Jan. 8, 1924. 1,480,161

R. L. FORD

DISK AND SCRAPER MOUNTING

Filed May 7, 1920 2 Sheets-Sheet 1

Fig. 1.

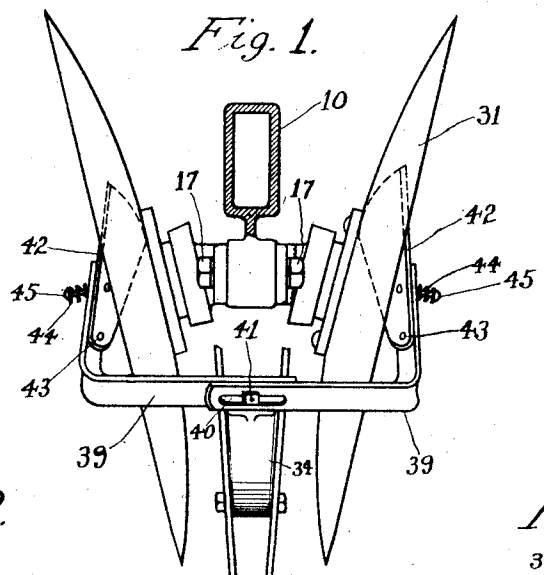


Fig. 2.

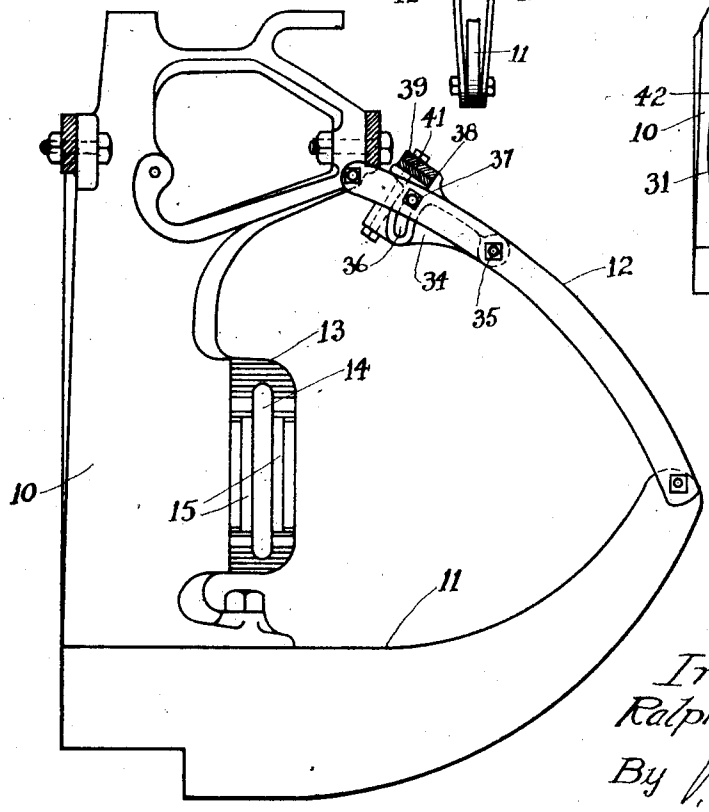
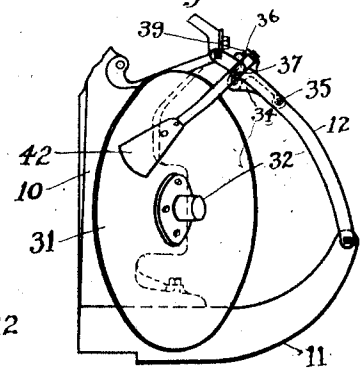


Fig. 3.



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Fig. 4.

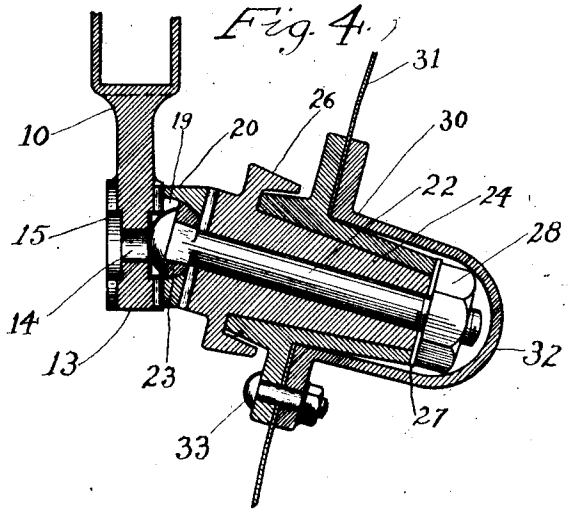


Fig. 5.

