(Model.) 3 Sheets—Sheet 1.

L. SCOFIELD.

CORN PLANTER.

No. 253,110. Patented Jan. 31, 1882.

Fig. 1.

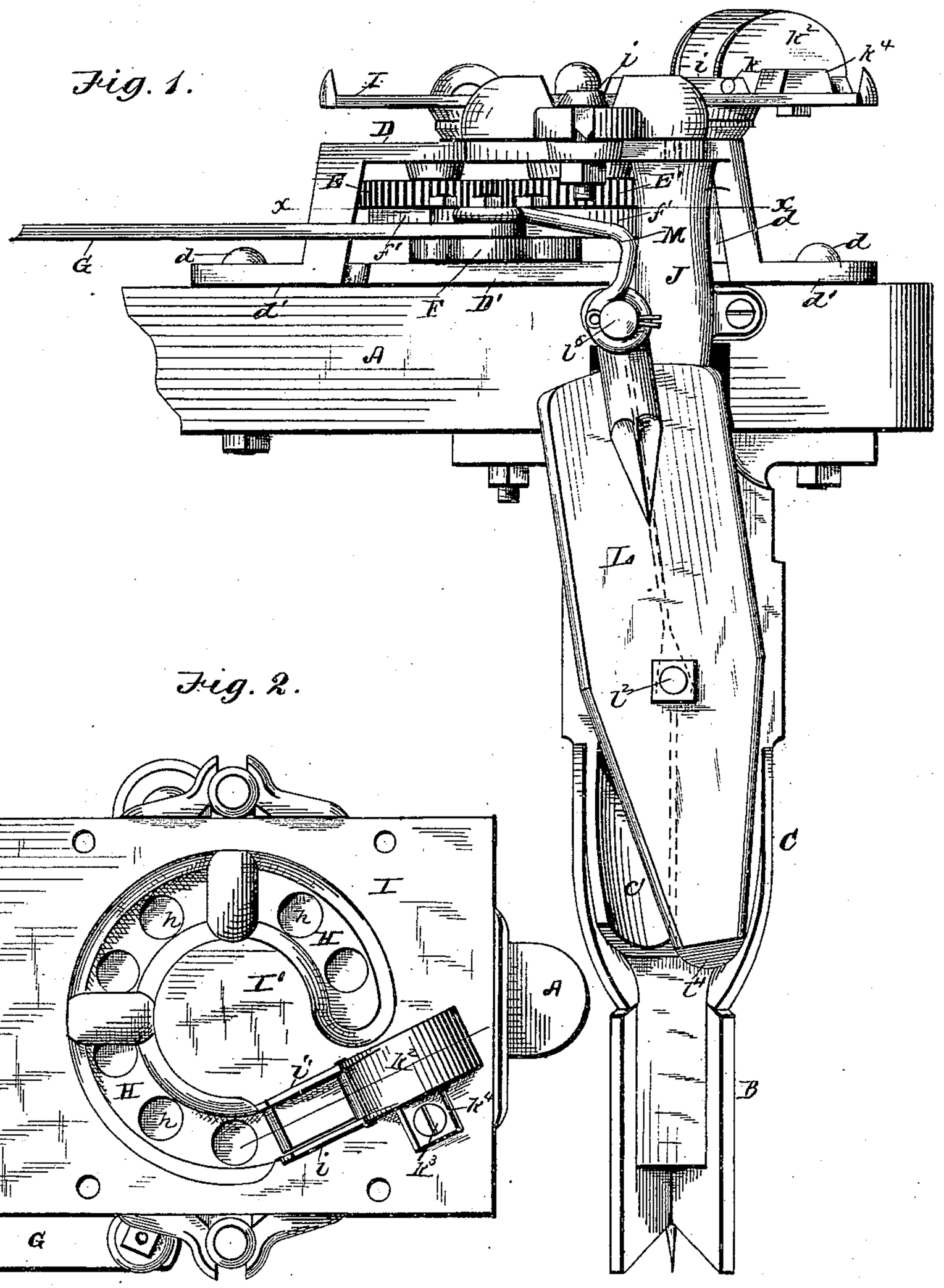

Fig. 2.

