

No. 645,683.

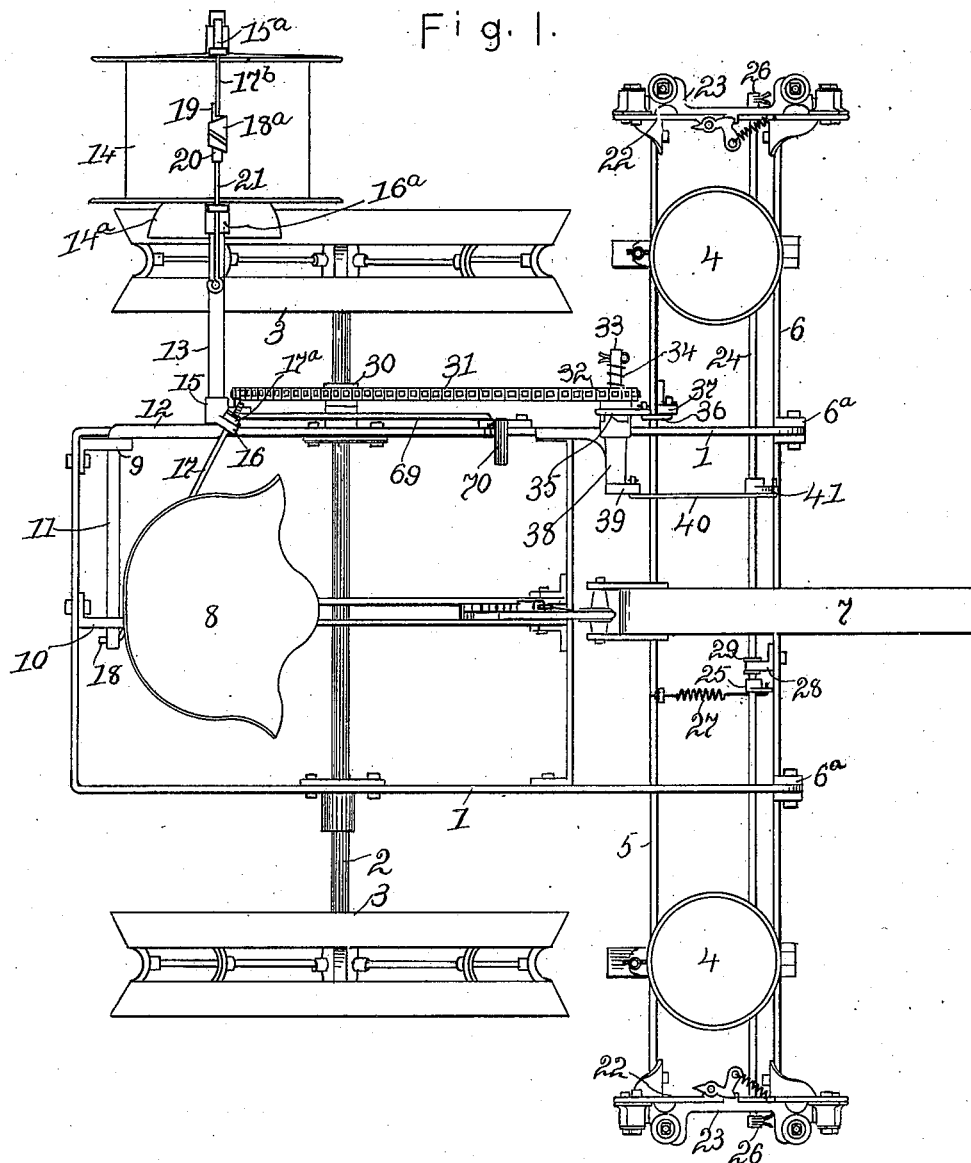
Patented Mar. 20, 1900.

W. S. GRAHAM.  
CORN PLANTER.

(Application filed Dec. 11, 1899.)

(No Model.)

4 Sheets—Sheet 1.



Attest

W. S. Graham.

W. S. Graham

Inventor,  
W. S. GRAHAM.

by L. P. Graham  
his attorney

No. 645,683.

