(No Model.) 3 Sheets—Sheet 1.

G. R. HAYES.

CORN PLANTER.

No. 342,601. Patented May 25, 1886.

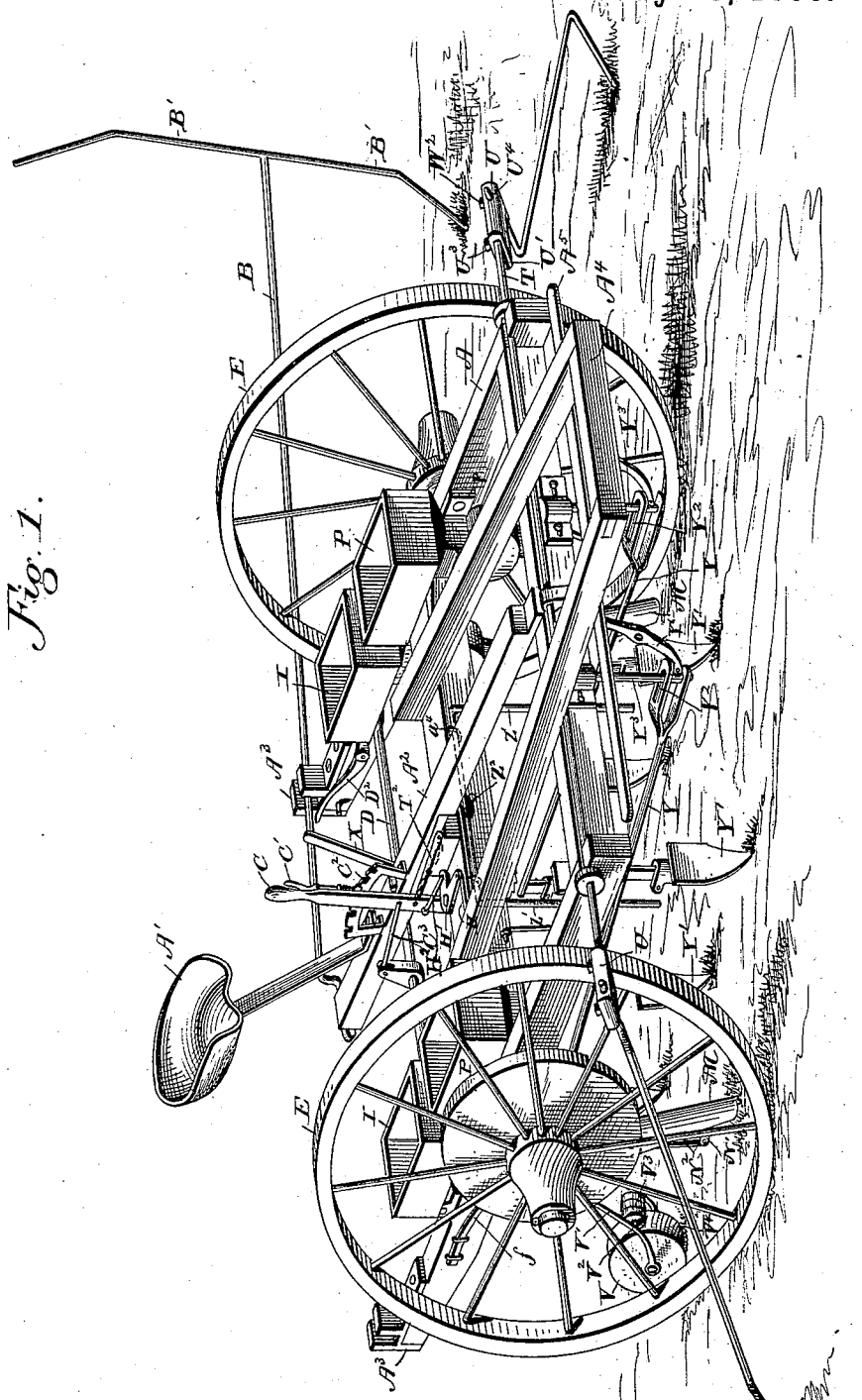


Fig. 1.

WITNESSES

F. L. Ourand

J. Fred. Reily.

INVENTOR

Geo. R. Hayes,

by Louis Bagger & Co.

