No. 651,918. Patented June 19, 1900.

E. W. BOWERS.

CORN PLANTER.

(Application filed Jan. 8, 1900.)

(No Model.) 3 Sheets—Sheet 1.

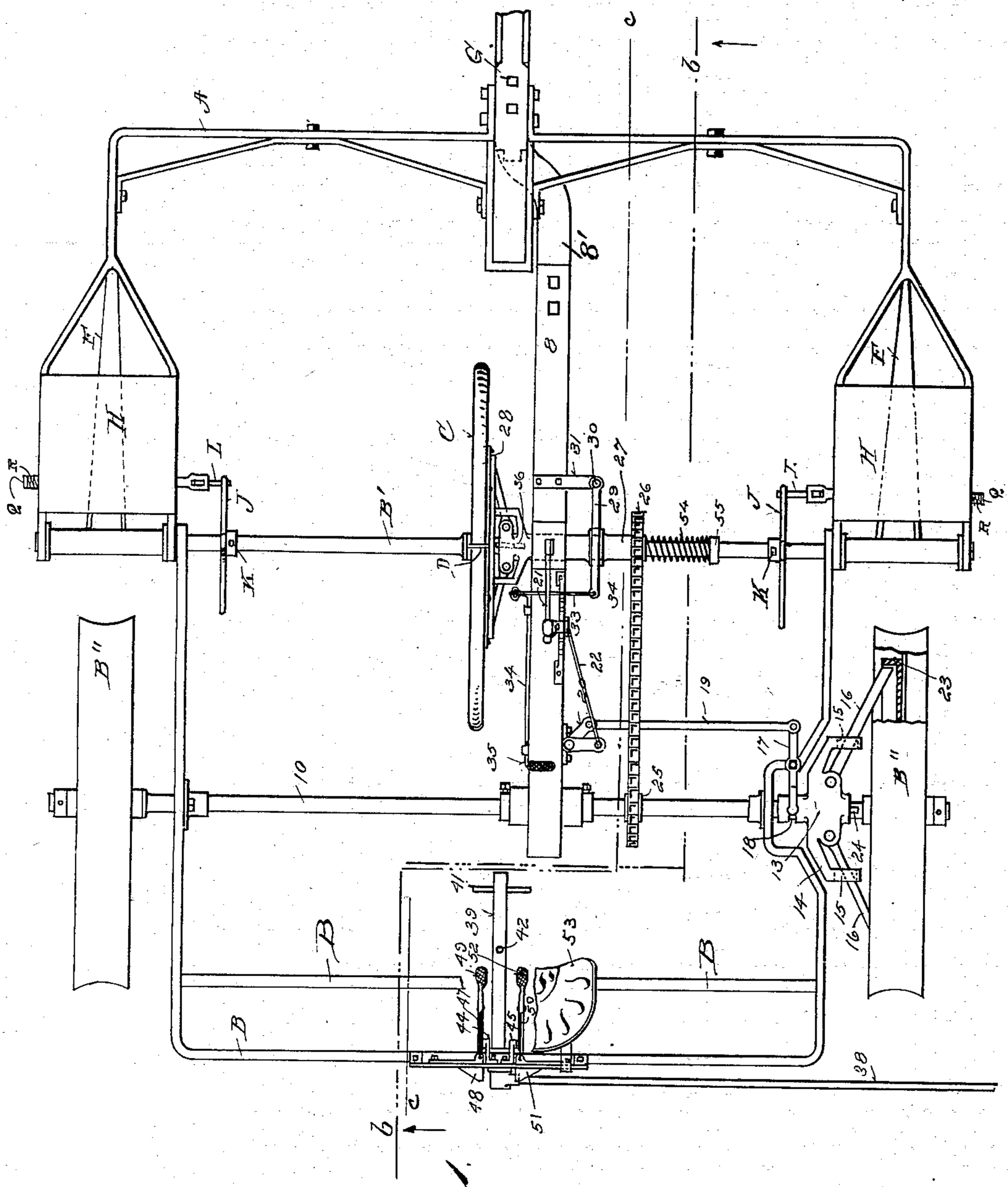

Fig. 1.

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(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

