

(No Model.)

4 Sheets—Sheet 1.

L. C. EVANS.
CORN PLANTER.

No. 508,568.

Patented Nov. 14, 1893.

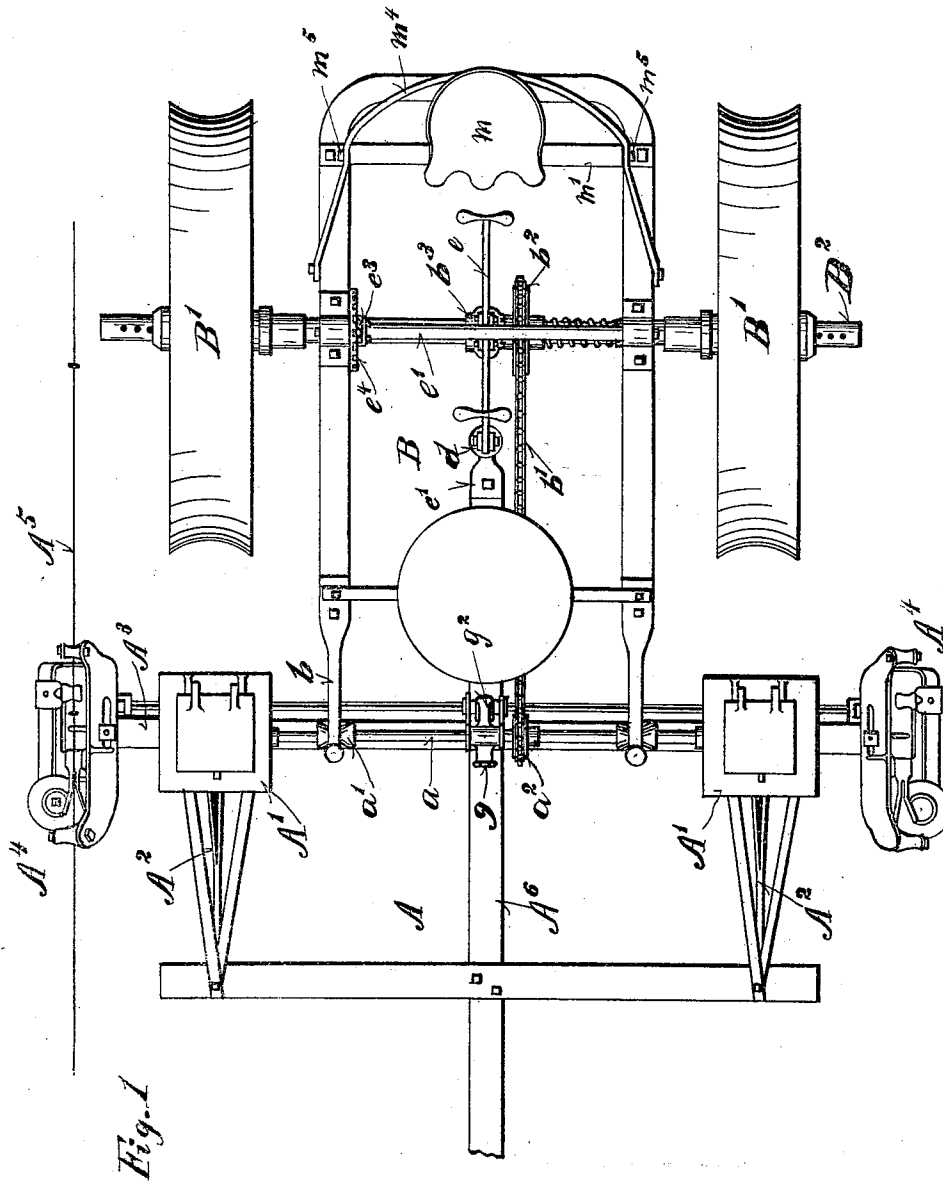
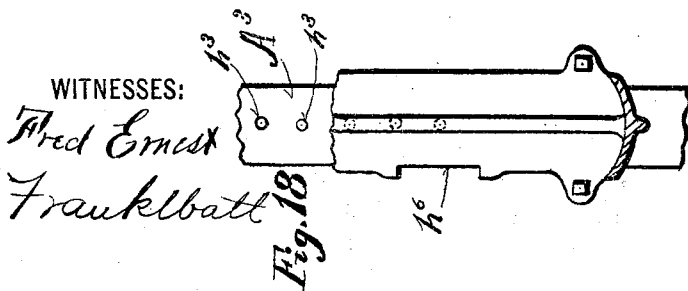


