

No. 812,925.

PATENTED FEB. 20, 1906.

W. S. GRAHAM.

PLANTER.

APPLICATION FILED NOV. 6, 1905.

4 SHEETS—SHEET 1.

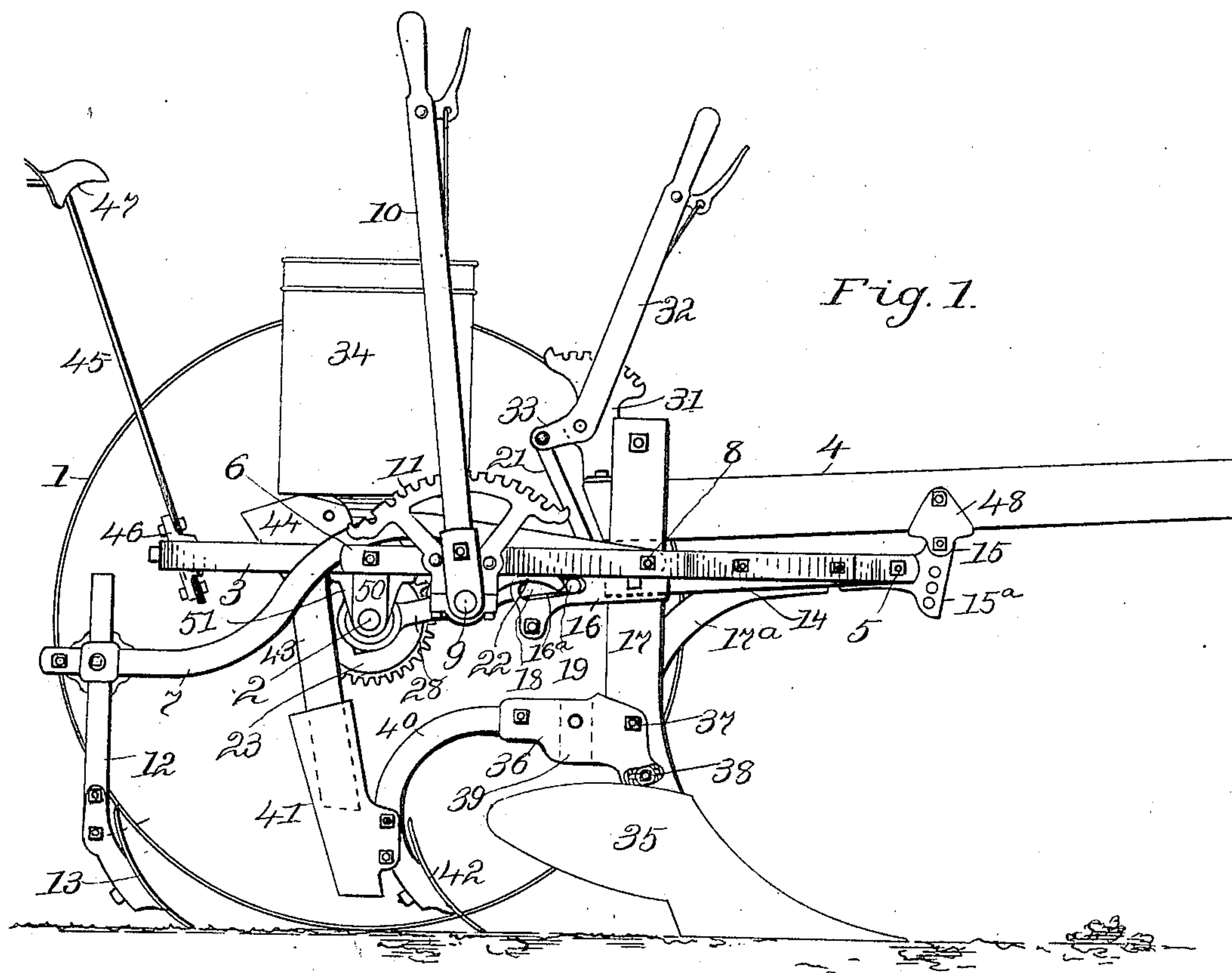


Fig. 1.

