(No Model.) 3 Sheets—Sheet 1.

J. A. DODD.

CORN PLANTER.

No. 528,901. Patented Nov. 6, 1894.

Fig. 1.

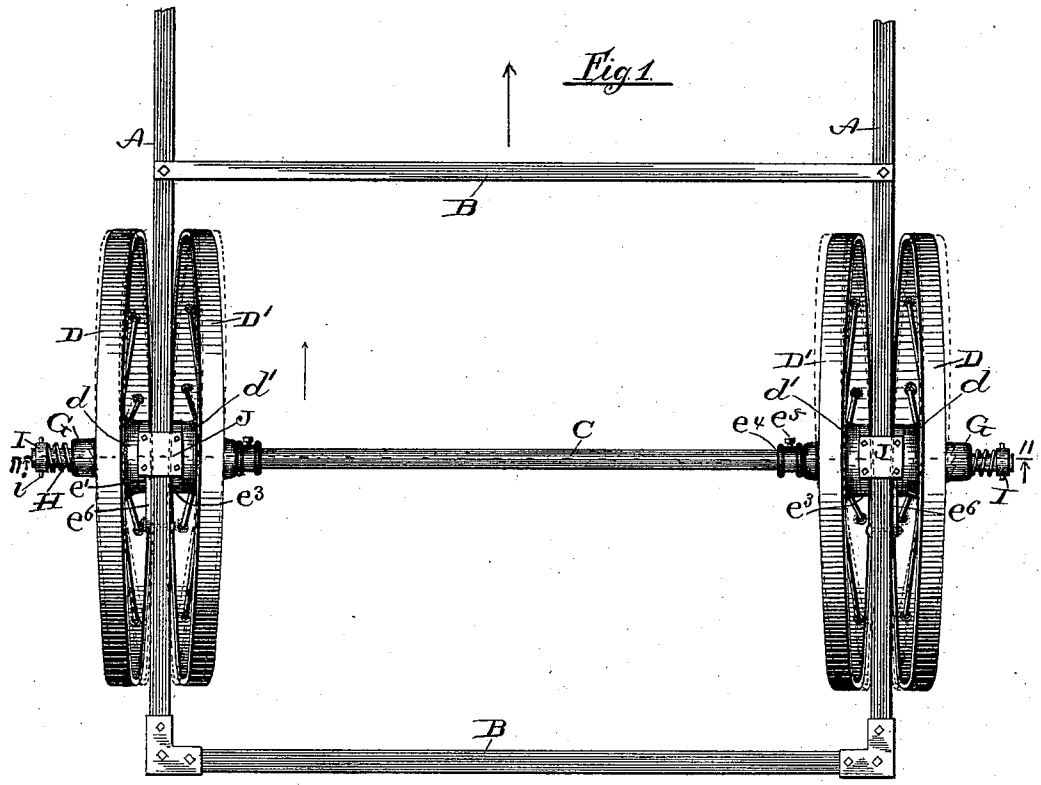


Fig. 2.

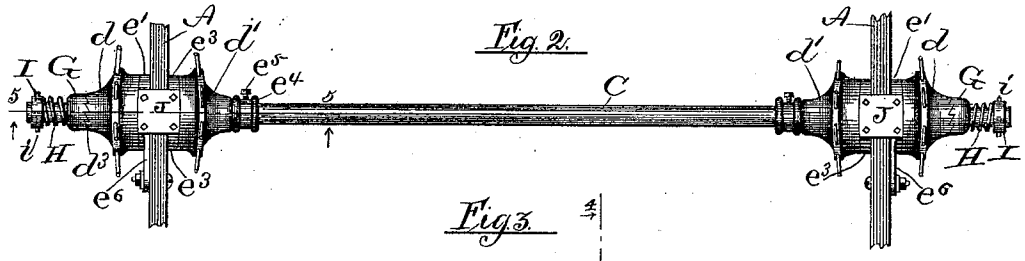
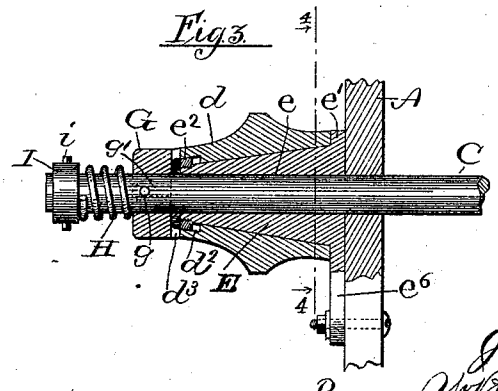


Fig. 3.



