No. 615,718. Patented Dec. 13, 1898.

M. W. KOUNS.

DISK HARROW.

(Application filed June 25, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

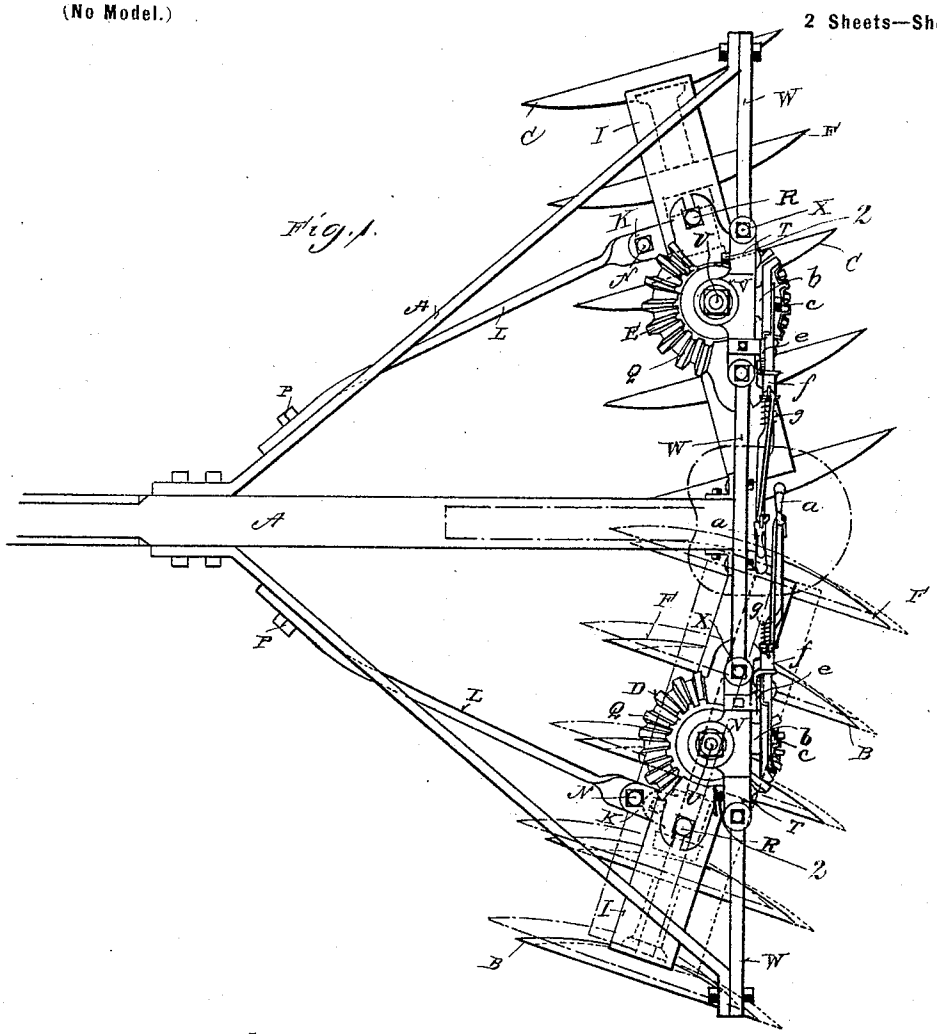
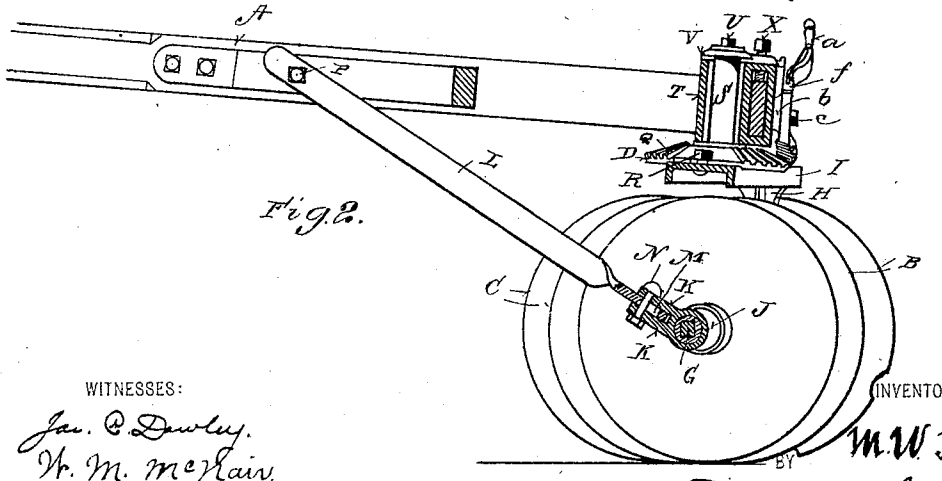


Fig. 2.