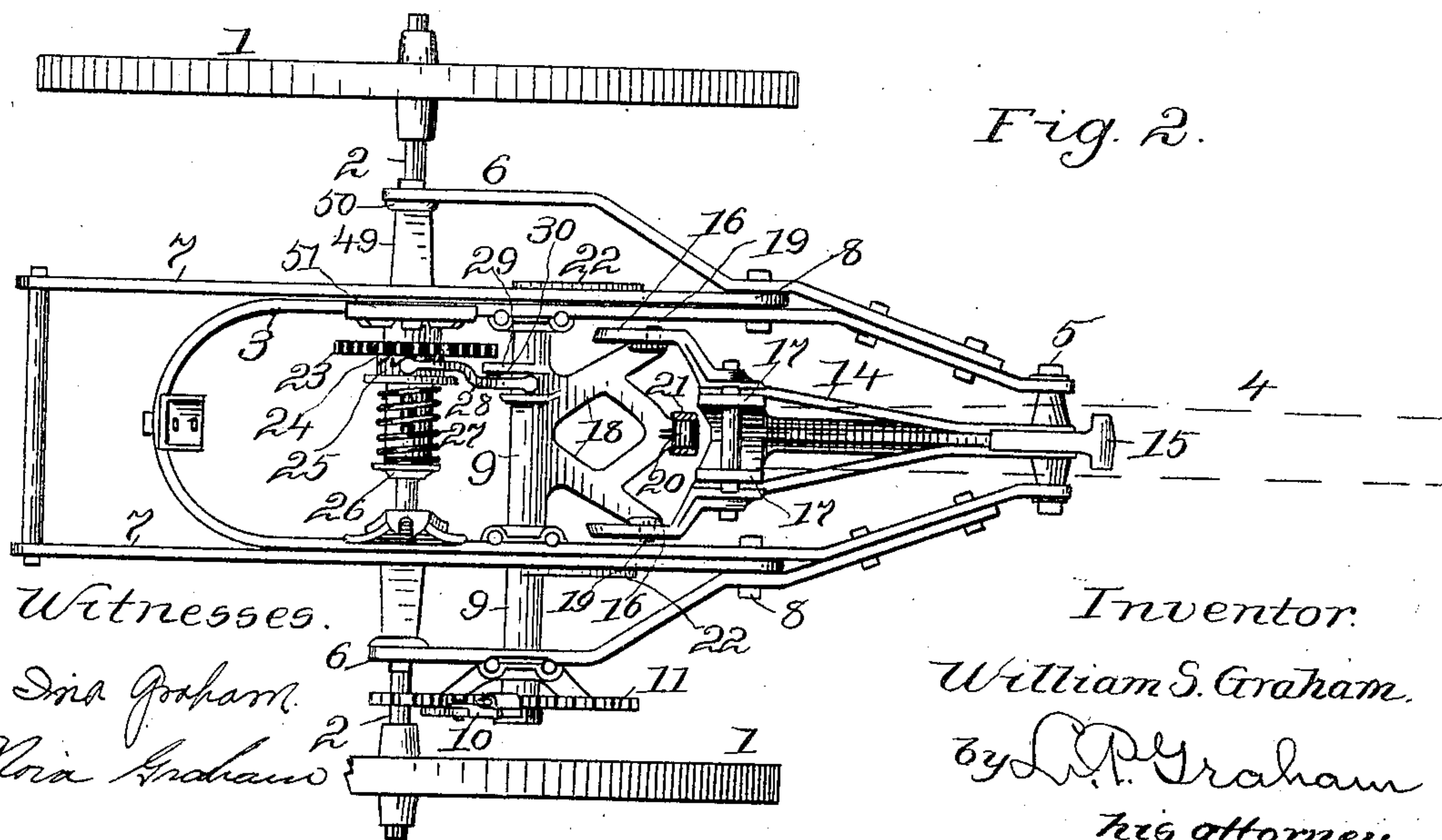


Fig. 2.

Witnesses.

Wm. Graham.