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(No Model.) 3 Sheets—Sheet 2.

J. A. DODD.

CORN PLANTER.

No. 528,901. Patented Nov. 6, 1894.

Fig. 4.

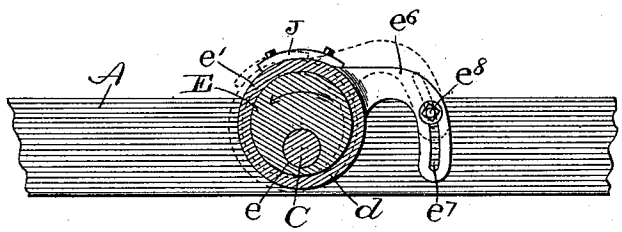


Fig. 5.

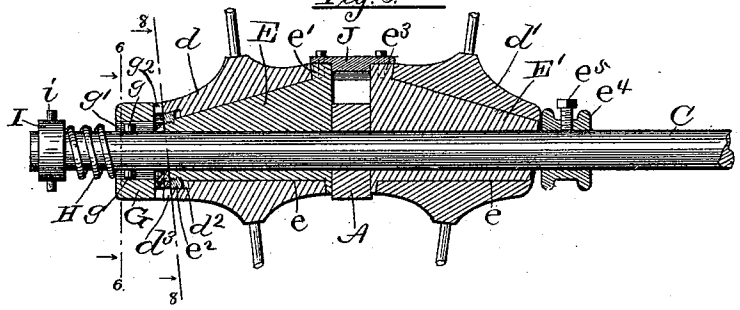


Fig. 6.

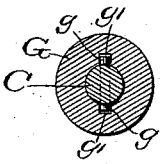


Fig. 7.

Fig. 8.

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(No Model.) 3 Sheets—Sheet 3.

J. A. DODD.

CORN PLANTER.

No. 528,901. Patented Nov. 6, 1894.

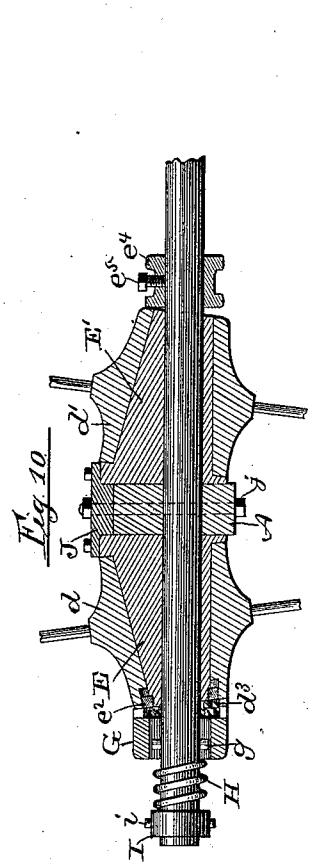


Fig. 10.

