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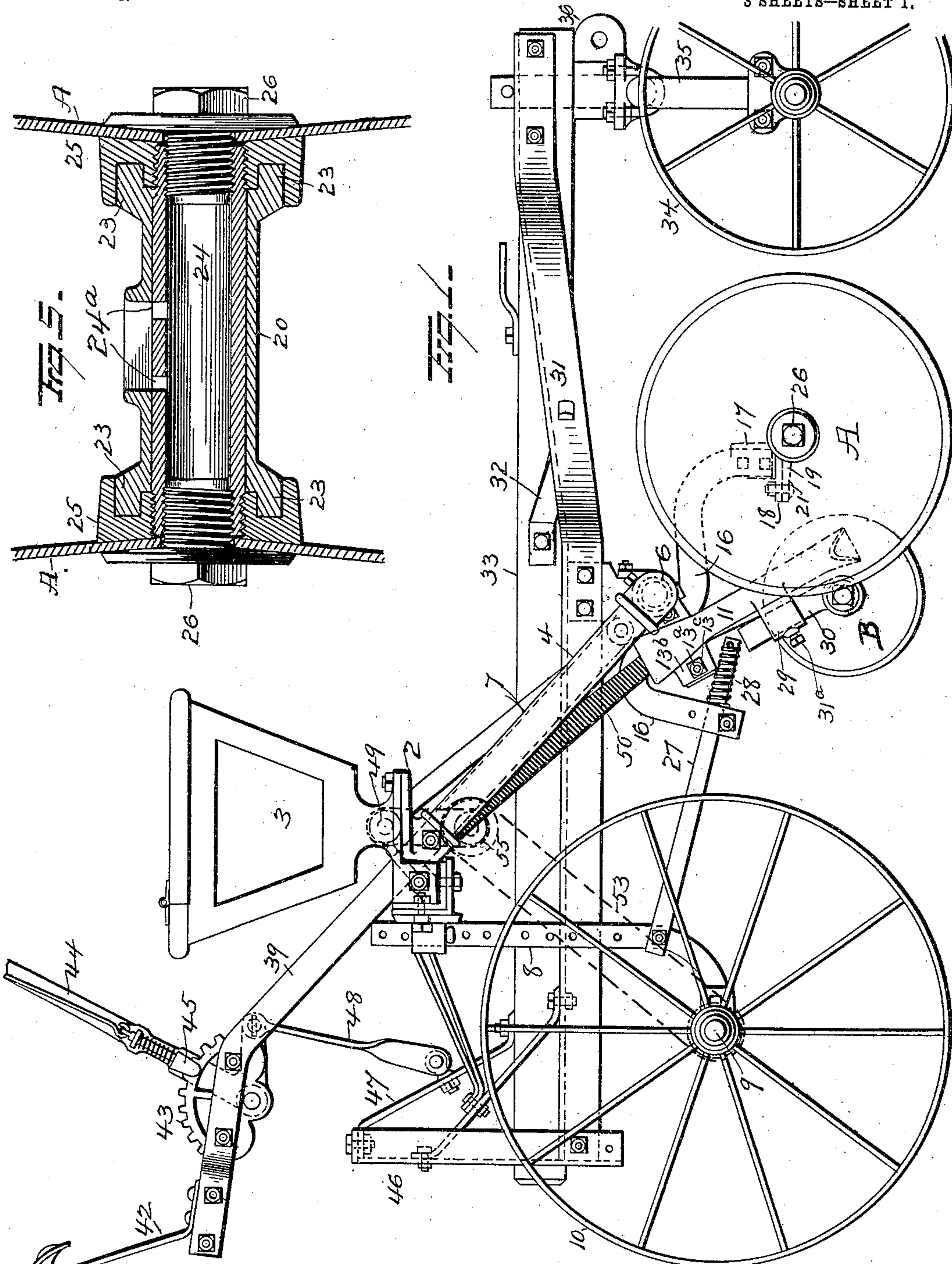
PATENTED AUG. 30, 1904.

