

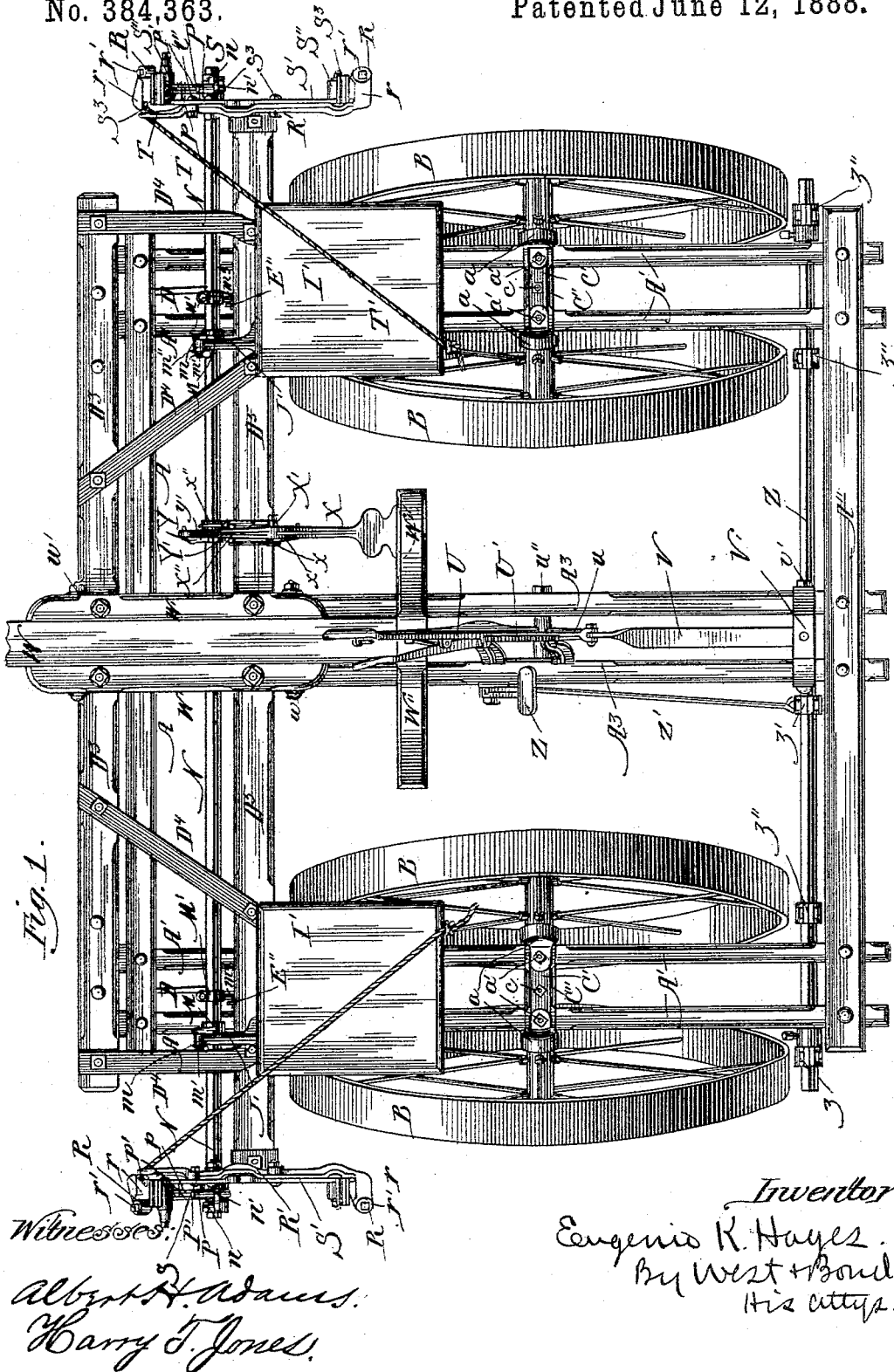
(No Model.)

6 Sheets—Sheet 1.

E. K. HAYES.
CORN PLANTER.

No. 384,363.

Patented June 12, 1888.



Witnesses:
Albert H. Adams.
Harry T. Jones.

Inventor:
Eugenio K. Hayes.
By West & Bond.
His attys.

No Model.)

