3 Sheets—Sheet 1.

A. C. EVANS.

Corn-Planter.

No. 217,083. Patented July 1, 1879.

Fig. 1.

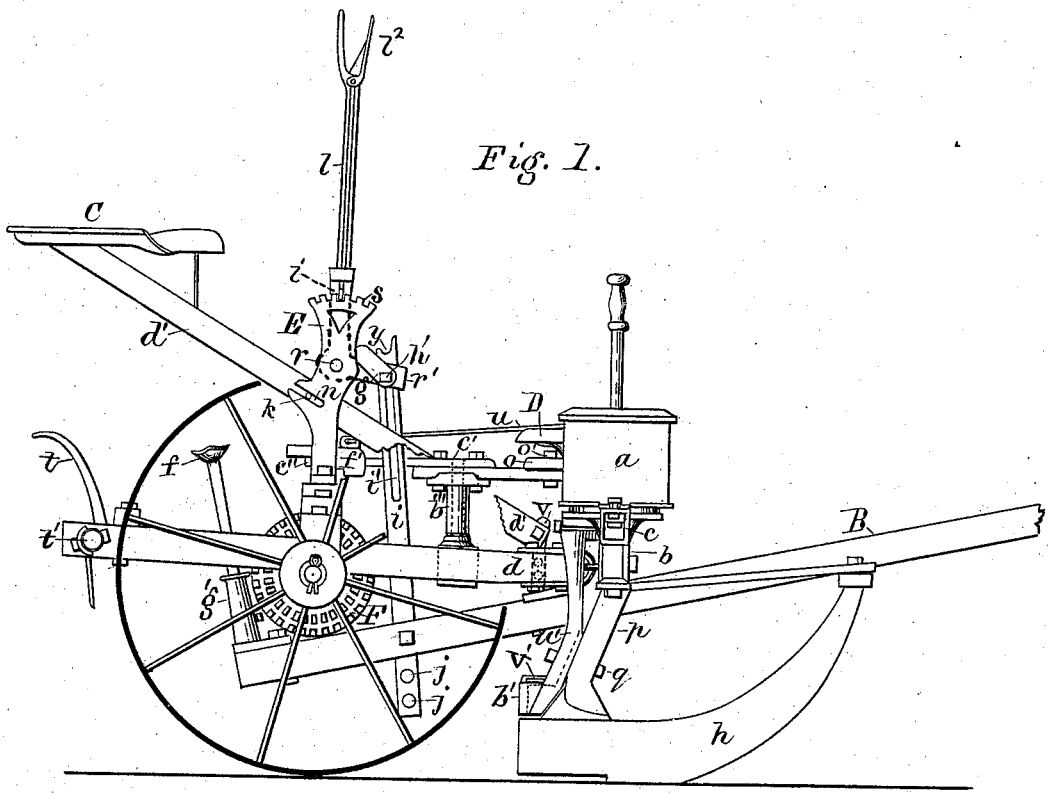

Fig. 2.