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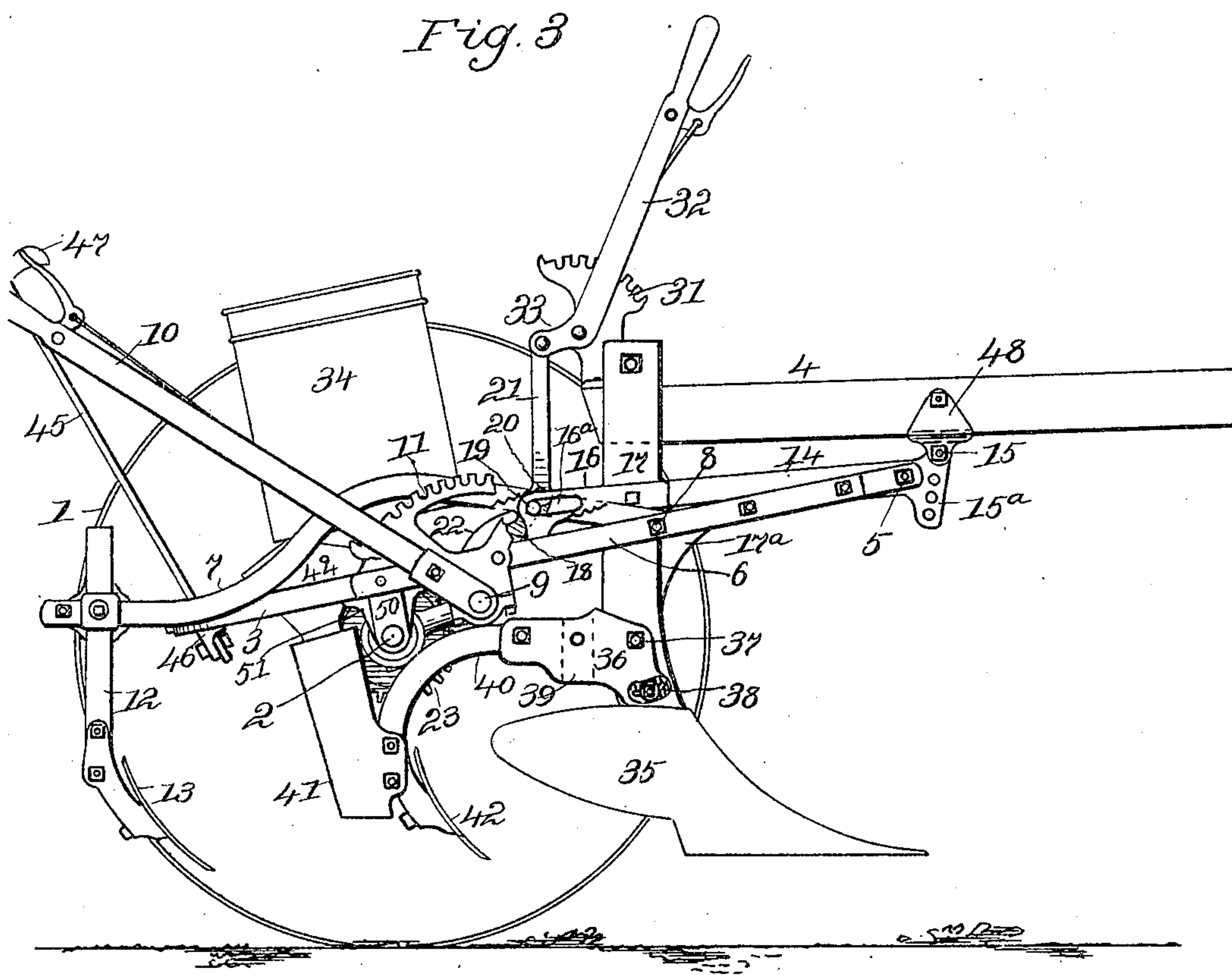
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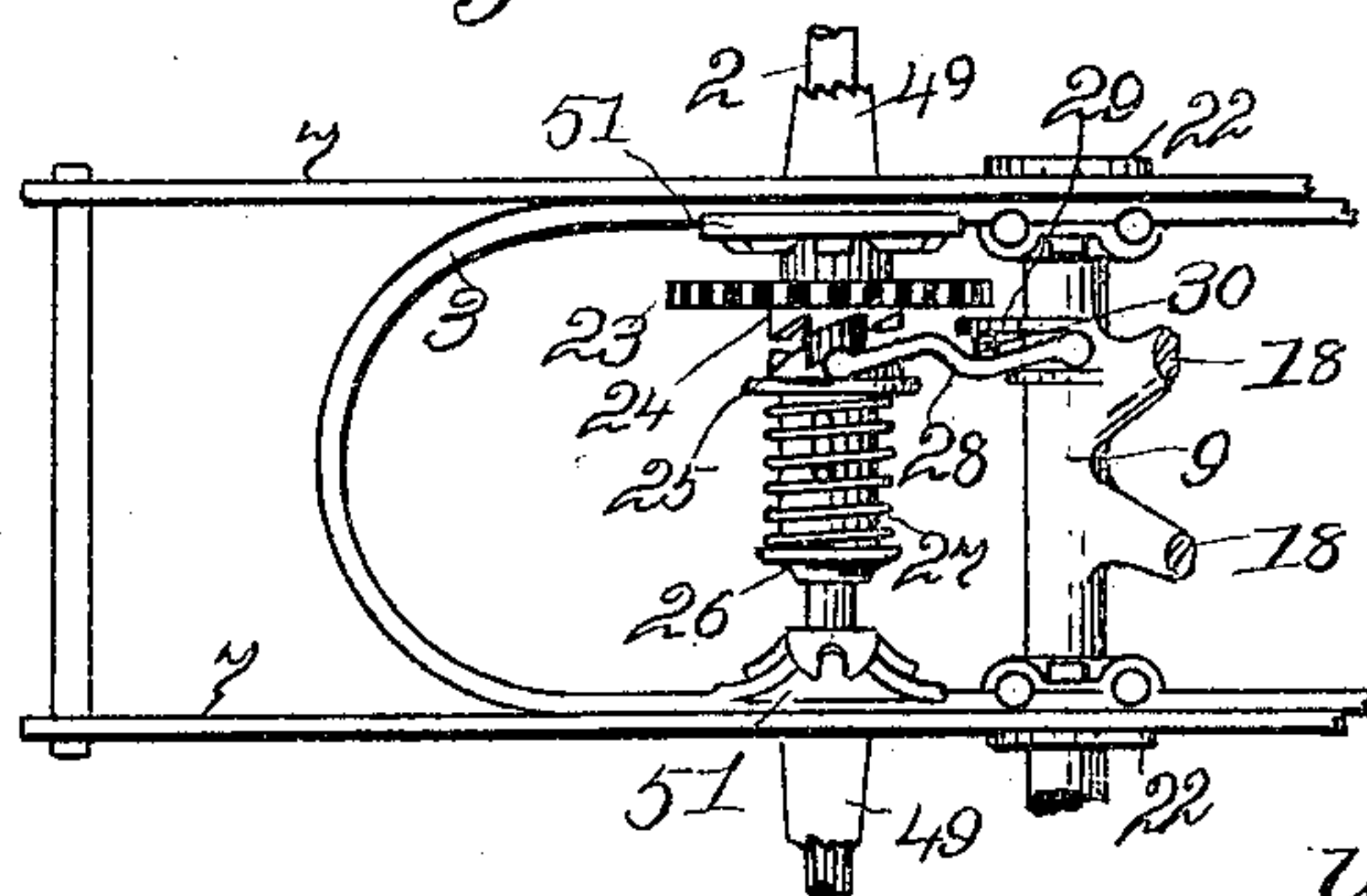
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4 SHEETS—SHEET 2



