(No Model.)

E. C. BOYER.

DISK HARROW.

No. 418,106. Patented Dec. 24, 1889.

Fig. 1.

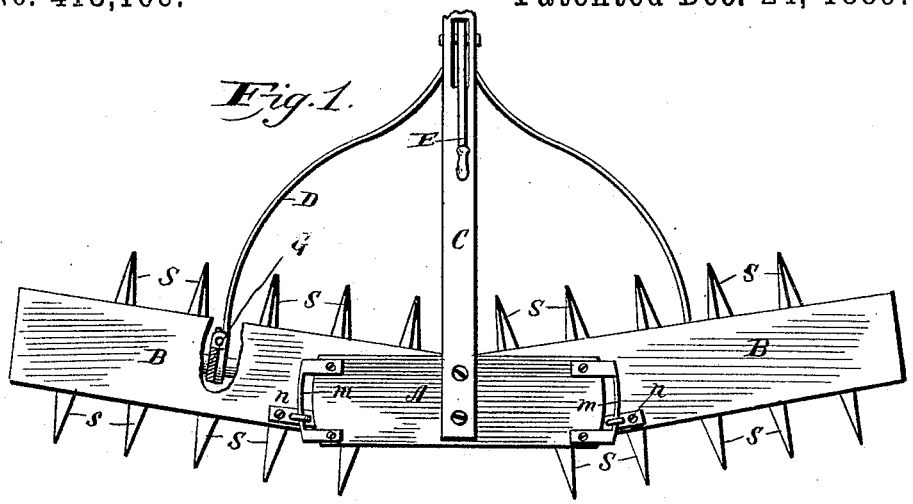


Fig. 2.

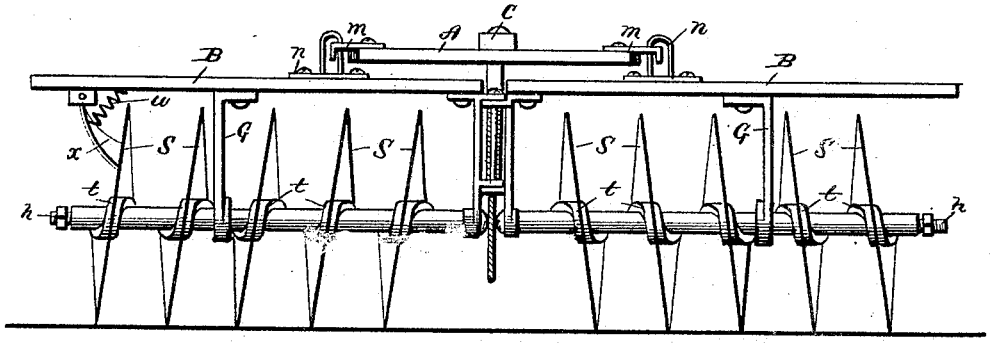


Fig. 3.

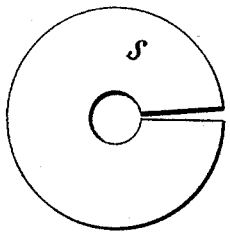


Fig. 4.

Fig. 5.

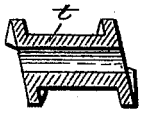
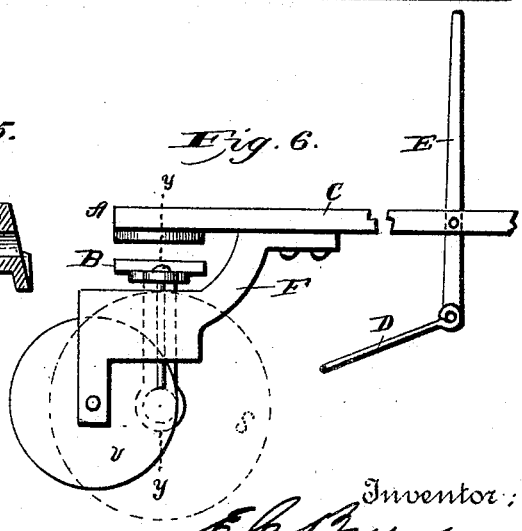


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

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DISK HARROW.

SPECIFICATION forming part of Letters Patent No. 418,106, dated December 24, 1889.

Application filed March 5, 1888. Serial No. 266,234. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. BOYER, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Disk Harrows; and I do hereby declare that the following is a full, clear, and exact description of the invention, 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.

My invention relates to improvements in disk harrows, the several features of which will be fully hereinafter set forth.