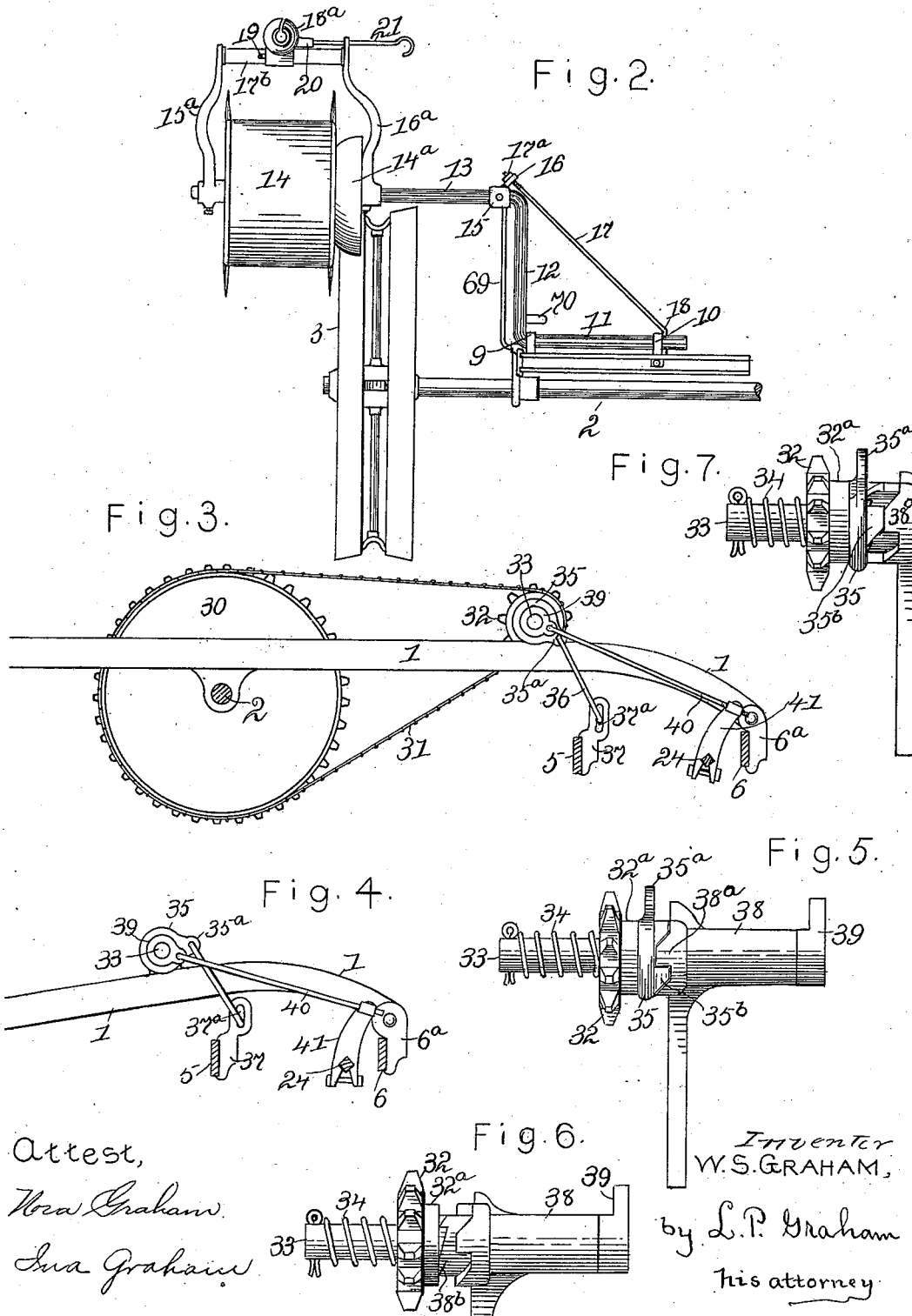
W. S. GRAHAM.  
CORN PLANTER.

Patented Mar. 20, 1900.

(No Model.)

(Application filed Dec. 11, 1899.)

4 Sheets—Sheet 2.



No. 645,683.