WITNESSES:

Jas. P. Dowley.

H. M. McNair.

INVENTOR

M. W. Kouns,

BY Faulkner & Whittemore,

ATTORNEYS.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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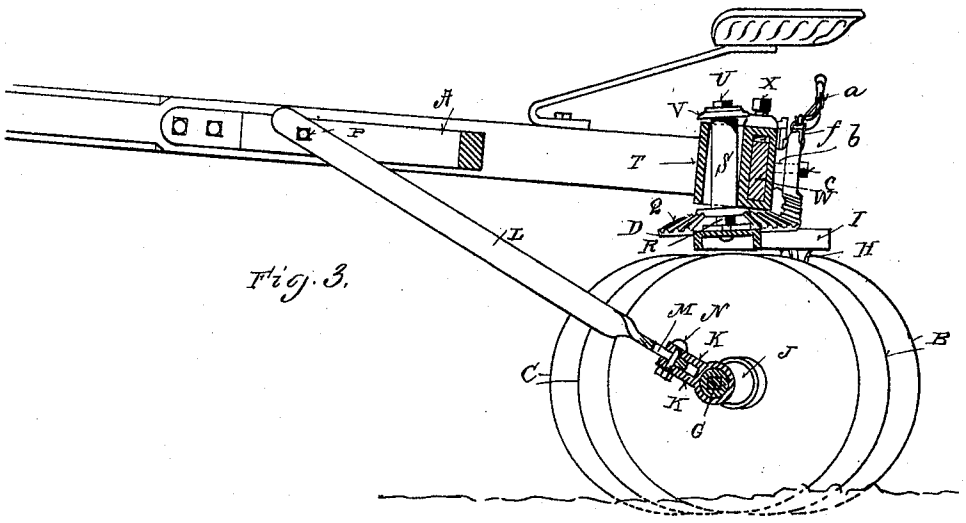


Fig. 3.

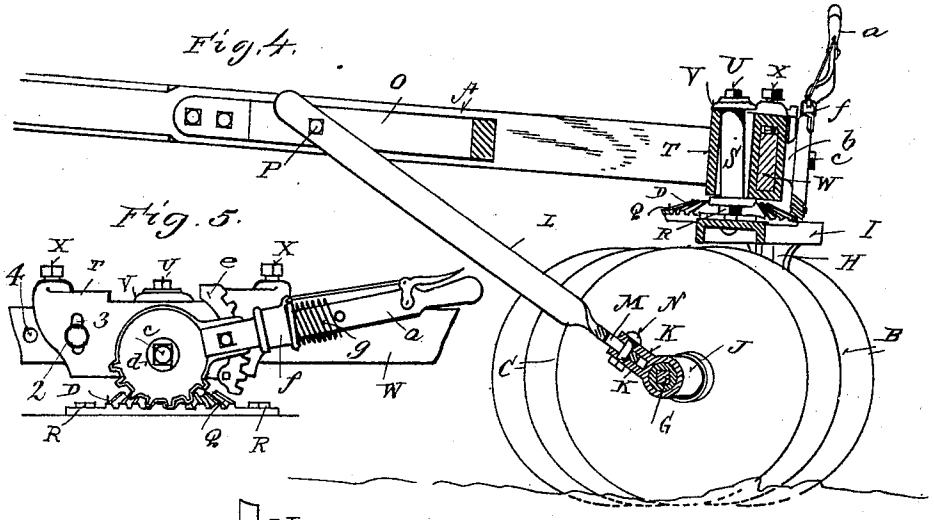


Fig. 4.

Fig. 5.

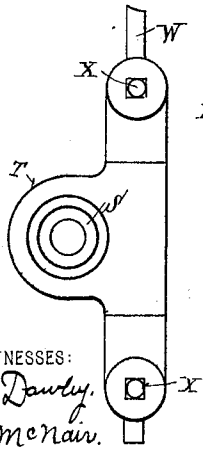


Fig. 6.

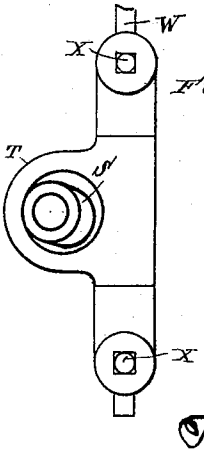


Fig. 7.

