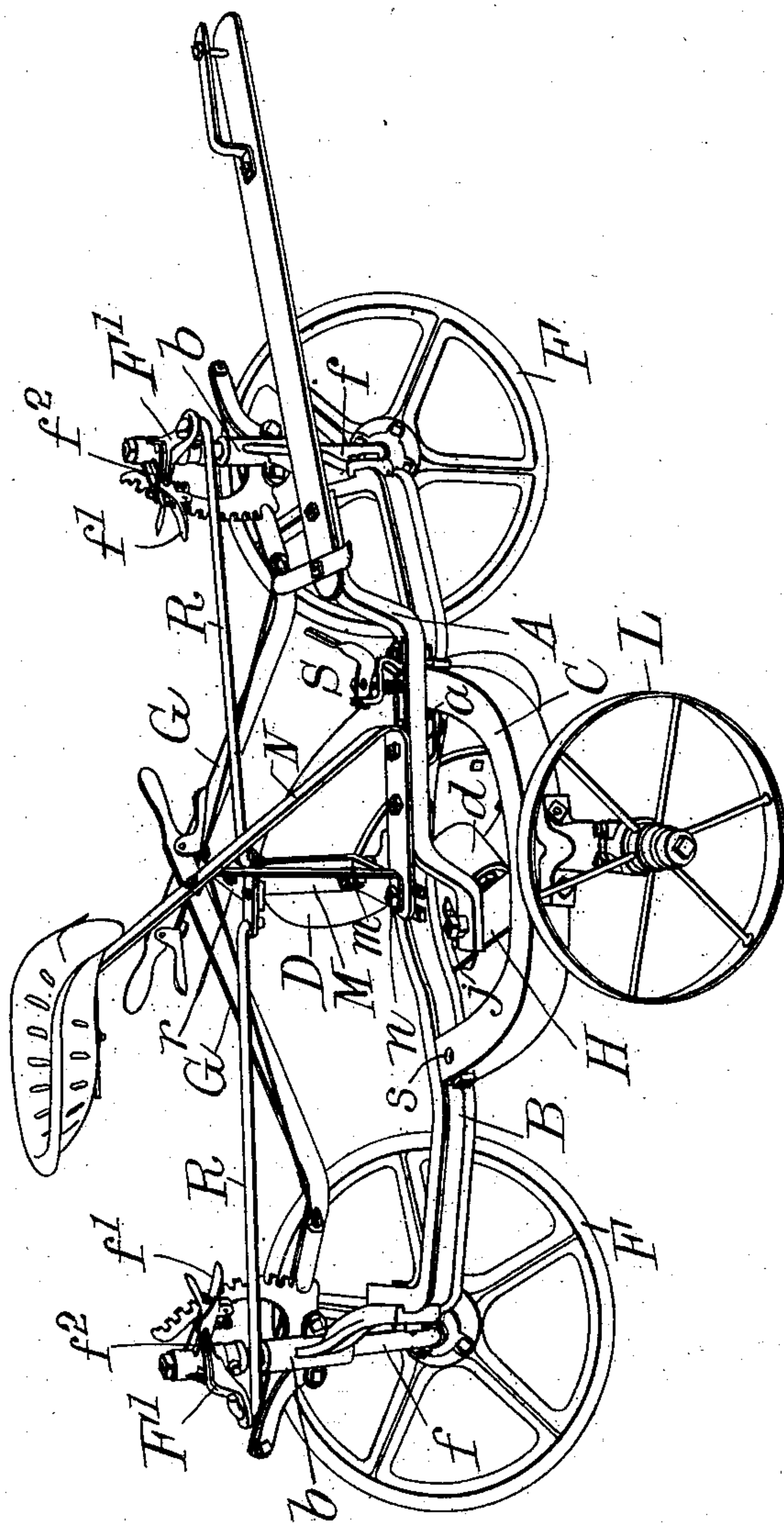


C. H. MELVIN.
 REVERSIBLE DISK PLOW.
 APPLICATION FILED JUNE 7, 1909.

Patented Dec. 20, 1910.
 5 SHEETS—SHEET 1.

979,019.

Fig. 1



WITNESSES.

