

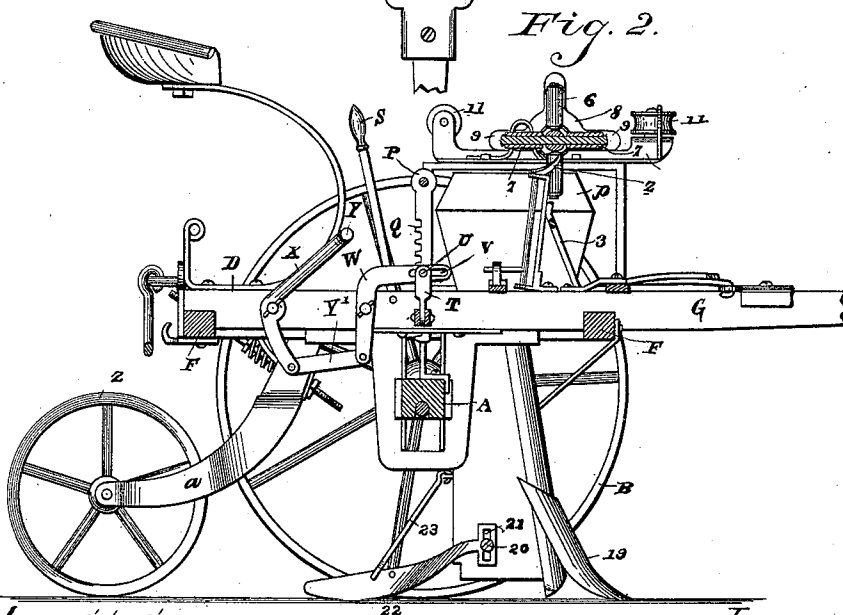
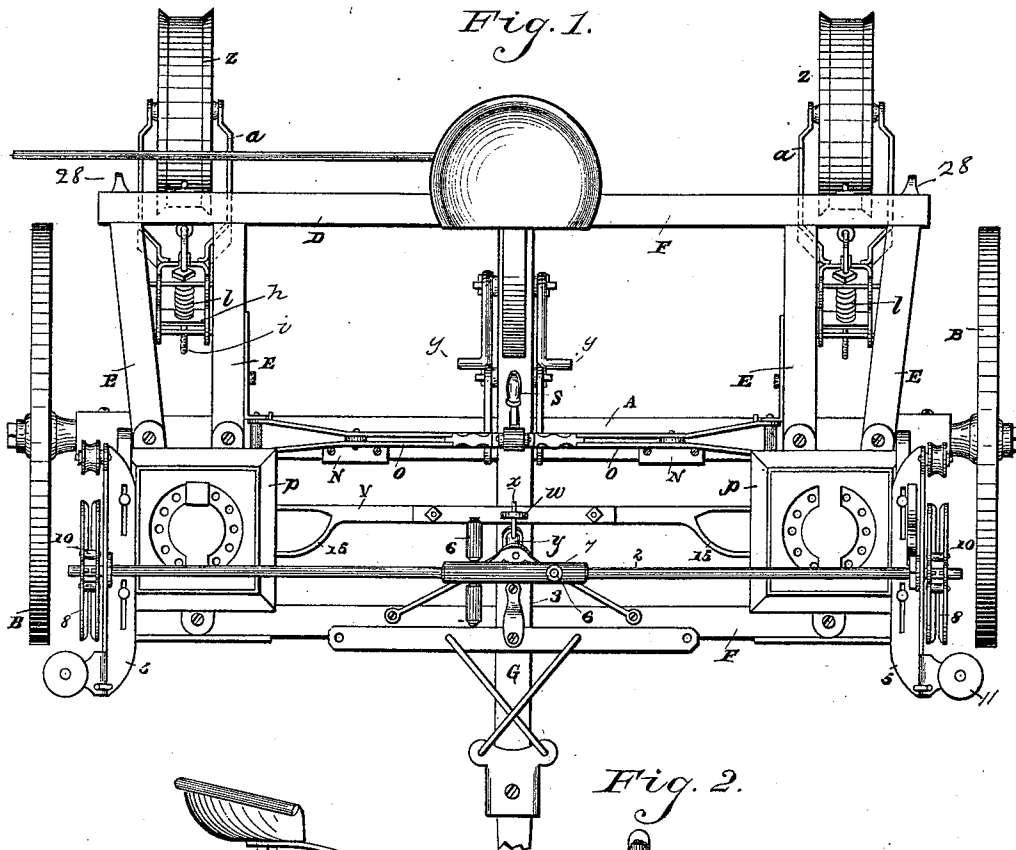
(No Model.)