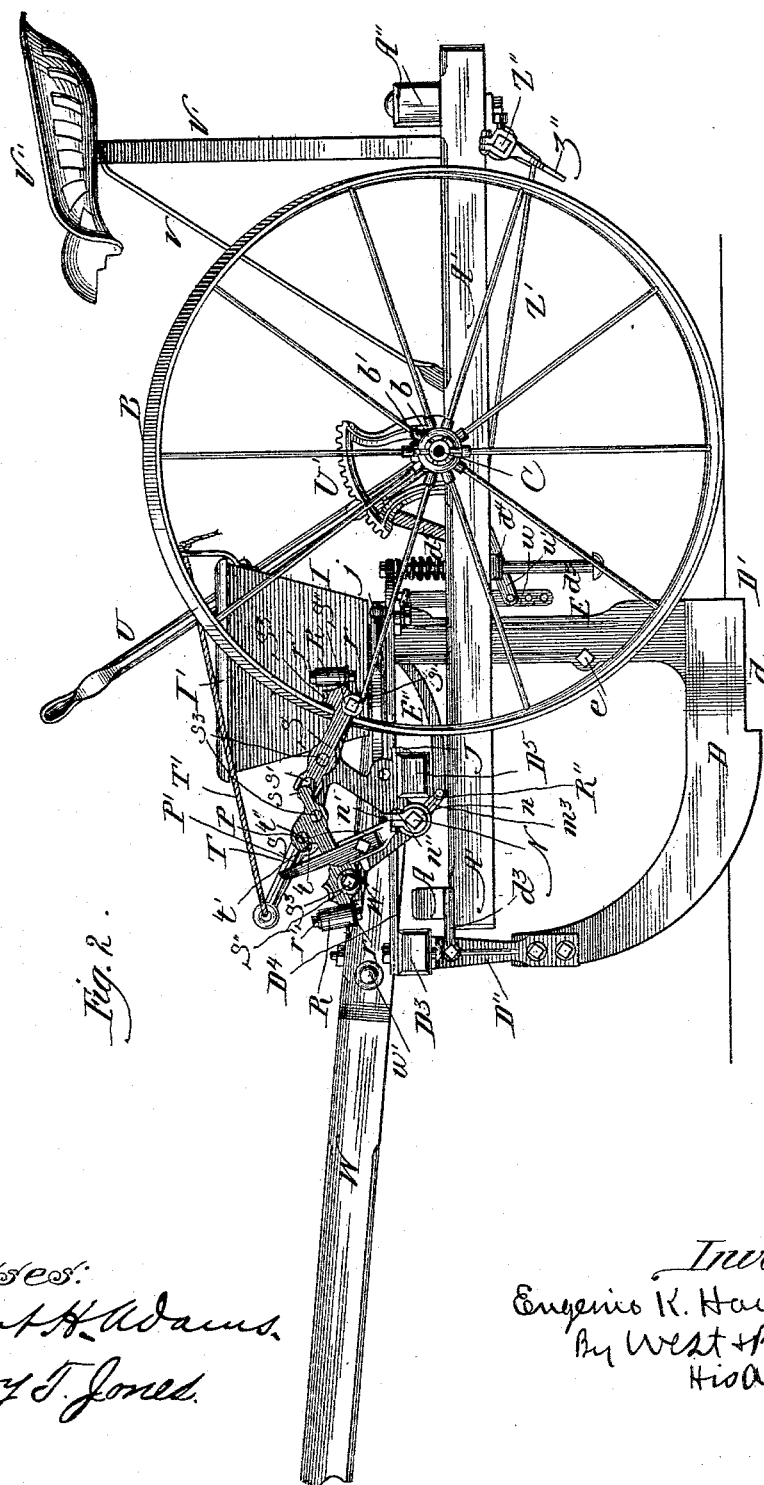
6 Sheets—Sheet 2.

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(No Model.)

6 Sheets—Sheet 4.

E. K. HAYES.

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Fig. 5.

