No. 659,748. Patented Oct. 16, 1900.

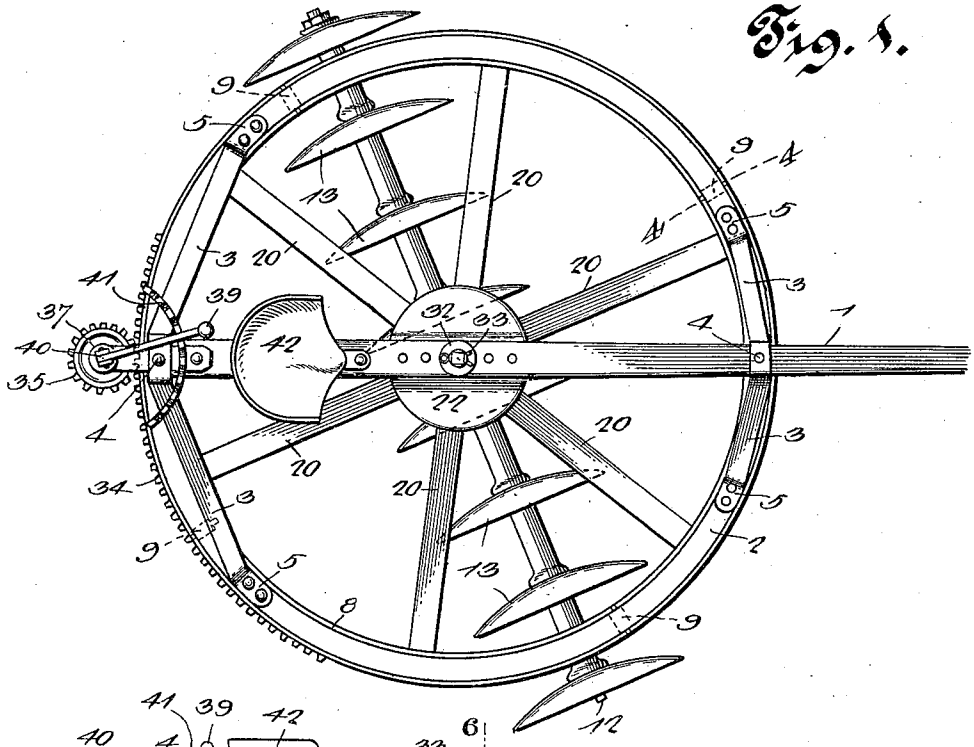
R. L. HILL.

DISK CULTIVATOR.

(Application filed July 13, 1900.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



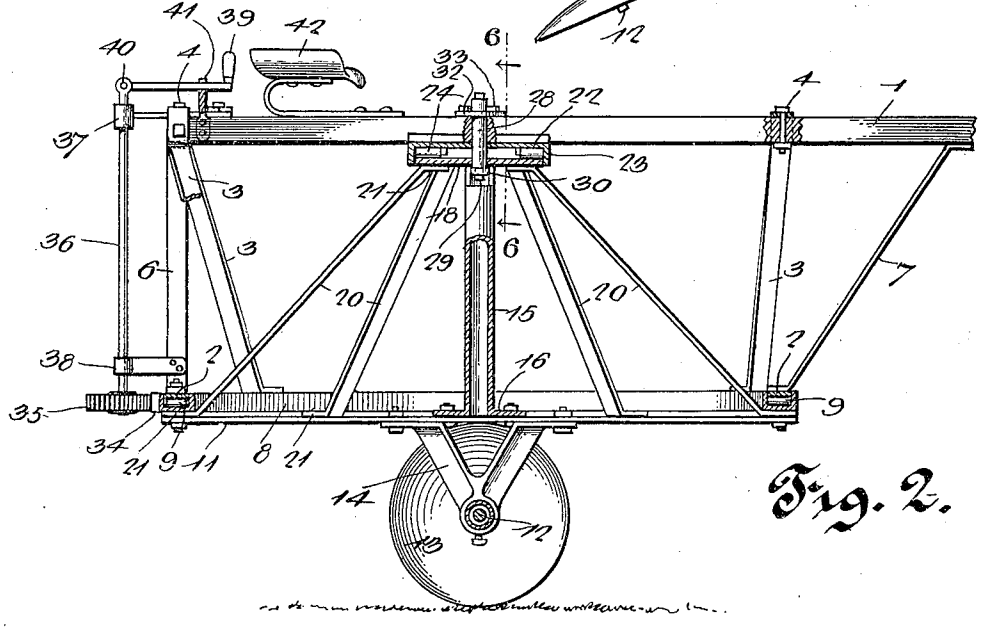


Fig. 2.