3 Sheets—Sheet 1.

W. M. HARSIN.  
CORN PLANTER.

No. 434,268.

Patented Aug. 12, 1890.



Witnesses:

J. B. McElhinney  
J. S. Fullerton

Inventor:

W. M. Harsin

(No Model.)

3 Sheets—Sheet 2.

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Fig. 3.

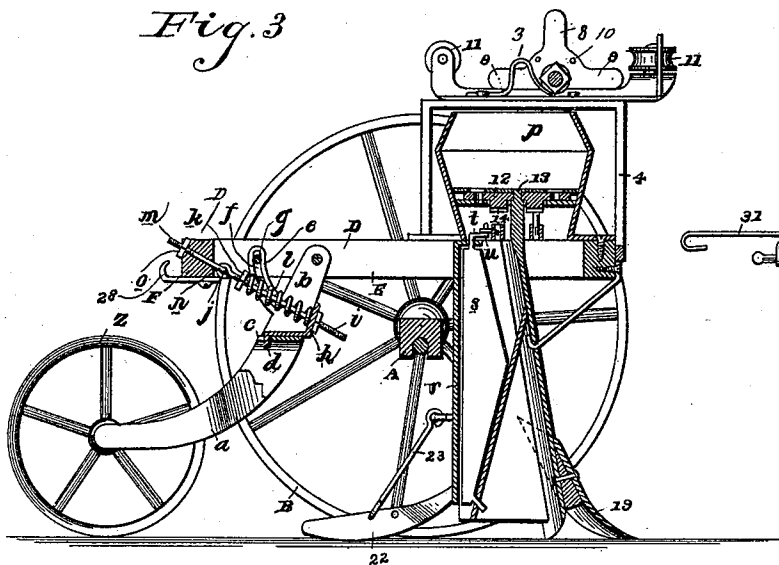


Fig. 4.

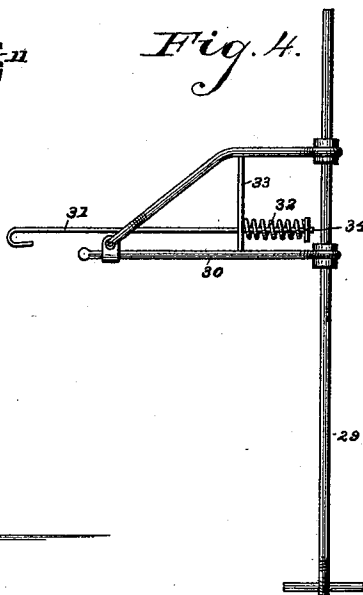


Fig. 5.

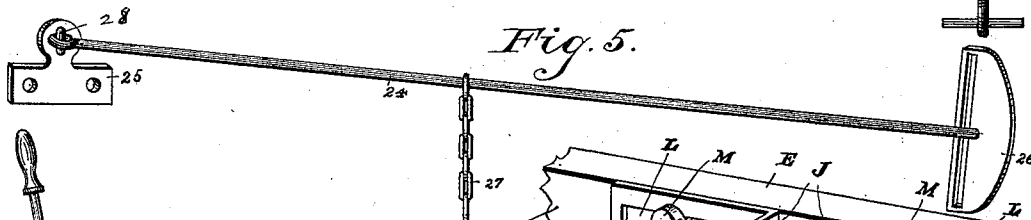


Fig. 6.

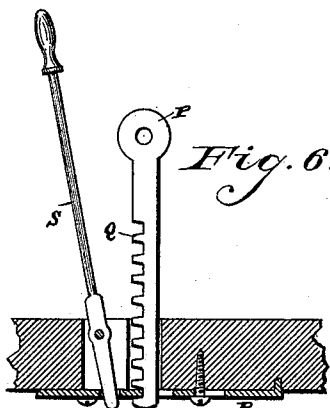


Fig. 7.