Attorneys.

(No Model.)

3 Sheets—Sheet 2.

G. R. HAYES.

CORN PLANTER.

No. 342,601. Patented May 25, 1886.

Fig. 2.

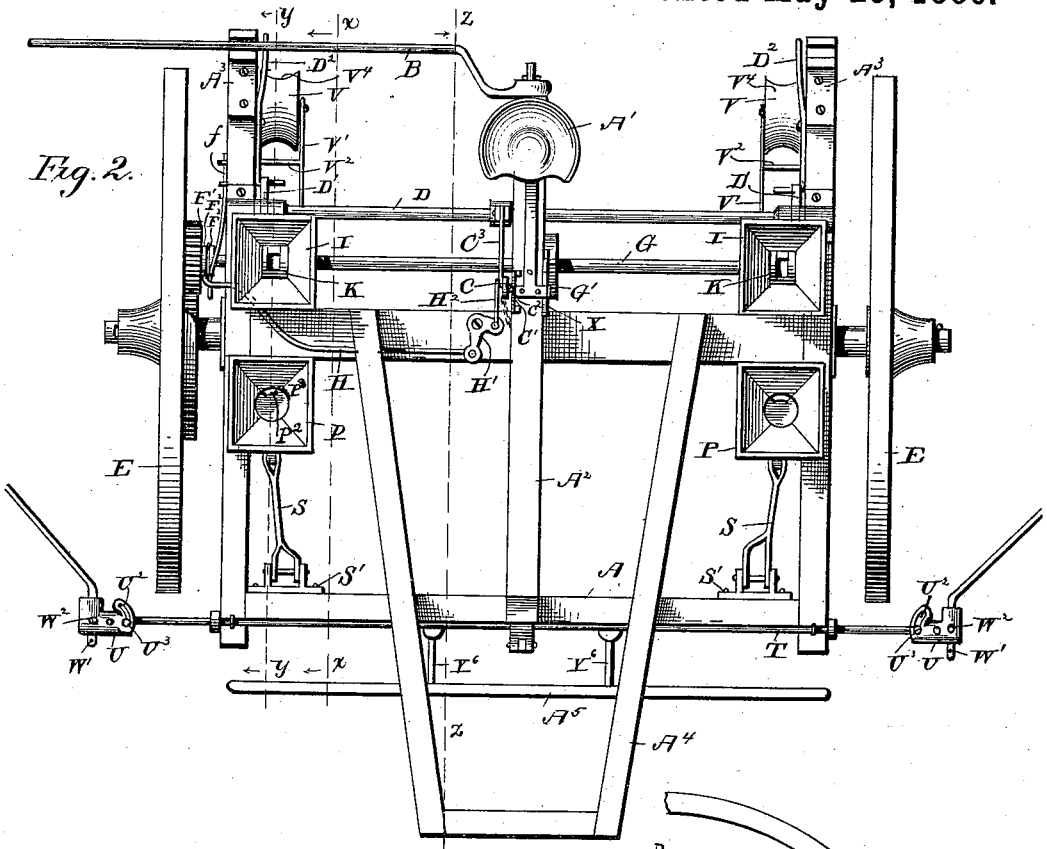
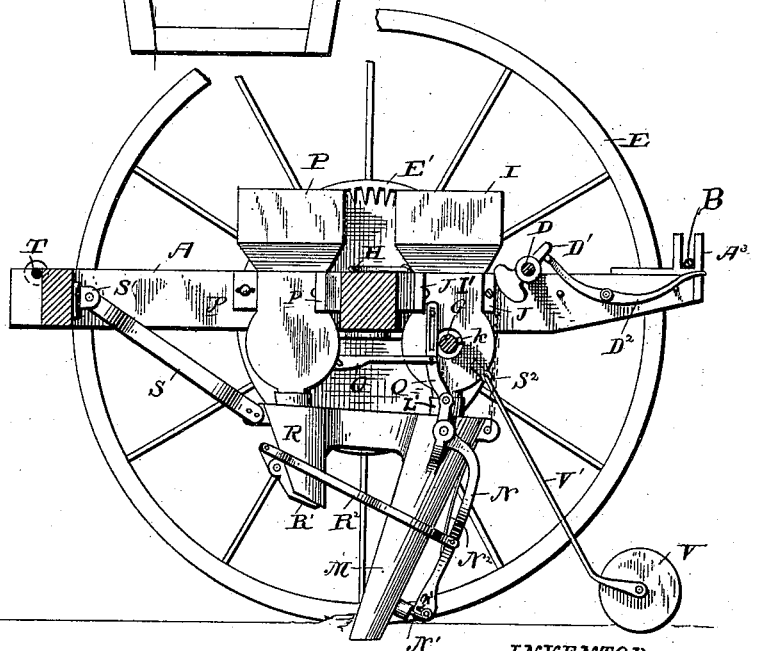


Fig. 3.



