(No Model.)

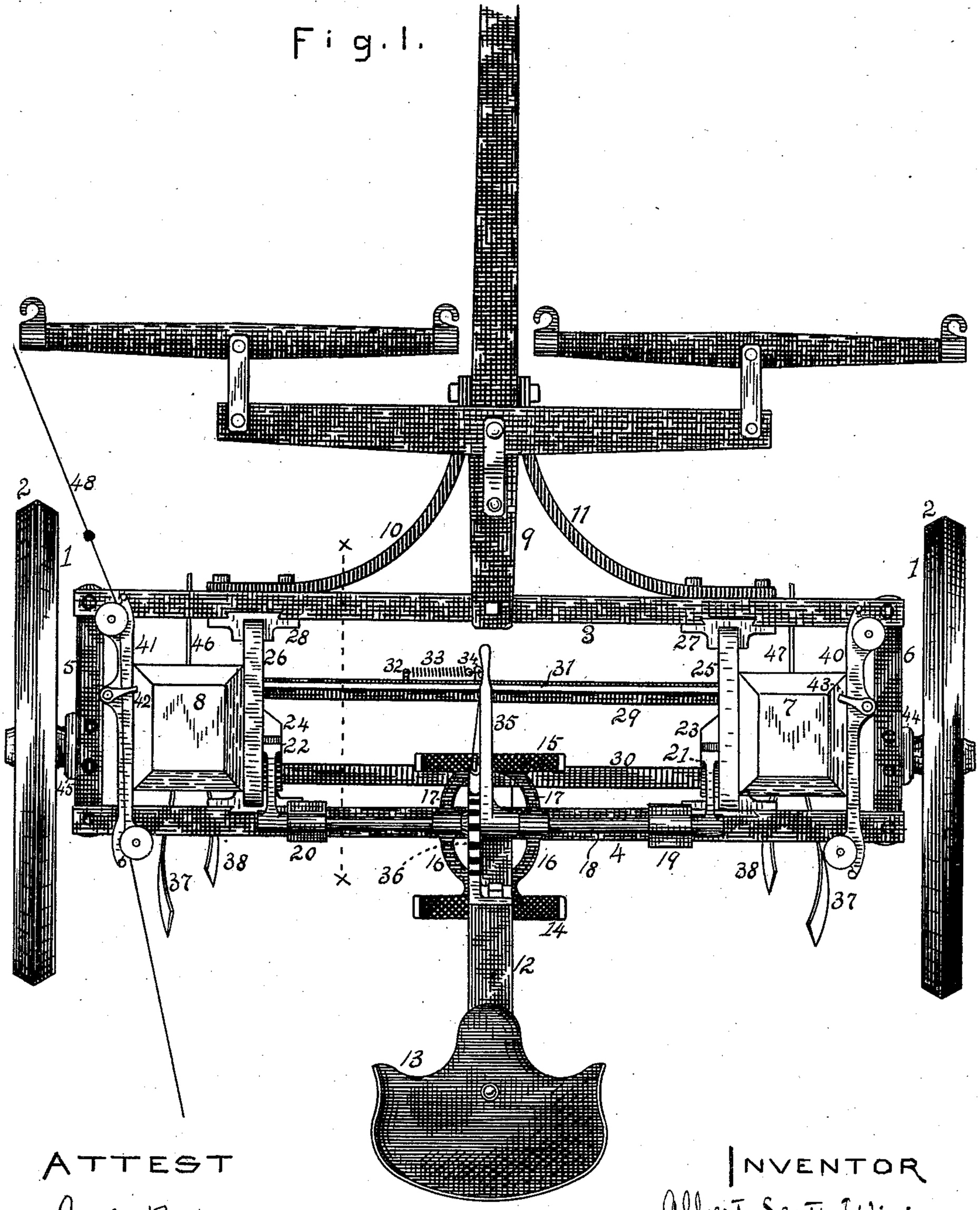
3 Sheets—Sheet 1.

A. S. WININGS.

CORN PLANTER.

No. 373,212. Patented Nov. 15, 1887.

Fig. 1.



ATTEST

J. N. Bills.

C. C. Clark

INVENTOR

Albert Scott Winings

By L. P. Graham

his attorney

(No Model.) 3 Sheets—Sheet 2.