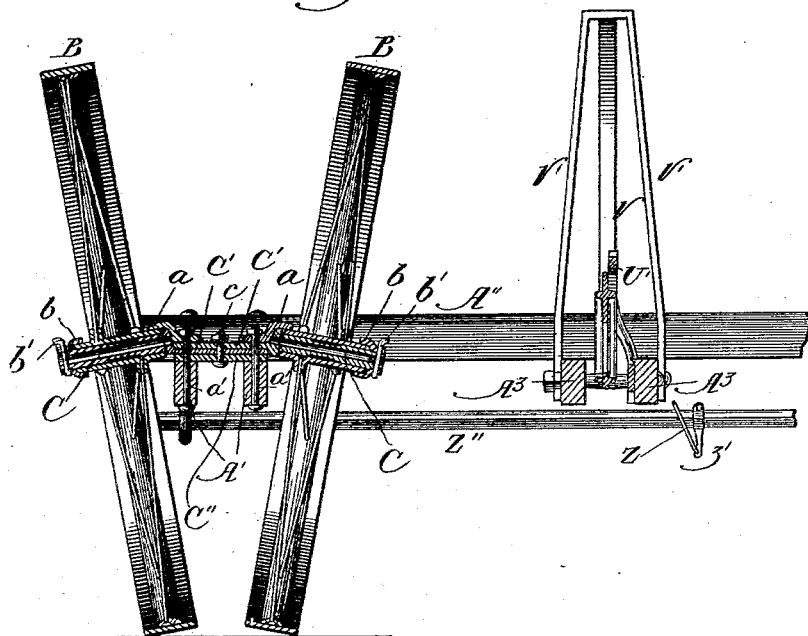


Fig. 6

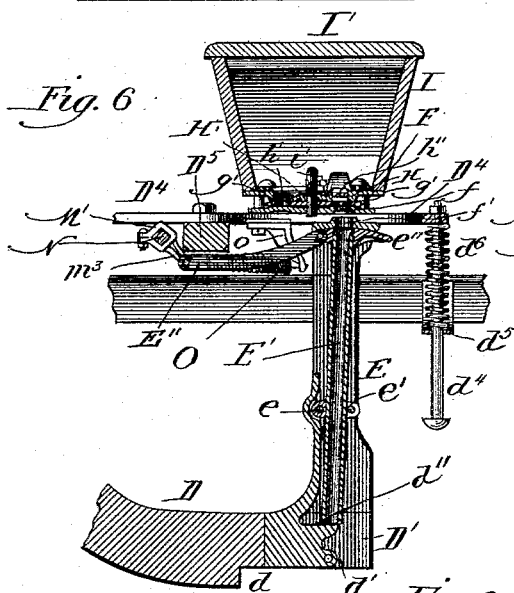


Fig. 7.

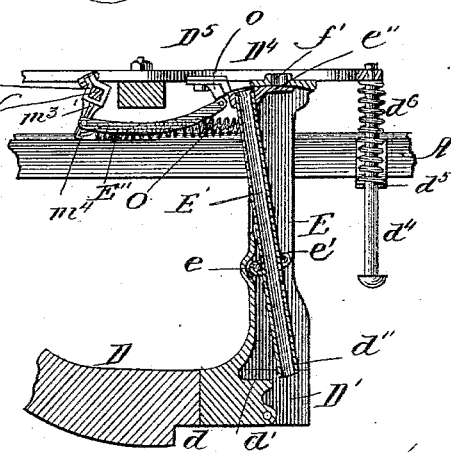
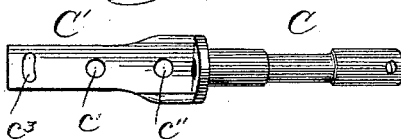


Fig. 8.



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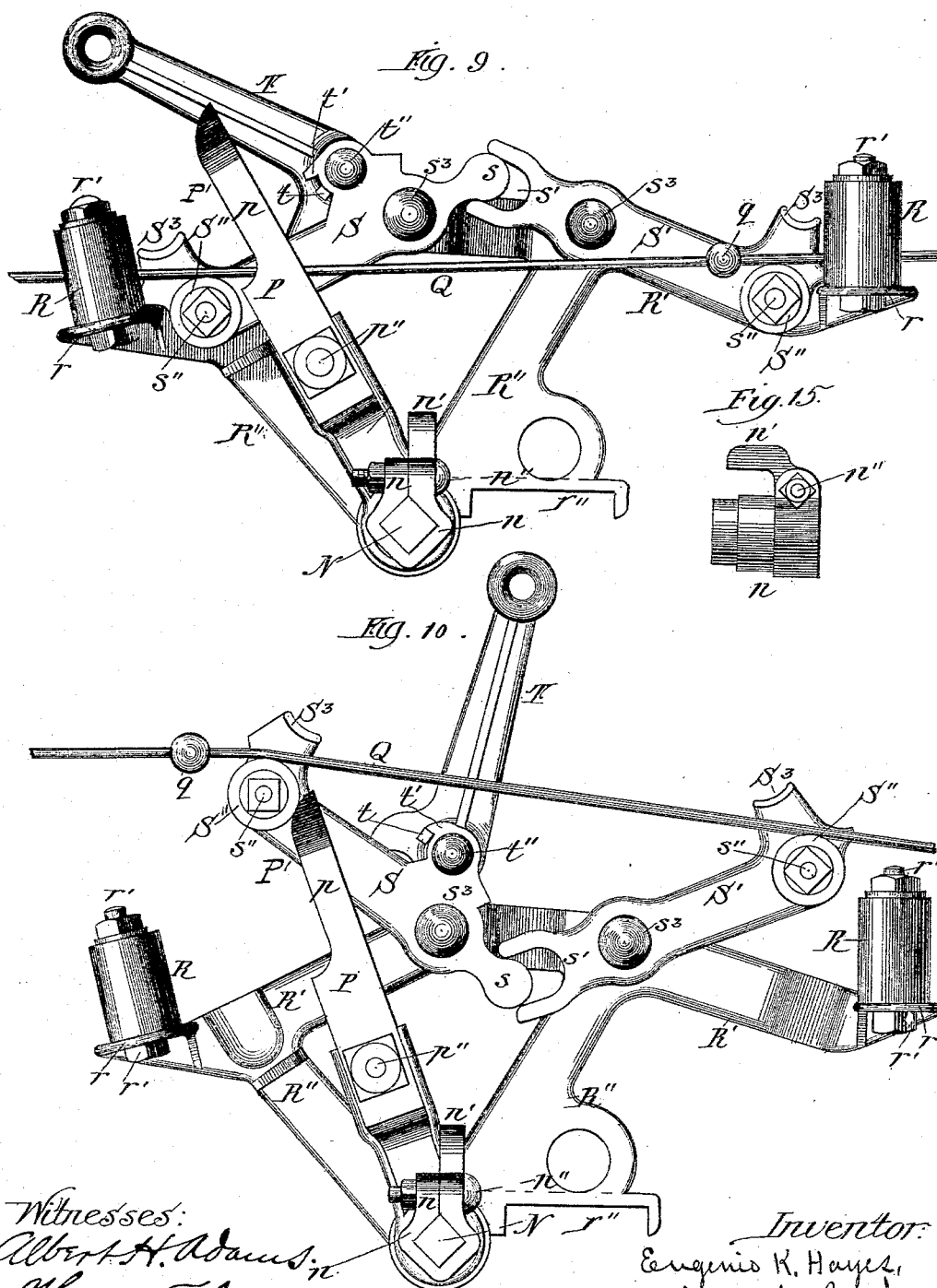
(No Model.)