*Fig. 4.*



Witnesses.

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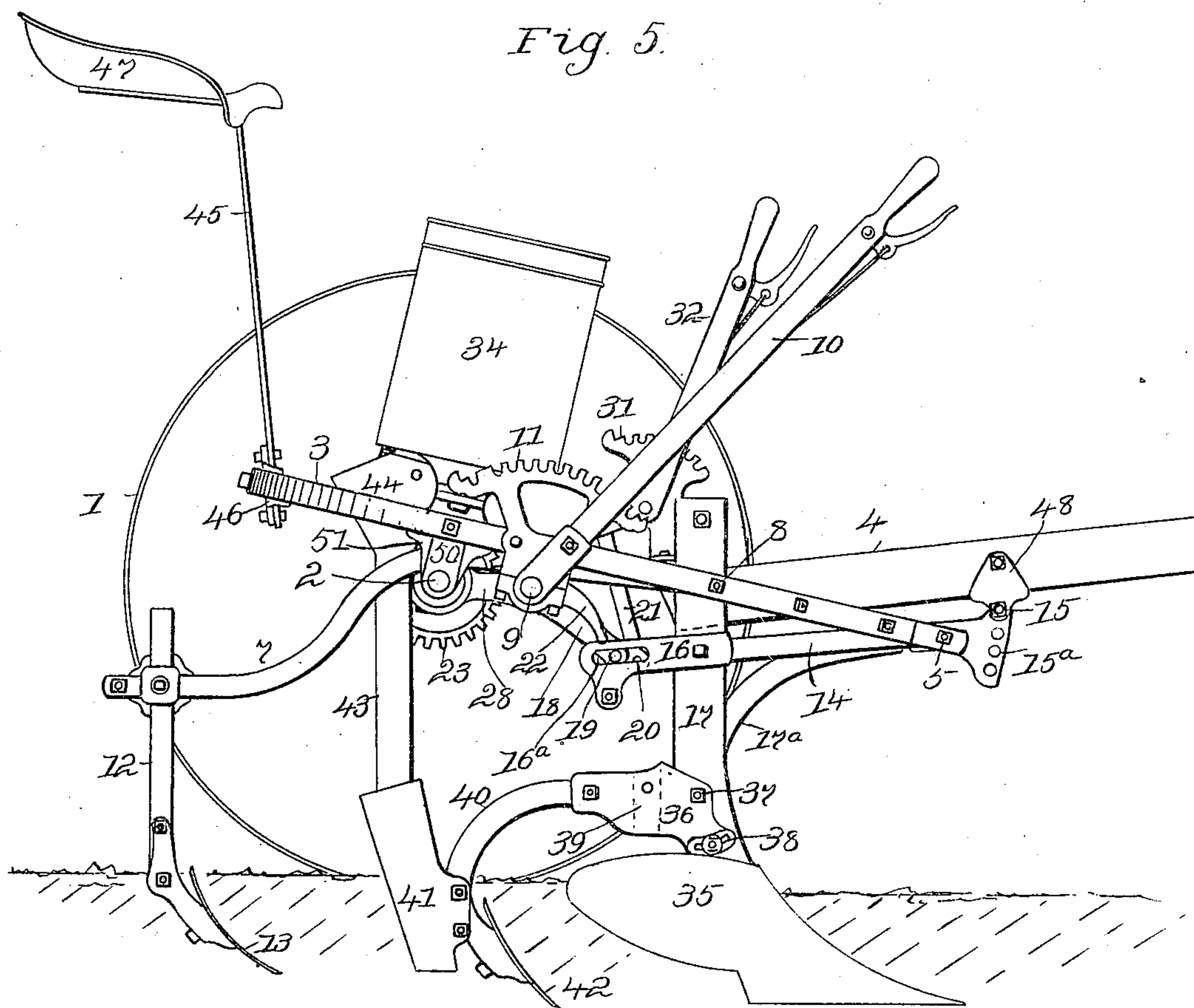
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4 SHEETS—SHEET 3.



