(No Model.) 2 Sheets—Sheet 1.

S. L. ALLEN.

CULTIVATOR.

No. 387,332. Patented Aug. 7, 1888.

FIG. 1.

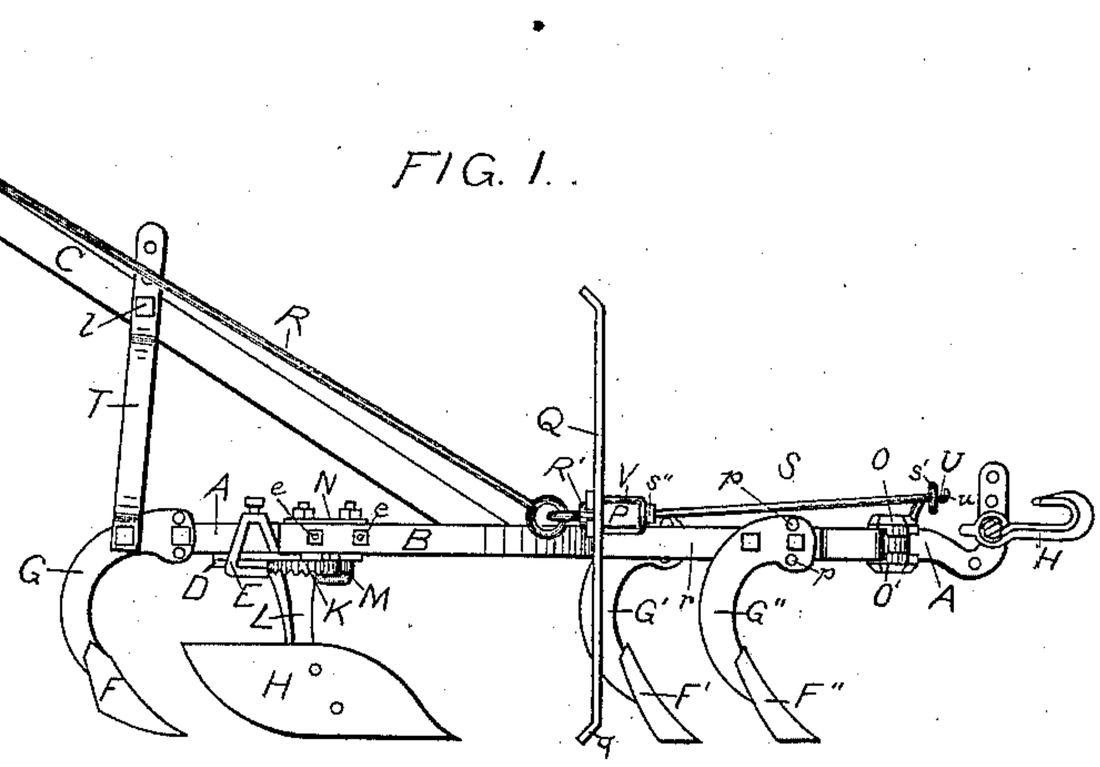

FIG. 2.

