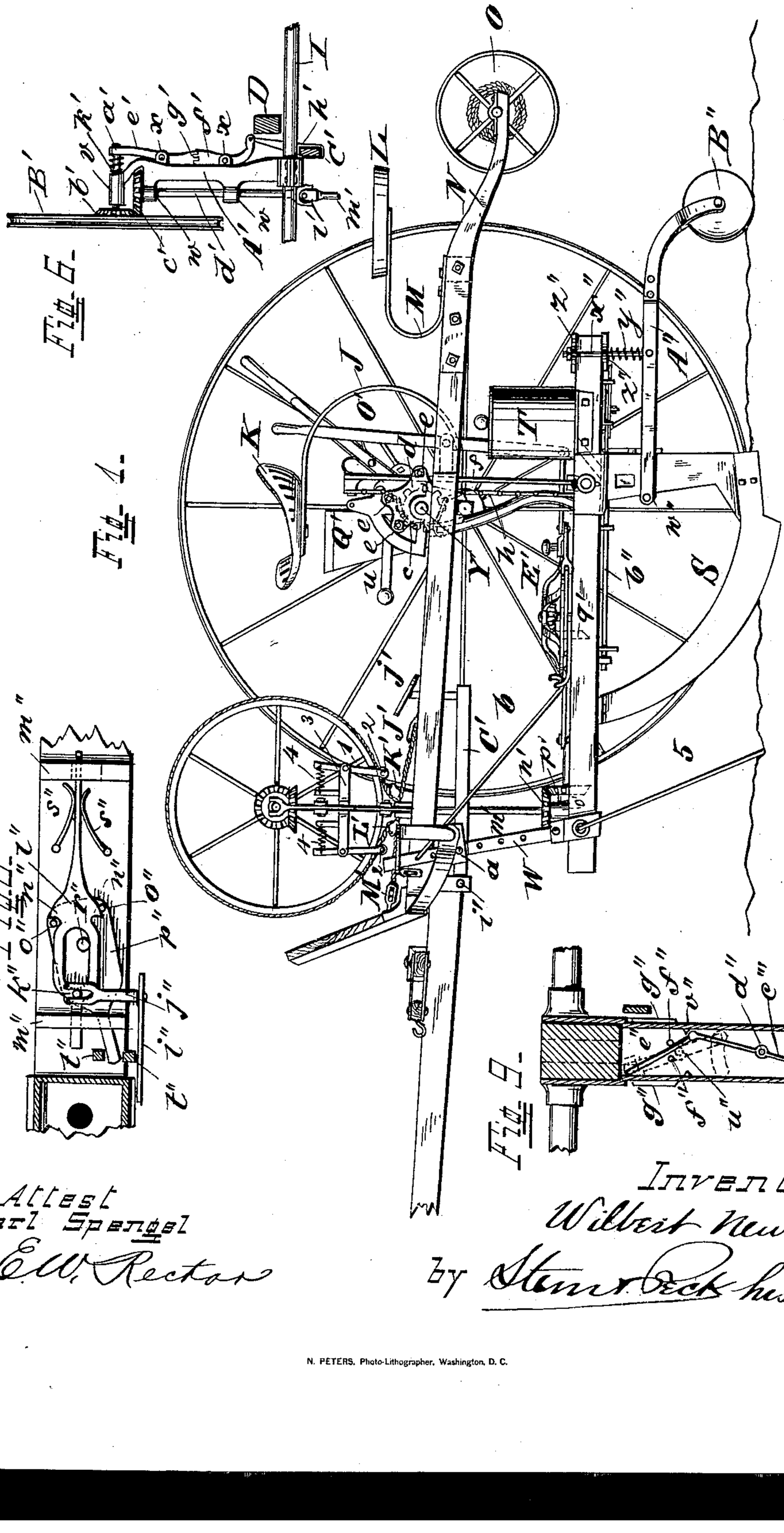
(No Model.)

3 Sheets—Sheet 1.

W. NEWHALL.

SULKY CORN PLANTER.