*Witnesses.*

*Wm Graham.*  
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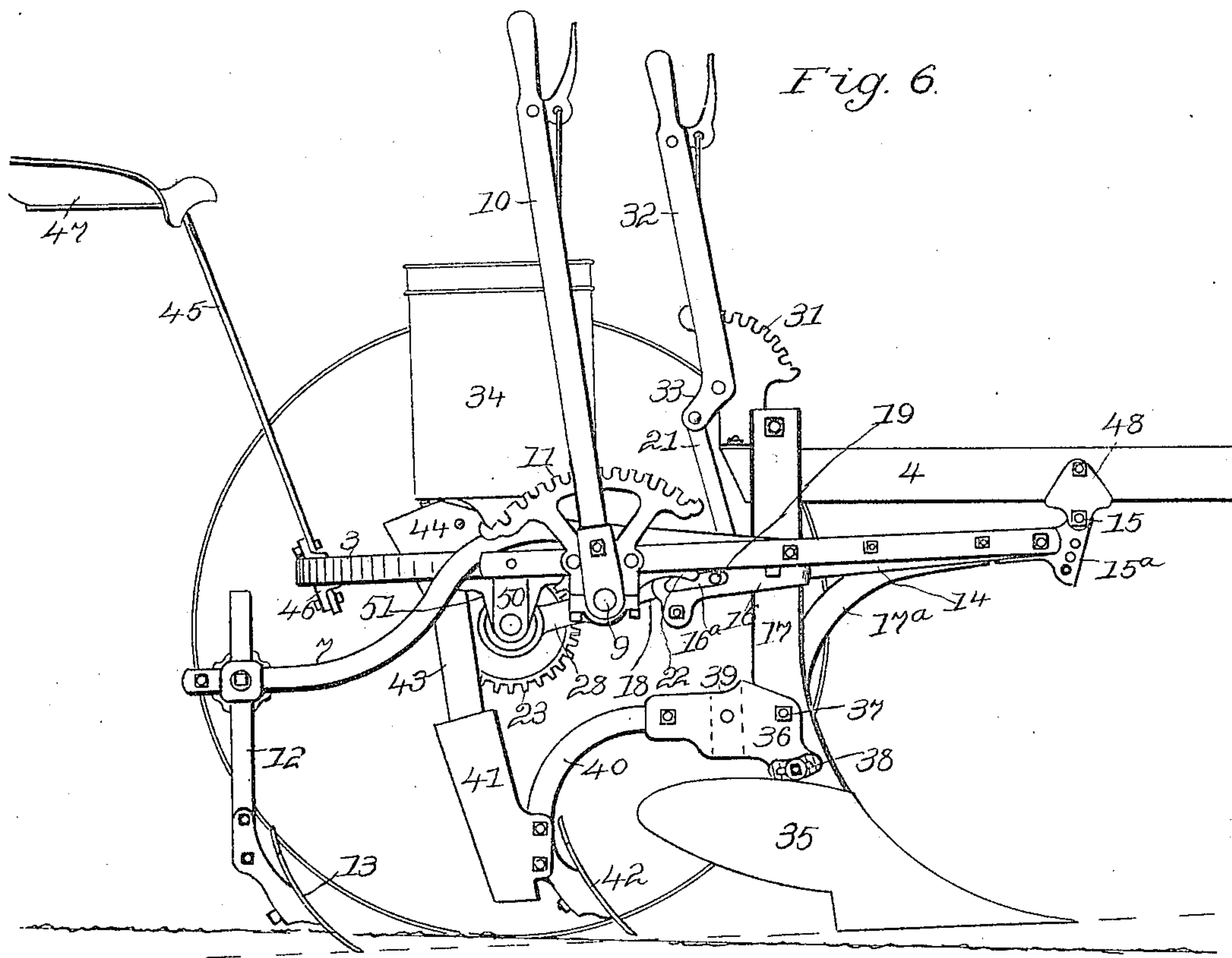
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4 SHEETS—SHEET 4.



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# UNITED STATES PATENT OFFICE.

WILLIAM S. GRAHAM, OF CANTON, ILLINOIS, ASSIGNOR TO PARLIN & ORENDORFF COMPANY, OF CANTON, ILLINOIS, A CORPORATION OF ILLINOIS.

## PLANTER.

No. 812,925.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed November 6, 1905. Serial No. 286,114.

*To all whom it may concern:*

Be it known that I, WILLIAM S. GRAHAM, a resident of the city of Canton, county of Fulton, and State of Illinois, have invented certain new and useful Improvements in Planters, of which the following is a specification.