6 Sheets—Sheet 5.

E. K. HAYES.
CORN PLANTER.

No. 384,363.

Patented June 12, 1888.



Witnesses:
Albert H. Adams,
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His Attys.

UNITED STATES PATENT OFFICE.

EUGENIO K. HAYES, OF GALVA, ILLINOIS.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 384,363, dated June 12, 1888.

Application filed October 13, 1887. Serial No. 252,944. (No model.)

To all whom it may concern:

Be it known that I, EUGENIO K. HAYES, residing at Galva, in the county of Henry and State of Illinois, and a citizen of the United States, have invented a new and useful Improvement in Corn-Planters, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a top or plan view with the tongue broken off; Fig. 2, a side elevation with the tongue broken off; Fig. 3, a view partly in side elevation and partly in cross-section, with the check-roller movement out of use; Fig. 4, a similar view of the devices for raising and lowering the runners; Fig. 5, a sectional elevation through the wheels on one side of the machine; Fig. 6, a sectional elevation of the dropping devices; Fig. 7, a sectional elevation of the dropping-tube; Fig. 8, a detail of one of the spindles for the wheels; Fig. 9, a side elevation of the check-wire support, showing the parts in working position; Fig. 10, a side elevation of the check-wire support, showing the parts in position to hold the wire out of use; Fig. 11, a top or plan view of the check-wire support; Fig. 12, a detail, being a top or plan view of the seed-dropping plate and its actuating devices; Fig. 13, a detail, being a cross-section through the dropping-plate; Fig. 14, a detail, being a plan view of the cut-off plate. Fig. 15 is a detail showing the locking-collar for the end of the rock-shaft.

This invention has for its objects to improve the construction and operation of the shoe and the covering-wheels and of the seed dropping devices generally, to improve the construction and operation of the check-wire support and the devices by which the runners are raised and lowered, and to improve the construction and operation of the machine as a whole; and its nature consists in the several parts and combinations of parts hereinafter described, and pointed out in the claims as new.

In the drawings, A represents the front cross sill or piece of the frame, to which at each end, at the proper distance apart, are bolted side pieces, A', which extend back and have bolted to their rear ends a rear cross-piece, A'', and running from the front cross-piece to the rear cross-piece at the center of the frame are longitudinal center pieces, A³, between which the tongue is pivoted, and which support the seat and devices for raising and lowering the

runners. The side pieces, A', furnish the supports for the wheel-spindles, four spindles being provided, one located on each side piece. 55

B are the wheels—two for each side of the machine—a wheel being located on each side of the side pieces, A'. Each pair of wheels is mounted so that the wheels can be set at an angle one wheel to the other, and be brought closer together at the bottom than at the top when used for planting purposes. 60

C are the spindles for the wheels B, each spindle having an extension or plate, C', in which are holes c' c'' and a slot, c³, and the spindle is set at an angle in relation to the plate, so that when the plate is horizontal the spindle will have a downward inclination, as shown in Fig. 5. The plates C' for the spindles lie one above the other, and are attached to the side bars, A', by a bolt, a', which passes through the side bar and the hole c'' in one plate and slot c³ in the other plate, and the hub of the wheel is slipped onto the spindle C, and is held thereon at the outer end by a cap, b, and a pin, b', and, as shown, the inner end of the hub is protected by a plate, a, having at the end a curved flange to fit around the end of the hub, and this plate is provided with a hole for the passage of the bolt a', by which the plate a is held in place. Each spindle C has an arm or extension, C', in which is a circular hole, c'', near the base of the arm, and a crosswise slot, c³, at the end of the arm, and the arms C' of two companion spindles when in place lie one over the other, as shown in Fig. 5, so that bolt a' can be passed through the hole c'' and slot c³, which are in line, and connect the arms C' together, and these holes and slots enable the spindles to be set at different inclinations, so that the wheels can be run at different angles. The spindles are set at different inclinations by loosening the bolt c and the bolts a', which permits the spindles to be moved fore and aft, the limit of turning being the contact of the face of the bolt a' with the end face of the cross-slot c³, and when the correct set of the spindles is reached the bolts c and a' are tightened up, locking the spindles one to the other and to the plate C', mounted on the side pieces, A', (see Fig. 5,) which plate C' forms a base for the plates C' across the space between the bars A' in the arrangement shown. 100

