(Model.) 3 Sheets—Sheet 1.

L. SCOFIELD.

CORN PLANTER.

No. 252,526. Patented Jan. 17, 1882.

Fig. 1.

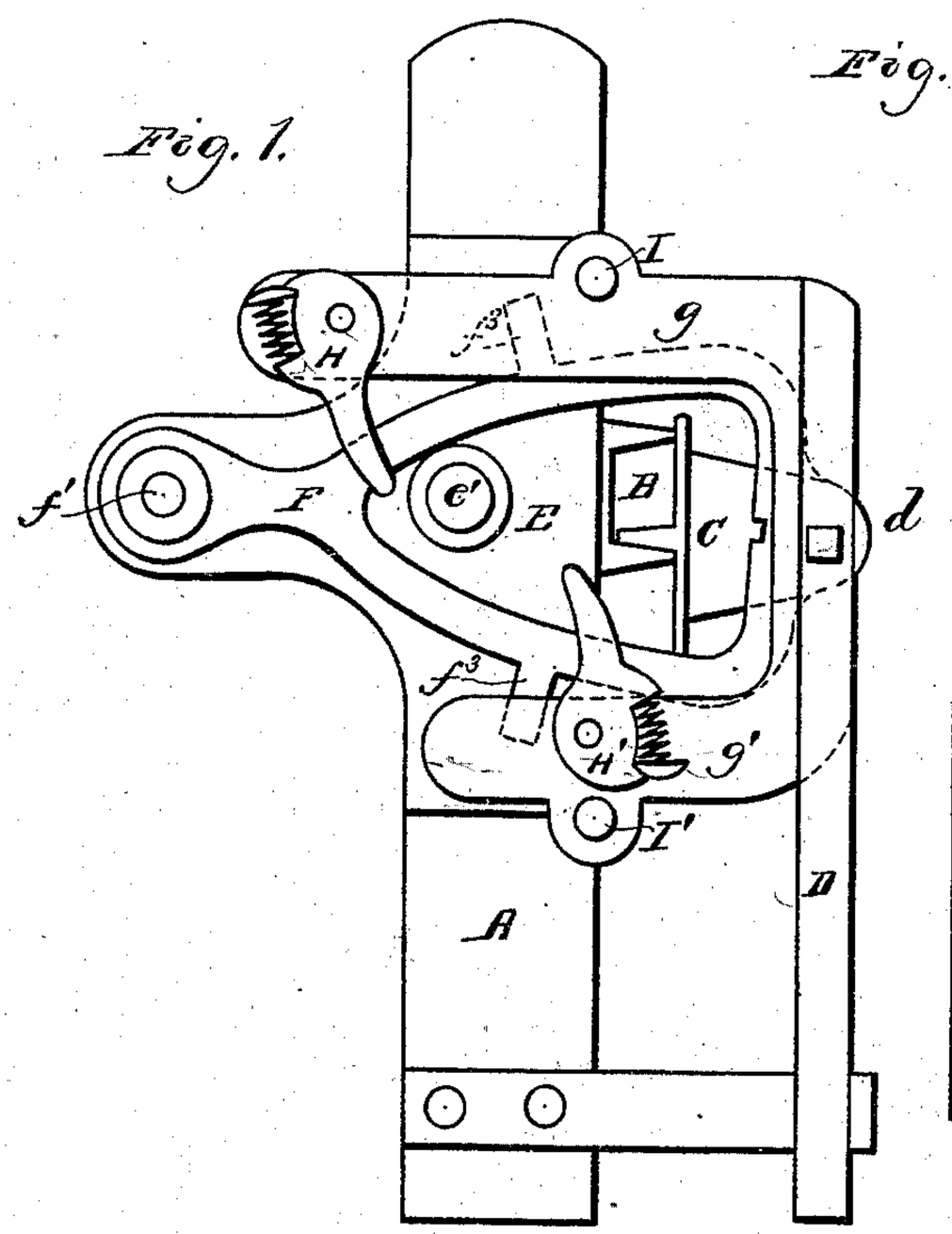


Fig. 3.

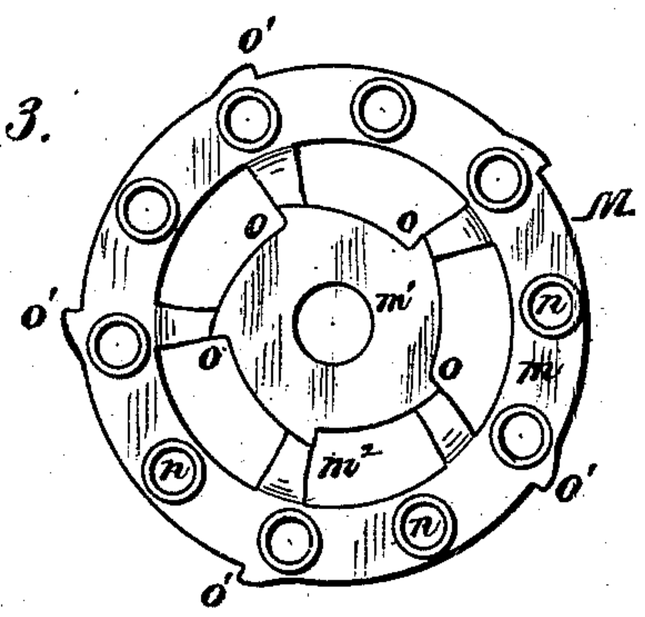


Fig. 4.