Fig. 1



WITNESSES:

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Fig. 18

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Stanley M. Shepherd
ATTORNEYS

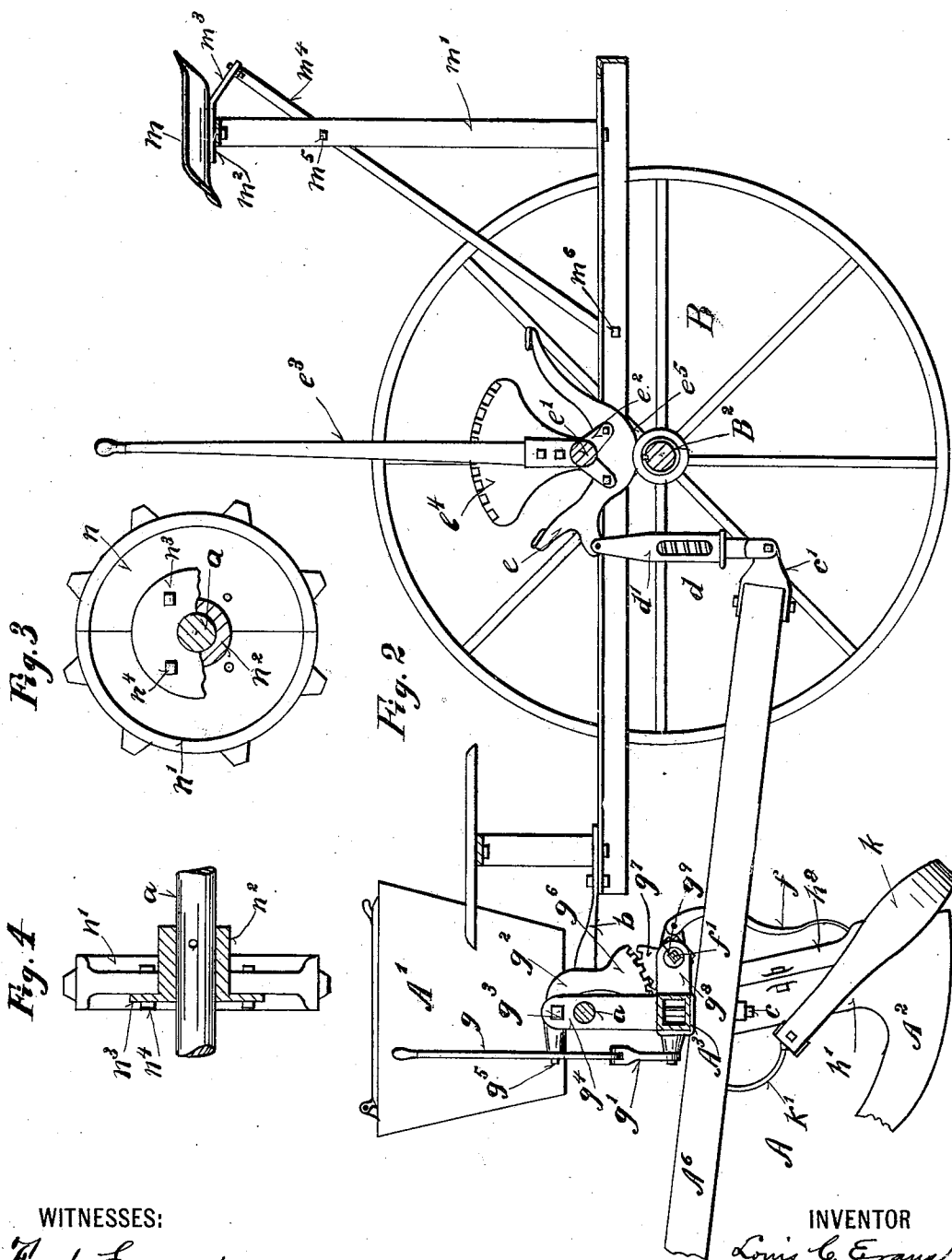