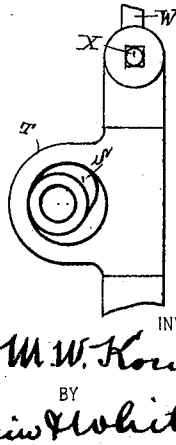


Fig. 8.

WITNESSES:
Jas. C. Dawley.
N. M. McNair.

INVENTOR
M. W. Kouns,
BY
Tulmin & Whittemore.
ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

MOSES W. KOUNS, OF BELLEVUE, OHIO, ASSIGNOR TO THE OHIO CULTIVATOR COMPANY, OF SAME PLACE.

DISK HARROW.

SPECIFICATION forming part of Letters Patent No. 615,718, dated December 13, 1898.

Application filed June 25, 1898. Serial No. 684,459. (No model.)

To all whom it may concern:

Be it known that I, MOSES W. KOUNS, a citizen of the United States, residing at Bellevue, in the county of Huron and State of Ohio, have invented certain new and useful Improvements in Disk Harrows, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in disk harrows.

The object of my invention is to provide a pivoted gang of disks having an odd number of disks, with a pull-rod which acts to pull on said gang when in the ground, but yet permits the gang to be thrown to different angles with respect to the line of travel, it being understood that said pull-rod is connected with said disk gang to one side of the disk gang pivot. This object is accomplished by reason of the play in the pivotal connection of the disk gang and the slotted opening in the pull-rod.

This invention also relates to details of construction hereinafter appearing, and particularly pointed out in the claims.

In the accompanying drawings, on which like reference letters and numerals indicate corresponding parts, Figure 1 is a plan view of a disk gang with my improvements applied thereto. Fig. 2 is a sectional end elevation, the section extending through the pivotal connection of the disk gang with its head and also through a portion of the pull-rod and its connection with the disk gang. Fig. 3 is a view similar to Fig. 2, showing the disks in working position, as indicated by dotted lines in Fig. 1; Fig. 4, another view similar to Fig. 2, showing the disks in the position indicated by dashed lines in Fig. 1; Fig. 5, a detail view of the operating-lever and its connection with one of the disk gangs; Fig. 6, a detail plan view showing the relative position between the head and the trunnion-bearing projecting from one of the disk gangs, being the position shown in Fig. 2; Fig. 7, another detail plan view of the same parts shown in Fig. 6, the parts being in the position assumed when the disks are in the position shown in Fig. 3; and Fig. 8, another detail plan view of the same, showing the relative position of the parts when the disks are in the position as shown in Fig. 4 and indicated by dashed lines in Fig. 1.

The letter A represents a suitable frame structure, to which are pivotally connected gangs of disks B and C, respectively, by means of adjustable heads D and E. Disks F of each gang are suitably mounted on a shaft G, supported in suitable bearings in brackets H, extending downward from the disk bar I. On each of these bars are preferably mounted five disks and so arranged on the shaft that one of the disks is placed nearly midway between its ends. At one side of this central disk and also mounted on the shaft G is a collar J, loosely fitting thereon. From this collar J extend a pair of ears K, between which fits a pull-rod L. It will be observed that at its lower end this pull-rod is slotted, as shown at M, and that a bolt N extends through the ears K and said slot M. This slot affords a movable connection between the bolt N and the pull-rod L for the purpose hereinafter appearing. The upper end of this pull-rod is secured to a portion of the frame structure A by means of a bolt P.

Referring now to the connection of the disk gangs with the frame structure above referred to, it will be seen that a toothed plate Q is secured to the gang-bar I by means of bolts R. From this plate extends a bearing-trunnion S, cast or otherwise secured thereto, which projects within the head T and loosely fits therein. A bolt U projects through the gang-bar I, the toothed plate Q, and its trunnion S and has fitted thereon a cap V, which engages with the head T, above referred to. This cap prevents the bearing-trunnion S from getting out of place in the head T, which it might otherwise do. The head T is adjustable on the bar W, also forming a portion of the frame structure A, and is adapted to be held in position by set-screws X. At times it is also desirable to change the angle of the bar I with respect to the bar W, which may be accomplished by manipulating the set-screws X and loosening a clamp-bolt 2, passing through the slotted opening 3

in the heads D and through a hole 4 in the bar W, the opening in the head of said bar W being sufficiently large to permit such adjustment. There are several holes 4 in each of the bars W, so that when the head D is moved to certain positions on the bar the bolt 2 may be inserted in one of such holes through the slot 3. This bolt may be raised and lowered in the slot 3 to any desired position when it is clamped, and thus holds the head in such a position that the bar I is at an angle to the bar W. It will of course be understood that the head E is constructed similar to the head D in regard to the slotted opening 3. After the bolt 2 has been tightly clamped in position by turning up its nut the said screws are turned down against the bar W and assist in holding the bar in its fixed position.