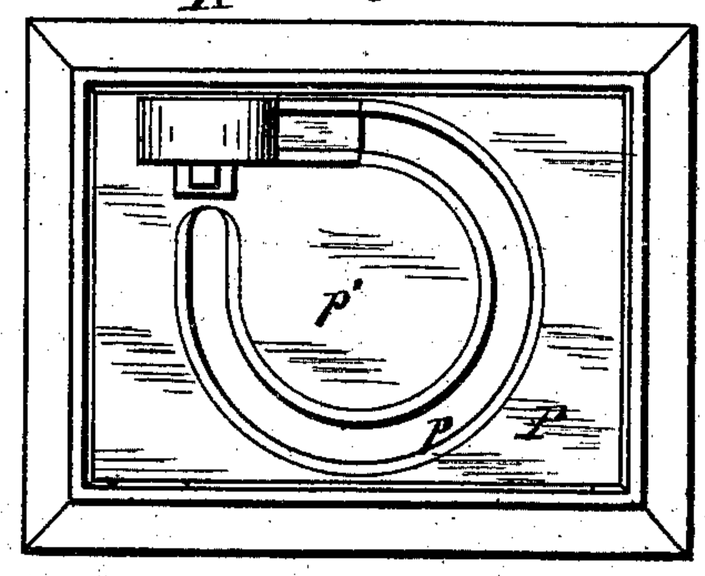
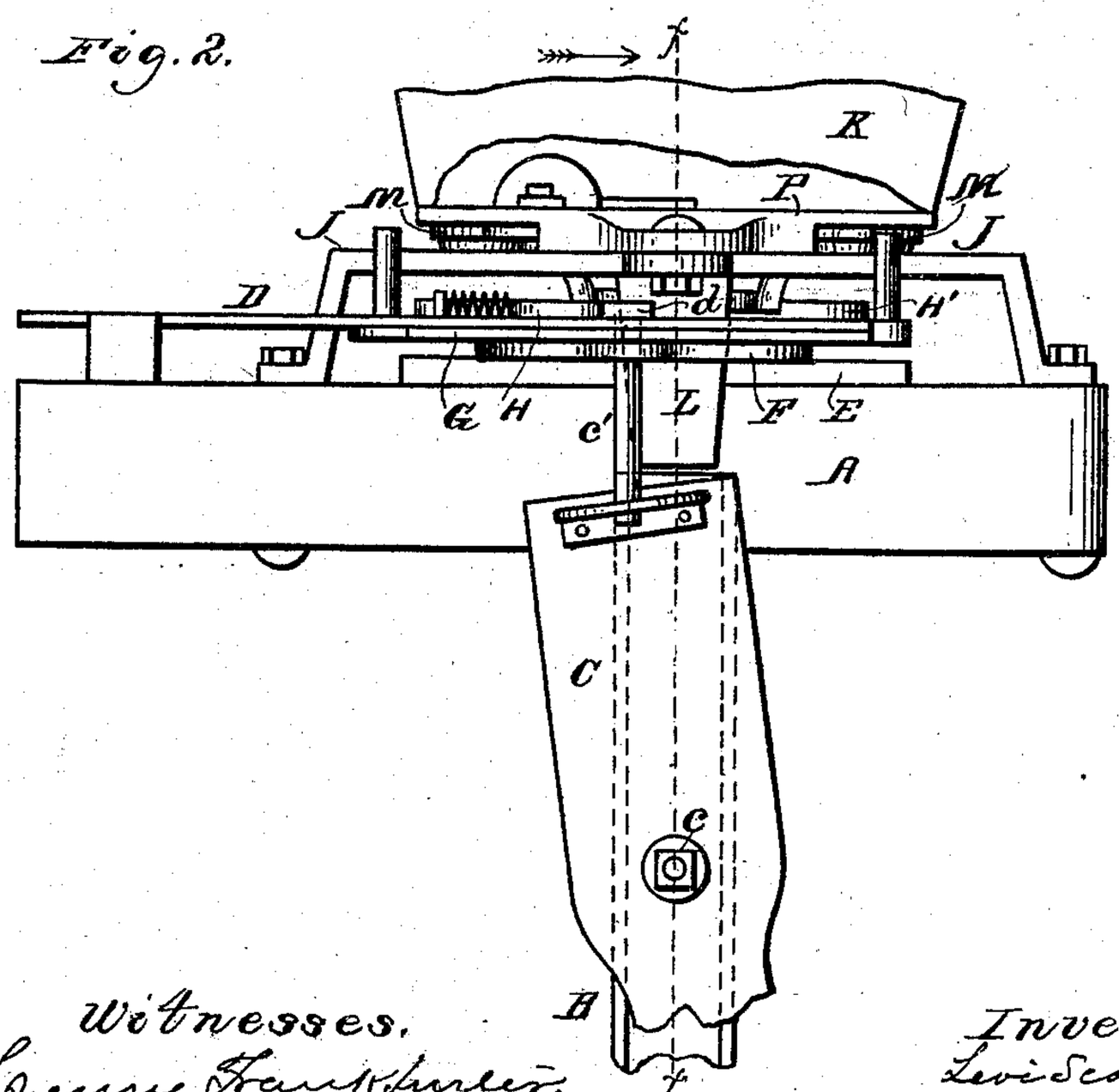


