2 Sheets—Sheet 1.

S. HARTMAN.

Rotary-Harrow.

No. 207,657. Patented Sept. 3, 1878.

Fig. 1.

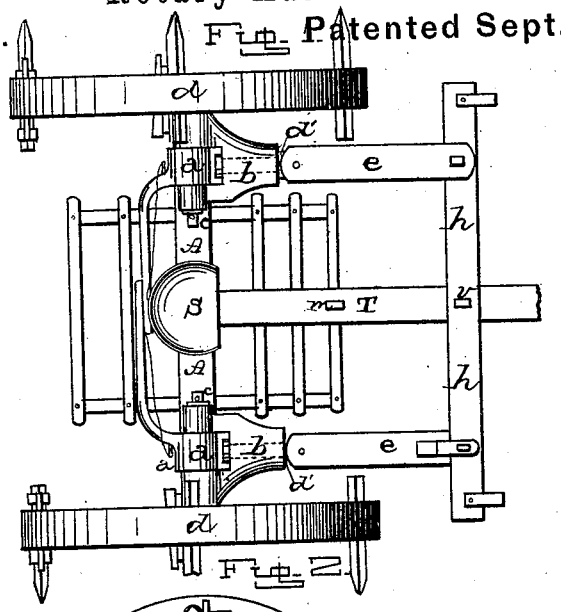


Fig. 2.

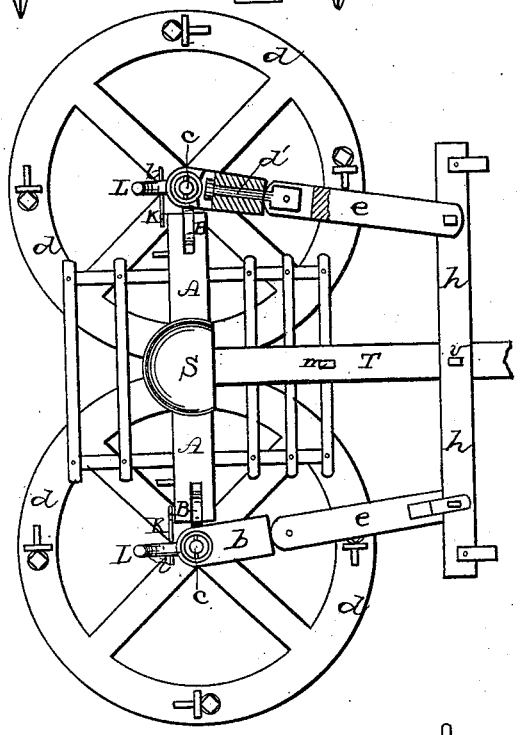
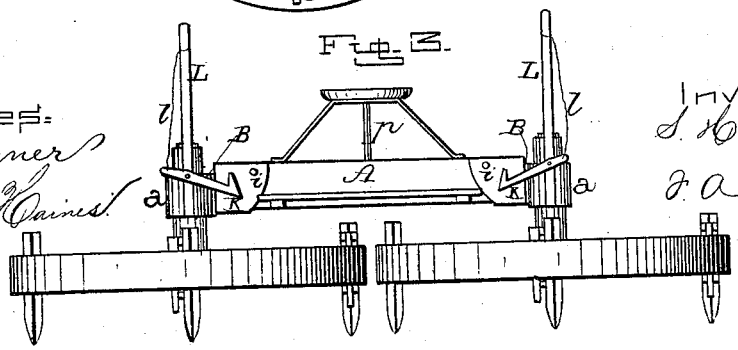


Fig. 3.



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2 Sheets—Sheet 2

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Fig. 4.

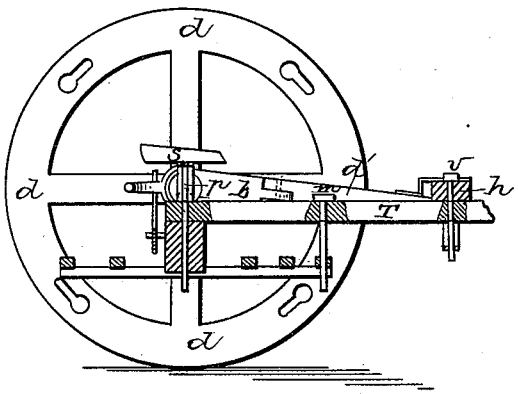
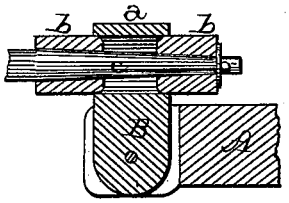


Fig. 5.