In order to adjust the angle of the disks with respect to the line of travel, I employ a segmental lever *a*, which is pivoted upon a stud or projection *b*, extending from the head T and which is held in position on said stud by means of a set-screw *c* and washer *d* or in any other suitable manner. A number of teeth are formed on this lever which are adapted to engage with the teeth on the toothed plate Q. Thus when the lever is operated the plate Q will be rotated, which plate being secured to the disk gangs causes them to change their angle with respect to the line of travel, as above mentioned.

In order to hold the disks in any position desired, I employ a toothed segment *e*, secured to the head T in any suitable manner, with which a detent *f*, slidingly mounted on the lever *a*, engages. This detent is held in engagement by means of a spring *g*.

I do not wish to limit myself to the use of my improvements in connection with a machine embodying all of the details herein described, but may vary the details at pleasure, the particular feature of my invention being in the slotted pull-rod when used in connection with a loose or wabbling joint between the disk gangs and the head T.

In the operation of disk harrows, such as the one I have illustrated, it has long been desired to apply some form of brace where an odd number of disks are used which would prevent all the strains due to traveling through the soil from being brought directly upon the pivotal connection between the disk gangs and heads, and at the same time permit the gangs to be swung to different angles with respect to the line of travel. This object I have accomplished by means of the loose or wabbling joint between each disk gang and its head in combination with a slotted pull-bar.

In Fig. 2 I have shown the disk gangs out of the ground, and in this position it will be seen that the bolt N is in the forward end of the slot M in the bar L and that the trunnion S is parallel to the sides of the hole in the head T, while in Fig. 3, after the disks are in the ground, the lower part of the bearing-trunnion S is against the lower rear edge of the hole in the head T, while the upper end of said bearing-trunnion is in engagement with the forward upper edge of said hole. When in this position, the bolt N is against the rear end of the slot M, and consequently the pull-rod is assisting in pulling the disk gangs. We will say that it is now found desirable to change the angle of the disk gangs with respect to the line of travel. This is accomplished by operating the lever *a*, which causes the bearing-plate S to assume the position indicated in Fig. 8, which movement will cause the bolt N to slide to the forward position in the slot M, but which will immediately return to the rear end of said slot when the strains due to working in the ground are brought to bear on the disks. Thus at all times with my invention when the disk gangs are operating in the ground the strain on the pivotal connection between the head and bearing-trunnion is greatly relieved by my improved pull-rod, and at the same time the disk gangs may be rotated to vary the angle with respect to the line of travel, notwithstanding that the center disk is substantially beneath the pivot of the disk gang and that the brace connection is at one side of such center.

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

1. In a disk harrow, the combination with a frame, of a disk gang loosely pivoted to said frame, and a pull-rod connected with said gang to one side of its center and having a slidable pivotal connection with said disk gang and frame, and means to change the angle of said disk gang to the line of draft.

2. In a disk harrow, the combination with a suitable frame having a head connected therewith, a disk gang, a pull-rod slotted at one end and connected with said gang to one side of its center, and connected at the other with the frame, a pivotal connection between said head and said gang consisting of a trunnion-bearing extending within the hole in said head, and means to change the angle of said disk gang, substantially as shown and described.

3. In a disk harrow, the combination with a suitable frame, having a head connected therewith, of a disk gang, a toothed plate having a bearing-trunnion extending therefrom, secured to said disk gang and adapted to loosely fit within a hole in said head, a pull-rod slotted at one end and connecting said frame and said disk gang, its connection with said gang being at one side of the center of the gang, and means to wabble the bearing-trunnion within the head and change the angle of said gang to the line of travel.

4. In a disk harrow, the combination with a suitable frame having a head connected therewith, a pull-rod also secured to said frame at one end and having a slotted opening at its other end, a disk gang having a disk shaft, a collar mounted thereon having

one or more ears extending therefrom, said slotted end of said pull-rod being adapted to fit between said ears, and a bolt extending through said ears and said pull-rod, a toothed plate secured to said disk gang having a bearing-trunnion extending therefrom and adapted to loosely fit within said head, and a lever adapted to engage with said toothed plate and rotate it to change the angle of said gang with respect to the line of draft.

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

MOSES W. KOUNS.

Witnesses:
JESSE VICKERY,
WILLIS VICKERY.