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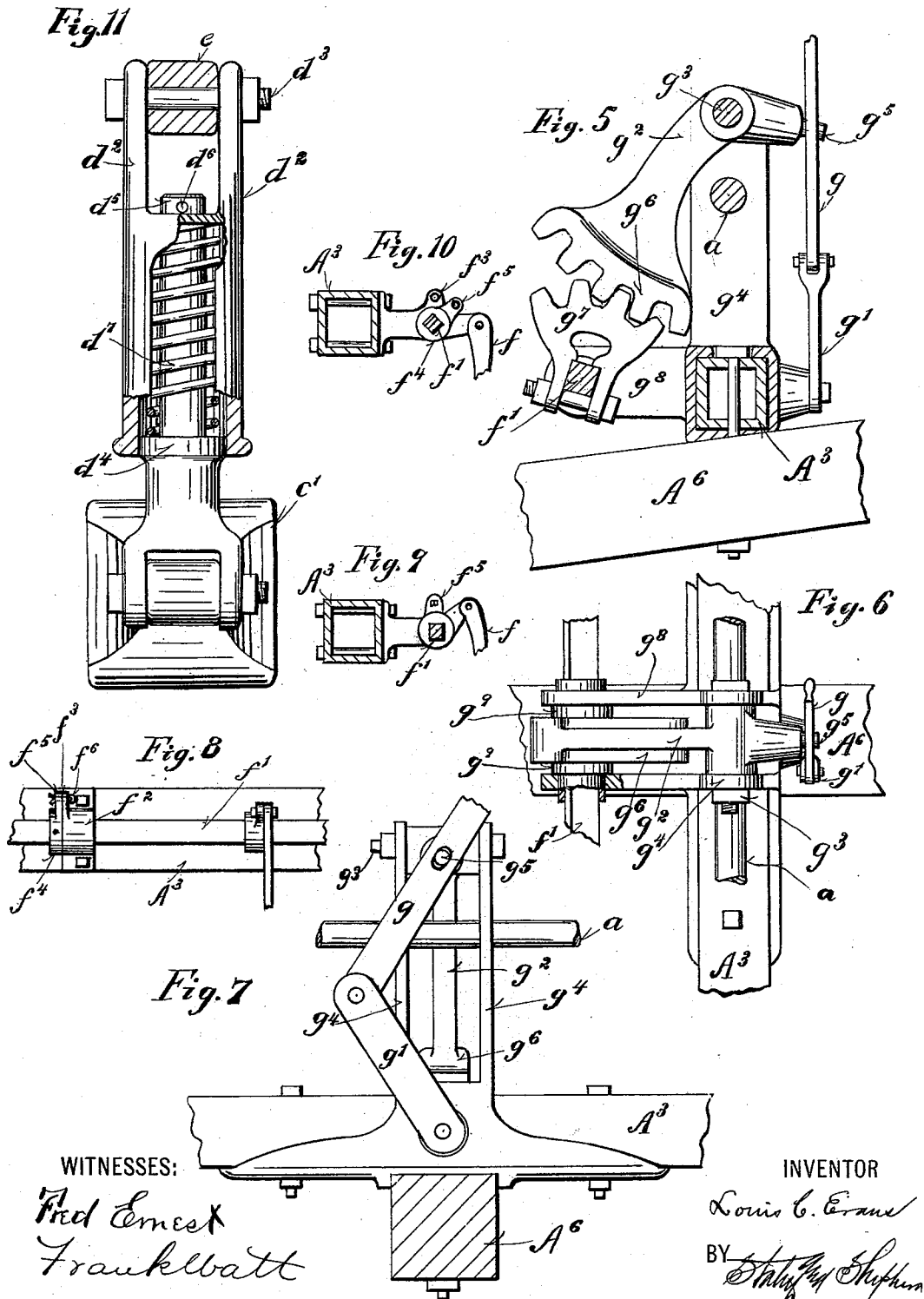
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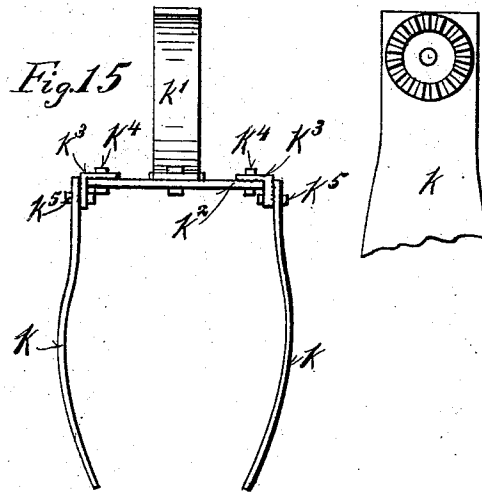