Fig. 2.



Witnesses.
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(Model.) 3 Sheets—Sheet 2.

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CORN PLANTER.

No. 252,526. Patented Jan. 17, 1882.

Fig. 5.

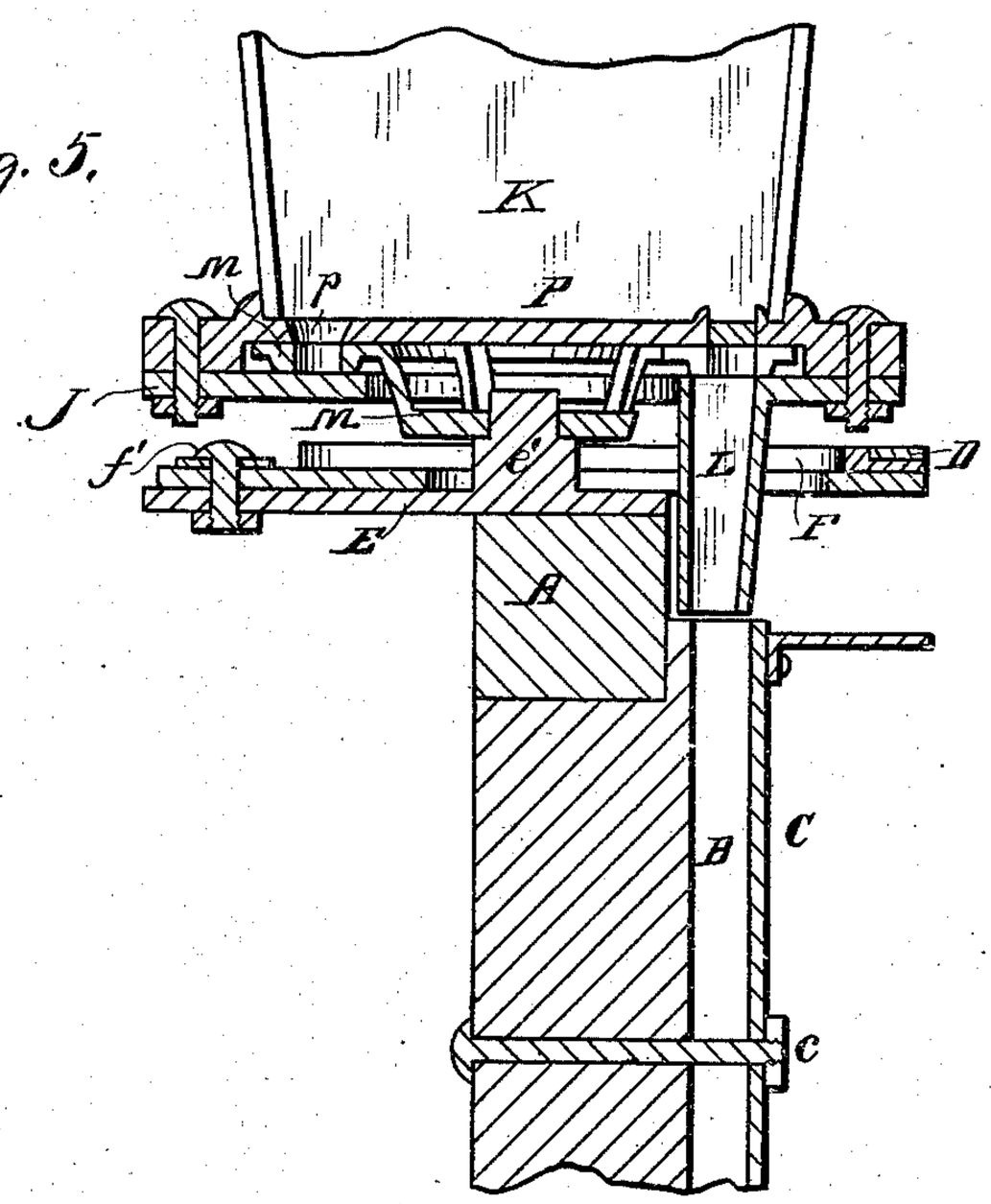


Fig. 6.