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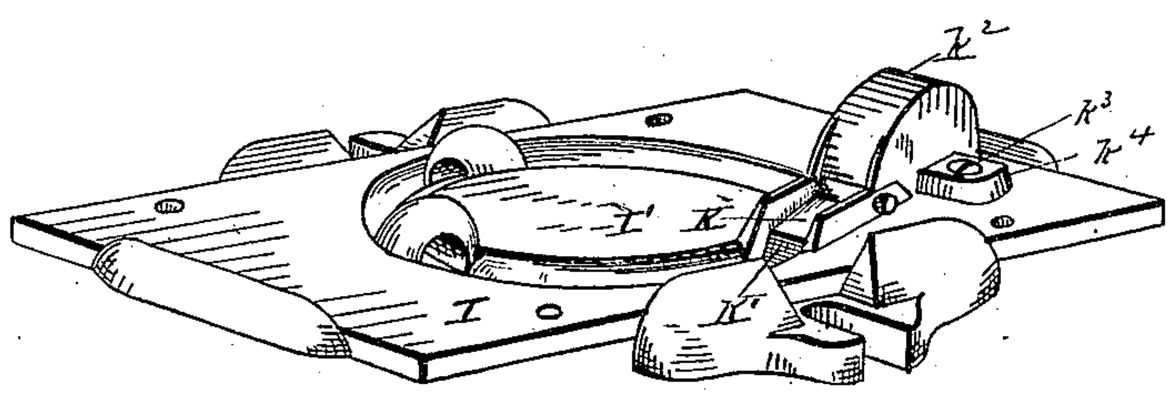


