No. 617,378. Patented Jan. 10, 1899.

A. V. WILBUR.

ROTARY DISK HARROW.

(Application filed Feb. 18, 1898.)

(No Model.)

Fig. 1.

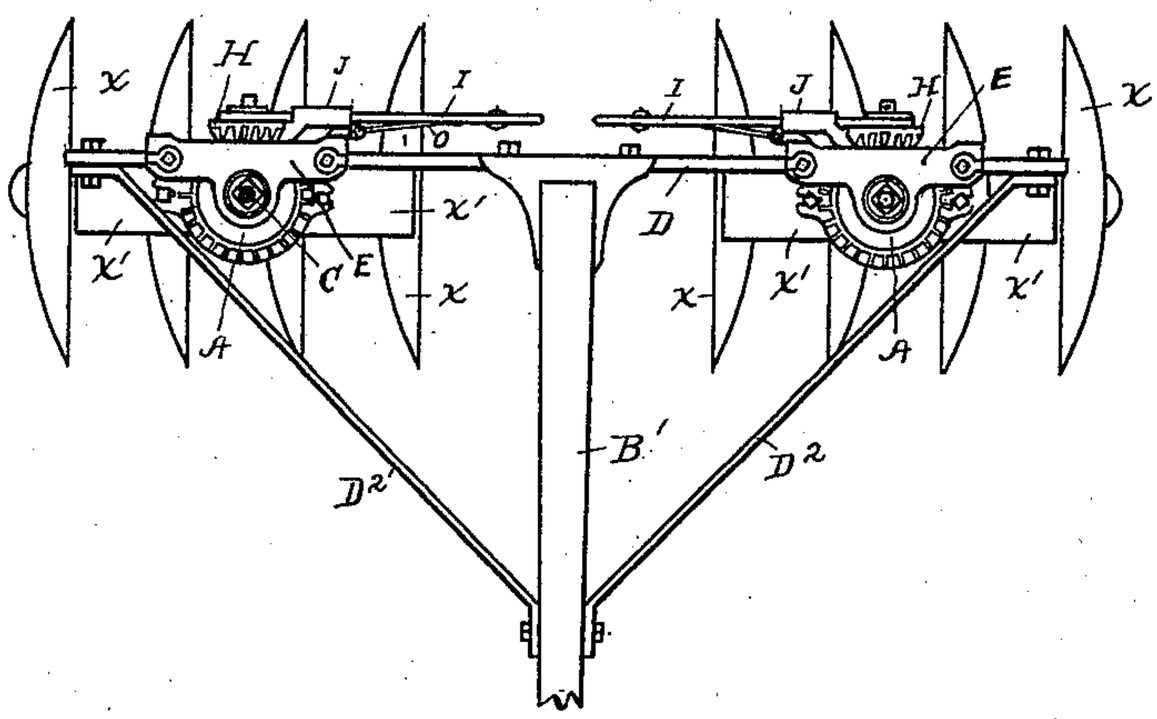


Fig. 2.