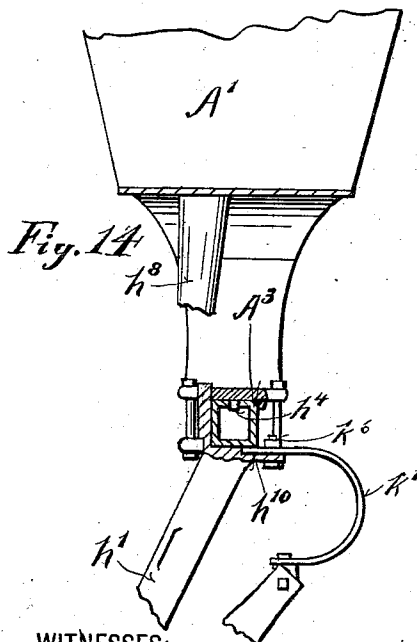
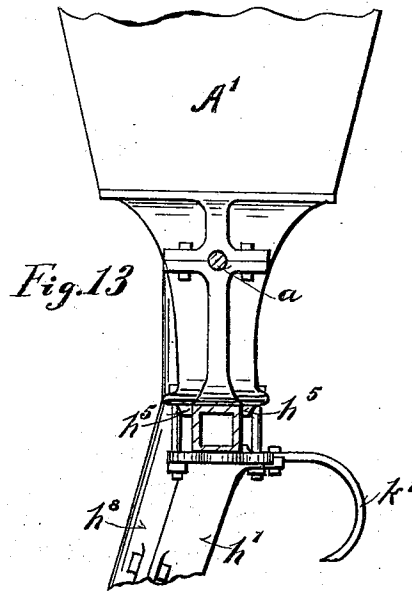
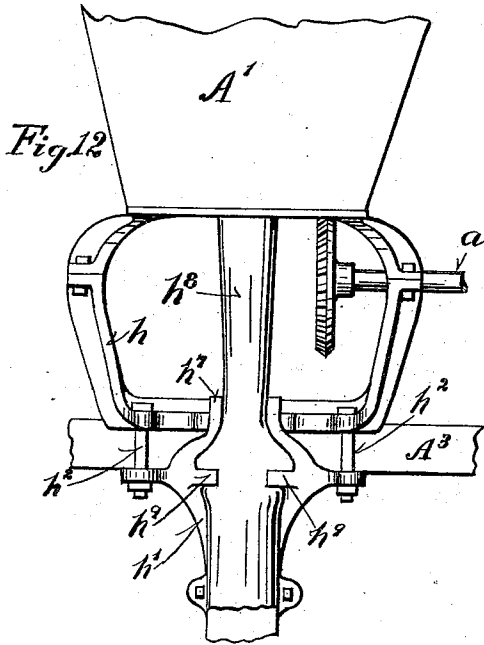
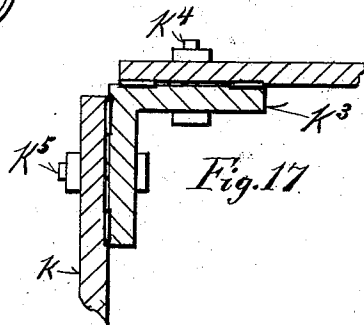
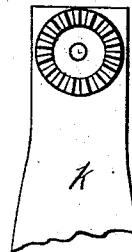