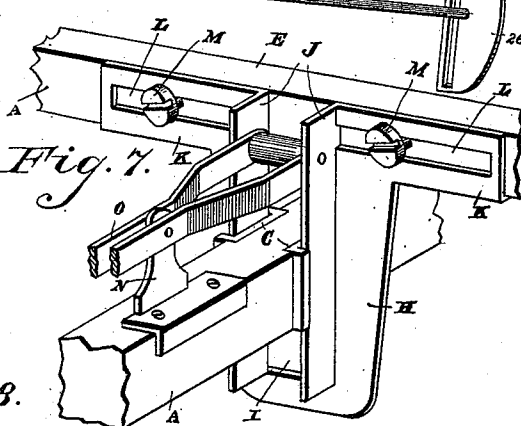


Fig. 8.

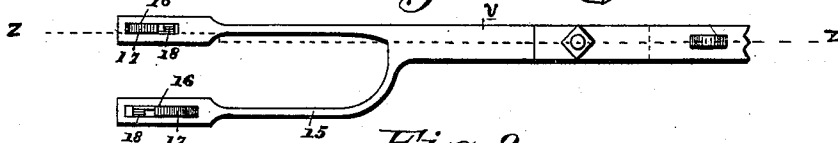


Fig. 9.



Witnesses:

J. B. McElhinney  
J. S. Fullerton

Inventor:

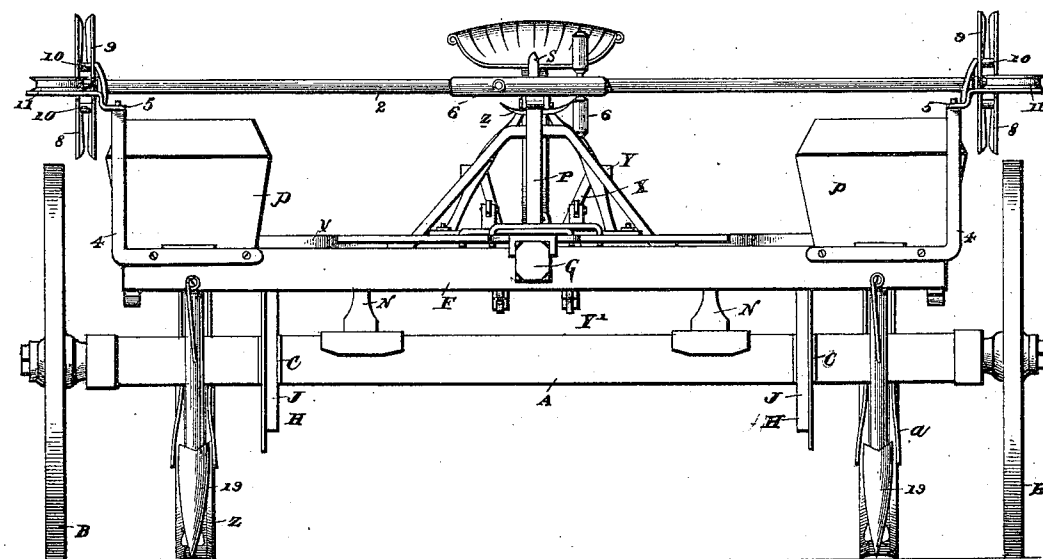
W. M. Harsin

3 Sheets—Sheet 3.

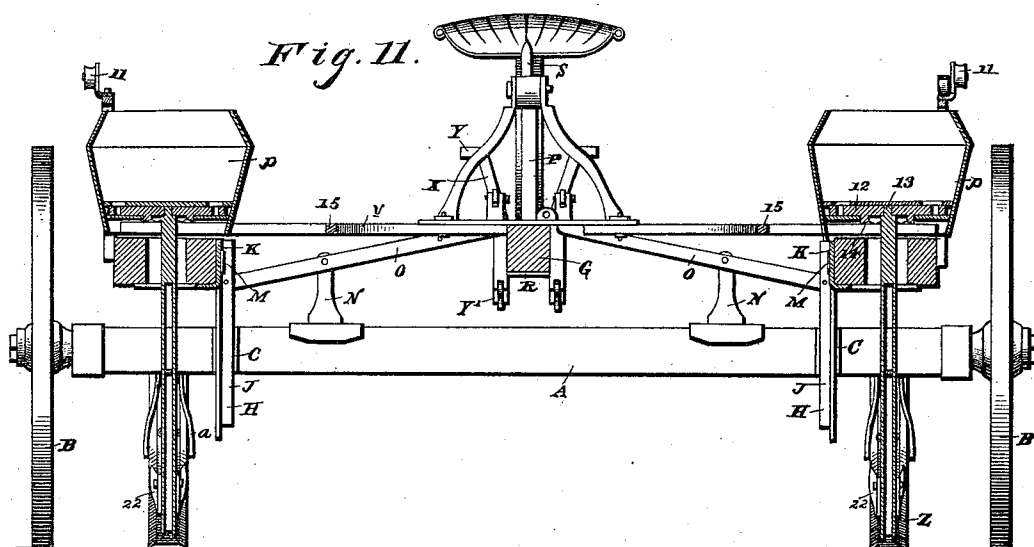
No. 434,268.

