(No Model.)

E. D. COOK.

HARROW TOOTH.

No. 355,302. Patented Jan. 4, 1887.

Fig. 1.

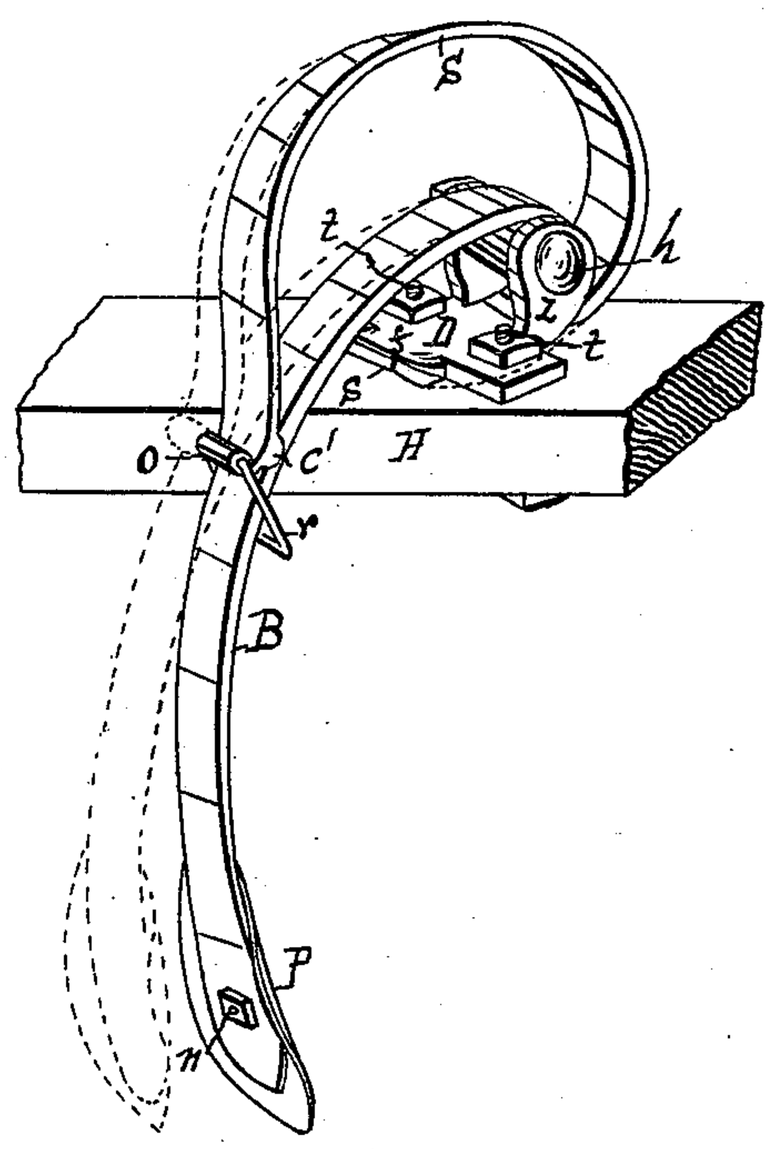


Fig. 3.