W. A. LEE.
DISK DRILL.

APPLICATION FILED MAY 2, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



WITNESSES

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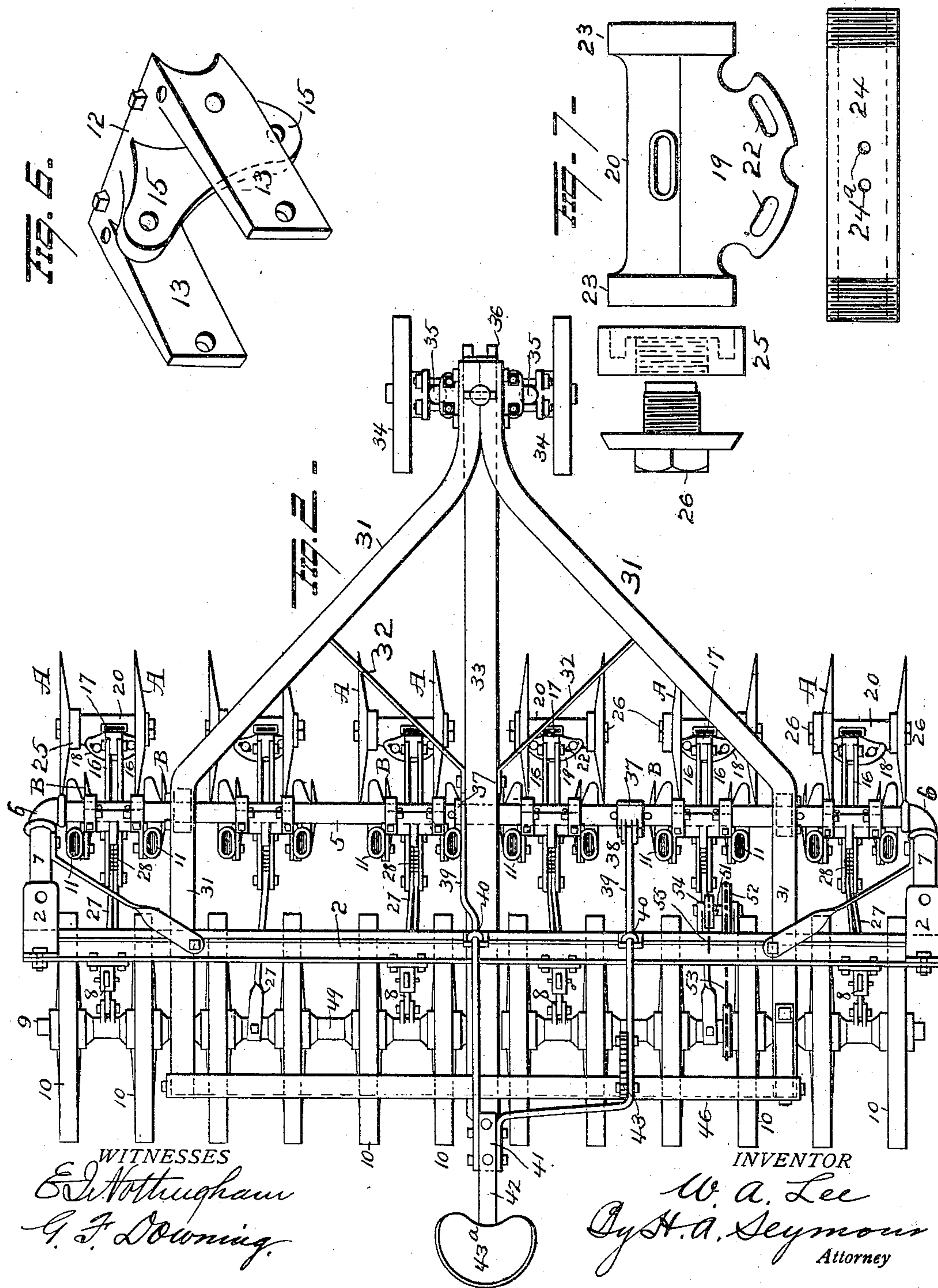