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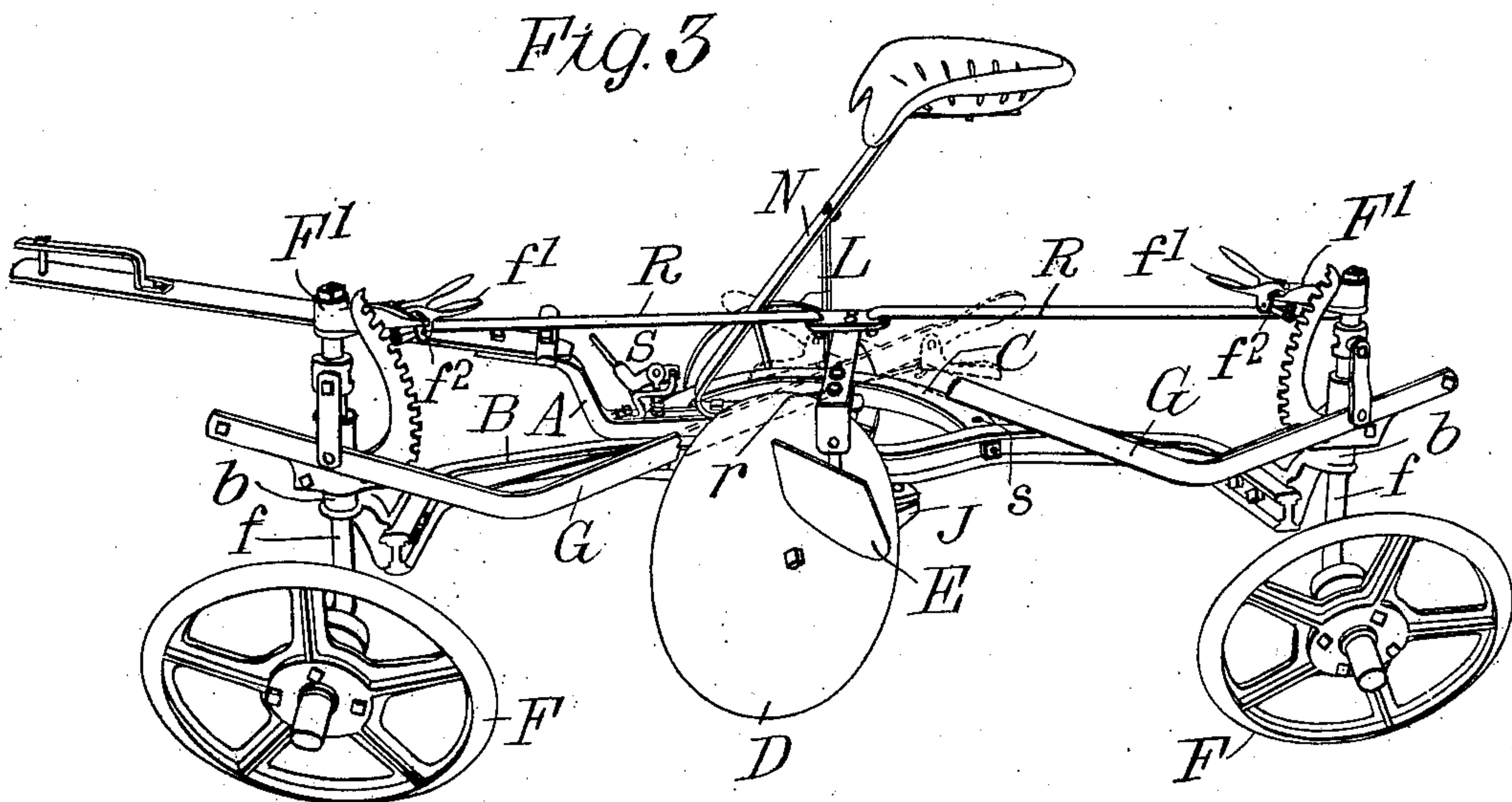
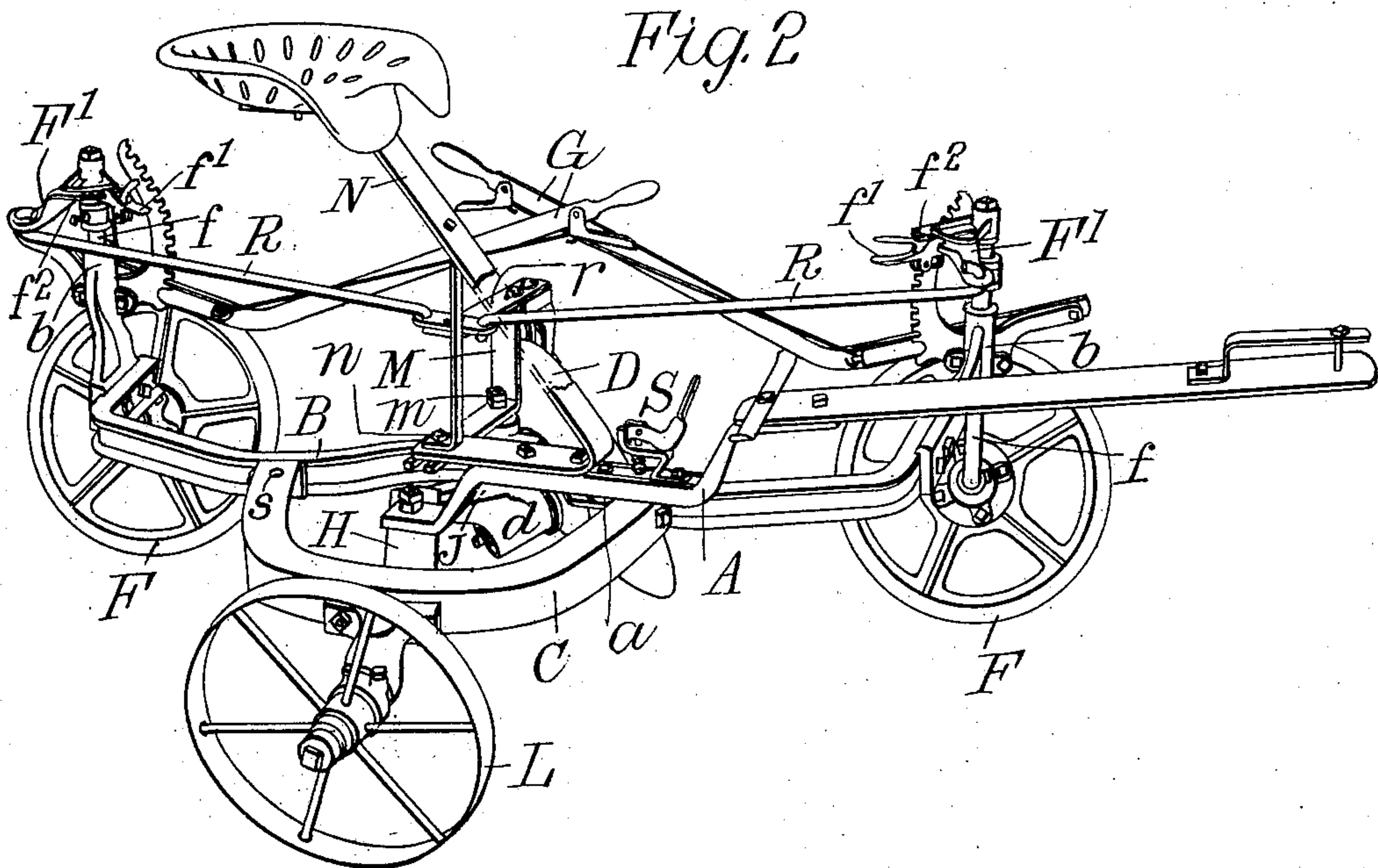
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5 SHEETS—SHEET 3.