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Fig. 2.

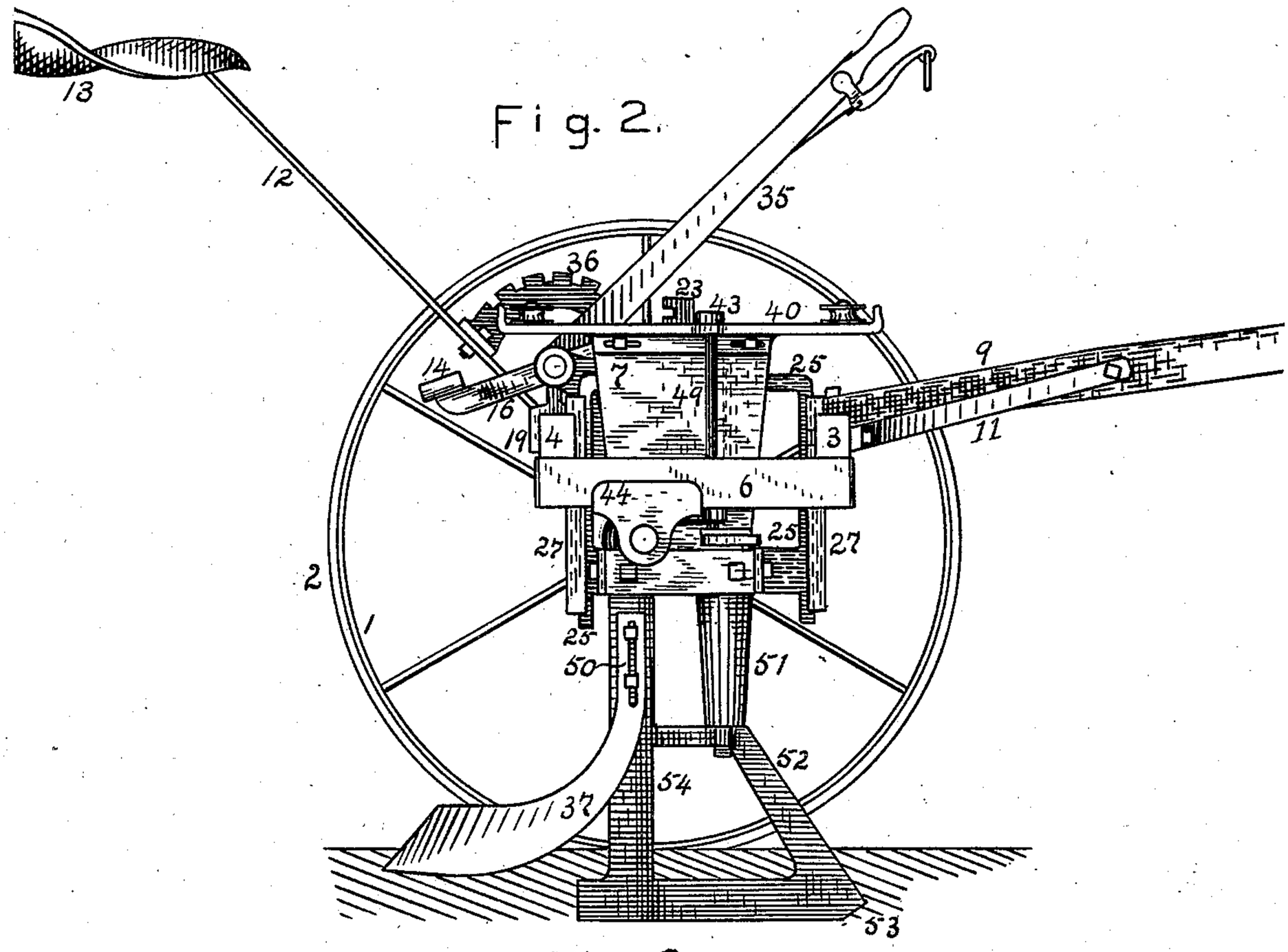
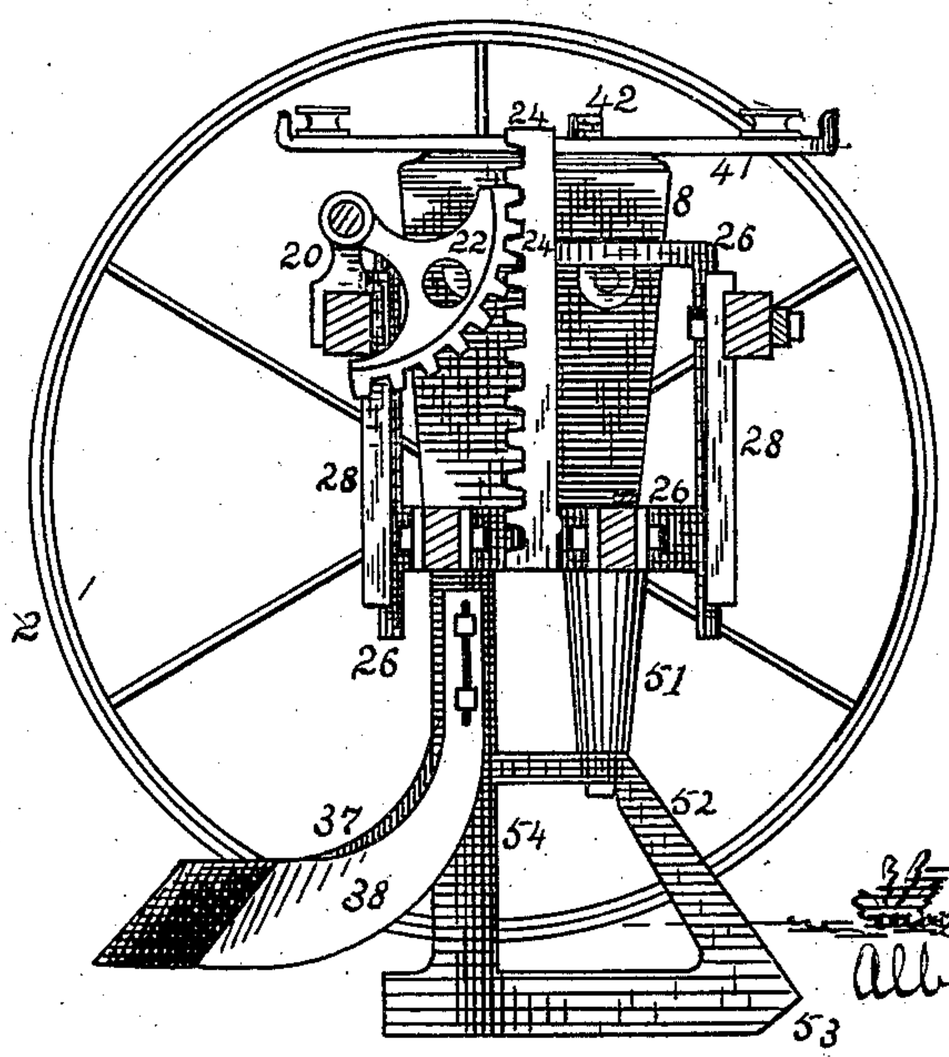