WITNESSES.

F. L. Ourand,

J. Fred. Reily.

INVENTOR

Geo. R. Hayes,

by Louis Bagger & Co.

Attorney s.

(No Model.) 3 Sheets—Sheet 3.

G. R. HAYES.

CORN PLANTER.

No. 342,601. Patented May 25, 1886.

Fig. 4.

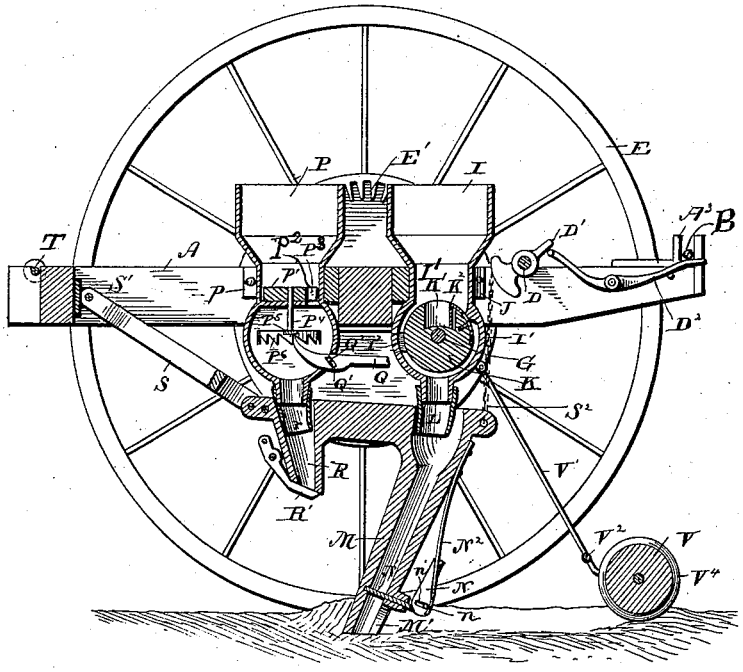


Fig. 6.

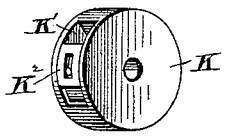
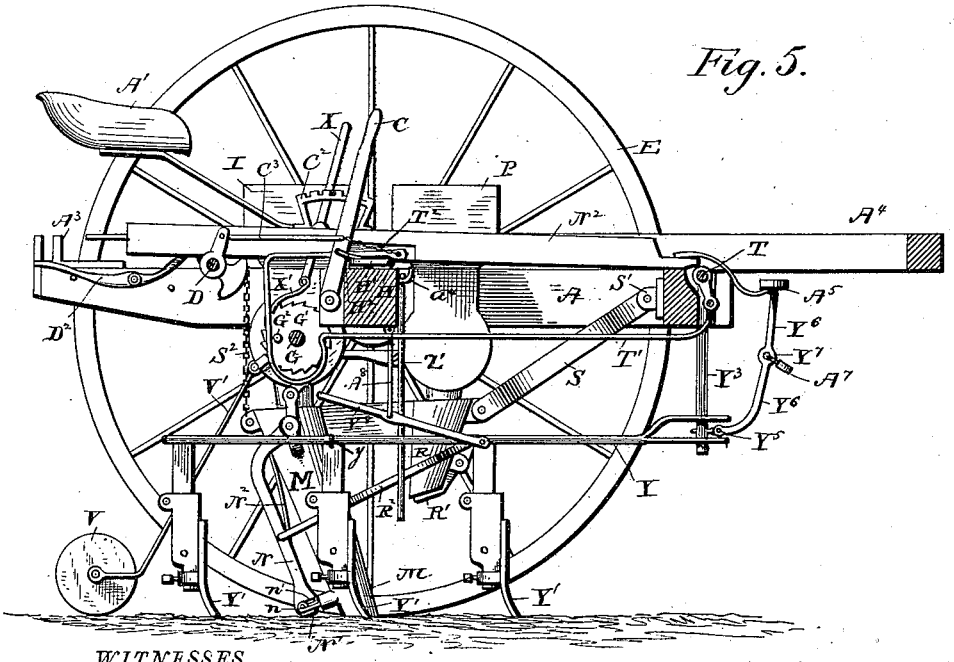