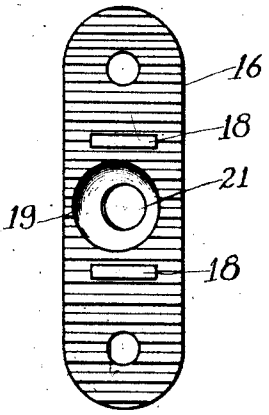


Fig. 6.

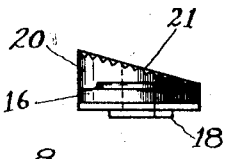


Fig. 7.

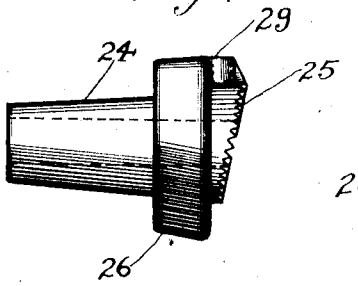


Fig. 8.

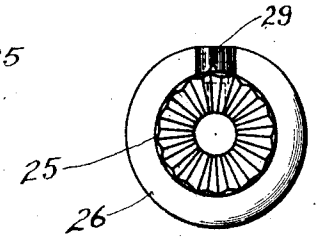
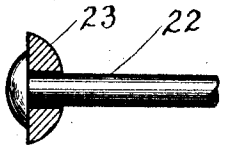


Fig. 9.



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UNITED STATES PATENT OFFICE.

RALPH L. FORD, OF CHICAGO, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

DISK AND SCRAPER MOUNTING.

Application filed May 7, 1920. Serial No. 379,594.

To all whom it may concern:

Be it known that I, RALPH L. FORD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Disk and Scraper Mountings, of which the following is a full, clear, and exact specification.

This invention relates to improvements in furrow openers of the twin-disk type—such as used in connection with loose-ground lister planters, and more particularly to the manner of mounting such disks and their scrapers on the runner-frame of the planter.

The objects of my invention are to provide a mounting for each disk of the pair that will afford a wide range of adjustment as to angle and vertical position relative to its support and to mount the scraper for each disk so that it can readily be adjusted in accord with any change of position of the disk.

I accomplish these objects by securing the stub axle for each disk to the runner frame of the planter by a novel form of mounting including a universal joint of the ball and socket type connecting each spindle to its supporting plate and constructing this mounting in such a way that adjustment is effected by loosening a single nut, and by employing a novel form of mounting for the disk scrapers, including a pivoted bracket carrying the scraper arms, constructed in such a way that adjustment of the disks can easily be followed by the scrapers.

With these main and other incidental objects in view my invention consists of the organization, details of construction, parts, or their equivalents herein described, and more particularly defined in the claims.

Having reference to the drawings:

Fig. 1 is a plan view of a runner frame with parts in section showing the disk and scraper mountings.

Fig. 2 is a side view of a runner frame showing the supporting brackets for the stub axle and scrapers.

Fig. 3 is a side view on a reduced scale with a disk and scraper in working position.

Fig. 4 is a horizontal section through one of the disk mountings.

Fig. 5 is a detail view of one of the attaching plates.

Fig. 6 is an end view of the plate shown in Fig. 5.

Fig. 7 is a detail view of a bearing sleeve.

Fig. 8 is an end view of Fig. 7 looking toward the left, and

Fig. 9 is a detail view of the spindle head.

In the embodiment illustrated on the drawings, my invention is shown in connection with the usual runner frame of a planter including the boot 10, runner 11, and runner braces 12. The boot 10 has a bracket 13 formed on or secured to its forward side. This bracket consists of an elongated body formed with a vertically extending transverse slot 14 which has its opposite margins on each face of the bracket formed with central grooves or depressions 15. The opposite faces of the bracket 13 are preferably corrugated as shown on Fig. 2. Each face of the bracket carries an axle supporting plate 16 both of which are secured thereto by bolts 17 which pass through the brackets and through slots 14, permitting vertical adjustment of both plates 16, and disks carried thereby, in unison. As the plates 16 and attached parts are the same on each side of bracket 13, only one will be described.

