

No. 615,272.

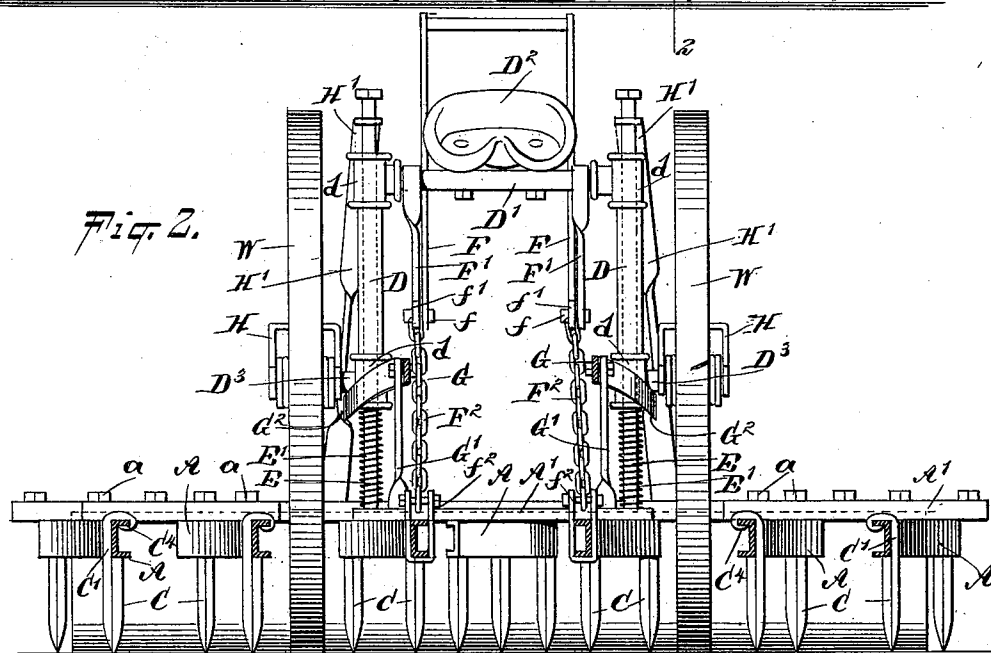
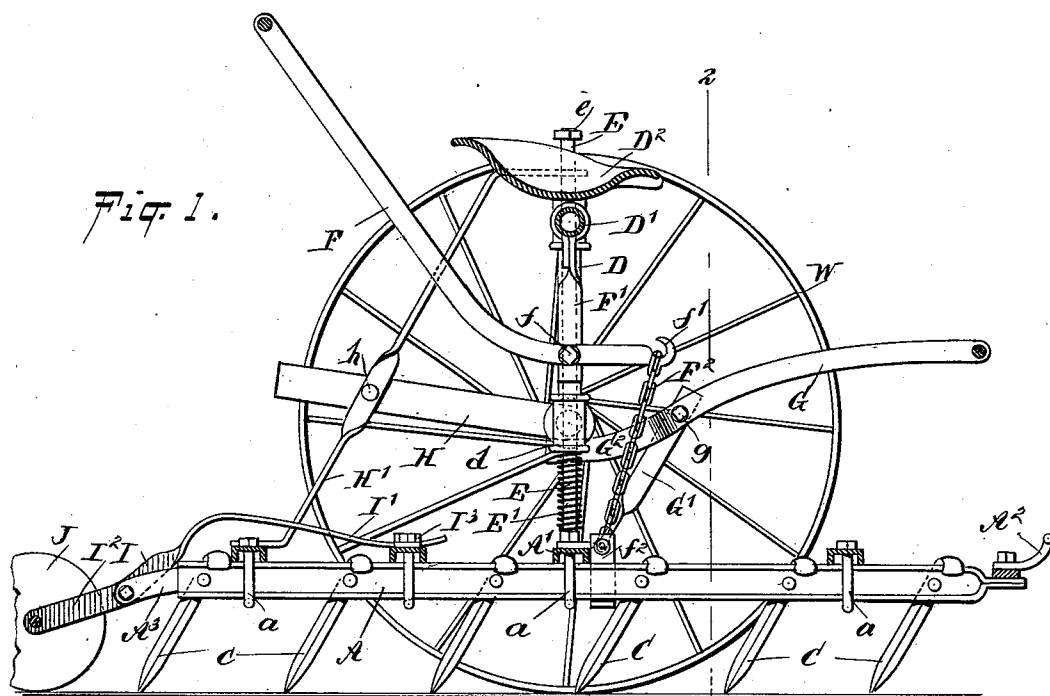
Patented Dec. 6, 1898.