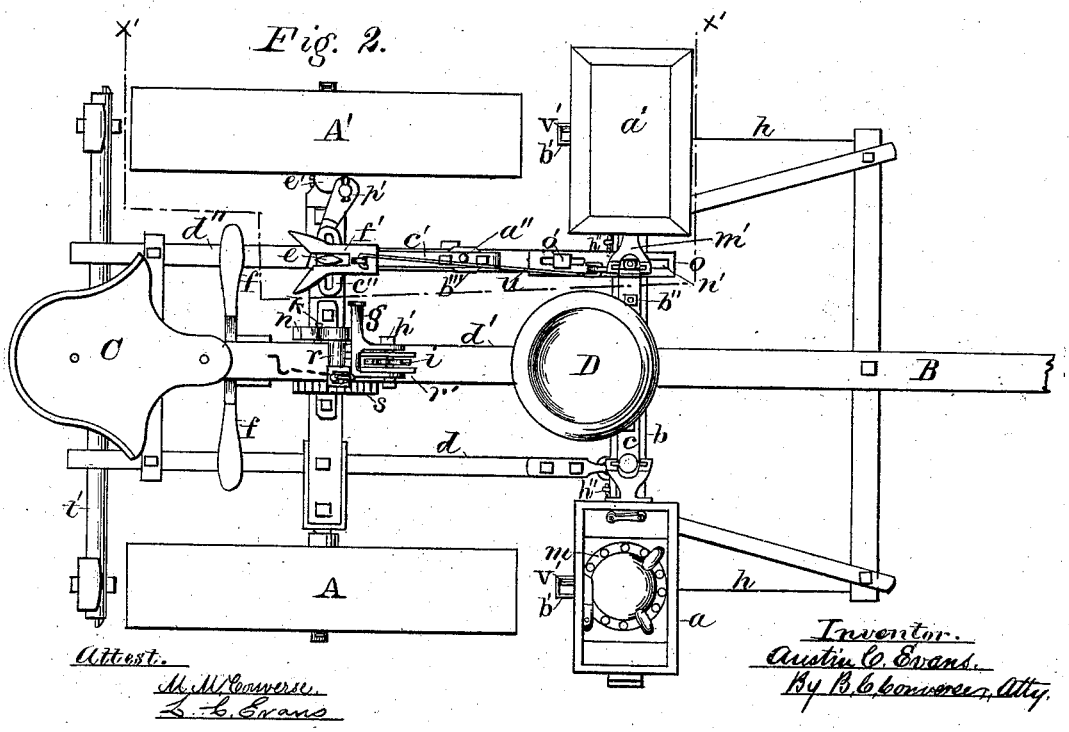

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Fig. 3.

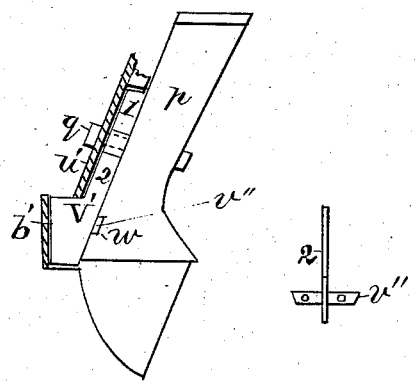

Fig. 4.

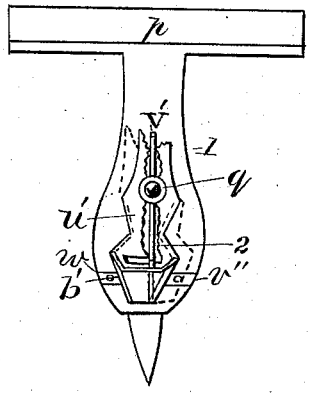

Fig. 5.

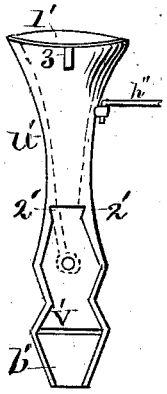

Fig. 6.

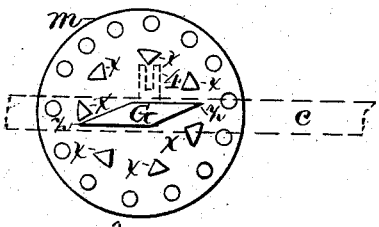

Fig. 8.

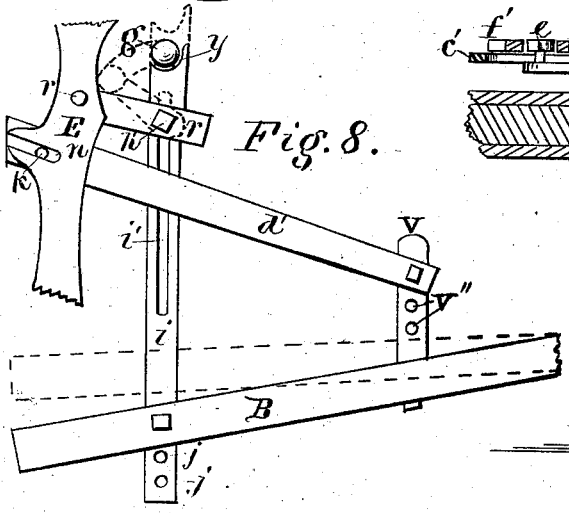

Fig. 9.