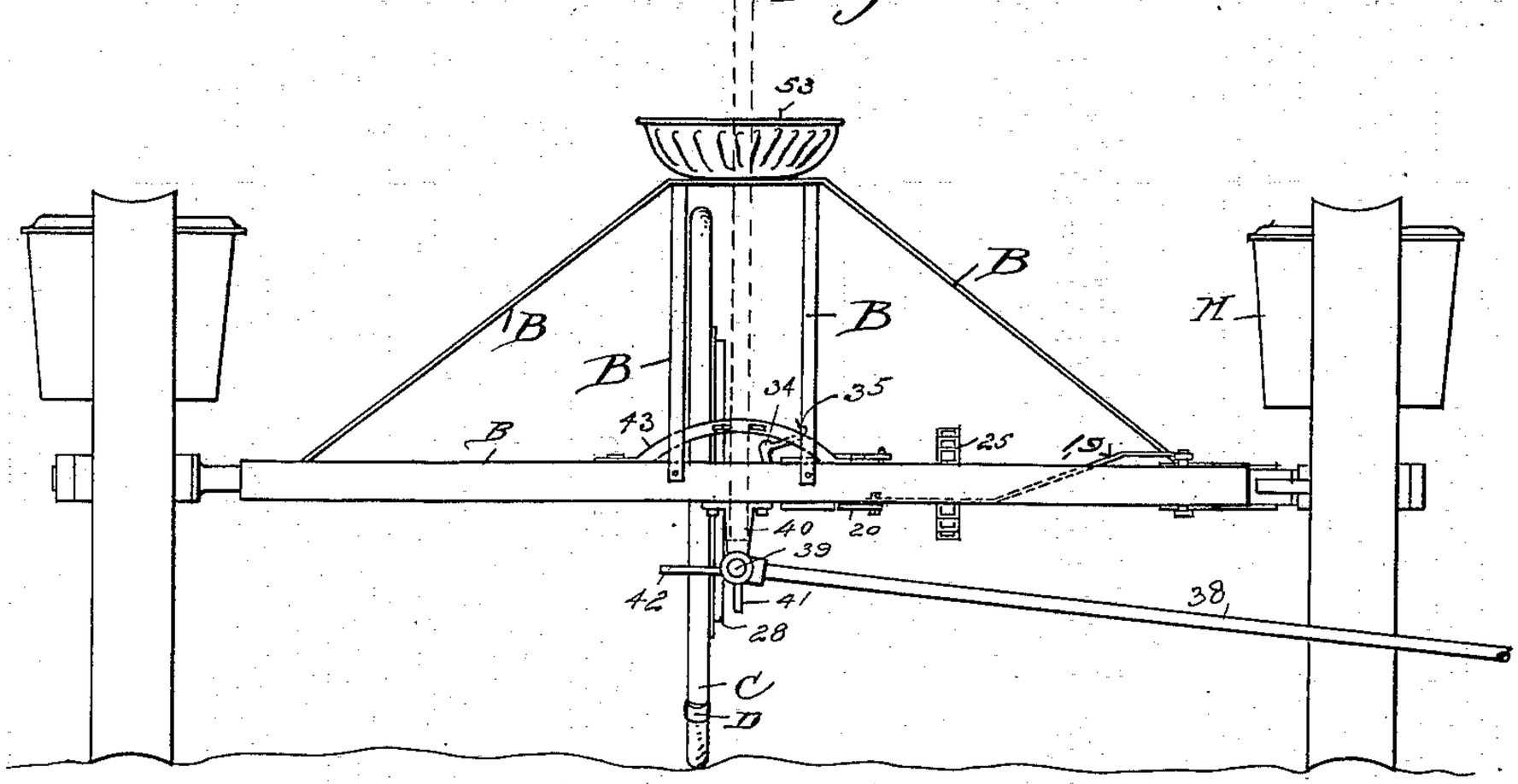

Fig. 3.