P. J. HELLER.
HARROW.

(Application filed Jan. 15, 1898.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES:

William P. Gaebel,
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BY

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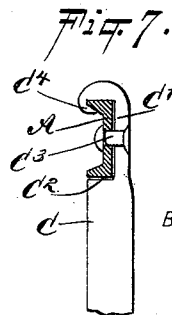
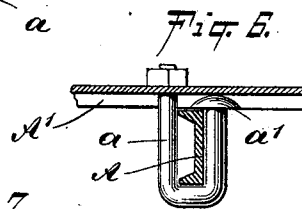
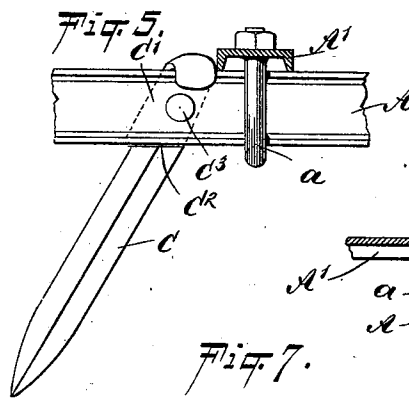
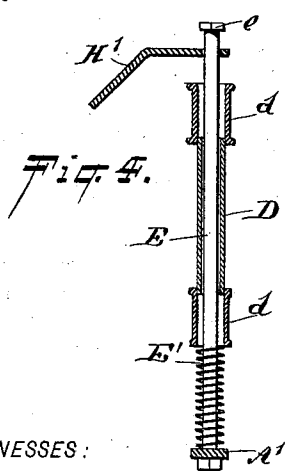
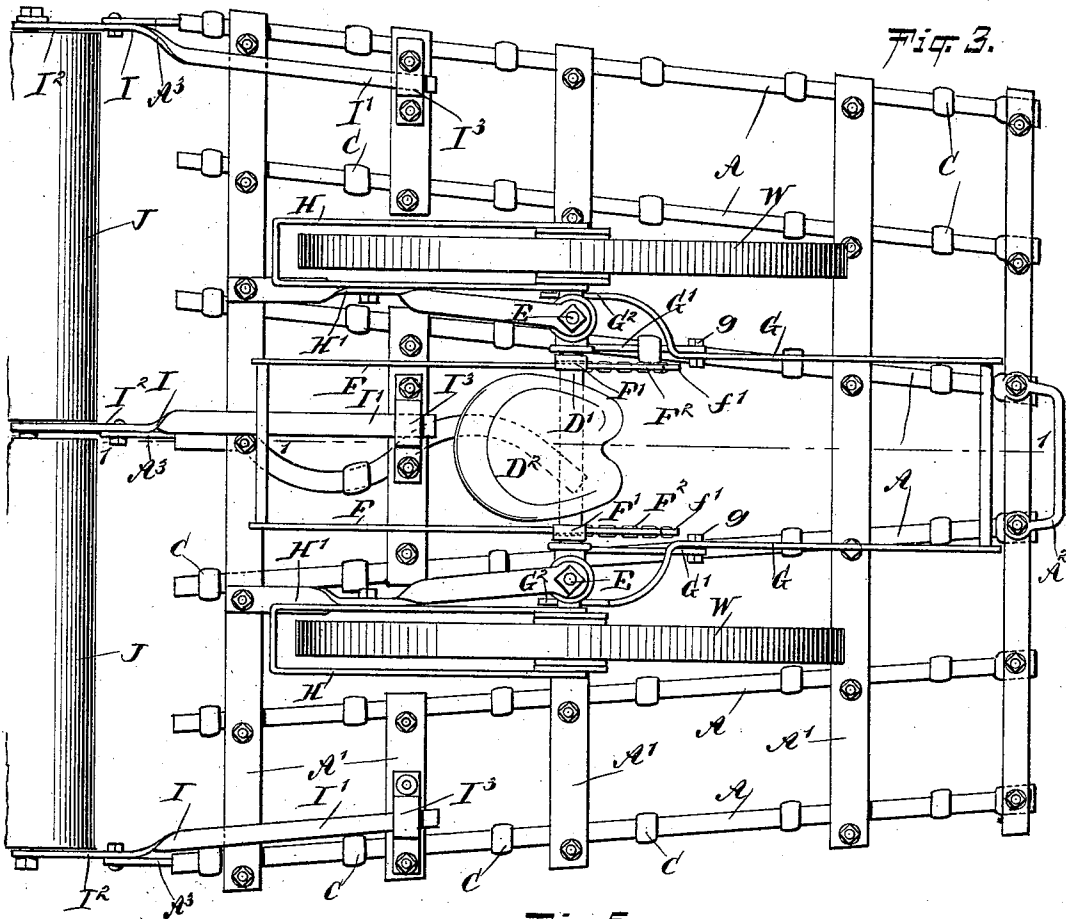
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WITNESSES:

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UNITED STATES PATENT OFFICE.

PETER JOHN HELLER, OF MONTCLAIR, NEW JERSEY.

HARROW.

SPECIFICATION forming part of Letters Patent No. 615,272, dated December 6, 1898.

Application filed January 15, 1898. Serial No. 666,744. (No model.)

To all whom it may concern:

Be it known that I, PETER JOHN HELLER, of Montclair, in the county of Essex and State of New Jersey, have invented a new and Improved Harrow, of which the following is a full, clear, and exact description.

The invention relates to an improvement in harrows of that class which have wheels and a seat for carrying the driver; and the invention comprises certain novel features, which will be fully described hereinafter and pointed out in the claims.

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

Figure 1 is a longitudinal sectional elevation taken upon the line 1 1 of Fig. 3. Fig. 2 is a cross-sectional elevation taken in front of the wheels on the line 2 2 in Fig. 1. Fig. 3 is a top plan view. Fig. 4 is a detail sectional elevation showing the sliding rod passing through the tube which forms part of the axle. Figs. 5 and 6 are detail views showing the method of connecting the cross-bars of the frame with each other and the teeth to the bars. Fig. 7 is a detail view showing the manner of connecting the teeth to the bars.

The frame of the harrow is composed of two sets of cross-bars A A', the same being channel-bars, the longitudinal bars A being placed with their flanges horizontal, while the lateral bars A' are placed above the longitudinal bars and with their flanges vertical, the channel side of the bar being down. The channel-bars are secured to each other at the points of crossing by means of a bent bolt *a*, (shown in detail in Figs. 5 and 6,) the threaded end of which bolt passes through the lateral bars A' or those having their vertical flanges in contact with the horizontal flanges of the bars A. This bolt *a* is bent around the bar A, so that the head *a'* of the bolt engages the upper flanges of the bar A, said head *a'* resting within the channel-bar A'.

The teeth C are herein shown as being set at an incline and are square bars, the upper ends of the teeth being flattened, so as to form a shoulder C², adapted to engage the lower flanges of the bars A. The flattened portions C' of the teeth C extend along the vertical portion of the channel-bars A and have their

upper ends bent over the upper flanges of said channel-bars, preferably with the point C⁴ turned under said flange. The teeth C are further secured to the channel-bars by means of bolts or rivets C³.