D are the runners—one for each side of the 105

- machine—the forward end of the runner being bolted or otherwise secured to a bracket, D'' , depending from a cross-piece, D^3 , and the heel of the runner is extended back in line with the dropping-tube from the seed-box. The heel D' of the runner is split and cut away on its under side, so as to leave a space, d , and in the heel is located a block, d' , on which is a shelf or stop, d'' , as shown in Figs. 6 and 7.
- 10 E is a standard running from a brace-support, D^4 , to the heel D' , and attached to the brace-support and the heel by bolts or in some other suitable manner. This standard is hollow, and within it is located the dropping-tube E' , the lower end of which coacts with the shelf or stop d'' . This tube E' is pivotally attached to a bolt or pin, e , by a split band, e' , which encircles the tube, and is locked thereto by a clamp-bolt or otherwise, so that the tube can oscillate on the pin or pivot e , and the upper end of the tube E' has an extension which forms a stop or shelf, e'' , which stop or shelf coacts with the opening in the top of the standard E , through which the seed drops.
- 25 This stop or shelf e'' , as shown, is on a band encircling the top of the tube E' , and to this band is pivotally connected one end of an arm or link, E'' , by which and a rock-shaft the tube E' is oscillated.
- 30 F is a plate located on top of the brace support D^4 , and having a hole, f , in line, when the parts are together, with a hole, f' , through the top piece, which lines with the tube E' when the tube is vertical, and each corner of this plate F has a lug or projection, f'' , standing above the plane of the plate, through which lugs and the plate are holes for the passage of bolts or screws, by which the plate is attached to the brace support D^4 .
- 35 G is the dropping plate or disk, the periphery of which is provided with a series of teeth, g , and the body with a series of holes, g' , which, as the plate is rotated, successively line with the hole f . This plate at its center has a hole for the passage of a pin or pivot around which it rotates.
- 40 H is a cap-plate having an annular center, H' , connected with the plate H by a stirrup, h , so as to leave a clear annular space, h' , between the center H' and the edge of the plate H , which space is in line with the seed-holes g' in the plate G , and in this annular space h' is located a cut-off dog, h'' , of the usual construction.
- 55 I is the seed-box, formed of sides and a cover, I' , the bottom of the sides fitting the plate H , as usual. The plate H is located on the upper ends of the lugs f'' , and is held in position by screws or bolts i , which pass through the plate and the lugs f'' and enter the brace-support D^4 , securing the plate F to the brace-support, and the pin or pivot e' for the seed-plate G , passes through the center of the plate F , seed-plate G , and center H' , in the form of construction shown.
- 65 J is a fork having a long arm, j , and a short arm, j' , the long arm extending the length of

the plate F and passing through a socket or eye, j'' , on one of the studs f'' of the plate F , and the fork J has an arm or extension, J' , for connection with a rock-shaft by which the fork is advanced.

K is a pawl pivoted to a flange on the fork J , and having an acting end to engage with the notches or teeth g of the disk G , and this fork has its acting end held in engagement with the teeth by a spring, k , the free end of which acts to throw the acting end of the pawl inward, the spring being attached by a bolt or rivet to the arm j .

L is a stop-pawl pivoted to the plate F , and having the acting end engage the teeth g and prevent recoil of the disk G . The acting end of the pawl is held in position for engagement with the teeth by a spring, l , attached at one end to a stud, f'' , of the plate F , to have its free end bear against the pawl and throw its acting end into engagement. The pawl L is held by its spring so as not to interfere with the rotation of the plate, and the pawl K is held by its spring so as to allow the free end of the pawl to ride over a tooth in the withdrawal of the fork.

M is a collar locked to the rock-shaft N by a set-screw, or in any other suitable manner, so as to be adjustable on the shaft. This collar is provided with an arm, m , having a pin, m' , and is located so as to be connected with a socket, m'' , on the outer end of the arm J' by a suitable pin or pivot. Another collar, M' , having an arm, m^3 , with a pin to connect with the end of the bar E'' , is mounted on the rock-shaft. The connection of the arm m with the socket m'' is to be one that will give the proper throw to the fork J from the rock of the collar M to advance the disk G by the engagement of the pawl K with a tooth, g , of the plate, and to withdraw the pawl K for the next engagement, and the connection of the arm m^3 with the end of the bar E'' is one that will give the required oscillation to the dropping-tube E for receiving and discharging the grain.

N is a rock-shaft extending across the machine at the front and supported at the ends in the brackets or arms which carry the check-wire support in the form of construction shown, and on which shaft is secured the collars M M' . This shaft is locked against end movement by a collar, n , secured to each end of the shaft outside of the arm or bracket in which the shaft is mounted, which collar, as shown, is a split one, having extensions, through which a bolt, n'' , passes, by which the collar can be drawn up to clasp the end of the shaft firmly and form a lock against the end movement.