Fig. 16



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UNITED STATES PATENT OFFICE.

LOUIS C. EVANS, OF SPRINGFIELD, OHIO.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 508,568, dated November 14, 1893.

Application filed July 26, 1893. Serial No. 481,486. (No model.)

To all whom it may concern:

Be it known that I, LOUIS C. EVANS, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented a certain new and useful Improvement in Corn-Planters, of which the following is a specification.

My invention relates to improvements in corn planters, and it especially relates to that class of planters known as combined planters, in which the seed may be delivered to the seed tubes in a substantially continuous manner in the nature of a drill, or may be dropped at intervals to form hills, as desired.

My invention consists in the various constructions and combinations of parts hereinafter described and pointed out in the claims.

In the accompanying drawings Figure 1 is a plan view of a machine embodying my invention. Fig. 2 is a longitudinal sectional elevation of the same. Figs. 3 and 4 are details of a sprocket wheel used in connection with the drilling apparatus. Figs. 5, 6 and 7 are details of the dropping devices, and particularly relate to mechanism for operating said dropping devices by hand. Figs. 8, 9 and 10 are detail views of a portion of the dropping mechanism, showing the means for retaining certain portions of the dropping mechanism out of the operative position when the machine is used as a drill. Fig. 11 is a detail view of a yielding connection used between the front and rear portions of the machine, usually designated the runner and wheel frame, respectively. Fig. 12 is a rear view of the seed hopper and its connections, in detail. Fig. 13 is a sectional view showing the same in side elevation. Fig. 14 is a vertical section of the same. Figs. 15, 16, 17 and 18 are detail views of a covering device attached thereto.

Like parts are represented by similar letters of reference in the several views.

In the said drawings A, represents the runner frame, and B, the wheel frame. The wheel frame is mounted on carrying wheels B', attached at each end to the axle B², which is supported in suitable bearings on said wheel frame in the usual manner. The runner frame carries the seed boxes A', supported above the planting shoes A², in the usual way; the parts being supported on and connected

together by a hollow shaft or bar A³, preferably square in cross section; said bar or shaft being adapted to carry the check heads A⁴, at each end thereof; said check heads being provided with the ordinary check apparatus for the check wire A⁵, in the usual manner. The wheel frame B, is pivotally connected to the runner frame A, preferably by means of extending brackets or arms b, provided with open or slotted bearings which engage on sleeves a', on the rotating shaft a, which operates the seed dropping devices in the seed boxes A'; this construction being substantially the same as that shown and described in my prior patent, No. 489,182, dated January 3, 1893. The power to drive the shaft a, is obtained from the axle B², through the medium of a sprocket chain b', operating on suitable sprocket wheels b², and a², on the main axle and the shaft, respectively. A⁶ is the tongue, which is preferably connected to the runner frame A, by a bolt c, which extends entirely through said tongue and through the bar A³. The tongue is projected at its rear end to a point slightly in advance of the main axle B², of the wheel frame and is provided with a bracket c', to which is attached a spring connection d, which in turn is connected at its opposite end to a vibrating foot lever e, on the wheel frame, in the manner hereinafter more fully described. This spring connection d, consists essentially of an outer casing d', which is provided at the top with upwardly extending ears d², perforated at the upper end to receive a bolt d³, which passes through the respective ears and the end of the vibrating foot lever e. The casing d², is formed to receive a plunger d⁴, which fits in said casing and is provided with an upwardly projecting stem d⁵, which extends through a perforation formed in the top of said casing and is held in place therein by a pin d⁶, which passes through said stem on the outside and above said casing. A spring d', arranged within said casing, rests at opposite ends against the top of said casing and against the plunger d⁴, respectively, so that a downward pressure of the outer casing serves to exert a yielding pressure on the end of the tongue.