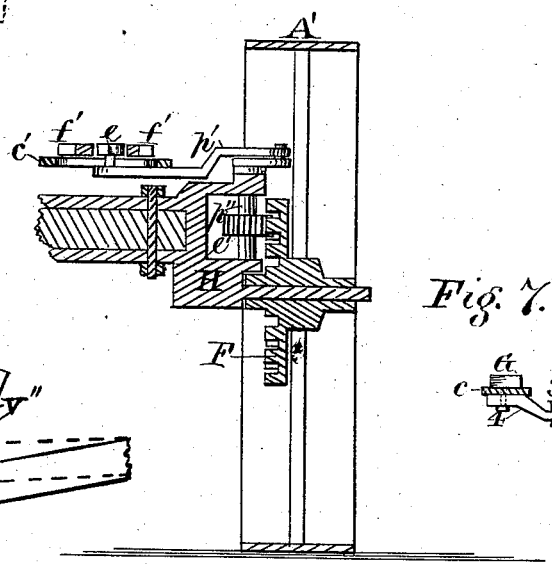

Fig. 7.

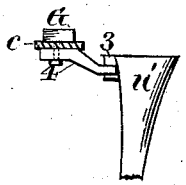

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Fig. 10.

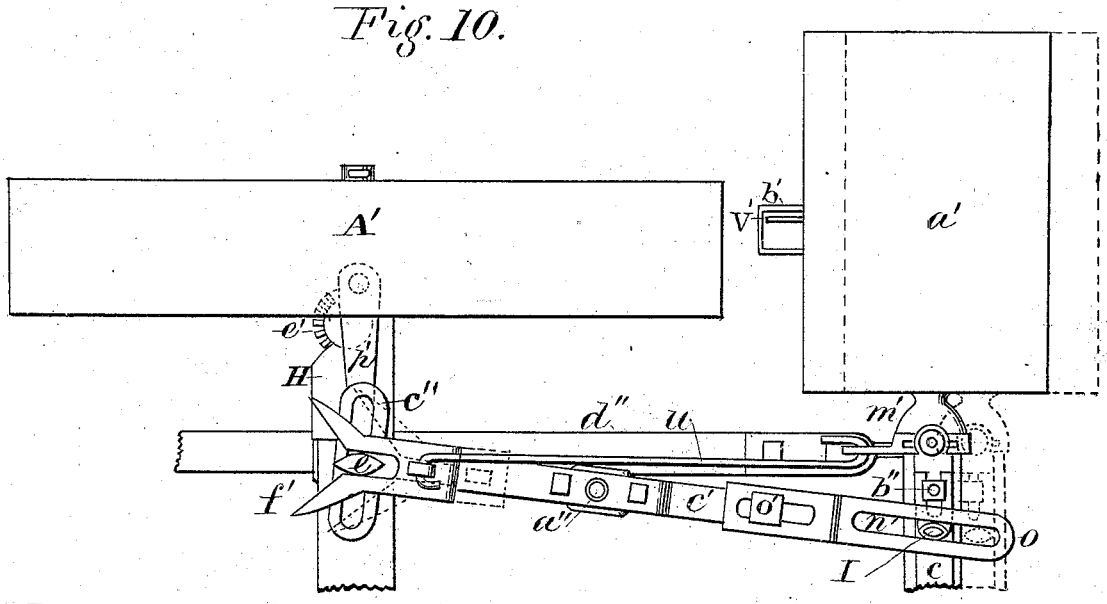


Fig. 12

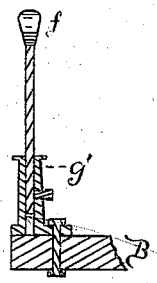


Fig. 13

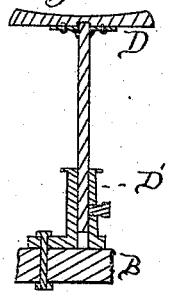
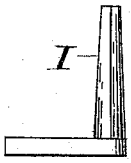


Fig. 11.



