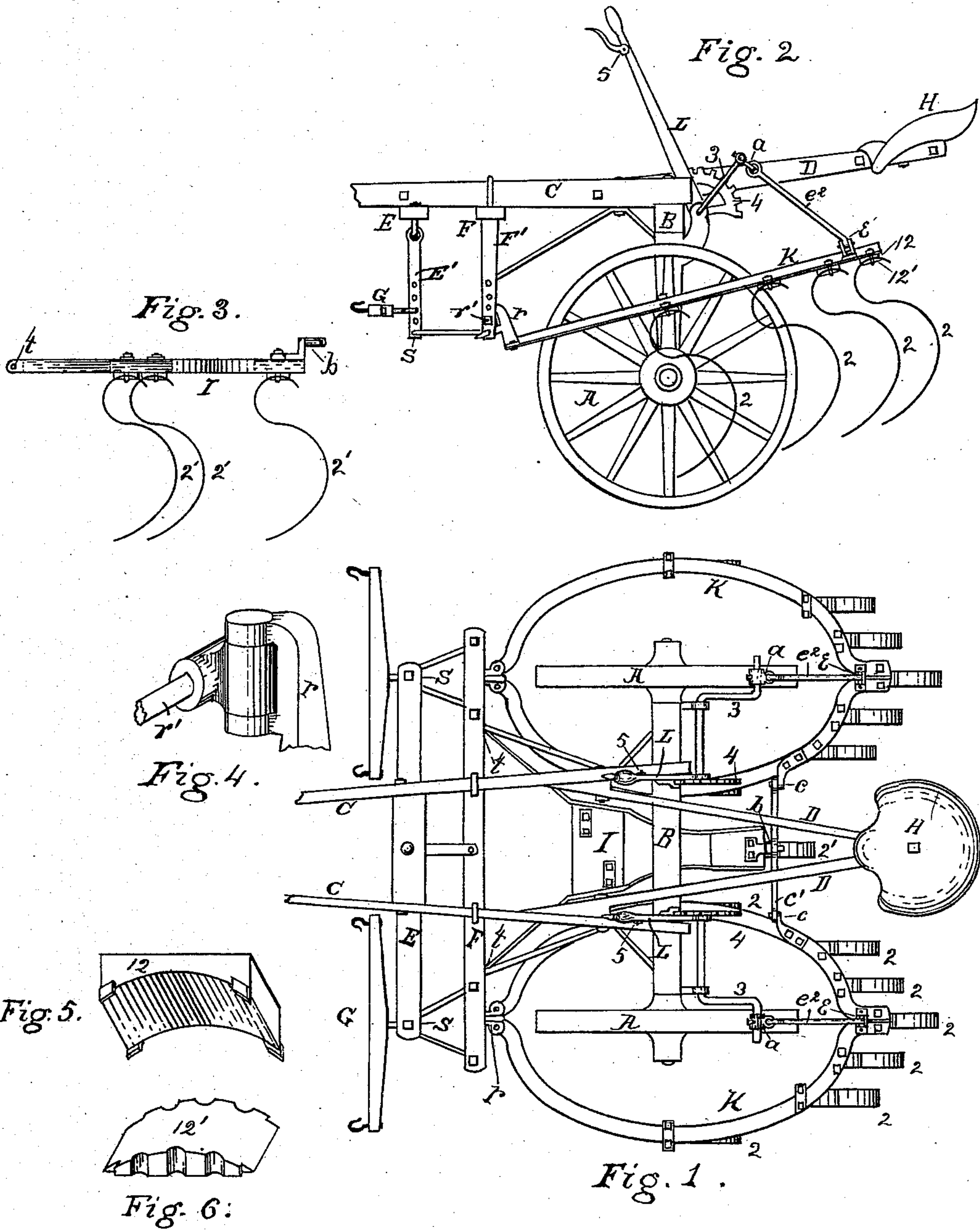
(No Model.)

2 Sheets—Sheet 1.

C. NOVER.  
CULTIVATOR.

No. 412,654.

Patented Oct. 8, 1889.



Witnesses  
Arthur C. Senison.  
Hugh E. Wilson.