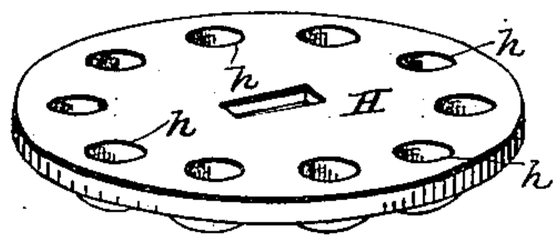
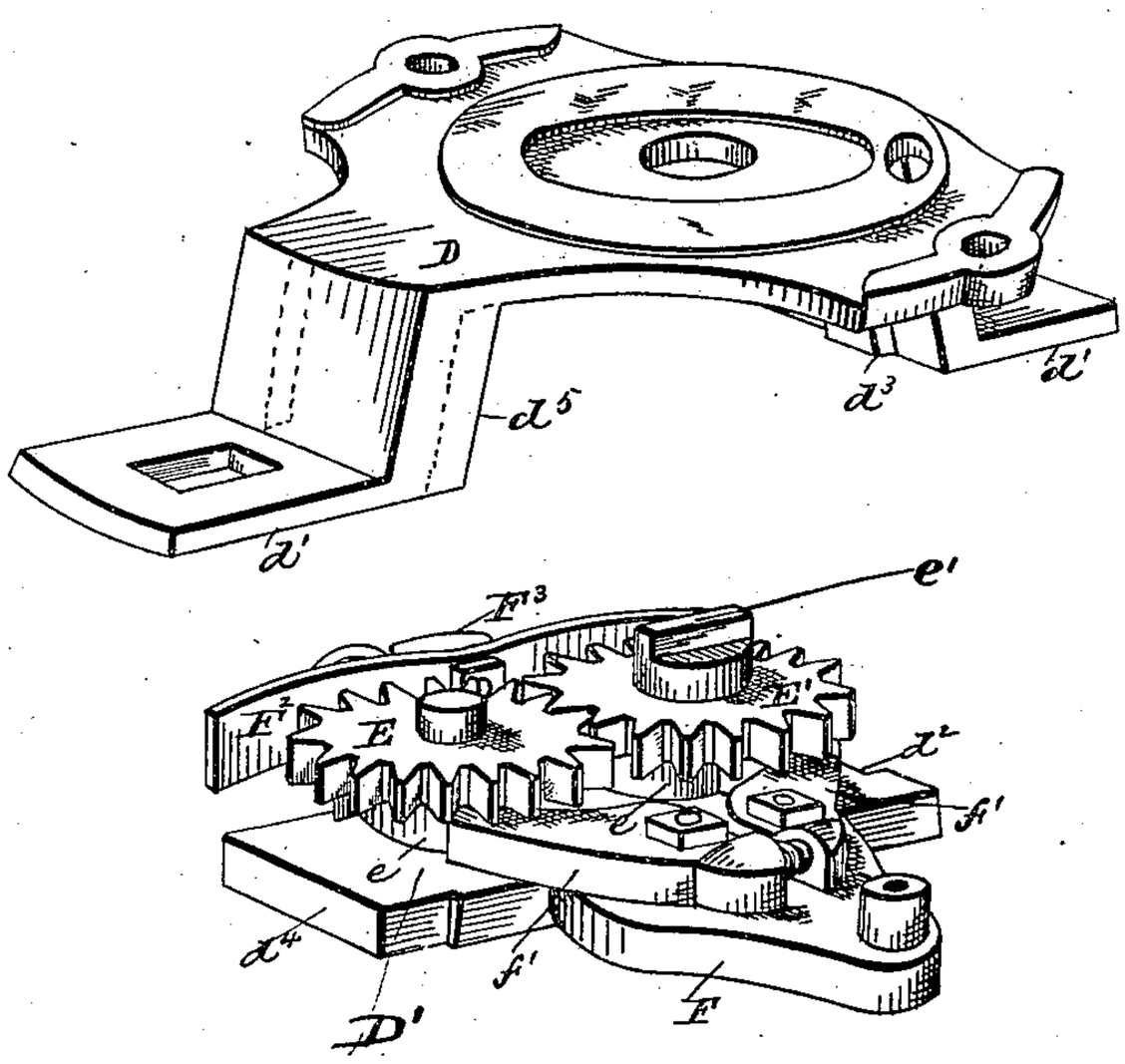


Fig. 3.