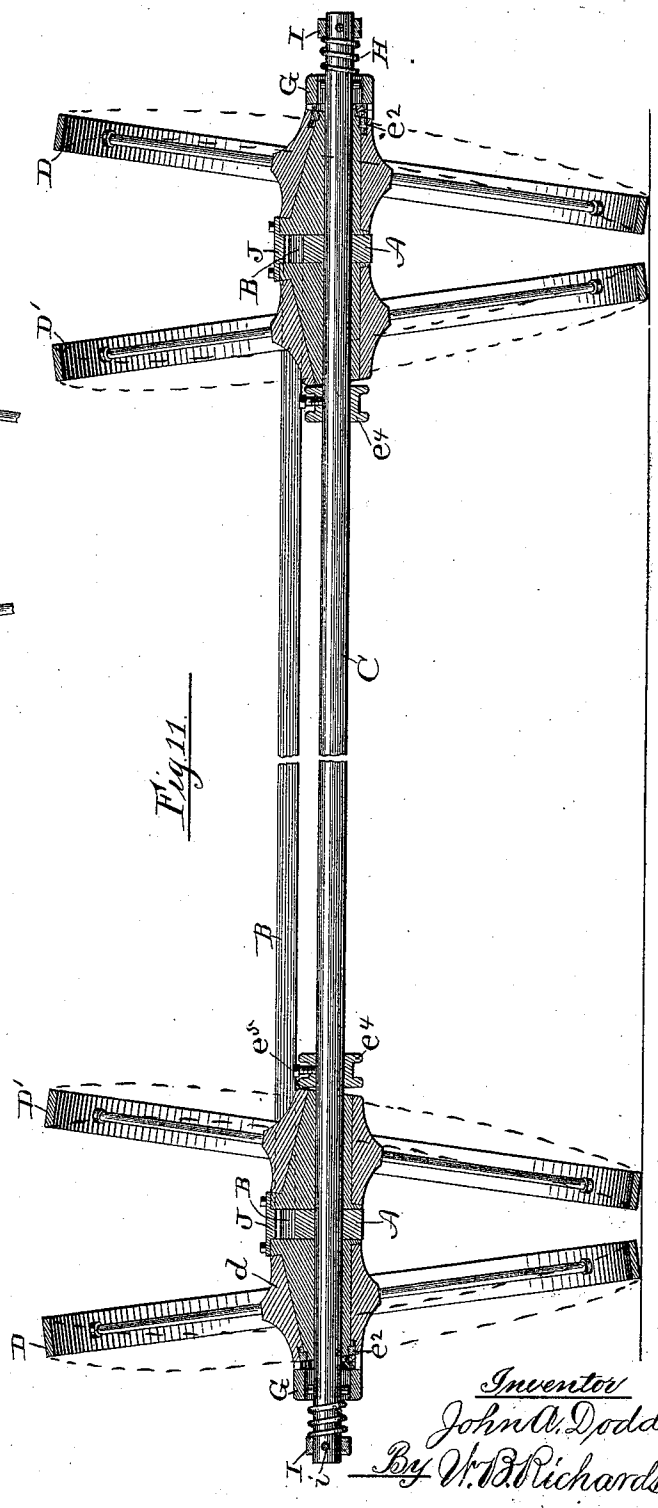


Fig. 11.

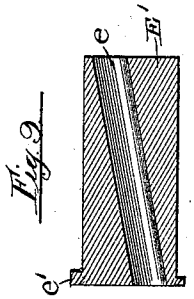


Fig. 9.

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UNITED STATES PATENT OFFICE.

JOHN A. DODD, OF KEWANEE, ASSIGNOR TO EUGENIO K. HAYES, OF GALVA, ILLINOIS.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 528,901, dated November 6, 1894.

Application filed June 18, 1894. Serial No. 514,874. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. DODD, a citizen of the United States, residing at Kewanee, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification.

My present invention relates to improvements in corn planters, of that general type or class in which an axle extends across the planter frame, and is supported on either a single wheel at each end, or on a pair of wheels at each end thereof.

Prior to my invention, so far as known to me, in planters having a pair of wheels at either end of the axle, the wheels of each pair of which were inclined to stand in operation farther apart at their upper sides than at their lower sides, such wheels have been mounted to revolve on short stub axles non-rotatably fixed at each side of the planter, and in planters having a single wheel at each side of the planter, inclined to a vertical plane of revolution, such wheels have been either mounted to revolve on non-rotatable short stub axles, or on the down-turned ends of non-rotatable axles which extend across the planter frame; and the leading object of my invention is to furnish planters with wheels, each inclined to a vertical plane of revolution, and adapted to operate with a rotatable or a non-rotatable axle which extends in an ordinary manner across the planter frame and through the wheel hubs.