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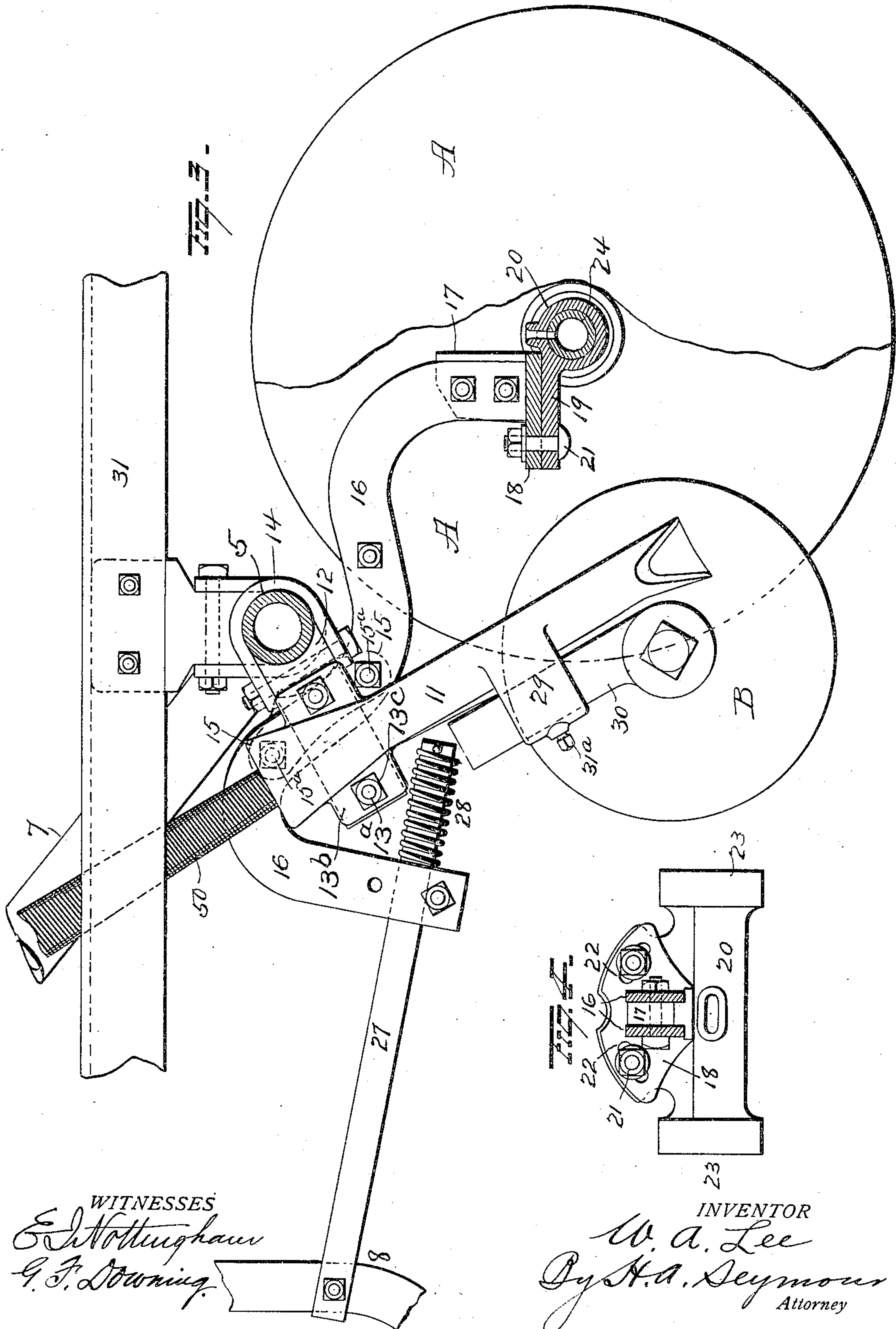
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UNITED STATES PATENT OFFICE.