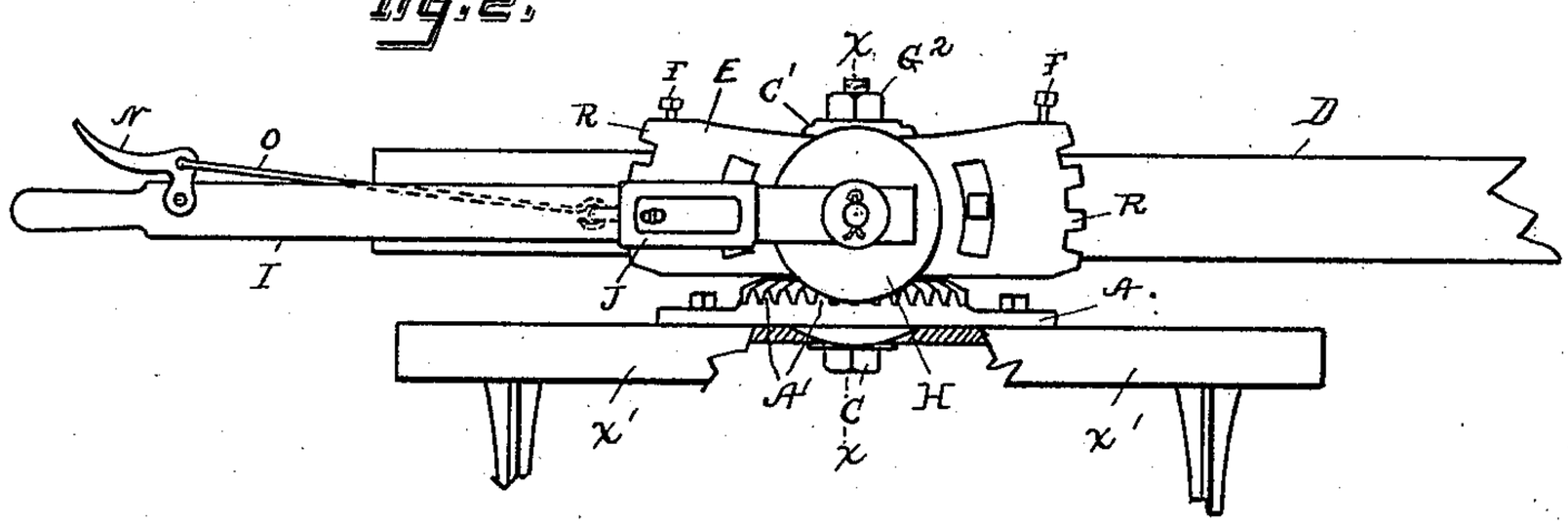


Fig. 3.

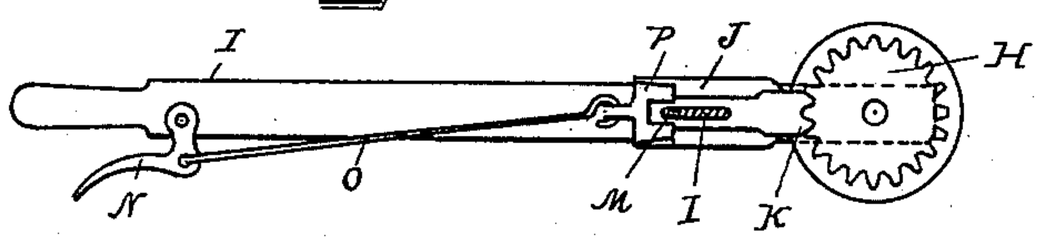
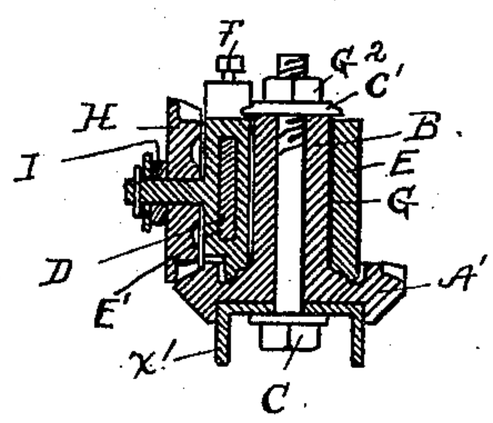


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ROTARY DISK HARROW.

SPECIFICATION forming part of Letters Patent No. 617,378, dated January 10, 1899.

Application filed February 18, 1898. Serial No. 670,852. (No model.)

To all whom it may concern:

Be it known that I, ALPHONSO V. WILBUR, a citizen of the United States, residing at Stockton, in the county of San Joaquin and State of California, have invented certain new and useful Improvements in Rotary Disk Harrows; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

This invention relates to improvements in rotary disk harrows; and it consists in the novel construction and arrangement of the parts, as hereinafter set forth.