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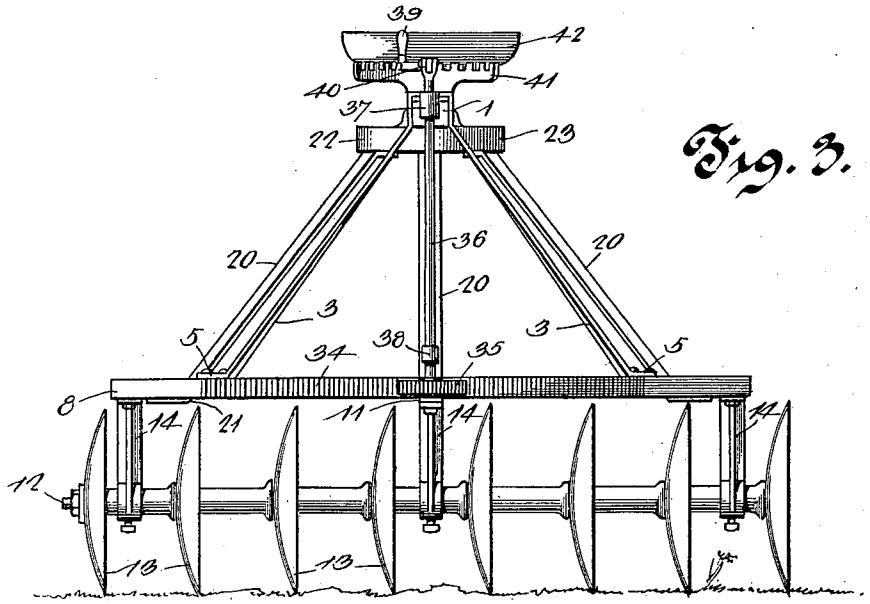


Fig. 3.

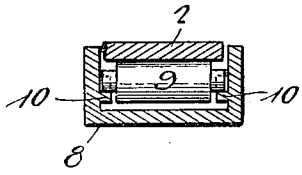


Fig. 4.

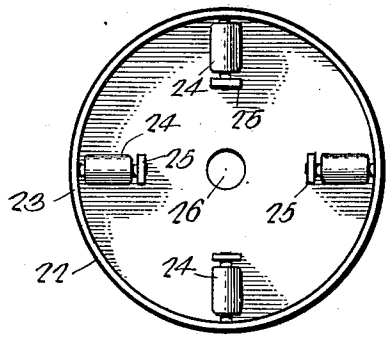


Fig. 5.

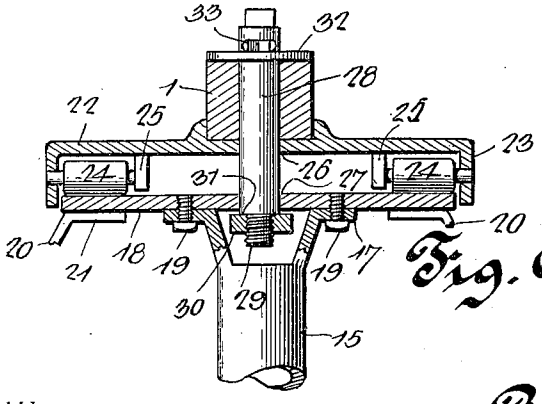


Fig. 6.

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UNITED STATES PATENT OFFICE.

ROBERT L. HILL, OF SATICOY, CALIFORNIA.

DISK CULTIVATOR.

SPECIFICATION forming part of Letters Patent No. 659,748, dated October 16, 1900.