Fig. 3.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 4.

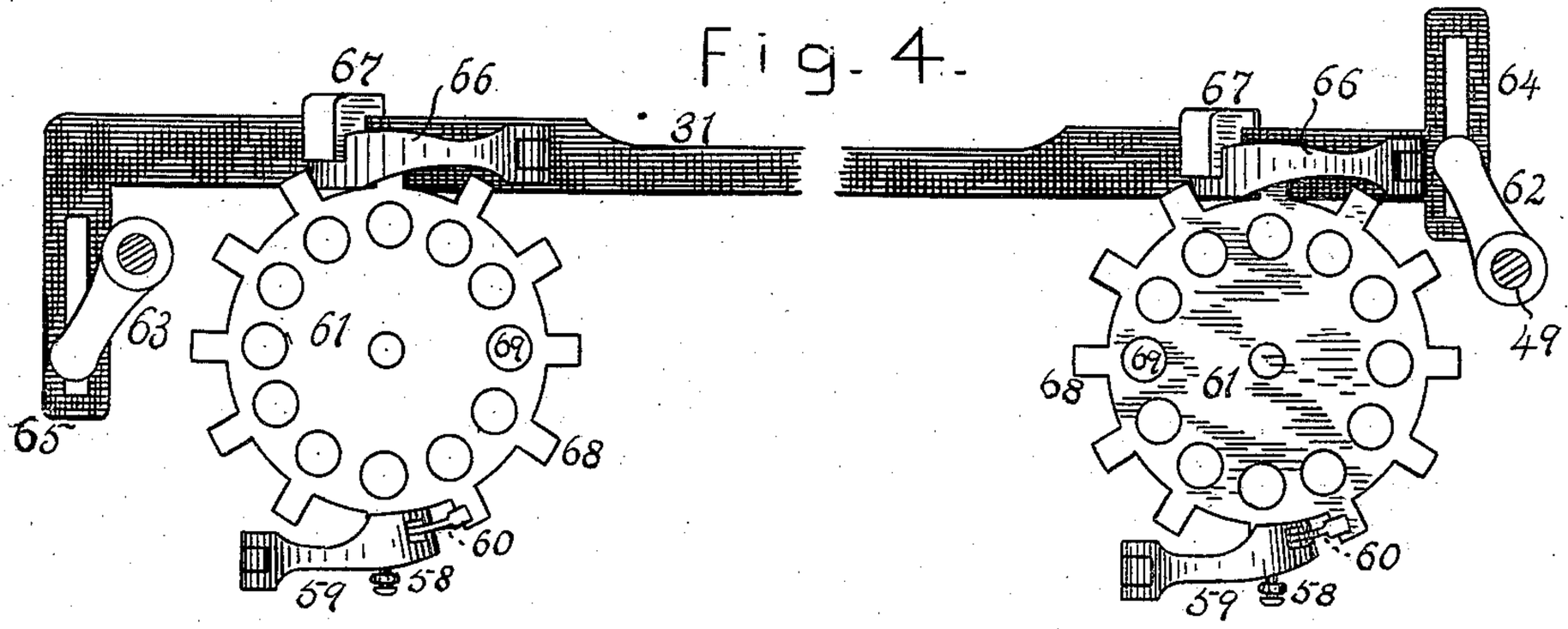


Fig. 5.

