

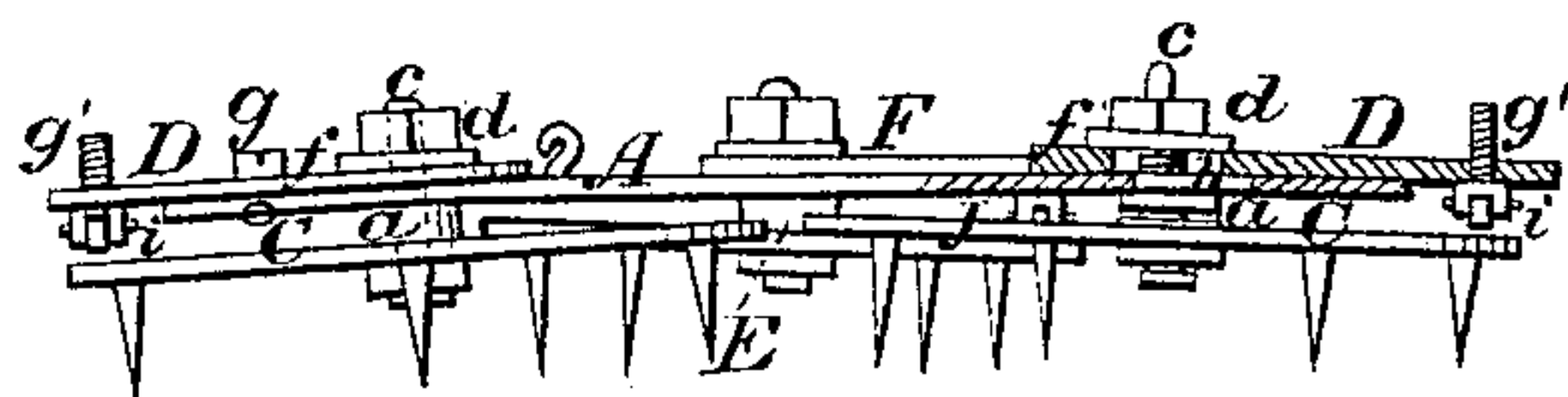
HORRALL & SIRWELL.

Revolving Harrow.

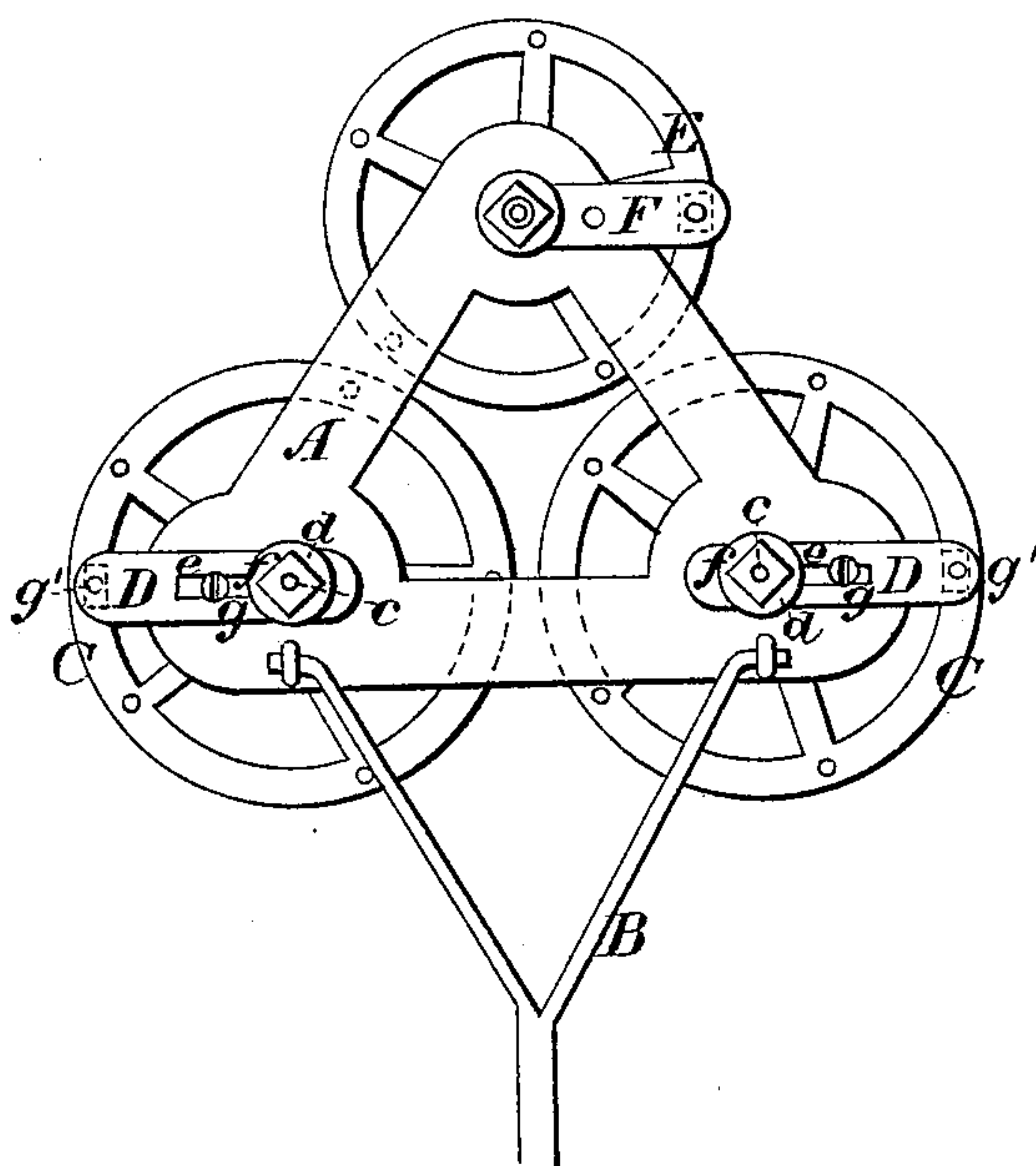
No. 19,365.

