

J. N. NORRIS.  
ROTARY HARROW.

No. 183,961.

Patented Oct. 31, 1876.

Fig. 1.

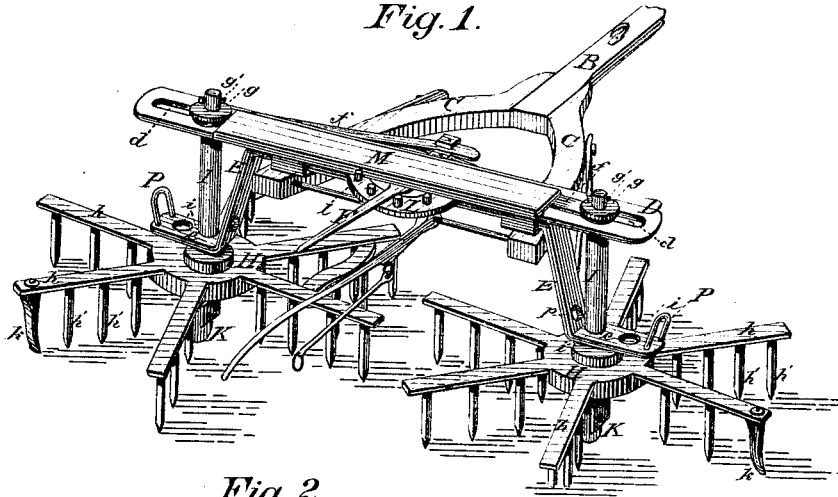


Fig. 2.

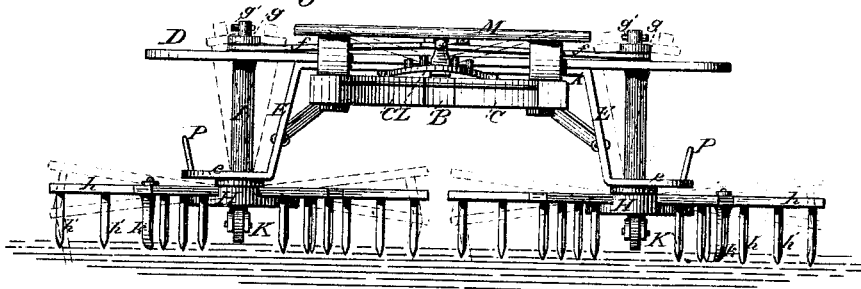
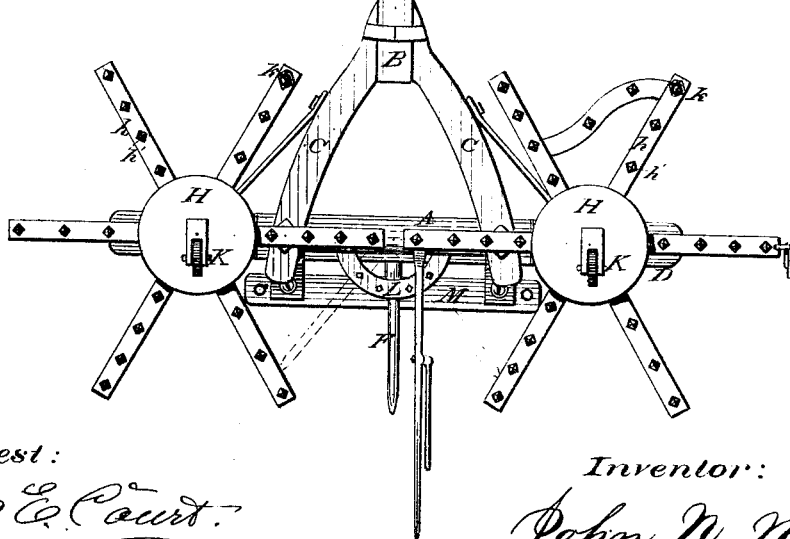


Fig. 3.



Attest:

*E. C. Court.*  
*C. P. [Signature]*

Inventor:

*John W. Norris,*  
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# UNITED STATES PATENT OFFICE.

JOHN N. NORRIS, OF DADEVILLE, ALABAMA.

## IMPROVEMENT IN ROTARY HARROWS.

Specification forming part of Letters Patent No. **183,961**, dated October 31, 1876; application filed August 16, 1876.