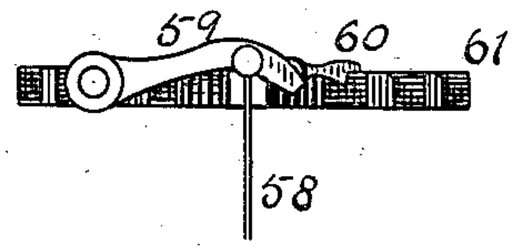
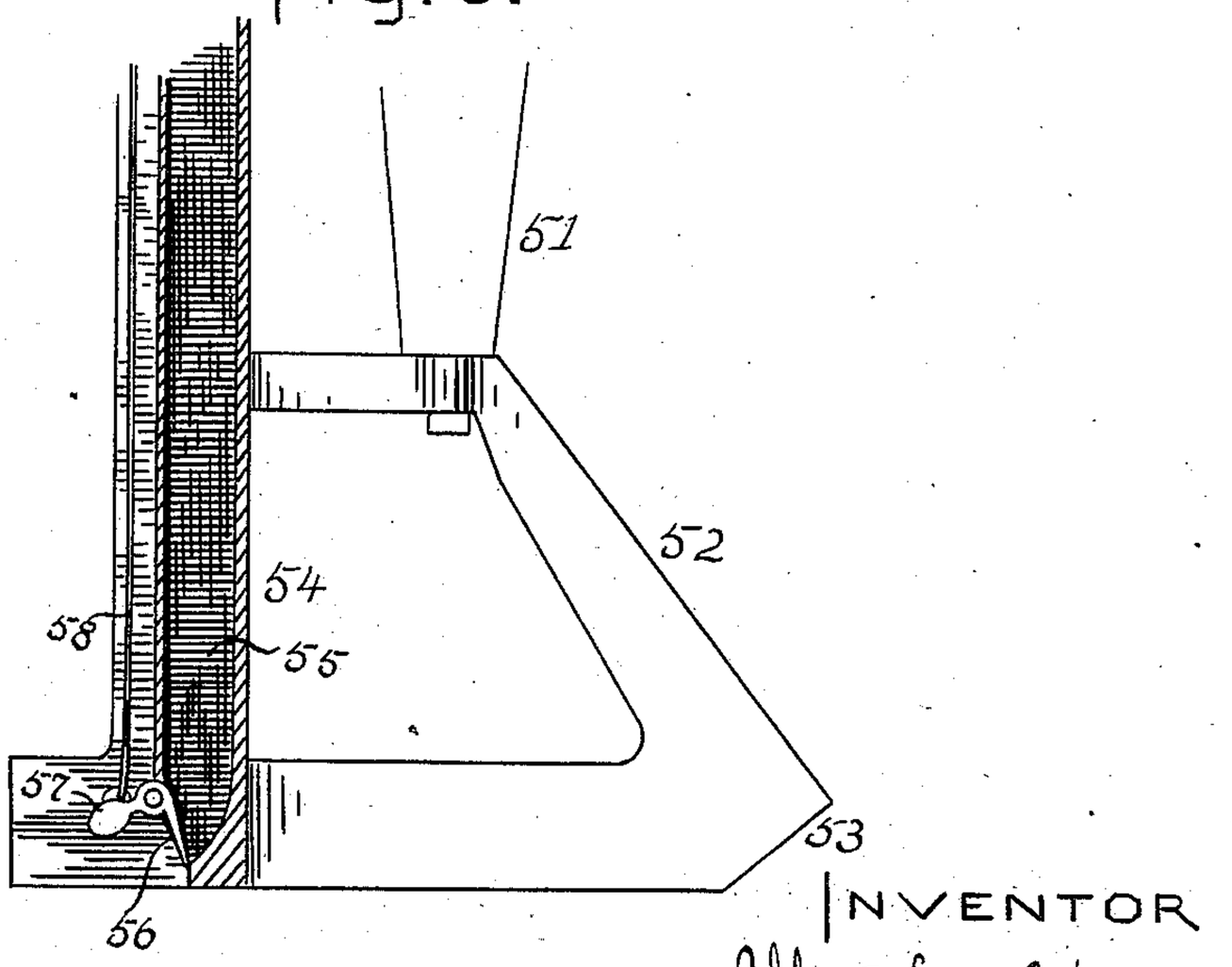


Fig. 6.



ATTEST
J. N. Bills
C. C. Clark.

INVENTOR
Albert Scott Winings
By L. P. Graham
His attorney

UNITED STATES PATENT OFFICE.

ALBERT SCOTT WININGS, OF LAKE CITY, ILLINOIS.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 373,212, dated November 15, 1887.

Application filed March 14, 1887. Serial No. 230,762. (No model.)

To all whom it may concern:

Be it known that I, ALBERT SCOTT WININGS, of the town of Lake City, county of Moultrie, and State of Illinois, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification.

My invention relates to check-row corn-planters; and it consists in certain details of construction and combinations of parts, as hereinafter set forth and claimed.

In the drawings accompanying and forming a part of this specification, Figure 1 is a plan of my machine. Fig. 2 is an end view of the same, with one wheel removed. Fig. 3 is a vertical section on dotted line *x* in Fig. 1. Fig. 4 is a plan of the mechanism used to impart the motion of the check-row levers to the dropping mechanism of the corn-planter. Fig. 5 is a rear view of a first drop-plate, showing the backlash-pawl and the lift-pawl that operates the second drop-valve. Fig. 6 is a side view of a furrow-opener and shank, the latter being vertically cut to expose the second drop-valve.

The main frame is composed of two parallel transverse bars, 3 and 4, and end pieces, 5 and 6. The tongue 9 is secured to the longitudinal center of bar 3, and is braced laterally by angle-bars 10 and 11. Brackets 44 and 45 on end bars, 5 and 6, respectively, carry spindles for wheels 1, and said wheels are provided with obtuse-angle peripheries 2, as shown in Fig. 1.

The seed-boxes 7 and 8 are mounted on an independent frame composed of bars 29 and 30. The guide-frames 40 and 41 for the check-row line 48 are secured to the outer edges of the seed-boxes in a manner permitting longitudinal adjustment, (see Fig. 2,) in which adjustable bolts and longitudinal slots are used to effect this result.