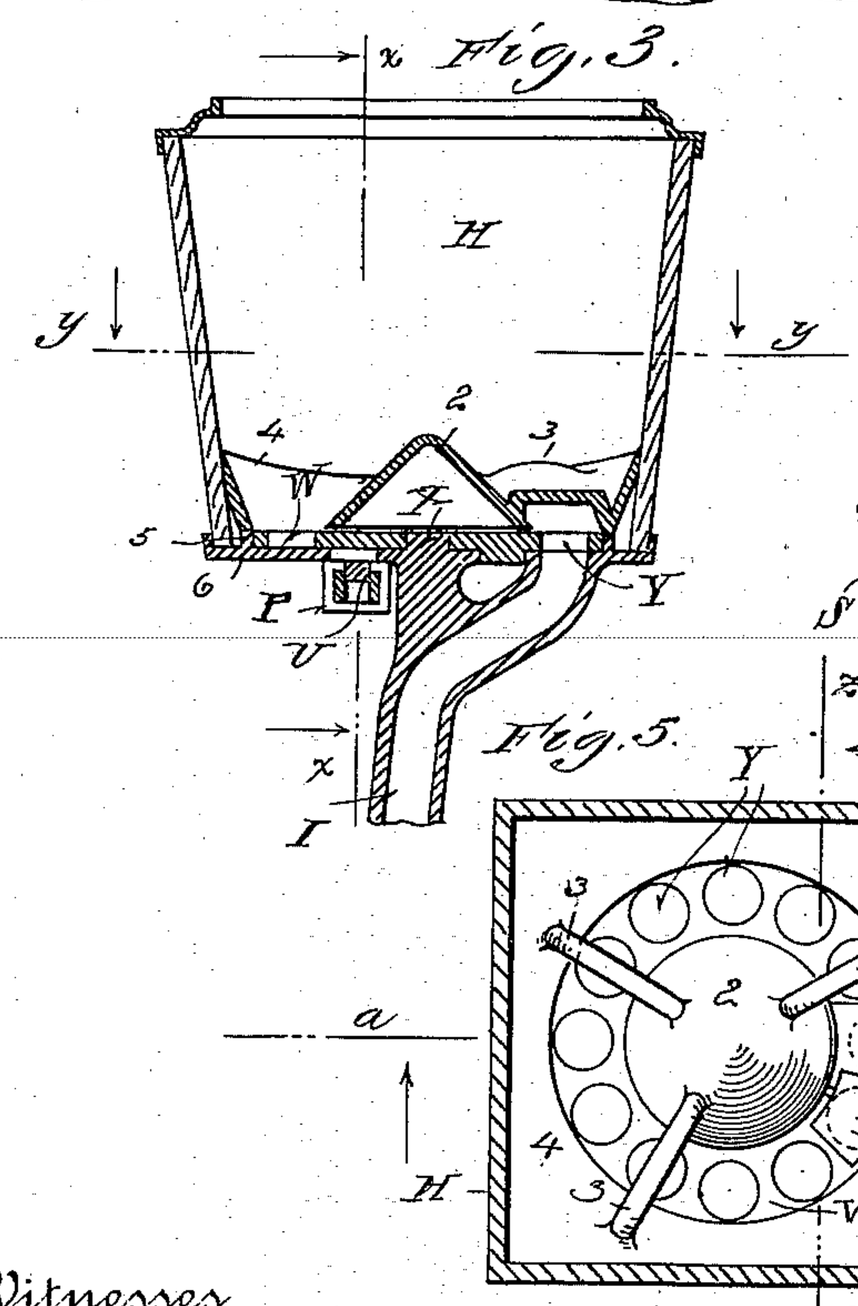

Fig. 4.

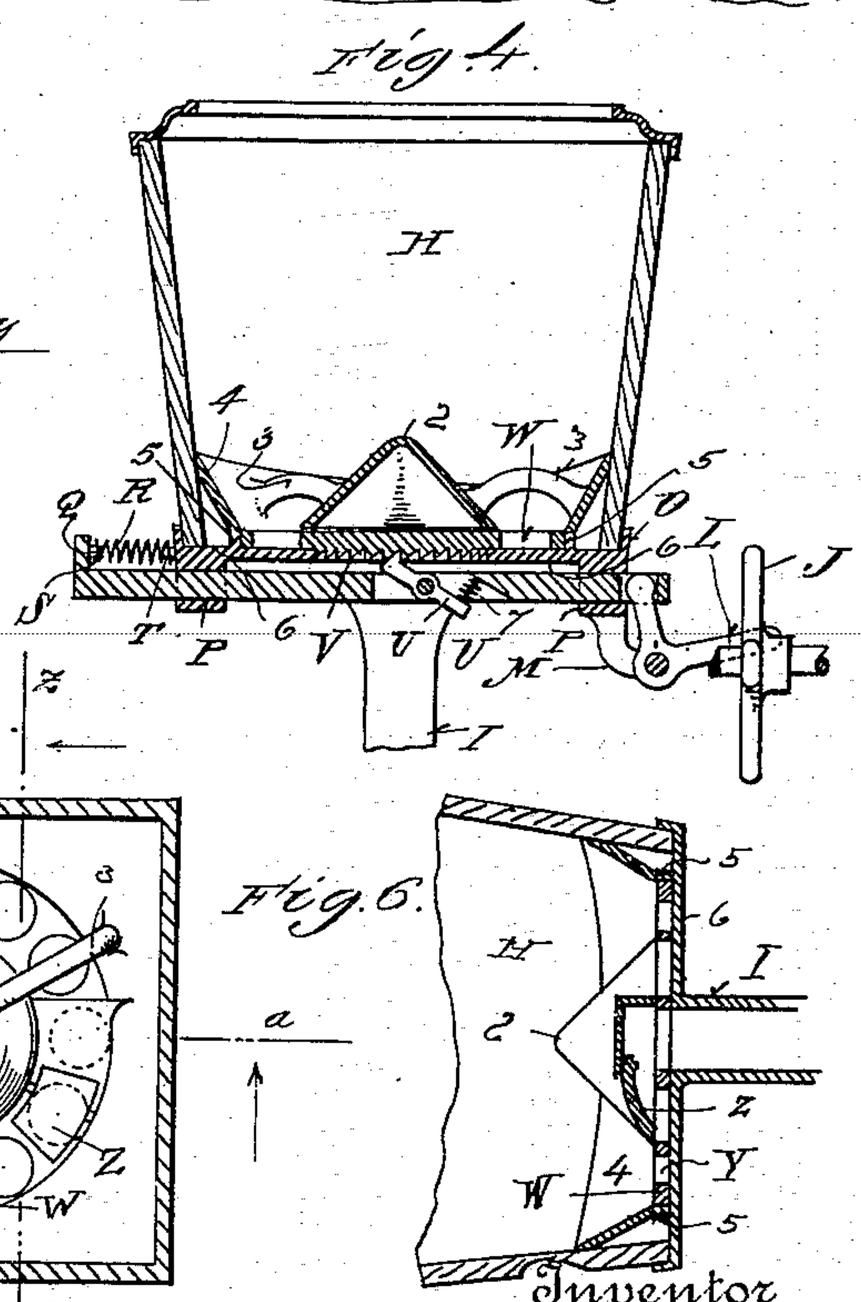

Fig. 5.

Fig. 6.

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(No Model.) 3 Sheets—Sheet 3.

Fig. 8.