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UNITED STATES PATENT OFFICE.

AUSTIN C. EVANS, OF SPRINGFIELD, OHIO.

IMPROVEMENT IN CORN-PLANTERS.

Specification forming part of Letters Patent No. **217,083,** dated July 1, 1879; application filed October 24, 1878.

To all whom it may concern:

Be it known that I, AUSTIN C. EVANS, of the city of Springfield, in the county of Clarke and State of Ohio, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification.

My invention relates to the dropping devices and a peculiar and novel arrangement by which they are connected with and disconnected from the driving-gear, which is used when dropping or drilling automatically, comprising also the construction and arrangement of certain detachable parts in changing from a dropping-planter or hilling-machine to a drill; also, to auxiliary devices for forcing the shoes or cutters into the ground and retaining the depth during the operation of planting.

Figure 1 is a side elevation (from the right) of my machine. Fig. 2 is a plan view of the same. Figs. 3, 4, 5, 6, and 7 are details (enlarged) of the dropping devices. Fig. 8 is an enlarged view of the connecting parts for retaining the shoes in the ground and for throwing the automatic devices out of gear. Fig. 9 is a vertical cross-section of the wheel A′, its gearing and bracket supporting it, and the devices for connecting it with the drilling attachments. Fig. 10 is a top view of the left section of the machine shown in Fig. 2 through line x'. Fig. 11 is a view of the detachable L-shaped post I, which is bolted to the slide-lever c for connecting it with the automatic devices. Fig. 12 is a vertical central section, taken through the adjustable foot-rest, which is arranged below the driver's seat, and Fig. 13 is a like view of the adjustable dropper's seat, a portion only of the bar upon which the hollow standards of these devices are mounted being represented.

My planter is designed for operation by hand with an attendant on the front seat, D, and also for dropping and drilling automatically without such attendant.

The machine shown is of the usual form, with the front and rear (connected) sections, the latter being flexibly attached to the former by a common clevis-joint at the ends of the frame-bars d d''. These extend under the axle and support a scraper-bar, t', pivoted in their rear ends.

The tongue B is much longer than is usual, is attached under the main cross-bar b, and extends back to the rear of the axle. On its extreme rear end is bolted a hollow post, g', which supports an adjustable upright fork, the two prongs of which are turned flat toward each side to form the horizontal foot-pieces f, by which the shoes or runners h are forced into the ground. A set-screw retains the shank of the fork at any required height in the post g' to adapt the foot-levers to the convenience of the operator.

The seat C is supported upon the rear end of an inclined bar, d', above the rear of the machine. This bar is centrally pivoted above the axle between the two uprights of the rack-standard E, which latter is secured on the top of the axle. The ends of a fixed pin driven through the seat-bar rest in inclined slots n of the rack-standard. The front end of the seat-bar is also pivoted and made adjustable upon post V located on the tongue near the front seat-post, behind the cross-bar b. The post V, has a series of holes in it to allow of elevating or depressing the driver's seat to any fixed position from this point. A rock-shaft, r, connects the two uprights of the rack-standard E, being pivoted just over the tongue. A hand-lever, l, extends upward from this rock-shaft, and is provided with a catch, l', adapted to engage with the notches in the segmental rack on the top of E. The catch is operated by a rod, which connects the same with a spring-lever handle, l^2, pivoted near the upper end of the lever l. The rock-shaft r has a divided arm, r', extending forward, through which a flat slotted bar, i, extends vertically, passing also through a mortise in the tongue and seat-bar, as seen in Figs. 1 and 8. The lower end of bar i is pivoted in the tongue, and has a series of holes, $j\,j$, in it to make it adjustable. A long slot, i', extending in it from a point below the seat-bar to near the top end, allows it to rise through the arm r' when the rear of the tongue is elevated, which movement is made by the operator removing his feet from the foot-pieces f and throwing his whole weight upon the seat C, the bar d acting as a lever, with its fulcrum k in the standard E. This movement tilts the front section forward, throwing the drilling devices on the left end of the axle out of gear

with the dropping-slide, the operation of which will be hereinafter more fully explained.