The check-row levers 42 and 43 are bifurcated in the customary manner to receive the check-row line, and are rigidly secured to vertical shafts, (see 49 in Fig. 2,) that have bearings in the guide-pulley frames, and connect with the dropping mechanism in a manner to be hereinafter set forth.

The main frame carries seat 13 on support 12. Brackets 19 and 20 on the rear transverse bar, 4, provide bearings for rock-shaft 18. A hand lock-lever, 35, is rigidly secured to shaft 18, and an arc-formed rack, 36, loosely mounted on the shaft and secured to the seat-support, co-operates with the catch of the hand-lever to hold the rock-shaft in various positions of rotative adjustment. Pedals 14 and 15, the one to the rear and the other to the front of the rock-shaft, connect rigidly with said shaft through arms 16 and 17, respectively.

Cogged sectors 21 and 22 are rigidly mounted on shaft 18, at the ends thereof, and intermesh the one with rack 23 and the other with rack 24. The racks are both vertical, and are secured to the sliding guide-frames 25 and 26. Guide-frame 25 is secured to bars 29 and 30 and to seed-box 7. Guide-frame 26 is secured to bars 29 and 30 and to seed-box 8. Guide-ways 27 form bearings for frame 25. Guide-ways 28 form bearings for frame 26.

Descending from each seed-box in the customary manner is a tubular shank, 54, that acts as a corn-conveyer, and in front of each shank is a furrow-opener, 52, extending upwardly and backwardly in general contour, and having the undercut bevel 53 at its lower front termination. Immediately above the front edge of each furrow-opener is a vertical roller, 51, tapering downwardly after the manner of an inverted-cone frustum, the said roller having free rotation on its vertical axis. Secured to the shanks at opposite sides thereof, in a manner permitting vertical adjustment, are covering-cutters 37 and 38, the one longer than the other, and both curving toward and over the furrow at their rear terminations. As seen at 50 in Fig. 2, vertical adjustment is provided for in the well-known expedient of a longitudinal slot and adjustable bolts, and other means for accomplishing the same result will be readily apparent to those skilled in the art.

At the lower termination of the vertical shaft of check-row lever 43 is crank-arm 62, (see Fig. 4,) extending forwardly, and having in the lower surface of its extended end a downwardly-projecting pin. The shaft of check-row lever 42 is provided at its lower termination with the rearwardly-projecting crank-arm 63, in the outer end of which is also a down-

wardly-projecting pin. A bar, 31, extends across the planter, tangential with the front of the seed-plates, and carries pawls 66, that swing vertically and engage the peripheral teeth with which the seed-plates are provided. Secured to the frame adjacent to the bar 31, and in line with the motion of the pawls, are stops 67. A slotted forwardly-extending arm, 64, integral with the bar 31 and at right angles thereto, provides a bearing for the pin of arm 62 and a means for imparting the oscillatory motion of the check-row lever 43 to the rectilinearly-reciprocating bar. The slotted arm 65 extends rearwardly from the bar 31, and connects through oscillatory arm 63 with the shaft of the check-row lever 42.

A spring, 33, (shown in Fig. 1,) connects with a spur, 32, on bar 31, and with a lug, 34, on the front bar of the box-supporting frame, and returns the said bar to its normal position after the completion of a throw of a check-row lever. At the rear of each seed-plate is a lift-pawl, 59, that rests on the teeth of the plate and connects, through rod 58, with the weighted end 57 of second drop-valve, 56, which automatically closes the seed-conveying tube 55.

The bar 31, as shown in Fig. 4, is at the termination of its operative stroke and the drive-pawls are pressed firmly down and against the peripheries of the seed-plates by stops 67. As the bar is returned by the action of the spring, the pawls are drawn free of the stops and each passes over and falls behind a tooth of a seed-plate preparatory to a subsequent stroke. While the seed-plates are in rest the lift-pawls are in their lowest positions, and the second drop-valves are, as a consequence, closed. The lift-pawls rise promptly at the first motion of the seed-plates and fall again before the motion has ceased, so permitting the escape of the corn from the second drop-valves and the reclosing of said valves before the upper plates are in position to discharge. This will be understood by reference to Figs. 4 and 5, where it will be seen that the lift-pawls have fallen before the completion of the rotation of the seed-plates.