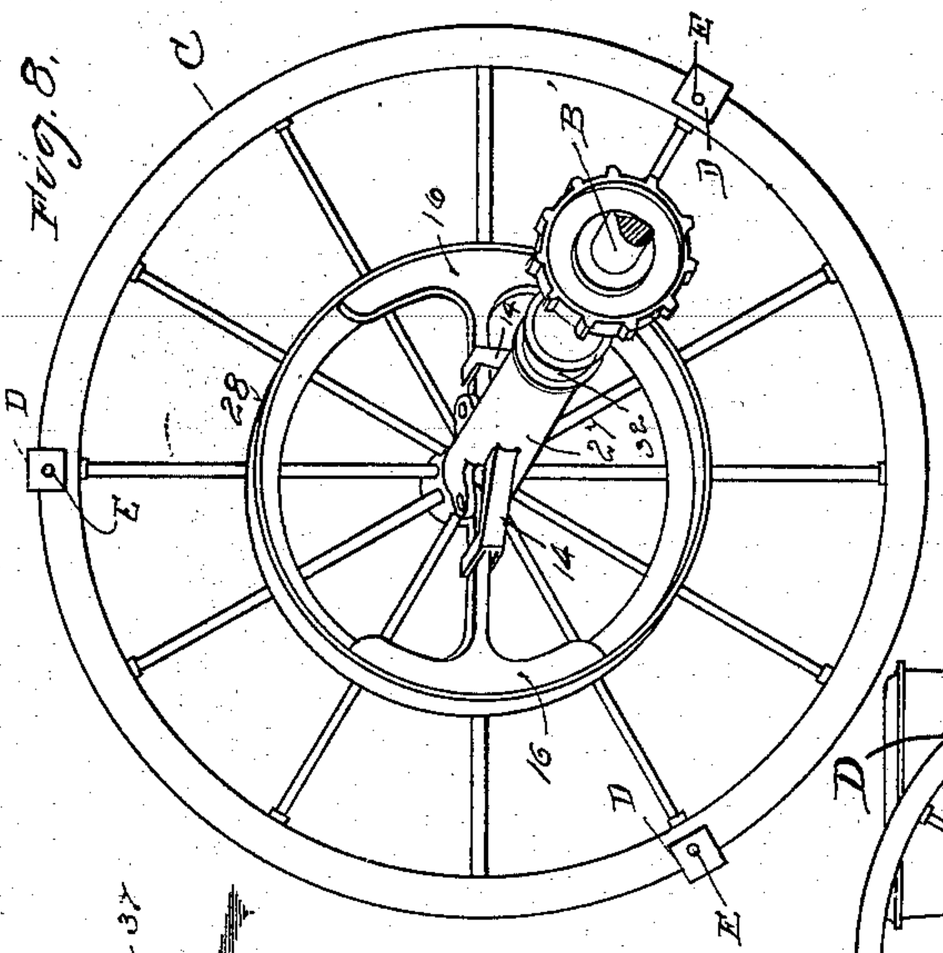


Fig. 9.