The vibrating foot lever e, is connected to and supported on a transverse shaft e', journaled in suitable bearings on the wheel frame;

this connection being preferably established through the medium of lugs or ears e^2 , formed on said shaft; said ears or lugs being bolted or otherwise secured to said vibrating foot lever. The shaft e' , is further provided with a projecting hand lever e^3 , provided with the customary spring bolt or other fastening device, adapted to engage in suitable notches provided therefor in a ratchet stand e^4 , secured to the frame; the result of the construction being that a yielding pressure may be exerted on the runner frame and thus on the planting shoes, either through the medium of the hand lever e^3 , or the foot lever e ; the parts being held in any desired position of adjustment by the ratchet stand e^4 . The sprocket wheel b^2 , is preferably supported loosely on the axle B^2 , and is provided with a ratchet shaped hub adapted to engage with a ratchet clutch b^3 , provided on its outer periphery with a groove adapted to be engaged by a cam e^5 , on the foot lever e' , so as to produce a lateral movement of said clutch collar and thus engage or disengage the sprocket wheel substantially in the manner described in my prior patent referred to; means being thus provided by which the sprocket wheel is disengaged when the runner frame is lifted so as to elevate the planting shoes from the ground.

Any well known dropping devices may be employed within the seed hoppers for dropping or sowing the grain into the conduits which lead to the planting shoes; the seed being retained in the seed tubes, when it is desired to drop the seed in hills, by means of the valves f , adapted to be operated by a rock shaft f' , which in turn is operated by the forked lever of the check heads in a well known manner. It is sometimes desirable to operate the valves f , by hand, independent of the check wire, and for this purpose I provide a novel device for producing an oscillatory movement of the shaft f' , from a hand lever g . This hand lever g , is pivoted at its lower end to a link connection g' , which is in turn pivoted to any suitable portion of the runner frame. An L-shaped arm g^2 , pivoted on a bolt or pin g^3 , within a suitable support g^4 , is reduced at its outer end to form a projection g^5 , which extends through a perforation in the hand lever g . This L-shaped piece g^2 , carries at its opposite end a segmental gear g^6 , adapted to engage with a similar gear g^7 , on the shaft f' . This segmental gear g^7 , is located between projecting ears or lugs g^8 , formed on the support g^4 ; a bearing for the shaft f' , being formed in said lugs by means of sleeves g^9 , which extend through said lugs and are formed with square openings to receive the shaft f' ; said sleeves and gear being placed in their proper position and the shaft extended through the same, thus holding the parts in their relative operating positions. It will be seen that the hand lever g , being pivoted to the link g' , forms a toggle joint, with the fulcrum of the lever g , on the

projection g^5 . As the lever is vibrated in either direction, so as to pass centers, the L-shaped piece g^2 , is oscillated, which in turn oscillates the shaft f' , through the segmental gear g^7 , and thus produces an opening and closing of the valve f , at each stroke of the hand lever; the movement being a positive one in each direction; that is to say the valves are positively opened and positively closed; the use of springs of any kind being thus avoided.

To provide for holding the valves f , in an open position when it is desired to discharge the seed directly from the seed tubes by means of the drilling devices therein, I attach to the frame piece A^3 , a bearing f^2 , having formed integral therewith a projecting perforated lug f^3 . On the rock shaft f' , and adjacent to the bearing f^2 , is a collar f^4 , having a similar perforated projecting lug f^5 . These arms or lugs are so arranged with reference to each other that when the valve f , is open, the perforations in said arms or lugs stand coincident, and the valves are retained in this position by inserting through said perforations a pin, preferably in the nature of a cotter f^6 , which holds the valves open and permits the machine to be used simply as a drill.

The seed boxes A' , are supported on the frame piece A^3 , by brackets h . These brackets are connected to the standards h' , of the planting shoes A^2 , by means of clamping bolts h^2 . It is desirable that means be provided for changing the distance between the planting shoes so as to plant the grain at different distances apart, to suit the preferences of the operator. To provide for this in an easy and simple manner, I construct the frame piece A^3 , with a series of perforations h^3 , at the top, (see Fig. 18) and on the bottom of the bracket which rests on said frame piece, I provide an extended stud or projection h^4 , adapted to fit in any one of said perforations. The bracket is preferably formed with ribs or flanges h^5 , which engage on each side of the bar A^3 . These flanges, together with the stud, hold the seed boxes and the brackets firmly in the proper position on the said bar and relieve the bolts h^2 , of any undue strain, either in a lateral or longitudinal direction. In order that the planting shoe may be retained at all times in the proper relative position to the seed boxes and at the same time permit the ready adjustment of the parts, I provide in the brackets h , a recessed opening h^6 , adapted to receive the projecting end h^7 , of the standard h' , which fits snugly in said recess. By loosening the bolts h^2 , the bracket h , may be raised sufficiently to withdraw the stud or projection h^4 , after which the parts may be moved to any desired position along the bar A^3 , and clamped in this position by means of said bolts when the stud h^4 , has engaged in the proper perforation; the parts being all held positively in the proper relative positions. The conduit h^8 , from the seed boxes is preferably made separable from the stand-