Fig. 5.



WITNESSES

F. L. Ourand.

J. Fred. Reily.

INVENTOR

Geo. R. Hayes,

by Louis Bagger & Co.

Attorney

UNITED STATES PATENT OFFICE.

GEORGE R. HAYES, OF CAMBRIDGE, MARYLAND.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 342,601, dated May 25, 1886.

Application filed August 18, 1885. Serial No. 174,725. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. HAYES, a citizen of the United States, and a resident of Cambridge, in the county of Dorchester and State of Maryland, have invented certain new and useful Improvements in Corn-Planters; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to corn-planters; and it has for its object the production of a corn-planter which shall possess superior advantages in the points of simplicity of construction, durability, and general efficiency in operation. To these ends my invention consists in the improved construction, arrangement, and combination of parts which will be hereinafter fully described, and pointed out in the claims.

Referring to the annexed drawings, Figure 1 is a perspective view of my improved corn-planter, showing the cultivator attachments connected thereto in their operative positions. Fig. 2 is a top view of the corn-planter. Fig. 3 is a vertical sectional view taken on line *x x*, Fig. 2, of the drawings. Fig. 4 is a vertical sectional view taken on line *y y*, Fig. 2. Fig. 5 is a vertical sectional view taken on line *z z*, Fig. 2; and Fig. 6 is a perspective detail view of one of the feed-disks of the seed-cups. The same letters refer to the same parts in all the figures.

Referring to the several parts by letter, A represents the frame which supports the various parts of the planter in their operative positions, the central cross-bar of which is provided with the usual driver's seat, A′. The rear end of the cross-bar A^2 has pivotally secured to it the inner end of a reversible marker, B, which is formed at its outer end with the usual marking arms or fingers, B′ B′, to adapt the marker to operate on either side of the planter. The rearwardly-projecting ends of the side-pieces of the frame A are provided with the brackets A^3, which serve to support and hold in its adjusted position the reversible marker B.

Within convenient reach from the driver's seat is pivotally secured a hand-lever, C, having secured to its side a spring-catch, C′, adapted to engage with the teeth of a segment, C^2, by which arrangement the said lever is secured in its adjusted position. This lever is connected, above its pivotal point, by means of a link, C^3, to a transverse shaft, D, the ends of which are journaled in the side pieces of the main frame, and which is formed with the arms or projections D′ D′, so arranged that when the hand-lever is drawn back by the operator the said arms will come in contact with and depress the forward ends of two centrally-pivoted levers, D^2, secured to the side pieces of the main frame, as shown, the forward ends of the said levers extending beneath the marker B, as shown, so that when their rear ends are depressed, as just described, the marker will be lifted from contact with the ground at its outer operative end, so as to permit of the machine being turned at the end of the row.

The marker B is of such a length that the distance from its inner end (which is pivoted in line with the center of the machine) to its outer operative ends is one and one-half times the length of the space between the drill-teeth—that is to say, the space between the rows being four feet, the distance from the central line of the machine to the end of the marker will be six feet, or the length of a row and a half, so that when the machine is turned at the end of a row the driver straddles the mark made by the marker—that is to say, brings the center of the machine directly over the said mark.

The machine is provided with the broad tongue A^4, of the form shown, which serves to prevent the horses from walking on the row.

E E indicate the drive-wheels, which are made with a circumference of twelve feet, the hills being planted four feet apart, so that in one revolution of the wheels the seed-slides are opened three times through the intervening mechanism, which will be hereinafter described.

