4 Sheets--Sheet 1.

L. SCOFIELD.

Corn-Planter.

No. 162,106. Patented April 13, 1875.

Fig. 1.

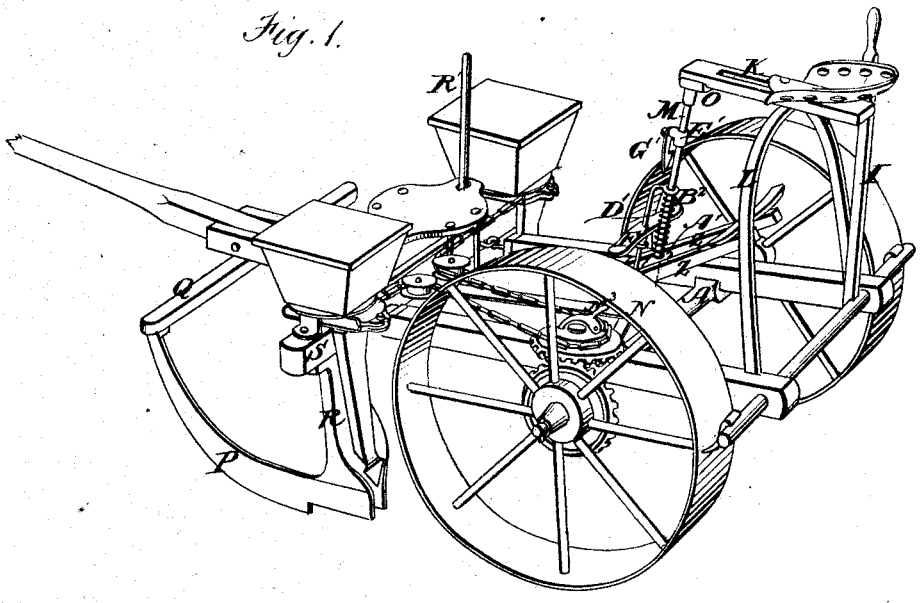
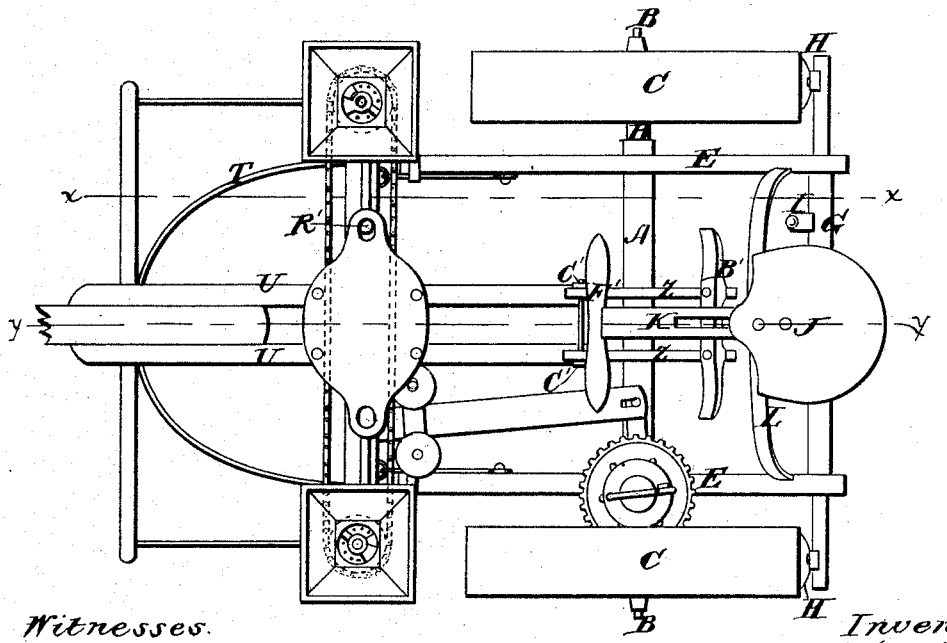


Fig. 2.



Witnesses.
C. F. Burns.
M. Church

Inventor.
I. Scofield.
by his Attys.
Hill & Talcott.

4 Sheets--Sheet 2.

L. SCOFIELD.

Corn-Planter.

No. 162,106. Patented April 13, 1875.

Fig. 3.