In the drawings, Figure 1 is a plan view of a harrow constructed in accordance with this invention, the draft-pole being partly cut away. Fig. 2 is a back elevation in detail of the mechanism for changing and maintaining the angle of inclination to the line of draft of the cutting-disks. Fig. 3 is a detail of the lever, beveled gear, and latch of the mechanism for changing and maintaining the angle of inclination to the line of draft. Fig. 4 is a cross-section through the center of the same mechanism, taken on the lines X X in Fig. 2.

Heretofore these harrows have been constructed in the form in which the disks have been carried in groups upon a single shaft or in a frame which has been pivotally mounted upon the draft-frame, so that the angle of inclination of the disks could be changed. Various mechanisms have been devised for turning these groups or sets of disks about their pivotal center. Various devices have also been constructed for locking the groups in the position to which they have been brought.

The present invention consists in providing the group of disks with a mechanism by means of which the groups may be completely revolved about a common center and may be readily and easily arrested and locked in any desired position.

Further, it consists in an arrangement of the parts of the mechanism referred to whereby the lever by which the mechanism is operated may be brought to a horizontal position, and thereby avoid fouling or striking upon any overgrowth.

To facilitate the description with reference to the drawings, I will assign to the various members or parts of the mechanism as therein illustrated distinguishing-letters. Thus by means of the letter A I will designate the plate-casting, from the center of which is extended a spindle B. The plate-casting is elongated, so as to rest upon and be secured to what I will call the "disk-beam" X'. The disks X are mounted on the disk-beam in any of the many well-known methods of construction of the present manufactures. The spindle B is constructed in a hollow form or it is provided with a perforation to receive a central bolt C, which is also, when in position, effective in assisting to clamp the plate A to the disk-beam X'.

The disk-beams, together with the disks, are mounted on a separate bar D, and it is preferred that there should be two equal sets of disks, one upon each side of the center of the bar or to each side of the draft-pole B'. The separator-bar and the draft-pole are suitably or preferably braced by means of brace-rods D^2.

In the present invention the separator-bar consists of a bar of metal provided with perforations to receive bolts, so that the separator-bar may be adjusted from one side to the other of the draft-pole. Upon the separator-bar is adjustably mounted a guide-frame E. This guide-frame E is provided lengthwise of its structure with an elongated slot E', into which the separator-bar D is extended. At each end of the guide-frame are mounted set-bolts in threaded perforations provided in the frame, so as to direct the ends of said bolts down upon the separator-bar to clamp the same rigidly in position. By loosening the bolts F F the frames E E may be adjusted laterally as desired. The frame E is provided with a socket G to receive the spindle B of the plate A. When the spindle is inserted in the socket and the bolt C is passed through the center perforation in the spindle, the threaded end of the bolt is extended above

the spindle B and socket G. The washer C′ is then placed over the bolt and set down in position by the screw-nut G². The disk-frame is thus pivotally mounted upon the separator-bar in any desired lateral position.

To revolve the frame upon its pivot and to lock it in position, I have provided the plate A with a beveled gear A′. This beveled gear A′ is preferably cast on the plate A; but it may be, if desired, formed separately and rigidly secured to the said plate, so that its center coincides with the center of the spindle B. Engaging the teeth of the beveled gear A′ is a second beveled gear H, which is mounted upon a journal extending outward from the side of the guide-frame E. The second beveled gear H is engaged by means of the lever I. With this mechanism as described it is evident that as the lever I is thrown from side to side it rotates the beveled gears upon their centers, and thereby causes the disk-frame X′ to revolve about its pivotal center.

