

(No Model.)

J. HILDESHEIM.

HARROW.

No. 381,623.

Patented Apr. 24, 1888.

Fig. 1.

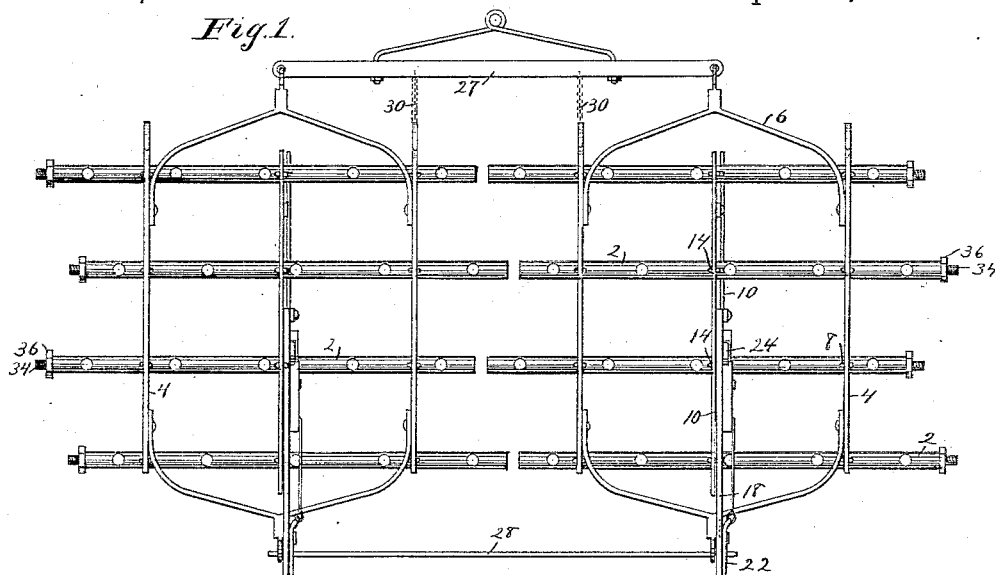


Fig. 2.

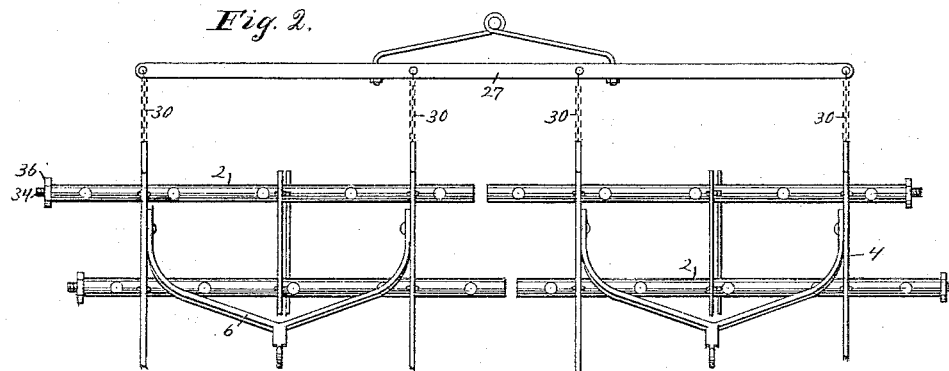


Fig. 6.

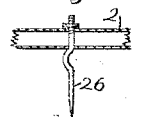


Fig. 3.

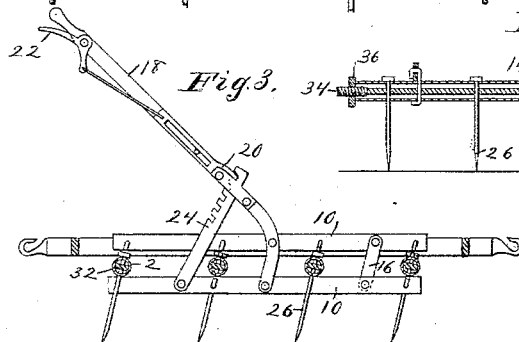


Fig. 5.