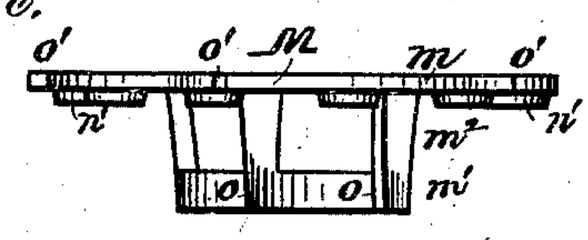
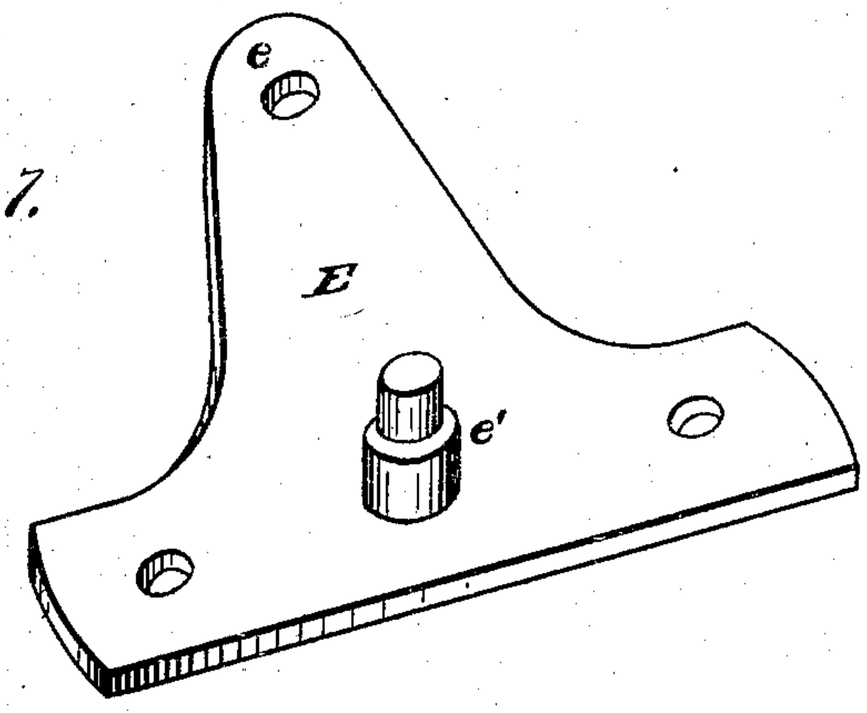


Fig. 7.



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(Model.) 3 Sheets—Sheet 3.

L. SCOFIELD.

CORN PLANTER.

No. 252,526. Patented Jan. 17, 1882.

Fig. 8.