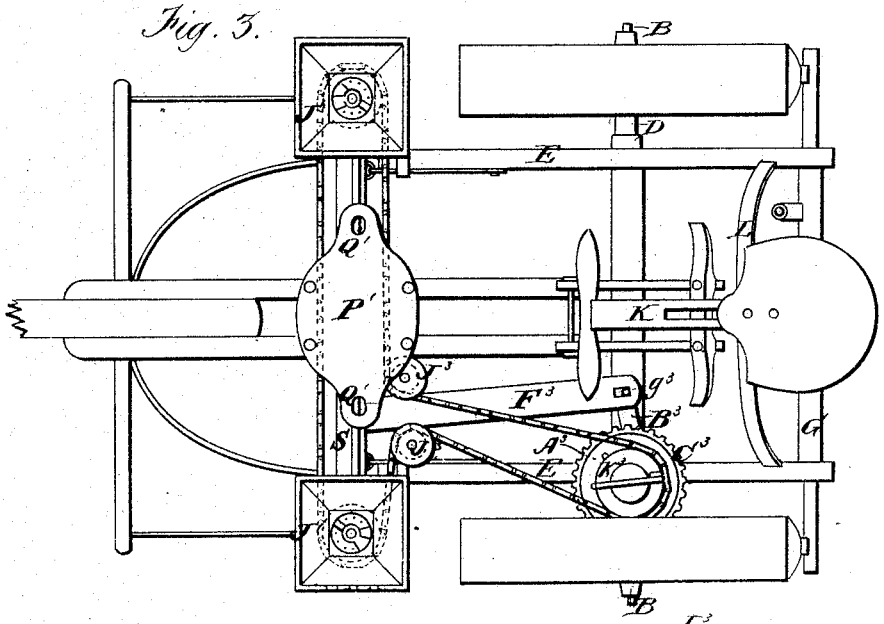
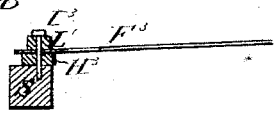


Fig. 4.



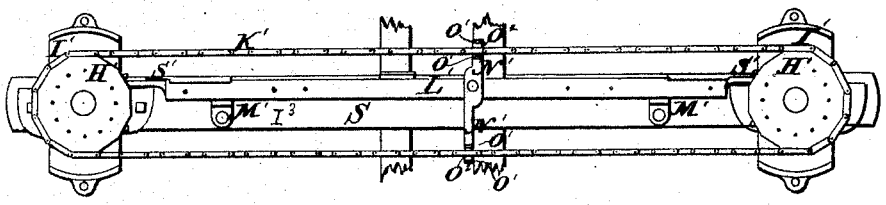


Fig. 5.

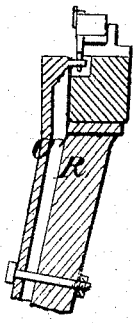
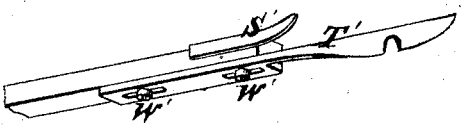


Fig. 6.



Witnesses.
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4 Sheets--Sheet 3.

L. SCOFIELD.

Corn-Planter.

No. 162,106. Patented April 13, 1875.

Fig. 7.

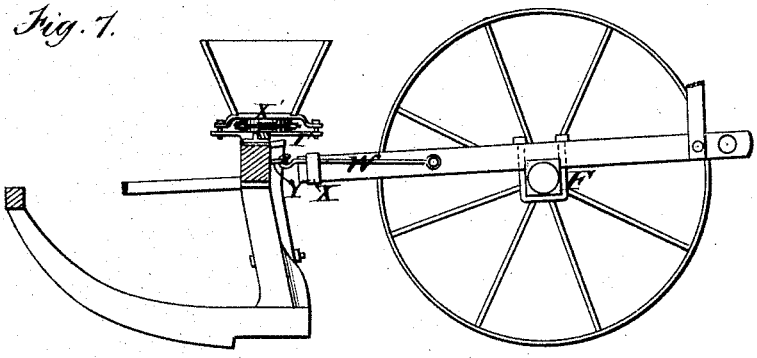


Fig. 8.

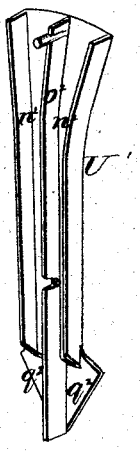


Fig. 9.