No. 353,959. Patented Dec. 7, 1886.



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(No Model.)

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SULKY CORN PLANTER.

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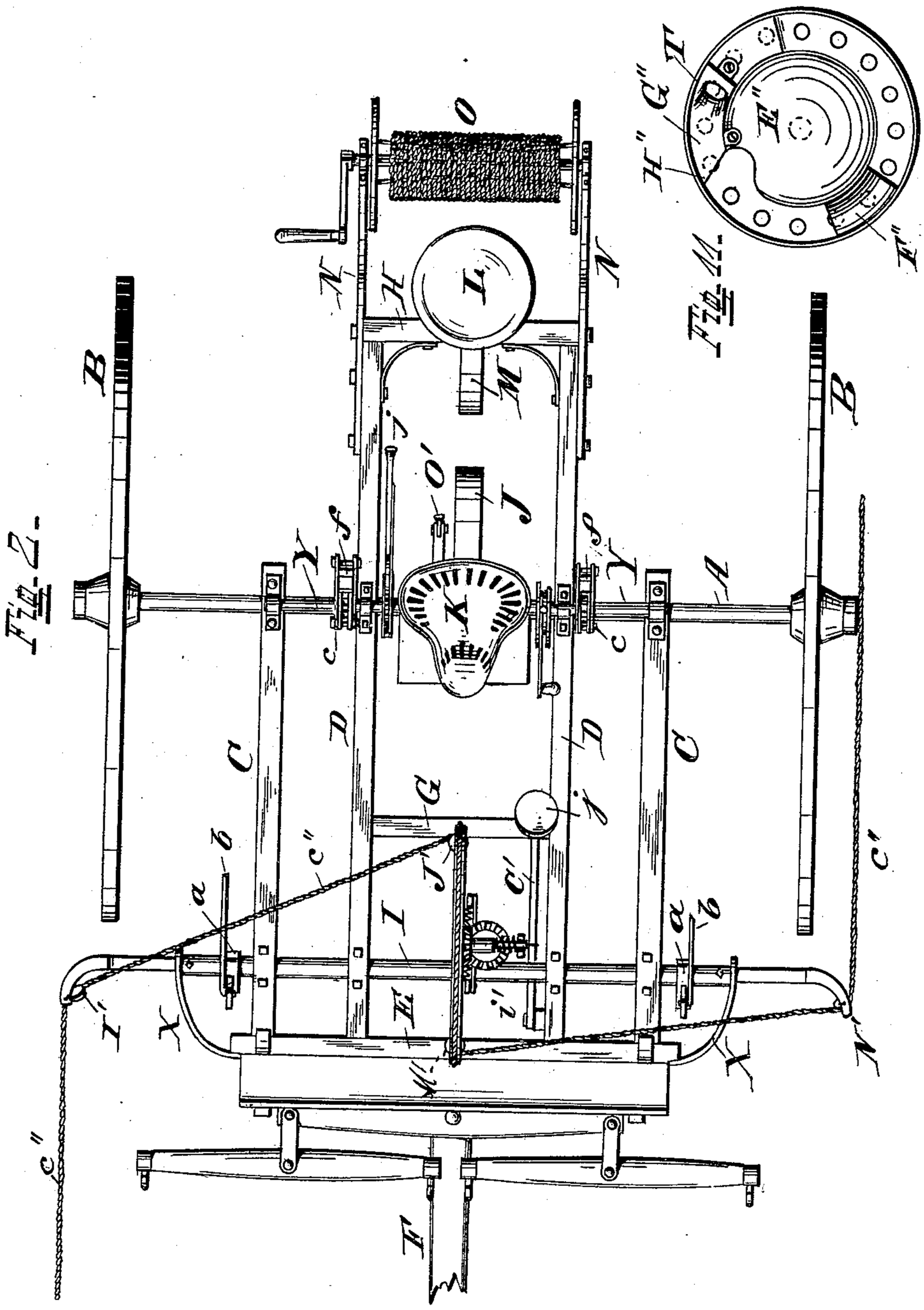

Fig. 2.