The harrow is provided with a clevis A², fixed upon the forward edge thereof and adapted for the attachment of a draft device. Wheels W occupy the space between two of the bars A, the space being produced by shortening the bars A', which would otherwise interfere with the operation of the wheels. The wheels W are mounted upon spindles D³ at the lower ends of an inverted-U-shaped axle or arch, said arch being composed of two vertical members D, which are constructed as tubes, and a horizontal member D', connecting the upper ends of the members D. The connections of the upper member D' and the spindles D³ of the arch or axle are by means of ordinary T's *d*, such as are used for connecting pipe-sections. A seat D² is mounted upon the upper or horizontal member D' of said arch.

Within each of the vertical tubes D is placed a rod E, which is free to slide therein, said rod at its lower end being connected to one of the lateral bars A' of the harrow-frame. The harrow-frame is held down by means of a spring E', which surrounds the lower end of the rod E and bears against the lower end of the tube D and the lateral bar A'. This gives a yielding pressure between the axles of the wheels and the harrow-frame.

From the upper horizontal member D' of the arch are suspended two bars F', having at their lower ends *f* pivots upon which are pivoted levers F, the main portions of which extend to the rear. Said bars have forward extensions terminating in hooks *f'*, to which are connected chains F², which at their lower ends are engaged by yokes *f''*, passing about the longitudinal bars A of the harrow-frame. By this means the harrow-frame may be lifted clear of the ground by depressing the rear ends of the levers F.

Vertically-extending bars G' are pivoted to the harrow-frame and at their upper ends are provided with pivots *g*, upon which levers G are pivoted, the rear ends G² of said levers extending under and engaging the wheel-spindles. By depressing the forward ends of

the levers G pressure may be brought upon the harrow-frame, so as to hold it down, and, if desired, the entire weight of the rider and the wheels may be supported from the harrow-frame. By means of these two levers the pressure of the harrow upon the ground may be regulated at will.

Two yokes H, formed of flat bars, are journaled upon the spindles D³ and extend horizontally to the rear and about the rear portions of the wheels W. To the rear ends of these yokes are pivoted brace-rods H', which at their rear ends are fixed to the harrow-frame, their upper ends being provided with an aperture through which the sliding rod E passes, the upper end of the brace-rod H' encircling the sliding rod E above the arch. The brace-rod H' serves to maintain the harrow-frame in an approximately-horizontal position and prevents its rocking to any material extent. A roller consisting of two sections J is also attached to the rear end of the harrow-frame. The journals of the sections J are engaged by a spring-bar I, which is given a quarter-twist at about the middle of its length, thus forming two sections I' I², the rear ends of the rear sections I² receiving the journals of the rollers.

From the forward portion of the section I² the spring-plate is pivoted upon rearwardly-extending arms A³, attached to the harrow-frame, and a short distance forward of this pivotal point a quarter-twist is given to the plate. From this point forward the section I' acts as a spring, so as to permit the sections of the roller J to rise and fall, as may be necessary in passing over obstacles, without seriously influencing the weight upon the harrow.

The forward ends of the spring-bars I are held loosely in guides I³, preferably formed by a plate or bar bent in the form of a staple and secured to the upper surface of one of the lateral bars A'. This arrangement leaves the forward ends of the springs free to have a little longitudinal movement within the guides, so that their action may be unobstructed, thus forming a flexible connection between the rollers and the harrow-frame, which is essential to the operation of the two.

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

1. A harrow comprising a toothed frame, wheels mounted on an inverted-U-shaped or arched axle, the vertical members of said axle being formed as tubes, rods sliding in said tubes and attached to the harrow-frame, and a lifting-lever mounted upon said axle and connected with the harrow-frame.

2. A harrow comprising a toothed frame, wheels mounted on spindles on an inverted-U-shaped or arched axle, the vertical members of said axle being formed as tubes, rods sliding in said tubes and attached to the harrow-frame, and springs surrounding said rods between the lower ends of the tubes and the

harrow-frame, and adapted to hold said harrow-frame down.