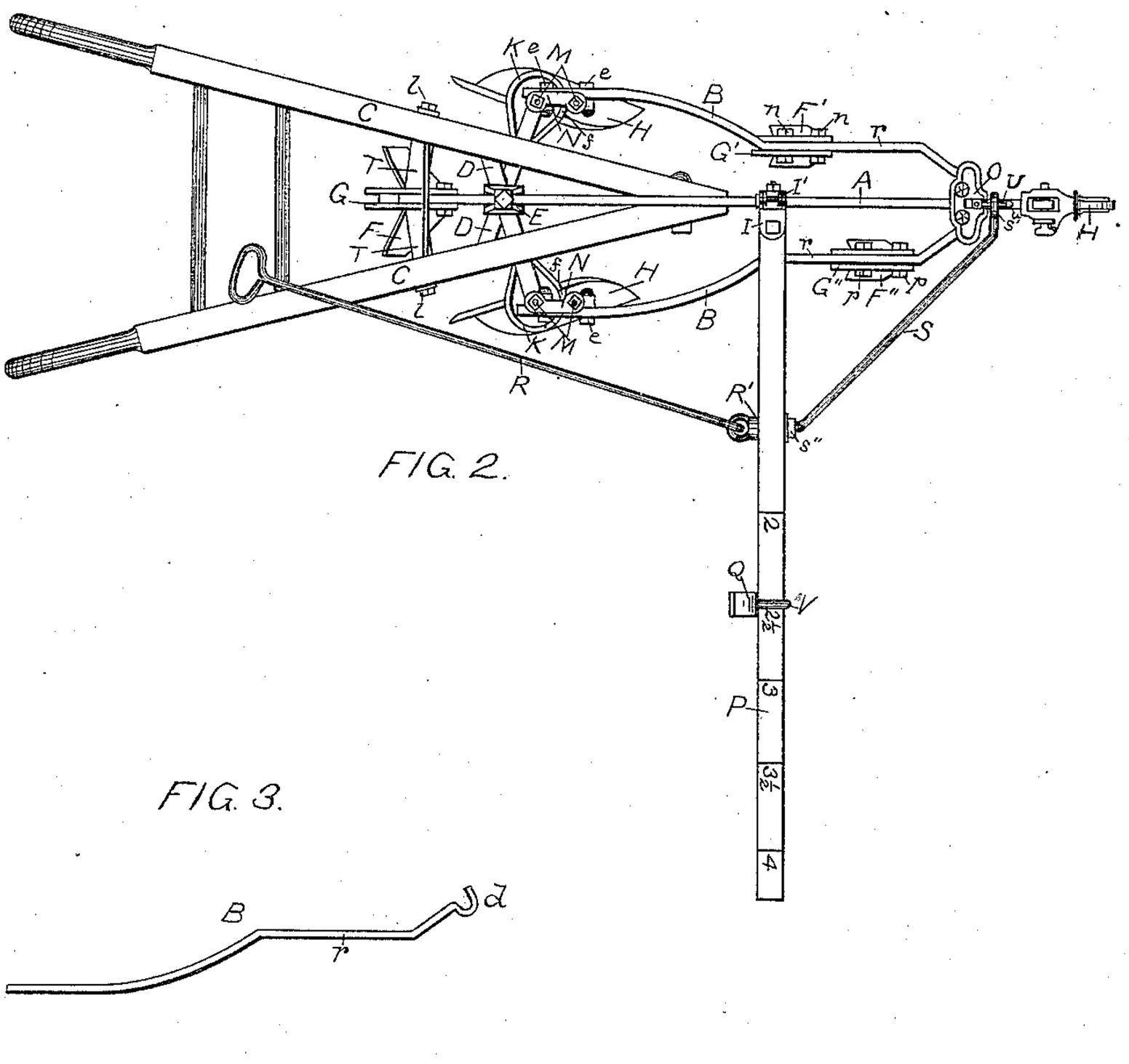

FIG. 3.

WITNESSES,
Albert E. Leach.
W. H. Thompson.

INVENTOR.
Samuel L. Allen.
By his Attorney.
Wm B. Dewoss.