Fig. 11.

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Fig. 3.

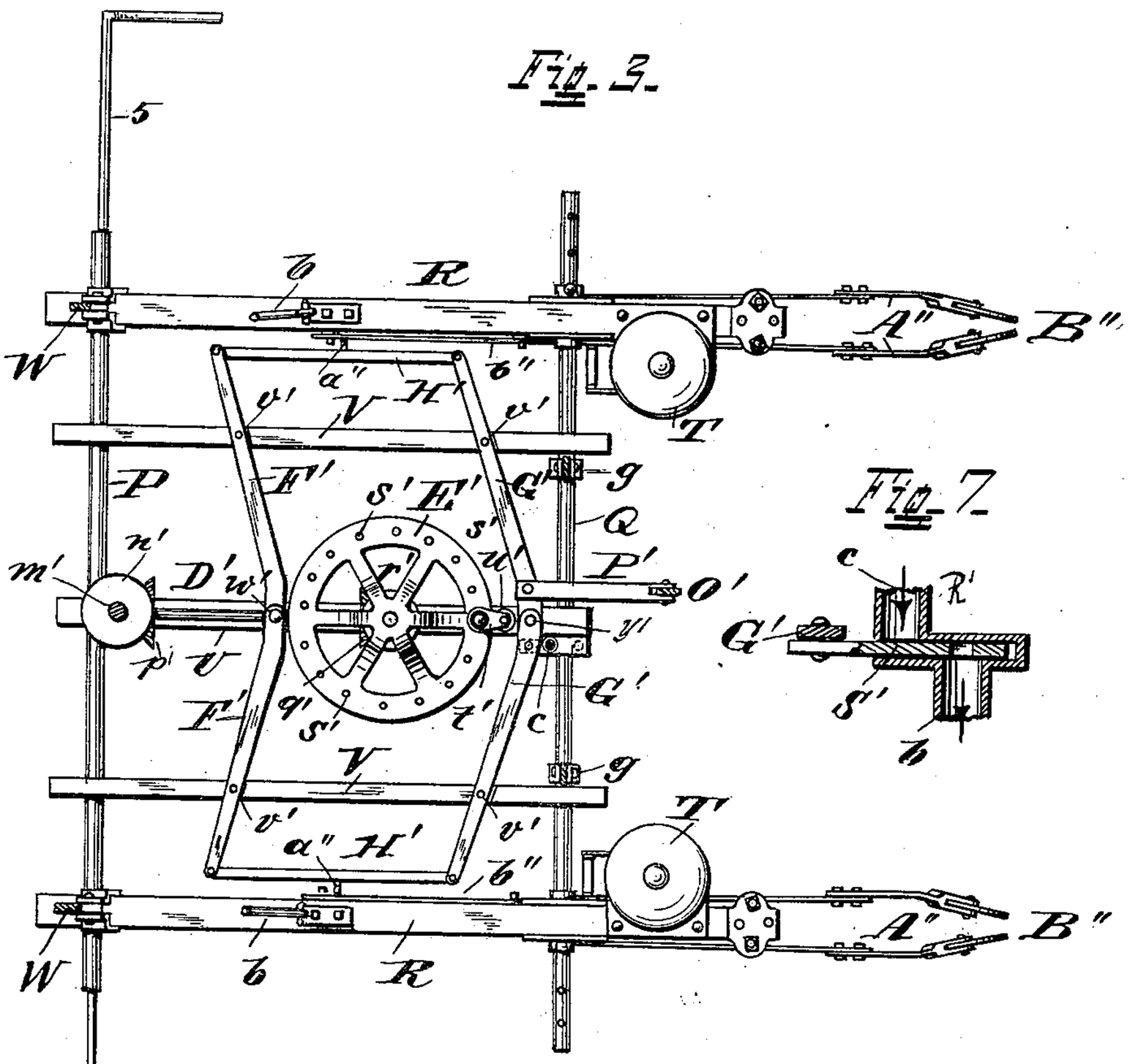


Fig. 7.