The inner face of one of the wheels E is formed with the annular series of inwardly-projecting teeth E′, adapted to engage with the teeth of a pinion, F′, journaled loosely upon

a transverse shaft, G, (see Fig. 2,) turning in suitable bearings, *a*, on the lower side of the frame A, immediately to the rear of the axle of the same. The teeth E′ are made of a considerable length and slender in proportion, for the purpose which will be hereinafter set forth. The pinion F is provided with a square central aperture, F′, to adapt it to fit and be slid upon the squared end of the shaft G when it is desired to throw the machine out of gear when turning corners, &c., this being effected by forming the said pinion on its inner side with the collar or hub F^2, having the annular groove F^3, in which fits loosely the lower curved end of a lever, H, the other end of which is pivotally connected to one arm of a bell-crank, H′, the other arm of which is connected by means of a link, H^2, to the hand-lever C, so that when the said lever is drawn back at the end of a row, to raise the marker B, as before described, the same movement will operate, through the intervening mechanism just described, to disengage the pinion F from the teeth E′ of the wheel E, a spring, *f*, serving to hold the pinion normally in its operative position.

The seed-boxes I I are mounted immediately back of and extending somewhat over the axle of the main frame, on each side of the machine, being supported by the adjustable brackets J J, which may be adjusted laterally, so as to increase or lessen the distance between the seed-boxes, and consequently the distance between the drill-teeth, though I prefer to have the drill-teeth arranged four feet apart. The lower portion of each seed-box is formed with the neck I′, in the lower portion of which revolves a feed-disk, K, mounted adjustably upon the shaft G, the said disk or wheel having formed in its periphery a seed cup or opening, K′, provided with an adjustable slide, K^2, which regulates the amount of seed which the said cup will hold, and consequently the amount of seed fed through the drill-tooth into each hill. A brush, I^2, is secured in each seed-box, as shown in Fig. 4 of the drawings, in such a position that the seed-cup of the feed-disk passes immediately beneath the same, and in contact therewith, as it leaves the neck of the seed-box, so that in case the seed-cup K′ is so full that the half of a kernel or grain projects above the face of the periphery of the feed-disk it will come in contact with the brush I^2, which will yield sufficiently to prevent the said protruding grain from becoming broken in half, which would occur if the said brush were not employed.

The lower end of the neck of each seed-box is connected by means of the usual flexible tube, L, with the upper end of a drill-tooth, M, the lower end of which is cast with the rearwardly-projecting side wings, M′ M′, the object of this arrangement being that when the seed is dropped through the tooth into the furrow the said wings will prevent the earth from rolling back into the furrow with the grain, giving time for the grain to fall to the bottom of the furrow before the earth enters the same. Near the upper end of the drill-tooth and to the side thereof is pivotally secured a lever, N, carrying at its lower end the pivoted slide N′, which extends laterally across the opening in the lower end of the drill-tooth and controls the discharge of the grain from the same. To the upper end of this lever, above its pivotal point, is pivoted the lower end of a second lever, O, which is pivoted adjustably to the side of the seed-box, as shown, at a point above the operating-shaft G. Each of the feed-disks K is provided on its inner side with an inwardly-projecting pin or stud, *k*, which is so arranged on the inner face of the said disk with relation to the seed-cup in the same that a moment after the seed-cup discharges its contents down into the drill-tooth the said pin or stud will strike against the rear edge of the upper lever, O, thereby drawing back the slide N′ and permitting the seed to enter the furrow.

It will be seen that by arranging the levers N and O in the manner shown and described that the slightest touch of the pin *k* will serve to instantaneously operate the slide N′, a suitable spring, N^2, serving to throw the said slide back into its closed position. The pivot-pin *n*, which holds the slide N′, passes through a transverse slot, *n*′, in the lower end of the lever N, for the purpose which will be hereinafter described.