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*Fig. 10.*



*Fig. 11.*



Witnesses;

J. M. Withersow.

W. S. Duval

By *his* Attorneys,

Chas. Snow Geo.

Inventor

*William M. Harsin,*

# UNITED STATES PATENT OFFICE.

WILLIAM MARTIN HARSIN, OF LYONS, NEBRASKA.

## CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 434,268, dated August 12, 1890.

Application filed August 22, 1889. Serial No. 321,676. (No model.)

### *To all whom it may concern:*

Be it known that I, WILLIAM MARTIN HARSIN, a citizen of the United States, residing at Lyons, in the county of Burt and State of Nebraska, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification.

My invention relates to improvements in that class of corn-planters known as "check-row corn-planters," and has for its object the provision of a planting-machine in which the parts will be compactly arranged and all supported on a single frame, and to provide improved means for raising and lowering said frame in order to regulate the depth to which the plows will enter the ground.

A further object of the invention is to provide an improved hanger or support for the packing-wheels, by the use of which the said wheels will be permitted to turn at an angle to the frame when the machine is rounding a corner, and also allowed to yield readily to any inequalities of the surface of the ground.

A further object of the invention is to provide an improved mechanism for dropping the corn; and with these several objects in view the invention consists in certain novel features hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a plan view of a planter provided with my improvements. Fig. 2 is a longitudinal section. Fig. 3 is a longitudinal section. Fig. 4 is a detail view of the anchor for the check-wire. Fig. 5 is a detail perspective view of the marker. Fig. 6 is a detail sectional view. Fig. 7 is a detail perspective view of a portion of the axle, the frame, and the devices whereby the frame is supported on the axle. Fig. 8 is a detail plan view of the reciprocating bar which operates the seed-slides. Fig. 9 is a longitudinal section on the line  $z z$  of Fig. 8. Fig. 10 is a front elevation of the planter. Fig. 11 is a transverse section.

The axle A is angular in cross-section, and the carrying-wheels B are mounted on the ends of the axle in the usual or any preferred manner. Near its ends the axle is provided on its opposite sides with the grooved blocks C, which serve as guides to cause the main frame to move in a true vertical plane. The frame D is substantially rectangular in form and is composed of the side bars E, the cross-

bars F, and the tongue G, secured upon the cross-bars at the center of the same and projecting forward a considerable distance to permit the attachment of the draft-applying devices. The side bars E, it will be observed upon reference to Fig. 1, are arranged in pairs, the members of each pair converging slightly toward their front ends, as clearly shown. To the inner sides of the inner side bars E, I secure the brackets H, which are provided with the vertical slots I and the flanges or ribs J along the side edges or walls of the said slots. The ends of the axle pass through the slots I, and the grooves of the blocks C are engaged by the flanges J, as shown most clearly in Fig. 7. The axle is thus prevented from moving endwise through the brackets, while the frame is allowed to have the necessary vertical movement to secure the desired adjustment. The brackets are provided at their upper ends with the horizontal arms K, having longitudinal slots L, and the said arms bear against the inner sides of the side bars E and are secured to the said side bars by the set-screws M, inserted through the slots L into the side bars, as shown in Fig. 7. The bracket can thus be adjusted longitudinally on the side bars, so that the frame will be balanced upon the axle. On the upper side of the axle and adjacent to the brackets H, I secure the posts or standards N, to the upper ends of which I pivot the levers O, which have their outer ends pivotally secured to the upper ends of the brackets H. The inner ends of these levers are attached to a vertically-movable bar P, which is mounted in the tongue and is provided on its rear side with notches Q. On the under side of the tongue I mount a sliding latch R, which is adapted to engage the notches Q, and thereby prevent movement of the said bar P, and consequently hold the frame in its raised or lowered position. This latch is disengaged from the bar P by a lever S, which is pivoted within the tongue at a point in advance of the driver's seat and has its lower end playing in an opening in the latch.