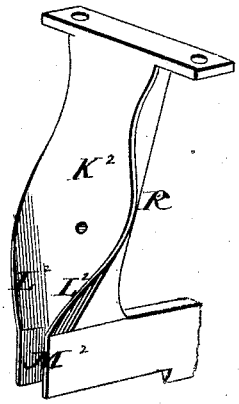


Fig. 10.

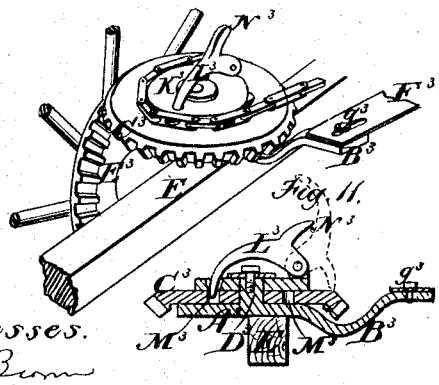
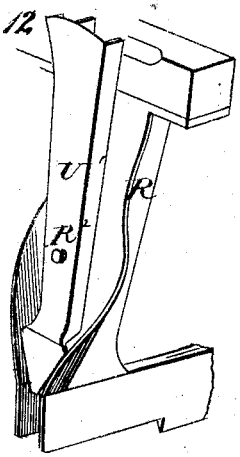


Fig. 11.

Fig. 12.



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4 Sheets--Sheet 4.

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Corn-Planter.

No. 162,106. Patented April 13, 1875.

Fig. 13.

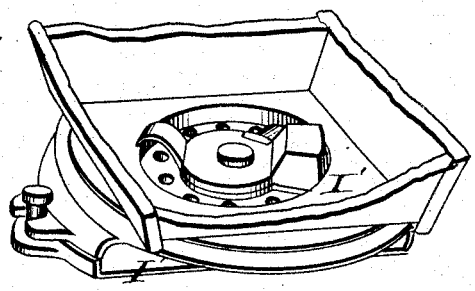


Fig. 14.

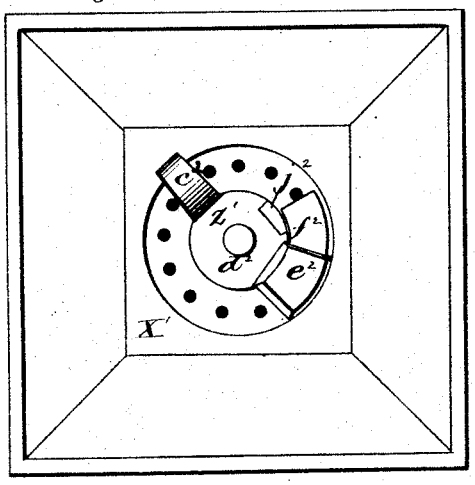


Fig. 15.

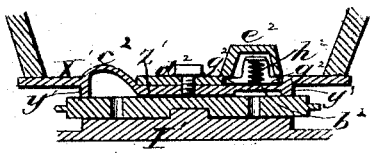


Fig. 16.

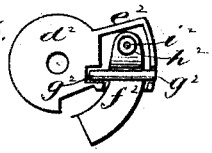
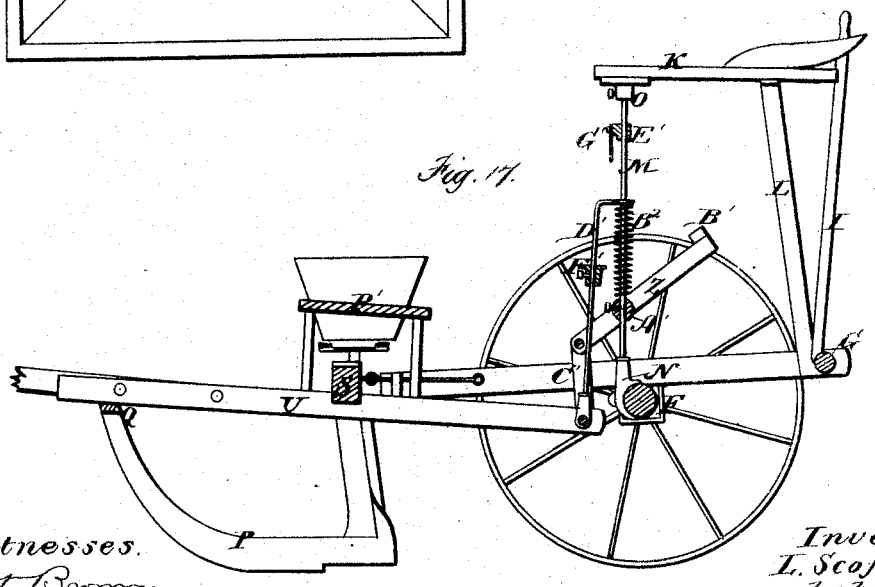


Fig. 17.



