D. L. GARVER.
Harrow-Tooth.

No. 199,430. Patented Jan. 22, 1878.

Fig. 1.

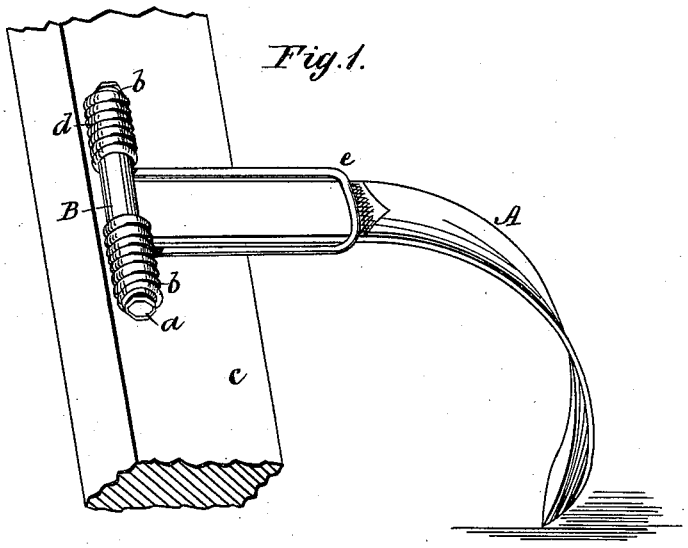
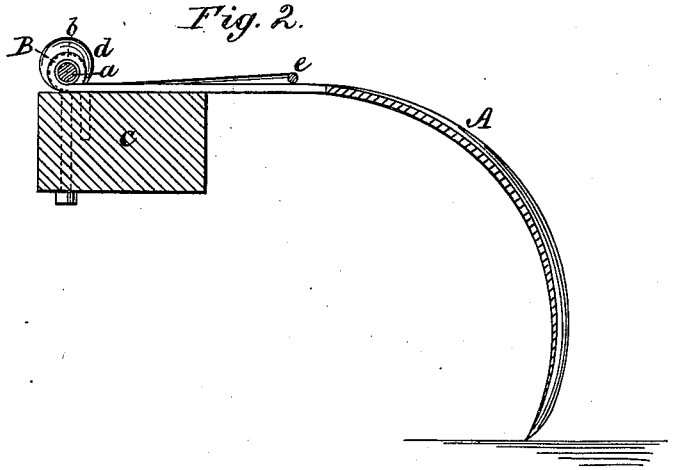


Fig. 2.



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UNITED STATES PATENT OFFICE.

DAVID L. GARVER, OF HART, MICHIGAN.

IMPROVEMENT IN HARROW-TEETH.

Specification forming part of Letters Patent No. **199,430**, dated January 22, 1878; application filed October 16, 1877.

To all whom it may concern:

Be it known that I, DAVID L. GARVER, of Hart, in the county of Oceana and State of Michigan, have invented a new and Improved Harrow-Tooth, of which the following is a specification:

Figure 1 is a perspective view from above of my improved harrow-tooth. Fig. 2 is a central vertical section of the same.

Similar letters of reference indicate corresponding parts.

The invention will first be described in connection with the drawing, and then pointed out in the claim.

In the drawing, A is a harrow-tooth secured to top of bar *c*, and which consists of a flat bar of iron or steel, curved downward and pointed at its lower end, and having at its upper end an eye, B, for receiving a bolt, *a*, which is supported by eyebolts *b*, that pass through the bar *c* of the harrow-frame. Upon the bolt *a* is placed a torsional spiral spring, *d*, having an extended U-shaped central portion, *e*, which rests upon the back of the harrow-tooth, and presses it against the bar *c*.

The upper surface of the tooth is made convex, to facilitate its passage through the soil. The forward movement of the tooth elevates and pulverizes the soil, and should the tooth come into contact with an obstruction it will yield, and after passing it will regain its normal position.

A harrow having my improved teeth may be lighter than those of ordinary construction, as the curvature of the teeth holds it in the ground, and it requires less power to draw it forward, as the teeth yield when brought into contact with a solid obstruction. The harrow, for the same reason, is more effective, as only a single tooth is rendered inoperative by an obstruction, whereas a small obstruction will raise a harrow of the usual form from the ground, so that several of the teeth are for the moment unemployed.

It is obvious that the spring arrangement may be used to advantage on a straight hinged tooth.

I am aware that harrow or cultivator teeth have been pivoted and held forward by springs; but

What I claim is—

The combination, with beam *c* and hinged tooth A, of the torsional spiral spring *d*, having its ends coiled, as shown, from the ends toward the middle of bolt which hinges said tooth to the beam, and formed with the extended portion *e* resting upon the back of the tooth, all constructed and arranged to operate substantially as shown and described.

DAVID L. GARVER.

Witnesses:
M. H. BROOKS,
JOHN F. WIDDE.