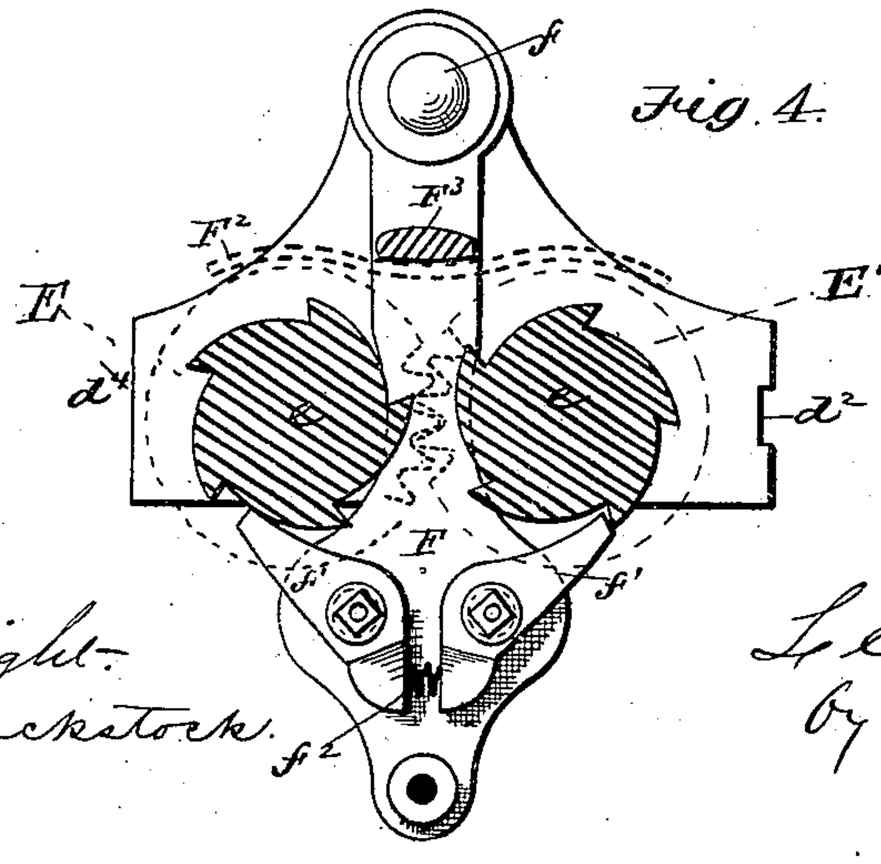


Fig. 4.

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CORN PLANTER.

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Fig. 6.

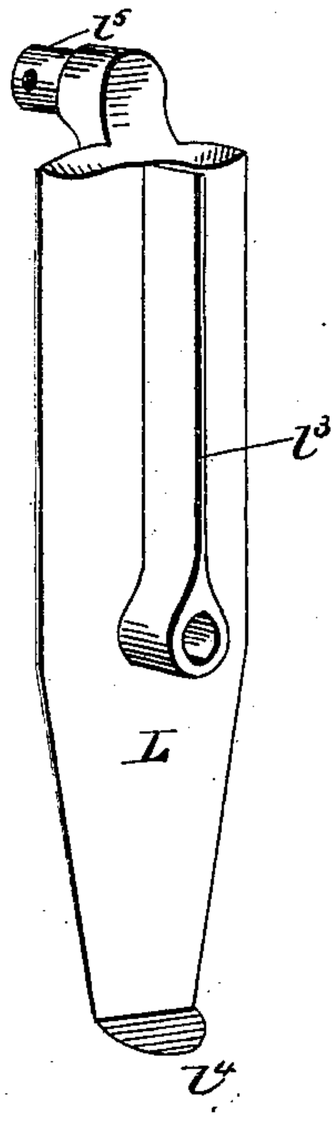


Fig. 5.