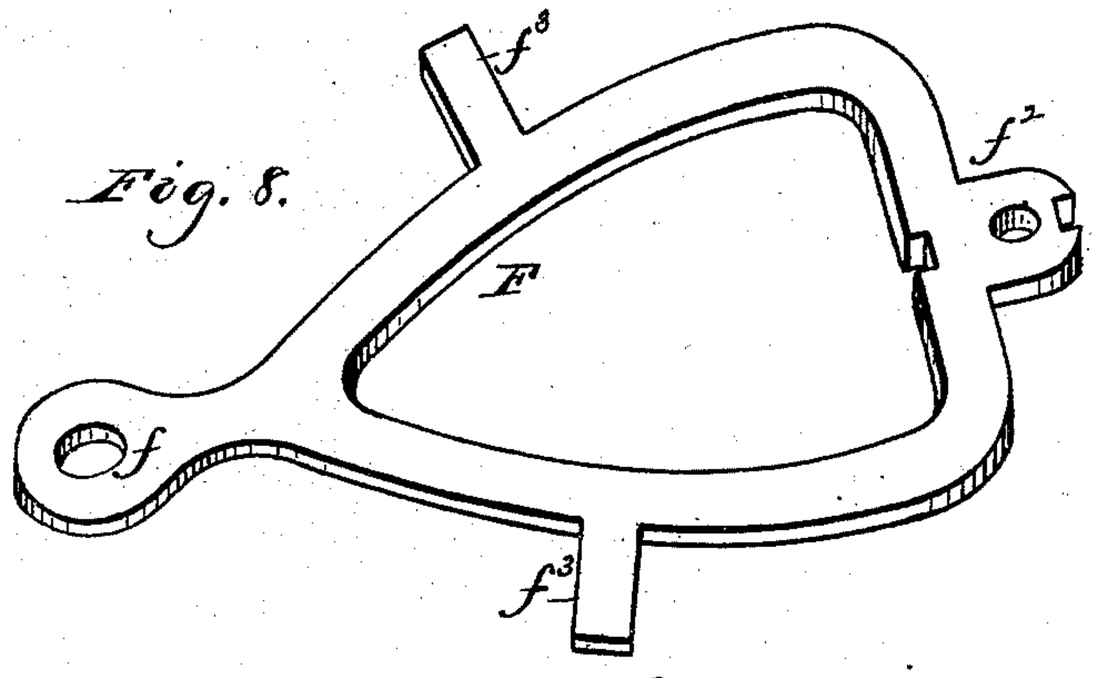


Fig. 9.

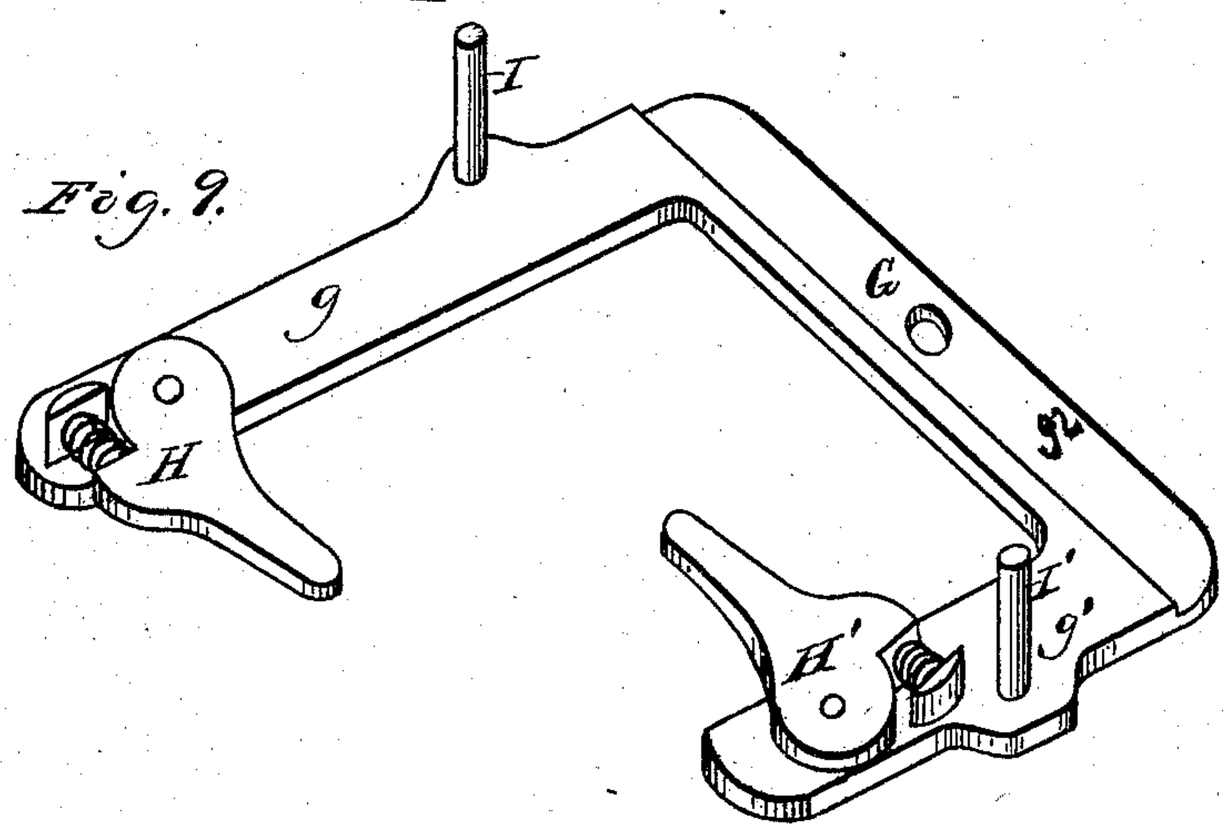
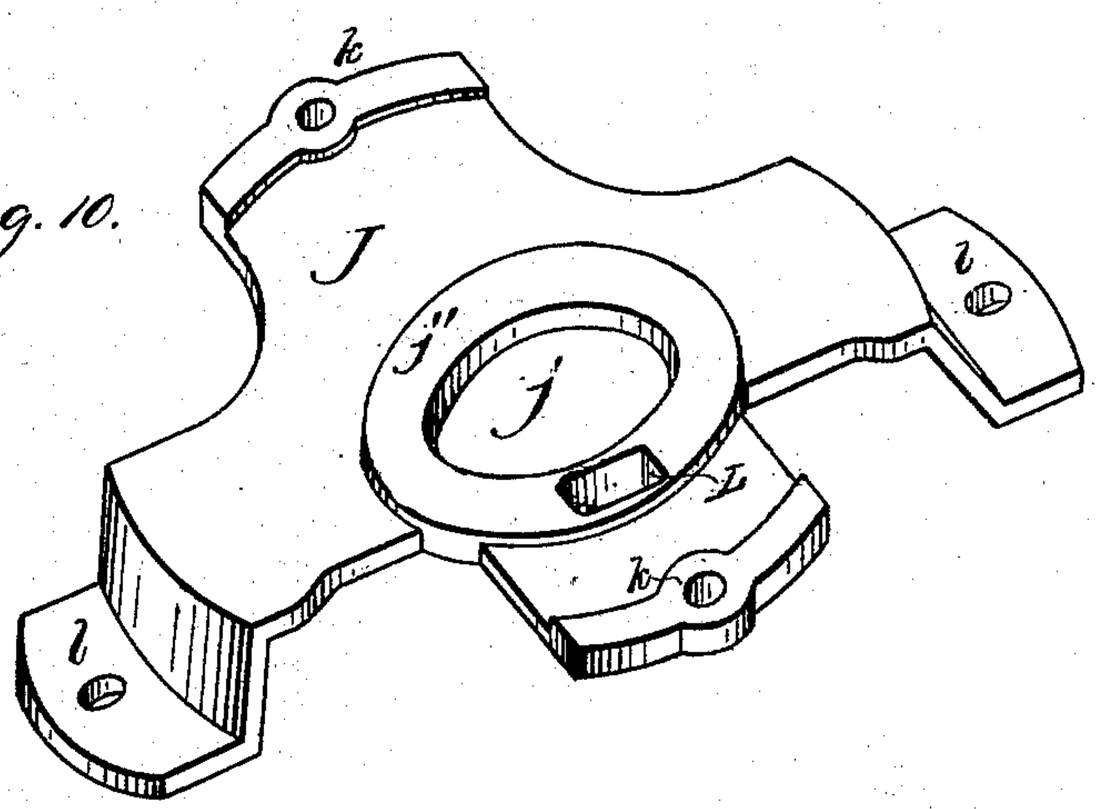


