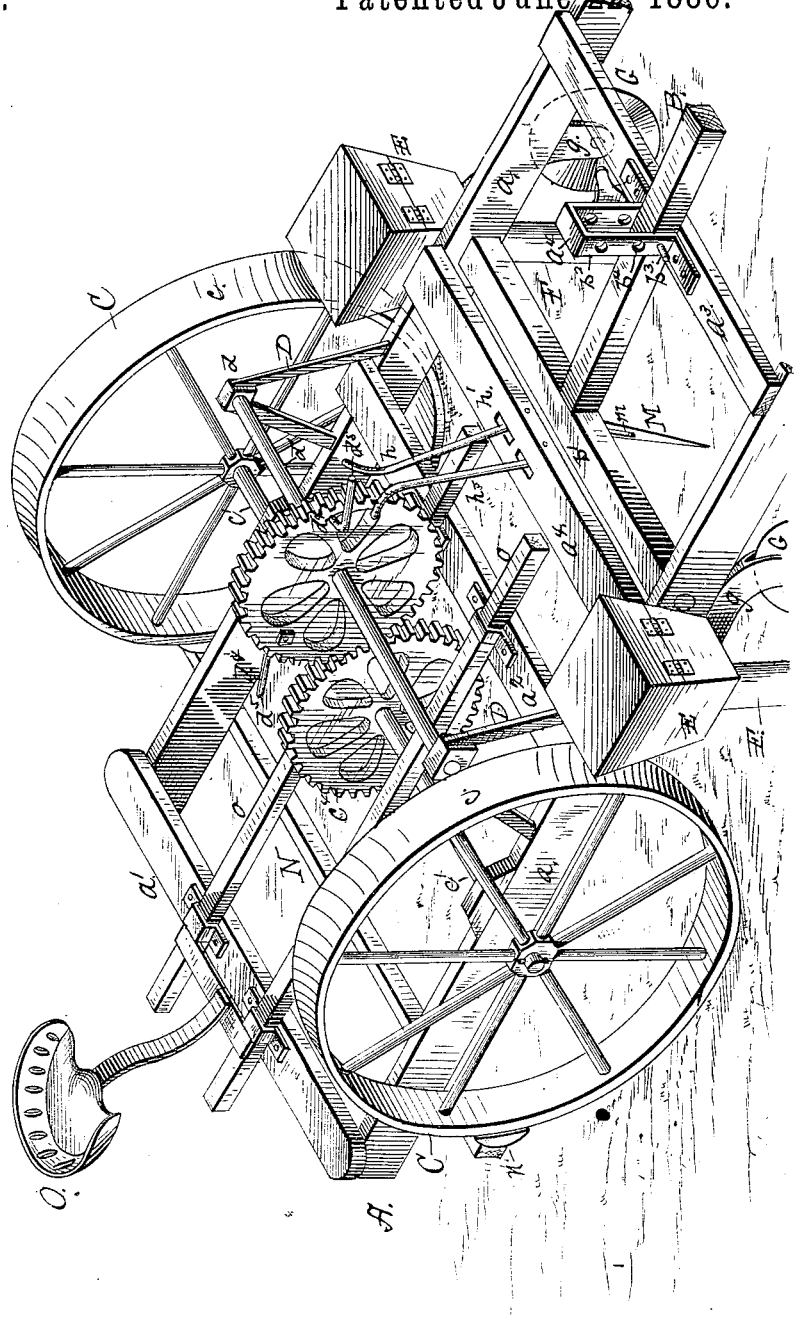
(No Model.) 4 Sheets—Sheet 1.

S. L. STILES.

CORN PLANTER.

No. 344,214. Patented June 22, 1886.



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F. Abel

INVENTOR
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by A. G. Hyltman,
Attorney

(No Model.) 4 Sheets—Sheet 2.

S. L. STILES.

CORN PLANTER.

No. 344,214. Patented June 22, 1886.

Fig. 2.

