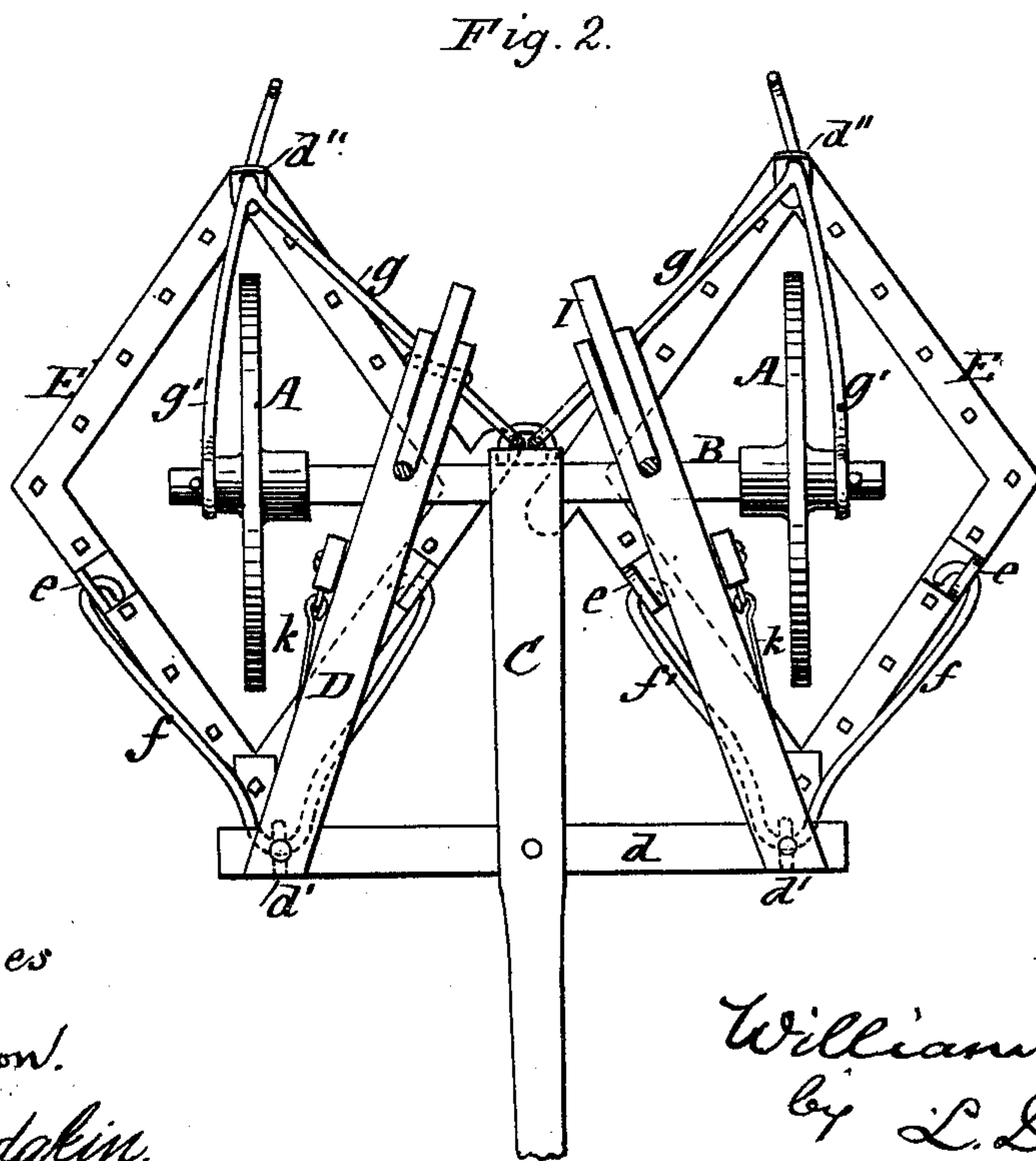
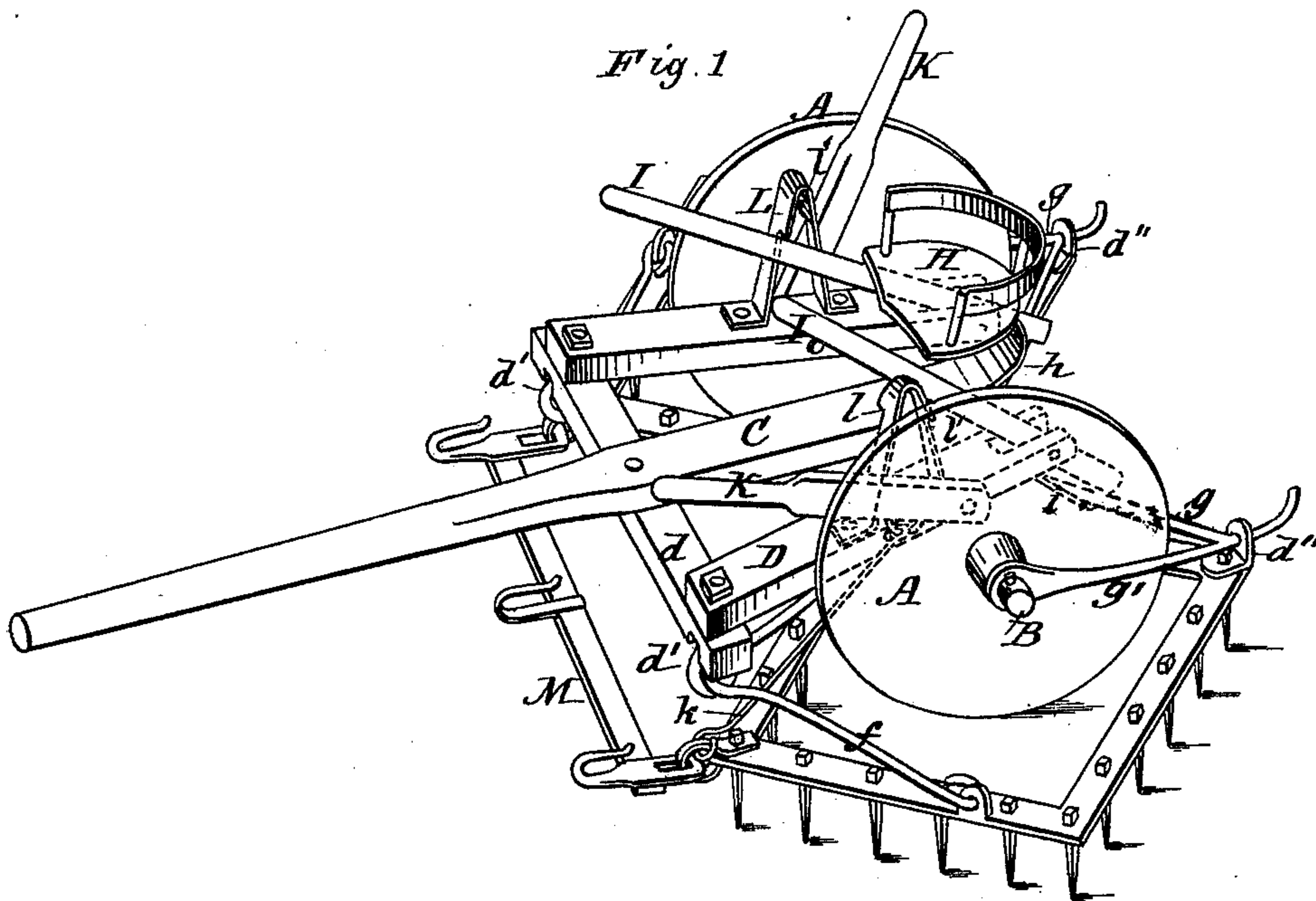


