(No Model.)

B. F. RIX.

HARROW.

No. 287,965. Patented Nov. 6, 1883.

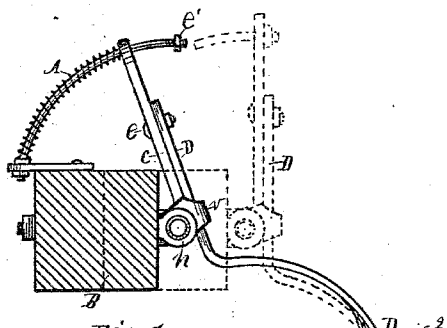


Fig. 1

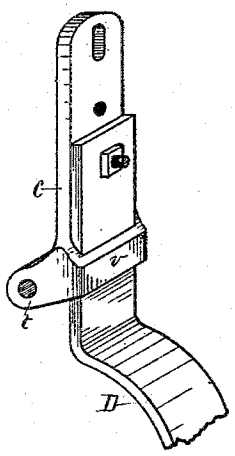


Fig. 3

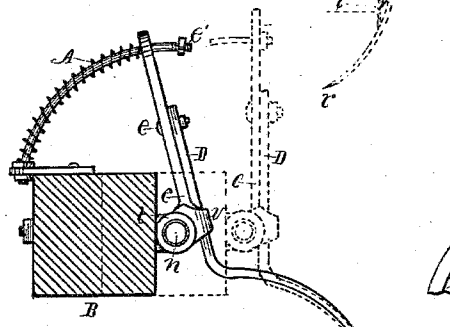


Fig. 2

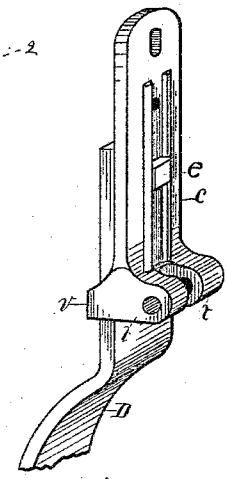


Fig. 4

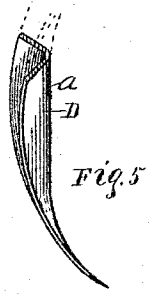


Fig. 5

Witnesses.
Jno. C. Perkins
John H. Chase

Inventor.
Benj. F. Rix
Per Lucius C. West
Atty.

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

BENJAMIN F. RIX, OF KALAMAZOO, MICHIGAN, ASSIGNOR OF ONE-THIRD TO MARY H. KIPP, OF SAME PLACE.

HARROW.

SPECIFICATION forming part of Letters Patent No. 287,965, dated November 6, 1883.

Application filed May 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. RIX, a citizen of the United States, residing at Kalamazoo, county of Kalamazoo, State of Michigan, have invented a new and useful Harrow, of which the following is a specification,

My invention has for its object certain improvements in harrow-teeth, and in the means for connecting them with the frame.

In the drawings forming a part of this specification, Figure 1 is a side elevation; Fig. 2, a side elevation of a differently-constructed tooth, introduced for the purpose hereinafter explained; Figs. 3 and 4, broken portions enlarged, showing a front and rear view in perspective; Fig. 5, a section on line 2 2 in Fig. 1 in perspective.

The hinged supporting-bar *c*, with which the tooth is connected, is made all in one piece—that is, the upright part, with which the tooth is connected by a bolt, *e*, is provided with an integrally-formed base consisting of the hinging-eyes *t t* and the loop *v*, which surrounds the tooth. The bar *c* is hinged to the frame B, in the usual manner, by bolt *n*. Such a construction is easily and cheaply made, compared with former tooth-supports, and the operation of connecting the tooth therewith greatly facilitated.

In constructing the tooth D a portion of the bow a little above the lower end is formed vertically concaved from the rear side, with the front edge or apex, *a*, of the convex side describing a straight line, Fig. 1, while the curved configuration of the edges remains the same throughout, as in a bowed tooth not having the improvement, Figs. 1 and 2. The lower or working end of the tooth is not convexed. The tooth receives its elastic effect from the spring on rod A. Many useful results are attained in the operation of such a tooth, aside from ease in draft and beneficial effects on the soil, a prominent one of which is that the tooth, when intercepting a root or obstruction, *x*, swings back and upward quicker and farther during a given movement of the harrow than a tooth having a like bow, Fig. 2, without the improvement in Fig. 1. The same forward movement of the harrow is shown in each of these figures, the dotted position showing the normal condition of the parts when at rest, with the tooth having just met the root *x*. Said root is located at the same vertical distance below the harrow-frame B. The difference in upward swing of the teeth is illustrated by the difference in distance between the dotted line at *r'* and the dotted end *r*.

When the harrow in each figure is moved on ahead, the tooth in Fig. 2 will hang to the root *x*, while the tooth in Fig. 1 will continue to swing up until the working end is met, when, owing to the angle of the bow at that time, it will readily pass over the root.

Having thus described my invention, what I claim is—

1. In a harrow, a tooth-support consisting of the flat upright portion, provided with a base integrally formed therewith, said base having the two lugs on one side horizontally perforated, and the loop on the other side having a vertical opening, substantially as set forth.

2. A bowed harrow-tooth having the convexed portion on the inner side of the bow, above the working end, the apex thereof describing a straight line, substantially as described.

3. A bowed tooth vertically concaved from the rear, above the working end, forming a convex portion on the inside of said bow, the apex of which is straight, while the curve of the edges of the bow is undisturbed, substantially as specified and shown.

In testimony of the foregoing I have hereunto subscribed my name in the presence of two witnesses.

BENJAMIN FRANKLIN RIX.

Witnesses:

JOHN H. CHASE,

N. O. NETEBROCK.