(No Model.)

L. A. RICHARDS.

DISK HARROW.

No. 348,693. Patented Sept. 7, 1886.

FIG. 1.

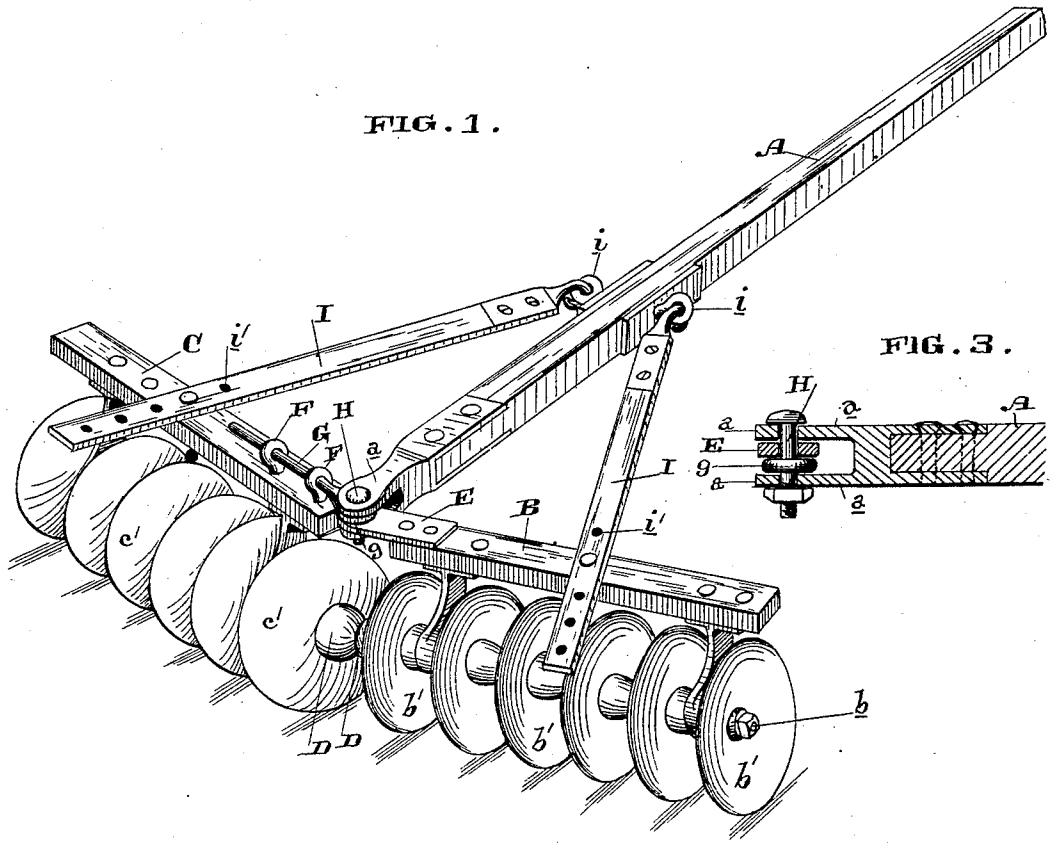
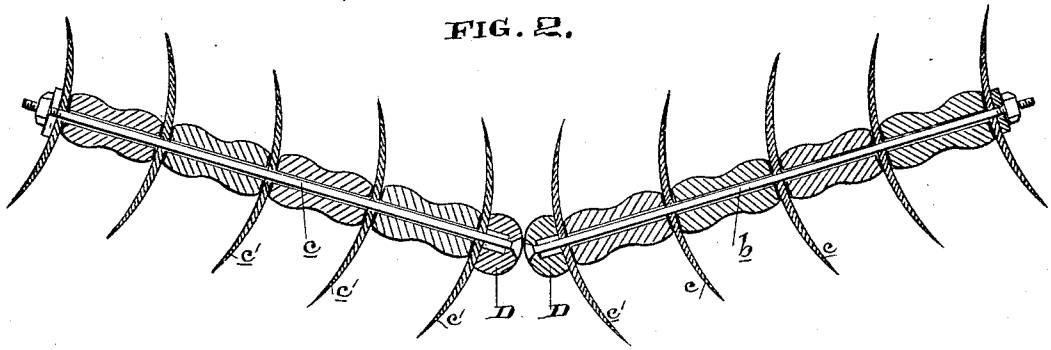


FIG. 3.

FIG. 2.



Witnesses,
Geo. H. Strong.
J. L. Morse.

Inventor,
L. A. Richards
By Dewey & Co.
Attys

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

LOVELL A. RICHARDS, OF GRAYSON, CALIFORNIA.

DISK-HARROW.

SPECIFICATION forming part of Letters Patent No. 348,693, dated September 7, 1886.

Application filed May 12, 1886. Serial No. 201,996. (No model.)

To all whom it may concern:

Be it known that I, LOVELL A. RICHARDS, of Grayson, county of Stanislaus, State of California, have invented an Improvement in Disk-Harrows; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to that class of harrows or cultivators which are provided with oppositely-inclined disk-gangs, the inner ends of which have abutting bumpers; and my invention consists in the pivot-connection of the tongue with the beams of the gangs, whereby one gang is held to the tongue and the other is allowed to have a lateral movement.

