

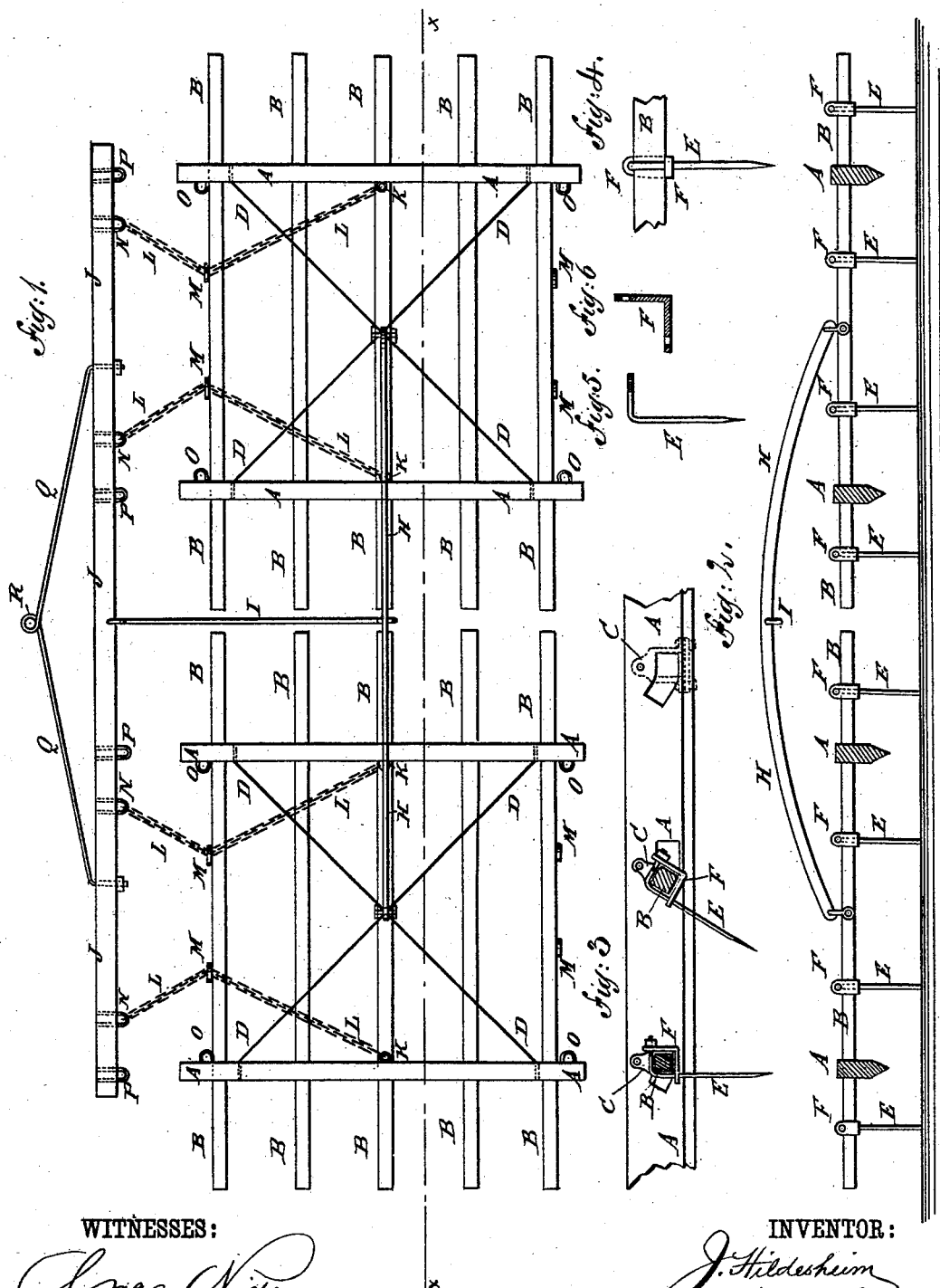
(No Model.)

J. HILDESHEIM.

HARROW.

No. 347,106.

Patented Aug. 10, 1886.



WITNESSES:

*Chas. Nida*  
*to bedgwick*

INVENTOR:

*J. Hildesheim*  
BY *Munro & Co.*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

JOSEPH HILDESHEIM, OF ALTON, IOWA.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 347,106, dated August 10, 1886.

Application filed March 18, 1886. Serial No. 195,767. (No model.)

### *To all whom it may concern:*

Be it known that I, JOSEPH HILDESHEIM, of Alton, in the county of Sioux and State of Iowa, have invented a new and useful Improvement in Harrows, of which the following is a full, clear, and exact description.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improved harrow. Fig. 2 is a sectional rear elevation of the same, taken through the line *x x*, Fig. 1. Fig. 3 is a sectional side elevation of a part of the same. Fig. 4 is a front elevation of the part of one of the tooth-bars, and showing a tooth attached thereto. Fig. 5 is a side elevation of one of the harrow-teeth. Fig. 6 is a sectional elevation of one of the angle-irons for holding the teeth.