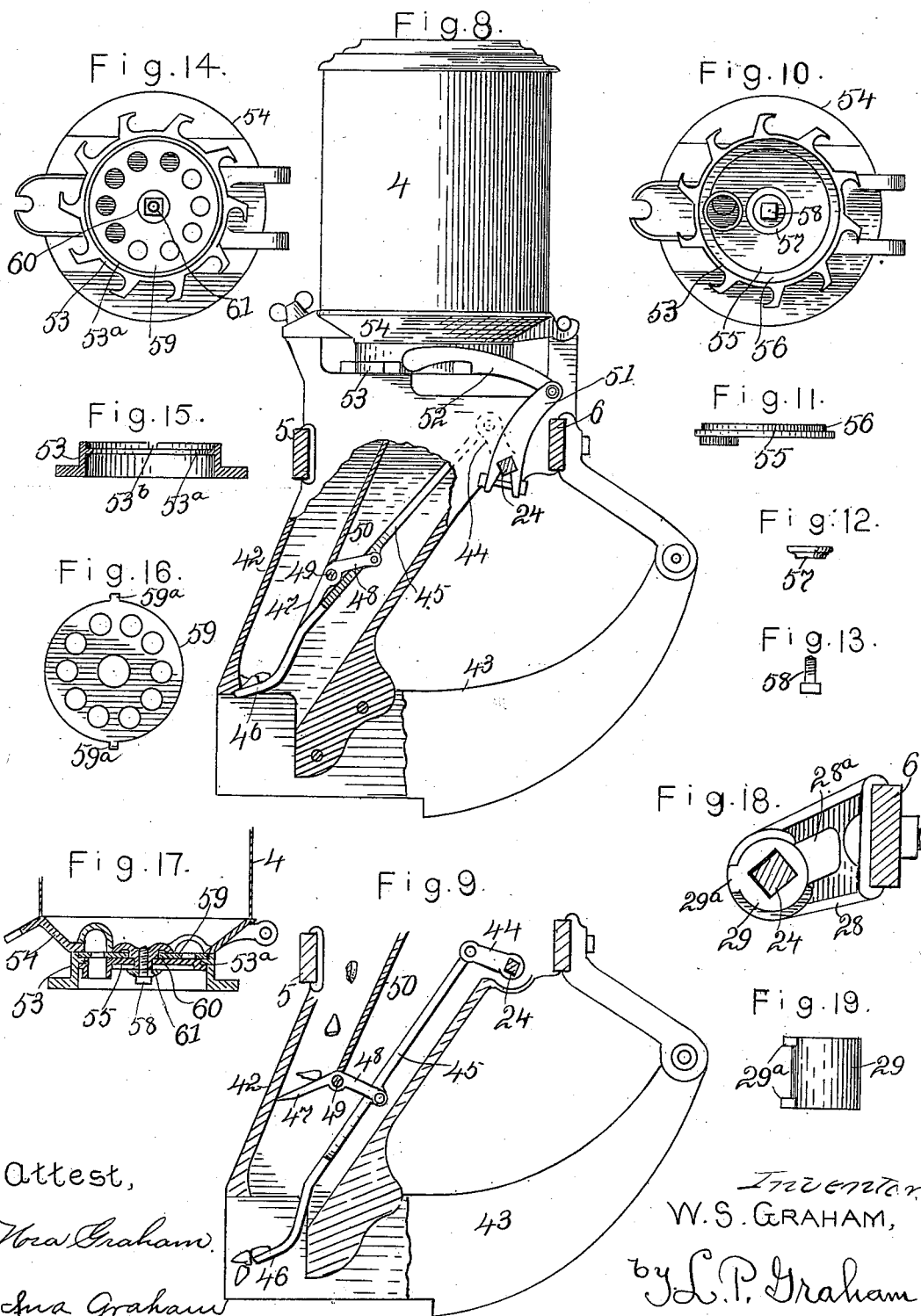
Patented Mar. 20, 1900.

W. S. GRAHAM.  
CORN PLANTER.

(Application filed Dec. 11, 1899.)

(No Model.)

4 Sheets—Sheet 3



Attest,  
Wm. Graham.  
Chas. Graham

Inventor  
W. S. GRAHAM,  
by L. P. Graham  
his attorney

No. 645,683.

Patented Mar. 20, 1900.

W. S. GRAHAM.  
CORN PLANTER.

(Application filed Dec. 11, 1899.)

(No Model.)

4 Sheets—Sheet 4.

Fig. 20.