Fig. 4.

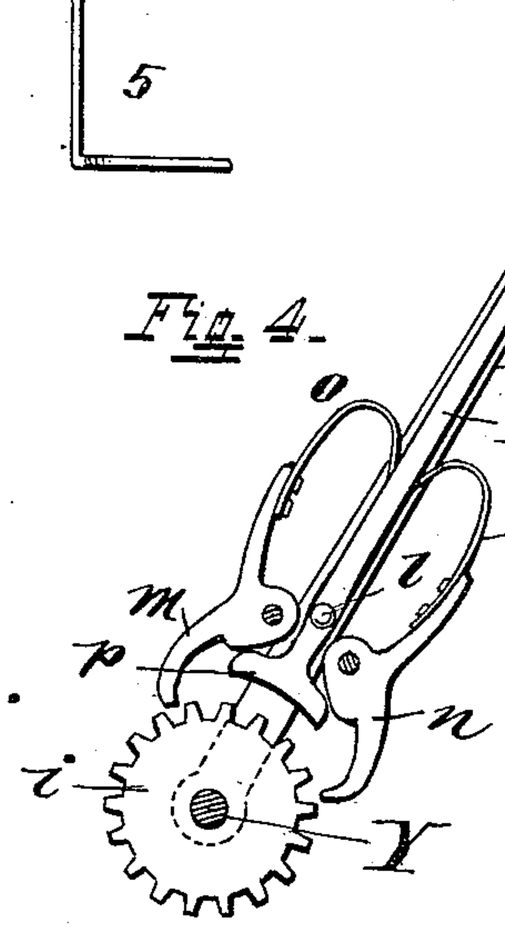


Fig. 5.

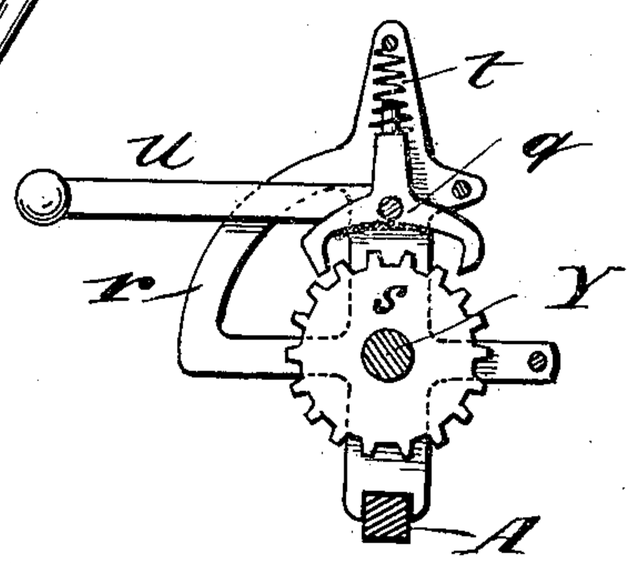
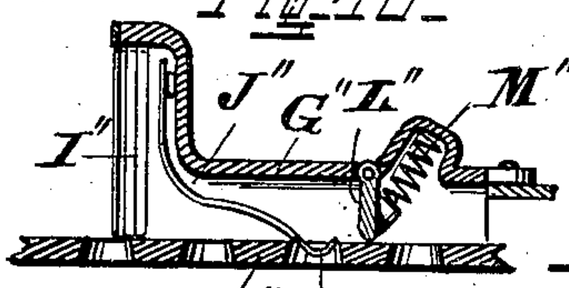


Fig. 10.



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UNITED STATES PATENT OFFICE.

WILBERT NEWHALL, OF COVINGTON, KENTUCKY.

SULKY CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 353,959, dated December 7, 1886.

Application filed October 12, 1885. Serial No. 179,597. (No model.)