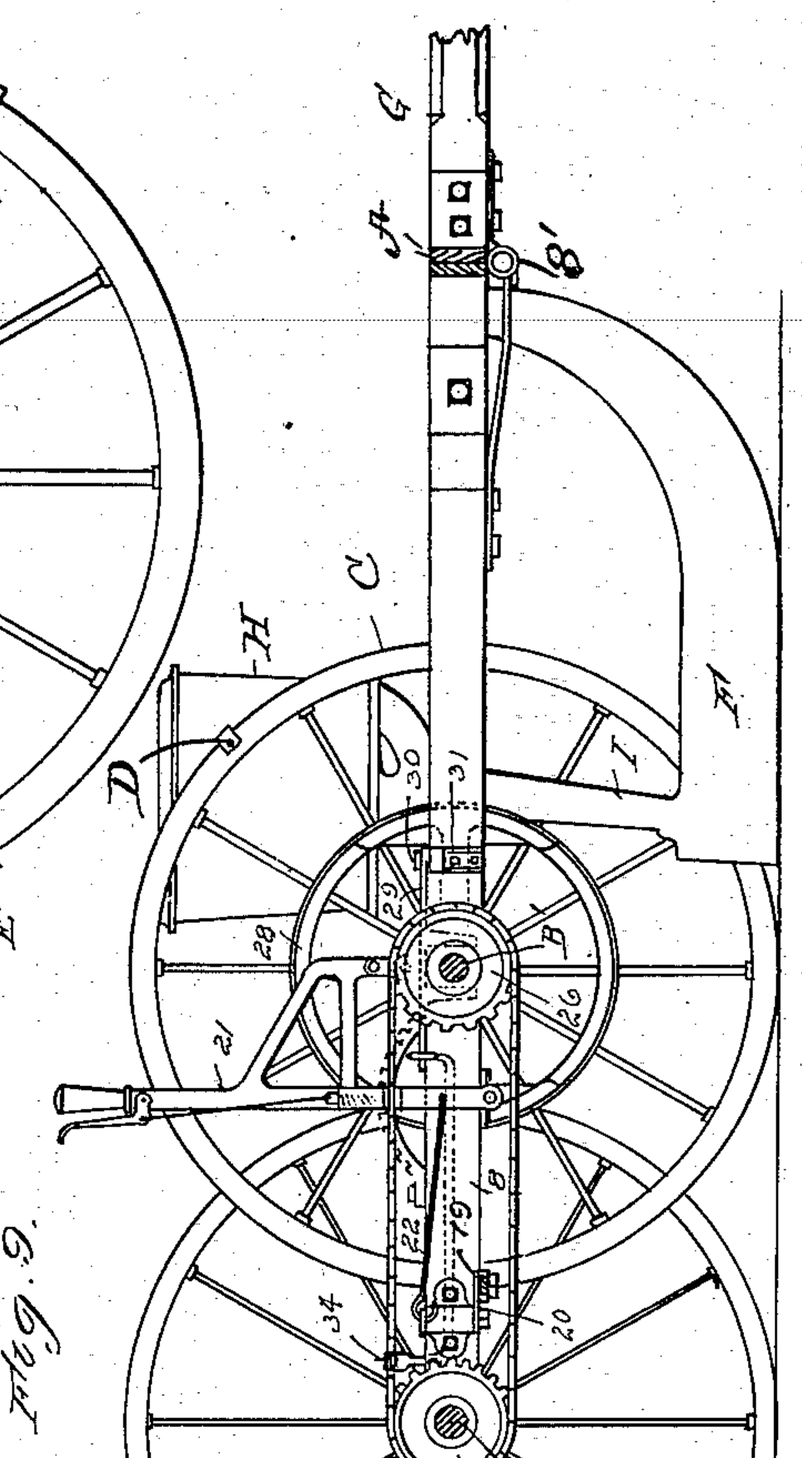


Fig. 7.

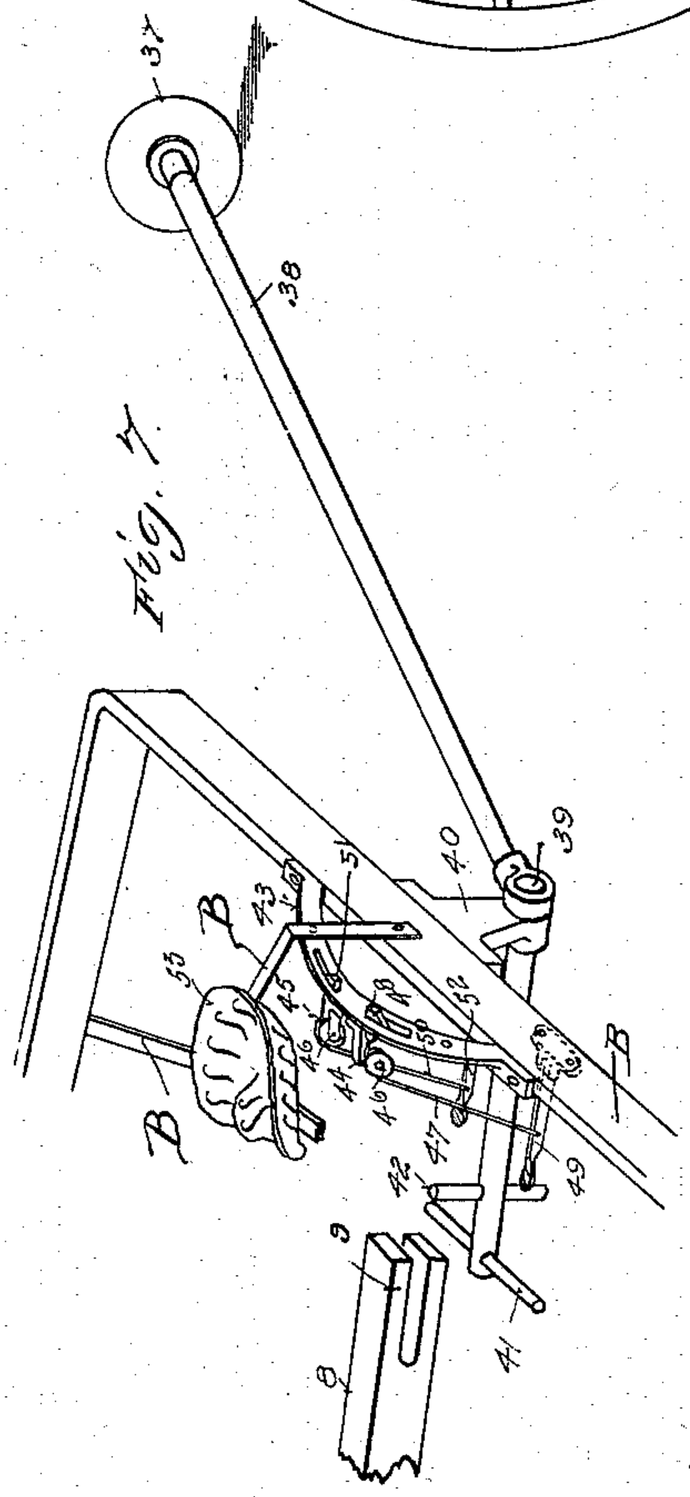
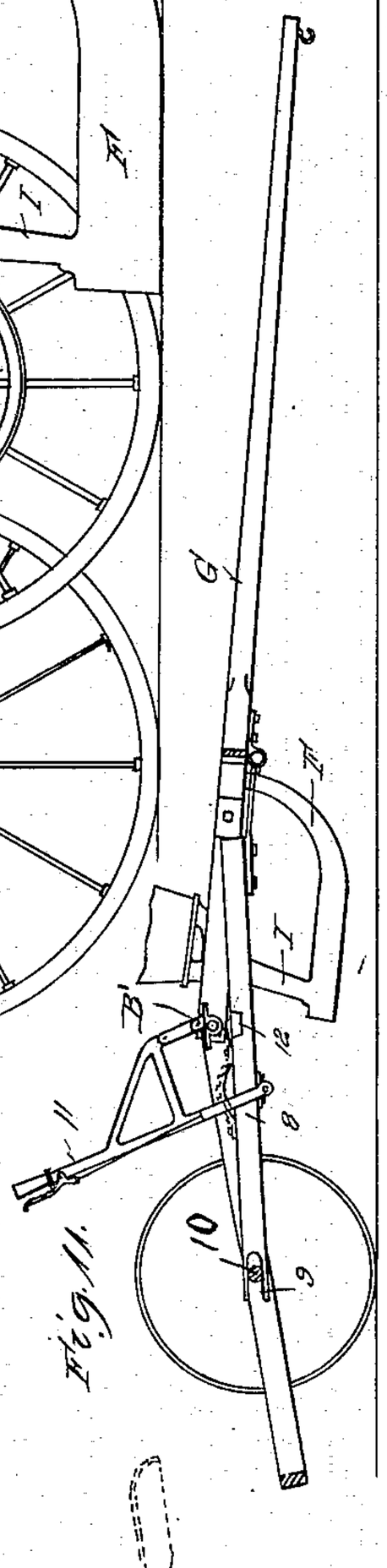