The plate 16 has its inner face corrugated to interlock with the bracket face and has a pair of vertically spaced lugs 18 which bridge the slot 14 and are received in the grooves 15 to serve as guides and retain the parts in proper position during vertical adjustments of the plate 16 on the bracket. At the middle of the inner face of the plate 16 and between the lugs 18 there is formed a substantially hemispherical or cup-shaped socket 19 (Fig. 5) with its transverse axis nearer the rear edge of the plate.

At the middle of the opposite face of plate 16 a cylindrical boss 20 is formed, on the axis of which there extends an opening 21 which communicates with socket 19 at a point somewhat offset from its transverse axis, owing to the lateral position of the socket on the plate as above referred to and as seen in Fig. 5. The cylindrical boss 20 is formed with an inclined face extending from its front edge in a plane at an angle of approximately 15° with the plate and with corrugations radiating from the opening 21. A bolt 22 extends from the opening 21 and has a plano-convex washer 23 mounted thereon with its plane face resting against the head of the bolt and its convex face re-

ceived in the socket 19. The diameter of opening 21 is enough greater than than of bolt or spindle 22 to permit a considerable degree of angular movement and the bolt and washer therefor constitute a spindle with a substantially hemispherically shaped head received in the socket 19 to form a universal joint of the ball and socket type.

A tapered bearing sleeve 24 is carried on the bolt or spindle 22 and is formed with its larger end inclined and corrugated as at 25 (Fig. 7) to conform to the face of boss 20 with which it engages. Near its inner and larger end sleeve 24 has an angular overhanging flange 26 and its outer and smaller end is engaged by a washer 27 which is drawn into position by nut 28 to clamp the stub axle composed of sleeve 24 and bolt or spindle 22 in adjusted position on the supporting plate 16. An oil duct and socket for reception of the stem of an oil cup is provided on the sleeve 24, as at 29. The flange hub 30 of a furrow opening disk 31 is mounted for rotation on the sleeve 24 the flange 26 overhanging the larger end of the hub and serving to exclude dirt from the bearing, while washer 27 engages the smaller end and retains the hub in position. A hub cap 32 is removably secured to the disk and flange as by bolts 33.

It is evident from the structure just described that loosening of nut 28 permits sleeve 24 to be turned on spindle 22 and that such turning will by reason of the opposed inclined faces of boss 20 and the sleeve 24 and the universal joint between the spindle 22 and the supporting plate 16, result in a variation in the angle at which the stub axle projects from the support. In order to permit adjustment of the scraper in accord with adjustment of the furrow disks, a scraper supporting bracket 34 is pivoted at its forward end by bolt 35 between the runner braces 12. This bracket is shaped to conform to the space between the runner braces and has a transverse slot 36 at its rear end, formed on an arc about the axis 35. A bolt 37 passes through this slot and both runner braces and serves to clamp the bracket in adjusted position. The upper face of bracket 34 has a seat 38 formed at its rear end in which the horizontal portions of scraper arms 39 are received in overlapped relation. These arms are formed with longitudinal slots 40 to permit lateral adjustment and a bolt 41 passes through these slots and the bracket 34 and serves to clamp the arms in adjusted position. The vertical portions of arms 39 extend downwardly and rearwardly toward the disks 31 and each carry a scraper blade 42 loosely secured thereto at 43 and held in resilient contact with the disk by a spring 44 encircling a headed pin 45 which is fixed to the scraper blade and is freely movable through an opening provided in the end of arm 39, against which spring 44 bears.

With this construction and arrangement of supporting bracket and scraper arms, adjustment of the bracket on its pivot moves the scraper arms on the arc of the pivot 35 and gives them the combined vertical and lateral adjustment needed to keep the blade at the proper place in all adjustments of disks likely to be required in practical use.