This invention has particular reference to cotton-planters or to planters of the lister type adapted to plant either cotton or corn; and the principal object is to provide means for raising and lowering the soil-cutting appliances without disarranging the pitch of the soil-cutting appliances and without weakening the draft-hitch as the cutters descend. In some planters of the lister type the plow-standard is vertically shiftable in the frame, so that the soil-cutting appliances may be raised or lowered by translatory vertical motion and without disarranging the pitch thereof; but this plan is open to the objection that the resistance increases as the soil-cutting appliances move downward from the bearing of the standard in the frame, making the draft-hitch weaker as the work becomes heavier—that is to say, the soil-cutting appliances are moved farther from the bearing of the standard in the frame as they enter the soil, and the farther the resistance or work is from the connection of the standard with the frame the greater the danger of breaking or straining the standard or the bearings therefor. Another plan which gives a secure draft-hitch is that of swinging the soil-cutting appliances up and down with the rear end of the tongue of the planter; but inasmuch as the tongue swings with the neck-yoke bearing for a pivot it is apparent that up-and-down motion of the rear end of the tongue changes the relation of the tongue to the horizontal and that soil-cutting appliances partaking of this swing would be constantly changing their pitch or soil-entering tendency. My idea is to raise and lower the soil-cutting appliances with the rear end of the tongue, to provide a draft-hitch that moves up and down with the soil-cutting appliances, and to neutralize the tongue swing in the draft-beam and the standard by giving the beam and the standard a corresponding swing in a direction opposed to the direction of the swing of the tongue. The draft-beam connects pivotally with the tongue in front of the rear end thereof, so as to swing verti-

cally with relation thereto, and as the tongue swings up and down the draft-beam is swung with relation to the tongue to an extent and in a direction to cause the standard to maintain a certain relation to the vertical, whatever its horizontal position may be. Assuming the proper position of the standard to be precisely vertical, as shown in the drawings, the compensating swing of the draft-beam is such that this position is maintained regardless of depth of penetration of the soil-cutting appliances.

Another object of my invention is to provide means for tilting the various soil-cutting appliances by tilting the frame on its axle-shaft so that desirable alinement of the appliances may be obtained and maintained, and other objects will appear from the detailed description.

In the drawings forming part of this specification, Figure 1 is a side elevation of an embodiment of my invention, showing the different soil-cutting appliances with their points in a horizontal line and in an intermediate position. Fig. 2 is a plan of the planter-frame. Fig. 3 is a side elevation of the planter, showing the soil-cutting appliances raised. Fig. 4 is a plan of a part of the planter-frame, illustrating the operation of throwing the seed-dropping mechanism out of operation as the soil-cutting appliances are raised to their highest positions. Fig. 5 is a side elevation of the planter, showing the soil-cutting appliances lowered to approximately their greatest depth of soil penetration. Fig. 6 is also a side elevation of the planter, showing by comparison with Fig. 1 how the soil-cutting appliances may be tilted on the axle-shaft to give the desired pitch or alinement to the different appliances.

A pair of wheels 1 are mounted on the axle-shaft 2, one being attached to the shaft so as to give motion thereto. A frame composed of bars 3 and 6 is sustained from the axle-shaft through bearings 49, having the upward-extending brackets 50 and 51. The frame-bars 3 and 6 are connected together at their front ends. The bar 3 is bent across the planter at its rear end and is attached to brackets 51, and the rear ends of bars 6 diverge from bar 3 to connect with brackets 50. Rails 7 are pivotally connected at 8 between bars 3 and 6, and they are suitably connect-



ed together at their rear ends. Standards 12 are secured to rails 7 near the rear ends thereof, and they are provided at their lower ends with the covering-shovels 13. A cross-shaft 5 9 is journaled in bearings attached to the planter-frame in front of the axle-shaft. A lock-lever 10 is attached to an end of cross-shaft 9, and a rack 11 provides means for holding the lock-lever in various positions. 10 A lever-frame 18 is formed on the cross-shaft, and it extends forward therefrom. The lever-frame has pins 19, which project laterally from its side extensions, and it has the central extension 20, which is farther from 15 the shaft than are the pins 19. The side extensions of the lever-frame constitute a lift-lever of a certain length, and the central extension constitutes a slightly-longer lift-lever.

A bracket 48 is secured to the tongue in 20 front of the rear end thereof. A clevis 15<sup>a</sup> is pivotally connected at 15 with the bracket 48, and a draft-beam 14 is secured at its front end to the clevis. Brackets 16 are secured to the rear end of the draft-beam. They diverge rearwardly and then extend parallel, 25 and they are grooved in their rear ends, as shown at 16<sup>a</sup>. The grooves are shown as slots for convenience in delineation, and they are adapted to receive the pins 19 of the lever-frame 18. A rack-frame 31 is attached 30 to the upper surface of the rear end of the tongue. A lock-lever 32 is fulcrumed on the rack-frame and provided with a bent extension 33, and a bar 21 forms a stiff link between the bent extension of lever 32 and the 35 central extension 20 of the lever-frame 18.

Lift - arms 22 project forward from the cross-shaft 9 outside frame-bar 3, and they extend beneath the rails 7 of the covering-shovels. The lift-arms provide means for 40 raising the covering - shovels simultaneous with the raising of the furrow-forming appliances.