Fig. 10.

Fig. 11.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWARD W. BOWERS, OF FIDELITY, OHIO.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 651,918, dated June 19, 1900.

Application filed January 8, 1900. Serial No. 682. (No model.)

To all whom it may concern:

Be it known that I, EDWARD W. BOWERS, a citizen of the United States, residing at Fidelity, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in corn-planters.

The general objects of this invention are, first, to provide a hill-marking device which may be adjusted to bring all of the hills in a field in line with each other without the use of a check-row wire, so that after the grain grows the ground may be cultivated in more than one direction; second, to provide an improved friction-clutch between one of the driving-wheels and the main driving-shaft, as also between the hill-marker and such machine; third, to provide an improved arrangement for holding the furrow-opener out of contact with the ground, as in turning corners and when the machine is not in use, and, fourth, to provide a two-part frame structure with the parts pivoted to a common shaft, such shaft being adapted to be elevated more or less.

My invention also relates to details of construction and arrangement hereinafter appearing and particularly pointed out in the claims.

In the accompanying drawings, on which like reference letters and numerals indicate corresponding parts, Figure 1 is a plan view of my improved machine; Fig. 2, a rear end elevation; Fig. 3, a sectional view through the hopper on the line *a a* of Fig. 5 looking in the direction of the arrows; Fig. 4, a sectional view on the line *x x* of Fig. 3 looking in the direction of the arrows; Fig. 5, a sectional view on the line *y y* of Fig. 3 looking in the direction of the arrows; Fig. 6, a detail sectional view on the line *z z* of Fig. 5, also looking in the direction of the arrows; Fig. 7, a detail perspective view of a portion of the rear of the machine and showing the furrow-opener or marker and the means for holding such furrow-opener out of contact with the ground and also for throwing the furrow-opener to either one side or the other of the machine; Fig. 8, a detail perspective view showing the hill-marker and the clutch mechanism for operating the same; Fig. 9, a sectional side elevation on the line *b b* of Fig. 1 looking in the direction of the arrows; Fig. 10, a detail view of a hinge for connecting a longitudinal beam with the tongue or pole; and Fig. 11, a sectional view on the line *c c* of Fig. 1, showing the manner in which the furrow-openers are elevated from the soil and supported in such position.

I am aware that numerous efforts have been made to construct a corn-planter so that the ordinary check-row wire could be dispensed with; but, so far as I am aware, a successful machine has never been produced. The construction here set forth is designed to overcome the numerous defects in machines for the same general purpose where check-row wires are not employed. Such check-row wires are a source of great annoyance and require very careful handling in order that all the hills may be dropped in line with each other, besides adding to the expense and inconvenience in handling the machine.

The letter A represents the forward or runner portion of the frame structure of my improved corn-planter, while the letter B represents the rear or wheel portion of said frame structure, such portions being pivotally connected to a shaft B′, which carries a hill-marker C, loosely mounted thereon. This hill-marker is preferably near the center of the machine and carries on its outer periphery a number of hill-indicators D, which are bolted or otherwise secured thereto, as shown at E. The forward frame structure is held off from the ground by runners or furrow-openers F, the hill-marker C, and the tongue G. The usual hoppers H are also supported by the forward frame structure, and each carries a spout I, extending downward to the rear end of one of the runners F. Of course it will be understood that these runners are pointed at their forward end and divided at their rear ends in the usual manner in this class of machinery, as indicated in Fig. 1. This is for the purpose of permitting the grain to pass down between the sides of such runners into a furrow formed thereby. The shaft B′ (see Figs. 1 and 4) carries a pair of tappets J in the nature of arms extending from said shaft, but which are secured there-