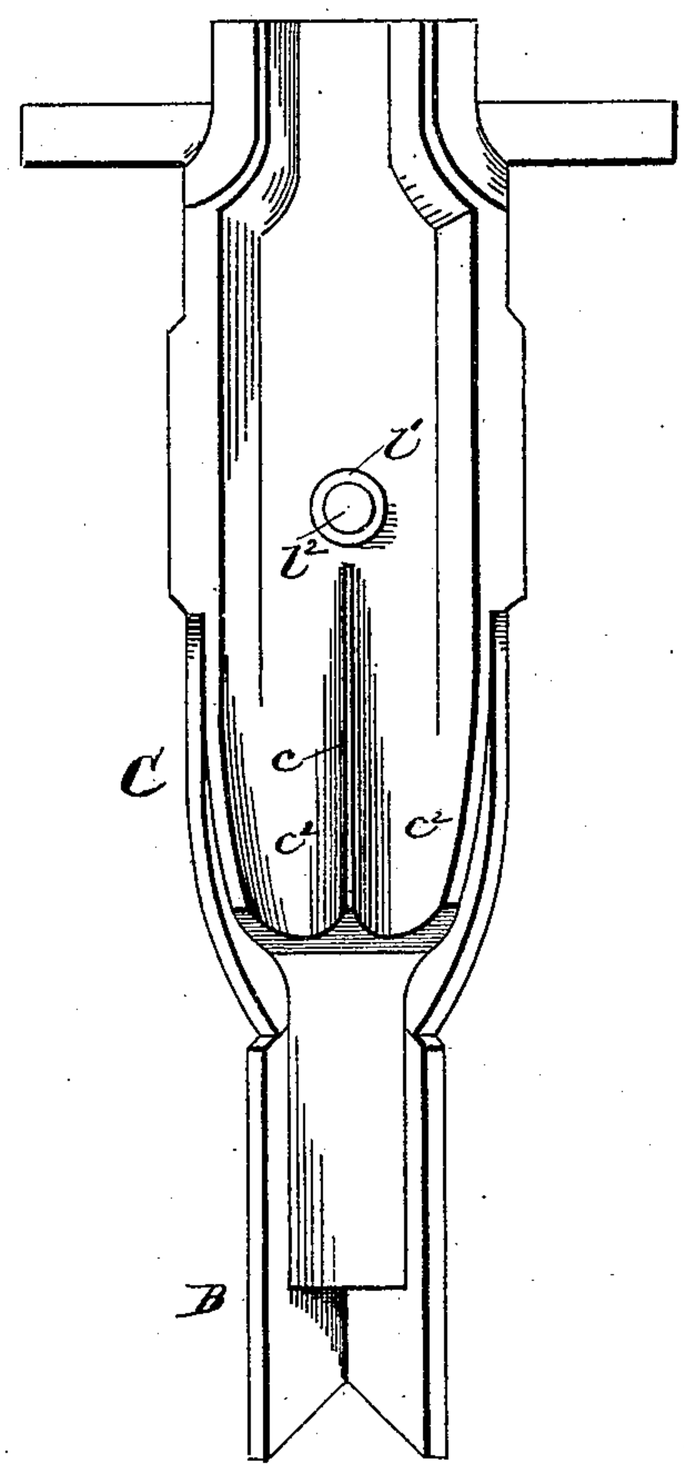


Fig. 7.

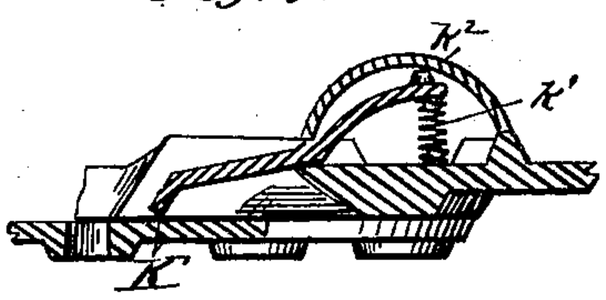
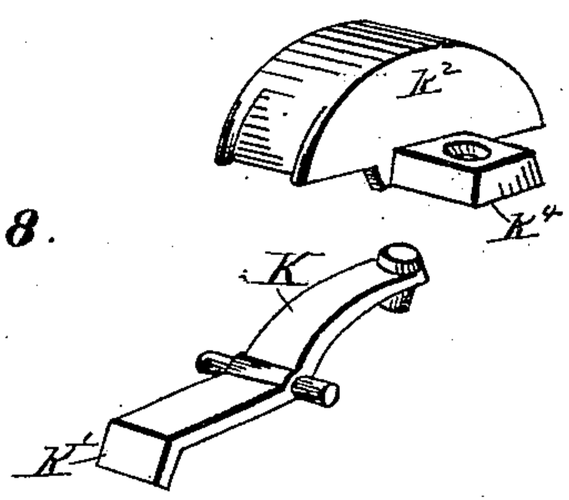


Fig. 8.



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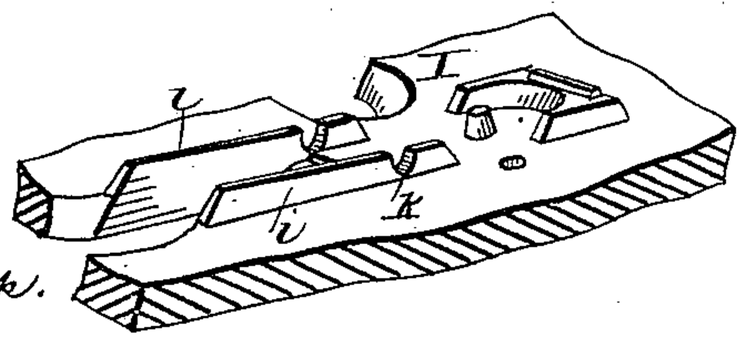

Inventor,
Levi Scofield
by Hill & Church
His attys

UNITED STATES PATENT OFFICE.