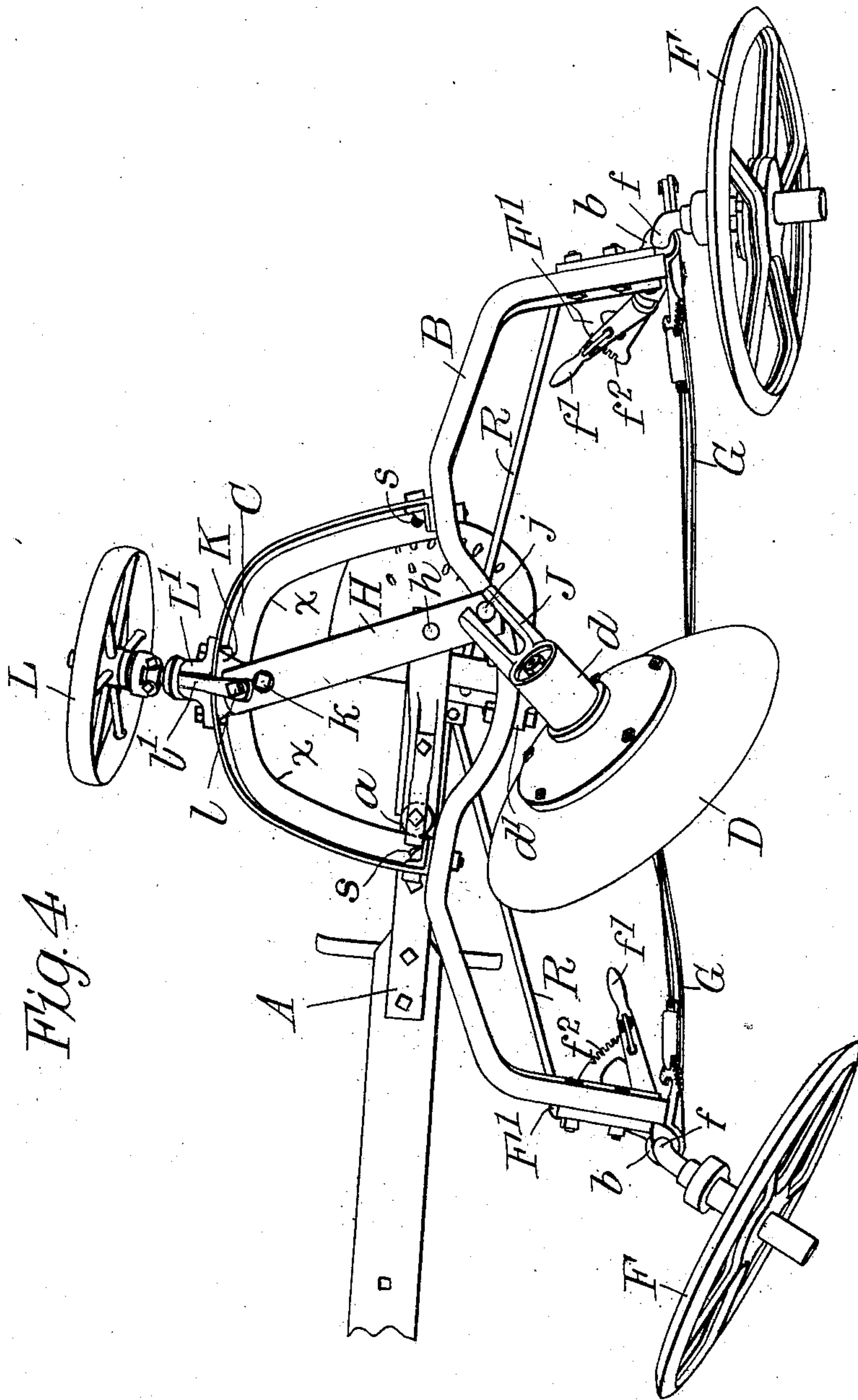


Fig. 4

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5 SHEETS—SHEET 4.