Immediately in front of the axle, and extending somewhat over the same on each side of the machine, are secured adjustably the fertilizer receptacles or boxes P P, being supported by the adjustable brackets *p p*, which may be adjusted laterally, so as to increase or lessen the distance between the fertilizer-receptacles when the seed-boxes are adjusted as before described. In the lower end of the neck of each of the receptacles P P is mounted in a horizontal plane a feed-disk, P′, having feed-openings P^2, the size of which are regulated by adjustable slides P^3, (see Fig. 2,) the said feed-disk being further provided with a downwardly-projecting central spindle, P^4, to the lower end of which is secured, by its central cross-piece, P^5, the annular toothed wheel P^6. To the lever O, a little below its pivotal point, is pivoted the rear end of an arm, Q, which is formed at about the center of its length with the oblique slot Q′, arranged as described, a pin, Q^2, passing through the upper end of the said inclined slot, so that when the lever O is swung forward by the pin *k*, as before described, the slotted arm Q, moving on the pin Q^2 will have its free end impelled both forward and upward, so as to engage with one of the teeth of the toothed wheel P^6 and rotate the same for a sufficient distance, to cause one of the feed-openings P^2 of the feed-disk P′ to register with the discharge-opening in the bottom of the neck of the fertilizer-receptacle. The neck of this receptacle is connected by a flexible tube, *r*, with a rigid discharge-tube, R, which is connected rigidly with or may be cast with the drill-tooth M, the opening in the

lower end of the said rigid tube being controlled by a pivoted valve, R′, which is operated by a lever, R^2, pivotally connected at its rear end to the slide-operating lever N of the drill-tooth. The pivot-pin of the seed-slide N′ works in a transverse slot in the lower end of this lever N, as before stated, and the object of this construction is that when the levers are operated by the pin *k* the phosphate in the fertilizer-tube will be discharged a moment before the seed-slide N′ is drawn back to discharge the seed into the furrow, so that the phosphate is deposited upon the top of the furrow an instant before the drill-tooth reaches that spot, the lower end of the drill-tooth passing through the earth of the furrow to a point immediately below the spot where the phosphate rests before the seed are discharged into the furrow. This construction and arrangement prevents the phosphate from mixing with the seed in the furrow, which would be the case if the two were discharged at the same time from their respective tubes.

The forward end of the rigid fertilizer-tube R, which is rigidly connected to the drill-tooth, is supported movably from the frame A by means of the arms or hangers S, pivotally secured at their upper ends in an adjustable bracket, S′, secured adjustably to the front cross-piece of the main frame A, while each drill-tooth is connected by means of a suitable chain or other flexible connection, S^2, to the transverse shaft D in the rear portion of the frame A, so that by drawing back the hand-lever C, which rotates the said shaft, as before described, the drill-teeth will be lifted out of the furrow, to enable the machine to turn at the end of a row, or when going from place to place.

Across the front of the main frame A is supported in suitable bearings a shaft, T, to the outer ends of which are centrally pivoted the castings U U, having the slots U′, through which the ends of the shaft T enter, and being also formed with the vertical slightly-curved slots U^2, and having the set screw U^3, to secure the said castings in their adjusted positions, in the manner and for the purpose which will be hereinafter described. The outer end or portion of each casting is formed with a transverse aperture, U^4, in which is secured the inner end of one of the two auxiliary markers and hill-indicators, the operation of which will be now described. These auxiliary markers are of such a length that the distance between the lower free end of each marker and the drill-tooth nearest to it is exactly the same as the space between the drill-teeth, and consequently the space between the rows. The free downwardly-extending ends of the said markers also extend rearwardly, so that when the operative ends of the said markers are resting upon the ground they will be in a straight line with the two drill-teeth. Now, when the machine is being driven along through the field, straddling the mark last made by the rear reversible marker, as before described, the seed-drill teeth will be planting in two of the furrows, while the auxiliary marker, which is toward that side of the field which has been already planted, will run in a furrow the hills of which have been planted, and the furrow closed by the grooved rollers V V, which are pivotally connected by means of the spring-arms V′ V′ to the frame A back of and in line with the drill-teeth, the said spring-arms being further provided immediately above the rollers with the transverse bar V^2, upon which the weights V^3 may be placed, as desired, so as to regulate the pressure of the rollers (the peripheries of which are formed with an annular concave groove, V^4, as shown) upon the furrow.