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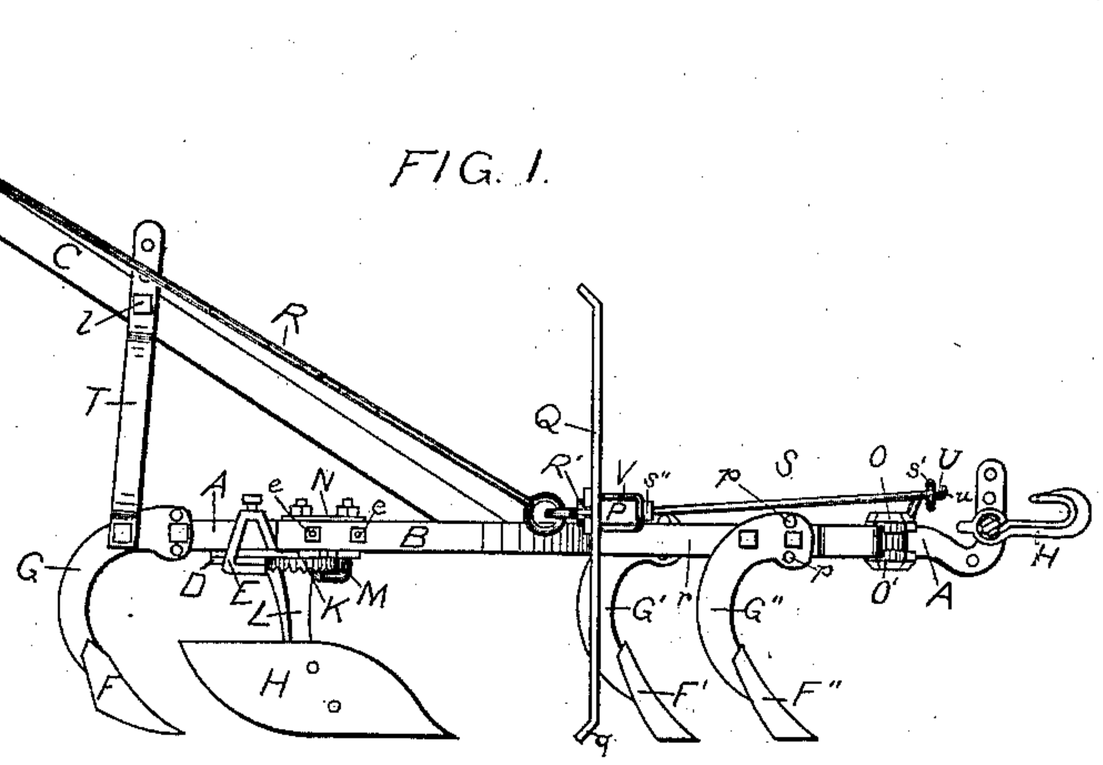

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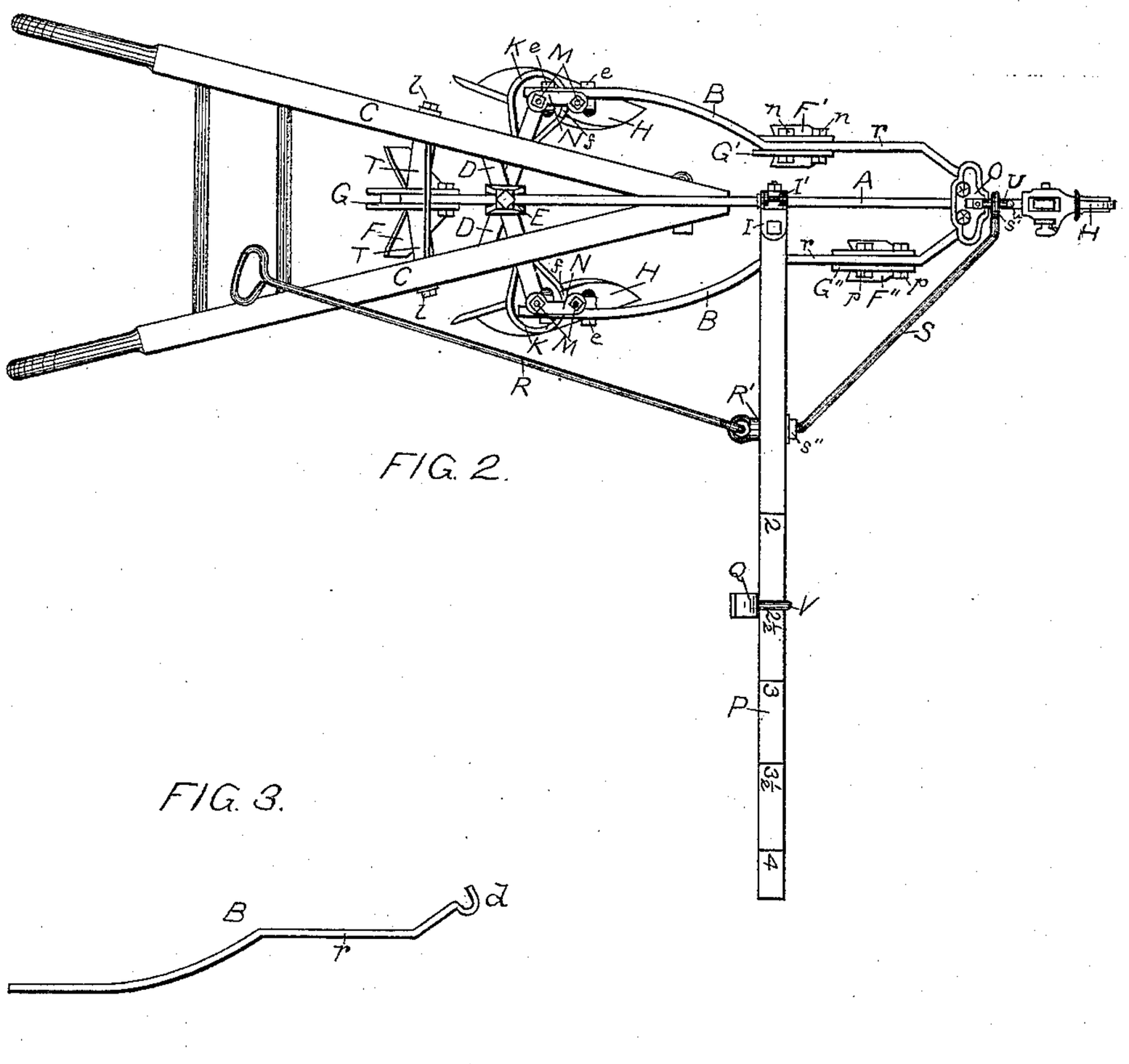