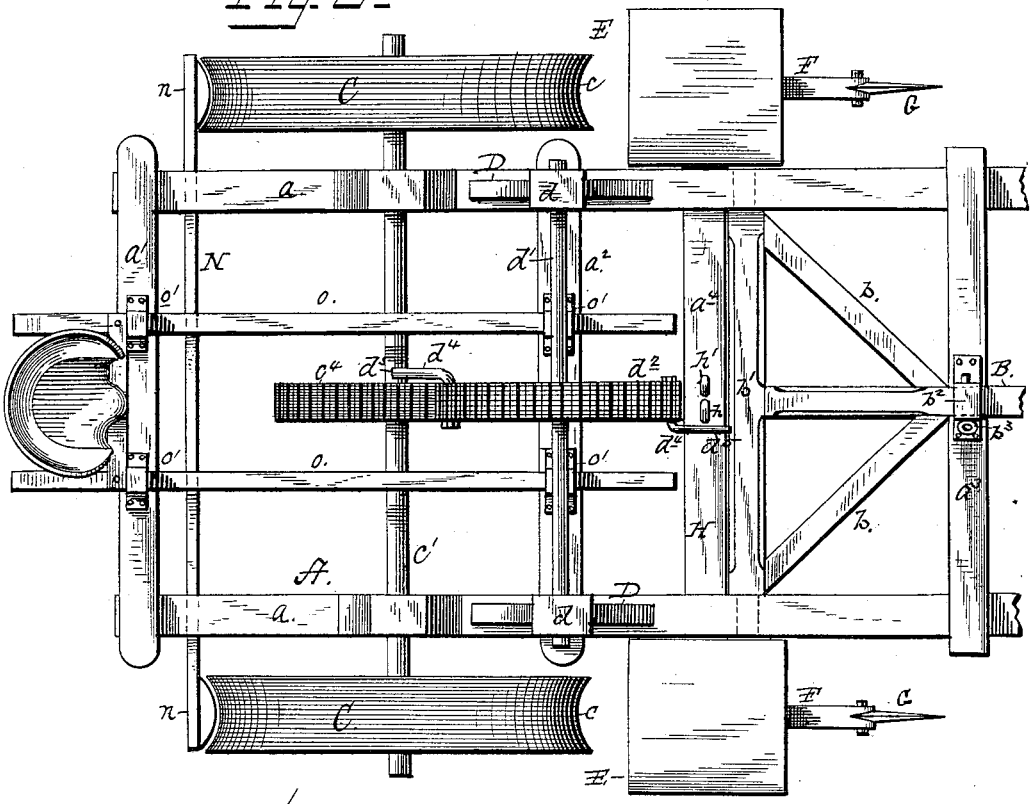
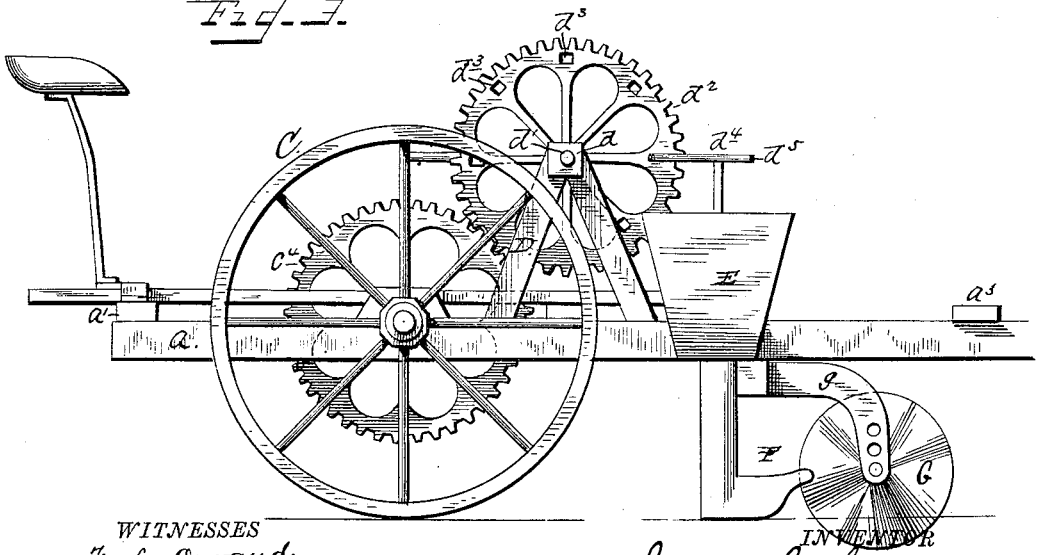


Fig. 3.



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(No Model.) 4 Sheets—Sheet 3.

S. L. STILES.

CORN PLANTER.

No. 344,214. Patented June 22, 1886.