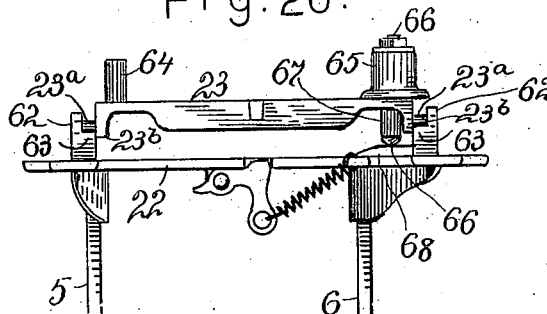
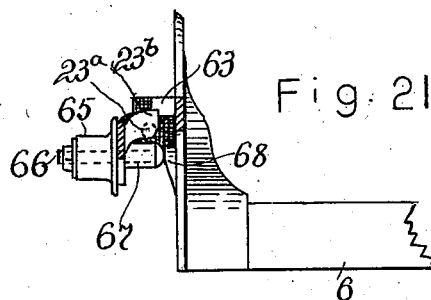


Fig. 21.



Attest,

*Nora Graham.*

*Sra Graham.*

*Inventor*  
W. S. GRAHAM.

by *L. P. Graham*  
his attorney

# UNITED STATES PATENT OFFICE.

WILLIAM S. GRAHAM, OF CANTON, ILLINOIS, ASSIGNOR TO THE PARLIN & ORENDORFF COMPANY, OF SAME PLACE.

## CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 645,683, dated March 20, 1900.

Application filed December 11, 1899. Serial No. 739,979. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM S. GRAHAM, of the city of Canton, county of Fulton, and State of Illinois, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification.

This invention has reference to certain details of a corn-planter, as will hereinafter appear. It is exemplified in the structure hereinafter described, and it is defined in the appended claims.

In the drawings forming part of this specification, Figure 1 is a plan of a planter embodying my improvements. Fig. 2 is a rear elevation of the check-row-wire reel. Fig. 3 is a side elevation of the drill mechanism, showing the same in operation. Fig. 4 is a side elevation of a part of the drill mechanism, showing the same thrown automatically out of operation preparatory to turning the planter. Fig. 5 is a detail plan of the clutch of the drill mechanism. Fig. 6 is a similar representation of the same mechanism with the clutch-shifting arm omitted. Fig. 7 is a detail illustrating the manner in which the clutch is detached. Fig. 8 is a side elevation of a seedbox, shank, and runner, showing the second drop movement in a corn-retaining position. In this figure a side of the shank is broken away to expose the second drop movement. Fig. 9 is a vertical section through the shank of the seedbox, showing the second drop mechanism in the act of discharging a hill of corn. Fig. 10 is a representation of the under side of a seedbox. Fig. 11 is a side or edge view of a plate used to sustain the seed-disk and the ratchet-ring by means of which the seed-disk is rotated. Fig. 12 is an edge view of a washer used in connection with the plate shown in Fig. 11. Fig. 13 is a representation of the bolt used to connect the plate with the bottom of the seedbox. Fig. 14 is a representation of the bottom of the seedbox with the plate shown in Fig. 11, the washer shown in Fig. 12, and the bolt shown in Fig. 13 removed therefrom. Fig. 15 is a vertical section through the ratchet-ring used to rotate the seed-disk. Fig. 16 is a plan of a seed-disk. Fig. 17 is a vertical section through the bottom of a seedbox and the seed-dropping mechanism thereof. Fig. 18 is a side

elevation of a bracket used to stay the check-row shaft. Fig. 19 is a plan of a collar used in connection with the shaft-stay. Fig. 20 is a detail in plan of certain novel peculiarities of the check-row head, and Fig. 21 is a cross-section detail of the same.

The rear frame of the planter is shown at 1, the axle-shaft at 2, and the carrying-wheels at 3. Seedboxes are represented at 4, the cross-bars of the front frame are shown at 5 and 6, the tongue is shown at 7, and the seat at 8. The rear frame is hinged to the front cross-bar 6 through hinge-blocks 6<sup>a</sup>.