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C. T. Brown.
M. C. Church

Inventor
L. Scofield
by his Attys.
Hill & Ellsworth

UNITED STATES PATENT OFFICE.

LEVI SCOFIELD, OF GRAND HAVEN, MICHIGAN, ASSIGNOR OF ONE-HALF HIS RIGHT TO JUSTIN B. WAIT, OF SAME PLACE.

IMPROVEMENT IN CORN-PLANTERS.

Specification forming part of Letters Patent No. **162,106**, dated April 13, 1875; application filed October 17, 1874.

To all whom it may concern:

Be it known that I, LEVI SCOFIELD, of Grand Haven, in the county of Ottawa and State of Michigan, have invented certain Improvements in Corn-Planters; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1, Sheet 1, is a perspective view of a corn-planter with my improvements. Fig. 2, Sheet 1, is a top plan-view, showing the planter arranged for check-row planting. Fig. 3, Sheet 2, is a top-plan view, showing it arranged for continuous operation as a drill. Fig. 4, Sheet 2, is a top-plan view of the runner-beam, with the hoppers and attendant's seat removed to show the seed-plates and sliding bar. Fig. 5, Sheet 2, is a sectional view, showing the means for connecting the sliding bar to the seed-conductors. Fig. 6, Sheet 2, is a perspective view of the sliding bar, showing the adjustability of the brackets for operating the seed-conductors. Fig. 7, Sheet 3, is a longitudinal section of the planter, taken in the line *x x*, Fig. 2, and looking toward the right-hand supporting-wheel. Fig. 8, Sheet 3, is a perspective view of the seed-conductors detached from the seed-tube. Fig. 9, Sheet 3, is a perspective view of the detached seed-tube. Fig. 10, Sheet 3, is a perspective view of the devices for operating the driving-chain from one of the supporting-wheels. Fig. 11 is a sectional view of the same. Fig. 12, Sheet 3, is a perspective view of the seed tube and conductor combined. Fig. 13, Sheet 4, is a perspective view of the cut-off. Fig. 14, Sheet 4, is a top-plan view thereof. Fig. 15, Sheet 4, is a longitudinal section of the same, showing its interior construction. Fig. 16, Sheet 4, is a view of the cut-off inverted; and Fig. 17, Sheet 4, a longitudinal section taken in the line *x x*, Fig. 2.

Similar letters of reference in the accompanying drawings denote the same parts.

My invention has for its object to simplify and perfect the construction and operation of corn-planters; and as the various improvements relate to separate and distinct parts of the machine, I will, for convenience, arrange the description of them in the proper order, and under appropriate headings.

The first part of my invention relates to the frame of the planter; and consists, first, in a compound coupling-joint for the runners and main frame, by which the planter is adapted to conform to uneven ground, and deposit the seed at a uniform depth therein; secondly, in the method of regulating the depth at which the seed shall be planted; thirdly, in the arrangement of the reach and spring, by which the front of the machine is connected with the axle, and the runners adapted to bear upon the ground with a yielding pressure; fourthly, in equalizing the pressure of the spring, whether the runners are set for deep or shallow planting; fifthly, in a pivoted catch to engage automatically with the sliding reach when the runners are raised, for the purpose of holding them out of contact with the ground.

The second part of my invention relates to the seeding or dropping plates of the corn-planter; and it consists, first, in the means employed for their operation; secondly, in the combination of stops with the slide-bar and chain, by which the seed-plates are rotated, for the purpose of registering the seed-chambers with the discharge-apertures to the seed-tubes; thirdly, in the employment of catches or brackets for operating the pivoted seed-conductors from the chain and slide-bar of the seed-plates; fourthly, in adapting the catches for adjustment to compensate for differences in the castings, so that the several parts can be fitted together without difficulty; and, fifthly, in the construction of the cut-off and its connections.

The third part of my invention relates to the devices for discharging the seed into the ground; and consists, first, in the construction of the seed-tube, which forms the shank of the runners or colters; secondly, in the construction of the seed-conductor, pivoted within the open back of the seed-tube; and, thirdly, in the combination of the tube and conductor to form an open drop, for the purpose of holding the seed in view of the attendant just prior to its discharge into the ground, and thereby insuring a knowledge of the quantity planted in each hill or discharged from the tube.