Fig. 4.

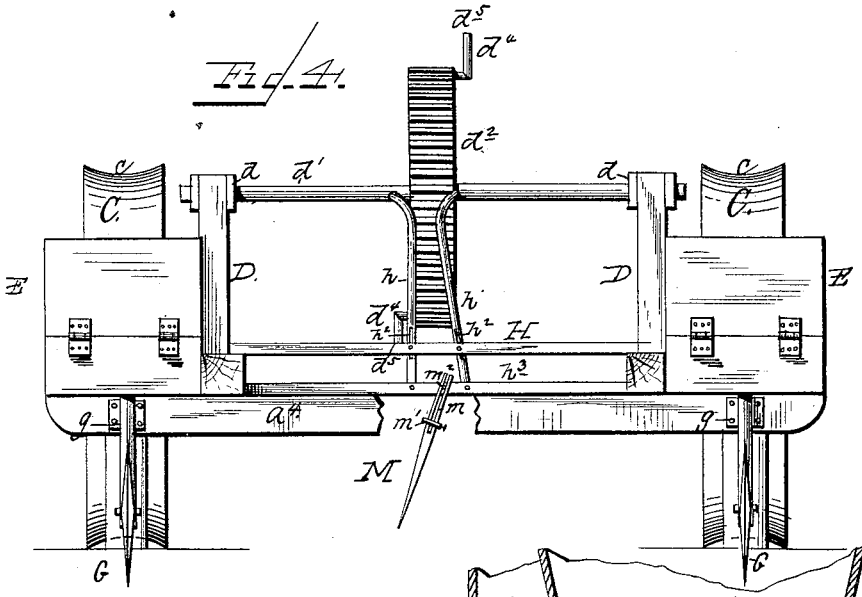


Fig. 5.

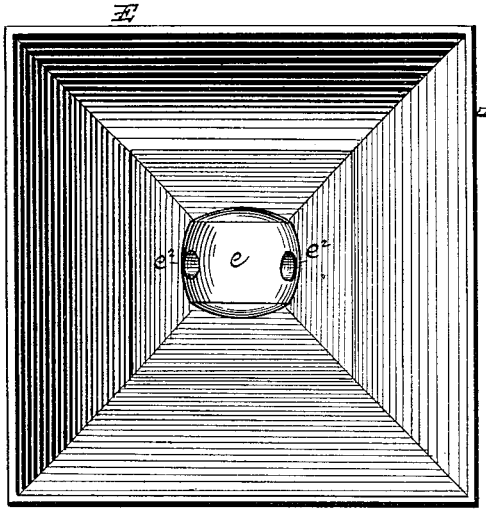
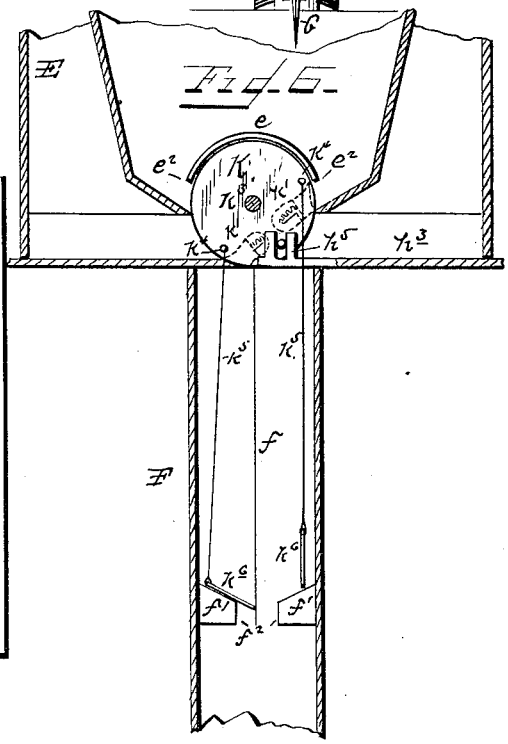


Fig. 6.



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(No Model.) 4 Sheets—Sheet 4.

S. L. STILES.

CORN PLANTER.

No. 344,214. Patented June 22, 1886.

Fig. 7.