To this end my improvement consists in wheels mounted to revolve on annular collars or journals that are obliquely arranged or eccentrically mounted, one on each end of the rotatable axle, which extends through said annular collars or journals as a support therefor, and across the planter, and which annular collar or journals are fixed to the planter frame, and cause the wheels to revolve each in a plane inclined to the axis of the axle or to a vertical plane of revolution; and to the same end my improvement further consists in wheels mounted to revolve on annular collars or journals that are obliquely arranged or eccentrically mounted on each end of a rotatable axle which extends through said collars or journals as a support therefor, and across the planter, and which annular journals are adjustably fixed to the planter frame, whereby they can, by adjustments thereof angularly of the axle, be made to adjust the gather of said wheels; and to the same end my improvement further consists in a pair of wheels at each end of a rotatable axle which extends across the planter, the single wheels of each pair of which wheels are inclined in opposite directions to each other, so that their sides next the ground will at all times be nearer to each other in operation than their opposite or upper sides, which wheels are mounted on annular collars or journals that are obliquely arranged or eccentrically mounted on the rotatable axle which extends through said journals, and which collars or journals are fixed to each other to maintain the wheels of each pair thereof in positions inclined outwardly from each other at their uppermost parts.

To this end my improvement further consists in a split wheel or pair of wheels at each end of an axle that extends across the planter, the single wheels of each pair of which wheels are inclined in opposite directions to each other so that their sides next to the ground will at all times in operation in the field be nearer to each other than their opposite or upper sides, and which wheels are mounted on annular collars or journals that are obliquely arranged or eccentrically mounted on the rotatable axle that extends through said journals, which journals are fixed to each other and are adjustably fixed to the planter frame, whereby they may be angularly adjusted on the axle, for the purpose of adjusting the gather of the wheels of each pair, or the angle of their planes of revolution with reference to a horizontal line between them and transversely of and in same plane as the axle which extends across the planter.

The different novel combinations which have been evolved in carrying out the leading objects of my invention, the several and collective special and general operations of the parts of said combinations, the new and useful results as the product of such combinations and the novel structural features, novel organizations of parts and novel dispositions of parts embodied in said combina-

tions, are hereinafter described and are respectively made the subject matter of claims hereto appended.

In the accompanying drawings all my improvements are shown as constructed and embodied in the best way now known to me. Obviously, however, while still within the purview of my invention, some or all of the parts may differ in their construction, in their organization and in their disposition for coaction from what I have shown in the accompanying drawings, in which—

Figure 1 is a top plan of part of the rear frame or wheel frame of an ordinary corn planter, supported by an axle with a pair of wheels at each end thereof, and embodying my invention; Fig. 2, a top plan of the axle, small part of the side-frame planter bars, and the wheels of Fig. 1 without their rims and portions of their spokes; Fig. 3, an axial, sectional plan, showing the hub of one wheel and other adjacent parts; Fig. 4, a sectional elevation in the line 4—4 in Fig. 3; Fig. 5, a sectional elevation in the line 5—5 in Fig. 2; Fig. 6, a sectional elevation in the line 6—6 in Fig. 5; Fig. 7, a top plan, showing part of a planter frame, an axle, and one inclined wheel at each end thereof; Fig. 8, a sectional elevation in the line 8—8 in Fig. 5; Fig. 9, a modification, an axial sectional elevation of an equivalent form of eccentrically or obliquely apertured collar or journal; Fig. 10, a sectional elevation in same vertical plane as Fig. 5, but showing the collars or eccentric journals fixed to the planter frame, and not adjustable on the axle; Fig. 11, a sectional elevation in the line 11—11 in Fig. 1, axially of the wheels.

Inasmuch as my improvements are adapted to planters of any ordinary construction, having an axle extending across the planter and provided with a wheel or wheels at each of its ends, arranged to follow the seed depositing mechanism of the planter for the purpose of partly compressing and otherwise operating on the soil adjacent to the deposits of seed, I have deemed it necessary to only show in the drawings such parts of a planter frame as will suffice to show the connection of the invention therewith.

Letters A represent partly broken away side frame bars, and B the transverse bars of an ordinary planter frame, with an axle C extending across the planter, and journaled to rotate as hereinafter described.

At Fig. 1 a split wheel, or two wheels D, D′, are shown on each end of the axle, which wheels are designed to follow the seed depositing mechanism of a two row planter, in same manner as do the wheels of the planter shown by the drawings in Letters Patent No. 384,363, issued to E. K. Hayes, June 12, 1888, for corn planters.