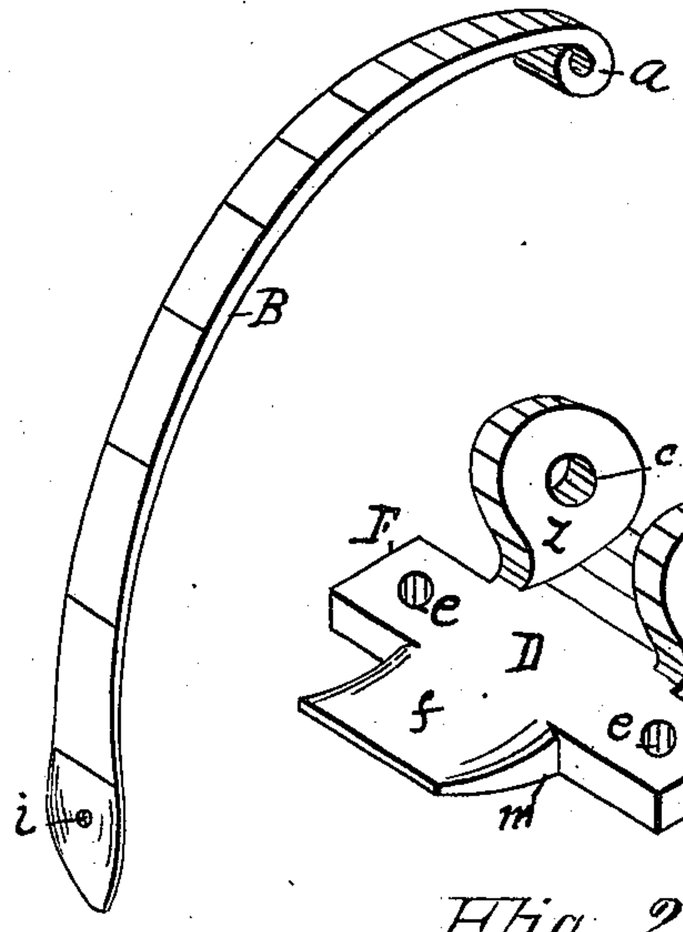
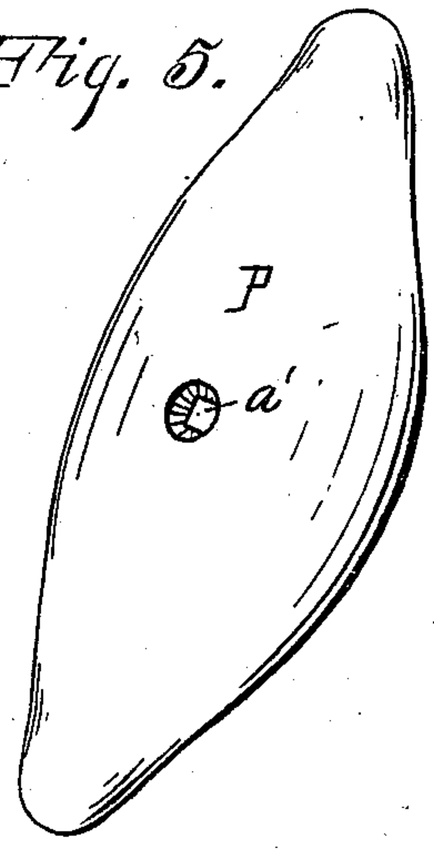


Fig. 2.

Fig. 5.



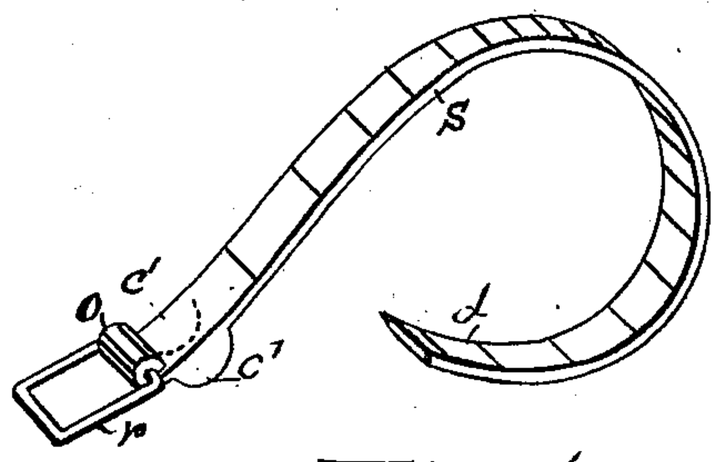


Fig. 4.

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EMERY D. COOK, OF AKRON, MICHIGAN.

HARROW-TOOTH.

SPECIFICATION forming part of Letters Patent No. 355,302, dated January 4, 1887.

Application filed October 12, 1885. Serial No. 179,671. (No model.)

To all whom it may concern:

Be it known that I, EMERY D. COOK, a citizen of the United States, residing at Akron, in the county of Tuscola and State of Michigan, have invented certain new and useful Improvements in Harrow-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.

My present invention in harrows relates to that class having rigid tooth-bars which are actuated by flat metal springs; and my invention consists in the combination and arrangement of parts, as hereinafter fully set forth, and pointed out in the claim.