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UNITED STATES PATENT OFFICE.

SAMUEL HARTMAN, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN ROTARY HARROWS.

Specification forming part of Letters Patent No. **207,657**, dated September 3, 1878; application filed July 29, 1878.

To all whom it may concern:

Be it known that I, SAMUEL HARTMAN, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Rotary Harrows; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in rotary harrows, and is intended as an improvement upon the patent which was granted me February 26, 1878, No. 200,656; and it consists in the arrangement and combination of devices by which the driver, seated upon the sulky, may change the harrow into a two-wheeled vehicle, or back from a vehicle into a harrow again, without leaving his seat; and it further consists in the devices for raising the wheels and securing them in a vertical position, all of which will be more fully described hereinafter.

The accompanying drawings represent my invention, in which Figure 1 is a plan view, showing the wheels raised; Fig. 2, a similar view showing the wheels converted into a harrow; and Fig. 3 is a rear elevation. Figs. 4 and 5 are details.

A represents a cross-bar, in the ends of which are vertical slots, and in these slots the lugs B are pivoted. These lugs project beyond and above the ends of the cross-bar in the form of eyes, *a*, for the reception of the axles of the harrow-wheels, and have a movement through about one-quarter of a circle.

The forks *b*, made of cast-iron, have their ends overlap the sides of the eyes, as shown, and passed through both ends of each fork and the eye *a* is the short axle, *c*, upon which the combined wheel and harrow *d* turns. Swiveled in the forks are the bars *d'*, to the outer ends of which bars are pivoted the rods *e*. These rods extend horizontally forward, and have their front ends pivoted to the cross-bar *h*, at any suitable distance from its end. As the forks *b* are swiveled upon the bars *d'*, when the eyes *a* are moved outward from a vertical position to a horizontal one, in a line with the cross-bar A, the forks turn upon the bars *d'*, as shown, until their edges assume a vertical position.

On the rear sides of the eyes *a* are secured the levers L, which assume a vertical position when the wheels are horizontal, and a horizontal one when the wheels are vertical.

By means of these levers the driver upon the seat S may, at his option, without leaving his seat, change the harrow into a two-wheeled vehicle, by simply drawing these levers inward from a vertical position until the wheels assume a vertical position, when the hooks K, pivoted to the levers, automatically fasten themselves under the pins *i*, projecting from the cross-bar A, and securely hold the wheels in that position.

If desired to again perform the work of harrowing, the hooks are withdrawn from under the pins by means of cords or chains *l*, attached to the levers and hooks within reach of the driver, and the wheels made to reassume a horizontal position by forcing the levers from a horizontal to a vertical position.

When the wheels are raised up by the levers, their axles, confined within the holes of the arms of the forks *b* and the eyes *a* of the lugs, rest upon the tops of the outer ends of the cross-bar A.

The seat S occupies the central part of the cross-bar A. Under it is a pin or rod, *p*, passing through a hole in the rear end of the tongue T into the cross-bar A, which tongue, although secured by another pin, *v*, through the cross-bar *h*, is free to move sidewise during the process of harrowing.

If the harrow is changed into a vehicle, a pin, *m*, is passed through the tongue in front of the seat, and inserted into one of the slats under or on top of the cross-bar A, upon which rests the driver's feet to steady it.

The rods *e*, to which the cross-bar *h* is pivoted, and the tongue T, have a simultaneous lateral movement when harrowing, to accommodate themselves to the irregularities of the surface of the ground. The single-trees are attached to the cross-piece *h*.

Having thus described my invention, I claim—

1. The swiveled bars d', in combination with the cross-bar h, tongue T, and pins p v m, substantially as described.

2. On a rotary harrow convertible into a two-wheeled vehicle, the levers L, hooks i, and cords or chains l, substantially as set forth and described.

In testimony that I claim the foregoing I have hereunto set my hand this 16th day of July, 1878.

SAMUEL HARTMAN.

Witnesses:

T. F. LEHMANN,

SAML. DIESCHER.