WILLIAM A. LEE, OF BLACKWELL, OKLAHOMA TERRITORY.

DISK DRILL.

SPECIFICATION forming part of Letters Patent No. 768,763, dated August 30, 1904.

Application filed May 2, 1903. Serial No. 155,328. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. LEE, a resident of Blackwell, in the county of Kay, Oklahoma Territory, have invented certain new and useful Improvements in Disk Drills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in disk drills, the object of the invention being to so construct a disk drill that it will be simple in construction and have as many parts as possible integral or rigidly secured together, each part having a distinct and useful application for its special work in connection with the whole of the drill construction and at the same time be strong and of proper weight, shape, and size to perform the best results and cheapen the cost of manufacture.

A further object is to so construct a tongue-frame and hounds in connection with the drill-frame and said tongue and hounds joined together in such manner that they will be sufficiently strong to carry the disks and frame of said drill and at all times sustain the lateral and vertical strain of the drill in operation and provide improved operating mechanism so connected with the rear of this tongue-frame and hounds as will permit the operator to raise and lower the disks and feed-tube at will.

A further object is to provide improved furrow-opening and furrow-closing or seed-covering disks and so connect them with the seed-dropping tubes, which are pivotally supported, that they are compelled to always remain in proper relative position for perfect planting regardless of the vibrations or adjustments of the disks and allow all of said parts to vibrate to pass obstructions or unevenness in the ground.

A further object is to so construct a disk drill that the disk furrow-openers shall operate under the front cross-bar of the drill-frame and that the disk furrow-openers shall act similarly to that of the foot of a plow-stock, so that the weight of the frame and parts carried thereby will hold the disks to their work as the drill is drawn over the ground.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in side elevation illustrating my improvements. Fig. 2 is a top plan view. Fig. 3 is an enlarged view in section showing details of the disk-mounting and associated parts. Fig. 4 is a top plan view of the disk journal-box, showing arms 16 secured thereto. Fig. 5 is a view in longitudinal section illustrating the disk journal-bearing. Fig. 6 is an enlarged perspective view of the bracket 12, and Fig. 7 illustrates the cooperating parts of the disk journal-bearing separated.

My improved drill-frame comprises an angle-bar 2, on which the seedbox 3 is mounted, and to this angle-bar 2 a forwardly and downwardly projecting yoke 4 is secured and comprises a cross-pipe 5, connected at its ends by pipe-couplings 6 with side pipes 7, secured to the angle-bar 2 by means of suitable collars and set-screws. Suitable stanchions 8 connect the axle 9 with angle-bar 2, and a series of presser or traction wheels 10 are mounted to turn on this axle 9.

11 represents the seed-dropping tubes, which are connected with the cross-pipe 5 by means of brackets 12. These brackets 12, as shown in Fig. 6, comprise a cross-bar having a curved face to bear against the pipe 5 and parallel rearwardly-projecting arms 13. Yokes 14 are secured to these arms 13 and pass around the pipe 5, securing the bracket thereto, but allowing pivotal or rotary movement thereon. To the outer faces of these arms 13 the seed-tubes 11 are secured, by means of bolts 13^a, passed through ears 13^b, on opposite sides of the seed-tubes and through the arms and secured in place by nuts 13^c. These brackets 12 have integral webs 15 between the arms 13, and parallel compound curved bars 16 are secured to the opposite sides of these webs by bolts 15^a, passed through the bars and webs. The forward ends of these bars 16 are secured on opposite sides of an upright web 17 on a plate or casting 18, which latter is secured upon flat rearward extensions 19 on

journal - bearing boxes 20 and is secured thereon by bolts 21, passed through elongated slots 22 in the plates, and extensions which permit the position of the journal-boxes to be
 5 adjusted at will. These journal-boxes 20 have sand-bands 23 at both ends and are adapted to receive hollow journals 24, which project beyond the boxes and are externally and internally screw-threaded at both ends. Col-
 10 lars 25 are secured on the ends of each journal 24 and made with annular grooves to receive the sand-bands and exclude all dirt and grit from the bearing. The furrow-opening disks A are located on the journals against
 15 collars 25, and headed screws 26 are screwed into the ends of the journals, closing them and effectually clamping the disks between the heads of the screws and the collars 25. Open-
 20 ings 24^a are provided in the journals 24 and journal-boxes 20, through which lubricant can be supplied to the journal and fed to the bearing, and, if desired, these journals can be
 25 filled with waste to more effectually hold and feed the lubricant, or I might extend the journals out beyond the disks and screw cap-nuts thereon.

The downwardly-bent rear ends of the several pairs of bars 16 are connected by bolts and receive between them bars 27, secured to
 30 the frame-stanchions 8, and coiled springs 28 are located on these bars 27 and bear against an enlargement or pin at their forward ends and at their rear ends against the bars 16 to
 35 yieldingly hold the disks in the ground or working position, but permit them to elevate in passing obstructions or permit them the
 40 desired flexibility in ordinary use to perform the best results. Each seed-tube 11 has a bearing 29 on its rear edge, in which a stand-
 45 ard 30 is adjustably secured by a set-screw 31^a, and this standard has at its lower end a bearing for a covering-disk B. These cover-
 50 ing-disks B have rotary mounting and are preferably smaller than the main disks A, and their angle and depth can be varied by ad-
 55 justing the standard 30 in bearing 29 and securing at such adjustment by the set-screw.