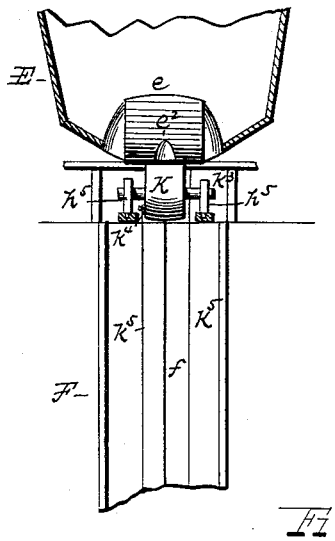


Fig. 8.

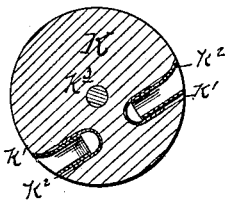


Fig. 9.

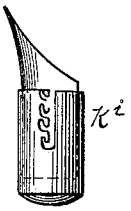


Fig. 11.

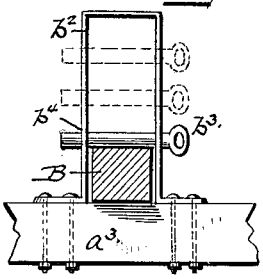


Fig. 10.

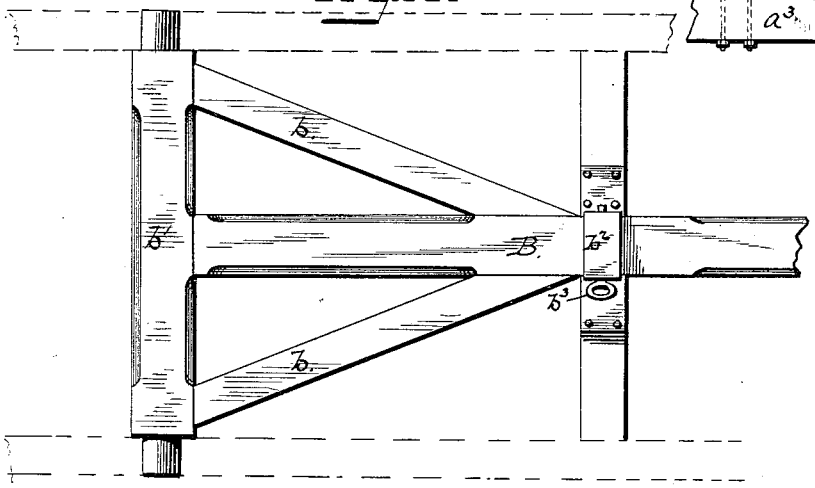


Fig. 12.

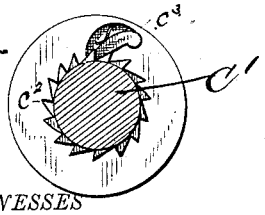
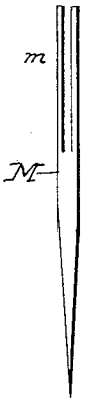


Fig. 13.



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UNITED STATES PATENT OFFICE.

SIDNEY L. STILES, OF WATSEKA, ILLINOIS, ASSIGNOR OF SEVENTY-ONE ONE-HUNDREDTHS TO GEORGE B. DANIELS, OF SAME PLACE, JAMES G. HOBBIE, OF CLEVELAND, OHIO, AND ROLLA BUTTERFIELD, OF CHICAGO, ILLINOIS.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 344,214, dated June 22, 1886.

Application filed August 11, 1885. Serial No. 174,182. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY L. STILES, of Watseka, in the county of Iroquois, in the State of Illinois, a citizen of the United States of America, have invented a new and useful Corn-Planter, of which the following is a specification.

My invention has relation to improvements in corn-planters of that class known as "check-row," and the objects are, first, to provide a machine of the kind named which is simple in construction and certain in operation; and, second, in connection with the planting mechanism, to provide improved means for marking or checking the course of the machine in its relation to the rows to be planted.

I have hereinbelow fully explained the mechanical elements of the invention, and have fully described the best mode in which the same may be applied so as to distinguish it from other inventions, and I have particularly pointed out and distinctly claimed the parts, improvements, and combinations which I claim as my invention, as directed by the statute.