Conrad Nover  
Inventor.  
By his Attorney  
Edward Tappan

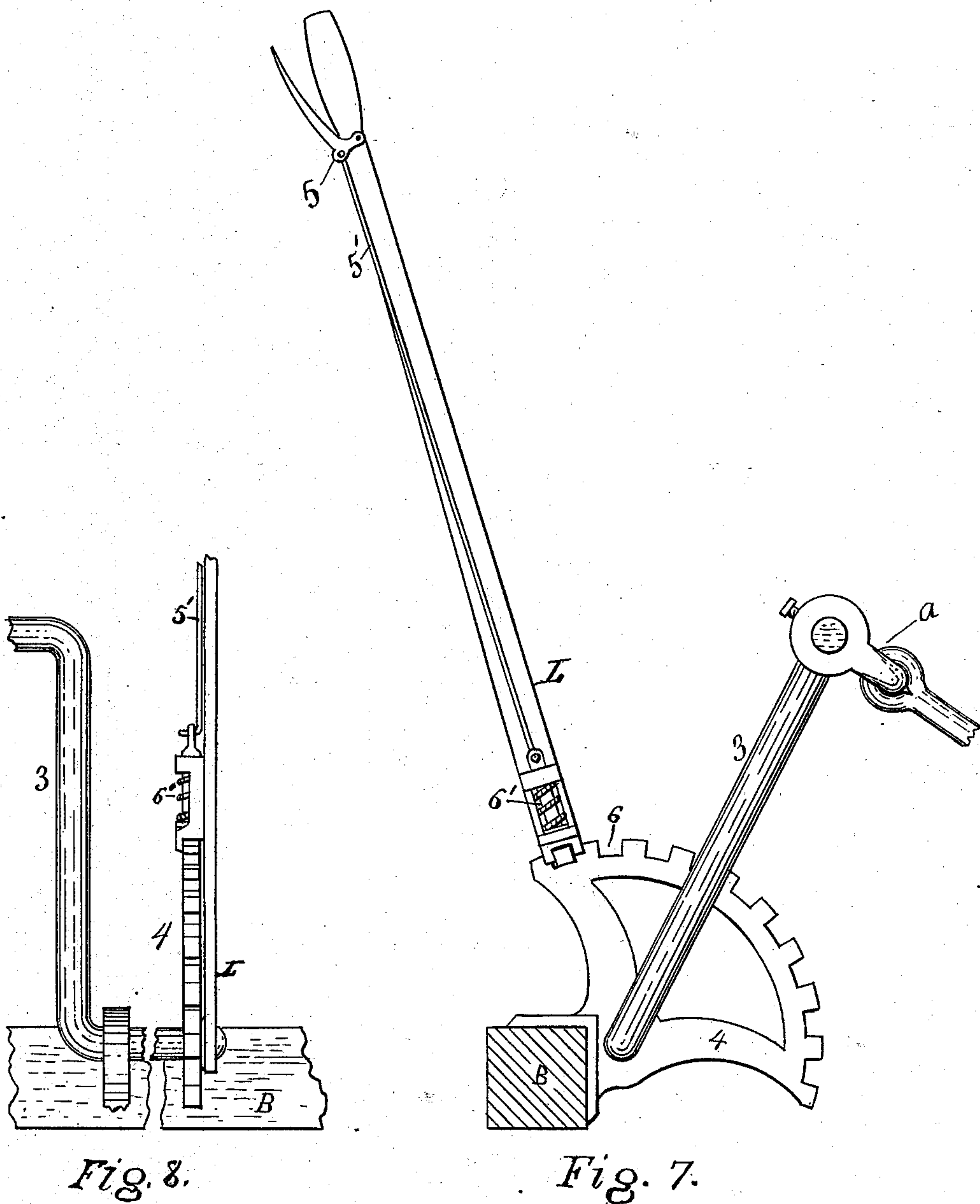
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# UNITED STATES PATENT OFFICE.

CONRAD NOVER, OF MARSHALL, MICHIGAN.

## CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 412,654, dated October 8, 1889.

Application filed November 30, 1888. Serial No. 292,315. (No model.)

*To all whom it may concern:*

Be it known that I, CONRAD NOVER, a citizen of the United States, residing at the city of Marshall, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Cultivators, of which the following is a specification.

My invention relates to a spring-tooth cultivator mounted on wheels; and the invention consists in its novel construction and combination of parts, hereinafter fully set forth.

Figure 1 of the drawings shows a plan view of my invention. Fig. 2 shows a side elevation of the same. Fig. 3 shows a side elevation of the center frame which supports the teeth between the cultivator-wings, detached therefrom. Fig. 4 shows an enlarged perspective view of the device for attaching the front end of the wings to the cultivator-frame, and Figs. 5 and 6 show a perspective view of the clamping device for attaching the teeth to the cultivator. Fig. 7 shows a side elevation of the lever, toothed segment, and lever-arm on an enlarged scale; and Fig. 8 is a rear elevation of the same parts.

Similar letters and figures refer to similar parts throughout the several views.

A A represent the supporting-wheels.