FIG. 3.

WITNESSES,
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UNITED STATES PATENT OFFICE.

SAMUEL L. ALLEN, OF CINNAMINSON, NEW JERSEY.

CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 387,332, dated August 7, 1888.

Application filed December 29, 1887. Serial No. 259,280. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. ALLEN, a citizen of the United States, residing at Cinnaminson, in the county of Burlington and State of New Jersey, have invented certain new and useful Improvements in Cultivators, of which the following is a full specification.

My invention consists of certain improved devices for cultivators, whereby, among other advantages, simplicity of manufacture is gained as well as easy adjustability of the various parts.

Of the accompanying drawings, Figure 1 is a side elevation of my improved cultivator. Fig. 2 is a plan view of the same; Fig. 3, a plan view of the side bar detached. Figs. 4 and 5 show the peculiar form of hinge used on the graduated bar. Figs. 6 and 7 are views of the upper hinge-plate seen from above and below, respectively. Fig. 8 is a front view of both hinge-plates secured in place about the central bar, but with the side bars removed. Fig. 9 is a longitudinal section through the said central bar and also through the middle of the hinge; and Figs. 10, 11, 12, and 13 are various views of the side-bar bearing-box in place on the side bar.

My improved cultivator is of the type known as the "adjustable-frame cultivator"—that is, its frame is adjustable to different widths. In United States Letters Patent No. 281,426, granted to me July 17, 1883, I have shown and described an implement of this type whose frame is preferably composed of bars of rolled wrought-iron or steel, and having adjustable teeth with struck-up wrought-iron or steel standards.

The frame herein shown rests, preferably, on five teeth secured thereto by bolts, and consists of the central bar, A, attached to the handle-bars C C, and of the adjustable side bars, B B, hinged at their forward end. The rear tooth, F, is secured to the rear of the said central bar, A, preferably by means of bolts passing through it and the standard G, which is bifurcated at its upper end to embrace the central bar, A. The supporting-braces are preferably secured to the central bar near its rear end and to the wooden handle-bars C C.