To all whom it may concern:

Be it known that I, WILBERT NEWHALL, a citizen of the United States, residing at Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Sulky Corn-Planters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to that class of corn-planters known as "check-row" corn-planters, in which the dropping mechanism is operated by a rope or wire stretched across the field.

My object is to increase the efficiency of this class of machines, and at the same time render the same strong and reliable in their operation.

The novelty of my invention will be herein set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1, Sheet 1, is a side elevation of my improved machine with the near carrying-wheel removed. Fig. 2, Sheet 2, is a plan view of the same with the planting and runner frame-work and operating parts removed. Fig. 3, Sheet 3, is a plan view of the parts omitted in Fig. 2. Fig. 4, Sheet 3, is a detail side elevation, enlarged, of the levers for raising and lowering the runner-frame. Fig. 5, Sheet 3, is an enlarged detail side elevation of the mechanism for holding the runners locked. Fig. 6, Sheet 1, is a sectional detail, in end elevation, of the unshipping mechanism for the check-rower. Fig. 7, Sheet 3, is an enlarged sectional detail of the meal-valve and operating mechanism. Fig. 8, Sheet 1, is an enlarged sectional plan view of the valve-operating mechanism. Fig. 9, Sheet 1, is an enlarged sectional end elevation of the heel of the runner-frame. Fig. 10, Sheet 3, is an enlarged detail sectional elevation of the seed-plate and cut-off mechanism. Fig. 11, Sheet 2, is a sectional plan view of the seed-box.

The same letters of reference are used to indicate identical parts in all the figures.

The main frame of the machine is mounted upon an axle, A, supported upon carrying-wheels B, and consists of two outer beams, C, two inner rearwardly-extended beams, D, a front beam, E, pole or tongue F, and cross-beams G and H, as will be seen by reference to Fig. 2. These are all bolted or properly secured together, and the axle A is suitably journaled or connected thereto in a line extending transversely across the rear ends of the beams C, as shown. Just in the rear of the front beam, E, and secured to the frame-work, above described, is a transverse bar, I, whose extremities are curved and extend outside of the tread of the wheels B.

Extending up from and secured to the axle A, at its middle, is a curved seat-support, J, carrying the driver's seat K, and a second seat, L, for the dropper is secured upon a support, M, attached to the beam H, as shown. Two rearwardly-extending arms, N, secured to the beams D, have journaled at their rear ends the reel O, upon which is wound the check-rower cord or wire, and from which the same is paid off in making the first lay of the cord.

The runner-frame, as seen in Fig. 3, is composed of five longitudinal beams connected to and supported by a front transverse shaft, P, and a rear transverse shaft, Q. Of these beams there are two outer ones, R, to which the runners S and seed-boxes T are secured, a central one, U, and two intermediate ones, V. To secure this runner-frame, which lies directly under the main frame, to the main frame, I employ two upright forwardly-inclined perforated drag-bars, W, each of whose lower ends is respectively secured to the forward ends of the beams R, and whose upper ends are pivoted to brackets *a*, secured to the shaft I.

X X are curved braces extending from the front beam, E, and embracing the shaft I just outside of the brackets *a*, and *b b* are brace-rods extending from the beams R to the drag-bars W, as shown. It will thus be seen that the runner-frame can be raised and lowered, and will swing from the brackets *a* as a pivotal point or axis.

The mechanism for raising or lowering the runner-frame and for forcing the runners into the ground to the desired depth, and for locking them when adjusted, may be thus described.

