

E. M. STEVENS.

HARROWS.

No. 178,343.

Patented June 6, 1876.

Fig. 1.

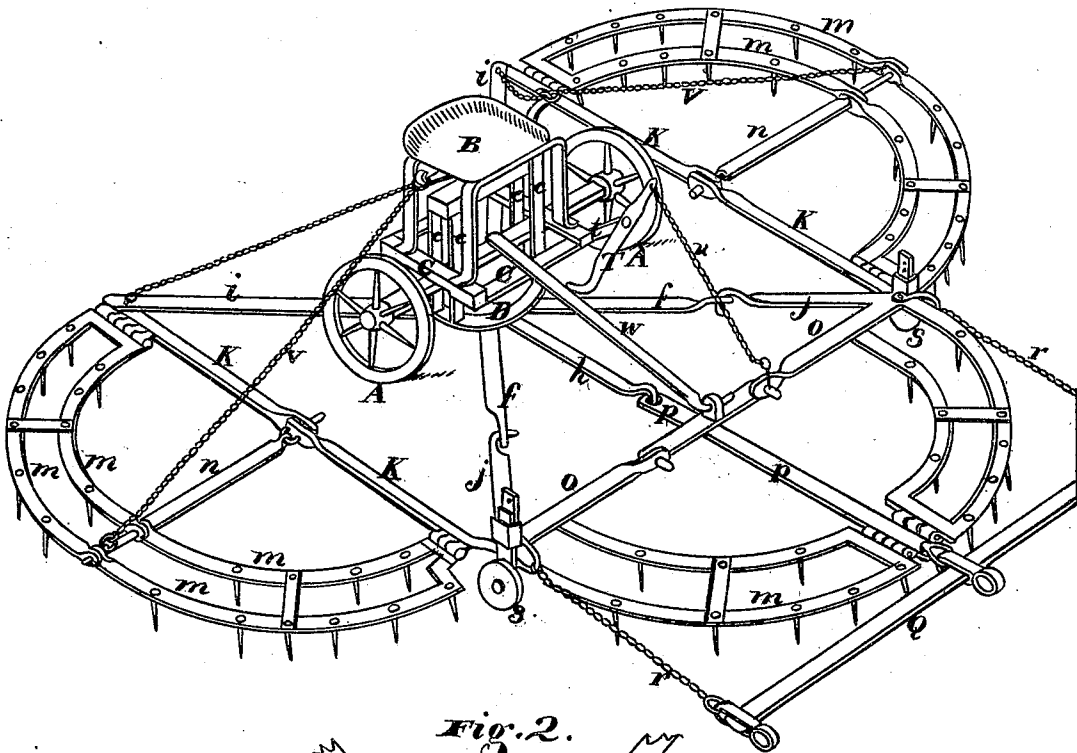
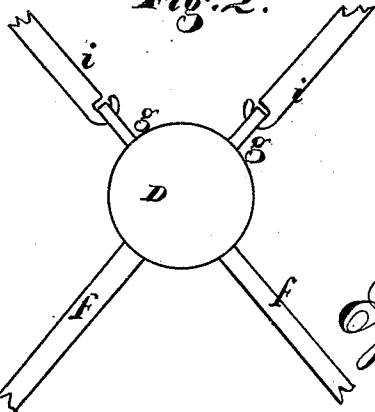


Fig. 2.



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EZRA M. STEVENS, OF SANTA ROSA, CALIFORNIA.

IMPROVEMENT IN HARROWS.

Specification forming part of Letters Patent No. 178,343, dated June 6, 1876; application filed September 15, 1875.

To all whom it may concern:

Be it known that I, EZRA M. STEVENS, of Santa Rosa, Sonoma county, State of California, have invented an Improved Harrow; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My invention relates to an improved field-harrow, which I call the "athletic harrow" on account of its great flexibility, and the ease with which it can be managed in order to clear it from the accumulations of weeds, and avoid obstruction while it is working, and the great facility with which it can be raised clear of the ground when being moved from field to field.

In order to describe my athletic harrow reference is had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a perspective view of my harrow. Fig. 2 shows a detached view of a part of my device.