I attain the objects and purposes of my invention by means of the mechanism illustrated in the accompanying drawings, wherein—

Figure 1 is a perspective view of the machine. Fig. 2 is a plan view of the same. Fig. 3 is a side view thereof. Fig. 4 is a front end view thereof. Fig. 5 is a plan view of the inside of one of the seed-boxes. Fig. 6 is a vertical central sectional view of the seed hopper or box and a portion of the leg of one of the shoes or sleds, and showing the seed-wheel, the valves in the leg of the shoe, and the valve-rod and connections; also showing the connection of the seed-wheel and seed-bar. Fig. 7 is a detail view of the seed-wheel with the hopper and seed-bar. Fig. 8 is a central sectional view of the seed-wheel. Fig. 9 is a perspective view of one of the seed-cups. Fig. 10 is a plan view of the rear end of the tongue, showing its connections to the planter. Fig. 11 is a vertical section of the tongue and bracket secured to the front cross-piece of the frame, showing the tongue arranged at the bottom and stayed by the cross-pin. Fig. 12 is an end view of a hub of the carriage-wheel, showing the ratchet on the axle, and spring-pawl pivoted to the end face of the hub; and Fig. 13 is a view of the marker or check-row.

In the drawings like parts of the mechanism are identified by the same letters of reference.

The letter A designates the frame, comprised of the side pieces, a, end cross-piece, a', central cross-piece, a^2, and cross-piece a^3, the last named having a sleeve, a^4, secured thereon, in which the end of the tongue passes and under which it is secured. This frame is of such dimensions as the capacity of the machine shall warrant, and is made of such substantialness as to meet all the exigencies of its uses. The ends of the cross-piece a^1 project beyond the outer faces of the side pieces of the frame and afford seats on which the seed-boxes are placed and secured.

The letter B designates the tongue of the machine. This may be secured to the frame by any well-known means. I have shown it in the drawings as having its rear end mortised into the tongue-roller b', which has round projecting ends or spindles, which are furnished with suitable bearings upon the side pieces of the frame and the side braces, b, with their rear ends secured to the cross-head b'. Forward of the side braces, b, the tongue rests upon the front cross-piece, a^3, of the frame, passing at this point through the bracket b^2, which is provided with the stay-pin b^3. This bracket is provided with a series of pin-holes, b^4, in its sides to admit of changing the place of the pin b^3, as indicated by the dotted lines, as shown in Fig. 11. The purpose of this arrangement of the tongue is to allow the forward part of the machine the desired amount of perpendicular play, and by the adjustment of the pin b^3 to cause the sleds or shoes to run deep or shallow in the ground, or to entirely clear the ground, as may be desired. With the pin b^3 in the position shown in Fig. 11, the frame of the machine being rigid throughout, the tongue will be rigid with the frame. With the pin b^3 placed at any point above that shown in Fig. 11 the tongue will play up and down independently of the position of the frame, according to the location of the pin b^3 in the bracket.

The letter C designates the wheels which

support the frame. These are made with broad rims, having concaved faces *c*, the purpose being to give a defined track to their course, and to make the covering of the row in the form of a hilled row. These wheels are loose on their bearings on the axle *c'*, which is supported in adjustable bearings fastened to the side pieces of the frame. Secured to the face of the outer end of the hub of one or both of the wheels is a spring-pawl, c^3, which engages with ratchet-collar c^2 on the axle. A chamber or seat may be formed in the face of the hub and the pawl be arranged therein, substantially as shown in Fig. 12 of the drawings. The purpose of this pawl and ratchet is to set the wheel and axle in operative union when the machine moves forward, thus turning the axle by the motion of the wheel; but when a backward movement of the machine is made the wheels are free to revolve upon the axle. The end of axle projecting beyond the ratchet or notches is rounded, and may be finished with a broad smooth-faced tap, the inner face of which setting closely against the outer face of the hub of wheel keeps the latter in position, and at the same time holds the pawl in its cavity. Mounted in the middle of the axle *c'* is a gear-wheel, c^4, which is arranged to mesh with another gear-wheel, hereinafter described, and with which, by means of the adjustable bearings, it may be thrown in and out of gear, the purpose being to control the movements of the seed-dropping mechanism by stopping the operation of that part of the machine at any time during its progress from place to place.

The letter D designates benches, secured on the upper faces of the side pieces substantially as shown, and formed with bearings *d*, in which is seated an axle, *d'*, upon which is mounted the gear-wheel d^2, heretofore mentioned, and which is arranged to mesh with the driving gear-wheel c^4. This gear-wheel d^2 is provided with a multiple of angular holes d^3, arranged near the rim of the wheel and in the direction parallel with its shaft.

