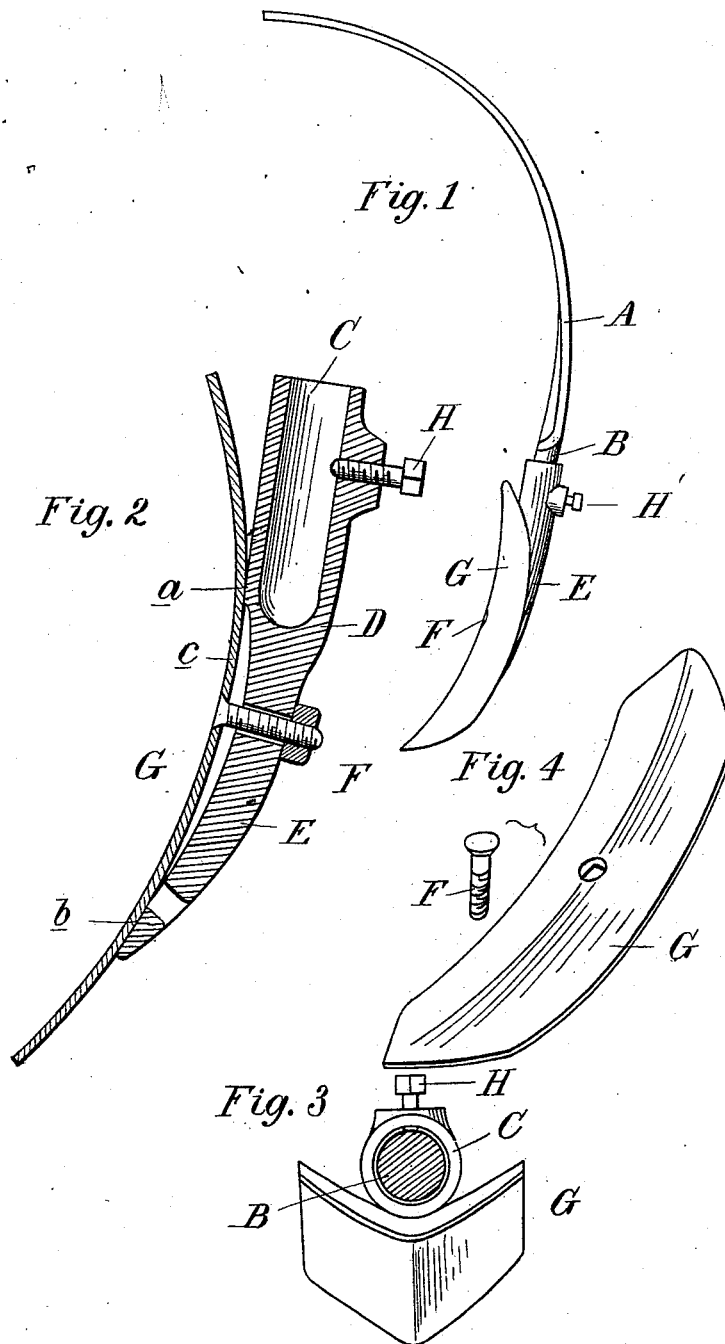


(No Model.)

G. C. CRANE.
HARROW.

No. 493,071.

Patented Mar. 7. 1893.



Witnesses:
Q. F. Barthel,
M. B. Doherty

Inventor:
George C. Crane
By *Mos Sprague*
Atty.

UNITED STATES PATENT OFFICE.

GEORGE C. CRANE, OF STONY CREEK, ASSIGNOR OF ONE-HALF TO R. G. BARNES, OF YPSILANTI, MICHIGAN.

HARROW.

SPECIFICATION forming part of Letters Patent No. 493,071, dated March 7, 1893.

Application filed June 6, 1892. Serial No. 435,683. (No model.)

To all whom it may concern:

Be it known that I, GEORGE C. CRANE, a citizen of the United States, residing at Stony Creek, in the county of Washtenaw and State of Michigan, have invented certain new and useful Improvements in Harrows, of which the following is a specification, reference being had therein to the accompanying drawings.

- 10 This invention relates to new and useful improvements in spring tooth harrows, and the invention consists in the peculiar construction of the spring tooth having a blade holder at its lower end rotatorily adjustable thereon, and a blade detachably secured to said blade holder, and further in the peculiar construction, arrangement and combination of the various parts, all as more fully hereinafter described.
- 20 In the drawings, Figure 1 is a side elevation of my improved harrow tooth showing it in position for operation. Fig. 2 is an enlarged vertical section through the blade holder and blade detached. Fig. 3 is a top plan view of Fig. 2. Fig. 4 is a detached perspective view of the blade.

- 30 A is a curved spring tooth having formed at its lower end a cylindrical bearing B adapted to engage with a socket C formed in the upper end of the blade holder D. This blade holder at its lower end has the curved extension or foot E centrally apertured to receive the clamping bolt F, by means of which the blade G is clamped upon the blade holder as plainly shown in Figs. 1 and 2.

- 40 H is a set screw in the blade holder adapted to clamp the same upon the bearing B of the spring tooth, and by means of which it may be adjusted vertically or rotatorily thereof, and be clamped in its adjusted position. The blade G consists of a plate pointed at both ends and suitably curved longitudinally of the usual angular face. The apex of the in-

ner face thereof is adapted to bear against the bearings *a b* a short distance on each side of the clamping bolt F giving a wide bearing for the blade, so that a single clamping bolt will enable me to tightly hold it in position. By separating these bearings and tightly turning up the nut I, on the clamping bolt I get a spring effect in the section *c* of the blade between these bearings which acts as a nut lock to prevent the possibility of the blade becoming detached in use. By arranging the clamping bolts centrally of the blade I am enabled to reverse it so as to use both ends. By making it rotatorily adjustable in this manner I can increase or diminish the width of the cut of each blade and the direction in which the dirt will be thrown to the utmost nicety, and by raising it or lowering it can increase or diminish the depth of the cut.

The tooth A is preferably a single spring blade having the circular bearing at its lower end formed by bending the edges of the blade at that point into substantially a tube or cylinder.

What I claim is—

In a harrow tooth, the combination with a tooth having a cylindrical lower end, of a blade holder having a cylindrical socket formed in its upper end, a curved lower end of a diameter less than the socketed portion thereby forming a shoulder, a blade on the holder, a binding bolt passing centrally through the blade and holder and a set screw at the socket for adjustably securing the cylindrical portion of the tooth in place, substantially as described.

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

GEORGE C. CRANE.

Witnesses:

M. B. O'DOHERTY,
N. L. LINDOP.