Fig. 5

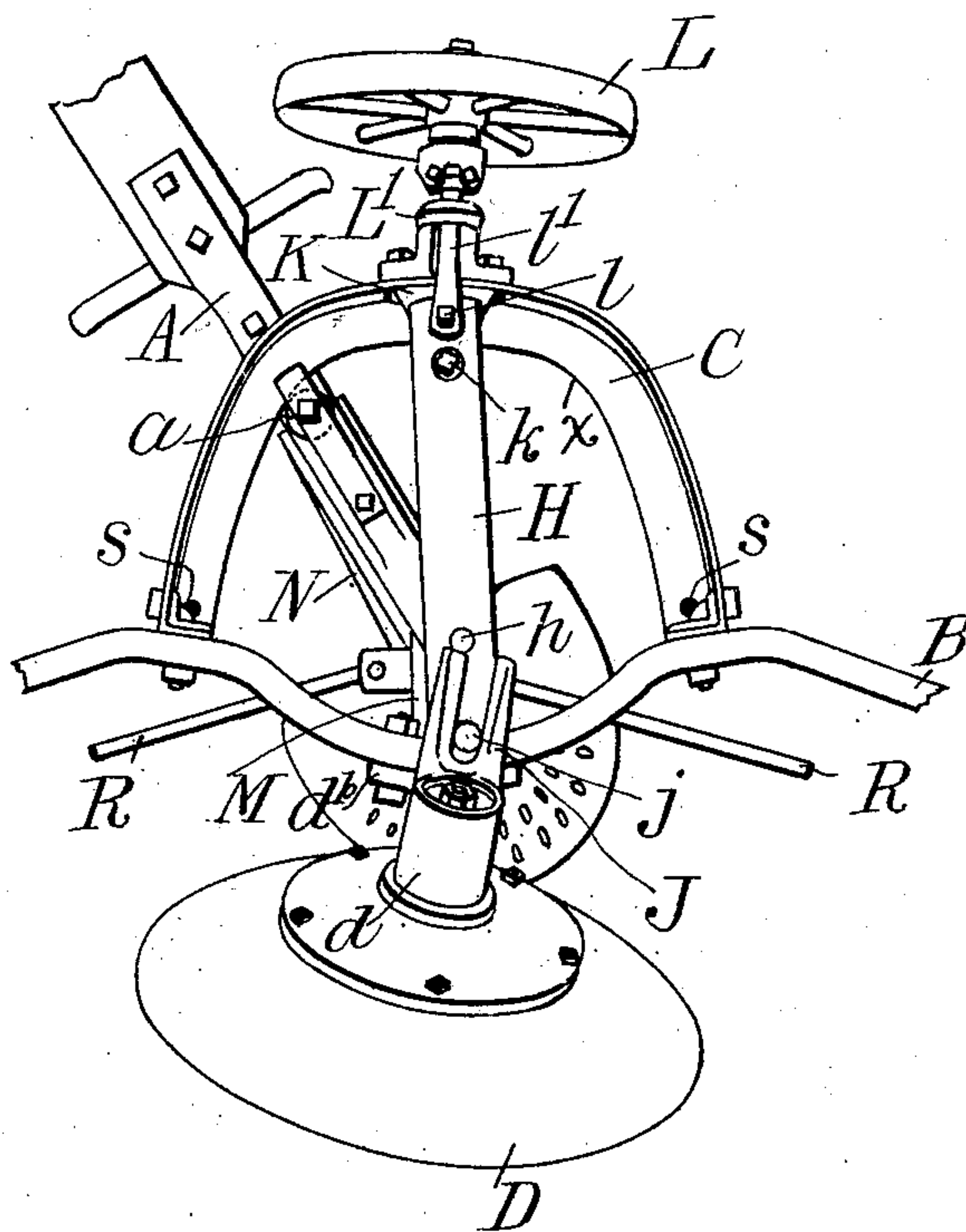
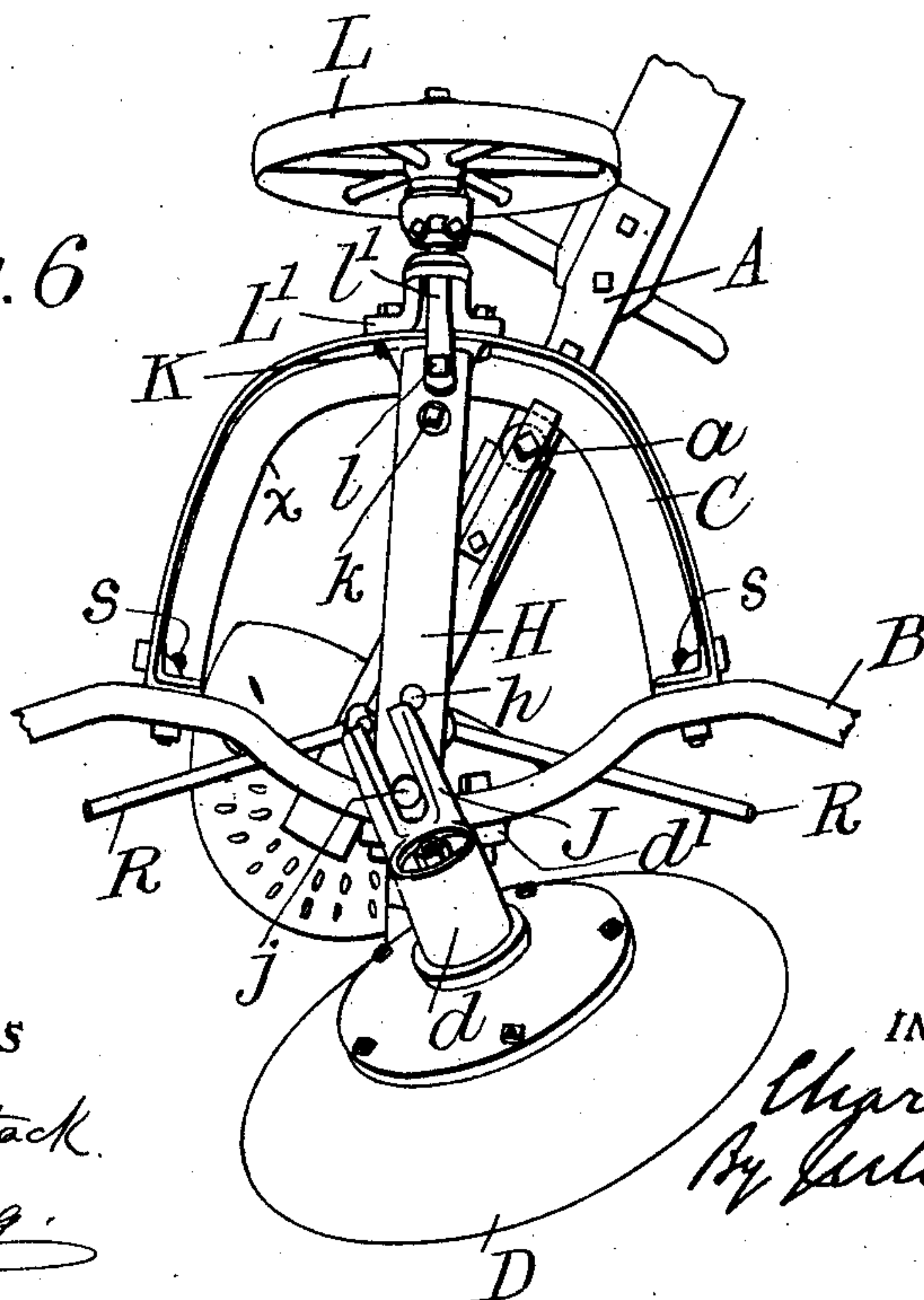


