(No Model.) 2 Sheets—Sheet 1.

J. S. CORBIN.

DISK HARROW.

No. 341,888. Patented May 18, 1886.

Fig. 1.

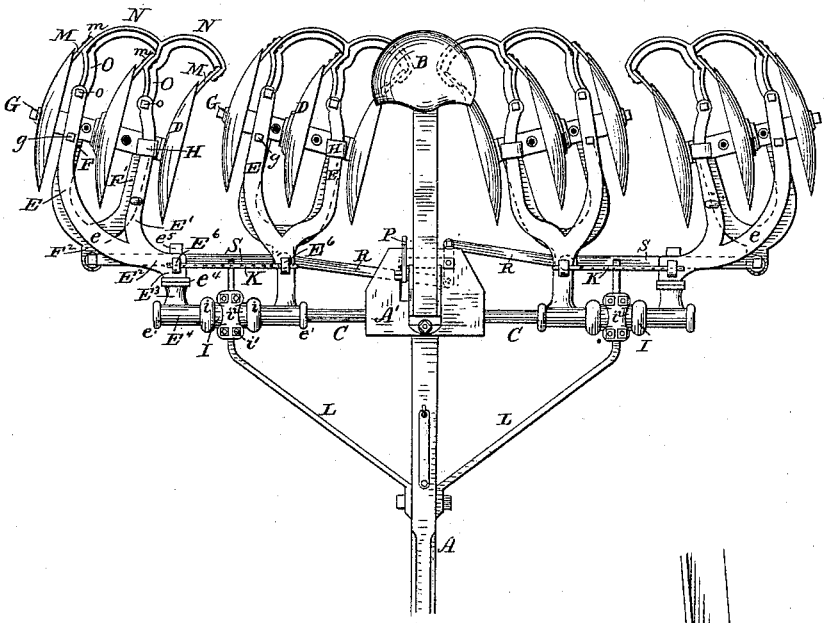


Fig. 5

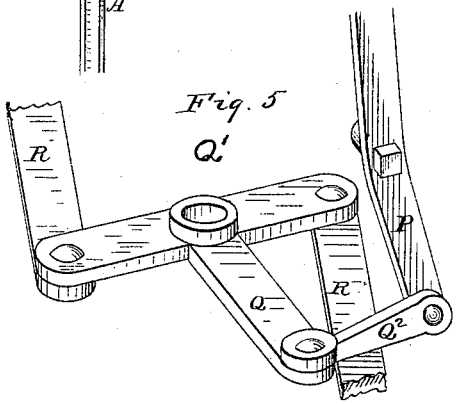


Fig. 2

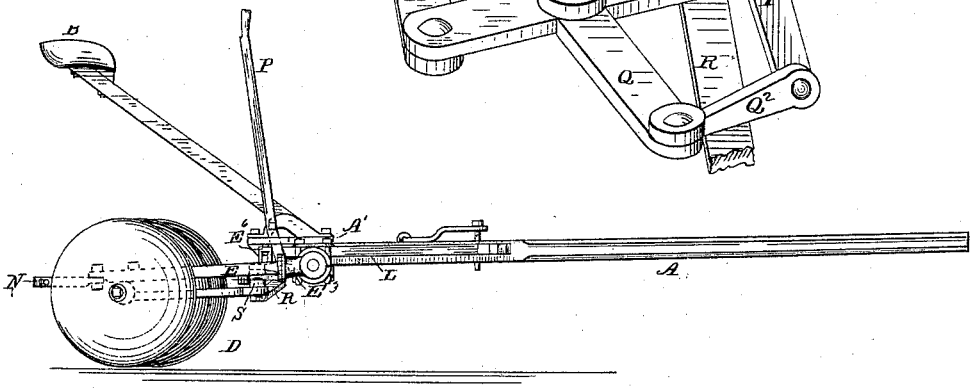
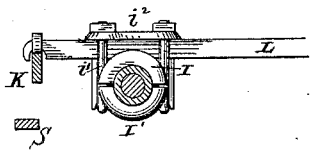


Fig. 6.



Witnesses:

H. N. Low

J. S. Barker.

Inventor:

J. S. Corbin

by Doubleday and Bliss

(No Model.) 2 Sheets—Sheet 2.

