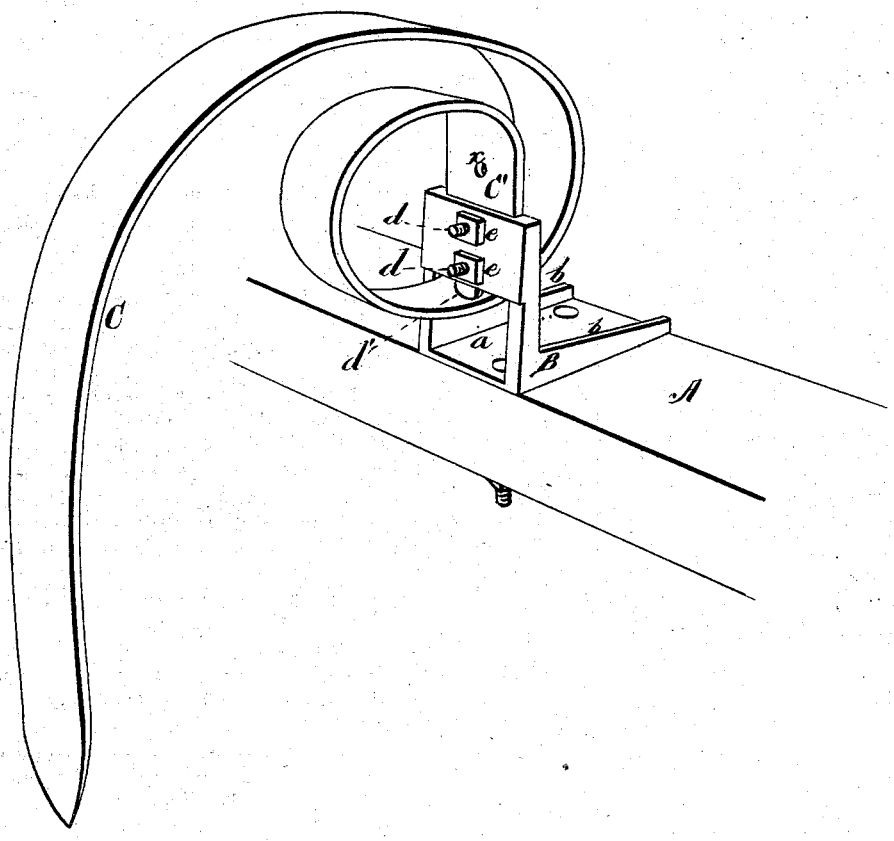
D. WATERBURY & F. MILLER.
Harrow-Teeth

No. 205,449. Patented June 25, 1878.



WITNESSES

Robt Burnett

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UNITED STATES PATENT OFFICE.

DANIEL WATERBURY AND FRANK MILLER, OF KALAMAZOO, MICHIGAN.

IMPROVEMENT IN HARROW-TEETH.

Specification forming part of Letters Patent No. **205,449**, dated June 25, 1878; application filed December 15, 1877.

To all whom it may concern:

Be it known that we, DANIEL WATERBURY and FRANK MILLER, of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented a new and valuable Improvement in Harrow-Teeth; and we do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawings is a representation of a perspective view of our harrow-tooth.

This invention relates to that class of harrows having spring-teeth; and our improvement consists in the particular construction of the spring-tooth, and the means of fastening and adjusting the tooth to the standard, as will be hereinafter more fully described and set forth.

The annexed drawing, to which reference is made, fully illustrates our improvement.

A represents a part of a harrow-frame, upon which is secured an L-shaped standard or casting, B. This standard or casting is formed with strengthening-ribs *b b* along both sides, both on the horizontal and the vertical parts. In the vertical part of the casting, at the bottom, is an opening, *a*, of any suitable dimensions.

C represents the spring-tooth, made of the usual flat spring-steel. The inner end C′ of the tooth is straight, and fits between the ribs *b b* on the vertical part of the casting, and is secured thereto by bolts *d d*, having nuts *e e* on their ends. The part C′ of the tooth extends vertically upward for a suitable distance, and the tooth is then coiled, running backward and downward, then forward through the opening *a*, upward and over, backward and downward again. By this construction, when the tooth catches, the spring, springs, or coils give quick relief from clogging or strain on the tooth by lifting in its vertical direction or from the soil.

An essential feature in spring-harrows is to raise and lower the teeth as different conditions of the soil demand. This we accomplish by a series of holes, *x x*, in the part C′ of the tooth, through which the fastening-bolts pass. By interchanging, any elevation or depression of tooth may thus be obtained. We also interpose washers *d′* between the tooth and the standard B. If a washer is placed on the upper bolt, the point of the tooth will be raised, and if placed on the lower bolt the point will be depressed.

What we claim as new, and desire to secure by Letters Patent, is—

The combination, with the standard B, constructed as described, of a spring-tooth, made of flat spring-steel, the inner end of which is perforated, and fits between the ribs *b b* on the vertical part of the standard, and secured thereto by bolts *d d*, having nuts *e* on their ends, substantially as described.

In testimony that we claim the above we have hereunto subscribed our names in the presence of two witnesses.

DANIEL WATERBURY.
FRANK MILLER.

Witnesses:
S. H. WATTLES,
VOLNEY H. LOCKWOOD.