B B are the side bars of the adjustable frame, and differ, essentially, from the ordinary straight diverging bars in common use. They are made from simple strips of rolled wrought metal bent in the peculiar shape shown in Figs. 2 and 3, and provided at their forward ends with the hinge-hooks *d*. While the rear end of the ordinary side bar is provided with a rounded or upset portion having a hole for the reception of the tooth-standard fastening-bolt, my improved bar is perfectly plain at the rear end, as shown in the drawings. Being thus of uniform thickness throughout, it is capable of being made at one heat, instead of the three or more heats necessary in the manufacture of the ordinary side bar. From the peculiar shape of the side bars, B B, when the frame is open to a medium width, the portions *r r*, to which the tooth-standards G′ G″ are attached, are parallel to the line of motion. It is of course desirable that the blades F′ F″ of the teeth be parallel to the line of motion, and to accomplish this result where straight diverging side bars are employed it is necessary to use bent or twisted standards for the teeth; but when the side bars are bent, as described, with the portions *r r* substantially parallel to the central bar, A, the tooth-standards may be vertical in the plane parallel to the line of motion similar to the rear standard, G. I am thus enabled in a five-tooth cultivator of this kind to use interchangeable teeth in so far as the two forward side teeth and the rear tooth are concerned; and, if desired, the same teeth may be used at the rear of the side bars instead of the teeth having standards L L, presently to be described, in which case all the teeth would be interchangeable.

The side bars, B B, are pivoted at their hooked forward ends on studs *c c*, projecting from the top and bottom hinge-plates, O O′. Figs. 6 and 7 represent the upper hinge-plate, O, the lower, O′, being identical therewith, excepting that it has no pin U. These hinge-plates are placed above and below the central bar, A, and are provided on their inner surfaces with the shoulders *a a a a a′ a′ a′ a′*, which firmly embrace the said central bar, as shown in Figs. 8 and 9, when the plates O O′ are secured in place by the fastening-bolts *b b*, thus forming a rigid seat for the forward end of the central bar.

In Fig. 8 the side bars, B B, are removed,

showing clearly the pivotal studs *c c* on the hinge-plates O O′, on which are to be hinged the forward hooked ends, *d*, of the said side bars, B B. When hooked in place, they are prevented from slipping out by means of the side flanges, *d′ d′*, cast or formed on the hinge-plates O O′. The rear side teeth, H H, adjustable axially, have standards preferably similar to those shown and described in United States Letters Patent No. 334,327, granted to me January 12, 1886, having flanged heads K, provided on their under sides with teeth, and secured to the frame by means of the staple-shaped fastening-bolts M, also fully shown and described therein.

Near the rear of each of the side bars, B B, preferably on the inner side thereof, is secured by the bolts *e e*, or in any suitable manner, the box N, against which the upper surface of the flanged head of the standard bears. This bearing-box N is of the shape shown in Figs. 10 to 13, inclusive, in which the box is shown in place against the side bar, B, but with the bolts removed. Fig. 10 is a plan view looking down from above; Fig. 11, a side elevation of the box; Fig. 12, a plan view of the bottom looking up, and Fig. 13 an end view, (the bar being shown in section.) It is provided with vertical holes *m m*, for the two arms of the staple-bolt M, horizontal holes *e″ e³*, for the bolts *e e*, by which it is securely fastened to the side bar B, and the curved seat *f*, against which the upper surface of the flanged head K directly bears when in place. The outer end of the stay-bar D is interposed between the center of the flanged head K of the standard L and the under surface of the bearing-box N, one arm of the staple-bolt M being passed up through the hole in the center of the said flanged head, through a hole in the stay-bar, and through the hole *e″* in the box N, the other arm of said bolt being passed through the hole *e³*. The tooth-standard L is thus secured at any desired angle, and with the circular portions of its flanged head K concentric with the hole *e″* of the bearing-box N, the seat *f* resting along the outer circular rim of the flanged head, as shown in Figs. 1 and 2. The teeth H H are thus firmly secured to the side bars, B B, as are also the stay-bars D D, which cross each other, and are held in place in the usual manner by the clamping device E on the central bar, A.

Should it be desired to use interchangeable teeth throughout, the bearing-boxes N may be removed and teeth having similar standards to G, G′, and G″ may be substituted for the teeth H H, as previously stated.