A A are the bearing-wheels of the truck, which forms the central portion of the harrow. A seat, B, is mounted upon four standards, the lower ends of which are supported by a horizontal frame, C, which is secured to the axle of the truck. Below the axle of the truck is a metal casting, D, from which four standards, *ee*, pass upward on each side of the axle of the truck, inside of the seat standards, thus forming a vertically-sliding frame, which can be raised or lowered, and secured at any desired point by means of a pin or other suitable device. Four arms radiate from this casting, one from each quarter, as represented. The two arms *ff* which radiate diagonally from the front portion of the casting are longer than the two, *gg*, which radiate from the rear portion, in order to clear the wheels in front. Another arm, *h*, extends directly forward from the casting. A long bar, *i*, has one end hinged to each of the short rear arms *gg*, while a short bar, *j*, has one end hinged to the extremity of each of the forward arms. The outer ends of these bars, upon each side of the truck, are con-

nected by means of two bars, *kk*, which are hinged together midway between the extremities of the arms, as shown. A semicircular harrow, which is formed in two sections by making each section to represent the quarter of a circle, and then hinging the two sections together, has its opposite ends hinged to the extremities of the jointed connecting-bars *kk* upon each side of the truck. Each section is composed of two parallel curved bars, *mm*, one inside of the other. The joint which unites the sections together is connected with the joint which unites the bars *kk* by means of the bar *n*.

It will thus be seen that the joints which connect the ends of each of the semicircular side harrows with the ends of the jointed bars *kk* are in line with each other, so that the semicircular harrow can be turned up into a vertical position on each side of the truck. The joint which connects the two sections of each semicircular side harrow is also in line with the joint which connects the bars *kk*, so that either section can be raised independent of the other. A third-semicircular harrow, which is constructed in all essential particulars in the same manner as the side semicircular harrows, is attached to the front of the truck by means of bars *oo*, which connect the ends of the bars *k* and *i* with the arms of a cross-shaped bar, *p*, which connects the forward end of the arm *h* with the middle of the front semicircular section, each point of junction being united by a joint, as above described for the side harrows. A brace-bar, *W*, connects the axle with the cross-shaped bar *p*. All of the bars above mentioned are provided with harrow-teeth.

The whiffletree *Q* is attached at its middle to the forward end of the cross-shaped bar *p*, the opposite end of which is attached to the end of the bar *h*, so that the pull upon the harrow will be in a direct line from the casting *D* and axle-tree of the trucks. A chain, *r*, also connects each end of the whiffletree with the ends of the front semicircular harrow-section. At each side of the front semicircular harrow I mount a small bearing-wheel, *S'*, which can be raised or lowered so as to regulate the depth to which the harrow-teeth are to penetrate, or to lift them entirely clear from the ground, as desired. A lug, *t*, extends upward in front of

the seat from each side of the horizontal frame upon which the seat-standards rest, and to the upper end of each lug a lever, T, is attached at or near its middle. Only one lug and one lever are shown in the drawing to avoid confusion in the same. The lower end of each lever is formed into a stirrup, as represented, upon which the feet of the driver rests. The upper end of each lever is connected with the junction of the front and side semicircular harrows by a chain, *u*, only one of which is shown in the drawing, so that the driver can, by pressing his foot upon the stirrup, and if necessary, grasping the lever with his hand, raise one half of the front harrow and a portion of the side harrow.

Another chain, V, extends from the joint at the middle of each side section, and has its opposite end attached to a hook on the side of the seat, within easy reach of the driver, so that he can, by grasping the chain, lift the side sections to a vertical position. A third chain connects the rear end of each side harrow with the hook on the side of the seat, and by means of this chain the driver can lift the rear ends of the side harrows.

It will thus be seen that my harrow is flexible in every direction. The driver can, without leaving his seat, lift any portion so as to clear it from weeds or other obstructions, or

he can raise the entire harrow so that the wheels alone will bear, and thus permit it to be drawn along the road, or from place to place.

The entire harrow arrangement is quite effective and simple, and it can be handled with great ease. This harrow can be converted into a single harrow by removing a portion of it, and attaching the remainder together. The trucks and seat can easily be removed so as to convert it into a walking harrow, and in packing it for transportation it can be taken entirely to pieces and packed in a small compass.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

A harrow constructed as described, and consisting of two or more semicircular sections connected by means of hinged bars, the central plate D, arms *ff* and *g g*, the bearing-wheels A A, with the connecting-axle and seat B, and the levers T attached to the lugs *t*, and connected with a section of the harrow by means of the chains *u*, all arranged to operate substantially as and for the purpose set forth.

EZRA M. STEVENS.

Witnesses:

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