Fig. 10.



Witnesses.
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Inventor,
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Attorneys

UNITED STATES PATENT OFFICE.

LEVI SCOFIELD, OF CEDAR RAPIDS, IOWA.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 252,526, dated January 17, 1882.

Application filed August 30, 1881. (Model.)

To all whom it may concern:

Be it known that I, LEVI SCOFIELD, of Cedar Rapids, in the county of Linn and State of Iowa, have invented a certain new and useful Improvement in Corn-Planters; and I do hereby declare that the following is a full, clear, and exact description and specification thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a top plan view, the seed-plate and hopper having been removed. Fig. 2 is a rear elevation of the same parts with the seed-plate in position, and showing a section of the lower part of the hopper. Fig. 3 is a bottom plan view of the seed-plate. Fig. 4 is a top plan view of the hopper. Fig. 5 is a longitudinal vertical section in line *x x* of Fig. 2. Fig. 6 is a side elevation of the seed-plate. Figs. 7, 8, 9, and 10 are detail views of separate parts employed in the machine.

Similar reference-letters indicate the same parts of the machine.

This invention pertains to that class of corn-planters in which an intermittently-revolving horizontal seed-plate separates the charges of seed and conveys them to the top of the seed-tube, into which they are dropped, and thence discharged to the furrow by the action of a valve or valves arranged in the tube.

It consists, first, in a new construction of the seed-plate; secondly, in a new construction of the actuating devices; thirdly, in a new combination of the seed-plate with the actuating devices; fourthly, in a new construction of the hopper-bottom; and, lastly, in the various mechanical devices, combinations, and sub-combinations not specifically referred to above, but hereinafter described and claimed, the object of the various improvements being to enable the machine to work more easily and keep in order better, to simplify and cheapen its construction, and to facilitate the taking apart and putting together of the various parts whenever it may be desirable so to do.

In the drawings, A represents one of the cross-bars of the machine-frame, and B the seed tube or duct through which the seed drops to the ground, C being the ordinary oscillating valve working in said tube on a pivot, *c*, and D being the ordinary actuating-bar reciprocated longitudinally in the usual manner.