The tongue-frame comprises a bar 33, extending through the center of main frame.
 50 Side bars or hounds 31 are located on opposite sides of bar 33 and extend forward parallel therewith for a short distance and then converge and are secured to main bar 33, and
 55 inclined bars 32 connect the converging portions of bars 31 with the central bar 33 at a point about midway its ends. In the forward
 60 end of this bar 33 a fork 35 has rotary mounting, and caster-wheels 34 are mounted at the lower ends of this fork 35 to support the
 65 forward end of the frame, and a suitable clevis or coupling 36 is provided on fork 35 for the attachment of a doubletree or pole to which the draft animals are hitched.

On the cross-pipe 5 sleeves 37 are secured
 65 and have parallel lugs 38, between which rear-

wardly and upwardly extending bars 39 are secured and pass through clips 40 on angle-
 bar 2, and one of these bars 39 is bent over to the other, and a block 41 is secured between
 70 them, to which block the seat-supporting spring 42 is secured and carries the seat 43^a.
 On this bent bar 39 a toothed segment 43 is secured, and an L-shaped lever 44 is pivotally
 75 secured against said segment and has a spring-pressed detent 45 to lock the lever in any po-
 sition.

The rear ends of the hounds 31 are connected by an arched bar 46, and the latter is connected
 with the bar 33 and hounds by braces 47, and
 80 a link 48 connects the brace 47 on bar 33 with the end of lever 44, so that when said lever is
 moved the hounds 31 and bar 33, which I term the "tongue-frame," will be moved up or
 85 down to depress the disks and feed-tubes or elevate them, as the case may be.

A shaft 49 turns in bearings carried by cross-
 bar 2 and operates the seed-droppers, which
 deposit the seed in wire tubes 50, projecting
 into the flared upper ends of the seed-tubes
 90 11, and sprocket-wheels are located on this shaft 49 and on the axle, and a short shaft 51
 carries a fixed sprocket-wheel 52, which is
 connected by a chain 53 with the sprocket on
 the axle. A sprocket-wheel 54 is mounted to
 95 slide on the shaft 51, and suitable means are provided to move the same to clutch with the
 sprocket 52 and lock them together, and a
 chain 55 connects this sprocket 54 with the
 sprocket on shaft 49, so that when the sprock-
 100 ets 54 and 52 are clutched together motion will be transmitted to the shaft 49 to operate
 the seed-droppers, and when the sprocket-
 wheel 54 is moved away from sprocket-wheel
 52 the seed-droppers will be idle.

It will be seen that with my improvements
 105 the disks A are pushed forward and not dragged, as heretofore, that the seed-tubes 11
 carry both the main and covering disks and maintain them in proper relative position to
 perform the best results, and as the seed-tubes
 110 pivot on the cross-pipe 5 vertical vibration of the disks is allowed.

A great many changes might be made in the
 general form and arrangement of the parts
 described without departing from my inven-
 115 tion, and hence I do not confine myself to the precise details set forth, but consider myself
 at liberty to make such slight changes and alterations as fairly fall within the spirit and
 120 scope of my invention.

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

1. In a disk drill, the combination with a furrow-opening disk, of a feed-tube behind
 125 the same, a standard, means for securing said standard to the feed-tube and a covering-disk mounted at the lower end of said standard.

2. In a disk drill, the combination with a frame and a pivoted seed-tube, of a bar con-
 130

necting the seed-tube and frame, a furrow-opening disk located at the forward end of said bar, a standard adjustably secured to the seed-tube and a covering-disk mounted at the lower end of said standard.

3. In a disk drill, the combination with a frame, a bar projecting forwardly therefrom and a furrow-opening disk located at the forward end of said bar, of a seed-tube behind the furrow-opening disk, a bearing on said seed-tube, a standard disposed parallel with the seed-tube and vertically adjustable in said bearing, and a covering-disk mounted at the lower end of said standard.

4. In a disk drill, the combination with a pivoted seed-tube, of a forwardly-projecting bar connected therewith, a furrow-opening disk on the bar, a bearing on the rear of said seed-tube, a standard adjustably secured in the bearing by a set-screw, and a covering-disk carried by said last-mentioned standard.

5. In a disk drill, the combination with a frame having a tubular cross-rod, of a series of seed-tubes pivotally secured thereon, and furrow-opening disks connected with said seed-tubes and tubular cross-rod, and covering-disks mounted in standards carried by the seed-tubes.