A seedbox 34 is connected with the planter-frame and is provided with proper seed-dropping mechanism. The actuating-wheel 23 for the seed-dropping mechanism is mounted 45 loosely on the axle-shaft and is provided with ratchet-teeth 24 on its inner face. A flange 50 25 has ratchet-teeth to correspond with the ratchet-teeth 24, and it is formed on the end of a sleeve which is splined onto the axle-shaft. A collar 26 is fixed on the axle-shaft adjacent to an end of the slidable sleeve, and 55 a spring 27 encircles the sleeve between collar 26 and flange 25. A lever 28 has both ends forked, one end to embrace shaft 9 and the other to engage the surface of flange 25, opposed to the gear-wheel 23. A lateral cam 60 extension 30 is formed on lever 28, and a shift-flange 29 is formed on shaft 9 in position to strike the cam 30 and push it aside when the planting appliances are raised to their highest position. The forward end of 65 the lever 28 acts as a fulcrum, it being held

between ledges on shaft 9. The rear end of the lever bears against the shiftable member of the clutch for the seed-dropping mechanism, and force applied laterally to the lever through flange 29 and cam 30 disconnects the 70 clutch against the tension of spring 27.

A furrow-former 35 is attached to the lower end of the standard 17. The upper end of the standard is made in two parallel parts 75 which straddle the tongue 4. The standard is firmly secured to the draft-beam 14, and a brace 17<sup>a</sup> adds to the rigidity of the connection. A bracket 36 is pivotally connected with the standard at 37 and is adjustably secured at 38. The bracket is slotted vertically, as shown by dotted lines at 39, in order 80 to provide a connection for the standard of a subsoiler, and it has the rearward-extending curved beam 40, to which the seed-shank 41 and the soil-preparing shovel 42 are attached. 85

A casting 46 is secured to the curved rear extension of frame-bar 3, and the supporting-bar 45 for seat 47 is secured to the casting 46. In this instance the furrow-former 35 is a 90 middle breaker or double - moldboard plow and the appliance 42 that prepares the soil in the furrow for the reception of the seed is a shovel; but a sweep may be substituted for the middle breaker and a subsoiler may take the place of the shovel 42 when desired. 95

The different soil-cutting appliances are to have the usual adjustment with relation to the frame, so that they may be set to meet different requirements, and this provision is too common and obvious to require special 100 explanation.

A tube 43 telescopes in shank 41, and its mouth 44 is pivotally attached beneath the discharge of the seedbox.

In operation the main furrow is formed by 105 the middle breaker 35 or a sweep. The supplemental furrow is formed by the shovel 42, or the seed-bed is prepared by a subsoiler, and the seed is covered by shovels 13. As the planter is drawn along the axle-shaft is rotated by motion derived from a supporting-wheel 1 and the seed-dropping mechanism in box 34 is rotated from the axle-shaft 110 through gear-wheel 23. The different soil-cutting appliances are set to penetrate the desired depth. The frame is tilted on the axle-shaft to get desired alinement, and the team-hitch is made with the draft-beam 14 through clevis 15<sup>a</sup>. The tongue stays the 115 front part of the frame against sidewise swing, and it carries the front end of the draft-beam up and down as it rises and falls. The rear end of the tongue is under the control of the central extension 20 of the lever-frame 18, and the rear end of the draft-beam is under 120 the control of the side extensions 16 of the lever-frame. The lever that controls the tongue is longer than the lever that controls the draft-beam. The levers swing in unison and to the same degree of circular motion 130



and so the rear end of the tongue is carried faster and farther with any movement of the lever-frame than is the rear end of the draft-beam. The variance in the motion of the draft-beam with relation to the tongue is sufficient to neutralize the swing of the tongue and hold the standard in a vertical position. (See Figs. 1, 3, and 5 of the drawings.)

When the soil-cutting appliances get out of proper alinement through raising or lowering the front end of the tongue or through any other disarrangement of proper conditions, the lever 32 may be swung backward or forward and the planter-frame may be tilted on the axle-shaft until the proper alinement is restored. In Fig. 6 the frame is shown tilted out of proper alinement; but the result of the tilt and the means for effecting the same are shown, and it is obviously but a matter of intelligent manipulation of the lock-lever 32 to get the desired alinement. The adjustment of the frame through lock-lever 32 may be made by the driver while on his seat and while the planter is moving, and when the proper alinement is obtained it will be maintained throughout the various raised or depressed positions of the soil-cutting appliances, as hereinbefore explained.

I claim—

1. In a planter the combination with the frame and carrying-wheels, of a tongue, a draft-beam pivotally connected with the tongue at its forward end, a furrow-former secured to the rear end of the draft-beam, means for raising and lowering the rear end of the tongue at a certain speed and to a certain extent, and means for simultaneously raising and lowering the rear end of the draft-beam at a slower speed and to a less extent.
2. In a planter, the combination with the frame and carrying-wheels, of a tongue, a draft-beam pivotally connected to the tongue at its forward end, a standard stiffly secured to the draft-beam, a furrow-former on the standard, a lever to raise and lower the rear end of the tongue to a certain extent, and a shorter lever for simultaneously raising and lowering the rear end of the draft-beam to a less extent.
3. In a planter the combination with the frame and carrying-wheels, of a tongue, a draft-beam pivotally connected at its front end to the under side of the tongue, a standard stiffly attached to the draft-beam, a team-hitch at the forward end of the draft-beam, a furrow-former secured on the standard, a lever to move the rear end of the tongue to a certain extent and a shorter lever for simultaneously moving the rear end of the draft-beam to a less extent.