to to prevent turning thereon in any suitable manner, such as fastening them thereto with a set-screw, as shown at K. These tappet-arms are adapted to rotate in the path of a bell-crank lever L, such lever being pivoted to a bracket M, extending from each of the hoppers H. The other ends of the bell-crank lever are adapted to engage with their respective reciprocating bars M, which are mounted in guides P in the bottom of the hopper. It will be observed that the end opposite the one with which the bell-crank lever is connected is provided with a flange Q. Between this flange Q and the hopper H is mounted a spring R, which fits over the ends of the lugs S and T, carried by the flange Q and hopper, respectively. Near the central portion of this reciprocating bar is mounted a pivoted clutch or pawl U, which is normally held in engagement with the teeth V, projecting from the under side of the dropper-plate W, rotatably mounted within the hopper upon a stud X, carried by the spout I. It will be observed that this plate is provided with a number of holes or openings, as shown at Y, as is usual in this class of dropper-plates. As the bar O reciprocates the clutch U will engage with one of the teeth of the plate W and will cause such plate to rotate from one hole to the next hole. Inasmuch as this plate supports the corn in the hopper each of the holes Y will be filled with corn. Consequently as one of the filled holes comes over the spout I the corn will drop through into such spout. In order to regulate the number of grains passing through the plate, I provide a scraper or cut-off Z, which normally rides on the plate over the discharge-opening. This scraper prevents more of the corn than that within one of the holes Y from passing into the spout I. As soon as the tappet-arms J pass by the double bell-crank lever L the spring R acts to reciprocate the bar O to its normal position, which movement will cause the clutch-lever U to engage with another tooth V of the plate W. Consequently as the tappet-arms again strike the bell-crank lever the reciprocating bar will be in position to operate the dropper-plate so that one of its filled holes will be over the discharge-spout, while the hole last over such spout will be moved into position within the hopper to be again filled with grain, it being understood that the scraper Z protects the hole or opening immediately above the spout-opening from the corn within the hopper. In order that the corn may be directed into the holes Y, a conical distributer 2 is supported within the hopper upon the plate W by means of arms 3, such arms extending from an annular grain-deflector 4, which fits down upon the flange 5, extending upward from the base 6 of the hopper, and which also acts to direct the grain into the holes Y in the rotatable dropper-plate. Any form of dropping mechanism, however, may be employed, no matter whether in connection with the hopper alone or with the spout leading to the furrow, or both, so long as my tappet-arms are employed. As above stated, the hill-marker C is loosely mounted upon the shaft B′; but when the machine is operating such hill-marker is engaged with the shaft through clutch mechanism hereinafter referred to, so that after once fixing the tappet-arms upon said shaft they will always rotate with the hill-marker when the shaft B′ is rotated, in a manner which will presently appear. Of course it will be understood that the tappet-arms are set with respect to the hill-indicators so that by the time such indicators are in marking contact with the soil the tappet-arms will have operated the reciprocating feed-bar, whereby the instant the mark is made the corn will come in contact with the ground. These hill-indicators are mounted around on the periphery of the disk-marker at suitable intervals to correspond with the distance it is desired to make the various hills of corn from each other.

Referring now particularly to Figs. 1, 9, and 10, it will be observed that a beam 8 is hinged at one end to the tongue G by means of a hinge 8′, while at its other end it is bifurcated, as shown at 9, to fit over a main driving shaft or axle 10. Upon this beam, which is slightly to one side of the center of the machine, is mounted a lever 11, which engages with the dropper-shaft B′ and is adapted to raise such shaft above a notched bearing 12 in the beam when it is desired to elevate the hill-markers and furrow-opening runners, as in turning corners and also in traveling to and from the field. As soon as the dropper-shaft B′ is elevated it causes the frame structures to be raised therewith. This will have a tendency to depress the outer ends of said frame structures, and does depress the outer end of the rear frame structure; but inasmuch as the front frame structure has a tongue rigidly connected therewith and also the beam 8, it being understood that the connection of such beam with the tongue is such that it will not give down, but will only yield in an upward direction, (see hinge 8′, Fig. 10,) the outer end of the frame structure is supported by such tongue and beam and main driving-axle 10 the same as though the tongue and beam were one solid piece. By reason of elevating the frame structures where they join it will bring the driving-shaft 10 and the dropper-shaft B′ slightly closer to each other, such movement being permitted by the bifurcation in the inner end of the beam 8.

It will be seen that upon the main driving-shaft is mounted a sliding clutch-body 13, which carries arms 14, having slotted openings 15 therein. Clutch-arms 16 are pivoted to such clutch-body and extend through the slotted openings 15. Upon the rear frame structure B is pivoted a bifurcated lever 17, which at its bifurcated end fits into a groove 18 in the sliding clutch-body, while at its other end it is connected with a link 19, adapted to engage with a bell-crank lever 20,

connected with an operating-lever 21 by a rod 22. As the bearing-lever 21 is thrown backward or forward it acts upon the bell-crank lever 20, and through the rod 19 and bifurcated lever 17 the friction-clutch is thrown into engagement with a flange 23, carried by one of the wheels B″. Consequently the more the lever 21 is operated to throw the friction-clutch into engagement with the driving-wheel B″ the tighter will be the contact between such clutch and flange. While the friction-clutch is slidable on its shaft, still it will be understood that it is prevented from rotating by means of a feather-key 24. This will cause the driving-shaft to rotate and also a sprocket-wheel 25, which is secured thereto, in any suitable manner. Another sprocket-wheel 26 is carried by a second slidable clutch 27, such latter clutch being adapted to engage with a flange 28, carried by the hill-marker C. The construction of this clutch is the same as the clutch heretofore described, so that a detail description will not be necessary. In order that the clutch 27 may be disengaged from the hill-marker, I provide a lever 29, pivoted at 30 to a bracket 31, carried by the beam 8. This lever fits in a groove 32 in the clutch and has connected therewith a rod 33, which engages with a rocking foot-lever 34. As the foot of the operator is placed upon the foot-rest 35 of the rocking lever 34 such lever is rocked, and through it the lever 29 is made to act upon the clutch 27 to reciprocate it out of contact with the hill-marker. This will cause the hill-marker to cease operating, it being understood, of course, that the clutch 27 is keyed to the dropper-shaft B′, as indicated by dotted lines 36. As the hill-marker is rotated the tappet-arms J, which are also rigidly mounted upon the dropper-shaft B′, will also rotate, so that the grain-feeding mechanism may be operated in the manner heretofore described. If found desirable, a clutch may be used for more than one of the driving-wheels, although it is found in actual practice that one friction-clutch is sufficient.