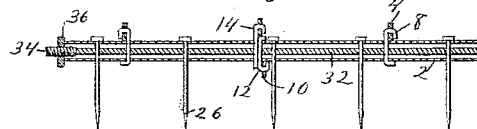
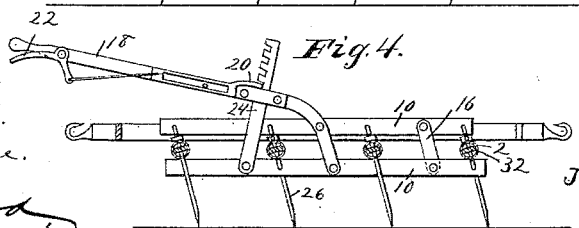


Fig. 4.



Witnesses.

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# UNITED STATES PATENT OFFICE.

JOSEPH HILDESHEIM, OF ALTON, IOWA.

## HARROW.

SPECIFICATION forming part of Letters Patent No. 381,623, dated April 24, 1888.

Application filed October 29, 1887. Serial No. 253,718. (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 certain new and useful Improvements in Harrows, of which the following is a specification.

My invention relates to improvements in harrows; and it consists, generally, in the construction and combination hereinafter described, and particularly pointed out in the claims.

In the drawings which form part of this specification, Figure 1 is a plan-view of my improved harrow. Fig. 2 is a partial plan view showing a modification in the attachment of the draft-bar. Fig. 3 is a cross-section showing the teeth inclined backward. Fig. 4 is a cross-section showing the teeth inclined forward. Fig. 5 is a section through one of the tooth-bars, showing the manner of holding the teeth, and also the arrangement of the shifting-bars. Fig. 6 is a detail showing a different method of attaching the teeth.

In the drawings, 2 represents the tooth bars of the harrow. These are preferably made of gas-pipe and are held together by a suitable transverse frame, 4. This frame is preferably constructed with the yokes 6 at the front and rear portions to give stiffness to the frame, and also for draft purposes. I prefer to attach these yokes by a pivoted joint, so that if necessary they may be thrown back, as shown in Fig. 2. The tooth-bars are preferably secured to the frame by a swinging or oscillating connection, as follows: A rod, 8, passes through the tooth-bar 2 with a head or offset at its lower extremity, which bears against the under side of the said tooth-bar. The upper extremity of the rod 8 is bent at right angles to the main portion of the rod and passed through an opening in the frame 4, and the end is then turned or bent down and thus secured to the frame. This construction allows a certain amount of oscillation to the tooth-bars and makes a simple and permanent connection, and one in which there are no nuts to become loosened.

10 10 represent the two bars running at right angles to the tooth-bars, to which they are connected, and by which the said tooth-bars are oscillated to give the required slant

to the teeth. These bars are connected to the tooth-bars in a manner similar to that described in connection with the frame 4. A rod, 12, is passed through the tooth-bar and through the lower bar, 10, and the ends bent to secure the two together. A rod, 14, is first secured to the upper bar, 10, and is passed down through the same opening in the tooth-bar, which is formed oblong and of sufficient size to receive both rods. As it might be inconvenient to bend this rod after the other one is in place, I prefer to secure the bars 10 together by means of the links 16. These links are riveted or otherwise secured to the bars in such a manner as to allow for the free movement of said bars in changing the angle of the teeth.

18 represents a lever provided with a catch, 20, and an operating-latch, 22. This lever is pivoted to both of the bars 10, and the upper portion is turned backward at an angle with the pivot-centers in order to make it more convenient in operation.