The inner ends of the levers O are provided with the links T, having inwardly-projecting horizontal pivot-pins U at their upper ends, and these rollers are engaged by the slots V in the front end of the levers W,

which are fulcrumed on the sides of the tongue and have vertical arms depending below the tongue. In rear of these levers W, I fulcrum upon the sides of the tongue the angle-levers X, which are provided at their upper ends with the lateral arms Y, adapted to serve as pedals, so that the lever may be operated by the driver's foot, and the lower ends of the levers X are connected with the lower ends of the levers W by the links Y', as shown most clearly in Fig. 2.

The packing-wheels Z are journaled in the lower ends of the slotted brackets *a*, which have their upper ends swiveled to the hangers *b*, the said hangers *b* being pivoted to the opposing sides of the side bars E. The brackets *a* are provided in the rear edges at their upper ends with the notches *c*, and these notches are engaged by the teeth or lugs *d*, depending from the lower ends of the hangers *b*. By this construction when the machine is being turned the tooth or lug *d* serves as a pivot on which the bracket *a* will swing, and when the machine is being drawn forward the said tooth or lug will impinge against the front end of the notch *c*, so as to draw the same forward. The hangers being pivoted at their upper ends to the side bars of the frame, they will vibrate readily as the machine passes over any irregularity or unevenness in the surface of the ground, and consequently allow the packer-wheels to run over the ground without putting undue strain on their supports.

The hanger is prevented from swinging too far downward by means of the curved arms *e*, which are formed integral with the said hangers and extend upward and rearward therefrom and are provided with the longitudinal slots *f*, which are engaged by the transverse pins *g*, as clearly shown in Fig. 3. The hangers are provided on their front sides with the cross-bars *h*, and in the said cross-bars I mount the rods *i*, having the eyes *j* at their rear ends and provided with the nuts *k* in advance of the said eyes. A spring *l* is coiled around this rod between the cross-bar *h* and the nut *k* and bears against the cross-bar *h*, so as to press the same normally forward, and thereby force the hanger downward, and consequently hold the packer-wheel to its work. In the rear cross-bar D, I mount the bolt *m*, having the eye *n* at its front end engaging the eye *j*, as shown, and this bolt is provided with a nut *o*, by means of which it is secured in the cross-bar. The rod *i* is thus firmly supported and at the same time allowed to swing freely from side to side as the machine is carried around a corner.

The hoppers or seed-boxes *p* are secured on the frame in advance of the axle, and the seed-spouts or planting-tubes *r* are secured to the frame directly beneath the hoppers and lead downward therefrom to the ground. Within each of the seed-spouts or planting-tubes *r*, I provide a flirt-valve *s*, which is provided at its upper end with a crank-arm *t*, en-

gaged by an eye or loop *u* on the side of the transverse reciprocating bar *v*, so that the seed within the tube will be prevented from accumulating therein, as will be readily understood. This reciprocating bar *v* is mounted on the upper side of the tongue and the side bars E and is provided at about its center with the eye *w*, engaged by a pin *x* at the lower end of a vertical rock-shaft *y*, which is mounted on the tongue and provided at its upper end with the arms *z*, as shown. This rock-shaft is operated by the rotary driving-shaft 2 and is prevented from being forced forward by the blows of the said shaft by the spring 3, which is secured on the front cross-bar of the frame and bears against the vertical rock-shaft.

On the upper side of the frame, at the ends of the same, I erect the standards 4, upon which I secure the adjustable brackets 5, and the driving-shaft 2 is journaled in the said brackets 5. The said driving-shaft is provided near its center with the radial striking-pins on cam-arms 6, around which I arrange anti-friction sleeves or rollers 7, and the said striking-pins are adapted to come into contact with the arms *z* of the rock-shaft *y*, and thereby operate the said shaft. At the ends of the driving-shaft 2, I secure the wheels 8, which consist of a pair of plates having the radial arms 9, and the rollers 10, journaled in and extending between the said arms. The check-row wire passes between the arms 9 and over the rollers 10, and at the ends of the brackets 5, I provide the usual pulleys 11 for guiding the check-row wire to the wheels.