Backlash-pawls 60 are provided in order to insure greater accuracy of operation, and as a matter of convenience they are pivoted to the free ends of the lift pawls.

The frame carrying the planting mechanism has free vertical motion in the main frame, and its relative position is adjusted and maintained by the rack-and-pinion mechanism operated through the rock-shaft by the pedals and hand-lever. The runners or furrow-openers may be held uniformly at any desired depth of penetration by the lock-lever and its coacting rack, or the locking mechanism may be thrown out of operation and the runners be constantly guided by the action of the feet on the pedals.

The wheels by running alongside the furrow-openers afford uniform and accurate guides therefor, and the accuracy of such guides is increased by the beveled conformation of the periphery of the wheels, which enables said wheels to cut through incidental obstructions and move more nearly in a right line.

The undercut bevels 53 avoid a possibility of the furrow-openers digging below the plowed ground or catching under obstructions in a detrimental manner.

The edges 52, by their upward and backward inclination, carry stalks, &c., in contact with the rollers 51, which are enlarged gradually toward their upper ends to prevent farther ascension, and which revolve readily in the direction of the greatest strain, effecting a detachment of débris that might otherwise accumulate and injuriously affect the operation of the machine.

The corn is covered by cutters that enter the ground vertically and curve toward and over the furrow at their rear terminations, drawing pulverized soil over the corn and pressing it with sufficient firmness to insure germination. To provide for the passage of trash, one cutter is extended to the rear of the other, and this arrangement is efficacious in providing for porosity of the covering-soil, which might become packed to an injurious extent if subjected to the simultaneous and opposing pressure of the two cutters. Owing to the individual conformation and relative arrangement of the covering cutters, the corn is covered with a slight ridge, which may be more or less pronounced by variations in the curve given to the rear ends of the cutters; but whatever the angle of curvature or whatever the degree of pressure, the ground immediately over the corn will not be packed by direct vertical pressure or glazed by frictional contact.

A tendency, noticeable in planters as commonly constructed, to vary the accuracy of checking by an adjustment of the furrow-openers with reference to depth of penetration, which tendency is caused by a tilting forward or backward of the check row levers with relation to the final drop of the planter, is avoided in my machine by the absolutely vertical motion of all the parts in adjusting the depth of the furrow-openers.

Variation in planting caused by using differently-paced teams is intended to be regulated by the simple expedient of adjusting the check-row levers backward or forward on the seed-boxes, the slots in the arms of the reciprocating bar 31 being long enough to permit a sufficient degree of adjustment.

The resistance of the check-row-line knots to the motion of the planter is reduced by the construction that requires the levers to be moved only enough to impart by direct application of force a partial rotation of the seed-plates equal to the distance between cells, the intermediate mechanism common to detachable check-rowers being dispensed with.

In general operation the machine does not vary essentially from other planters of the same class, the check-row line lying across the field adjacent to the path of the planter, the

check-row levers being operated by the knots on the line and returned by a spring, and each lever effecting a drop in both seed-boxes; but, owing to the compact arrangement of the parts, the draft is lighter and the machine more sensitive to the motions of the team, making accurate driving more easy of accomplishment.

I claim as new and desire to secure by Letters Patent—

1. In corn-planters, in combination, the frame comprising the front bar connected with the tongue, the rear bar supporting the seat, and the end pieces carrying spindles for the supporting-wheels, planting mechanism between the wheels in the space inclosed by the frame, vertical guideways in the front bar and rear bar, respectively, guides on the planting mechanism adapted to slide in the guideways, and means for adjusting and holding the planting mechanism at various altitudes with relation to the frame, as and for the purpose set forth.

2. In corn-planters, in combination, the frame comprising the front bar connected with the tongue, the rear bar supporting the seat, and the end pieces carrying spindles for the supporting-wheels, planting mechanism between the wheels in the space inclosed by the frame, vertical guideways in the front bar and rear bar, respectively, guides on the planting mechanism adapted to slide in the guideways, vertical racks on the planting mechanism, and a rock-shaft on the rear bar of the frame, having pinions in mesh with the racks, and also having a lever accessible from the seat, as and for the purpose set forth.