The wheels D, D′ are preferably of ordinary construction, each with the surface of its tire parallel in its cross section with its axis of rotation. Wheels however may be used with my invention having frusto-conical shaped or any other ordinary shaped rims that may be preferred. The hubs d, d', of the wheels D, D′, of each pair of wheels, are journaled respectively on annular, eccentrically bored collars or journals E, E′, which I have shown in two of the many forms in which they may be used, having the same mode of operation, or embodying the same principle, and producing the same effects or results.

At present I consider the frusto-conical form a preferable form for the annular collars or journals E, E′. In a preferred way of using the annular journals E, E′, they project in opposite directions from each frame bar A, and while being supported and held in proper alignment and position on and by the axle C, are held in either fixed or adjustable positions thereon as hereinafter described. When the annular collars or journals are in their normal positions, as shown by full lines in the drawings, the hole or aperture e through which the axle passes, in each annular collars or journal is horizontally of said journal located centrally between the two sides thereof at both ends thereof, as shown at Figs. 3 and 4, while vertically of said journal the aperture is, at the smaller end of the collars or journal, centrally located between its upper and lower sides, and at the larger end thereof is located below the center thereof, or in other words, is in respect to the circular larger end of the collars or journal eccentrically located, or below the center thereof, as shown at Figs. 4 and 5.

Each wheel D is held in place on its collars or journal E by an annular flange e' from the larger end of the collar or journal E, and by an annular collar e^2 at its smaller or outer end, which collar screws onto the outer end of the journal and into an annular rabbet d^2 in the end of the hub d, suitable space being left between it and the abutting end of the hub to permit of adjustments of the journal E and free revolution of the wheel thereon. Each wheel D′ is held in place on its journal E′ by an annular flange e^3 from the larger end of said journal, and at its smaller end by an annular collar e^4 which is fixed on the axle by a set screw e^5.

The annular projecting part, in operation planting, of the outer end of each hub d has an annular series of ratchet teeth d^3, and constitutes one member of a clutch, the other member of which consists of a collar G loosely mounted on the axle to slide freely endlong thereof while held from revolving thereon by pins g projecting radially from the axle into grooves g' in the collar G. The collar G has an annular series of ratchet teeth g^2 adapted to engage with the teeth d^3, and is held in contact therewith when the planter is moved forwardly, by means of a spiral spring H coiled on the outer end part of the axle and abutting against the collar G at one end, and a collar I fixed by a pin i at its other end. By these means the wheels D are made to ro-

tate the axle when the planter moves forwardly, in the direction shown by the arrows at Figs. 1 and 7, and to turn without affecting the axle when the planter moves backwardly or is turned around.

Each journal E has an arm or lever e^6 projecting rearwardly from its annular flange e', in close proximity with the adjacent bar A. The outer downturned end of each arm e^6 has a slot e^7 concentric with the axle C, through which slot a retaining bolt e^8 passes from the bar A. The arm e^6 is shown in all of the drawings where shown at all, as best shown at Fig. 4 by full lines as adjusted and fixed by the bolt e^8 to hold the journal E in its normal position, and thereby to adjust and hold its fellow journal E′ in same relation to the axle, as said journals E, E′ are connected or fixed to each other by a plate or block J, which is shown as bolted to the flanges e', e^3, but may be integral therewith.

At Figs. 4 and 5 the collars or journals E, E′ are shown best, as adjusted and held in what may be termed their normal positions in operation planting, in which positions they will hold the wheels in operation, as shown at Figs. 1 and 11, with the two wheels D and D′ of each pair divergent or inclined from each other from their lowermost to their uppermost parts, or tipped outwardly from each other at their upper sides, as shown in the Hayes patent hereinbefore referred to, and will hold them, as shown by full lines at same figures to revolve respectively in planes parallel with their respective paths, when moved directly forward in planting. By raising the outer or rear end of the arm or lever e^6, the collars or journals E, E′ will be adjusted angularly on the axle, and turned forwardly at their upper sides, as shown by the arrow and by dot lines at Fig. 4, and are fixed after such adjustments by the bolt e^8. Such adjustments will carry the thicker part of the base end of each collar or journal forwardly relatively to the axle, as also shown by dot lines at same figure, and thus bring the conical collars or journals E, E′ into such positions that they will hold the wheels D, D′, in operation, divergent from each other from their front to their rear sides or parts, or in other words, will hold them as shown by dot lines at Figs. 1 and 11, to revolve in planes inclined outwardly from their respective paths, when moved directly forward; while at the same time said journals will vary the inclination of the wheels vertically, from each other, but slightly from their positions shown by full lines by same figures.