In the drawings forming a part of this specification, Figure 1 is a perspective of my invention mounted upon a harrow-beam. Figs. 2, 3, 4, and 5 are enlarged details, as will be fully set forth.

In the drawings, H represents a section of a beam of the harrow, upon which the tooth and fastenings are mounted diagonally.

B is a bow-shaped tooth-bar, which I form of heavy metal, being rigid. The lower end is provided with a hole at *i*, to which I attach the reversible shoulder-point P by means of a nut and bolt, *n*, which passes through the holes *i a'*. (See Figs. 1, 3, and 5.) The upper end of the tooth-bar is coiled over itself, forming the bolt-hole *a*. (See Fig. 3.)

D is a metal standard, forming a support for the tooth-bar and a clamp for the flat spring S. Said standard I provide with ears Z Z, which extend upward at right angles to the upper face of the standard, leaving ample room between them for the insertion of the upper end of the tooth-bar. Said tooth-bar is pivotally attached on the bolt *h*, which passes through the holes *c c* of the ears and the hole *a* of the tooth-bar, as shown in Fig. 1. I also provide the standard with the attaching-arms F F, having holes *e e*, through which pass the bolts *t t*, for attaching said standard to the harrow-beam. The standard is also provided with a curved nose, *f*, whose width is equal to that of the spring S, and presses upon said spring when in proper position, as shown in Fig. 1. The curvature of the under face of the standard at *m* is made to coincide with the curvature of the end portion, *d*, of the flat spring S. The ears Z Z, arms F F, and nose *f* of the standard are formed integral therewith. S is a flat metal spring whose body portion is in a circular form, having its free end portion nearly straight, the end being coiled over the link or loop *r*, as shown in Figs. 1 and 4.

I form on each edge and at right angles to the face of the spring, near the loop O, the lips or flanges C', which, when the spring is in position, as shown in Fig. 1, engages with the edges of the tooth-bar. The link *r* passes around the tooth-bar freely, as shown in Fig. 1, holding the bar in close proximity to the free end of the spring. The flanges, C', formed on the spring support the tooth-bar from lateral strain in striking obstructions, such as roots, stones, and the like.

The parts are united and operated as follows: A slight recess is cut in the upper face of the harrow-beam, in which the curved end *d* of the spring lies. The upper end of the tooth-bar is passed through the link *r*, then between the ears Z Z of the standard. The bolt *h* is then passed through the ears and bar. The standard D is then placed on the curved end portion, *d*, of the spring, when the bolts *t t* are passed through the harrow-beam and up through the holes of the arms F, and by tightening the nuts on said bolts the spring S will be firmly bound to the harrow, and the tooth-bar also firmly held, but allowed to rock upon the bolt *h*. The tooth-bar being stiff, when it strikes an obstruction, the force is brought upon the free end of the spring, which yields, allowing the harrow to advance, when the bar will be in the dotted position of Fig. 1, and as soon as the bar has passed the obstruction the spring will force said tooth-bar forward to its normal position, thus preventing the breaking of the tooth-bar. To increase the pressure of the spring upon the tooth-bar, as desired in heavy or clay soil, the nuts on the bolts *t t* are loosened. The curved end *d* of the spring is drawn slightly under the nose *f* of the standard. The nuts are then tightened, when the free end of the spring will be located lower on the tooth-bar, thus increasing

the pressure; but when cultivating light or sandy soil, requiring a less pressure of the spring upon the bar, the nuts on the bolts *t t* are loosened, when the end portion, *d*, of the spring is moved outward in advance of the nose *f* of the standard, the nuts tightened, when the free end of the spring S will be located nearer the top of the tooth-bar, when it will have a less pressure upon said bar. The bar will also stand less hooking.

Having thus fully set forth my present invention, what I claim as new, and desire to secure by Letters Patent, is—

In a harrow, and in combination, the beam, the metal standard having ears projecting upward, the rigid tooth-bar pivoted between said ears, said standard having also the attaching-arms and curved nose, the spring S, having one end adjustably attached to the beam below the nose of said standard, its free end carrying a link, through which the rigid tooth-bar passes, and bolts for attaching said parts to the harrow-beam, as and for the purposes specified.

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

EMERY D. COOK.

Witnesses:

G. W. DAVIS,

FRANK H. THOMAS.