24 represents a serrated or notched bar pivoted to the lower bar, 10, and extending upward and through a suitable guide upon the lever 18. The catch 20 is arranged to enter the notches in the said bar and secure the lever in any required position. It will be seen that when the lever is in its highest position, with the catch 20 in the upper notch in the bar 24, the harrow-teeth 26 will stand at an angle with the points toward the rear and will constitute what is known as a "smoothing-harrow," as shown in Fig. 3. When the lever is forced down to the position shown in Fig. 4, the catch 20 will engage the lower notch in the bar 24. This operation will change the relative position of the bars 10, and the tooth-bars will be oscillated or turned to bring the angle of the teeth in the opposite direction or with the points toward the front, which will constitute what is known as a "pulverizing-harrow." Any desired angle of the teeth between these two extremes can be obtained by placing the lever 18 so that the catch 20 will engage the intermediate notches on the bar 24, and the bars 10 will be securely locked in this position and hold all the teeth firmly at the same angle. The round form of tooth-bars causes them to turn much more easily than they would if of

any other form, which is a decided advantage in changing the position of the teeth.

I prefer to form my harrow in two sections. One is substantially the counterpart of the other, and they may be secured together at the front by means of the draft-bar 27 and at the rear by a connecting-bar or spreader, 28.

When the implement is used as a vibrating harrow, the draft-bar 27 is connected to the yokes 6. This brings the line of the draft directly in the center of each of the sections, and the said sections will be allowed to vibrate on this line and accommodate themselves to the unevenness and inequality of the soil. Suitable stay-chains, 30, may be secured to the inner bars of the frame 4 and to the draft bar 27 to prevent unnecessary vibration.

If a non-vibrating harrow is desired, the yokes 6 may be thrown back, as shown in Fig. 2, and the draft-bar 27, which is made somewhat longer than in the first instance, is connected directly to the front corners of the two sections, and the draft is distributed equally upon the frame 4 and the vibrations prevented.

I prefer to provide a means of easily attaching and detaching the teeth from the tooth-bar, which is as follows: 32 represents a plate or rod inserted in the opening in the tooth-bar 2. This plate is of sufficient length to receive all the teeth in the said bar. The outer end of the plate 32 is provided with a screw-threaded portion, 34, which receives a nut, 36, which forms a bearing against the end of the tooth-bar, or a nut and washer may be used in this connection if found more desirable. The teeth 26 are passed through the bar 2 and the plate 32, which is bored in line, and when the row is complete the nut 36 is turned and pressure brought to bear against the teeth, binding them between the plate 32 and the walls of the pipe which forms the tooth-bar 2. I do not confine myself to this manner of attaching the teeth, as it may be done as shown in Fig. 6, in which case the tooth 26 is swaged or offset to form a shoulder

upon the under side of the pipe, and the upper end screw-threaded and held in position by a nut.

The advantages which I obtain by my improvement are the cheapness of construction, the strength and durability of the implement, and the ease with which it is adjusted to suit the requirements of the operator.

I claim as my invention—

1. The combination, in a harrow, of the frame 4, the round tooth-bars 2, the rods 8, passing through said tooth-bars and loosely secured to said frame 4 and permitting said tooth-bars to oscillate upon said frame, the bars 10, arranged above and below said tooth-bars, links 16, connecting said bars 10 and extending at right angles to said tooth-bars, and the lever 18, pivoted to both of said bars 10 and provided with the catch 20 and the serrated or notched bars 24, with which said catch is adapted to engage, substantially as described, and for the purpose set forth.

2. The combination, in a harrow, of the tubular tooth-bar 2, the rod 32, extending longitudinally through said bar, the series of teeth 26, passing through said tubular bars and through said rod 32, and a locking device for drawing said bar 32 lengthwise in the tubular bar and securing the same, substantially as described.

3. The combination, in a harrow, of the tubular tooth-bar 2, the bar 32, arranged within said tubular tooth-bar and provided with a threaded end, the series of teeth 26, extending through said tubular bar and through said bar 32, and a locking-nut, 36, arranged upon the threaded end of the bar 32 and bearing against the end of the tooth-bar, substantially as described.

In testimony whereof I have hereunto set my hand this 24th day of October, 1887.

JOSEPH HILDESHEIM.

In presence of—

JACOB KLEIN,  
M. D. GIBBS.