Fig. 7 represents a flat horizontal plate or casting attached to the top of the cross-bar A by screws or other suitable means. It consists of an elongated plate, E, fitting on the top of the cross-bar and provided with a front extension, *e*, and near the center with a stout vertical stud, *e'*.

Fig. 8 represents a metal lever adapted to rest and swing laterally on the plate E. It consists of a flat casting, F, somewhat triangular in form, with open center, having a projecting front arm, *f*, whereby it is pivoted to the front extension, *e*, of plate E by means of a vertical pin, *f'*, and having also a slight elongation, f^2, at the opposite end, whereby it is connected to the actuating-rod by a suitable bolt, *d*, and two lateral lugs, f^3 f^3, the purpose of which is to assist in supporting the parts which rest upon the lever.

Fig. 9 represents a casting rigidly attached to the actuating-bar D and reciprocating therewith. It consists of a flat plate, G, provided with two arms, *g g'*, of unequal length, and with a groove or bed, g^2, in which fits the end of the bar D. It supports also two spring pawls or dogs, H H', arranged as shown, and two vertical stop-pins, I I'. This plate thus attached to the actuating-bar, and further connected thereto by the bolt *d*, rests upon the rear end and lateral edges of the lever F and upon the lugs f^3 f^3, and is supported by said lever, which oscillates with it, the lever swinging upon its pivot and the casting G simply moving back and forth with the movements of the bar D.

Fig. 10 represents a bridge-plate mounted upon the cross-bar A and extending over the three plates E F G, above described. It consists of a casting, J, having a central opening, *j*, bounded by a raised annular smooth surface, *j'*. It has extensions *k k*, with bolt-holes, to which to attach the seed box or hopper K. It has also a depending tube, L, opening upward through the rear side of the raised smooth rim *j'*. It is further provided with two lugs or supports, *l l*, by which it is attached to the cross-bar A and held in suitable position to extend

across above the parts E F G, as above described. When in position the vertical stud e' of plate E is in line with the center of the opening j and its upper end comes about flush with the top of the bridge-plate.

Figs. 3 and 6 represent the seed-plate. This is cast in one piece, M, having a large annular top, m, and a smaller annular hub, m', about an inch and a half below the top, and connected thereto by a series of converging arms, m^2 m^2, as shown, the spaces between the arms being preferably open to permit the escape of dirt. The top of the annular rim m is dressed flat and smooth, and it is provided with a series of holes, n n, operating as seed-pockets. Underneath the rim each hole n is surrounded with a burr, n', the under surface of which is dressed smooth. The hub is provided with a series of ratchet-teeth, o o, formed preferably by the projecting edge of the arms m^2, in order to give the teeth greater vertical length. The periphery of the rim m is further provided with a series of projections, o', or equivalent notches, to operate as stops in connection with the pins I I'. The hole in the hub accurately fits upon the stud e', the upper end of which comes about at the upper surface of the hub. When the seed-plate is in position the burrs n' rest upon the smooth annular surface j' of the bridge-plate, and as the seed-plate is intermittently revolved its seed-pockets n n are each consecutively brought over the open top of the tube L, so as to discharge the seed through said tube into the seed-duct B, directly underneath said tube L.

In constructing the machine the plate E is first attached to the cross-bar A. The lever F is then placed in position and connected to the plate E by its pivot-bolt. The plate G, attached to the actuating-bar D, is then placed on the rear end of the lever and connected thereto by the pin d. The bridge-plate is then applied and secured as described, and the seed-plate is lastly dropped into position by dropping the hub m' through the opening j, so as to fit upon the stud e'. When in this position the two pawls H H' immediately engage with the ratchets o o on opposite sides of the hub, after which every movement of the actuating-bar partially rotates the seed-plate, so as to bring the holes n n, one after another, over the open tube L. The seed-plate can be removed and replaced at any time by simply lifting it out and dropping it back into place. The seed-plate being open at the center and the space around the hub and its centering-pin e' being open and free, all the dirt is allowed to fall through and escape from the machine, and if any tends to lodge on the plates under the hub it is immediately swept off by the movements of the lever and the plate G. The actuating-bar is worked with very little power in consequence of its being connected to and mounted upon the swinging lever F, which gives it a free and easy movement, prevents all binding and cramping, dispenses with guides, and reduces the friction of the parts to a minimum. As the seed-plate comes to the end of each movement effected by the actuating-bar one or the other of the stop-pins I I' comes in contact with one of the projections or notches o' and holds the plate in position till moved again by the next movement of the bar in the reverse direction.

The seed box or hopper K is constructed in the usual manner, but is provided with a cast-iron bottom, P, having a curved slot, p, extending partially around its center and partially inclosing a central tongue, p', which forms a portion of the casting P. The slot p extends directly over the seed-pockets n n and permits the access of corn thereto. The slot is not bridged at any point, as I have discovered that the seed is apt to wedge under bridges and interfere with the movement of the seed-plate. The slot terminates directly over the tube L, where the usual housing and spring cut-off are provided. By this arrangement the grain feeds easily and regularly, and the action of the feeding mechanism is never disturbed by any accidental obstruction. The construction is also simplified and cheapened.