B is a beam supported on a suitable framework above the axle of the supporting-wheels.

C C is the tongue, preferably attached to the beam B at the rear end of the tongue, as shown in Fig. 2.

Attached to the tongue in front of the driving-wheels are the cross-pieces F and E, which cross-pieces, in combination with the tongue, form a supporting-frame for supporting the front ends of the wings and center tooth-frame.

K K are two elliptical frames, each frame encircling the upper part of one of the wheels. These frames form the wings of the cultivator and support the spring-teeth 2 2 2, &c., which teeth are attached in the manner hereinafter described. Each of the wings K is supported at the front end by means of the lug  $r$ , pivot  $r'$ , and bar  $F'$ . The bar  $F'$  is attached to the cross-bar F, and is provided with a series of holes for the reception of the pin or pivot  $r'$ . The front end of the frame K may be adjusted

vertically by means of the pin  $r'$  to any desired point. The rear end of each frame K is pivoted at  $e$  to the connecting-rod  $e^2$ , which rod is connected by the link  $a$  to the lever-arm 3. The lever-arm 3 is in the shape of a bell-crank, and is rigidly attached to the lever L in the manner shown in Fig. 8. A toothed segment 4 is rigidly attached to the cultivator-frame, and a stop operated by the latch 5, rod 5', and spring 6' engages with the teeth of the segment 4 and holds the lever and connecting-rods in any required position. The lever as arranged in the drawings lifts the rear ends of the frame K when said lever is pushed forward and lowers it as it is pressed backward. The cultivator-teeth on the rear of the frame K may not only be adjusted to any required depth, but can be raised entirely from the ground, if required.

The two frames K K are constructed and operated alike, and a description of one will serve for both. The frames K K are connected by means of the bar or rod  $c'$ , pivoted to the pins at  $c$ , as shown in Fig. 1. The wings or frames K K are also connected by a frame I, having a projection  $b$ , that rests on the connecting-bar  $c'$ . I prefer to construct the projection  $b$  of metal and attach it to the frame I by grips, as shown. From the front end of I are two arms extending to the supports  $F'$ , and attached thereto by means of draw-rods S S on one side at  $t$ .

Depending from cross-piece E are two supports, one of which is shown by  $E'$  in Fig. 2. These supports are provided with holes for the reception of a clip on the whiffletree, allowing for a vertical adjustment of the whiffletree. The supports  $F'$  and  $E'$  are connected by means of rods S S, which engage with the holes in  $E'$  and  $F'$ .

The seat H is of any suitable form, and is supported on the bars D D, as shown.

The teeth 2 2 2, &c., and 2' 2' 2' are attached by means of the device shown in Figs. 5 and 6, in which 12 represents a concave piece and 12' a convex follower. The upper curve of the tooth corresponds with the curve of 12 and 12', and is placed between 12 and 12' and securely clasped in that position by means of grips and nuts. By this method of attaching the teeth they can be singly ad-



justed to any position by simply loosening the nuts and turning the tooth in its seat and again tightening the nuts.

G represents the whiffletree.

5 Having thus described my invention, what I claim to have invented, and desire to secure by Letters Patent, is—

1. In a cultivator, the combination, with an axle and a supporting-frame, of an adjustable  
10 tooth-bearing frame suspended from the supporting-frame above the axle and surrounding the upper portion of the cultivator-wheel, substantially as described.

2. In a cultivator, the combination, with a  
15 tooth-bearing frame adjustably suspended above the axle and surrounding the upper portion of the cultivator-wheel, of a lever, a lever-crank, and a connecting-rod for raising and lowering the rear end of said tooth-frame,  
20 substantially as described.

3. In a cultivator, the combination, with a supporting-frame, of two elliptical tooth-bearing frames surrounding the cultivator-wheels and suspended from the supporting-frame, a  
25 connecting-rod  $c'$ , pivoted to said frames in

rear of the axle, and levers, toothed segments, and connecting-rods for raising and lowering the rear ends of either of said tooth-bearing frames and retain them at any desired elevation separately, substantially as  
30 described.

4. In a cultivator, the combination of a supporting-frame located above the axle, the swing tooth-bearing frames K K, surrounding the upper portions of the cultivator-wheels, a  
35 pivoted cross-rod  $c'$ , connecting said swing-frames at the rear of the axle, a central tooth-bearing frame pivotally supported above the axle between the swing tooth-bearing frames and having its rear end resting on the cross-  
40 rod that connects said frames, and levers for vertically adjusting the rear ends of said frames, substantially as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses. 45

CONRAD NOVER. [L. S.]

Witnesses:

WILLIAM L. BUCK,  
WATSON B. MEAD.