*To all whom it may concern:*

Be it known that I, JOHN N. NORRIS, of Dadeville, in the county of Tallapoosa and State of Alabama, have invented certain new and useful Improvements in Rotary Harrows; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification, and in which—

Figure 1 is a perspective view. Fig. 2 is a rear elevation; and Fig. 3 is a bottom plan.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to rotary harrows, or to that class of harrows in which the teeth are affixed to the radiating arms or spokes of horizontally-revolving plates; and it consists in the construction and arrangement of parts hereinafter described, by which the direction in which the wheels of the harrow revolve may be reversed at will, thereby causing the harrow to unchoke itself whenever it has become choked, all as hereinafter more fully shown and specified.

In the drawing, A is the bolster. This is affixed by means of bolts, or in any other suitable manner, to the hounds C of the tongue B. On the top of the bolster is secured a metallic plate, D, having at each end a slot, *d*, for the purpose hereinafter set forth. The bolster A is bent so as to form at each end a downward-projecting bracket, E, the horizontal arm of which *e* has one or more perforations, *i*, that serve as bearings for the vertical shafts I I of the harrow-wheels H H. The upper ends of the shafts I I have their bearings in slots *d* of plate D, above which they have washers *g* held in place by bolts *g'*.

The construction of the wheels is as follows: H H are the central or body plates, from which radiate in all directions the arms or spokes *h*, to which are secured the teeth *h'*. To the end of one of the arms *h* of each wheel is pivoted a peculiar drill-shaped tooth, *k*, of a larger size than the rest, the point of which, owing to its peculiar shape, always points forward, and the object of which is to cut or pul-

verize the clods. Under the center of each wheel is pivoted a vertical wheel or caster, K, the length of the shank of which may be regulated in any suitable manner. By means of these casters the depth of the work may be regulated, as when the shanks are shortened the teeth of the harrow are allowed to sink deeper in the ground than when the shank is lengthened.

To the center of the plate D is pivoted the lever F, and to this lever, upon each side of, and at equal distances from its fulcrum, are pivoted two bars or rods, *f f*. These bars are of sufficient length to reach the shafts I I, which pass through perforations in the ends of bars *f f*, and are secured there by their respective washers and bolts.

To the rear side of the bolster is secured a segmental plate, L, having upward projections or pins *l l*, between which the lever F may be inserted, and thus kept in its proper position. Above the plate L is the seat-bar M.

The advantage of my improved harrow, and the mode of operating the same, will be readily understood from the foregoing description.

By means of the lever F the upper ends of the shafts I I and the horizontal wheels H H may be either brought toward or apart from each other, thus giving a certain slant or pitch to the wheels H H. When thus set, the wheels will, when the harrow is drawn over the ground, revolve horizontally, the direction of their rotation being reversed, when necessary, by changing the position of the lever F. By having two or more bearings in the brackets E E the wheels may be brought quite close together, or any suitable distance apart, to suit the operator, the length of the rods *f f* on top of the plate D being adjusted accordingly.

The ends of the horizontal plates *e e* of brackets E E have metallic bails P P, and the brackets E E have corresponding perforations *p p*. Bearings are thus formed into which the shafts I I of the wheels may be inserted after removing them from their vertical position, the object of this being to enable the harrow to be transported more easily from place to place.

Having thus described my invention, I claim, and desire to secure by Letters Patent of the United States—

1. The combination of tongue B, bolster A, plate D, having slots *d d*, rods *f f*, lever F, and segmental plate L, substantially as and for the purpose shown and specified.

2. The combination of bolster A, plate D, having slots *d d*, rods *f f*, lever F, vertical axis or shafts I I, and harrow-wheels H H, substantially as and for the purpose shown and specified.

3. The improved harrow herein described, consisting of the tongue B, bolster A, having downward-projecting brackets E E, plate D,

having slots *d d*, vertical shafts or axes I I, lever F, rods *f f*, wheels H H, and casters K K, all combined and arranged to operate substantially as and for the purpose herein shown and specified.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in presence of two witnesses.

JOHN N. NORRIS.

Witnesses:

WM. GRAY,

Z. JONES WRIGHT, Jr.