4. In a planter, the combination with the frame and the carrying-wheels, of a tongue, a draft-beam pivotally connected at its front end to the under side of the tongue in front of the rear end thereof, a standard stiffly at-

tached to the draft-beam, a furrow-former secured to the draft-beam, a team-hitch at the front end of the draft-beam and a lever having a longer extension connected with the rear end of the tongue and a shorter extension connected with the rear end of the draft-beam.

5. In a planter, the combination of an axle-shaft, carrying-wheels on the axle-shaft, a tongue, a draft-beam pivotally connected at its front end to the under side of the tongue in front of the rear end thereof, a frame carried on the axle-shaft and pivotally connected with the draft-beam near the front end thereof, a cross-shaft journaled in the frame, a lock-lever for the cross-shaft, a shorter lever extension on the cross-shaft engaging the rear end of the draft-beam, a longer lever extension on the cross-shaft engaging the rear end of the tongue and a furrow-former attached to the draft-beam.

6. In a planter, the combination of an axle-shaft, carrying-wheels on the axle-shaft, a tongue, a draft-beam forked at its rear end and pivotally connected at its front end to the under side of the tongue in front of the rear end thereof, a frame carried on the axle-shaft and pivotally connected with the draft-beam near the front end thereof, a cross-shaft journaled in the frame, a lock-lever for the cross-shaft, a lever-frame on the cross-shaft having side extensions engaging the forked end of the draft-beam and a longer central extension connected with the rear end of the tongue, and a furrow-former attached to the draft-beam.

7. In a planter, the combination of an axle-shaft, carrying-wheels on the axle-shaft, a tongue, a draft-beam pivotally connected at its front end to the under side of the tongue in front of the rear end thereof, a frame carried on the axle-shaft and pivotally connected with the draft-beam near the front end thereof, diverging arms forming rearward extensions of the draft-beam, said arms having longitudinal grooves, a cross-shaft journaled in the frame, a lock-lever for the cross-shaft, a lever-frame on the cross-shaft having side extensions that engage the grooves of the arms of the draft-beam and a longer central extension, a stiff link pivotally connecting the central extension of the lever-frame with the rear end of the tongue and a furrow-former attached to the draft-beam.

8. In a planter, the combination with the frame, the axle-shaft and the carrying-wheels, of a draft-beam pivotally connected near its front end to the front end of the frame, a tongue pivotally connected to the front end of the draft-beam and extended rearward beyond such connection, a cross-shaft in the frame, a lever extension on the cross-shaft engaging the rear end of the draft-beam, a longer lever extension on the cross-shaft engaging the tongue, arms on the cross-shaft, and rails



for covering-shovels pivoted to the frame at their front ends and sustained intermediately on the arms of the cross-shaft.

9. In a planter the combination of an axle-shaft, carrying-wheels on the axle-shaft, a tongue, a draft-beam pivotally connected at its front end to the under side of the tongue in front of the rear end thereof, a frame carried on the axle-shaft and pivotally connected with the draft-beam near the front end thereof, a cross-shaft journaled in the frame, a lock-lever for the cross-shaft, a shorter lever extension on the cross-shaft engaging the rear end of the draft-beam, a longer lever extension on the cross-shaft, a lock-lever mounted on the rear end of the tongue, a stiff link pivotally connecting the lock-lever on the tongue with the longer lever extension of the cross-shaft, and a furrow-former secured to the draft-beam.

10. In a planter, the combination with the carrying-wheels, the axle-shaft, the frame, the tongue, the draft-beam pivotally connected with the tongue, the furrow-former secured to the draft-beam, the drop-actuating drive-wheel and the clutch connecting the drop-actuating wheel with the axle-shaft; of the cross-shaft, the lock-lever for the cross-shaft, the lever extension on the cross-shaft connecting with the draft-beam, the longer lever extension on the cross-shaft connecting with the

tongue, the clutch-shifting lever having a fulcrum on the cross-shaft, a cam extension on the clutch-shifting lever and a flange on the cross-shaft adapted to force the cam sidewise as the cross-shaft is rocked to raise the furrow-former.

11. In a planter, the combination with the carrying-wheels, the axle-shaft, the frame, the tongue, the draft-beam pivotally connected with the tongue and with the frame, the furrow-former secured to the draft-beam, the rails for the covering-shovels pivotally connected with the frame, the drop-actuating drive-wheel and the clutch connecting the dropping-wheel with the axle-shaft; of the cross-shaft, the lock-lever for the cross-shaft, the lever extension of the cross-shaft connecting with the draft-beam, the longer extension connecting with the tongue, the arms on the cross-shaft extending under the rails for the covering-shovels, the clutch-shifting lever having a fulcrum on the cross-shaft, a cam extension on the clutch-shifting lever and a flange on the cross-shaft adapted to engage the cam.

In testimony whereof I sign my name in the presence of two subscribing witnesses.

WILLIAM S. GRAHAM.

Witnesses:

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CURTIS L. HARBOLT.