By attaching the pawls directly to the plate G and causing them to operate upon the reduced hub of the seed-plate it is evident that a very short stroke of the actuating-bar is required to operate the seed-plate—a feature the advantages of which will be readily perceived by any one practically skilled in the art; but the short stroke would too greatly reduce the throw of the valve C if the latter were directly attached to the bar. Hence, in order to preserve the normal throw of said valve, I cause it to be operated by a downwardly-projecting pin, c', which proportionately shortens the upper arm of the valve, and thus gives the latter its usual range of movement. The downwardly-projecting pin may be simply a downward extension of the pin or bolt d.

From the above description it will be observed that nearly all the working parts of my machinery may be made simply of rough castings, with but a few portions of the surfaces dressed smooth, thereby greatly reducing the cost of construction. I do not, however, limit myself to the use of cast metal, nor to the precise forms and details of construction herein shown and described, as the forms and material may be greatly modified without departing from the principles of the invention. This is especially true of my combination claims, some of the elements of which may be considerably modified without substantially affecting their functions in the combinations. For example, the advantages of the guide-lever F, combined with the actuating-bar D, are not confined to the use of those parts in connection with a seed-plate having a reduced hub, nor with any particular form of seed-plate, but would be enjoyed even if the pawls operated upon the outer edge of the rim m or upon any other part of the seed-plate, such advantages

resulting mainly from relieving the actuating-bar from friction and dispensing with other forms of guide. So, also, other forms of pawl or dog may be used instead of spring-pawls; and many other changes may be made without affecting the co-operation of the parts in substantially the manner herein set forth.

I claim as my invention—

1. The seed-plate M, having a large annular top, *m*, provided with seed-pockets and with lateral notches or projections *o'*, and a smaller dependent hub, *m'*, connected to the top by arms and provided with lateral ratchet-teeth, substantially as described.

2. A seed-plate having a concave center formed by a depressed hub, through which the seed-plate is centered upon a bolt below the horizontal line of its surface, substantially as described.

3. The combination of the seed-plate M and bolt *e'* with the bridge-plate having the central opening, whereby the seed-plate can be inserted and removed simply by dropping its hub through the opening in the bridge-plate or lifting it out of said opening, substantially as described.

4. The swinging lever F, substantially as represented in Fig. 8, having the open center, the front extension, *f*, and the lateral extensions f^3 f^3, or their equivalents, as herein set forth.

5. The plate E, substantially as represented in Fig. 7, having the front extension, *e*, and the vertical pin *e'*, and adapted for application to the cross-bar A, as herein set forth.

6. The combination of a revolving seed-plate having a reduced hub with the bar D, and with a plate, G, rigidly attached to and moving with the bar, and having two arms, *g g'*, two spring-pawls operating in opposite directions against the reduced hub, and two stops to limit the movement of the seed-plate, substantially as described.

7. The combination of the actuating-bar, the swinging lever, the seed-plate with downwardly projecting hub, and the spring-pawls attached to the actuating bar and operating on opposite sides of the hub, substantially as described.

8. The combination of the bar D, the plate G, the lever F, and the seed-plate M, substantially as described.

9. The combination of the bar D, the plate G, the lever F, the seed-plate M, and the bridge-plate J, substantially as described.

10. The combination of the bar D, the plate G, the lever F, the seed-plate M, and the supporting-plate E, having the central stud, *e'*, substantially as described.

11. The combination of the bar D, the plate G, the bridge-plate J, the lever F, the seed-plate, and the supporting-plate E, having the central stud, *e'*, substantially as described.

12. A seed-plate having a concave center formed by a depressed hub, through which the seed-plate is centered on a bolt or stud, and having openings through the sides of the concavity for the release of dirt, substantially as described.

13. The combination of the hopper-bottom having a nearly-annular unbridged slot, *p*, terminating at one end over the discharge opening, as described, with an intermittingly-rotating seed-plate having pockets that move in line with said slot, whereby the grain is fed easily and regularly, and is never interrupted by clogging at any obstructing bridge, substantially as described.

14. In a corn-planter, the combination of an actuating-bar, to which the pawls are attached for rotating the seed-plate, and a swinging lever to guide the bar, substantially as described.

15. The combination of an upper hopper-supporting plate and a lower lever-supporting plate with the pawl-plate and guide-lever arranged between them, substantially as described.

16. The combination of a reciprocating pawl-plate and its guide-lever with the reduced hub of the seed-plate, all said parts operating below the plate which forms the bottom of the seed-pockets, substantially as described.

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