LEVI SCOFIELD, OF GRAND HAVEN, MICHIGAN.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 253,110, dated January 31, 1882.

Application filed April 26, 1881. (Model.)

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 new and useful Improvements in Corn-Planters; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a rear elevation of one of the seed-dropping mechanisms of a corn-planter constructed in accordance with the present invention. Fig. 2 is a top-plan view of the same; Fig. 3, a perspective view, showing the construction of the plate which forms the bottom of the seed box or hopper, the seed-plate, the casting which supports the seed-plate, and the mechanism by which the seed-plate is intermittingly rotated. Fig. 4 is a sectional view taken on the line *x x*, Fig. 1, showing clearly the vibratory arm or pawl-carrier, its pawls, and the ratchets of the gear-wheels, and in dotted lines the gear-wheels themselves. Fig. 5 is a view of the seed-conducting shank with the vibrating plate or valve removed. Fig. 6 is a view of the vibrating plate or valve. Fig. 7 is a view showing the construction of the cut-off which co-operates with the rotary seed-plate, and Fig. 8 a perspective view of the parts constituting the cut-off.

Similar letters of reference in the several figures denote the same parts.

This invention relates to that class of corn-planters in which the corn is withdrawn from the seed-box and dropped into the conductor by means of a rotary seed-plate, and it has for its object to improve such planters in respect to rendering them cheaper in construction, more efficient in operation, and more durable.

To this end the invention consists in certain novelties of construction which I will now proceed to describe, and will make the subject of the claims.

In the drawings, A represents one end of the beam or cross-timber of the planter; B, the furrow-opener; and C, the shank of the furrow-opener, bolted or otherwise secured to the beam, as shown.

Mounted upon the top of the beam is a metal casting, D, the same being secured by means of bolts *d d* passing through perforations in its end flanges *d' d'*. Beneath the casting D, and resting upon the beam, is a flat metal plate, D'. This plate is held in place by the engagement of its recessed or notched end d^2 with a shouldered rib, d^3, on the casting D, and also by the engagement of its opposite plain end, d^4, with the shouldered side flanges, d^5 d^5, of said casting D, as shown in Fig. 3.

Between the casting D and plate D' are arranged two gear-wheels, E E', that mesh with each other, and the studs of which are journaled in said casting and plate. Each of these gear-wheels is provided on its under side with a ratchet, *e*, the ratchet of one gear-wheel being reversed in position with respect to that of the other gear-wheel. An arm or pawl-carrier, F, fulcrumed at *f* to the plate D', is adapted to vibrate between the lower studs of the two gears, and carries at its outer end two pivoted pawls, *f' f'*, that project in opposite directions and are adapted to engage alternately with the ratchets of the two gear-wheels as the arm is vibrated back and forth. The pawls are so arranged upon the vibratory arm or pawl-carrier that a single spiral spring, f^2, interposed between their inner ends, operates to keep them both properly engaged with the ratchets. A separate spring may be made to operate each pawl; but for cheapness and simplicity the single spring is preferred.

Inasmuch as the two meshed gear-wheels are rotated only intermittingly, and not continuously, and depend for such motion upon the alternate engagement of the two pawls with their ratchets, it is found essential, in order to insure a proper and reliable engagement of the pawls, that some sort of stop or brake be employed to arrest the motion of the gear-wheels just as soon as each pawl ceases to act positively upon its co-operating ratchet, and thus prevent the further rotation of the wheels before the next pawl is properly engaged and commences to act; otherwise a racing of the gear-wheels will take place, and the ratchets will not stop at the proper points, and the pawls will not consequently engage with them with any degree of certainty.