3. In corn-planters, in combination, the frame comprising the front bar connected with the tongue, the rear bar supporting the seat, and the end pieces carrying spindles for the supporting-wheels, planting mechanism between the wheels in the space inclosed by the frame, vertical guideways in the front bar and rear bar, respectively, guides on the planting mechanism adapted to slide in the guideways, vertical racks on the planting mechanism, a rock-shaft on the rear bar having pinions in mesh with the racks, pedals for the rock-shaft, on opposite sides thereof, and a hand lock-lever on the rock-shaft, accessible from the seat, as and for the purpose set forth.

4. In corn-planters, in combination, the outer frame comprising the front bar connected with the tongue, the rear bar supporting the seat, and the end pieces carrying spindles for the supporting-wheels, the inner frame carrying the seed-boxes, the furrow-openers, and the dropping mechanism, the vertical guideways on the front bar and rear bar, respectively, of the outer frame, the guides on the inner frame adapted to slide in the guideways, and means for holding the inner frame at various altitudes with relation to the outer frame.

5. In corn-planters, in combination, the outer frame comprising the front bar connected with the tongue, the rear bar supporting the seat, and the end pieces carrying spindles for the supporting-wheels, the inner frame carrying the seed-boxes, the furrow-openers, the dropping mechanism, and the covering-runners, the vertical guideways on the front bar and rear bar, respectively, of the outer frame, the guides on the inner frame adapted to slide in the guideways, and means for holding the inner frame at various altitudes with relation to the outer frame.

6. In corn-planters, in combination, the outer frame comprising the front bar connected with the tongue, the rear bar supporting the seat, and the end pieces carrying spindles for the supporting-wheels, the inner frame carrying the seed-box, seed-plates, and furrow-openers, a bar adapted to reciprocate longitudinally in contact with the seed-plates, check-line levers on the boxes in direct connection with the reciprocating bar, vertical guideways on the front bar and rear bar, respectively, of the outer frame, guides on the inner frame adapted to slide in the guideways, and means for holding the inner frame at various altitudes with relation to the outer frame.

7. In corn-planters, in combination, the corn-depositing tube, the furrow-opener integral with the tube and having its front edge inclined upward and backward, and the vertical roller at the upper termination of the inclined edge of the furrow-opener.

8. In corn-planters, in combination, the corn-depositing tube, the furrow-opener integral with the tube and having its front edge inclined upward and backward, and the vertical roller at the upper termination of the inclined edge of the furrow-opener, tapered downward, as shown and described.

9. In corn-planters, in combination, the corn-depositing tube, the furrow-opener integral with the tube and having the undercut point and the upward and backward inclined front edge, and the vertical roller at the upper termination of the furrow-opener.

10. In corn-planters, in combination, the seed-plates having peripheral teeth, the transverse bar having pawls in position to engage the teeth of the seed-plates, slotted arms on the ends of the bar extended in opposite directions, and check-row levers engaging the slots of the arms, as and for the purpose set forth.

11. In corn-planters, in combination, the check-row levers over the boxes, the vertical shafts on which the check-row levers are mounted extended to the bottom of the boxes, the oscillatory arms on the lower ends of the shafts connecting with the slotted arms of the reciprocating bar, the seed-plates with peripheral teeth, and pawls on the bar in contact with the teeth, as and for the purpose set forth.

12. In combination with the peripheral teeth of the seed-plates, the vertically-swinging lift-pawls having beveled under surfaces in contact with the upper surfaces of the teeth, the normally-closed second drop-valves, and means for connecting the valves with the pawls.

13. In combination with the peripheral teeth of the seed-plates, the vertically-swinging lift-pawls having beveled under surfaces resting on the teeth, the second drop-valves, the weighted arms, and the rods connecting the lift-pawls with the weighted arms, as and for the purpose set forth.

14. A covering-cutter for corn-planters having its front surface of penetration vertical, and the upper portion of its rear end curved toward the horizontal, whereby the soil may be simultaneously drawn over and pressed onto the corn, as and for the purpose set forth.

15. Covering mechanism for corn-planters comprising a pair of cutters arranged one in advance of the other and having the rear portion of their upper edges curved toward the horizontal, as and for the purpose set forth.

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

ALBERT SCOTT WININGS.

Attest:
I. D. WALKER,
W. F. RANKIN.