Application filed July 13, 1900. Serial No. 23,498. (No model.)

To all whom it may concern:

Be it known that I, ROBERT L. HILL, a citizen of the United States, residing at Saticoy, in the county of Ventura and State of California, have invented a new and useful Disk Cultivator, of which the following is a specification.

This invention relates to cultivators, and has for its object to provide an improved device of this character in which the frame and draft connections are mounted to turn upon the disk-carrying frame, so that the latter may be conveniently adjusted to different angles to the line of draft without stopping the forward movement of the cultivator and to permit of the team and frame being turned completely around upon the disk-frame, so as to reverse the direction of the movement of the device without necessitating the turning of the entire machine. It is furthermore designed to provide improved means for adjusting the upper frame upon the lower frame and to arrange such means in convenient reach of the driver's seat, so that the driver need not dismount to adjust the machine.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a top plan view of a cultivator constructed and arranged in accordance with the present invention. Fig. 2 is a vertical central longitudinal sectional view thereof. Fig. 3 is a rear elevation of the machine. Fig. 4 is an enlarged detail sectional view taken on the line 4 4 of Fig. 1 to show the slidable connection between the upper and lower frames. Fig. 5 is an inverted plan view of the roller-bearing plate which is carried by the tongue or draft-beam of the machine. Fig. 6 is an enlarged detail sectional view taken on the line 6 6 of Fig. 2.

Corresponding parts are designated by like characters of reference in all of the figures of the drawings.

Referring to the accompanying drawings, 1 designates the longitudinally-disposed tongue or draft-beam of the machine, from which is suspended a flat ring or circular frame-bar 2, by means of the opposite pairs of downwardly-divergent braces or hangers 3, to form the upper frame of the device. Each pair of hangers is preferably formed from a single length or bar of flat metal, which is bent intermediate of its ends, so as to embrace the tongue, to which it is fastened by means of a suitable bolt 4, the opposite ends of the bar being bent to form attaching-ears 5, that are riveted or otherwise secured to the upper face of the circular frame-bar. Another rear brace or hanger 6 connects the rear side of the ring to the rear extremity of the tongue, and a front forwardly-inclined brace 7 connects the forward side of the ring to the forward portion of the tongue, so that the latter and the frame-ring are rigidly connected together. This upper frame is rotatably supported upon a lower frame, comprising a channeled circular or ring frame-bar 8 of substantially the same diameter as the upper ring, so that the latter may be loosely received within the groove of the channeled ring in order that it may turn therein. A plurality of antifriction-rollers 9 are journaled in the opposite inner sides of the channeled ring, as best shown in Fig. 4, so as to support the upper ring 2 in order that the latter may turn easily and freely upon the lower ring. The inner faces of the opposite walls of the channeled ring are provided with the pairs of opposite concaved bearing lugs or projections 10 for the reception of the journals of the respective rollers, so that the latter may be placed in position through the open upper side of the ring. One or more flat metallic diametric brace-bars 11 are employed to stiffen and strengthen the channeled ring.

The entire machine is supported upon a transversely-disposed shaft 12, which is provided with a plurality of cultivator-disks 13 of the ordinary form, the shaft being suspended from the lower ring 8 by means of the hangers 14, that are secured to the under side of the ring, the intermediate hanger being secured to one of the diametric braces.

To more effectively brace the two frames and to prevent the upper frame from tilting