Fig. 6



WITNESSES

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5 SHEETS—SHEET 5.

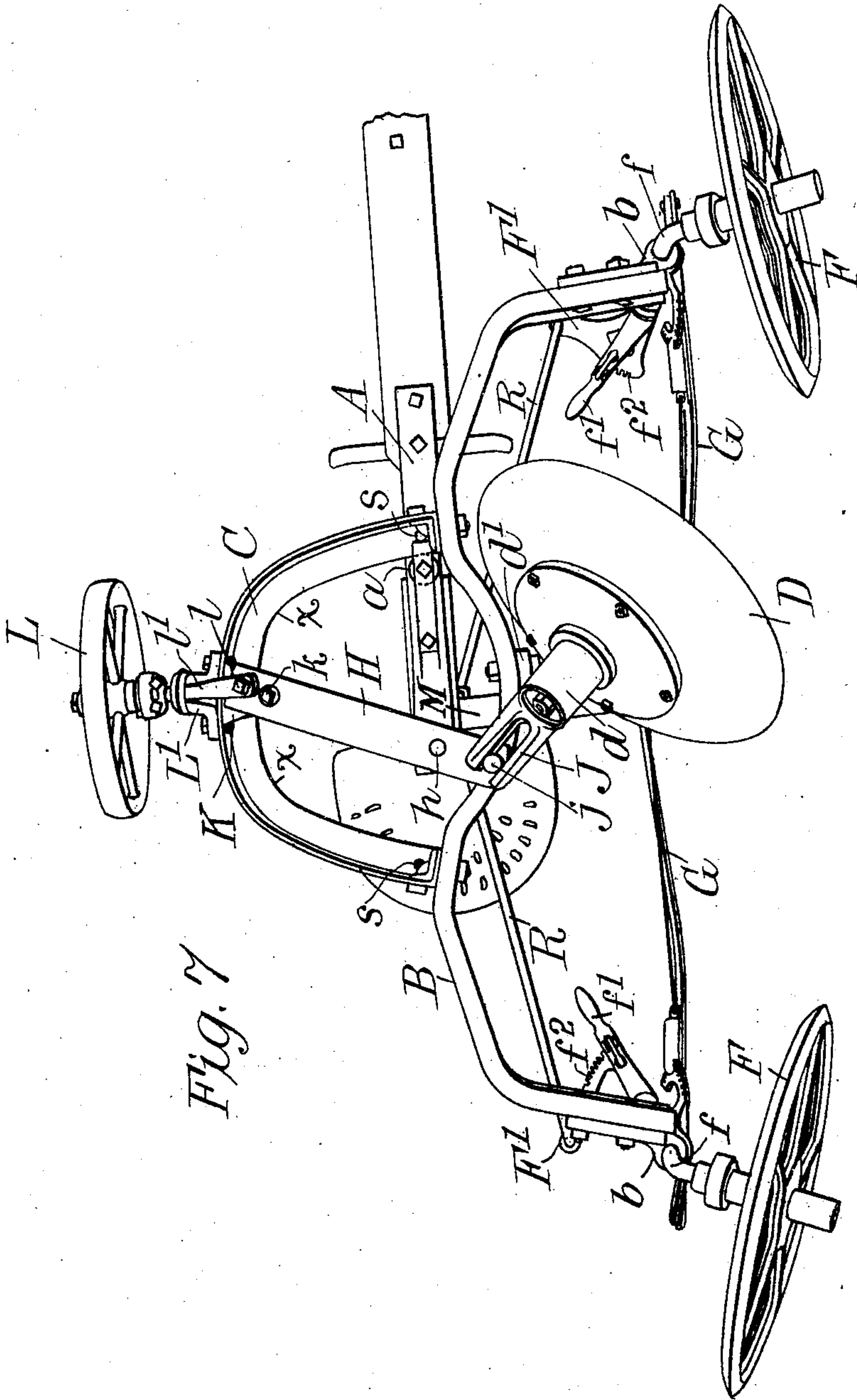


Fig. 7

WITNESSES

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UNITED STATES PATENT OFFICE.