J. S. CORBIN.

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Fig. 3

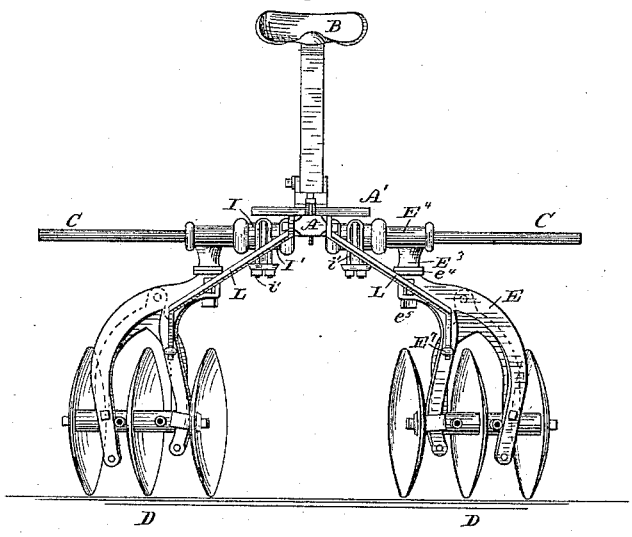
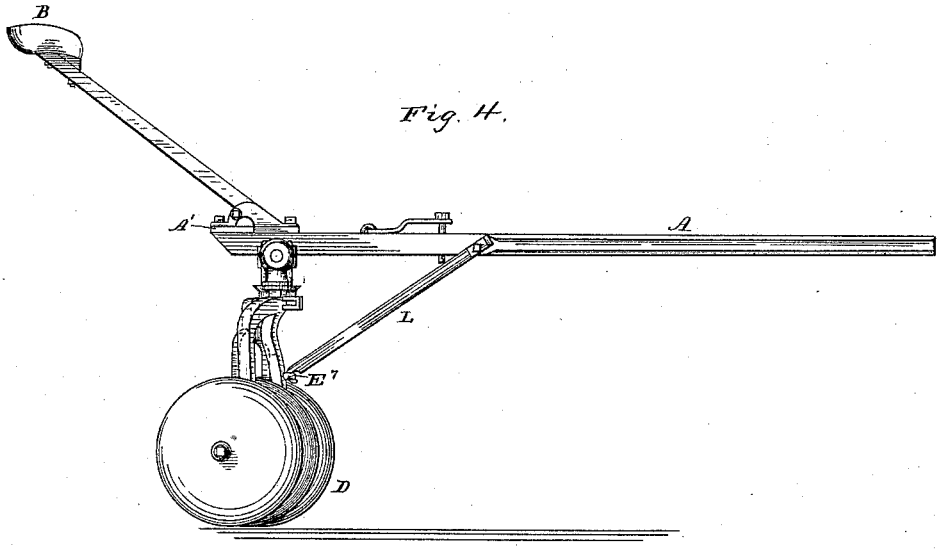


Fig. 4.



Witnesses:

H. N. Low

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Inventor

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UNITED STATES PATENT OFFICE.

JAY S. CORBIN, OF GOUVERNEUR, NEW YORK.

DISK-HARROW.

SPECIFICATION forming part of Letters Patent No. 341,888, dated May 18, 1886.

Application filed January 28, 1881. Serial No. 24,900. (No model.)

To all whom it may concern:

Be it known that I, JAY S. CORBIN, a citizen of the United States, residing at Gouverneur, in the county of St. Lawrence and State of New York, have invented certain new and useful Improvements in Disk-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 appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 is a top plan view of my improved harrow. Fig. 2 is a side elevation of the same. Fig. 3 is a front view of the machine when arranged as a cultivator. Fig. 4 is a side elevation of the machine when arranged as shown in Fig. 3. Fig. 5 illustrates a device for operating the oscillating frames; and Fig. 6 is a vertical section of the transverse bar, the tie-bar, and one of the links.

A represents the tongue or draft frame, and B the driver's seat mounted thereon, there being preferably a platform, A′, combined with these parts and attached to the rear end of the tongue. A transverse bar or connecting-frame, C, is secured also to the rear end of the tongue. For some of the purposes aimed at in this construction it is preferable that the transverse bar should be round in section, as shown in the drawings, though other features of the harrow are not dependent upon this construction of the transverse bar or connecting-frame. To this transverse bar are hinged the gang-frames, in which the rotating cutting-disks are mounted. When the machine is to be used as a harrow, I prefer to employ four gang-frames, and to combine three disks with each frame; but both the frames and the disks may be varied in number, if circumstances require. By examining Fig. 1 it will be seen that the outer gang-frames are not of the same shape as the inner ones. Each outer frame is constructed in two parts, of which the first part is hinged to the above-described transverse bar C, so that the frame can rise and fall vertically, and the second part is pivoted to the first in such manner as to allow a horizontal oscillatory motion. The first part of the gang-frame is composed of a curved arm or bar, E, a bar, E′, a shank, E^2, a short arm, E^3, and a sleeve, E^4. The arm E is longer than the bar E′, and is curved, as shown at *e*. This part of the frame is hinged to the transverse bar C by means of the sleeve E^4, which permits more or less rising and falling of the frame relative to the bar C. The other part of the gang-frame consists of a yoke or substantially Y-shaped support, having the legs F and F′ and the arm F^2. It is attached rigidly to the axle G, and is pivoted to the other part of the frame at *g*, the pivot being somewhat in front of the axle, and passing through the arm E and the leg F.