The reel-shaft 13 is bent downward at 12 and then extended horizontally at 11, the object being to support the reel from the frame and hold it above one of the carrying-wheels 3. The lower horizontal extension 11 is journaled in brackets 9 and 10, attached to the rear bar of the rear frame, the reel 14 is mounted on the upper horizontal extension 13, and a brace 69 extends from the shaft 13 to a foot-lever 70, which is fulcrumed on a side bar of the rear frame. The reel has a bell-flange 14<sup>a</sup>, which is adapted to engage the carrying-wheel, and to keep the flange in proper relation to the wheel an adjustable brace is provided for the upward extension 12. The brace comprises a collar 15, fixed onto the reel-shaft at the upper end of extension 12, a perforated lug 16, formed on the collar, a brace-rod 17, connecting with the end of extension 11 farthest from extension 12, as shown at 18, and a nut 17<sup>a</sup> on the threaded upper end of rod 17. By adjusting nut 17<sup>a</sup> against lug 16 the reel may be firmly supported and its relation to the wheel may be properly maintained.

Arms 15<sup>a</sup> and 16<sup>a</sup> rise from the reel-shaft one on each side of the reel, and they are connected at their upper ends by a bar 17<sup>b</sup>. A wire-guide 18<sup>a</sup> is mounted slidably on bar 17<sup>b</sup>. It has a stop projection 19 on one side to limit its side motion, and on the other side it has a sleeve into which an end of rod 21 extends. The rod 21 has a sliding bearing in the upper end of arm 16<sup>a</sup> above bar 17<sup>b</sup>, and by means of the rod the wire-guide 18<sup>a</sup> is shifted from side to side of bar 17<sup>b</sup> to properly place the wire on the reel. The reel is turned by frictional contact with the wheel and the wire

may be reeled up while planting the last two rows.

The drill mechanism is driven by means of a sprocket-wheel 30, fastened onto axle or shaft 2, and the motion is transmitted through a chain belt 31. A sleeve-bracket 38 is fastened to a side bar of the rear frame, a shaft 33 is journaled in the sleeve, and an arm 39 is fixed on one end of the shaft. On the opposite end of the sleeve a sprocket-wheel 32 is mounted loosely on the shaft and provided with clutch-ratchets on the inner face of its collar 32<sup>a</sup>. The shaft has clutch-ratchets corresponding to those of the sprocket-wheel, and a spring 34 tends to hold the wheel in clutch with the shaft. The sleeve 38 has broad-faced inclined teeth 38<sup>a</sup> presented toward the sprocket-wheel, but out of contact therewith, and between the sprocket-wheel and the teeth of the sleeve surrounding the clutch-teeth of the shaft and the wheel is journaled a collar 35, which is toothed at 35<sup>b</sup> to conform to the teeth of the sleeve and provided with an arm 35<sup>a</sup>. A rod 40 connects arm 41 on the check-row shaft 24 with the crank-arm 39 on shaft 33, and when the clutch-ratchets of the sprocket-wheel 32 are in mesh with the shaft motion may be imparted to the check-row shaft from the axle-shaft 2 of the planter through wheel 30, chain 31, wheel 32, shaft 33, crank-arm 39, rod 40, and arm 41. The clutch mechanism is located above the rear cross-bar 5 of the front frame of the planter, and a rod 36 connects the arm 35<sup>a</sup> of collar 35 with the slotted end 37<sup>a</sup> of a bracket 37 on cross-bar 5. The rear frame of the planter is hinged to the front cross-bar of the front frame, and as the front frame is raised and lowered the rear cross-bar 5 moves toward and from the part of the rear frame above it. This varies the distance between the bracket 37 and the clutch-shaft, and the variation is used to disengage the clutch when the front frame is raised. The clutch-disengaging operation is exemplified in Figs. 4 and 7, the arm 35<sup>a</sup> of the clutch-disengaging collar being thrown upward by the rise of bar 5 in Fig. 4 and the effect of such motion being illustrated in Fig. 7. As the up-and-down motion of bar 5 with relation to the clutch-shaft is greater than is needed to shift the clutch and as the clutch should not be affected by variations in depth of planting the slot 37<sup>a</sup> is provided. While the planter is in operative position, the slot permits enough up-and-down motion in the front frame to meet ordinary requirements without disturbing the clutch, and it is only the extreme upward motion of the front frame that is communicated to the clutch. The clutch-shifting collar encircles the clutch-teeth, thus forming a housing therefor, and the teeth 38<sup>a</sup> and 35<sup>b</sup> are broad enough to preclude the possibility of one set riding past the other set as the clutch is thrown out of operation.