upon the lower frame, there is provided a central upright tubular standard 15, which has its lower flanged end 16 bolted or otherwise secured to the upper side of the intermediate portion of the diametric brace of the lower ring, the tongue being swiveled to the upper end of the standard. The upper end of this standard terminates short of the under side of the tongue and is provided with an outwardly-directed annular flange 17, as best shown in Fig. 6 of the drawings, to the upper face of which is fixedly connected a circular plate or flat disk 18 by means of suitable fastenings 19. From this plate radiate the downwardly and outwardly inclined braces 20, the opposite ends of which are bent into the oppositely-directed lateral attaching-ears 21, which are secured to the under sides of the channeled ring 8 and the plate 18. Secured to the under side of the tongue 1 is a circular bearing-plate 22, which has a pendent marginal flange 23, loosely embracing the marginal edge of the plate 18. Mounted upon the under side of the plate 22 is a plurality of antifriction-rollers 24, which have their opposite journals mounted in the flange 23, and pendent bearing-ears 25. Both of the plates 18 and 22 are provided with the corresponding central openings 26 and 27, respectively, for the reception of a pivot bolt or rod 28, that also passes through the tongue or draft-beam. The lower end of this rod is provided with a reduced screw-threaded extremity 29, to which is removably fitted the nut 30 to form a head to prevent an upward displacement of the rod. The reduced extremity forms an annular shoulder 31, against which the nut fits, so as to prevent the latter from binding against the under side of the plate 18. The upper end of the bolt projects above the upper side of the tongue and is provided with a washer 32 and a key or nut 33 to prevent downward displacement of the pivot-pin or bolt. It will be understood that the pivot-bolt is cylindrical in shape and passes through the several openings loosely, so that the plate 22 may turn upon the lower plate 18, whereby the tongue and the upper frame are conveniently swiveled upon the lower frame.

In order that the upper frame may be conveniently turned upon the lower frame, the outer side of the rear portion of the latter is toothed, as at 34, so as to form a rack, with which is meshed a pinion 35, carried at the lower end of a vertical shaft 36, which is journaled in the opposite bearings 37 and 38, which project rearwardly from the rear end of the tongue and the rear vertical brace 6, respectively. A suitable crank-handle 39 has one end hingedly connected to the upper end of the shaft 36, as at 40, so as to swing vertically, while the forward free end portion of the crank is arranged to travel over a segmental rack 41, secured transversely across the upper side of the tongue immediately in rear of the driver's seat 42, which is mounted upon the upper side of the tongue between the swiveled connection and the rear end thereof.

From the foregoing description it will be seen that the upper frame, comprising the tongue, the pendent braces 3, 6, and 7, and the upper ring 2, may be turned upon the lower frame, so as to adjust the shaft carrying the disks at any desired angle to the line of draft. Also the upper frame may be turned completely around upon the lower frame, so that the direction of the movement may be reversed without turning the entire machine. To adjust the machine, the driver raises the crank-handle 39 out of engagement with the rack 41 and swings the handle in either direction, thereby rotating the pinion 35, which meshes with the toothed portion of the lower ring and travels thereon as upon a track, so as to swing the upper frame in opposite directions upon the lower frame.

What is claimed is—

1. In a cultivator, a wheeled lower frame, having cultivator disks or shovels, an upper frame rotatably mounted upon the lower frame, and having a tongue or draft-bar, and means for adjustably turning the upper frame upon the lower frame.

2. In a cultivator, a circular wheeled lower frame, having cultivator disks or shovels, and an upper frame, comprising a diametrically-disposed tongue or draft-bar, hangers pendent therefrom, and a circular frame carried by the hangers and rotatably supported upon the lower circular frame.

3. In a cultivator, a wheeled lower frame, comprising a channeled ring, and cultivator disks or shovels, and an upper frame, comprising a ring rotatably mounted within the channeled ring, and having a tongue or draft-bar.

4. In a cultivator, a wheeled lower frame, comprising a channeled ring, having antifriction-rollers mounted therein, and cultivator disks or shovels, and an upper frame, comprising a ring rotatably mounted within the channeled ring and upon the antifriction-rollers, a diametrically-disposed tongue or draft-bar, and hangers connecting the tongue to the upper ring.

5. In a cultivator, a lower frame, comprising a ring, diametrically-opposite hangers pendent therefrom, a shaft journaled in the hangers, cultivator-disks mounted upon the shaft, and an upper frame comprising a ring rotatably mounted upon the lower ring, a diametrically-disposed tongue or draft-bar located above the rings, and hangers connecting the upper ring to the tongue.