By the foregoing recited means and in an evident manner, the wheels D, D′ of each pair can be readily and easily adjusted to operate as may be desired, at different angles of divergence from each other from their hindmost parts toward their forward parts, while at the same time such adjustments will vary the angle of divergence of the wheels vertically, but very slightly. The operation of the two wheels following each seed depositing tube, when tipped or inclined away from each other at their upper parts is well known in regard to their functions in compressing the soil at each side of the row of deposited seed and not immediately over the seed, and especially as to their functions arising from the action of the tipped wheels on the soil, from their having in addition to the rolling and compressing contact with and on the soil, of ordinary split wheels, their also having a frictional contact therewith which will tend to force the soil into a ridge over the row of seeds, and to open somewhat deeper trenches at each side thereof and paralleling the row of seed. Additional functions arise in the use of such wheels when divergent from each other from their rear to their forward sides, especially in that their frictional contact with the soil is increased to such an extent as to become a factor in addition to the weight, in pulverizing the soil, and also a factor in positively forcing the soil toward the row of deposited seed, and thereby positively closing the groove made by the furrow opener, and insuring a deeper and more thorough covering over the seed than by wheels without such divergence, and the extent of this divergence, as embodied in my invention, being adjustable, it can be regulated to better suit the requirements of different soils.

In raising the forward ends of the bars A in an ordinary manner, for the purpose of raising the ordinary runners or furrow openers, (not shown,) above the ground, the annular collars or journals will be partially rotated forwardly and thus increase the angle of divergence of the wheels from their rear to their forward parts, so that the wheels will not run smoothly in local transportation of the planter over roads and on its own wheels.

The collars or journals may be adjusted to cause the wheels to revolve in planes parallel with their respective paths, before the planter is moved from place to place on its own wheels, and it may be so adjusted, and then when the frame bars A are lowered at their forward ends for planting, the wheels will be at divergent angles to each other from their rear to their forward parts.

The modification of the annular collars or journals shown at Fig. 9, consists of a collar or journal cylindrical in its exterior figure, and with a bore or aperture e extending lengthwise therethrough, and obliquely thereof, as shown at same figure. In a line transversely of this form of journal, the aperture is midway between the opposite sides of the collar or journal, and in a line vertically thereof is below the center of the journal at its end carrying the flange e' which goes next the frame bar A, and above the center at its other end, and hence eccentric to the circular figure of both ends of the journal, so that this collar or journal will incline the wheels, or tip them outwardly from each other at their upper parts, in same manner as do the conical col-

lars or journals hereinbefore described, and operated in the same way by angular adjustment on the axle will adjust the wheels with the same results as hereinbefore described with reference to the conical collar or journal, the results arising principally from the through aperture in the journal being eccentric to the outer journal surface, either at one or both ends of the collar or journal, so that at opposite outer sides, or at least at one outer side of the journal, such side or sides as the case may be, are oblique to the axle lengthwise of the axle. The main feature in either of these forms of annular collar or journal is, that it is mounted on the axle, and while it forms the journal for the axle, and while the wheel revolves on and in a plane at a right angle to the axial line of the collar or journal, the wheel at the same time may be said to revolve indirectly on the axle, and revolves in a plane inclined to the axis of the axle. In fact these journals may be made of various forms, by skilled mechanics who understand the principle thereof and their mode of operation, to have the same functions and accomplish the same results as my improvements hereinbefore described, and thus come within the purview of my invention.

At Fig. 7 I have shown a single inclined wheel at each side of the planter, mounted, fixed and adjusted in same manner as the wheels D at Fig. 1, and the same reference letters are used thereon as on the wheels D. Hence no further description of this arrangement of the wheel is necessary than to merely state that the single wheel D accomplishes the same result in this use of it that it does when combined with the wheel D′, as hereinbefore described.