The letter d^4 designates angle-irons, having the short arms formed to fit the holes d^3 of the gear-wheel, and the long arms d^5 projected beyond the rim of the wheel on a line at right angles to its shaft. These angle-irons are secured to the wheel by nuts on the end of their short arms, which project through the rim of the wheel; or they may be keyed in place. The purpose of these angle-arms will be stated in connection with the description of the operating-levers of the seed-bar.

The letter E designates the seed-boxes, secured on the projecting ends of the cross-piece of the frame, as hereinbefore stated. These boxes are preferably constructed with four flaring sides constituting the upper section of the box and a lower section of more horizontality than the upper section or portion. Doors or covers are secured to the boxes by any suitable means. In the bottom of each seed-box is secured a drum or arch, *e*, which is made of a shell of suitable material. This drum or arch in contour, conformation, and dimensions is designed to fit over and cover one-half of the seed-wheel, and is arranged in position with the line of its ends transversely to the direction of the line of the seed-bar.

In the base of the drum are formed apertures for the seed to pass through, as at e^2, which in dimension or capacity are the same as the seed-cups fixed in the seed-wheel into which these apertures open.

The letter F designates the sleds or shoes, secured to the side pieces of the frame with their sleds projecting forward in the direction of the line of travel. The leg or standard of these sleds is cored out, and a partition or dividing plate, *f*, formed or inserted therein, the upper open ends of the leg registering with the respective seed-cups in the seed-wheels. In the interior of each seed-channel of the leg is formed an inclined step or shelf, *f'*, which projects partly across the seed-channel to form a smaller dropping-aperture, as f^2. These steps or shelves are located preferably well down in the leg, and having inclined upper faces adapted to be covered by valves or gates, as hereinafter stated. The nose of the shoes is slotted vertically to receive the edge of the cutters G, and serve as a guide to these disks. These cutters G consist of metal disks journaled in hangers *g*, secured to the frame in front of the leg of the sleds and arranged with a portion of their edges within the slotted nose of the shoe, as hereinbefore stated, and substantially as seen in the drawings.

The letter H designates a cross piece or bar having its ends secured to the side pieces of the frame substantially as seen in the drawings. In the middle of this bar are two slots, *h'*, through which are passed the levers *h*. These levers consist of substantial bars having curved upper ends, substantially of the shape seen in the drawings, and are provided with slots h^2. They are pivoted at their lower ends to the seed bar h^3, and are also secured in the slots of the cross-bar by a pin or bolt passed through the cross-bar and through the slots of the lever, thus giving the levers a bearing against the pins and also permitting them to have a vertical movement at the same time. The levers are arranged with their curved ends turned outward, and so that they shall engage with the angle-arm projecting from the gear-wheel. The seed-bar h^3 is formed with slotted ends, in the extended pieces of which are set vertical pins h^5, arranged in pairs, as shown in the drawings. The slots in the ends of the seed-bar are adapted to straddle the seed-wheel, and the pin in the seed-wheel sets between the pins in the seed-bar.

The letter K designates the seed-wheel. This consists of a spool or wheel journaled within the drum or arch of the seed-box and formed with two pockets, *k'*, arranged within about one-fourth of the distance around the seed-wheel and to open in opposite direction. In these pockets *k'* are fitted the seed-cups k^2.

These seed-cups consist of two sections adapted to slide the one within the other, the inner one being provided with a pin, and the outer one having a ratchet-slot, which engages with the pin, and whereby the capacity of the cup may be regulated. A pin, k^3, is projected through the seed-wheel, and adapted to set between the vertical pins on the end of the seed-bar, by which connection and arrangement the seed-wheel is moved by the reciprocations of the seed-bar. In the side face of the seed-wheel are fixed two studs or pins, k^4, arranged at the farther end of each pocket in the wheel, and to each of these pins is secured a rod, k^5, which extends down and has its lower ends secured to the valve or gate k^6 in the leg of the shoe or sled, the purpose being to operate the valve by the movements of the seed-wheel.

The letter M designates the improved marker or check-row. This consists of a substantial piece of suitable material having its lower end tapered, and an open-end slot, *m*, formed in its upper end. This marker is arranged in operative position by disposing it in a slot in the center of the forward cross-piece of the frame, and securing it by means of an adjustable stirrup, *m'*, or by any other suitable means, and then arranging the slot in the upper end over a pin, m^2, set in the seed-bar, substantially as shown in Fig. 4 of the drawings.