The object of this invention is to provide harrows constructed in such a manner that they will readily adjust themselves to the surface of uneven ground, and can be readily adjusted to serve as pulverizing-harrows or as smoothing-harrows.

The invention consists in the construction and combination of various parts of the harrow, as will be hereinafter fully described.

The harrow is made in two sections, each of which is formed of two longitudinal bars, A, and five (more or less) tooth-bars, B. The tooth-bars B are passed through slotted holes in the longitudinal bars A, and are secured in place by clamps C, set-screws, or other suitable means. The clamps C are made in the form of plates, forked at their lower ends to receive and fit upon the tooth-bars B, and have yokes bolted to their lower ends at the lower sides of the said tooth-bars. The clamps C are pivoted to the sides of the longitudinal bars A by bolts or screws passing through the upper ends of the clamps, and through or into the said longitudinal bars A, in such positions that the harrow-teeth will be in a vertical position when the tooth-bars B are at one end of the slotted holes in the bars A, as shown at the left-hand part of Fig. 3, and will be in an inclined position when the said tooth-bars are at the other ends of the said slotted holes, as shown at the middle part of

Fig. 3, so that the implement will be a pulverizing-harrow when the draft is applied to one end, and a smoothing-harrow when the draft is applied to the other end, the tooth-bars B being moved from one end of the slotted holes in the longitudinal bars A by the resistance of the soil to the teeth. The longitudinal bars A are strengthened in position by diagonal braces D, the forward ends of which are attached to the forward parts of the said bars A. The brace-bars D cross each other at the centers of the sections, and their rear ends are attached to the rear parts of the longitudinal bars A, as shown in Fig. 1.

E are the harrow-teeth, the upper parts of which are bent over at right angles, and have screw-threads formed upon their ends.

F are angle-irons, which have holes in their ends, as shown in Fig. 6.

In securing the harrow-teeth E to the tooth-bars B, the angle-irons F are placed upon a lower angle of the tooth-bars B, with one end projecting above the said bars and the other ends at the sides of the bars. The teeth E are inserted in the holes in the lower arms of the angle-irons F and pushed downward, and their upper ends are inserted in the holes in the upper arms of the said angle-irons, and have nuts G screwed upon them, as shown in Fig. 3.

To the centers of the central tooth-bars of the harrow-sections are pivoted the ends of an arched bar, H, to connect the said sections and keep them in proper relative positions, while allowing them to adjust themselves freely to the surface of the ground. In the center of the arched bar H is formed a perforation, into which is hooked the rear end of a rod, I, the forward end of which is hooked into a perforation in the center of the draft-bar J, or into a staple or clevis attached to the said draft-bar. The rod I is made of such a length as to hold the arched bar H in a vertical position when the harrow is in use.

To the centers of the inner sides of the longitudinal bars A are attached eyebolts or staples K, to which are attached the rear ends of the draft-chains L. The draft-chains L are passed through eye-plates or staples M, attached to the forward tooth-bar B, upon the opposite sides of and at a little distance from the centers of the said tooth-bars. The for-

ward ends of the draft-chains L are attached to staples or clevises N, attached to the draft-bar J at points about midway between the longitudinal lines passing through the eye-plates M and the longitudinal bars A. This arrangement of the draft-chains produces what is known as a "vibrating harrow"—that is, one in which the sections are so attached to the draft-bar that one section can move ahead of the other straight with the line of draft should either of the said sections strike an obstruction or run in deeper on uneven ground, thereby lessening the danger of breakage.

When it is desired to have a non-vibrating harrow, the draft-chains L are passed through staples O, attached to the ends of the longitudinal bars A, and are attached at their forward ends to staples or clevises P, secured to the draft-bar J at points about in line with the said longitudinal bars A.

To the draft-bar J, at points about midway between its center and ends, are attached the ends of a bail, Q, in the center of which is formed an eye, R, to receive the draft attachment.

The harrow-sections are provided with a set of staples, M O, at both ends, so that the draft can be readily applied to either end to form a pulverizing-harrow or a smoothing-harrow, as may be required.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a harrow, the combination, with the harrow-sections A B A B and the draft-bar J, of the arched bar H, pivoted to the centers of the said sections, and the connecting-rods I, attached to the said arched bar and to the draft-bar, substantially as herein shown and described, whereby the said sections will be held securely in their proper relative positions, while being free to adjust themselves to the surface of the ground, as set forth.

2. In a harrow, the combination, with the harrow-sections A B A B, having staples K, and two sets of staples, M and O, and the draft-bar J, having two sets of staples, N and P, of the draft-chains L, substantially as herein shown and described, whereby the harrow can be readily adjusted as a vibrating harrow or as a non-vibrating harrow, as set forth.

3. In a harrow, the combination, with the tooth-bar B, of the teeth E, having their upper parts bent at right angles, and having screw-threads on their upper ends, the angle-irons F, perforated at their ends to receive the said teeth E, and the nuts G, screwed upon the upper ends of the said teeth, substantially as herein shown and described, whereby the said teeth are readily and firmly secured to the said tooth-bars, as set forth.

JOSEPH HILDESHEIM.

Witnesses:

HARRY LEWIS,  
EILT HERMAN CASJENS.