O is a coiled spring, one end of which is hooked into an eye, m^4 , on the end of the arm m^3 , and the other end is connected to a bracket, o , on the bottom of the brace-support D^4 , which bracket o has a slot in its base, through which the attaching bolt passes, and by which the bracket can be adjusted to give the proper tension to the spring to withdraw the fork J ,

and, as shown, the bracket *o* is attached by one of the bolts *i*.

P is an arm mounted on the rock-shaft *N*, the arm being located between the arm *n'* and the bracket or support for the check-wire support, and being loose on the stop, so as to turn thereon, for which purpose the stop is rounded at the point where the arm is located, the rounded portion also extending through the bracket or arm carrying the check-wire support, and the collar *n* has one of its arms, *n'*, extended so as to form a stop, against which the arm *P* will bear and rock the shaft *N*, the end of *n'* being turned so as to be engaged by the edge of the arm *P*. This arm *P* has secured thereto a fork, *P'*, for the check cord or wire, which fork is formed of two plates, *p*, with an opening, *p'*, between them, the plates being attached to the arm *P* by a bolt, *p''*, as shown in Figs. 9, 10, and 11, and the outer end of each plate *p* is turned so as to form a mouth for the guiding of the cord in passing into the slot *p'*.

Q is the cord or wire, having knots or balls *q* thereon, as usual, the rope dropping into the slot *p'* of the fork *P'* and the balls being of sufficient diameter to engage the edges of the plates *p* and move the fork in the usual manner.

R are anti-friction rollers or spools, one on each side of the fork *P'* and supported on a shelf, *r*, by a bolt or pivot, *r'*. The shelves *r* are located at the end of a bar, *R'*, from which bar extend arms *R''*, which come together so that the parts *R' R''* form a bracket or support, which bracket or support is attached to the cross-bar *D³* by an ear, *r''*, on the rear arm, *R'*, and at right angles thereto, as shown in Fig. 1, through which ear and the cross-bar a bolt passes, and, as shown, the lower end of *R''* is recessed, so as to partly receive the bar.

S S' are pivoted arms or levers, the arm *S* having a rounded end, *s*, to enter an opening, *s'*, in the adjacent end of the arm *S'*, so that the movement of either arm will operate the other. Each arm is pivoted by a suitable pin or pivot, *s²*, to the bar *R'*, and each arm at its outer or free end has a journal or pin, *s''*, standing horizontal, on which is mounted a roller or spool, *S''*, over which the rope runs when the parts are in position for check-rowing, and each arm at its outer or free end above the spool *S''* has a projection or lip, *S³*, which forms a stop against the upward movement of the wire or cord, keeping the cord down and in position for use.

T is a pivoted arm attached to the arm *S* by a pin or pivot, *t'*, and on this arm adjacent to the pivotal point is a projection, *t*, located and arranged to engage with a projection, *t'*, on the arm *S*, so that the upward movement of the arm *T* will raise the free end of the arm *S*, and the free end of the arm *S'* will be raised at the same time by the action of the end *s* in the opening *s'*, and such upward movement of the arms *S S'* will raise the check-cord *Q* out

of engagement with the fork *P'*, as shown in Fig. 10, Fig. 9 showing the parts in position for use.

U is a lever pivoted to the cross-bars of a rack, *U'*, by a pin or pivot, *u''*, and having at its pivoted end projecting arms *u* and *u'*, as shown in Fig. 4. This lever is located between the center bars, *A³*, and the rack *U'* is bolted or otherwise secured to one of the center bars, *A³*, its upper end having notches with which a pawl on the lever *U* engages to lock and hold the lever in any desired position.

V is a rod or bar, the lower end of which is connected to the arm *u'* by a pin or pivot, *v*, and the upper end of which is bolted or otherwise secured to the upper end of a yoke, *V'*, the lower end of which yoke is pivotally connected by a bolt, *v'*, to the center bars, *A³*, the arms of the yoke coming outside of the center bars in the construction shown.

W is a tongue pivotally secured between the cross-pieces *W'* at its rear end by a bolt, *w'*, and having at its extreme rear end a cross-piece, *W''*, which forms a foot-rest for the driver or operator of the machine, and the rear end of the tongue, below the cross-piece *W''*, has a depending bar, *w*, pivoted at its upper end to the tongue and provided at its lower end with a series of holes for connection with the arm *u* by a pin or bolt, the holes enabling a proper adjustment to be had for the running depth of the runners *D*.

X is a foot-treadle pivotally mounted between ears *X'* on a base-plate attached to the cross-piece *D³* by bolts or otherwise, and around this pin or pivot of the treadle is a coiled spring, *x'*, which bears against the under face of the treadle *X* and acts to return the treadle after being depressed, and the treadle has a continuation or arm, *X''*, as shown in Fig. 4, and the base-plate has a depending eye, *x''*.

Y is a rod, one end of which is hooked or otherwise connected to the end of the arm *X''*, and the other end, *y*, of which is turned so as to engage an arm, *y'*, projecting out from a collar, *Y'*, locked to the shaft *N*, the collar being locked to the shaft in the construction shown by having split ears through which a bolt, *y''*, passes, and, as shown, adjacent to the collar *Y'* is the eye *x''*, into the opening of which a rounded portion of the collar projects, thus forming an intermediate bearing for the rock shaft *N*.