Journaled across the beams C D, just over the axle A, is a shaft, Y, having keyed to it, on the outer side of each of the beams D, a sprocket-wheel, *c*, confined between upright plates *d*, secured together by bolts *e*, and attached to the beams D. In rear of these

sprocket-wheels, and confined between the plates *d*, are upright bars *f*, one for each spocket-wheel, having their lower ends hinged or secured, as at *g*, Fig. 3, to the transverse shaft Q of the runner-frame. A drive-chain, *h*, secured to the upper end of each of the bars *f* is by the bolts *e* made to pass around the front of and to engage with the sprocket-wheels *c*, and then passing down is secured either to the lower end of the bars *f* or to the shaft Q. It will thus be seen that by rotating the shaft Y the runner-frame will be raised or lowered through the medium of the sprocket-wheels, the drive-chains, and the bars *f*. The mechanism for rotating the shaft Y consists of a pinion, *i*, Fig. 4, keyed to the shaft Y to the right of the driver's seat, a hand-lever, *j*, mounted loosely upon the shaft Y by the side of the pinion *i*, and a second hand-lever, *k*, pivoted, as at *l*, to the lever *j*. Also pivoted to the lever *j*, on opposite sides, are two pawls or dogs, *m n*, having spring-extensions *o*, which bear against the lever *k*, as shown, and the lower end of this lever has a hammer-head extension, *p*, which bears against the under side of the dogs *m n* in such manner that when the lever *k* lies directly upon and is coincident with the lever *j* both dogs are held out of engagement with the pinion *i*. When the lever *k* is vibrated forward, the dog *m* is released, and its spring *o* forces it into engagement with the pinion *i* in such manner that by vibrating the lever *j* forward, the shaft Y is rotated and the runner-frame forced down. The reverse motions of both the levers enables the shaft Y to be rotated in the opposite direction, to raise the runner-frame, as will be readily understood.

To hold the shaft Y locked in any of its adjusted positions, I employ a double dog, *q*, Fig. 5, which is pivoted to a bracket, *r*, secured to the axle A just to the left of the driver's seat, and which engages with a pinion, *s*, keyed upon the shaft Y. This dog is held normally out of engagement by a spring, *t*, but is provided with a handle or arm, *u*, by means of which it can be vibrated to engage the pinion *s*, and whereby a lock will be formed, as will be readily understood.

The check-row mechanism may be thus described: Secured to the shaft I, at or near its middle, is an upright casting, A′, Fig. 6, having an upper horizontal journal, *v*, two vertical journals, *w*, and two perforated ears, *x*. Secured in the journal *v* is a short horizontal shaft, *a′*, carrying on one end a grooved wheel, B′, to whose hub is affixed a small beveled pinion, *b′*, with which meshes a pinion, *c′*, secured upon a vertical shaft, *d′*, journaled in the journals *w*. Pivoted to the ears *x* are two toggle-levers, *e′ f′*, whose abutting ends are formed into segment-racks, which mesh together, as at *g′*. The upper end of the lever *e′* is forked and pivoted to the shaft *a′*, and a spiral spring, *k′*, surrounding said shaft bears against the upper end of the lever *e′* and the end of the journal *v*, as shown. The lower end of the lever *f′* is curved, as shown, and is connected to a pedal, C′, by a wire or cord, *h′*. The pedal C′ is pivoted at *i′* to any convenient part of the frame-work, and its rear upturned end, *j′*, is in convenient reach of the driver's foot, so that by pressing down said pedal the toggle-levers *e′ f′* are actuated in such manner as to press the shaft *a′* through its journal, and to cause the disengagement of the pinions *b′ c′*. This is done whenever it is desired to temporarily stop the action of the check-rower mechanism. By the release of the pedal C′ the spring *k′* retracts the shaft *a′* and re-engages the pinions *b′* and *c′*.

As a continuation of the shaft *d′*, and secured thereto by a universal joint, *l′*, is a shaft, *m′*, whose lower end, provided with a self-accommodating beveled pinion, *n′*, is confined in a journal, *o′*, upon the central beam, U. In this same journal is one end of a shaft, D′, which lies longitudinally upon the top of the beam U, and is provided with a pinion, *p′*, meshing with the pinion *n′*. The rear end of shaft D′ is provided with a beveled pinion, *q′*, meshing with a horizontal pinion, *r′*, upon the under side of a dished wiper-wheel, E′, keyed to a short vertical shaft stepped upon the beam U. This wheel E′ has a flat rim perforated with equidistant holes *s′*, in one of which is removably secured a plate, *t′*, having pivoted to it a friction-roller, *u′*.

