

(No Model.)

T. R. CRANE.
SPRING TOOTH HARROW.

No. 418,502.

Patented Dec. 31, 1889.

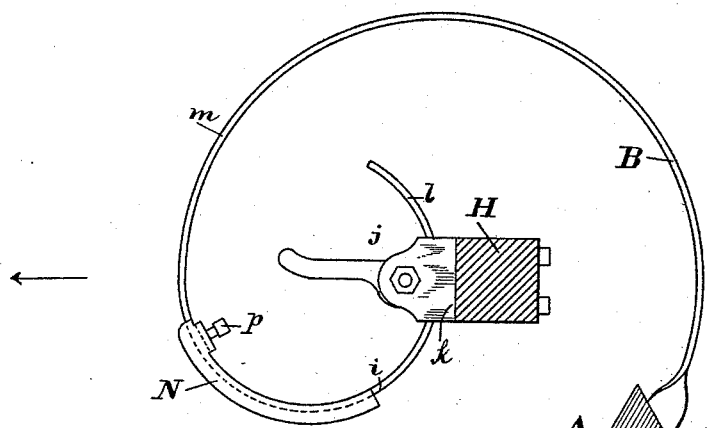


Fig. 1.

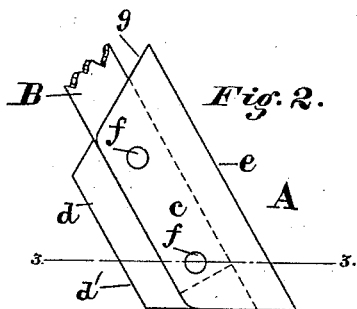
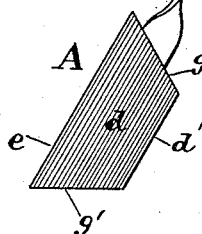


Fig. 2.

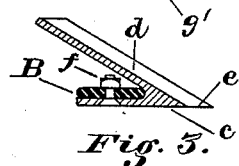


Fig. 3.

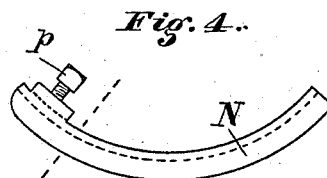


Fig. 4.

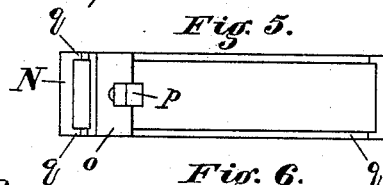


Fig. 5.

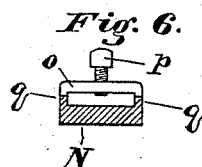


Fig. 6.

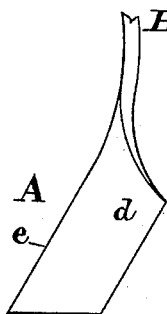


Fig. 7.

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SPRING-TOOTH HARROW.

SPECIFICATION forming part of Letters Patent No. 418,502, dated December 31, 1889.

Application filed May 7, 1889. Serial No. 309,896. (No model.)

To all whom it may concern:

Be it known that I, THOMAS R. CRANE, a citizen of the United States, residing at Heathsville, in the county of Northumberland and State of Virginia, have invented certain new and useful Improvements in Spring-Tooth Harrows, of which the following is a specification.

This invention relates to spring-tooth harrows; and it consists in the features hereinafter described and claimed.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a cross-section of the beam of a harrow-frame and an improved spring-tooth attached. Fig. 2 is a view of the spring-tooth point, showing the reverse side to that seen in Fig. 1. Fig. 3 is a horizontal cross-section of the point taken on the line 3 3 of Fig. 2. Figs. 4, 5, and 6 are views of the drag-shoe. Fig. 7 is a side view, and shows a modification of the point.

One feature of the invention relates to the point A, which is attached to the end of the spring-tooth B. This point has two sides, one being at an angle with respect to the other. One side *c* is straight fore and aft and constitutes the landside, and the other side *d* extends from the cutting-edge *e* diagonally back. This construction and combination of spring-tooth B and a point A, having a straight fore-and-aft side and a diagonal side, is productive of useful results, in that effective work in harrowing is accomplished, while the resistance drag or draft is reduced to a minimum. A point of this kind may be integral with the spring-tooth—that is, it may be welded directly and permanently thereto, as in Fig. 7—or the point A may be a separate piece attached to the tooth by rivets or bolts *f*, as shown in Figs. 1, 2, and 3. This latter form is preferred, and as a further feature of improvement the point has two inclined ends *g g'*. The inclination is so applied as to leave the upright cutting-edge *e* the longest part of the point-piece, while the rear edge *d'* of the diagonal side *d* is the shortest. This construction and combination with a spring-tooth of point A, having a fore-and-aft side *c*, a diagonal side *d*, and two inclined ends *g g'*, enables the device to be reversed, end for end, and

thus after one end is worn out the other may be utilized.

I attach curved spring-teeth B to the beam H of a harrow-frame, so that a portion *i* of the curvature of each tooth near its attached part will project below the said beam or be on a plane lower than that of the beam, as shown in Fig. 1. In the present instance, the fastening device *j*, which may be of any suitable kind, is attached to one of the vertical sides *k* of the beam in preference to the top or bottom thereof. The end *l* of the curved spring-tooth is secured by the device *j*, and therefrom the tooth curves down, as at *i*, below the plane of the beam H, and thence up, as at *m*, over the said beam, and finally down to the point A, which takes into the ground. It will be seen that this combination of beam H and curved spring-tooth B, attached thereto, with a portion *i* of its curvature projecting below the beam, provides that the low curvature *i* of the spring-tooth shall serve as a runner to drag on the surface of the ground, and thereby sustain the beam H up from the ground, while the free end of the tooth carries the harrow-point A.

To protect the spring-tooth from abrasion and wear at that part where it serves as a drag, a drag-shoe N is attached. This shoe is curved to suit the curvature of the tooth. It has a top loop or band *o*, provided with a set-screw *p*, and at each side has an upward flange *q*. It thus fits the tooth, as shown in Fig. 1, and may be adjusted or removed.

Having described my invention, I claim—

1. A spring-tooth for harrows, having a point A, provided with a straight fore-and-aft side *c* and a side *d*, extending diagonally with respect to said fore-and-aft side.

2. A spring-tooth for harrows, having, in combination, the curved spring-tooth B and a detachable point A, provided with a straight fore-and-aft side *c* and a side *d*, extending diagonally with respect to said fore-and-aft side.

3. A spring-tooth for harrows, having a detachable point A, provided with a straight fore-and-aft side *c* and a side *d*, extending diagonally with respect to said fore-and-aft side, and two inclined ends *g g'*, as and for the purpose set forth.

4. The combination of the harrow-beam, a

curved spring-tooth attached thereto, with a
portion of its curvature projecting below
the said beam, while the free or point end of
the tooth located behind the low curvature
5 penetrates the ground, and a protecting drag-
shoe adjustably attached to the said low
curvature of the spring-tooth.

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

THOMAS R. CRANE.

Witnesses:

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