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REVERSIBLE-DISK PLOW.

979,019.

Specification of Letters Patent.

Patented Dec. 20, 1910.

Application filed June 7, 1909. Serial No. 500,616.

To all whom it may concern:

Be it known that I, CHARLES H. MELVIN, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Reversible-Disk Plows; 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.

The object of my invention is to provide a practicable and efficient reversing mechanism for disk-plows adapted for back-and-forth plowing, in which the reversal of the disk is effected by turning the team, and with it the pole or tongue, but without turning the carrying-frame of the implement.

In connection with the reversal of the disk, my invention also includes provision for automatically adjusting a disk-scaper and for regulating the landing or angular setting of the supporting wheels of the implement.

The invention will be hereinafter first fully described with reference to the accompanying drawings, which form a part of this specification, and then more particularly pointed out in the claims following such description.

In said drawings: Figure 1 is a perspective view of an implement embodying my invention, looking at the land side. Fig. 2 is a similar view showing a different perspective. Fig. 3 is a perspective view of the implement looking at the mold-board side. Fig. 4 is a bottom plan view taken from a photograph. Fig. 5 is a fragmentary bottom view showing the tongue and disk in the act of reversing and before reaching a dead center. Fig. 6 is a similar view showing the position of the tongue and disk after passing the dead center. Fig. 7 is an inverted plan view of the implement when completely reversed.

A is a tongue or draft-member, which is pivotally connected as hereinafter described at the center of the implement, and is adapted to be swung around the land side thereof so as to extend from either end of the implement, for back-and-forth draft, the tongue being turned with the team or draft animals when the driver on reaching the end of a furrow turns and drives around the team for pulling in the reverse direction.

B is the main beam of the plow-frame having attached laterally to its medial portion a land-bracket C, the latter being a cam-shaped yoke.

D is the rotary disk.

E is the disk-scaper.

Reversibility of the disk is or may be allowed by customary or any suitable means; for example, the disk-axle is journaled in a swinging bearing *d*, said bearing being at the foot of a pivot-standard or spindle journaled in a bracket-bearing *d*¹, the latter being bolted to the beam B.

F F are the front and rear furrow-wheels attached to the opposite ends of the beam F, and L is the land-wheel attached to the middle portion of the land-bracket or cam-yoke C.

Levers G G are or may be provided for adjusting the elevation of the implement on the furrow-wheels; said levers each having the usual auxiliary lever controlling a spring-actuated latch-bolt engaging a toothed segment on or attached to the bearing-bracket *b* in which the caster-spindle of the furrow-wheel axle is journaled and movable up and down, the said spindle being provided with a swiveled collar connected by a link with the lifting lever as shown in Fig. 3; it being understood of course that the particular lifting mechanism illustrated in the drawings is only typical of any suitable lifting mechanism that may be incorporated in the implement.

Referring now to the disk-reversing mechanism, it will be observed that the tongue A (which carries the driver's seat and a suitable foot-rest) is supported upon the land-bracket or yoke C and is connected by a pivot-pin or bolt *h* to a bar H, shown more clearly in the bottom views of Figs. 4 to 7 inclusive. Bar H constitutes a lever of the third order, having its fulcrum on a fixed pivot-pin or bolt *k* carried by a casting K to which is bolted the supporting-bracket of the land-wheel L. The bar or lever H is thus fulcrumed adjacent to the land-wheel, at the middle of the yoke C, and at its inner end it is provided with a pivot-pin *j* working in a slotted lever-arm J extending from the disk-bearing *d*.

The disk reversing motion is actuated by the turning of the tongue A with the team around on the yoke C to either point *s*; the tongue being provided with any suitable

stop or foot-latch S to lock it to the yoke at either point *s* and to hold the tongue at either extreme of the throw. The form of foot-latch shown (Fig. 1) is a spring-depressed bolt for engaging an aperture in the yoke at either point *s* and adapted to be disengaged by a trip-lever.

The tongue A carries a roller *a* which runs against the inner side of the yoke C, the latter constituting a cam for the roller; the legs of the cam-yoke lying within a circle which might be described by revolution of the roller *a* about the pivot-pin *h* as an axis (when said pivot-pin occupies a substantially central position as in Figs. 5 and 6); so that for either extreme position of the tongue A, that is when the tongue is at either point *s*, the bar or lever H must maintain an oblique position with its pivot *h* rearward of the pivot *h*, with reference to the direction of draft, and when the tongue is swung around to the opposite point *s*, the bar or lever H is shifted to an opposite oblique position by pushing action of the roller *a*, as will be clearly understood by reference to Figs. 4 to 7 inclusive. Thus the tongue swings eccentrically, shifting its pivot *h* and with it the bar or lever H, thereby reversing the disk D by action of the pivot-pin *j* in the slotted lever-arm J.

When the tongue is about half way around the cam-yoke, the disk assumes a position at practically a dead-center, and the movement past this dead center is principally a travel of the tongue A without action on the working parts of the plow, enabling the tongue to get to such a point beyond the line of centers that, by virtue of engagement of roller *a* with the cam, the further motion is resolved into a pushing action against the bar or lever H which is operatively connected with the disk. Consequently the travel from such point to the finish of the stroke absolutely forces the disk to a reversed position. In this connection, it will be noted that the medial curve of the cam between the bends or corners *x x* of the yoke is or may be at such distance from the pivot *h* (when the latter is in a substantially medial position) that the tongue can pass over or from one side to the other of the bar H without the roller *a* necessarily contacting with the cam; but when the roller reaches the opposite point *x* or corner of the yoke it rides against the cam from such point to the point *s*, imparting a positive shift to the bar or lever H for completely reversing the disk. This reversing mechanism also operates to shift the disk-scaper E to the side of the disk which lifts the soil, and to change or reverse the landing or relative angular setting of the furrow-wheels F F and of the land-wheel L in accordance with the reversal of the disk.