A U-shaped locking-bar, *g*, (see Figs. 1, 2, and 8,) is pivoted by bolt *h'* to the arm *r'* of the rock-shaft, having a lateral extension to operate by the foot. This is thrown forward into the notch *y* on the top end of bar *i*, locking the two sections of the planter rigidly together, when it is desired to raise the runners out of the ground by the movement of the operator, before described. When the sections are thus locked, by throwing the hand-lever *l* forward the runners can be forced into the ground when the weight of the operator on the foot-levers *f* alone would not penetrate it. The depth of the runners can at the same time be regulated and retained by the hand-lever *l*, it being the long arm of an angular lever of which the arm *r'* is the short one, with the rock-shaft *r* at the angle as its fulcrum.

The seed-boxes *a* and *a'* have rotary seed-plates *m*, provided with the usual number of seed-cells. On the under side of these seed-plates (see Fig. 6) the series of lugs *x x* projecting at right angles from their under surface (for actuating them) are nearly in the form of an equilateral triangle in their cross-section, this form being necessary to facilitate their operation by the rhombus-shaped block G on the horizontal slide-lever *c*, which actuates the seed-plates. It will be noticed that this block actuates the disk *m* when lever *c* is reciprocated by its angular points Z Z catching over one of the lugs *x* on either side of their circle at each movement. The block G operates the disk entirely from within the circle of the lugs *x x* instead of from the outside of the circle, as is the case with all forms of the ordinary slide-lever for actuating rotary seed-plates.

In the view shown in Fig. 6 slide-lever *c* is shown in dotted lines, in order that the block G may be distinctly seen and its operation understood. Opposite to the block G on the slide-lever is a fork, 4, projecting at right angles from the rear edge, which straddles lug 3 (see dotted lines, Fig. 6, and cross-section of slide-lever, Fig. 7) at the top of the seed-tube *w'* on the front side. (See Figs. 5, 6, and 7.) The fork 4 is detachable, being screwed on the slide-lever *c*, and used for oscillating the seed-tube *w'* in dropping in groups or hills, and is taken off, when the machine is used in drilling.

The valve V' is a stationary one, the opening at the lower end for the discharge of the seed in dropping for hills being made by the oscillation of the pivoted seed-tube *w'* over it. This valve is in two parts, (see Figs. 3 and 4,) 1 and 2. The upper section, 1, is cast solid in the form of a thin rib on the rear (central line) of the runner-post *p*, extending from about the middle to the point, where it is formed into a boss for the reception of the pivot-bolt *q*, which pivots the seed-tube *w'* to the post from that point downward, inclusive of the wide part which extends across the seed-pockets *b'* of the tube. It is in a separate detachable piece, and is removed when using the machine as a drill. It is secured to the post by screws through the transverse rib *v''*, which latter is let into the groove *w*, extending across the rear of the post for the purpose of firmly securing this portion of the valve from displacement. The seed-tube *w'* is an open funnel-shaped tube entire from the mouth 1' to the point 2'. (See Fig. 5.) From this point to the lower end it is open on the side in contact with the post, which is flat and smooth to allow it to operate easily. Its upper part is vertical, so that it forms an angle at the upper point of contact. Its lower end extends to the rear, and is formed into a square tapering pocket (open above and below) for the retention of the seed, and to bring it to view before it is deposited in the furrow. It is oscillated laterally on its pivot *q* over the fixed valve V' by the motion of the slide *c* and its connection therewith through the bifurcated piece 4 and lug 3. (See Figs. 3, 4.) At the upper part of the opening in the tube is seen a notch or offset, 2', which covers the top end of *v'* as *w'* is oscillated, so as to prevent the seed from being obstructed in passing over the valve. The form of the pocket *b'* and the movement of the lower end of the tube away from the valve causes the seed to be discharged exactly in the center of the furrow.