To the shaft T, at about its center, is pivotally connected the forward end of a rod, T′, the rear end of which moves in a suitable bearing, while the central part of the said rod, which extends partially around the operative shaft G, is bent or curved, as shown. Upon the center of the shaft G is rigidly mounted a toothed wheel, G′, having the pin G^2 inserted in one of its sides, the said pin being so arranged with reference to the pins in the feed-disks of the seed boxes, already described, that when the said pins come in contact with the levers N and O, and thereby discharge, first, the phosphate and then the seed into the furrow, the pin G^2 will operate to raise the ends of the auxiliary markers W W from contact with the ground, by striking against the rear curved portion of the rod T′ and forcing the said rod backward, when, as will be readily understood, the shaft T will be turned sufficiently to elevate the operative ends of the markers W W from the ground, the markers falling back by their own weight as soon as the pin G^2 ceases to bear against the curved portion of the rod T′ as the shaft G continues to rotate. The effect produced by this operation is as follows: The end of the marker which is running in the furrow which has not yet been planted will of course leave a distinct mark as long as it is in contact with the ground—that is to say, between the hills; but when the seed is discharged into the furrow, which, as before stated, is done at distances apart of four feet each way, the marker will be lifted from the ground, so as to leave a break or unmarked spot in the line, which will be in direct line with the hills already planted, and will serve to indicate where the next row of hills is to be made. The rod T′ is connected to the hand-lever C by means of a link, T^2, so that by drawing back the said lever the auxiliary markers or hill-indicators will be raised clear of the ground to permit of the machine turning at the end of a row or in going from place to place.

As before stated, the distance between the drill-teeth and between each of the hill-indicators and the nearest drill-tooth is usually four feet; but when it is desired to plant the rows nearer together, and the adjustable seed-

boxes, phosphate-receptacles, and their connections have been moved toward each other the requisite distance, the set-screws U^3 of the castings U U are loosened and the said castings turned on the ends of the shaft T, to which they are pivoted, until the ends of the hill-indicators are the right distance from the drill-teeth; but as this swinging of the said indicators will necessarily throw their points somewhat back of a straight line running through the lower ends of the drill teeth, the forward ends of the indicator-rods are formed with a series of apertures, W' W', to admit of their backward and forward adjustment in the castings U U, where they are retained in their adjusted positions by the vertical pins W^2 W^2, the set-screws U^3 being tightened when the castings U have been adjusted.

A hand-lever, X, is pivoted to the central cross-piece of the frame A, having pivotally connected to its lower end the catch X', adapted to engage with the inclined teeth of the wheel G' when the said lever is drawn back, the object of this arrangement being that if when the machine has been turned at the end of a row and is about to start along another row, it is found that the seed will not be discharged at the right points—that is, where the hills are indicated by the marker W—the shaft G may be turned by the lever X until the feed-disks of the seed-boxes are in the proper positions to discharge at the hills indicated.

When it is desired to regulate the distance apart at which the seed is discharged into the furrow, the cog-wheel or pinion F' may be replaced by a wheel having a different number of teeth from the pinion here shown, and by making the said teeth of a greater length than those of the pinion here shown, they will intermesh evenly with the teeth E', which, as heretofore stated, are made rather long and slender, so that the long teeth of the pinion having the least number of teeth may extend farther between the teeth E' than the shorter teeth of the pinion having a greater number of teeth, so that both pinions will mesh evenly with the teeth E'.

Y Y indicate cultivator attachments, which may be readily secured to the frame A in the manner which will be hereinafter described. An adjustable yoke, Z, consisting of the two halves or sections, Z' Z', which are adjustably connected by the set-screw Z^2, as shown, to admit of the downwardly-projecting legs of the said yoke being brought closer together or farther apart when it is desired to regulate the distance between the cultivator attachments, is secured to the frame A at about the center of the same by suspending it from the hooks a^4 a^4. The cultivator-beams Y are provided with the shovels Y', the construction of which forms no part of my invention, the said beams being formed at their forward ends with the vertical apertures Y^2, to adapt them to be secured adjustably to the lower ends of downwardly-projecting arms or hangers Y^3, which are secured adjustably to the front cross-piece of the frame A, while toward the rear ends of the beams Y are formed eyes through which pass the legs of the adjustable yoke Z. The lower ends of the hangers Y^3 are provided with the eyes Y^5, which are connected to the double-tree A^5 by the connecting-rods Y^6, having the staples or eyes Y^7, to permit of the single-trees A^7 being connected thereto, as shown, instead of to the double-tree itself, this arrangement throwing the draft lower down and taking the weight off of the horses' necks. To about the center of the cultivator-beams are pivoted the forward ends of foot-levers Y^8, which pass over the hooks A^8, and by pressing with the foot upon the free ends of which the cultivator-beams may be raised, so as to lift the shovels thereof from contact with the ground. The beams may be secured in their elevated positions by catching the rear portion of the levers under the hooks *y* on the sides of the said beams.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of my improved corn-planter will be readily understood, without requiring further explanation.