Pivoted upon the beams V at *v′* are four vibrating arms, in pairs F′ and G′, the inner ends of which pairs are pivoted together at *w′ y′*. The outer ends of both pairs are connected together by pivoted link-bars H′, thus constituting a vibrating frame surrounding the wheel E′. The arms H′ are connected by means of studs *a″* to the slide-bars *b″*, mounted in suitable guides under the beams R. These slide-bars are connected to and actuate the dropping mechanism in the seed-boxes T, which may be of the usual or any suitable construction, and are actuated once on every complete or half revolution of the wheel E′, by reason of the roller *u′* causing the bars F′ G′ to vibrate, as will be readily understood.

To cause the operation of the above-described check-rower mechanism, I employ a rope or wire, *c″*, preferably in detachable sections, which, stretched across the field in the usual way, passes from the front through a pulley, I′, on the shaft I, thence to a pulley, J′, on the beam G, thence to a pulley, K′, under the grooved wheel B, up around said wheel, under a pulley, L′, forward to a pulley, M′, across to a pulley, N′, on the opposite end of the shaft I, and back across the field, as shown in Figs. 1 and 2. The forward motion of the machine causes the revolution of the wheel B′, which drives the check-rower mechanism. Where the cord is dispensed with and the check-rower mechanism is not used, an ordinary hand-lever, O′, connected by a link, P′, to the vibrating frame, may be operated by the dropper from his seat L.

To clearly indicate the lines in which the

corn is dropped, I employ a centrally-arranged hopper, Q′, under the driver's seat, with a spout, R′, leading therefrom, and provided with any suitable valve, S′, connected to and operated by the vibrating frame of the check-rower mechanism, and I fill said hopper with any white powder—such as meal, bone-dust, or the like—which is deposited at the same time the corn is dropped, and lies upon the surface of the ground half-way between the rows, thus making a readily distinguishable mark that can be seen across the field, and by which the driver can see that his rows are kept straight in both directions.

To insure the proper dropping of the successive charges of corn, I employ a double valve in the chute of the runner-heels, as seen in Fig. 9. This valve is composed of a lower portion, c''', pivoted at d'', and has pivoted to its upper end an upper portion, e'', which lies between two studs or pins, f''. Openings g'', preferably covered by glass, on both sides of the upper part of the valve, and against which the corn is deposited and held, enable the dropper to see that the corn is being regularly dropped, and a lower rear opening, h'', serves the same purpose. To operate this compound valve, I employ the mechanism shown in Fig. 8, where i'' is a continuation of the bar b'', and carries a forked arm, j'', which engages with a pin, k'', upon a spear-shaped slide, l'', working in guides m'', upon the rear under side of the beams R. This slide is provided with lateral hooks n'', adapted to engage alternately with pins o'', upon an arm-plate, p'', pivoted as at r''. The rear end of the slide l'' is confined between springs s'', secured to the beam R, and the front end of the arm-plate p'' projects through a slot in the forward guide, m'', and engages with the fork of a lever, t'', which, pivoted to the casing of the chute, as at u'', Fig. 9, engages at its lower end, by means of a forked extremity passing through a slot in the casing, with the valve c'''. It results from this mechanism that at each stroke of the slide-bars b'' the slide l'' is operated, and on each forward stroke it vibrates the arm-plate p'', thereby throwing the valves c''' e'' first to one side and then to the other. The dropped corn is first caught at the bottom of the valve e'', where said valve comes in contact with the beveled ribs v'' upon the side walls of the chute, and is there held against the glass window until the next vibration of the valves, when it is freed, and is caught near the ground by the lower end of the valve c''', which also engages with ribs v''. The next vibration liberates the corn, which is dropped into the furrow. In starting the machine for the first time the hand-lever O′ can be operated to deposit the corn at the lower end of the valve c'''. By beveling the ribs v'' the corn is prevented from lodging within the chute, as will be readily understood.