H is a loop or eye carried by the Y-shaped part of the frame, and through it passes the arm E′. When the two parts of the frame are thus connected together, the part F F′ can be oscillated upon the other, so that the position of the axle G relative to the line of draft can be varied when necessary.

The intermediate gang-frames are in most respects similar to the end frames above described. The arm E, however, of each intermediate frame is somewhat shorter than the corresponding arm of the outer frame, and though it is curved a little it is not curved as much as shown at *e* on said outer frame. Moreover, the arm E^3 does not extend laterally from the parts E and E′, but projects substantially directly forward from the last said parts, as shown in Fig. 1. When four gangs are to be employed, they are connected to the transverse bar C, as shown in said Fig. 1.

Owing to the peculiar shape of the frames above described, the sleeve E^4 of an outer frame and the sleeve of an intermediate frame can be brought close together, so that they can be secured in place by a single clamping device, and can be used with a very short connecting-bar. The clamp is in the form of a coupling or divided sleeve, (represented by I I′.) Upon the inside of the coupling recesses are formed at *i i*, adapted to engage with beads or flanges *e′ e′* on the sleeves E^4. The parts I I′ are clamped together by means of loop-bolts *i′ i′* and a plate, i^2.

Each of the gang-frames is formed with a loop or eye, E^6, which projects upwardly when the machine is arranged as in Fig. 1. The bar K connects the loops of each pair of frames, it being loosely supported therein.

L L are braces attached to the tongue, one

on each side thereof. Each brace is at the rear end attached to one of the bars or tie-pieces K, and the rear end of the brace is clamped in position by the bolts i' and the plate i^2, as seen in Fig. 6.

It will be seen that the gang-frames are to a limited extent free to rise and fall independently of each other, to conform to uneven ground. The loops or eyes E^6, the bars K, and the braces L serve to limit the vertical movement of the gang-frames both upward and downward, and the bars K and braces L serve to distribute the weight of the driver and tongue-frame and the connecting-frame uniformly over the gang-frames.

M M are scrapers adapted to remove any soil that may adhere to the concave sides of the disks. They are situated in rear of the axle and in the same or nearly the same horizontal plane therewith. They are attached to removable frames consisting of bars N N, having inwardly-projecting arms O O, the arms and bars of each scraper-frame being preferably formed in one piece of metal. The scrapers M are detachable from the frames, being arranged to be secured thereto by bolts at m. The frames N O are bolted to the arms E and E′ at o, and the frames and scrapers can be readily removed when desired. It will be seen that if the forward end of the frame F F′ F^2 be moved outward from the tongue (such movement being permitted by the pivotal connection at g and the loose eye H) the inner end of the axle will be moved forward, and that the inclination to the line of draft will be varied, such variation being often required in machines of this class, as is now well known. It will be further seen that by moving the axle thus the disks can be brought into contact with the scrapers M.

The oscillating frames F F′ F^2 are connected together by links or otherwise, so that they can be simultaneously moved outwardly or inwardly. Any convenient mechanism may be employed for this purpose.

In the drawings, P represents a hand-lever pivoted to the main frame, and situated within convenient reach of the driver. It projects below the frame, and is connected by a link, Q^2, with the arm Q of a bell-lever, Q′. The bell-lever is connected with the horizontally-oscillating parts of the intermediate gang-frames by means of links R R, and said oscillating parts of the intermediate frame are connected with the corresponding parts of the outer frames by means of other links, S S. It will be seen that if the hand-lever be pushed forward the links R and S will thrust each of the oscillating frames F F′ F^2 outwardly, which will result in drawing the inner ends of the gang-axle forward, whereby the inclination of said axles may be varied, and whereby the scrapers M may be brought into operation.

Having thus described the position of the gang-frames and the other parts when the machine is arranged as an ordinary harrow, I will now describe the position and arrangement of the parts when it is to be employed as a cultivator. It will be seen that the sleeves E^4 are of such nature that the gang-frames may be situated in substantially vertical planes, so that the rotating disks F may be directly beneath the transverse connecting-frame. If the gang-frames be rigidly secured in such vertical positions, the machine may then be used as a cultivator especially adapted to stir and pulverize the soil upon both sides of a standing row of plants. When the machine is to be used for this purpose, I propose to remove the intermediate frames and to employ the outer frames. (Shown in Fig. 1.) These frames are placed vertically, as above set forth, the tongue being sufficiently elevated to bring the transverse frame over the disks D. The bars K, the links R and S, and the hand-lever P are removed from the machine. After the intermediate frames have been removed the outer gang-frames are so placed as to have the sleeves E^4 as near as possible to the tongue, as shown in Fig. 3. By means of the coupling I I′ (preferably arranged between the tongue and the sleeves E^4) the frames may be secured in proper position laterally. The braces L are turned downwardly, and are connected with the gang-frames by means of eyes E^7 E^7, situated at suitable points for bracing and drawing the frames.

