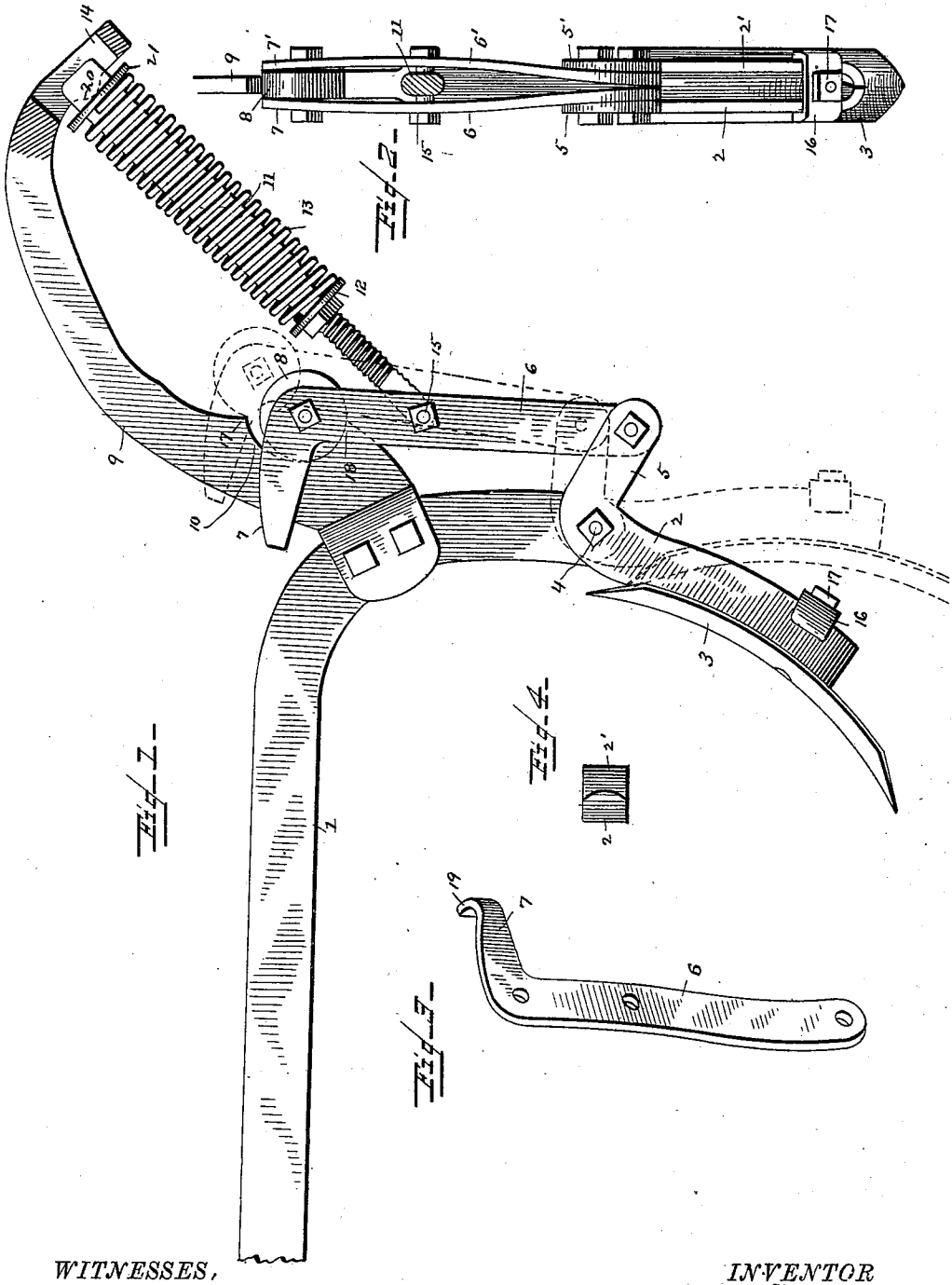
(No Model.)

J. C. BIRD.

CULTIVATOR TOOTH.

No. 397,962. Patented Feb. 19, 1889.



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CULTIVATOR-TOOTH.

SPECIFICATION forming part of Letters Patent No. 397,962, dated February 19, 1889.

Application filed October 13, 1888. Serial No. 288,050. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. BIRD, a citizen of the United States, residing at Rising Sun, in the county of Cecil and State of Maryland, have invented certain new and useful Improvements in Cultivator-Teeth; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to cultivator-teeth which are mounted elastically and are capable of yielding when a rigid obstruction is met.

The invention embodies certain structural features, which will hereinafter be fully described in the accompanying specification, and definitely indicated in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a cultivator-tooth embodying my invention. Fig. 2 is a rear elevation of the same. Fig. 3 is a detached view of one of the connecting-arms. Fig. 4 shows a joint of the plow-supports.