I will now proceed to describe the first part of my invention with special reference to the accompanying drawings, in which—

A is the axle of the machine, composed of wood, and provided with wrought-iron skeins B, driven into their ends, to receive the supporting-wheels C. The ends of the wooden axle are strengthened by the metal bands D, and the squared portions next the ends are mortised to receive the two side bars E E, which are held therein by the staples or loops F. G is a rod passing through the rear ends of the side pieces to complete the main frame of the machine, and form a support at its ends for the wheel-scrapers H. It is constructed with shoulders between the side pieces, to prevent the latter from being moved inward or toward each other, and is also adapted to turn in its bearings, to operate the scrapers when the lever I is moved by the driver on the seat J. By this construction the main frame of the machine is greatly simplified, lightened, and cheapened, while its various parts are united in the strongest possible manner. The driver's seat is mounted upon a slotted bar, K, which is supported at or near its rear end by a bow or bent bar, L, connected to the side piece of the frame, and at its front end by a leg, M, affixed to the axle of the machine. The seat is attached to the slotted bar by means of a bolt and nut, so as to be moved back and forth for the purpose of adjusting the position of the driver to balance the machine. The front leg of the seat is connected to the axle of the machine by being stepped into a socket, N, bolted or screwed to the front side of the axle, and its upper end is held by a clamping-screw within a metal socket, O, affixed to the under side of the seat-bar. P are the runners or colters, connected at their front ends by a cross-bar, Q, and at their rear ends by the seed-tubes R and main beam S. The cross-bar and beam are strengthened and supported from each other by the curved brace T, and are connected centrally by the parallel hounds U, which carry the draft-pole of the machine between their forward ends. The runners and their attachments are connected to the side bars of the main frame by long links or eyebolts W, pivoted to either side of the bars, some distance from the front ends thereof, and, after passing through loops X on the front of the bars, are jointed to the back of the main beam by staples or short eyebolts Y. This arrangement forms a compound coupling-joint, by which the runners and seeding devices are permitted to rise and fall through the vertical movements of the long eyebolts within the loops X, and to turn or swing freely by the connection of the eyebolts with the beam-staples. The joint thus formed prevents the parts from being cramped o strained, and enables the runners to conform readily to inequalities in the surface of the ground, and consequently insures the planting of the seed at a uniform depth. Z are levers hung upon the ends of a bar, A′, which is adapted for adjustment upon the front seat-leg. Their rear lower ends are provided with a foot-bar, B^1, and their forward ends are pivoted to the hounds by short bars C^1. When it is desired to raise the runners wholly or partially out of the ground the driver presses down the bar B^1 with his feet, lifting the hounds, and with them the runners and seeding devices. Upon releasing the levers the runners drop down again by their own gravity. The depth at which the runners shall operate is determined by adjusting the pivot-bar A′ upon the seat-leg. The runners are further connected to the rear portion or frame of the planter by a rod, D′, pivoted at its lower end between the hounds, and arranged to slide upon the front seat-leg between an adjustable collar, E^1, and a coiled spring, B^2, above the pivot-bar A′.

When the planter is in operation the upper end of the reach rests upon the coiled spring, and therefore causes the runners to bear upon the ground with a yielding pressure. The sudden shocks to which the machine is subjected in passing over the ground are taken up by this spring, in order to prevent injury to the seeding mechanism.

It will be observed that when the lifting-levers are adjusted on the seat-leg to raise or lower the runners the same relative distance is preserved between the upper end of the reach and the pivot-bar A′. This arrangement insures uniformity in the action of the spring, whether the runners are set for deep or shallow planting. F is an adjustable foot-bar on the reach-rod, by which the driver is enabled to press down the runners with his whole weight in passing over hard or very uneven ground. The adjustability of the foot-bar also adapts it for use to suit drivers of different stature. G′ is a catch pivoted to the adjustable collar E^1, so that when the runners are raised out of the ground by pressure upon the foot-bar B^1 it shall automatically engage with the reach-rod and hold the runners in an elevated position. To release the runners, it is only necessary to depress their foot-levers and swing back the catch by hand. The seed-plates H′, to which the second part of my invention relates, are pivoted upon the plates I′ at the ends of the runner-beam, and covered by the hoppers J^1. The plates are provided with a number of teeth to enter the open links of a chain, K^1, by which such plates are connected. L^1 is a bar adapted to slide longitudinally upon the runner-beam within guides M′ M′, and provided with two lateral arms, N′ N′, extending under the chain to support it in a horizontal position. The ends of the arms are inclined upward in opposite directions to form catches O^2, for engaging the chain-links, and are further formed with guards O^1 O^1, to prevent the chain from slipping laterally. P′ is a seat supported upon the hounds of the planter, immediately over the runner-beam and chain, and provided with an opening, Q′, at each end, through one of which a pointed bar or hand-lever, R^1, is placed to enter an opening or recess in the top of the bar L^1, as shown.