A scraper-bracket or standard M is pivot-

ally-mounted at *m* above the pivot-standard which carries the disk-axle. The pivot at *m* may be a bolt formed on the upper end of the said pivot-standard passing through a hole therefor in the foot of the scraper-bracket and provided with fastening nuts, as shown more clearly in Fig. 2. The foot of the scraper-bracket M constitutes a lever-arm which is slotted or bifurcated and engaged by a pivot-bolt *n* carried by the tongue, and in the illustrated implement said pivot-bolt *n* is shown as used for fastening a brace to the foot of the seat-spring N, which is mounted upon the tongue. The pivot *h* is preferably eccentric to the pivot *n*, being located intermediate the two extreme positions of the latter; so that, as the tongue A is swung around to reverse position, the pivot *n* turns around the pivot *h* while pivot *h* moves in an arc of a circle around the pin *h* as an axis. The scraper-bracket is thus turned at a slight but sufficient angle to shift the scraper in accordance with the reversal of the disk. The scraper-bracket overlies the disk and the scraper is pendent therefrom with sufficient loose or free movement to adjust itself to the face of the disk.

On the upper end of the scraper-bracket is adjustably-secured thereto a strap or bar *r* to which are pivotally connected the rods R R that govern the furrow-wheels F F, said rods being respectively connected to arms or brackets F¹ F¹ which are rigid with the furrow-wheel spindles. Adjustment of the strap *r* moves the inner ends of the rods R R laterally, from and toward the land, thereby lengthening or shortening the connections between the furrow-wheels and changing the angles at which they are set relatively. The furrow-wheels are also individually adjustable for setting them at different angles to the line of draft; for which purpose the caster-spindles *f* on said wheels are provided with hand-levers *f*¹ fast at said spindles and carrying supplementary finger-levers controlling spring-actuated locking devices for engaging segments *f*² on the brackets F¹, the latter being loose on the caster-spindles but held in fixed relation by their connection through the rods R R. As will be understood, the relatively angular setting of the furrow-wheels will be automatically reversed with the reversal of the disk, being controlled by the reversing motion of the tongue operating through the scraper-bracket and connecting-rods R R.

The landing of the land-wheel L is controlled by the bar or lever H, having just beyond its fixed pivot *h* a pivotal connection *l* with the axle *l*¹ of the land-wheel, which axle extends loosely through and works freely in its bracket L¹.

When the driver gets to the end of the furrow, he trips the foot-latch S and drives

his team around the land side of the plow until the foot-latch engages at the opposite point *s*, which action reverses the disk, adjusts the disk-scraper, and changes the landing of the furrow-wheels and land-wheel in accordance with the reverse position of the disk, and he is ready to cut another furrow.

I reserve the right to such other embodiments of my invention and modifications in construction and arrangement as may be made within the scope of said invention, as defined in the following claims.

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

1. In a disk plow adapted for back-and-forth draft, the combination with a reversible disk, of a tongue adapted to be turned around for reversal, means coöperating with the tongue for imparting an eccentric motion thereto in turning, and operative-connections between the tongue and pivot-standard of the disk for reversing the disk by the turning of the tongue.

2. In a disk plow adapted for back-and-forth draft, the combination with a reversible disk, of a disk-reversing lever, a tongue pivoted to said lever and adapted to be turned around for reversing, and means coöperating with said tongue causing it to shift its pivot in turning, thereby shifting said lever to reverse the disk.

3. In a disk plow adapted for back-and-forth draft, the combination with a reversible disk, of a tongue adapted to be turned around for reversal and having a movable pivot, a cam-shaped yoke coöperating with the tongue to shift its pivot as the tongue is turned, and means whereby the turning of the tongue reverses the disk.

4. In a reversible disk plow, the combination with the pivot-standard of the disk, said standard having a lever-arm extending back from the disk, of a tongue having a movable pivot and adapted to be turned around for reversing, means coöperating with the tongue causing it to shift longitudinally backward on the latter part of its turn in either direction, and operative connecting means between the tongue and said lever-arm, whereby the disk is forced to reversed position by pushing action of the tongue.

5. In a reversible disk plow, the combination with the disk, of a tongue adapted to be turned around for reversal, a yoke constituting a cam with which the tongue coöperates on movement in either direction, and a disk-reversing lever arranged between the legs of the cam to which the tongue is pivoted eccentrically with reference to said cam.

6. In a reversible disk plow, the combination of a tongue adapted to be turned to reverse positions, a reversible disk, a disk-reversing lever arranged transversely of the tongue and to which the tongue is pivoted

between the fulcrum of said lever and the disk, and means whereby the tongue in turning is caused to shift said lever to reverse the disk.

7. In a reversible disk plow, the combination with the disk, of a tongue adapted to be turned to reverse positions, a disk-reversing lever to which the tongue is pivoted, the fulcrum of said lever being at the land side of the tongue, a cam-shaped yoke between the legs of which said lever operates, and means on the tongue for coöperating with said cam-shaped yoke, the distance between the legs of said yoke being less than the diameter of a circle described by said means revolving about the pivot of the tongue.