Z is a foot treadle pivotally mounted on the center bar, *A³*, opposite to the foot-treadle *X*, and connected to a rod, *Z'*, the other end of which is connected through an arm, *z'*, locked to a shaft, *Z''*, which shaft is supported in suitable bearings on the under side of the side pieces, *A'*, and has secured thereto scrapers *z''*, so arranged as to be brought in contact with the tires or rims of the wheels *B* for cleaning purposes, a scraper being provided for each wheel. The scrapers are brought into contact with the wheels by pressing down on the foot-treadle *Z*, which rocks the shaft *Z''* through the con-

necting-rod Z' , bringing the edge of the scrapers in contact with their respective wheels, and when the force is removed from the foot-treadle Z the weight of the scrapers will drop them out of use.

A seat, V'' , is provided for the dropper or operator, which seat is mounted on the upper end of the yoke V .

The operation is as follows: The tread of the wheels B is at a line just back of the place of deposit of the seed from the heel of the runners D , and the wheels run on each side of the furrow made by the runners, into which the seed is dropped, and these runners, being set at an angle, act to crowd or force the dirt on each side of the furrow opening over the seed, so that as the seed is dropped it is covered by the travel of the wheels, and the depth of covering can be changed by giving the wheels a greater or less inclination. The location of the wheels on each side of the runner to have the tread just back of the point of discharge from the seed-tube brings the runners and wheels into close coacting relation and enables both the dropping and covering devices to have independent frames, the runner or secondary frame being mounted above the main frame, leaving the runner-frame to operate independently.

The dropping-spout E' , pivoted between its two ends in the support E , and having at its upper end a shelf, e'' , in connection with the shelf d'' in the heel of the runners, enables a charge to be stopped at the upper end while a charge is being dropped at the lower end, as when the tube is in the position shown in Fig. 7 the shelf e'' closes the passage f' and holds the seeds in that passage, and at the same time the lower end of the tube is carried away from the shelf d'' , allowing the seed which has passed into the tube, when the parts are in the position shown in Fig. 6, to drop, and with the parts as shown in Fig. 6 the seed is stopped at the lower end of the tube by the shelf d'' , the tube, when in the position shown in Fig. 6, having a free communication with the passage f' . The tube E' is oscillated through the bar E'' by its connection with the arm m^3 of the collar M' , which collar, being locked to the rock-shaft N , moves with such shaft, giving a vibrating movement to the arm m^3 , the forward movement of the arm m^3 bringing the dropping-tube into the position shown in Fig. 7, and the rearward movement into the position shown in Fig. 6, and the degree of oscillation or movement of the tube E' is adjusted by connecting the collar M' with the rock-shaft at such an angle as will give the desired amount of swing. The rock-shaft N also actuates the disk or plate G , through the fork J and its arm J' , which arm J' is connected with the arm m of the collar M by the pin m' , which enters the socket m'' on the end of the arm J' , which will give the desired throw to the fork J for the pawl K to advance the seed-plate G and have the holes g successively register with the hole f in the plate F to have the seed pass to the

dropping-tube. The disk G is moved by the pawl K , carried by the fork J , and when the fork is reeded the acting end of the pawl is carried back of the tooth with which it is to engage to advance the wheel for the next drop, allowing the required amount of lost motion for registering the holes g with the hole f , and with each advance of the fork J the arm j' is brought into position to engage a tooth and prevent back movement of the plate G at the end of the stroke of the fork, and on the receding movement of the fork and the pawl K the acting end of the pawl L comes into position to engage a tooth and prevent backward turning of the plate G by the drawing back of the pawl K , by which means the plate G is advanced to a registered position and stopped in that position by the arm j' , and held in position on the backward or return movement of the pawl K by the pawl L , thus insuring a correct register for each advance of the pawl. The fork J is drawn back by the spring O , which spring is extended with the advance of the fork to have the necessary reaction to draw the fork back, and such drawing back of the fork through the spring O returns the rock-shaft N to its normal position through the arm m^3 of the collar M' .

The rock-shaft N is actuated in a forward direction from the fork P' through the check cord or wire Q when the parts are in the position shown in Fig. 9, in which position the fork P is carried forward by the engagement of the knot q to the limit of its throw, which brings the fork into position for the knot to pass out from the upper end thereof, as usual.