For marking out the rows in the field I employ an improved marker, constructed as shown in Figs. 1, 2, 4, and 5. P is a graduated bar hinged at one end to the central bar, A, of the cultivator-frame, substantially at right angles therewith. Attached to the horizontal graduated bar P by the staple-bolt V is the vertical furrowing-blade Q, having bent ends, as shown in Figs. 1 and 2. By loosening the nuts on the staple-bolt V the said vertical bar Q may be moved along the graduated bar P and secured at any desired point thereon. Near the middle of the graduated bar P is a hole, through which passes the screw-threaded end of the bent bracing-rod S, the other end of the said rod S being provided with a ring, *s′*, which in a certain position can be slipped over the projecting pin U, attached to the upper hinge-plate, O, but which, when in the position shown in Figs. 1 and 2, is prevented from becoming detached from the pin U by reason of the knob or nipple *u*. The threaded end of the bracing-rod S being passed through the bar P, the swivel-nut R′, attached to the ring on the end of the handle-rod R, is screwed on to it, so that the bar rests between the nut *s″* on one side and the swivel-nut R′ on the other. The hinged graduated bar P thus rests on the vertical marking-bar Q, and by its weight causes the bent end *q* of the said marking-bar to draw a line in the ground when the cultivator is moved parallel to the line of motion.

By the swing-handle R the marker may be lifted from the ground when desired and hooked over the top round of the handles, thus holding the bar P nearly perpendicular in turning at the ends of rows or in going from one place to another.

In Figs. 4 and 5 are shown the peculiar form of clamping-hinge I preferably employ for securing the graduated bar P to the central bar, A, of the cultivator. This consists of a divided clamping hinge-plate, I, embracing the bar P and secured thereto by a bolt, and having the ears *h h* cast or formed integrally therewith, and the similar clamping hinge-plate, I′, to embrace the central bar, A, being secured thereto by the bolt *k′* and having the ears *g g*. The two members I I′ are hinged together on the bolt passing through the ears *g g h h*. In this manner an exceedingly rigid hinge is obtained of sufficient strength to bear the great lateral strain to which it is subjected.

I claim—

1. In a cultivator, horizontal hinge-plates O O′, having shoulders *a a′* and fastening-bolts *b*, whereby the central bar of a cultivator-frame is rigidly held in position and provided with separate pivotal studs C and side flanges, *d′*, whereby the hooked side bars of a cultivator-frame may be pivotally secured between said studs and flanges, substantially as described.

2. In a cultivator, the combination, with horizontal shouldered hinge-plates O O′, provided with fastening-bolts *b*, separate pivotal studs C, and side flanges, *d′*, of the central bar, A, and the adjustable side bars, B, provided with hooks *d* and bent, whereby when opened to medium width the straight portions *r r* of the said side bars, to which the tooth-standards G′ G² are attached, are parallel to the line of motion, substantially as and for the purposes described.

3. In a cultivator, the combination, with the side bars, B, of uniform thickness throughout,

of the detachable bearing-box N, provided with the horizontal bolts *e*, whereby the box is secured to the face of said bar, vertical bolt-holes *m*, for the reception of the tooth-standard fastening-bolt, and having the seat *f* on the under side thereof, substantially as and for the purposes described.

4. In a cultivator, a detachable marker consisting of the combination of a graduated bar, P, hinged to the central bar of a cultivator-frame, and adjustable furrowing-blade Q, provided with the staple-bolt V, embracing said graduated bar, a bent diagonal brace, S, having a screw-threaded end passing through the said bar P, and provided at its forward end with a ring, S′, whereby it is hinged to a horizontal pin, U, on the hinge-plate O, and a handle, R, pivotally attached to the nut R′ on the said diagonal brace, all constructed and arranged substantially as and for the purposes described.

5. In a cultivator, bent adjustable side bars of uniform thickness throughout, provided with hooks *d*, in combination with detachable bearing-boxes N, provided with fastening-bolt holes and seats *f*, substantially as described, and horizontal shouldered hinge-plates O O′, provided with fastening-bolts, separate pivotal studs, and side flanges, all constructed and arranged substantially as and for the purposes described.

In witness whereof I have hereunto set my hand.

SAMUEL L. ALLEN.

Witnesses:
OSWALD SMITH,
A. L. JACOBY.