W. H. MAIN.  
Wheel-Harrow.

No. 220,396.

Patented Oct. 7, 1879.



Witnesses  
E.E. Masson.  
C.E. Hodgkin.

Inventor:  
William H. Main.  
by L. Deane.  
Atty.



# UNITED STATES PATENT OFFICE.

WILLIAM H. MAIN, OF BOSCOBEL, WISCONSIN.

## IMPROVEMENT IN WHEEL-HARROWS.

Specification forming part of Letters Patent No. **220,396**, dated October 7, 1879; application filed June 24, 1879.

*To all whom it may concern:*

Be it known that I, WILLIAM H. MAIN, of Boscobel, in the county of Grant and State of Wisconsin, have invented certain new and useful Improvements in Wheel-Harrows, of which the following is a specification.

Figure 1 is a perspective view of the harrow. Fig. 2 is a plan view of the harrow proper, the seat being removed.

This invention relates to that class of harrows usually called "wheel-harrows;" and it consists more particularly in such arrangement and attachment of levers that either part of the harrow can at will be raised above the ground or so lowered as to take the ground; also, in such construction as will keep the harrow from swinging sidewise and interfering with the wheels; also, in the use of push-braces in connection with the wheels and axles and their attachments; as well as with the tongue, and in so combining the several parts that the draft shall come on the pointed end of each harrow; and in the general construction and combination of all the parts, all as will now be more in detail set out and explained.