The check-row wire can be released from the machine by the operator taking hold of the cord T' and raising the arm T , which brings the stop t into engagement with the stop t' on the arm S , raising that arm, and also the arm S' , as before described, which raising of the arms S S' leaves the check-wire cord clear of the fork P' , as shown in Fig. 10, the cord lying on the spools S'' , so that with the forward movement of the machine there will be no engagements of the knots q , with the fork, and consequently the fork will not be advanced and the rock-shaft will remain at rest. The runners or furrow-openers are set in to the required running depth by the operator through the lever U , the forward throw of which lever through the arm u forces down the frame at the forward end, and when the desired running depth is reached the lever is locked to the rack U' , holding the runners at the required running depth. The driver, mounted on the seat V'' , can also operate the dropping devices through the treadle X and rod Y , as by pressing down on the treadle with his foot a rocking movement is given to the shaft N through the engagement of the end y of the rod Y with the arm y' of the collar Y' . The downward movement of the free end of the treadle X draws up the arm X'' and the rod Y , which lifts the arm y' and rocks the shaft N forward, advancing the fork J in the manner already

described to rotate the disk G, and when the treadle is released the springs O act to return the forks J and throw the rock-shaft N back to its normal position. The operator on the seat V" can also operate the scrapers by pressing down on the foot-treadle Z, which, through the connecting-rod Z', rocks the shaft Z" and brings the scrapers z" into contact with the tires or rims of the wheels.

10 The dropping-tube E' is pivoted to have an oscillation fore and aft, which throws the seed rearward with the movement of the planter, and this movement of the seed-dropping tube is of great advantage, as the faster the planter is moved forward the farther back the tube will throw the seed, thus overcoming the difficulty found with other planters in fast driving of carrying the seed past the mark or point where it was to be dropped. As shown, the dropping-tube is pivotally attached by a split band, e', encircling the tube, and a bolt, e, passing through an ear of the band; but other means of pivoting and forms of pivot can be used to give the dropping-tube a pivotal support, by which it is free to have a fore-and-aft oscillation, and the upper stop for the seed-dropping tube could be otherwise formed and applied than in connection with a band encircling the tube, so long as such shelf would act to form a stop for the passage of the seed through the hole f when the dropping-tube was thrown out of line with the hole f.

The runner-frame is formed of the bars D³ D⁵, which are connected by the brace-supports D⁴, to the top of which bars the support is bolted, and this support D⁴ extends back of the bar D⁵ and supports the seed-boxes I through the plates F and H, the plate F lying upon the support D⁴, and this plate and the plate H are connected together and to the support by the bolts i. This runner-frame is connected to the main frame by plates or straps d³, one extending forward from each side piece A', and having at its front end a slot to receive the arm of the bracket D'', and being pivotally attached to the arm of the bracket by a suitable pin or bolt, as shown in Fig. 3, and this connection allows the runner-frame to have movement independent of the main frame, by which the wheels can ride over inequalities without affecting the running depth of the runners. The wheels at one side can be raised without affecting the level of the runner-frame by the yielding spring d⁶, coiled around the bolt or rod d⁴, the upper end of which is secured to the rear end of the brace-support D⁴ by a nut, and the body of which passes through a guide-plate, d⁷, secured to the side bar A', so that the frame has a free play to the limit of the length of the rod d⁴, and beyond that limit the spring d⁶ comes into play, forming a yielding support between the guide-plate d⁷ and the support D⁴. The block d', having thereon the shelf d'', is formed, as shown, with the standard E, and the runner at its rear end

is forked to receive the block d' and be bolted thereto; but this block and shelf could be formed independent of the standard and be bolted to the runner, and the band e', which supports the tube E', has at one side a solid ear, through which the pivot e passes, and at the opposite side a split ear, through which a clamp-bolt passes to draw the band firmly around the tube.

What I claim as new, and desire to secure by Letters Patent, is—

1. The wheels B, in combination with the spindle C, each spindle having a plate, C', provided with a hole, c', and a slot, c'', for adjusting the spindle to set the wheels at different inclines, substantially as specified.

2. The runner D, provided at its heel with a shelf, d, in combination with an oscillating tube, E', having a shelf, e', at its upper end for holding the seed, substantially as specified.

3. The runner D, provided at its heel with a shelf, d, and support E, in combination with the tube E', provided at its upper end with a shelf, e', bar E'', and a rock-shaft for oscillating the tube E', substantially as and for the purpose specified.

4. The rock-shaft N and collars M M', having the arms m m', in combination with the fork J, having the arm J' and carrying a pawl, K, bar E'', and tube E', for operating the seed disk and tube, substantially as and for the purpose specified.

5. The arms S S', carrying rollers S'', in combination with the fork P' and check-wire Q, substantially as and for the purpose specified.

6. The arms S S', carrying the rollers S'', and arms T, in combination with the fork P' and check-wire Q, substantially as and for the purpose specified.

7. The fork P' and arm P, in combination with the collar n, having the extension n', and rock-shaft N, for giving the rock-shaft its advance throw, substantially as and for the purpose specified.

8. The arm S, provided with the end s, and arm S', provided with the opening s', in combination with the arm T, for operating both arms S S' simultaneously, substantially as and for the purpose specified.

9. A seed-dropping tube, E, having a fore-and-aft movement, in combination with a rock-shaft, and a connection between the shaft and tube, substantially as and for the purpose specified.

10. In a check-row planter, the combination of the herein described device for releasing the wire, and a cord by which the operator can disengage the latch and raise the rollers and carry the wire out of the upright fork clear of the machine, substantially as specified.

EUGENIO K. HAYES.

Witnesses:

B. H. SNYDER,
W. H. McELROY.