ard h' , and is bolted to the rear thereof, engaging lugs or projections h^9 , on the standard being adapted to mesh with corresponding indentations on said conduit, and thus hold the parts in their proper relative positions.

To provide for more thoroughly covering the seed in certain soils which necessitate some additional device, I construct the covering shovels k , adapted to stand at an angle to the planting shoes A^2 , and to curve backwardly and inwardly to a point immediately in the rear of said shoes. These shovels are attached yieldingly to the frame by means of a resilient U-shaped spring k' , which is connected at its lower end to a cross bar k^2 , carrying at each end right angled connecting clips k^3 . These connecting clips k^3 , are serrated on their opposite faces, which stand at right angles to each other and are adapted to fit in corresponding serrations formed in the ends of the shoes k , and the cross bar k^2 , respectively; the parts being secured together by bolts k^4 , k^5 , which form pivotal connections for the respective parts and thus permit a substantially universal adjustment of the shovels k , so that they will assume any desired angle to accomplish the work to be performed.

In order to permit the shovels to be readily attached or detached, as the case may be, I form in the standard h' , of the planting shoe, a recess or pocket h^{10} , which extends under the bar A^2 , and is adapted to receive the free end of the U-shaped spring k' ; said spring being held against accidental displacement by a bolt or other fastening k^6 , (see Fig. 14.) The seat m , for the operator, is placed at the top of a U-shaped support m' , and supported on a seat plate m^2 . This plate m^2 , is preferably bent downwardly and backwardly to form a connecting portion m^3 , and to this portion m^3 , is attached a U-shaped brace m^4 , which extends around the support m' , and is bolted or otherwise secured thereto, as shown at m^5 , with the ends of said brace connected at m^6 , to the wheel frame; this construction being adapted to form a simple as well as an exceedingly efficient and strong connection for the seat.

In planting seeds generally it is desirable that means may be provided for varying the quantity of seed sown. This may be readily accomplished by changing the speed of the feed shaft a , which may be done by changing the size of the sprocket wheel on said feed shaft. To accomplish this I have provided a sprocket wheel formed in two parts, n , n' , adapted to fit on a central hub or core n^2 , provided with a projecting flange n^3 , to which the respective parts n , n' , may be secured by bolts or other fastening devices n^4 . The central hub or core n^2 , is secured rigidly to the shaft a , and admits of the ready detachment of the parts n , n' , which may be replaced by parts of different diameters, thus furnishing means for readily varying the speed of the

feed shaft and thus the quantity of seed sown without other change in the operative parts.

It will be seen that a machine constructed in accordance with the above description embodies many features of utility, both in the construction and operation; and while in many cases I have specified with some minuteness the details of mechanical construction, it is quite obvious that these may be deviated from and modifications thereof employed without in any way impairing the effectiveness of the construction or the results obtained thereby. I do not therefore limit myself to the exact constructions shown and described.

Having thus described my invention, I claim—

1. In a corn planter, the combination with the seed tubes, the valves in said seed tubes, a rock shaft connected to said valves, a segmental gear on said rock shaft, an L-shaped piece having gear teeth adapted to mesh with said segmental gear, a lever fulcrumed on said L-shaped piece, said lever being connected at its lower end to a pivotal link adapted to form a toggle joint, substantially as specified.

2. The combination with the rock shaft and the valves in the seed tubes operated by said rock shaft, a segmental gear on said rock shaft, and a pivoted segmental gear on a stationary frame, a link pivoted to said frame, and a lever pivoted to said link, said lever being fulcrumed on an extended portion of said pivoted segmental gear, whereby a vibratory movement of said lever produces an oscillatory movement of said shaft, substantially as specified.