One very efficient means for arresting the motion of the gear-wheels is shown in the drawings, and consists of a metal stop-plate, F^2, mounted upon and secured to a stud or pro-

jection, F^3, of the vibratory arm F. This stop-plate projects from both sides of the support and opposite the peripheries of both the gear-wheels, as shown. When the vibratory arm or pawl-carrier is vibrated to the right, for instance, and just as the right-hand pawl is about to leave the ratchet-tooth with which it has been engaged, such being also the time when the left-hand pawl clicks in behind the next tooth of its ratchet, the left-hand arm of the stop-plate F comes in contact with the periphery of the left-hand gear-wheel and holds said gear, and consequently the other gear meshed with it, from further rotation by that impulse. Then as the vibrating arm is moved back to the left the plate is removed from the left-hand gear, so as to allow the left-hand pawl to operate both gears again, and at the end of that vibration the stop-plate bears in turn upon the right-hand gear and arrests it, and so on, the same operation being repeated at each vibration of the vibrating arm or pawl-carrier. The stop-plate is preferably curved, so as to conform somewhat to the outline of the gears, and to enable it to bear upon the ends of two, three, or more of the gear-teeth at once, and thus secure a greater bearing, and it is also made preferably slightly elastic, so as to bear with yielding pressure and decrease the amount of wear. While it is shown in the drawings constructed in one piece, it is evident that it may be made in two parts, each secured independently to the pawl-carrier and each adapted to engage with one of the gears. So, too, it may be made straight instead of curved, though the latter form is preferred. Of whatever form, however, the stop-plate should preferably be made to bear upon the ends of the gear-teeth instead of projecting in between them, as there is then less liability of breaking the teeth, and, besides, there is no difficulty about clearing the stop-plate from the teeth at the proper times.

Motion is preferably imparted to the pawl-carrier by means of a bar, G, connected to it, and also to the pawl-carrier of the mechanism at the opposite side of the machine, though any other suitable means for operating may be employed, if desired.

The stud e' of the gear-wheel E′ extends up through and projects above the top of the casting D, and upon it is mounted the circular seed-plate H, having seed-cups or openings h, as shown. The projecting portion of the stud is preferably made of rectangular or other angular form, and the seed-plate is provided with a corresponding central opening, into which the stud fits, so that when the two parts are together and the stud is rotated the seed-plate partakes of its motion.

Fitted over the seed-plate is a plate, I, which, in connection with the seed-plate, forms the bottom of the seed box or hopper. This plate I is bolted to the casting D, as shown, and overlaps and covers the edge of the seed-plate, and also has a central portion, I′, which covers the middle of the seed-plate, leaving the seed cups or openings, or nearly all of them, exposed for the admission of the corn.

The seed cups or openings h are normally kept full of corn, and as the seed-plate rotates they are one after the other brought over an opening in the casting D, leading into a conducting-tube, J, and discharge their contents down through the said tube and through the shank C to the ground.