8. In a reversible disk plow, the combination of the disk having a pivot-bearing provided with a lever-arm, a disk-reversing bar or lever fulcrumed at the land side of the implement, there being a pin and slot or sliding pivotal connection between the inner end of said bar or lever and said lever-arm, a tongue pivoted to said bar or lever near the disk, said tongue adapted to be turned around for reversal, a yoke on the land side of the plow frame between the legs of which said disk-reversing bar or lever is arranged, and means on the tongue for engaging said yoke, the said yoke constituting a cam whereby the turning of the tongue shifts said disk-reversing bar or lever to reverse the disk.

9. In a reversible disk-plow, the combination of a tongue adapted to be turned around for reversal, a disk-reversing bar or lever to which the tongue is pivoted, means whereby the tongue in turning is caused to shift said bar or lever, and the disk having a pivot-standard provided with a lever-arm, there being a sliding pivotal connection between said lever arm and the disk-reversing bar or lever.

10. In a reversible disk plow, the combination of a reversible disk having a pivot-standard provided with a lever-arm, a reversing tongue and means for giving it an eccentric motion, a bar or lever operatively-connected with the tongue to be shifted thereby as the tongue is turned, and an operative connection between said bar or lever and said lever-arm for reversing the disk.

11. In a reversible disk plow, the combination with the pivotal disk-standard, of reversing mechanism operatively-connected therewith comprising a reversing tongue and a yoke-shaped cam and lever coöperating therewith, the tongue having means for engaging the cam, said lever being fulcrumed to the intermediate portion of the cam, and said tongue being pivoted to said lever at a distance from the fulcrum thereof and from said cam-engaging means greater than half the distance between the legs of the cam.

12. In a reversible disk plow, the combina-

tion of the plow-frame, front and rear furrow-wheels, a land wheel, a reversible disk, a tongue adapted to be turned around for reversal, and reversing mechanism actuated by the turning of the tongue to reverse the disk and change the landing of the furrow-wheels and also the landing of the land wheel.

13. In a reversible disk-plow, the combination of a tongue adapted to be turned around on a movable pivot, means for shifting the tongue as it is reversed and means for reversing the disk thereby, a pivotal-scraper standard having a lever arm, there being a pin and slot connection between said lever-arm and the tongue for turning the scraper-standard to shift the scraper when the disk is reversed, furrow-wheels carried by caster-spindles, arms on said caster-spindles, and rods connecting said arms to said scraper standard.

14. In a reversible disk plow, the combination of a plow-frame, supporting wheels including front and rear furrow-wheels, a reversible disk carried by the frame, a reversing tongue and a yoke-shaped cam engaged by the tongue when turning in either direction, means operated thereby for reversing the disk, and means operated thereby for adjusting the landing of the furrow-wheels.

15. In a reversible disk plow, the combination of a plow-frame, front and rear furrow-wheels, a land-wheel, a reversible disk carried by the frame, a reversing tongue and a yoke shaped cam controlling its movement, a lever operated by the tongue for reversing the disk and for adjusting the landing of the land-wheel, and means operated thereby for adjusting the landing of the furrow-wheels.

16. In a reversible disk plow, the combination with the disk, of a tongue adapted to be turned around for reversal, a disk reversing bar or lever to which the tongue is pivoted, means whereby the tongue in turning is caused to shift said bar or lever for reversing the disk, and a land-wheel having an oscillatory axle connected with said bar or lever for adjusting the landing of said land-wheel when the disk is reversed.

17. In a reversible disk plow, the combination of the plow-frame, having a land-bracket consisting of a cam-shaped yoke, supporting wheels including a land-wheel attached to the medial portion of said yoke, a reversible disk, a disk-reversing bar or

lever fulcrumed adjacent to the land-wheel, a tongue adapted to be turned around and pivotally connected to said bar or lever eccentrically with reference to said cam-shaped yoke, means on the tongue for cooperating with said yoke to shift said bar or lever and reverse the disk when the tongue is turned around, the land-wheel having an oscillatory axle, and the said disk-reversing bar or lever having an extension beyond its fulcrum pivotally connected to said axle.

18. In a reversible disk-plow, the combination of the plow-frame having a land-bracket consisting of a cam-shaped yoke, a reversible disk attached to the frame intermediate the legs of said yoke, front and rear furrow-wheels, a land-wheel attached to the medial portion of said yoke, a disk reversing bar or lever fulcrumed adjacent to the land-wheel attachment, a tongue adapted to be turned around for reversal, and pivoted to said bar or lever, means on the tongue for engaging said yoke whereby on turning the tongue said bar or lever is shifted to reverse the disk, means for adjusting the landing of the land-wheel by said bar or lever, a disk-scraper and pivotal-standard therefor, operative means for turning said standard by the tongue, and connections between said scraper-standard and the furrow-wheel caster-spindles for adjusting the landing of the furrow-wheels.

19. In a reversible disk plow, the combination with the plow-frame, supporting-wheels including front and rear furrow-wheels having caster-spindles, a reversible disk, a tongue adapted to be turned around, means for reversing the disk thereby, a disk-scraper, an adjustable standard therefor, means for adjusting the same by the tongue, adjusting levers fast on the caster-spindles of the furrow-wheels, bracket-arms loose on said spindles having toothed segments, means carried by said levers for engaging said segments whereby said bracket-arms are made rigid with said spindles, and rods connecting said bracket-arms with said scraper-standard.

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

CHARLES H. MELVIN.

Witnesses:

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ROY E. ANDERSON.