The seed-disk 12 is mounted on a vertical journal 13 within the hopper and is adapted to rotate therein, and on its under side it is provided with depending teeth or lugs 14, as clearly shown. The reciprocating bar *v* is provided at its ends with the forks 15, and the arms or tines of the said forks are provided at their ends with the longitudinal slots or recesses 16, in which I pivot the pawls 17, which are adapted to engage the lugs or teeth 14 on the under side of the seed-disk. These pawls are arranged reversely to each other in the arms of the forks, so as to engage diametrically-opposite lugs on the seed-disk, and they are normally pressed upward into the path of the said lugs by the springs 18, which are secured in the slots or recesses 16 and bear on the under sides of the pawls.

To the front side of the seed-spout or planting-tube, at the lower end of the same, I secure the shovel 19, which is adapted to take into the ground and forms a furrow therein as the machine is drawn over the field. On the sides of the seed-spouts I provide the pins 20, and these pins are engaged by the vertical slots 21 in the front ends of the coverers 22, which consist of elongated plates extending rearward from the seed-spouts and are adapted to throw the loose dirt into the furrow over the seed. These coverers are pre-

vented from entering the ground so as to cut up the same by the braces 23, which have their upper ends secured to the seed-spouts and their lower ends secured to the coverers.

5 In Fig. 5 I have shown a marker adapted to be used in connection with my improved machine, so as to indicate the line of the next furrow while the seed is being planted in one furrow. This marker consists of a rod or bar 10 24, having one end pivoted to a bracket 25, secured on the rear cross-bar of the frame, and having a runner 26 secured to its other end and adapted to make a depression in the ground as the machine is drawn along. A 15 chain 27 is secured to the rod 24 and the end of the rod engaged over a hook 28, secured to the rear cross-bar of the frame at the end of the same, so as to hold the marker to its work.

20 In Fig. 4 I have illustrated my improved anchor-post for the check-row wire. This improved anchor consists of a cylindrical rod or bar 29, which is journaled in a suitable base located in the ground at one side or end 25 of the field in a vertical position. Upon this rod I mount the triangular frame 30, which is adapted to turn horizontally and slide vertically on the said rod, so as to permit the check-row wire to be carried off in any de- 30 sired direction, and within the frame 30 I arrange the hook 31, around the shank of which a spring 32 is coiled, the said spring bearing between a bar 33 of the frame and a nut or shoulder 34 on the hook. This spring pre- 35 serves the tension of the check-row wire, while at the same time it allows the hook to yield to any sudden strain put on the wire, and consequently prevents the breaking of the wire.

40 In practice the hoppers or seed-boxes are filled with seed and the machine is then drawn over the ground in the usual manner. As the machine is drawn forward, the check-row wire will rotate the wheels 8 in the ordinary man- 45 ner, and thereby operate the driving-shaft 2. As the said shaft is rotated, the striker-pins 6 thereon will be brought into contact with the arms  $z$  of the vertical rock-shaft  $y$ , and the transverse bar  $v$  will thus be reciprocated. 50 As this bar  $v$  slides back and forth, the pawls carried thereby will engage the lugs on the undersides of these seed-disks, and consequently rotate the same. When the bar moves in one direction, the rear pawl at one end of the bar 55  $v$  will rotate the seed-slide, while the front pawl at that end will slip past the lugs on the said slide. At the opposite end of the bar the front pawl will engage the disk and the rear pawl slip on the same, so that both seed-disks 60 will be operated, and on the reverse movement of the bar the pawls which were formerly disengaged will be brought into play and the disks thereby rotated. Seed will thus be planted from both hoppers at each stroke of 65 the bar. As the bar is vibrated, furthermore, the flint-valve will be oscillated in the seed-spouts and the seed prevented from accumu-

lating therein. The shovels on the front side of the seed-spouts form furrows, and the seed is discharged directly into these furrows, while 70 the covering-plates, being drawn along directly in rear of the seed-spouts, will throw the dirt back into the furrow over the seeds, and the dirt will be packed down by the 75 wheels  $Z$ , which run directly in rear of the covering-plates.