It is to completely revolve the disk-frame about its pivotal center that I have provided the lever I with a latch J to engage and disengage the teeth on the beveled gear H. The latch consists of a hollow slide, at the forward end of which, abutting against the beveled wheel H, it is provided with the teeth K K, which strike into and mesh with the teeth of the beveled gear H. Mounted in a rounded slot provided in the latch is a spiral spring L, which in expanding bears against the bottom of the slot, and a cotter-pin M, which is extended through a perforation in the lever I. The expanding force of the spring L tends to seat the teeth K K with the teeth of the gear H. To withdraw the teeth K K from engagement I have provided the rocking lever N, which is pivotally mounted on the lever I at the handle and is connected with the latch J by means of the pull-rod O.

By means of the construction and engagement of the parts as above set forth it will be seen that by manipulating the lever I the beveled gears may be completely revolved about their centers by a succession of throws of the lever I, it being engaged at different points with the wheel H by means of the latch J and teeth K K.

It is to lock the mechanism in position that I have provided the latch J with the teeth P P. These are extended out from the latch into the path of the teeth R R, with which the guide-frame is provided. This guide-frame presents only segments of a circle, and by means of the arrangement of parts just specified the latch J can be moved by the rocking lever N to disengage the teeth P from the teeth R and the teeth K from the gear H, the lever I being then swung to bring the teeth P above the guide-frame. When in this position, said lever I can be worked in an obvious manner to shift the disk-frame to any desired angle, and after the frame has been so shifted the latch is again disengaged from the gear H and the lever lowered to a horizontal position, as shown in Fig. 2. In this position the handle N is released, allowing the spring L to force the latch forward, the teeth K K engaging the teeth in the beveled gear H and the teeth P P engaging the teeth R R in either end of the guide-frame. When thus set, it will be seen that the parts are all rigidly locked in position.

It will be observed that with a mechanism constructed as above described the angle of inclination of the line of draft of the disks X may be varied without limit. It will also be observed that without separating the parts of the mechanism the disk-frame X′ may be completely revolved about its pivotal center to change the direction of the throw of the disks. It will also be observed that when the disks are brought into a desired position the lever I may be depressed to a horizontal position, extending not higher than the guide-frame E, and in that position it serves as a lock for securing the mechanism. It will also be observed that in the construction and arrangement of the parts simplicity and strength of construction have been attained.

Having thus described this invention, I claim—

1. In a rotary disk harrow, the combination of a disk-frame adapted to carry a series or set of disks and provided with a vertical pivot; with a full-gear wheel mounted rigidly on the said frame to encircle the said pivot; and a mechanism to engage and revolve the said gear-wheel substantially as described.

2. In a rotary disk harrow the combination of a disk-frame adapted to carry a series or set of disks and provided with a vertical pivot; with a full-gear wheel mounted rigidly on the said frame to encircle the said pivot; a lever; and intermediate connections between the said lever and gear-wheel adapted to alternately engage and disengage the said gear-wheel to completely revolve the wheel by successive movements of the lever substantially as described.

3. In a rotary disk harrow, the combination of a disk-frame adapted to carry a series or set of disks and provided with a vertical pivot; with a full-gear wheel mounted rigidly on the said frame to encircle the said pivot; a full-gear wheel mounted on the draft-frame of the harrow and engaged with the gear-wheel mounted on the disk-frame; a lever mounted on the said draft-frame; and a latch mounted on the said lever adapted to engage and disengage the wheel mounted on the draft-frame, substantially as described.

4. In a rotary disk harrow the combination of a disk-frame adapted to carry a series or set of disks and provided with a vertical pivot; with a gear-wheel mounted rigidly on the said frame to encircle the said pivot; a guide-frame mounted on the separator-bar of the draft-frame and provided at the end with cog-teeth; a gear-wheel mounted on the said

guide-frame to engage the wheel on the disk-frame; a lever mounted on the guide-frame; and a double-toothed latch adapted to engage the teeth of the gear-wheel mounted on the guide-frame and the cog-teeth in the end of the guide-frame at the same time, substantially as described.

In testimony whereof I have hereunto set my hand this 26th day of January, 1898.

ALPHONSO V. WILBUR.

Witnesses:
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