6. In a disk drill, the combination with a frame, a series of seed-tubes pivotally connected to the frame, brackets connecting pairs of seed-tubes, bars secured to the brackets and projecting forwardly therefrom, bearings on the forward ends of said bars, furrow-opening disks secured to opposite ends of said bearings, and covering-disks carried by the seed-tubes.

7. In a disk drill, the combination with a frame, of an axle thereon, traction-wheels on said axle, seed-tubes carried by the frame, furrow-opening disks connected with the seed-tubes, standards secured to the seed-tubes, covering-disks mounted in the standards, and a lever to move the frame to raise and lower the disks and seed-tubes.

8. In a disk drill, the combination with a tubular support, of brackets pivotally secured to said support, seed-tubes secured on opposite sides of said brackets, forwardly-projecting bars secured to the brackets, bearings carried by the forward ends of said bars, furrow-opening disks secured at opposite ends of said bearings, spring-held rearwardly-pulling bars connected with the rear ends of said bars, and covering-disks carried by the seed-tubes.

9. In a disk drill, the combination with a tubular support, of a bracket having a curved face bearing against said support, bails around the support secured to the bracket to pivotally connect the latter, rearwardly-projecting arms on the bracket, seed-tubes secured to said arms, a web on said bracket between the arms, bars secured on opposite sides of the web and extending forwardly and rearwardly therefrom, a bearing at the forward ends of

said bars, furrow-opening disks secured to said bearing, and furrow-closing and seed-covering disks carried by the seed-tubes.

10. In a disk drill, the combination with a frame, of forwardly-projecting bars secured to the frame, a plate secured to the forward ends of said bars, a journal-box having a flat extension thereon, said extension having diagonally-disposed elongated slots, bolts passed through the plate and said elongated slots in the extension securing them together and permitting the angle of the journal-box to be varied at will, a journal in said box, and disks secured at the ends of said journal.

11. In a drill, the combination with the main frame, of a tongue secured centrally to the main frame and extending from the rear end of the main frame to a point in advance of the forward end thereof, a tongue-frame comprising bars secured at their rear ends to the main frame a considerable distance laterally from the center of said main frame, said bars converging and secured at their forward ends to the forwardly-projecting end of the tongue and a truck swiveled under the forward end of the tongue and tongue-frame and supporting the same.

12. The combination with a journal-box having a flat extension thereon, a journal in said box and disks secured to both ends of the journal, of a plate on said extension, bolts passing through elongated slots in the plate and extension to secure them together and permit of their adjustment, a web on said plate, and supporting-bars secured to opposite sides of said web.

13. In a disk drill, the combination with a pivoted seed-tube, of a forwardly-projecting post-bearing, a post connected therewith, a furrow-opening disk on said post, an adjustable standard attached to the rear of said tube and a covering-disk and bearings carried by said standard.

14. In a disk drill the combination of a frame, a tubular cross-bar and support, a series of seed-tubes pivotally attached thereon, posts connected with said seed-tubes and tubular cross-bar, furrow-opening disks carried by said posts, covering-disks and bearings mounted and carried by said seed-tubes under the front of said drill-frame.

15. In a disk drill, the combination with a frame, of a series of pivotally-supported seed-tubes and a cross-support, stop of pins through said support, brackets connecting pairs of seed-tubes and forwardly-projecting disk-bearing posts bearing on the forward ends of said posts, furrow-opening disks journaled in said bearings standards on said seed-tubes, and disks mounted and carried on said standards.

16. In a disk drill the combination of a tubular support a frame, a series of press-wheels, rearwardly-projecting pull-bars attaching to the axles of said series of press-wheels, furrow-opening disks, pull-bars to draw said

press-wheels in traction with the furrow-opening disks, rearwardly-projecting springs on the pull-bars to hold furrow-openers taut to the land when in vibration, seed-tubes, and a
5 web securing furrow-disks, posts and covering-disks together, so that the disks and seed-tubes will vibrate in unison.

17. The combination of a frame and a tubular cross-bar forming part of said frame, a
10 hound converging in front of said cross-bar, a tongue, passing rearwardly to the rear of drill-frame, a cross-bar attached in rear of the

drill-frame, a truck in front of said hound, a turn-table integral with said truck, and a post passing upwardly through the front end of 15 said hound and connecting therewith.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM A. LEE.

Witnesses:

J. A. BARNES,
L. W. FARRIS.