3. In a corn planter, a spring coupling between the runner and wheel frames, said spring coupling consisting essentially of a cylindrical casing, open at the bottom and having a perforation at the top, upwardly extending ears formed integral with said cylinder on opposite sides of said perforation, a spring in said casing adapted to bear against the top of said casing around said perforation, a plunger fitting in said casing and bearing against the opposite end of said spring, a stem on said plunger passing through said spring and through said perforation and projecting upwardly from said casing between and parallel to said projecting ears, a connecting bar connected between said ears and adapted to limit the upward movement of said plunger, and a pin extending through said plunger above said casing to limit the downward movement of said plunger and of said spring, substantially as specified.

4. In a corn planter, the combination with the planting shoes having the seed tubes, valves in said seed tubes, a rock shaft for operating said valves, and means for oscillating said shaft, a stationary bracket adjacent to said shaft having a perforation therein, and a movable projection on said shaft having a

corresponding perforation, and means, substantially as described, for connecting said parts through said perforations, to hold said shaft in a position to open said valves, substantially as specified.

5 5. The combination with the rock shaft and the valves connected thereto, means for oscillating said rock shaft, a bearing surrounding said rock shaft and having a stationary perforated lug projecting therefrom, and an arm
10 secured to said rock shaft, having a perforation adapted to coincide with the perforation in said lug, and means, substantially as described, for connecting said parts together to
15 prevent the oscillation of said shaft, substantially as specified.

6. The combination with the seed box and the bracket for supporting the same, a planting shoe having a standard independent of
20 said bracket but connected thereto, as described, said standard being provided with a projection adapted to fit in a recess in said bracket, substantially as and for the purpose specified.

25 7. In a planter, a runner frame having a supporting bar on which the various parts are supported, and seed boxes supported on a bracket from said bar, a planting shoe connected to said bracket by bolts adapted to
30 clamp the parts against said bar, a projecting stud on said bracket adapted to engage in an opening in said bar, and interlocking parts on the bracket and shoe standard, respectively, substantially as specified.

35 8. In a corn planter, the combination with a planting shoe, of covering shovels arranged on opposite sides of said shoe, said covering shovels being attached to the opposite ends of a transverse bar which is supported on a
40 central supporting spring connected to said bar between said shovels, said spring constituting the sole support for said transverse bar and shovels, substantially as specified.

9. The combination, in a corn planter, of a
45 central curved supporting spring adapted to support a transverse bar, covering shovels, as described, attached to the respective ends of said bar and on opposite sides of said spring,

attaching clips adapted to form a connection between the said bar and shovels, said clips
50 being pivoted to said bar and to said shovels, respectively, in planes substantially at right angles to each other, so as to permit an adjustment of said shovels in either a horizontal or vertical plane, substantially as specified. 55

10. The combination with a planting shoe and its supporting standard, said standard being provided with a recessed bearing adapted to receive the free end of a curved supporting spring, as described, a transverse
60 supporting bar supported on the opposite end of said spring, covering shovels connected to opposite ends of said bar, and means, substantially as described, for securing said supporting spring in the said recessed bearing, 65 substantially as specified.

11. The combination with a central supporting spring and a transverse bar, as described, of covering shovels connected at the
70 respective ends of said bar and supported wholly by said spring, and means, substantially as described for adjusting said shovels in a horizontal or vertical plane, substantially as specified.

12. In a planter, a wheel frame, a U-shaped
75 support mounted on said frame, and a seat plate on said support, a seat on said seat plate, said plate being extended downwardly and backwardly and connected to a U-shaped brace which extends downwardly at an angle
80 to said U-shaped support and is connected thereto and to the main frame, substantially as specified.

13. In a corn planter, an oscillating shaft, a segmental gear attached to said shaft, a
85 pivoted vibrating piece having gear teeth adapted to engage with said segmental gear, a lever pivotally connected to said vibrating piece, said lever being pivotally connected to a link, whereby a vibratory movement of said
90 lever produces an oscillatory movement of said shaft, substantially as specified.

LOUIS C. EVANS.

In presence of—

ROBERT C. RODGERS,
FRANK WATT.