To cover the corn after it is dropped, I preferably employ the beams A″, which are pivoted, as at w'', to the runner-heels, and have pivoted to their rear down-turned ends inclined disks B″, so set as to cover up the furrow in which the corn is dropped. Instead of these disks a roller having a concaved tire may be employed. To get the requisite pressure upon the beams A″, I employ vertical rods x'', which, passing through perforated plates z'', have their lower ends connected to the beams A″. Adjustable spiral springs y'', surrounding the rods x'', serve to give the pressure required to the beams A″, in the usual or any suitable manner.

To hold the check-row cord or wire securely upon the wheel B′, I employ the spring arms l, whose lower ends carry rollers 2, bearing upon the cord, as seen in Fig. 1. These arms are pivoted to a cross-piece, 3, secured to the casting A′, and their upper ends are spread apart by springs 4, secured in any suitable manner, as shown.

By reference to Figs. 10 and 11, the novelty in my improved feeding mechanism may be thus described: D″ is the usual perforated seed-dropping plate, rotated by the vibration of the slides b''. Upon this plate, within the seed-box T, is a central cap, E″, having secured to one side the arched bridge F″, and at the opposite side the cut-off shell G″, across the diagonal mouth H″ of which are three pendent flat springs, I″, Fig. 10, whose lower ends come down flush upon the plate D″. Just behind these springs is a second curved spring, J″, secured at its upper end to the shell, and having its lower end formed into a knuckle, K″, that enters successively the holes in the plate D″, to knock out the corn carried therein, and to insure its dropping into the chute of the heel. To the rear of the spring J″, and within the shell G″, is a yielding pivoted wall, L″, held normally in a vertical position by a rearward spiral spring, M″, held in a recess in the top of the shell G″, as shown.

It will be seen from this construction that the perforations in the plate D″ can only carry under the requisite number of grains of corn, and that these grains will be knocked out into the chute by the spring J″; or should a greater number pass, the excess would be carried through, past the yielding gate L″, and so on around without possibility of breaking the kernels or choking up the cut-off.

Projecting from the ends of the shaft P are detachable marker-arms 5, of the shape shown, which, passing over the ground, serve the usual purpose of markers.

Having thus fully described my invention, I claim—

1. The combination, with the shaft Y, for raising and lowering the runner-frame, of the pinions s, bracket r, double vibrating dog q, spring t, and lever u, substantially as and for the purpose specified.

2. The combination, with the wiper-wheel E′, revolved by the passage of the check-row cord through the machine and provided with an adjustable roller, w', of the vibrating frame composed of the pivoted bars F′ G′ and con-

necting-bars H′, the latter united to the slide-bars that actuate the seed-dropping mechanism.

3. The combination and arrangement of the grooved wheel B′, for receiving the check-row cord, the beveled pinion b', shaft a', pinion c', shaft d', beveled pinions n' p', shaft D′, pinions q' r', and wiper-wheel E′, substantially as described.

4. The check-row-unshipping mechanism, consisting of the pedal C′, cord h', toggle-levers e' f', shaft a', spring k', grooved wheel B′, and pinions b' c', substantially as described.

5. The combination, with the shaft P, of the adjustable and detachable markers 5, one arranged upon each end of said shaft, substantially as described.

6. The combination, with the corn-chute, of the ribs v'', the compound valve c''' e'', lever t'', arm-plate p'', slide l″, springs s'', arm j'', and extension i'', of the slide-bars b'', substantially as and for the purpose specified.

7. The combination, with the runners S, of the beams A″, pivoted thereto and carrying at their rear ends covering-disks B″, substantially as described.

8. As an improved cut-off, the combination, with the rotating perforated plate B″, of the shell G″, having an oblique mouth covered by pendent springs I″, an internal knocker-spring, J″, and a rearward yielding spring-wall, L″, substantially as and for the purpose specified.

WILBERT NEWHALL.

Witnesses:
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OTTO RICHTER.