It consists, further, in the side braces, by which the disk-gangs are held and their inclination varied, and in said braces in connection with the tongue and the beams of the disk-gangs, all of which I shall hereinafter fully describe.

The object of my invention is, while providing for the various adjustments of the disk-gangs, to hold them at the same time in the same vertical plane at their meeting ends, so that said ends cannot get out of line by moving up or down.

Referring to the accompanying drawings, Figure 1 is a perspective view of my disk. Fig. 2 is a horizontal section through the disk-gang. Fig. 3 is a detail view showing the pivot-connection of the beams with the tongue.

A is the tongue, having at its rear end the forked clip *a*.

B is the beam of one of the disk-gangs. This carries the necessary boxes, in which is mounted the shaft *b*, upon which are secured the disks *b'*.

C is the beam of the other disk-gang, carrying the shaft *c*, upon which are secured the disks *c'*. The inner ends of the shafts are provided with bumpers D, which abut, as shown.

Upon the inner end of the beam B is rigidly fixed a plate or tongue, E, which fits between the forked clip *a* of the tongue A and holds said beam against lateral movement.

Upon the inner end of the beam C are staples or guide-sockets F, in which is fitted loosely a bar, G, the projecting end of which has an eye, *g*, which is fitted between the forked clip *a* of the tongue A. A pin or bolt, H, passes down through the forked clip *a* and the intervening plate E of the beam B and the eye *g* of the bar G of the beam C, so that the tongue and beams are all pivoted together, the beam B, as before stated, having no movement to or from the tongue, although the beam C, by reason of the staples F and bar G, is adapted to have a sliding lateral movement on said bar.

I are bars or braces, the forward ends of which are connected with the sides of the tongue A by means of a hook and staple, *i*, and their rear ends have a series of holes, *i'*, whereby they may be adjustably connected with the beams B C. These bars or braces hold the disk-gangs to their proper inclination, and by adjusting them at their rear ends the angle of their inclination may be varied. At the same time the hinge-connection with the tongue in front does not interfere with the lateral adjustment of the beam C.

It will be observed that by reason of the connection of the beams with the tongue the said beams are securely held with the inner ends of the disk-gang shafts in the same plane, so that the bumper of one of the shafts cannot rise above nor overlap that of the other.

The outer ends of the two gangs may have a slight vertical play to adapt said gangs to the undulating condition of the ground, and provision is made for the necessary side movement caused by a side thrust through the lateral movement of the beam C on the bar G, which said movement is in no wise interfered with by the side brace, I.

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

1. In a disk-harrow, the combination of oppositely-arranged disk-gangs having their inner ends abutting, one of said gangs being connected with the frame by a fixed pivot and the other having a sliding or extensible pivot-connection with the frame, substantially as described.

2. In a disk-harrow, the tongue A, in combination with a disk-gang connected with its rear end by a fixed pivot, and an opposing disk-gang having a sliding or extensible pivot-connection with the rear end of the tongue, substantially as described.

3. In a disk-harrow, the tongue A, in combination with the beam B, having the shaft *b* and the disks *b'* thereon, said beam being connected with the rear end of the tongue by a fixed vertical pivot, and the beam C, having the shaft *c* and disks *c'* thereon, said beam having a sliding or extensible pivot-connection with the rear end of the tongue, substantially as described.

4. In a disk-harrow, the tongue A, having a forked clip, *a*, on its rear end, in combination with the beam B of one disk-gang, said beam having a plate or tongue, E, on its inner end, fitted in the forked clip of the tongue A, the beam C of the other disk-gang having the sockets F on its inner end, the bar G, fitted loosely in said sockets, and having an eye, *g*, on its inner end fitted in the forked clip of the tongue A, and the vertical pin or bolt H, pivoting the plate E and the bar G in said forked clip, substantially as described.

5. In a disk-harrow, the tongue A, having the forked clip *a* on its rear end, in combination with the beam B, having the tongue or plate E on its inner end fitted in the forked clip of the tongue A, the shaft *b*, suspended under the beam, and the disks *b'* on the shaft, the beam C, having the sockets F on its inner end, and the shaft *c*, with the disks *c'*, the bar G, fitted loosely in the sockets F, and having an eye, *g*, on its inner end, fitted in the forked clip of the tongue A, the vertical pin or bolt H, pivoting the plate E and the bar G in the forked clip *a*, and the abutting bumpers D on the inner ends of the disk-shafts, substantially as described.

6. In a disk-harrow, the tongue A, having a forked clip, *a*, on its rear end, in combination with the beam B of one of the disk-gangs, said beam having a plate or tongue, E, on its inner end fitted in the forked clip *a*, the beam C of the other disk-gang having the sockets F on its inner end, the bar G, loosely fitted in the sockets and having an eye, *g*, fitted in the forked clip *a*, the vertical pin or bolt H, pivoting the bar G and the plate E in the clip, and the brace-bars I, hinged at their forward ends to the tongue A, and adjustably secured at their rear ends to the beams, substantially as and for the purpose described.

In witness whereof I have hereunto set my hand.

LOVELL A. RICHARDS.

Witnesses:
M. E. McDONALD,
S. W. HAWAEL.