Patented Feb. 16. 1858.

*Fig. 1.*



*Fig. 2.*



# UNITED STATES PATENT OFFICE.

W. A. HORRALL AND R. G. SIRWELL, OF GRAYVILLE, ILLINOIS.

## IMPROVEMENT IN REVOLVING HARROWS.

Specification forming part of Letters Patent No. 19,365, dated February 16, 1858.

*To all whom it may concern:*

Be it known that we, W. A. HORRALL and R. G. SIRWELL, of Grayville, in the county of White and State of Illinois, have invented a new and Improved Revolving Harrow; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a front view of our improvement. Fig. 2 is a plan or top view of the same.

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

This invention relates to an improvement in that class of harrows in which teeth are attached to rotating wheels put in motion by the forward movement of the implement, in connection with pressure-rollers.

The invention consists in the employment or use of three wheels provided with teeth and attached to a triangular frame, two of the wheels being made adjustable, so that they may be placed nearer to or farther from each other, as may be required, and all the wheels provided with pressure-rollers peculiarly arranged so as to insure their rotation by the forward movement of the machine, and at the same time allowing of a certain degree of vertical vibratory movement, so that they may conform to the inequalities of the surface of the ground over which they pass. By this arrangement the construction of the harrow is rendered extremely simple and efficient and capable of being adapted to various works, performing the office of the usual harrow, and, to a certain extent, the office of a cultivator.

To enable those skilled in the art to fully understand and construct our invention, we will proceed to describe it.

A represents a triangular frame, which may be constructed of metal or wood of any desired size. The frame, if of metal, may be cast of the proper form; or, if wrought metal is used, a flat bar of requisite dimensions may be forged or bent in triangular form.

The thills or a draft-pole, B, is attached to one side of the frame, and two horizontal wheels, C C, are also attached to the same side of the frame A. Each wheel C is fitted on a small arbor, *a*, the upper ends of which are squared, or have two parallel sides to fit in

slots *b*, made in the front side of the frame A. One of these slots is shown in Fig. 1. Through each arbor *a* a screw-bolt, *c*, passes, said bolts having each a nut, *d*, on its upper end. The bolts *c* also pass through oblong slots *e*, made through the inner ends of flat metal bars D, a washer, *f*, being placed on each bolt *c* above the bars D, the nuts *d* bearing on said washers. Set-screws *g* also pass through the slots *e* and into the frame A, said screws preventing the casual movement of bars D. The slots *e* in the bars D and the slots *b* in the frame A are in the same plane.

Through the outer end of each bar D a screw-rod, *g'*, passes, and in the lower ends of these rods rollers *i* are fitted—one in each. These rollers bear on the outer edges of the wheels C C, and the arbors *a* of said wheels are adjusted in the slots *b* in a somewhat inclined position, as shown clearly in Fig. 1. The rollers *i*, in consequence of bearing on the outer edges of wheels C, keep the same in an inclined position.

From the above description it will be seen that by relaxing or unscrewing the screws *g* and nuts *d* the wheels C may be adjusted nearer to or farther from each other, as the nature of the work may require.

To the back end of the frame A a wheel, E, is attached. This wheel is provided with teeth, and is attached to the frame A precisely in the same way as the two wheels C C, with the exception that its bar F is not provided with an oblong slot, nor is the frame A. The wheel E therefore cannot be adjusted laterally. Its bar F, however, is provided with a roller, *j*, which bears on the wheel E at one side and gives it an inclined position.

As the implement is drawn along the wheels C C are rotated in consequence of their outer parts being depressed lower than their inner parts, and kept in that position by the bars D and rollers *i*, for the teeth at the outer parts of the wheels penetrate the ground deeper than at the inner parts, and said wheels will consequently be rotated. The bars D will yield or give sufficiently to allow the wheels to conform to the uneven surface of the ground. The wheel E is rotated by the same cause, and the harrow may be increased or diminished in width by adjusting the wheels C, the back



wheel, E, acting upon the ground which escapes between the front wheels, so that the implement may be used for cultivating the ground between the rows of hoed crops—such as corn, potatoes, &c.—or it may be used as an ordinary harrow to pulverize plowed ground, the work being done much more effectually than by the ordinary harrow.

We do not claim the employment or use of horizontal rotary toothed wheels, for they have been previously used; but,

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The employment or use of three horizontal rotary toothed wheels, C C E, arranged as shown—viz., the back wheel, E, having a per-

manent axis and the two front wheels, C C, being rendered capable of lateral adjustment, so that the width of the harrow may be increased or diminished, as desired, and the space or width of the ground included between the outer edges of wheels C C perfectly pulverized.

2. The elastic bars D D F, provided with pressure-rollers *i i j*, and bearing on their respective wheels, C C E, substantially as and for the purpose set forth.

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Witnesses:

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