The actuating mechanism for the seed-disks of the boxes 4 comprises ratchet-rings 53,

pawls 52, and arms 51 on the rock-shaft 24. Each ratchet-ring has an annular internal rib 53<sup>a</sup> near its upper edge and a notch or notches 53<sup>b</sup> in its upper edge. Each seed-disk 59 has a spur or spurs, as 59<sup>a</sup> in Fig. 16, and the disks are adapted to rest in the ratchet-rings with their spurs in the notches thereof. The bottom plate 54 of a seedbox has a circular boss 60 extended downward from its center, and beyond the boss is a prismatic stud 61. The seed-disk fits over the circular boss, the ratchet-ring fits up against and around the seed-disk, and a plate 55 fits over the prismatic stud against the seed-disk and the rib of the ratchet-ring. A washer 57 bears against the end of stud 61 and the plate 55, and a bolt 58 screws into the boss 60 of the bottom plate of the seedbox and holds all the parts in position. The seedbox is swingably mounted on the frame, and whenever it is desired to change the seed-disk to plant more or less corn the box is inverted, the bolt 58 is withdrawn, and the change is made by simply substituting one plain seed-disk for another of different thickness or having different-sized holes.

The second drop comprises mechanism as follows: A drop-bar 45 is connected at its upper end with the swinging end of an arm 44, which is mounted on the check-row shaft 24, and its lower end is adapted to bear against the rear wall of the shank 42. A plate 47 is pivoted in the shank at 49 in the rear of the drop-bar, and it has an arm 48, which extends forward and upward and connects pivotally with the drop-bar. When the check-row shaft is in its normal position, the end 46 of the drop-bar bears against the rear wall of the shank and closes the corn-chute, while the plate 47 assumes a position in line with partition-wall 50 and forms a part of the front wall of the corn-chute. When the check-row shaft is rocked, the corn-detaining end 46 of the drop-bar is forced downward into the heel of the runner 43, as shown in Fig. 9, and the plate is swung across the chute to form a detaining-valve for the corn. The rock-arm 44 swings rearward in forcing the drop-bar downward, while arm 48 swings forward, and so the bar is given a tilting motion that expedites the discharge of the grain. The plate and the drop-bar both swing downward with the grain in discharging the same, and so there is no danger of the grain becoming wedged. When the drop-bar is held at half-throw by the common expedient of hitching a check-row fork behind a projection on the check-row head or otherwise, a passage is left through which corn may be drilled. The check-row shaft is thrown in one direction by a check-row wire acting on a forked lever 26 and is returned by a spring 27, acting on an arm 25. The shaft 24 is square in cross-section to facilitate proper placing of the different arms with which it is equipped. The spring 27 is located near the center of the shaft, and it exerts a stress on the shaft tending to spring it

out of a straight line. To overcome this tendency, a stay-bracket 28 is fastened to a cross-bar of the front frame near the arm 25, with which the spring is connected. The bracket 5 has a circular bearing in its end, and it is slotted at 28<sup>a</sup> to form an opening adjacent to the circular bearing. A circular bearing-block 29 has a square opening to receive the check-row shaft. It is adapted to the circular opening in bracket 28, and it has radial lugs 29<sup>a</sup> on its ends, which are smaller in circumferential extension than the slot of the bracket. The bearing-block is seated in the bracket by passing one of the lugs through slot 28<sup>a</sup> and then turning the bearing until the lugs are opposite the slot, when the required amount of oscillation may be given to the shaft without swinging the lugs in line with the slot.

The check-row head consists of two members 22 and 23, one of which is mounted fixedly onto the cross-bars 5 and 6, while the other is hinged to the first, so as to permit dumping of the check-row wire. Details of the head are shown in Figs. 20 and 21, as follows: Bearing-lugs 62 project outward from the fixed member of the head, and they have bearing-blocks 63 on their inner surfaces. The swinging member 23 is as long as the distance between the bearing-blocks, and it has pivot-pins 23<sup>a</sup>, that extend farther and journal in the lugs below the bearing-blocks. Inward extensions 23<sup>b</sup> on the ends of the swinging member fit between the bearing-blocks while the head is in operative condition and prevent the swinging member from sliding toward one lug 62 and becoming detached from the other lug. In putting the members of the head together the swinging member is lowered until extensions 23<sup>b</sup> are out of line with bearings 63. One pivot-pin is pushed through a lug its full length, the other pin is inserted through its lug, and the member is swung upward until it is held from longitudinal motion by bearings 63. To hold the swingable member in an undetachable position, a sleeve 67 is made for a bolt of one of the pulleys, such sleeve being sufficiently long to strike against the fixed member when the swingable member is lowered and prevent motion beyond the stay-bearings 63. Studs, as 64, project from casting 23, and pulleys, as 65, are journaled on the studs. Bolts, as 66, are used to fasten the pulleys on the studs, and all that is needed to hold the swingable member against excessive swing is a longer bolt and a sleeve of proper length to fill the space between the bar 23 and the bearing-surface 68 when the swingable member is in the position shown in Figs. 20 and 21.