When using the machine in the manner now being described, I prefer to reverse the end gang-frames shown in Fig. 1—that is to say, I take the left hand frame shown in Fig. 1 and employ it as the right-hand frame shown in Fig. 3, and the right-hand frame in Fig. 1 as the left-hand frame in Fig. 3. The part E E' E^2 E^3 of the gang-frame is situated in front, and the other part, F F′, pivoted thereto, is in the rear. I do not wish, however, to be limited to this specific arrangement of frames. It will be seen that the gang-axles of the cultivator are allowed to rise and fall vertically upon the pivot at g, so that the disks can conform to irregularities of surface. By this construction of the various devices I can provide the farmer with a machine the parts of which can be immediately and readily arranged to operate either as an ordinary harrow or as a "straddle-row" cultivator without necessitating the employment of different frames, as heretofore. The arm E^3 of the outer frames is divided into two parts, as shown at e^4. By means of a bolt, e^5, passing longitudinally through arm E^3 the two parts thereof can be clamped tightly together, and when the gang-frames are arranged as shown in Figs. 3 and and 4 the inclination of the gang-axle to the line of draft may be regulated by these last-described parts. It will be seen that so far as applying the draft to the gang of disks is concerned the arm E is the efficient element, (the gang-frame being pivoted thereto,) it operating as a draft-bar extending backwardly from the draft-frame, and to which the gang-frame is flexibly connected, so that the latter can oscillate relatively to the line of draft independently of this draft-bar, and if this were the

only purpose aimed at the other parts of the frame E E′ not essential to this function could be dispensed with, although, as I desire to attain several ends, I prefer to employ a frame of substantially the character shown. It will be further seen that the frame the essential features of which are indicated at F F′ is of the nature of a yoke pivoted to the above-described draft bar or arm E, and connected at two points to the disk-gang, the connection in the construction shown being effected by means of the bearings for the gang-axle, this yoke mechanism being arranged to oscillate relatively to the line of draft together with the gang of disks.

I prefer to apply the draft from the main frame to the gang at points nearer the outer end than the inner; but, if desired, this may be reversed, it being quite common prior to the date of this patent to apply the draft in the manner last alluded to. The draft-bar E also operates as a holder, which prevents the gangs from shifting endwise either outward or toward each other, as will be readily understood.

I do not herein claim any of the combinations set forth in the claims in my Patent No. 273,966, granted upon an application filed subsequently to the filing of the present one.

What I claim is—

1. The combination, with the draft-frame, of the rearwardly-projecting frame having the arm E′, the arm E, curved as at *e*, and the sleeve E^4, whereby the last said frame may be connected to the draft frame by a horizontal pivot on a line other than the central longitudinal line of the rearwardly-projecting frame, substantially as set forth.

2. The combination, with the draft-frame and the transverse connecting-frame, of the braces L and the herein-described frame having the arms E and E′ and the sleeve E^4, adapted, substantially as set forth, to support the draft-frame above the ground either while the frame E E′ E^4 projects rearwardly from the draft-frame or while it projects downwardly therefrom.

3. The combination, with the draft-frame, the transverse connecting-frame, and the rearwardly-projecting gang-frames having the sleeves E^4, of the coupling I I′, adapted to couple the sleeves of the gang-frames to the transverse frame, as and for the purposes set forth.

4. The combination, with the draft-frame, the transverse frame, and the rearwardly-projecting gang-frames pivoted to the transverse frame, and having the sleeves E^4, of the brace L and the coupling I I′ and bolts *i*, adapted to clamp together the brace and two of said sleeves, substantially as set forth.

5. The combination, with the transverse connecting-frame and the gang-frames having the arms E and E′, and arranged, as set forth, to project backwardly from the connecting-frame, and also to project directly downward from said frame, of the scraper-frame having the detachable arms O O projecting backwardly from the arms E and E′, and having the connecting-bars N N, as set forth.

6. In a disk-harrow, the combination of the main draft-frame, the transverse connecting-frame, the gang-frames connected to said transverse frame, and mechanism for oscillating said gang-frames, it consisting of the lever P, the link Q^2, the bell-crank Q′, and the links connecting the opposite arms of the bell-crank with the gang-frames, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAY S. CORBIN.

Witnesses:

JAMES R. AUSTIN,

A. G. HILL.