It will be seen that my invention is comparatively simple in construction and at the same time is exceedingly efficient in its operation. By its use the distance apart at which the hills are planted (each way) is regulated with great accuracy. By drawing back the one lever all of the operative portions of the planter are thrown out of gear and removed from contact with the ground, so as to permit of the machine turning easily at the end of a row, or passing from place to place.

The cultivator attachments are designed to be sold with the planter, at a small cost, and can be readily attached thereto in operative position.

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

1. As an improvement in corn-planters, the fertilizer-receptacles arranged in advance of the seed-boxes, and having journaled in their lower ends the seed-disks connected by a central spindle with the toothed rings below the said feed-disks, the operative arms pivoted to the seed-slide levers and having each the inclined slot working on a fixed pin, and the discharge-tubes arranged below the said fertilizer-receptacles in advance of the drill-teeth and having each a valve near its lower end, and means for opening the said valves an instant before the valves of the drill-teeth are opened, all constructed and arranged in the manner and for the purpose herein shown and described.

2. As an improvement in corn-planters, the combination, with the drill-teeth, arranged as described, having each a spring-actuated slide near its lower end and the levers for the same, the lower one of which is provided at its lower end with a transverse slot in which the pivot-pin of the said slide works, of the discharge-

tubes for the fertilizer-receptacles arranged in front of the drill-teeth and provided each at its lower end with a valve connected by a pivoted lever with the lower lever of the corresponding drill-tooth, all arranged to operate in the manner and for the purpose herein shown and set forth.

3. As an improvement in corn-planters, the combination, with the drill-teeth arranged adjustably, as described, of the reversible marker pivotally secured at the rear of the main frame and pivotally connected to a hand-lever for raising the same from contact with the ground, the transverse shaft supported movably in the forward portion of the main frame and carrying at its ends the laterally and rearwardly adjustable hill-indicators, and the curved rod connecting the said shaft with the hand-lever and adapted to be operated by a pin projecting from the side of the central toothed wheel mounted rigidly on the transverse shaft which carries the feed-disks, substantially as described, for the purpose set forth.

4. As an improvement in corn-planters, the combination of the adjustable seed-boxes arranged as described, the feed-disks mounted rigidly upon the transverse operating-shaft which is rotated by the drive-wheel, having each an inwardly-projecting operating-pin and formed in its periphery with a seed-cup having the adjustable slide, the drill-teeth, arranged as described, and having each near their lower end the spring-actuated slide, the operating-levers for the said slides, the lower one of which is formed at its lower end with a transverse slot, in which the pivot-pin of the said slide works, while to the upper is pivoted the arm which operates the feed disks of the fertilizer-receptacles, the adjustable fertilizer-receptacles, arranged as described, and having the feed-disks adapted to be rotated by the said arms, and the fertilizer discharge-tubes having each its lower end controlled by a valve connected by a suitable lever to the lower seed-slide lever, all constructed, combined, and arranged in the manner and for the purpose herein shown and described.

5. The combination, with the transverse shaft supported movably in the forward part of the main frame and mechanism for partially rotating the same at the moment when the seed is dropped into the furrow, of the herein-described adjustable blocks centrally pivoted upon the ends of the said movable shaft and provided near their inner ends with the curved vertical slots, and the set-screws working in the same and having near their outer ends a horizontal aperture for the inner ends of the adjustable hill-indicators, and a set-screw for securing the indicators in their adjusted positions in the said horizontal aperture, and the adjustable hill-indicators curved, as described, and having their forward ends provided with a series of perforations, for the purpose specified.

6. The combination, with the main frame, of the laterally-adjustable seed-boxes, fertilizer-receptacles, and furrow-coverers, all constructed and arranged to be adjusted laterally, in the manner and for the purpose herein shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

GEORGE R. HAYES.

Witnesses:
WM. HELMICK,
WM. S. JOHNSON.