At Fig. 10 the collars or annular conical journals shown are same and are mounted in same manner as the herein described conical collars or journals shown at Fig. 5, except that at Fig. 10 the plate J is fixed by bolts *j* to the frame bar A, thus furnishing non-adjustable collars or annular journals. It will be evident that by removing the clutch mechanism, in this use of my improvements with single wheels, or in its use with two wheels at each side of the planter, a fixed axle may be used without departure from the purview of my invention.

I have shown that mode of carrying out the broad invention made by me which I have thus far devised, and by which invention means are provided whereby a single wheel, or wheels in pairs may be mounted on a straight axle, in such positions that their planes of revolution are oblique or inclined to the axis of said axle, and which axles may be eitheir fixed and non-rotatable, or rotatable and clutch geared with the axle; and I consider the scope of my invention as covering not only the particular forms of the collars, or annular journals interposed between the wheel and the axle, but also any construction of interposed or intermediary collar or annular journal which is mounted obliquely on the axle in such eccentric relation thereto that as a journal for the wheel it contains the novel principle of my invention, or has the same mode of operation and produces the same results as my improvement.

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

1. In a corn planter, in combination, a planter frame, an axle, covering wheel, and an intermediate collar or annular journal mounted on the axle oblique thereto lengthwise of the axle, whereby the wheel journaled on said collar and the plane of revolution of said wheel is inclined or oblique to the axis of the axle, substantially as described.

2. In a corn planter, in combination, a planter frame, an axle, covering wheel, and an intermediate collar or annular journal, fixed to the frame and mounted on the axle oblique thereto lengthwise of the axle, whereby the wheel journaled on said collar, and the plane of revolution of said wheel is inclined or oblique to the axis of the axle, substantially as described.

3. In a corn planter, in combination, a planter frame, an axle extending across the frame, covering wheels, in pairs at each end part of the axle, and intermediate collars or annular journals, also in pairs at each end part of the axle, the two collars comprised in each pair thereof fixed to the frame, projecting in opposite directions from a part of the frame, and mounted on the axle oblique thereto lengthwise of the axle, whereby the two wheels of each pair journaled on the collars are retained in positions tipped or inclined outwardly from each other from their lowermost to their uppermost parts, substantially as described.

4. In a corn planter, in combination, a planter frame, an axle extending across the frame, covering wheels in pairs at each end part of the axle, and intermediate collars or annular journals also in pairs at each end part of the axle, the two collars comprised in each pair thereof fixed to each other, projecting in opposite directions from a part of the frame, and mounted on the axle oblique thereto lengthwise of the axle, whereby they retain the wheels, which are journaled on the collars, in positions inclined outwardly from each other from their lowermost to their uppermost parts, and means for adjusting said collars or journals angularly on the axle, whereby the two wheels of either pair may be adjusted to revolve at different angles of divergence from each other from their rear to their forward parts, or without any such angle of divergence, substantially as described.

5. In a corn planter, in combination, a planter frame, an axle extending across the frame, covering wheels in pairs at each end part of the axle, intermediate collars or annular journals also in pairs at each end part of the axle, the two collars comprised in each pair thereof fixed to each other and fixed to

the frame and on the axle, projecting in opposite directions from a part of the frame, and mounted on the axle oblique thereto lengthwise of the axle, and a clutch gear mechanism between the axle and the hub of an inclined wheel, substantially as described.

6. In a corn planter, in combination, a planter frame, an axle extending across the frame, covering wheels in pairs at each end part of the axle, and intermediate collars or annular journals also in pairs at each end part of the axle, projecting in opposite directions from a part of the frame, and mounted on the axle oblique thereto lengthwise of the axle, whereby they retain the wheels which are journaled on the collars, in positions inclined outwardly from each other from their lowermost to their uppermost parts, and means for adjusting said collars or journals angularly on the axle, whereby the two wheels of each pair thereof may be adjusted to revolve at different angles of divergence from each other from their rear to their forward parts, or without any such angle of divergence, substantially as described.

7. In a corn planter, in combination, a planter frame, an axle, covering wheel, an intermediate collar or annular journal mounted on the axle oblique thereto lengthwise of the axle, whereby the wheel journaled on said collar, and the plane of revolution of said wheel is inclined or oblique to the axis of the axle, and means for adjusting said collar or annular journal angularly on the axle, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN A. DODD.

Witnesses:
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GEO. A. MCCLINTOCK.