In the accompanying drawings, A denotes the wheels; B, the axle, to which is secured the rear end of the tongue C, and on which is also fastened the rear end of the frame D, which frame is preferably of a triangular shape, the base *d* in front, over which the tongue passes, and on which it is also bolted. This part *d*, I denominate the "push-bar." The harrows E E are so attached to the axle B and frame D that one of the wheels will run freely within the body or cut of each harrow, and also so as to allow the utmost flexibility of the movement of said harrows, and to admit of their being raised and lowered. The manner or detail of such attachment and operation will now be more particularly explained.

On the under side of the frame D, preferably to the push-bar *d*, as now shown, is fixed the eyebolt *d'*, which carries the bent end or angle of the forked iron rod *f*, the rear ends of said rod being hooked in eyes *e* on either side of the fore part, but nigh to the center of the harrow. Each harrow is hung at the rear by the iron rod *g*, one end of which is attached to the outer end of the axle, and the other to the center of the axle, and so as to allow free mo-

tion to the rod *g*. To the rearward-projecting angle of this rod the rear end of the harrow is hung by eye *d''*.

The driver mounted on seat H, which is attached to the tongue or axle by spring *h* in any usual way, can operate at will the front or rear portion of each harrow by means of the handles or levers I and K. The former of these is pivoted to the rear end of the side bar of the frame D, one on each side of the driver, and each of the latter on either side of the frame.

Near the lower end of the handle I is a link, *i*, through which one side of the bent iron rod *g* is passed, and by moving the lever I the rod *g* is raised, and lifts with it the rear end of the harrow, which is secured to it in the manner above set forth. This lever can be held in a downward position by catching it under notch *l* of strap L, or by any convenient way or means.

The lever K can by means of the rod *k*, which connects its lower end to the front portion of the harrow, be operated to raise or lower this part of the harrow. This lever can be held in a fixed downward position by engaging its side on the notch *l'* of the strap L. The said levers may be adjusted so as to lower the harrow wholly and levelly on the ground, or by raising the front end and lowering the rear, or vice versa. Either the rear or front of the harrow may at will be made to clear the ground, and the teeth on the other portion to run in it. By said levers also the entire harrow may be raised above the ground when desired.

The traces are hitched to the draw-beam M, which is properly attached to the front ends of the harrows.

Each harrow has sufficiently side-tilting motion on its supporting-rods *f* and *g*. The harrow-teeth *e* are fixed in place in any usual way and manner. The rods *f* help to hold up the tongue, and cause the pressure to come lightly on the horses working the harrow. Said rods will also, by the peculiar manner in which they are attached to the front part of the harrows, cause the harrow-teeth to press deeply into the ground, and in this way a light harrow will do the work of a heavy one, and in a measure these rods will act to balance the weight of the driver and the pressure on the wheels, so as to prevent the wheels sinking too deep in



the soil. The side part,  $g'$ , of the bars  $g$ , which extend from the joint-connection in front on the axle in a right line to the eye  $d''$  on the harrow, serves to brace and hold the harrow so that it shall not rub against the wheel or get out of proper position. The rods  $f$  and  $g$  will act in connection with bar  $d$  as push bars or braces.

As thus made and adapted for use the harrow is very strong. Either part or the whole can be easily and certainly worked at pleasure, so as to be raised above the ground or made to take the ground when and as desired. The harrows cannot swing sidewise out of place, and yet will have always the utmost flexibility of proper working motion. The push-bar on front of the frame will steady as well as carry the front portions of the harrows. The draft will come in line with the points of the harrow, and will thus serve to make the teeth do more effective work. The harrow cannot easily get out of order, and can be readily and cheaply repaired.

Having thus described my invention, what I consider new, and desire to secure by Letters Patent, is—

1. In a wheel-harrow in which the wheel runs within the body or cut of the harrow, the combination of harrows E with frame D and rods or braces  $f$  and  $g$ , bent as shown, oper-

ated by levers or handles, substantially in the manner described.

2. In a wheel-harrow, as described, the combination of frame D, having forward bar,  $d$ , and carrying forked rod  $f$ , with the movable harrows E, rod  $g$   $g'$ , adjusting-levers I and K, and rod  $k$ , substantially as described.

3. In a wheel-harrow, as described, the combination of harrows E with wheels A and bar  $g$ , having a generally straight part,  $g'$ , coming outside the wheel, and flexibly connecting the end of the axle with the rear end of the harrow at  $d'$ , substantially as and for the purposes set forth.

4. In a wheel-harrow, as described, the combination of the movable harrows E with bent bars  $f$  and  $g$ , the latter having a part,  $g'$ , nearly straight and outside the wheels A, levers I and K, connecting-rod  $k$ , adjusting-strap L, frame D, having front bar,  $d$ , all adapted to operate substantially in the manner shown and described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM H. MAIN.

Witnesses:

JOHN W. OSTRANDER,  
C. H. CONTOIT.