At 1 is represented the drag-bar to which the tooth is attached, said bar being attached to the beam of the cultivator in any suitable manner. The bar is bent downwardly, as shown. On a bolt passing through the lower end, and on opposite sides of the bar, are pivotally hung two elbow-levers, 2 2′, bent at their lower ends so as to meet when drawn together, as shown in Fig. 2, the meeting faces locking together, one being grooved to receive a tongue on the other. (See Fig. 4.) On a bolt passing through one of the arms of each lever are pivoted bars 6 6′, which are provided with arms 7 7′ at their upper ends, the arms being at an angle to the main portion or stem. Between the arms is pivotally supported a wheel or roller, 8, bearing on a guide-bar, 9, secured to the drag-bar, as shown. The guide-bar is provided with a curved recess, 10, in which the roller normally rests. The lower wall of the recess extends around the roller to a point beyond a vertical line passing through its center, so as to form a safe stop. The upper wall of the recess terminates on the inside of a vertical line passing through the center of the roller. The extremities of the limbs 7 are bent, as shown at 19, Fig. 3, so that they will meet over the guide-bar and prevent the roller being thrown off the guide-bar when the tooth receives a sudden shock. At a point intermediate between the roller and the lower ends of the bars 6 6′ is pivotally hung a rod, 11, provided with a screw-threaded stem near the pivot, on which is a tension-nut, 12, co-operating with a coil-spring, 13, said spring being seated at its opposite end against a washer on the rod 11. The outer end of the guide-bar 9 is bent downwardly and provided with a slot, 14, through which the rod may pass, the walls of the slot preventing the washer passing through. The side walls of the slot are each provided with an arc-shaped protuberance or lug, 20, (indicated in dotted lines, Fig. 1,) against which the washer is pressed by the spring. These lugs have an important function in permitting the end of the spring to be squarely seated against the washer irrespectively of the angular deflection of the rod, as the washer can rock on the apex of the lug when the pivotal point 15 is shifted under strain. If the washer were seated firmly, the spring would bear on the washer only at a point when the pivot 15 was shifted, and its resiliency would cause it to bulge at the middle, crowding it hard against the bar 11, thus introducing so strong a resistance to action that the whole device would be rendered inefficient. By the provision described, however, the rod can always play up and down in the spring without friction, the resiliency of the spring being the only thing to be overcome to allow the plow to yield.

It will be evident that by adjusting the nut 12 the tension of the spring 13 may be varied within wide limits. The plow or tooth is shovel-shaped, as shown in Figs. 1 and 2, and may be reversed. Said plow is provided with a central pin, which extends between the arms 2 2′ and through a clamp, 16, the latter having side wings which embrace the arms 2 2′ and lock them together and to the plow when the nut 17 is tightened. The wings of the clamp prevent any lateral displacement, while

the tongue-and-groove joint above referred to and clearly shown in Fig. 4 prevents the arms slipping over one another.

The operation will now be understood. When the plow strikes a rigid obstruction, the roller is forced to ride over the ridge 17 and along the guide-bar until the obstruction is cleared. The dotted lines in Fig. 1 illustrate the relative position of the parts during this movement. The rod 11 is forced through slot 14 against the tension of spring 13, which reacts and forces the plow back to its normal position as soon as the obstruction is passed. It will be noted that the shovel-plow has a firm seat against the two arms of its support 2 2′, and can be adjusted to various positions on the same by simply loosening the nut 17 and sliding the pin to the desired point. The plow can thus be adjusted to work at different depths in the soil. By making the parts in duplicate, as described, a great economy in manufacture and material is effected.

In machines where plow-supports of the loop character shown are used they are cast in one piece. Sudden shocks are liable to break them. When made as shown, they can be stamped out from malleable metal by a die in duplicate or can be cast with less difficulty and afterward rendered malleable by any suitable treatment.

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

1. In a cultivator-tooth, the combination of a pivoted plow-support, a bar pivotally connected to said support, a guide-roller secured to the bar, a fixed guide co-operating with the roller, an obstruction on the guide over which the roller must ride when the plow yields, and a spring engaging the bar and holding the roller and plow in their normal positions.

2. The combination of the drag-bar 1, angle-lever pivoted thereto, bar 6, roller 8, guide 9, retaining-hook on bar 7 to prevent dislodgement of the roller, and a spring co-operating with bar 6 for maintaining the parts in their normal positions.

3. In a cultivator-tooth, the combination of drag-bar 1, plow-support pivoted thereto, a crank-arm on said support, bar 6, pivoted thereto, said bar being provided with a retaining-hook co-operating with a guide, 9, a roller carried by the arm engaging the guide, rod 11, adapted to pass through a slot in guide 9, and spring 13, co-operating with said rod.

4. The combination of a pivoted plow, pivoted bar 6, co-operating therewith, roller 8, guide 9 for said roller, a spring to hold the roller and plow in their normal positions, and a recess in the guide in which the roller normally rests.

5. The combination of the elbow-lever 2, a plow carried by one arm, bars 6 6′, pivotally secured to the other arm, guide 9, arms 7 7′, bent to meet over the guide, roller 8, pivoted between the bars, and a spring for holding the roller against the guide.

6. The combination of a slotted guide-bar, 9, rod 11, having one end mounted on a movable pivot, 15, the other end entering the slot of the guide-bar, spring 13, washer 21, against which the spring is seated, and lugs 20, on which the washer bears, as and for the purpose set forth.

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

JOSEPH C. BIRD.

Witnesses:
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