It will be seen by reference to the drawings that the movements of the reciprocating seed-bar impart a vibratory motion to the marker, the point moving in an arc of a circle, and in the progress of the machine making a well-defined mark or check-row, by which the driver can set the lines of seeding.

At the rear of the machine is arranged a shaft, N, upon the ends of which are secured scrapers *n*, which are adapted to set against the face of the wheels and clear them of any substance which may adhere to them.

A seat, O, is provided, and this consists of a seat sustained by a standard fixed in a cross-piece, having its ends mortised in side bars, *o*, which are projected through sleeves *o'*, secured on the cross-pieces of the frame, and through which the bars may be slid, and thus the seat adjusted in relation to the machine as the operator may desire.

The operation of the machine is as follows: A forward movement of the planter turns a wheel on the forward wheel of the axle, which transmits motion to the cog-wheel on the frame, and brings the angle irons or arms, which project from it, in contact with the levers of the seed-bar at a point near their upper ends where their outward curvature begins. The continued upward movement of the arm forces one of the levers to the right or left above the fulcrum-point, and of course in an opposite direction below that point, the foot or lower end of the lever carrying with it the seed bar or rod, which slides over the dropping-aperture in the hoppers; also, as the seed-bar reciprocates the marker or check row is carried in movement by it. The movement of the seed-bar imparts motion to the seed-wheel, causing it to describe about one-fourth of circle in its path. In the drawings I have demonstrated the seed-wheel as having been moved to the right, and carried with it the right-hand seed-cup in position with its mouth opening into the hopper, and the left-hand seed-cup as in position to empty its charge of seed into the leg of the shoe and down the left-hand channel thereof, the opening in the arch or drum through which the latter cup was filled being now closed by the face of the rim of the wheel. A movement of the seed-bar will now cause the seed-wheel to turn toward the right, carrying the right-hand seed-cup downward to discharge the seed-channel, and carrying the left-hand cup upward to receive its complement of seed. A reverse movement of the seed-bar repeats the operation, and so in alternation the cups are charged and discharged. As the seed is discharged from the cups into the respective channels of the shoe it falls upon the gates or valves, and is there held in suspense until that valve is open by means of connection with the seed-wheel, when it is dropped into the soil, and covered by the pressure of the wheel.

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

1. The shoe or sled having a rigid vertical partition forming two seed-channels extended through the heel and vertical standards of the shoe, each channel having an inclined step or shelf projected partly across the channel, in combination with seed-valves seated on the inclines and journaled to fall across the channels, substantially as described.

2. The seed-boxes formed with an upper section of inclined sides, and a lower section of inclined sides arranged at less inclination than the sides of the upper section, and a bottom consisting of an arch or drum with closed ends and having seed-apertures at the base of the arch on opposite ends, substantially as described.

3. In combination with the reciprocating seed-bar of a corn-planter and the seed-box, a seed-wheel mounted on journals in the bottom of the seed-box, and formed with seed-pockets opening in opposite direction, and adapted to be moved from and over the seed-receiving aperture and seed-dropping aperture by the movements of the seed-bar, substantially as described.

4. In combination with the seed-box formed with an arched bottom having seed-apertures on opposite sides, and having closed ends, the seed-rod, and a seed-wheel mounted on journals in the bottom of the seed-box, and formed with seed-pockets arranged to be alternately filled and discharged by the movements of the seed-rod, the shoe or sled formed with two seed-channels in its vertical standard and provided with seats having gates or valves with rods connected to the seed-wheel, substantially as described, and for the purpose set forth.

5. In combination with the seed-wheel formed with pockets, the seed-cups consisting of an outer and an inner shell arranged to slide the one within the other, and having means to hold the slides in a fixed position, substantially as described, and for the purpose stated.

6. In combination with the frame, the carriage-wheels provided with the gear-wheel mounted on the axle of said wheels, and the gear-wheel mounted on the frame of the carriage and provided with arms projected at right angles to the axis thereof, the levers h pivotally secured by pins through the slots h', with capability of vertical movement, and the seed-rod h^3, pivotally connected to the lower end of said lever, substantially as described, and for the purpose set forth.

In testimony whereof I have hereunto signed my name in the presence of two attesting witnesses.

SIDNEY L. STILES.

Attest:
WM. WILLIAMS,
CHARLES BOLEN.