60 I claim—

1. The combination with a reel-shaft having two rectangular bends, of an adjustable brace-rod extending from one of the horizontal extensions to the vertical extension.

65 2. The combination with a reel-shaft having a supporting downward extension and a pivotal horizontal extension of an adjustable

brace-rod extending from the upper end of the vertical extension to the pivotal extension.

3. The combination in a reel-frame of arms 70 rising on opposite sides of the reel, a bar connecting the arms, a wire-guide mounted slidably on the connecting-bar and a shift-rod connected with the wire-guide and having a sliding bearing in one of the arms. 75

4. In drill mechanism for planters, the combination of a counter-shaft journaled on the front part of the rear frame, a crank-arm on the counter-shaft connected with the check-row shaft, a drive-wheel having a clutch connection with the counter-shaft and a clutch-shifter connected with the rear part of the front frame. 80

5. In drill mechanism for planters, the combination of a counter-shaft journaled on the 85 front part of the rear frame, a crank-arm on the counter-shaft connecting with the check-row shaft, a sprocket-wheel on the counter-shaft having a clutch connection with the shaft, a clutch-separating collar mounted on the clutch between the wheel and a fixed bearing and a connection between the collar and the rear part of the front frame. 90

6. The combination in drill mechanism for planters, of counter-shaft 33 journaled in 95 sleeve 38 on the front part of the rear frame, crank-arm 39 connecting with the check-row shaft clutch-teeth on the shaft, a sprocket-wheel 32 having sprocket-teeth to engage the teeth of the shaft, a spring 34 to hold the 100 sprocket-wheel in clutch with the shaft, the clutch-separating collar encircling the clutch-teeth between the wheel and a fixed bearing of the sleeve and a rod 36 connecting the collar with the rear of the front frame of the planter. 105

7. The stay for the check-row shaft, comprising the bracket 28 slotted at 28<sup>a</sup> and the bearing-block 29 having the side lugs 29<sup>a</sup>, substantially as and for the purpose described.

8. The combination in the first drop mechanism of a planter of a hopper-bottom having 110 a central downward-extended circular boss and a prismatic stud extending below the boss, a seed-disk having radial projections on its edges, such disk being journaled on the boss 115 of the hopper-bottom, a ratchet-ring having an internal rib and notches to receive the projections of the disk, a plate fitting over the prismatic stud against the seed-plate and the rib of the ratchet-ring and a bolt engaging the 120 boss of the hopper and holding the parts in place.

9. In a check-row head, the combination of a fixed member, a swingable member pivoted to the fixed member and separable therefrom 125 by longitudinal shift when the swing exceeds the ordinary wire-dumping motion, and a stop-sleeve held in position on the swingable member by one of the pulley-securing bolts thereof, substantially as described. 130

10. A planter-drop comprising a chute, a plate pivoted in the wall of the chute to swing upward in closing, an arm on the plate extending away from the chute, and a drop-bar

connected pivotally with the arm of the plate with its lower end extended under the discharge of the chute, substantially as described.

- 5 11. A planter-drop comprising a chute, a plate pivoted in the front wall of the chute to swing upward in closing, an arm extending forward from the plate, a rock-arm pivoted in front of the chute above the discharge end  
10 thereof and a drop-bar pivoted at its upper end

to the rock-arm, connected between its ends to the arm of the plate and having its lower end extended under the discharge end of the chute to form a closure therefor.

In testimony whereof I sign my name in the presence of two subscribing witnesses. 15

WM. S. GRAHAM.

Witnesses:

C. B. CHANDLER,

A. L. GARDNER.