In operation the disks are set to the desired forward and downward inclination by removing the hub caps 32 and loosening nuts 28 and then rotating the sleeve 24 to desired position where they are again clamped by drawing up the nuts. If vertical adjustment on bracket 13 is desired, bolts 17 are loosened and the bearings raised or lowered as required without disturbing the angular setting of the disks. The scrapers are then set by loosening bolts 37 and rocking the bracket 34 sufficiently to bring the scraper to proper position where they are retained by drawing up nut or bolt 37. Lateral adjustment of the scraper arms is seldom required as the mounting of the scraper blades allows them to compensate for ordinary changes in position.

Various modifications in the specification structure above described is contemplated within the scope of the appended claims.

I claim as my invention:

1. In a disk furrow-opener, the combination of a support, a pair of oppositely disposed stub-axles, disks on the axles, connecting means between each stub axle and the support permitting vertical and angular adjustment of the axles and disks, and scrapers in contact with the disks and supported by means permitting their adjustment in accord with the several adjustment of the disks.

2. In a disk furrow-opener, the combination of a support, a pair of oppositely disposed stub-axles, disks on the axles, connecting means between each stub-axle and the support permitting vertical and angular adjustment of the axles and disks, and scrapers in contact with the disks and carried by means permitting adjustment thereof in accord with that of the disks, said means comprising a vertically adjustable bracket mounted on said support and scrapers in contact with the disks and having oppositely extending supporting arms mounted for lateral adjustment on said bracket.

3. In a disk furrow-opener, the combination of a support, a pair of oppositely disposed stub-axles, disks on the axles, connecting means between each stub-axle and the support permitting vertical and angular adjustment of the axles and disks, and scrapers in contact with the disks and carried by means permitting adjustment thereof in accord with that of the disks, said

means comprising a bracket having one end pivoted for vertical movement on the support above the disks, means for adjusting the bracket about its pivot, and scrapers in contact with the disks and having supporting arms formed with oppositely extending horizontal portions mounted for lateral adjustment on the other end of the bracket.

4. In a disk furrow-opener, the combination of a support, a stub-axle bodily adjustable thereon vertically and angularly adjustable on the support about a point on the axis of the axle, a disk rotatable on the axle, and a scraper in contact with the disk and carried by means permitting adjustment thereof in accord with the disk, said means comprising a vertically swingable bracket on the support, and an arm having one end laterally adjustable on the bracket and carrying a scraper blade on its other end in contact with the disk.

5. In a disk furrow-opener, the combination of a support, a plate secured to the side of said support and formed with a socket on its inner face, a boss on the outer face of the plate opposite said socket and formed with a vertical face positioned at an angle to the plane of the plate and an opening into the socket, a spindle in said opening having a head movably received in said socket, a bearing sleeve on the spindle having an inclined end in contact with the boss-face, a disk rotatable on the sleeve, and means on the outer end of the spindle for clamping the spindle and sleeve in position on the plate.

6. In a disk furrow-opener, the combination of a support including a member formed with a socket in its inner side and an opening into the socket, a spindle in said opening formed with a head movably received in said socket, a bearing sleeve on the spindle having an inclined end in contact with the member, a disk rotatable on the sleeve, and means engaging the spindle and sleeve and clamping them in position on the member.

7. An adjustable mounting for furrow-opening disks comprising a supporting plate formed with a substantially hemispherical socket in one side and an opening at the bottom of the socket, a spindle extending through the opening and having a substantially hemispherical head movably received in said socket, and means carried by the spindle for clamping it to the plate at variable angles.

8. An adjustable mounting for furrow-opening disks comprising a supporting plate formed with a socket in one side and an opening at the bottom of the socket, a spindle extending through the opening and having a head adjustably received in the socket, and means carried by the spindle for clamping it to the plate at variable angles.

9. An adjustable mounting for furrow-opening disks comprising a supporting plate, a spindle with one end connected to the plate by a universal joint, and means for adjusting and locking the spindle on its joint with the plate.

10. An adjustable mounting for furrow-opening disks comprising the combination with a vertically slotted standard of a supporting plate on each side of the standard, securing means engaging the plates and extending through said slot and permitting vertical adjustment of the plates in unison, a spindle connected to each plate by a universal joint and means for adjusting and locking each spindle on its joint with the supporting plate.

In testimony whereof I affix my signature.

RALPH L. FORD.