An attendant occupying this seat, by mov-

ing the bar L^1 to and fro—the openings O^1 being large enough to permit this movement—causes the bar L^1 to reciprocate upon the runner-beam, and the catches O^2 to bear alternately against the ends of the open links upon the lower side of the chain.

This operation imparts an intermittent movement to the chain in one direction, and, consequently, an intermittent rotation to the seed-plates. While the catch upon one side is moving the chain, the depressed portion of the opposite catch causes the latter to pass freely under the links of the chain without moving them. By this arrangement the seed-plates are moved the distance of one opening at each movement of the chain, to discharge the seed into the seed-tubes. S′ S′ are stops attached to or formed upon the ends of the sliding bar L^1. As the sliding bar is operated to move the chain these stops are alternately thrown within the path of the seed-plates, where they come in contact with the teeth thereof, and prevent the momentum of the plates from carrying their seed-chambers past the discharge-apertures in the base-plates I.′ T′ T′ are notched brackets for communicating motion from the sliding bar to the seed-conductors U′, which are pivoted to the backs of the seed-tubes R. These brackets are adapted for adjustment on the sliding bar by means of slots and set-screws W′, for the purpose of compensating for any variations in the castings forming the different parts of the seeding devices, and thereby facilitating the fitting of parts together in setting up of the machine.

The metal plates X′, to which the hoppers are secured, are each formed with a large circular opening in the center, surrounded on the under side of the plate by a projecting flange, Y′, which rests upon the seed-plate beneath with close contact. A bar, Z′, extends diametrically across the opening, to form a support for the seed cut-off. Its center is enlarged somewhat, and, together with the arm b^2, bears upon the seed-plate, while the opposite arm c^2 is curved upward for the passage of the seed beneath it. To this central support is screwed a plate, d^2, formed with an inverted cup, e^2, at one end, which rests upon the arm c^2 of the bar, and within this cup the curved cut-off f^2 is pivoted by means of the trunnions g^2, so that its longest arm shall project laterally outward and downward over one of the chambers in the seed-plates, as shown. A spring, h^2, held within the cup by the pins i^2, bears up the short arm of the cut-off, and, consequently, presses its long arm down upon the seed-plate with a yielding pressure, so that while it acts as a cut-off for the corn in the chambers of the seed-plate, it shall yield somewhat to prevent the seed from being broken or crushed as the plate is rotated. To prevent the plate d^2 from turning, one side is notched slightly, to receive an upward projection, j^2, on its supporting-plate, as shown in Fig. 14. The metal plates X′ and the plates I′ are open upon opposite sides for the passage of the chain, and to expose the edges of the seed-plates and chain, for the purpose of observing their operation and facilitating repairs, changes, &c.

The devices for discharging the seed into the ground, and which constitute the third part of my invention, are the pivoted seed-conductor U′, already referred to, and the seed-tube R. The latter is formed by a flat plate, K^2, secured to and constituting the back of the runner-shank, and bent inward at its lower end, so as to form two curved side wings, L^2, extending upward about one-half the length of the shank. The lower ends of these wings are squared and united to the runners, so as to form the open-backed base or foot m^2 of the tubes, as shown. The seed-conductors are each constructed with an open face, which is divided into two longitudinal chambers, n^2, by the central rib o^2, which, at the foot, projects beyond the sides n^2 of the conductor, and divides its triangular or diamond shaped foot into two compartments, q^2, which I designate as the lower drop. The conductors are pivoted to the seed tubes or plates, as shown at R^2, with the parallel channels next the winged plates, and with the angular base between the widest portion of the wings.