6. In a cultivator, a relatively-fixed lower frame, having cultivator disks or shovels, and a segmental rack, and an upper frame rotatably mounted upon the lower frame, and having a tongue or draft-bar, a shaft carried by the upper frame, a pinion fixed upon the shaft and in mesh with the rack, and means for operating the shaft to travel the pinion

upon the rack and thereby adjustably turn the upper frame upon the lower frame.

7. A cultivator, comprising upper and lower concentrically-swiveled frames, a draft-bar for the upper frame, cultivator disks or shovels for the lower frame, and adjusting means for turning the upper frame upon the lower frame, said means being carried by the upper frame and traveling upon the lower frame.

8. In a cultivator, a pair of upper and lower concentrically-swiveled frames, cultivator disks or shovels for the lower frame, a fixed and centrally-located upright standard rising from and carried by the lower frame, a tongue or draft-bar swiveled upon the upper end of the standard, and pendent brace connections between the tongue and the upper frame.

9. In a cultivator, a pair of superposed concentrically-swiveled frames, cultivator disks or shovels for the lower frame, an upright standard rising from the lower frame and projecting above the upper frame, a tongue or draft-bar swiveled upon the upper end of the standard, braces between the tongue and the upper frame, and other braces between the upper end of the standard and the lower frame.

10. In a cultivator, a pair of superposed concentrically-swiveled frames, cultivator disks or shovels for the lower frame, a standard rising from the center of the lower frame, and provided at its upper end with a plate or head, a tongue disposed diametrically of the frames, a bearing-plate carried by the tongue and resting upon the head of the standard, a swivel pin or bolt connecting the bearing-plate and the head, and braces between the tongue and the upper frame.

11. In a cultivator, a pair of superposed concentrically-swiveled frames, cultivator disks or shovels for the lower frame, an upright standard rising centrally from the lower frame, and provided at its upper end with a circular head, a diametrically-disposed tongue or draft-bar, a flanged bearing-plate fixed to the tongue and loosely embracing the head of the standard, antifriction-rollers interposed between the bearing-plate and the head, and a swivel bolt or pin connecting said plate and head.

12. In a cultivator, a pair of superposed concentrically-swiveled frames, cultivator disks or shovels for the lower frame, an upright tubular standard rising centrally from the lower frame, and provided at its upper end with a head, a tongue or draft-bar arranged diametrically across the upper end of the standard, and a swivel pin or bolt passing through the tongue and the head of the standard and into the interior of the latter.

13. In a cultivator, a pair of superposed concentrically-swiveled frames, cultivator disks or shovels for the lower frame, an upright tubular standard rising centrally from the lower frame, and provided with a circular head having a central perforation, a tongue arranged diametrically across the upper end of the standard, a bearing-plate secured to the tongue, and provided with a pendent marginal flange loosely embracing the head, antifriction-rollers carried by the bearing-plate and traveling upon the head, and a swivel pin or bolt passing loosely through the tongue, the bearing-plate and the head, the lower end of the pin being received within the standard, and both ends having nuts or the like.

14. In a cultivator, a pair of superposed concentrically-swiveled frames, cultivator disks or shovels for the lower frame, a segmental rack thereon, a diametrically-disposed tongue or draft-bar located above the frames, connections between the tongue and the upper frame, a vertically-disposed shaft carried by the upper frame, a pinion at the lower end of the shaft and in mesh with the rack, a crank-handle hingedly or pivotally connected to the upper end of the shaft, and a segmental rack carried by the upper frame and arranged for engagement by the crank-handle.

15. In a cultivator, a lower ring-frame, having one or more diametric braces, hangers pendent from the ring, a shaft mounted upon the hangers, cultivator disks or shovels carried by the shaft, an upright standard rising centrally from the diametric brace, outwardly and downwardly inclined braces between the upper end of the standard and the lower side of the ring, an upper ring rotatably mounted upon the lower ring, a tongue or draft-bar arranged diametrically across the upper end of the standard, front and rear braces between the tongue and the upper ring, a head for the upper end of the standard, a bearing-plate carried by the tongue and coöperating with the head, and a pivot pin or bolt forming a swiveled connection between the plate and the head.

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

ROBERT L. HILL.

Witnesses:
DANIEL SULLIVAN,
H. C. MCCLURE.