The objects are to give the disks that form and position which shall present greater obliquity to the line of draft, thereby stirring the soil more thoroughly, and to support the said disks so that the two series will readily adapt themselves to deviations of the surface of the soil. I attain the objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top view of the disk harrow with a portion of the frame cut away to show the connection of the drag-bar. Fig. 2 is a rear view of the same with some of the parts in section and others omitted. Fig. 3 is a side view of a disk. Fig. 4 is a front view of the same. Fig. 5 is a longitudinal section of the spool. Fig. 6 is a fragmentary view of the machine near the longitudinal center.

Like letters designate like parts throughout the several views.

The frame is composed of the part A, to which the tongue C is rigidly attached, and the parts B B, to which the two gangs of disks are respectively attached. To these parts are attached the hinges *u u'* on the under surfaces of the inner ends. These hinges are provided with lateral lugs, each having oblong orifices, through which the pin *o* is entered to pivotally attach the two gangs together, and thereby providing for a restricted horizontal movement of the respective gangs. In the lower end of these hinges are bearings for the inner spools used in securing the disks. The hangers G G, attached to the frame-pieces, form the outer bearings for the gangs.

To the under side of the tongue is attached the arm F within which is an orifice for the pin *o;* and in the lower back end is pivoted the wheel *v*. (Shown full at Fig. 6 and in section, Fig. 2.) The rounded ends of the bolts *h* bear against this wheel as they are rotated, thereby causing less friction than if these heads abutted, and thereby are also relieved the journals supporting the gangs of disks.

In addition to the support given to the gang-frames by the hinges there are the curved plates *m m*, attached at both ends of part A, and the loops *n n* embrace these parts. To the front of the arms G are lugs, to which the draft-bars D are jointed, and the forward ends of these are jointed to the lever E, pivoted in a slot of the tongue. (See Fig. 6.) The use of the drag-bars combined with the lever is to change the position of the gangs with reference to the line of draft.

To the under side of part B and to the left is pivoted the scraper *x*, which is made to press against the surface of the disk by the spiral spring *w*, which is likewise attached to the said part. These scrapers are curved, as shown in Fig. 2, in order that when the disks revolve they will readily conform to the spiral surfaces of the disks. As the disks revolve, the scrapers will be pressed outward, distending the springs *w* until they reach the end of the spiral, when they will, by reason of their curvature, be permitted to fly back upon the surface of the disks near the beginning of the spiral, thus effectually keeping the disks free from soil. The purpose is to use scrapers of like construction on all the disks for the purpose of detaching any adhering soil.

The disk *s*, Fig. 3, is a circular plate of steel having a central circular orifice, and from this orifice to the periphery the metal is separated, and the disk is then given the form of a spiral.

At *t*, Fig. 5, is a longitudinal section of one of the spools, the same having their faces of a spiral form and having a central orifice for the bolt *h*, by which the several parts constituting the gang are held together. The spools are all alike with the exception of those provided with bearings for the journals and those at the ends, which have but one spiral face. The spiral faces may be so constructed that the radial edges of the disks of each

gang may be equally divided throughout the circuit of the respective gangs. The spool *t* at the right end of the gang shows the radial edges extending to the rear, while the others extend forward.

The two gangs of disks are formed by placing on the long bolts *h*, with rounded heads abutting the anti-friction plate-wheel *v*, alternately the spools and disks and fastening the whole together solidly by forcing the nuts against the outer spools. The spiral faces of the spools bear against the sides of the disks and hold them rigidly in position. The separate gangs of disks rotate freely in their journals as the harrow is being drawn over the soil, and as the spiral form of the disks gives greater obliquity to the line of draft the soil is effectually pulverized.

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

1. In a disk-harrow frame, the combination of the part A, with tongue C rigidly attached, the parts B B, having arms G, with journals, the hinges *u u'*, with journals for the spools *t*, said spools being supported on the gang-shaft, the pin *o*, held in arm F as a support to the gang-frames, and draft-bars D D, secured to the tongue, substantially as set forth.

2. In a disk harrow, the combination of the arm F, attached to the tongue, the supporting-hinges *u u'*, attached to parts B B of the frame, and the pin *o*, to engage the lugs of said hinges and the orifice of said arm to unite the inner ends of the disk-gangs, substantially as set forth.

3. In a disk harrow, the combination of part A, with arm *m*, to engage loop *n*, the arm F of the tongue, draft-bars D D, attached to a lever pivoted in the tongue, hinges *u u'*, with pin *o* to unite them, the arms G G, and the disk-gangs, substantially as set forth.

4. The combination, with a gang-shaft provided with a series of spiral cutters or disks, of pivoted scrapers, these scrapers being curved to conform to the shape of the disks, and retracting-springs connected to these scrapers, substantially as described.

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

EDWARD C. BOYER.

Witnesses:
B. PICKERING,
SUMNER T. SMITH.