3. A harrow comprising a toothed frame, wheels mounted on spindles on an inverted-U-shaped or arched axle, the vertical members of said axle being formed as tubes, rods sliding in said tubes and attached to the harrow-frame, springs surrounding said rods between the lower ends of the tubes and the harrow-frame, and lifting-levers mounted upon said axle, and connected with the harrow-frame.

4. A harrow comprising a toothed frame, wheels mounted on spindles on an inverted-U-shaped or arched axle, the vertical members of said axle being formed as tubes, rods sliding in said tubes and attached to the harrow-frame, lifting-levers mounted upon said axle, and connected with the harrow-frame, and a depressing-lever having its pivot supported from the harrow-frame and engaging the axle, whereby the load upon the axle may be transferred to the harrow-frame as desired.

5. A harrow comprising a toothed frame, wheels mounted on spindles on an inverted-U-shaped or arched axle, the vertical members of said axle being formed as tubes, rods sliding in said tubes and attached to the harrow-frame, brace-rods attached to the harrow-frame and at their upper ends embracing the vertical rods over the tubes, and lifting-levers upon said axle and attached to the harrow-frame.

6. A harrow comprising a toothed frame, wheels, an axle connecting the wheels and having thereon vertical members formed as tubes, open at the top and bottom, rods sliding in said tubes and attached to the harrow-frame, springs surrounding said rods between the lower ends of the tubes and the harrow-frame, and adapted to hold the harrow-frame down, brace-rods attached to the harrow-frame and at their upper ends embracing the vertical rods above the tubes, and lifting-levers mounted upon said axle, and connected with the harrow-frame.

7. A harrow comprising a toothed frame, a pair of wheels, an axle therefor having vertical members formed as tubes open at the top and bottom, rods sliding in said tubes and attached to the harrow-frame, springs surrounding said rods between the lower ends of the tubes and the harrow-frame, and adapted to hold the harrow-frame down, brace-rods attached to the harrow-frame and at their upper ends embracing the vertical rods above the tubes, lifting-levers mounted upon said axle and attached to the harrow-frame, and a depressing-lever having its pivots supported from the harrow-frame and engaging the axle, whereby the load upon the axle may be transferred to the harrow-frame as desired.

8. A harrow comprising a toothed frame, a pair of wheels, an axle connecting the wheels and having attached thereto vertical members formed as tubes open at the top and bot-

tom, rods sliding in said tubes and attached to the harrow-frame, depressing-springs interposed between the axle and the harrow-frame, and a lifting-lever mounted upon said axle and connected with the harrow-frame.

9. A harrow comprising a toothed frame, a pair of wheels, an axle connecting the wheels and having mounted thereon vertical members formed as tubes, open at the top and bottom, rods sliding in said tubes and attached to the harrow-frame, brace-rods attached to the harrow-frame and at their upper ends embracing the vertical rods above the tubes, bars pivoted upon the axle and extending to the rear and pivoted to said brace-rods, and a lifting-lever mounted upon said axle and connected with the harrow-frame.

10. A harrow, a roller, and a connection between the harrow and roller, comprising flat spring-plates each having a quarter-twist therein intermediate between its ends, divid-

ing it into two sections, one section having two pivot-bearings, one of said bearings engaging the roller-journals and the other engaging the pivots on the harrow-frame, and staples or loops upon the harrow-frame engaging the forward ends of the other sections and restraining them against vertical motion.

11. A harrow - frame composed of crossed channel-bars, one set of bars being placed with their channeled sides in contact with the upper flanges of the other set, the two sets of bars being secured together at their points of crossing by bolts having their threaded ends passing through the upper bars, the bodies of said bolts extending about the lower bars, and the head of the bolts hooking over the edges of the lower bars.

PETER JOHN HELLER.

Witnesses:

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