Any suitable form of cut-off may be employed for scraping the surplus corn from off the filled seed-cups before the discharge is made into the conducting-tube; but a cut-off like the one shown in Figs. 7 and 8 is preferred and recommended. Such cut-off consists of a centrally-pivoted arm, K, working between and journaled in recesses $k\ k$ in flanges $i\ i$ of plate I, a spring, k', for keeping the outer end of the arm in close proximity to but just clear of the seed-plate, and a cap, k^2, adapted to fit over and inclose the inner end of the cut-off arm and the spring, and also adapted to hold the journals or pivots of the arm properly in their recesses or bearings. The cap is itself held in place by a screw-bolt, k^3, passed down through a lug or flange, k^4, on one side of it, and through the plate I, as shown. The cap is so formed that it may be turned end for end and employed to hold the journals of the cut-off arm in the mechanism at the other side of the machine, the plate I of such other mechanism being the counterpart of the plate I shown, except that provision is made in it for the location of the cut-off at the right end instead of at the left end, as shown. This construction of cap enables the same patterns to be used for casting the caps of both mechanisms. The outer end of the cut-off arm, it will be observed, is bent slightly, so as to present an extremity inclined to the surface of the feed-plate. This construction enables any corn projecting above the seed-cup to raise the cut-off and pass under without injury to it. After the corn passes through the conducting-tube J it falls into the shank C, and thence passes to the ground. The lower portion of the conducting-passage of the shank is divided by a vertical partition, c, into two passages, $c'\ c^2$, both leading into the space in rear of the furrow-opener. The outer wall of this seed-passage is formed by a vibrating plate or valve, L, hung at or near its center upon a friction-sleeve, l', on a bolt, l^2, as shown. A central longitudinal rib, l^3, is provided upon the plate L above the pivot-bolt, and forms a continuation of the partition c, and the lower end of the plate is provided with an inward flange or stop, l^4, which is adapted to close the lower end of either the passage c' or the passage c^2, according as the plate is vibrated to the right or to the left.

Upon the upper end of the plate or valve L is formed a stud, l^5, which is connected to the bolt on the vibrating pawl-carrier by means of a simple link, M. This link is preferably made of malleable or wrought metal, so that it can be easily bent to conform to any irregu-

larities of the castings and give a free movement without binding. When the pawl-carrier is rotated in one direction a number of grains of corn (the contents of one of the cups or openings in the seed-plate) are delivered through the tube J into one of the branches of the seed-conducting passage of the shank, being arrested at the bottom of such passage-branch by the stop l^4 on the valve-plate. Upon the pawl-carrier being now vibrated in the opposite direction the valve-plate L will be also vibrated, causing its stop l^4 to be removed from the bottom of the branch containing the corn to the bottom of the other branch, into position for the next operation, and allowing the corn to drop into the furrow, this operation being continuously repeated so long as the machine remains in action.

The opening in the casting D through which the corn is dropped from the cups of the seed-plate, it will be observed, are made at the outer part of said casting and in line with the center of the shank of the furrow-opener. This is done in order that a shorter beam may be used, and that the seed box or hopper may be brought inward on the beam, so as to better protect it, quite an advantage being thus obtained.

Having thus described the invention, what is claimed as new is—

1. The combination, with the two meshed gear-wheels having the reversed ratchets on their hubs, of the pivoted arm or pawl-carrier moving between the hubs of the gear-wheels and carrying the pawls which alternately engage with the ratchets as the arm is vibrated, substantially as described.

2. The combination, with the two meshed gear-wheels having the reversed ratchets on their hubs, of the pivoted vibratory arm or pawl-carrier moving between the hubs of the gear-wheels, the ratchets mounted on said pivoted arm, and an elastic friction-brake or stop, also mounted on the said pivoted arm and operating alternately on the peripheries of the gear-wheels, substantially as described.

3. The combination of the meshed gear-wheels, the pivoted arm or pawl-carrier, the pawls, and the friction-brake or stop consisting of an elastic plate mounted centrally upon the pawl-carrier, and projecting laterally so as to bear alternately against the peripheries of the gear-wheels as the pawl-carrier is vibrated or swung on its pivot, substantially as described.

4. The combination of the meshed gear-wheels, the pivoted arm or pawl-carrier, the pawls, and the elastic stop or friction-brake, curved so as to conform to the outline of the gear-wheels and to bear upon two or more of the teeth of the same at once, substantially as described.

5. The combination, with the vibrating pawl-carrier, of the reversed pawls and the single spring interposed between the two pawls to operate both, substantially as described.

6. The arched casting D, having the shouldered side flanges, d^5 d^5, and the shouldered rib d^3, in combination with the plate D′, carrying the gear-wheels and the pawl-carrier, and having the arched end d^2 and plain end d^4, the parts being connected together substantially as described.

LEVI SCOFIELD.

Witnesses:
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ANNIE E. ROBINSON.