When the machine is in operation the sliding bar L^1 oscillates the seed-conductors upon their pivots, in conformity with the rotation of the seed-plates, so that the seed-channels in each conductor shall alternately receive the seed and conduct it to the ground. The beveled edges of the lower drop are alternately thrown against the side wings of the seed-tube, and therefore hold the seed-compartments q^2 in plain view of the driver a sufficient length of time to enable him to see their contents, and determine the quantity of seed planted in each hill or drill.

The position of the seed-conductors in holding the seed in view on one side the seed-tube produces a large opening upon the opposite side—that is to say, an opening formed by the unoccupied compartment q^2 and the adjoining side wing, which effectually prevents the accumulation of dirt to stop or otherwise affect the operation of dropping devices. The curved side wings also serve to exclude the dirt from the conductor and seed-tube, as will be readily seen.

For operating the machine as a drill the driving-chain is increased in length by the interposition of several additional feet, and passed around a toothed driving-plate, K^3, arranged to be driven by suitable gearing C^3 E^3 from one of the main supporting-wheels. The sliding bar L^1 is locked to the axle, so that the seed-conductors shall not be operated to drop the seed intermittingly, while the chain is guided by grooved pulleys J^3, mounted upon the end of a thin metal bar, F^3.

These devices are shown, but I do not claim them herein, as they form the subject of a separate application for Letters Patent.

The quantity of seed to be planted is regu-

lated by changing the seed-plates, as described in my patent of November 21, 1871.

Having thus described my invention, what I claim as new is—

1. The compound coupling for connecting the runners and their attachments to the main frame of the machine, consisting of the long eyebolts W, jointed to the runner-beam, and pivoted to the inner faces of the side bars E, after passing through the guide-loops X thereon, substantially as described, for the purposes specified.

2. The lifting-levers Z, combined with the front seat-leg by means of an adjustable pivot-bar, to regulate the depth at which the seed shall be planted, substantially as described, for the purposes specified.

3. The spring B^2, supported upon the front seat-leg by the adjustable pivot-bar of the lifting-levers, for the purpose of insuring a uniform action of the spring when the runners are set for either deep or shallow planting, substantially as described.

4. The adjustable foot-bar F^1, in combination with the reach-rod, substantially as described, for the purposes specified.

5. The combination of the adjustable lifting-levers and spring with the front seat-leg, the hounds, and the reach-rod, substantially as described, for the purposes specified.

6. The combination of the adjustable lifting-levers and pivot-bar, arranged to raise the runners of the machine, and the adjustable foot-bar and reach-rod, arranged to press them down upon the ground, substantially as described.

7. The arrangement of the adjustable pivoted catch G′ on the seat-leg, for automatically engaging with the sliding reach-rod, to hold the runners out of contact with the ground, substantially as described.

8. The sliding bar and the endless chain, combined with the toothed seed-plates of a corn-planter, substantially as described, for the purposes specified.

9. The sliding bar, the stops S′, and the endless chain, combined with the toothed seed-plates of a corn-planter, substantially as described, for the purpose specified.

10. The sliding bar, the endless chain, and the brackets T′, combined with the toothed seed-plates and pivoted seed-conductors, substantially as described, for the purposes specified.

11. The notched brackets T′, adapted for adjustment upon the sliding bar, to compensate for variations in the castings and facilitate their fitting together, substantially as described.

12. The combination of the sliding bar, the adjustable brackets, and the stops with the seed-plates, the endless chain, and the seed-conductors, substantially as described, for the purposes specified.

13. The spring cut-off, consisting of the bar Z′ and plate d^2, screwed or bolted together within the hopper, with the pivoted spring-plate f^2 between them, the bar Z′ being formed with an enlarged center, a flat arm, b^2, and a curved arm, c^2, and the plate d^2 being formed with an inverted cup to receive the spring of the plate f^2, substantially as described, for the purpose specified.

14. The metal plates I′ and X′, constructed and arranged together so as to form openings on opposite sides under the bottom plate of the hopper for the passage of the chain, substantially as specified.

15. The open-backed seed-tube R, formed by the runner-shanks, the runners, and the back plates, substantially as described, for the purposes specified.

16. The back plates K^2, constructed with the curved side wings L^2, substantially as described, for the purpose specified.

17. The vibratory seed-conductor constructed with the double parallel channels and the lower compartments or holding-chambers q^2, substantially as described, for the purposes specified.

18. The seed-conductor combined with the seed-tube and its side wings, to form the open lower drop, substantially as described, for the purpose specified.

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