To prepare my machine for drilling the detachable parts before described are taken off, and the seed-tubes *w'* are inclined inward at the top and secured by the hooks *h''* on the rear of the cross-bar *b*, so as to be stationary.

The dropper-slide *c* is connected to the driving-gear on the left end of the axle through a lever, *c'*, pivoted on the top of the post *b'''*, which stands on the left side bar, *d''*, (see Figs. 1, 2, 9, 10,) about midway between the axle and the cross-bar *b*. This lever oscillates in in a horizontal plane, actuating the seeding-devices through a detachable L-shaped post, I, which is bolted on the top of the slide-lever *c* by bolt *d''* (see Fig. 2) on the left of the dropper's seat, and extends up through slot *n'* in the adjustable plate O on the forward end of the lever. Its rear end is provided with a sleeve, terminating in an angular fork, from which a slot extends forward about half its length. This fork receives a stud having an oval-shaped head, *e*, on the end of pitman *p'*, the latter connecting it with a crank on the top of a vertical pinion-shaft, *p''*, in the open bracket H.

The pinion *e'* is geared into the concentric gear-wheel F on the wheel A'. When the movement is made, as before described, to disconnect the driving-gear from the drilling devices for the purpose of turning at the ends of rows, &c., and the front section tilted forward, as seen in Fig. 10, the clutch or fork *f'* is drawn forward by a hooked rod, *u*, which connects it with hand-lever bracket *m'* on the left seed-box, thus releasing it from the stud *e*, the neck of which plays back and forth in the elongated transverse slot in the plate *c''* on the rear end

of c', under f', the object being to allow of easy disconnection at this point by simply removing the feet of the operator from the foot-pieces f f, and permitting the gearing F e' and pitman p' to continue in motion, also to allow of easy connection being made at the option of the operator by replacing his feet on the foot-pieces and lowering the runners into the ground without the use or interposition of a hand-lever.

The shape of the head of stud e allows it to readily enter the slot in fork f' although the pitman p' is in motion, the faces of the fork standing at an angle of about forty-five degrees, so as to readily guide the stud e into its slot.

Heretofore drilling and dropping planters using concentric driving-gear have been thrown out of gear by disconnecting the pinion from the drive-wheel. This mode causes shocks and often breaking of the cogs. Besides this it is not always certain in operation, while my devices allow the connection and disconnection to be made with ease and certainty, and without shock or breakage.

The sectional view, Fig. 12, clearly shows the hollow post secured to bar B by a screw or bolt passing through a flange or plate formed at the base of the same. It is obvious, however, that the standard may be secured in other ways with like result. In Fig. 13 the dropper-seat D is illustrated as mounted in the same way as the foot-rests f, a hollow post, D', being secured upon bar B in like manner with post g'. The standard of the seat D is swiveled in post D', and rendered adjustable by a set-screw, substantially as shown.

I wish to be distinctly understood as making no claim to the adjustable dropper-seat, nor the adjustable foot-rests beneath the driver's seat, considered as separate devices.

I claim as my improvement—

1. In a corn-planter, the stationary valve V', constructed in two sections, 1 and 2, the lower section, 2, of which is detachable, so that by its removal the devices connected therewith may be used for drilling, as hereinbefore set forth.

2. The pivoted seed-tube w', in combination with the stationary valve V', lower detachable section, 2, and the runner-post p, all constructed and arranged substantially as specified, and adapted to be operated for both dropping and drilling the seed.