From the foregoing description, taken in connection with the accompanying drawings, it will be seen that I have provided a very 80 efficient corn-planter in which the several parts are all supported upon a single frame, so that by raising or lowering the said frame the depth to which the several parts will enter the ground or the force with which they will press on the ground will be simulta- 85 neously and rapidly regulated. If it be desired to plant the seed deep, the levers  $O$  are vibrated so as to lower the frame, thereby simultaneously lowering the seed-spouts and devices carried thereby and the packing- 90 wheels. The levers  $O$  may be operated either by vibrating the angle-levers  $X$  by the foot or by operating the vertical bar  $P$ , and in either event the desired adjustment will be easily and quickly effected. 95

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The improved check-wire anchor, the same consisting of a rod, the base to which the 100 lower end of the rod is loosely connected, the triangular frame, the terminals of which are provided with vertically-opposite openings and loosely mounted for rotation and recip- 105 rocation upon the rod, the transverse bar connecting the terminals, the draft-rod passing through an eye in the said transverse bar and the triangular frame and terminating beyond the latter in a hook, and the spring coiled upon the draft-rod in rear of the transverse 110 bar, substantially as specified.

2. The combination of the axle, the grooved blocks  $C$ , secured to the opposite sides of the axle, the frame above the axle, the brackets se- 115 cured to the said frame and depending therefrom and provided with the lateral flanges  $J$ , engaging the grooved blocks  $C$ , and mechanism for raising and lowering the frame, as set forth.

3. The combination of the axle, the verti- 120 cally-movable frame mounted on the axle, the levers fulcrumed on the axle and connected with said frame to raise and lower the same, the vertically-movable bar mounted on the tongue of the frame and connected with said 125 levers and provided with a series of notches in one edge, the sliding latch on the under side of the tongue adapted to engage the notches of said bar, and the lever mounted on the tongue and engaging said latch, as set 130 forth.

4. The combination of the axle, the frame supported thereby and adapted to be ad- justed vertically, the levers fulcrumed upon

the axle and connected with the frame and provided at their inner ends with upwardly-projecting arms having rollers at their extremities, the axle-lever W, fulcrumed on the frame and provided at its front ends with a slot V, engaging said roller, the lever X, fulcrumed on the frame in rear of the lever W, and the link connecting the lower ends of the levers W and X, as set forth.

5. The combination, with the frame, of the hanger pivoted thereto, the bracket swiveled for lateral movement to the said hanger, and the packing-wheel journaled in the lower end of the said bracket, as set forth.

6. The combination of the frame, the hanger pivoted thereto, the bracket swiveled for lateral movement to the hanger and carrying a packer-wheel, the rod passing through the hanger and connected to the frame, and the spring arranged around said rod and bearing on the hanger, as set forth.

7. The combination of the axle having the carrying-wheels at its ends, the frame supported by the axle, the planting-tubes carried by the front end of the frame, the shovels secured to the front side of the tubes at the lower ends of the same, the covering-plates pivotally and adjustably secured to the sides of the tubes and extending in rear of the same, and the packer-wheels connected with the rear end of the frame, as set forth.

8. The combination, with the frame and the hoppers thereon, of the seed-disks mounted in the hoppers and having depending lugs,

the sliding bar mounted on the frame and having its ends forked and extended into the hoppers, the similar pivoted pawls mounted in the ends of the forks and having their engaging ends oppositely disposed and adapted to engage the lugs on the seed-disks for operating each of said disks in alternate directions, and mechanism for reciprocating said bar, as set forth.

9. The combination of the seed-disks having the depending lugs, the reciprocating bar having forked ends provided with the longitudinal slots 16, the similar pawls pivoted in said slots having their engaging ends oppositely disposed and adapted to engage the lugs on the seed-disks, and the springs secured in said slots 16 and bearing on the pawls, as set forth.

10. The combination of the hoppers, the seed-spouts leading downward therefrom, the seed-disks in the hoppers, the flint-valves vertically pivoted in the seed-spouts, having crank-arms at their upper ends, the bifurcated reciprocating bar having openings in which are mounted oppositely-working pawls at their ends adapted to engage the seed-disks and provided with eyes in which are journaled the crank-arms at the upper ends of the flint-valves, and mechanism for reciprocating said bar, as set forth.

WILLIAM MARTIN HARSIN.

Witnesses:

A. H. SMITH,  
W. D. SMITH.