3. In a corn-planter, a runner-post, p, constructed with a fixed or stationary valve, V', on the rear side of the same, for the purpose of adapting it to the operation of a seed-tube, w', pivoted thereto, and actuated in connection with the seed-plates by either a hand-lever or other driving mechanism, for the purpose hereinbefore set forth.

4. Hooks h'', arranged upon the cross-bar b, in combination with the pivoted seed-tube w' and the cross-bar b, whereby the seed-tube may be swung round upon its pivot, and then maintained in position by the engagement of the hook therewith, as and for the purpose set forth.

5. A rotary seed plate or disk, m, having a series of lugs, x x, projecting from its under surface, and of nearly equilateral triangular form in their cross-section, said lugs being arranged in a circle, and the disk thereby being adapted to be operated by a rhombus-shaped block, G, on the slide-lever c from within said circle, substantially as specified, and for the purpose set forth.

6. In a planter having a rotary seed dropping and drilling device, slide-lever c, rhomboid block G, seed-plate m, fork 4, in combination with seed-tube w', valve V', and runner-post p, as and for the purpose set forth.

7. In a pivoted or movable seed-tube, w', adapted to be operated in connection with a fixed or stationary valve, V', on the runner-post of a seed-planter, a rearward-projecting and downwardly-tapering seed-pocket, b', open above and below, as and for the purpose specified.

8. In combination with the stationary valve V' secured upon the runner-post, the pivoted seed-tube w', arranged to oscillate laterally over the said valve, substantially as herein shown and described, and for the purposes set forth.

9. In a corn-planter having its front and rear sections flexibly connected together, and constructed substantially as described, the adjustable, slotted, vertical bar i, connecting the tongue with the arm r' of rock-shaft r and its hand-lever l, and adapted to be operated in connection with the locking-bar g when thrown into its notch y for locking the two sections of the planter rigidly together, as and for the purpose hereinbefore set forth.

10. In a corn-planter having its front and rear sections flexibly connected together, and constructed substantially as described, an elevated rack-standard, E, on its axle, having an open guideway between its uprights, and supporting a seat-bar, d', and a rock-shaft, r, (with its hand-lever l and auxiliary locking devices,) pivoted therein, substantially as hereinbefore specified, for the purpose set forth.

11. In combination with the rack-standard E, hand-lever l, rock-shaft r, having arm r', locking-bar g, pivot-bolt h', bar i, having slot i', notch y, and holes j, and tongue B, as and for the purpose hereinbefore specified.

12. In combination with the pivoted hand-lever l, arranged to force the runners into the ground through the medium of a vertical rod or bar, i, and a rock-shaft, r, the post g', having flaring foot-pieces f, and mounted upon the tongue B in rear of the axle and below the driver's seat, the same constituting a means auxiliary to the said lever for the purpose of forcing down the runners, substantially as shown and specified.

13. In a corn-planter having its front and rear sections flexibly connected together, and constructed substantially as described, concentric gear-wheel F, pinion e', pitman p'',

plate c'', fork f', stud e, pivoted bar c', slotted plate o, and post I, for connecting with slide-lever c when dropping or drilling automatically, as hereinbefore set forth.

14. In a corn-planter having its front and rear sections flexibly connected together, and constructed substantially as described, the driving-gear adapted to be disconnected from the actuating-lever c', that connects the same with its dropping and drilling devices, by removing the weight of the operator from the rear of the tongue to the driver's seat C, whereby the front section is tilted and the clutch f drawn forward on the lever c' by the rod u connecting it with the bracket m' on the seed-box a', and disengaged from the stud e on the pitman p', as hereinbefore set forth.

15. The slotted plate c'', in combination with the stud e on the pitman p', for allowing the play of the stud in its slot when the clutch f' is drawn forward without communicating motion to the vibratory lever c', or entirely disconnecting it from the same at the time the parts are thrown out of gear, substantially as hereinbefore specified.

16. The L-shaped post I, detachably bolted to the cross-bar b, in combination with the slotted plate o and the slide-lever c for connecting the forward end of the vibratory lever c' with the latter when using the machine as an automatic drill or planter.

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