Referring now to the marking device for making a mark at one side of the machine for the machine to follow on its return trip after making one trip across the field, it will be seen that I employ a marking-disk 37, rotatably mounted on the outer end of a bar 38. The inner end of this bar is rigidly connected with a rotatable shaft 39, mounted in a bearing 40, secured to the frame structure. This strip-shaft carries a pair of cross pins or spindles 41 and 42 at substantially right angles to each other, as shown in Figs. 1 and 7 particularly. Above this shaft and upon the frame structure is mounted a segmental support 43, which carries a pair of brackets 44 and 45, respectively, upon which are pivotally mounted rollers 46. A rope or other suitable device 47 is adapted to pass over one of the pulleys 46 and be secured at one end to a spring-detent 48, while at its other end it is secured to a pivoted foot-trip 49, the latter being connected with the frame structure B. The other pulley 46 also has a rope 50 passing over it and secured at one end to a spring-detent 51, while its other end is connected with a pivoted foot-trip 52, also connected with the frame structure B. These foot-trips extend out from the frame structure sufficiently for the operator to place his heel upon one at a time, and at the same time his toe will strike one of the spindles 41 and 42, according to which may be in a tripping or horizontal position.

Let us suppose that the machine has traveled to the end of a row and that it is about to be turned. The operator sitting upon the seat 53, supported by the frame structure B, places his foot upon one of the spindles which is lying in a horizontal plane, in this instance being spindle 41. He presses downward on such spindle, which acts to partially rotate the shaft 39, thereby raising the marker disk and rod up from the ground, and by the time the shaft 39 has rotated sufficiently for the spindle 41 to be in a vertical plane the rod 38 will be between the spring-detents 48 and 51, respectively, in which position it is held until one or the other of such spring-detents is withdrawn from engagement with such rod. The machine is now in position to be turned for its return trip, which will necessitate throwing the marker to the opposite side of the machine after the machine is in position for such return trip. This is quickly done by the operator simply placing his heel upon the foot-lever 49 and upon the spindle 42, which has been rotated into a horizontal plane, thereby withdrawing the detent 48 and at the same time partially rotating the shaft 39, which causes the marker-disk to drop to the ground on the opposite side of the machine to that which it was on before turning.

If after the machine makes one trip across the field and on its return the operator finds that the hills of corn are not being planted in line with the preceding rows, all that is necessary for him to do is to elevate the dropper-shaft sufficiently for him to slightly turn the hill-marker, which will cause the hill-indicators to mark the hills in the proper places and the tappet-arms J to properly operate the seed-dropping mechanism.

A spring 54 is mounted on the shaft B′ between a collar 55, rigidly mounted on the shaft B′ and the clutch 27, so as to hold said clutch normally in engagement with the hill-marker. This spring has sufficient tension to prevent such marker from slipping with respect to the frictional clutch.

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

1. In a corn-planter, the combination with a two-part frame structure, of a dropper-shaft to which said parts are pivotally connected, a dropper-wheel and tappet-arms carried by said dropper-shaft, seed-dropping mechanism

carried by one of said frame structures and adapted to be operated by said tappets, and means for supporting said frame structures, and means for driving said dropper-shaft, substantially as shown and described.

2. In a corn-planter, the combination with a two-part frame structure, of a dropper-shaft to which said parts are hinged, a tongue rigidly secured to one of said parts, a beam hinged at one end to said tongue and forming a rigid extension thereof in one plane, yet permitting said tongue to be raised above said plane, the other end of said beam being supported by the other of said frame structures, means to elevate said dropper-shaft and parts attached thereto, ground-wheels for supporting the said frame structures, and dropper mechanism operated by said tappets, substantially as shown and described.

3. In a corn-planter, the combination with a two-part frame structure pivotally connected with a dropper-shaft, furrowing and dropping mechanism carried by one of said frame structures, tappets carried by said dropper-shaft for engaging with said dropper mechanism, a main driving-shaft carried by the other of said frame structures mounted in ground-wheels, a hill-marker mounted on said dropper-shaft, a frictional clutch slidably mounted upon said dropper-shaft for engaging with said hill-marker, a sprocket-chain adapted to connect said friction-clutch with said main driving-shaft, substantially as shown and described.

4. In a corn-planter, the combination with a two-part frame structure pivotally connected with a dropper-shaft, one ahead of the other, a tongue rigidly connected with said forward structure, a main driving-shaft mounted in the rear frame structure and having ground wheels connected therewith, one of which is adapted to drive said shaft, a beam hinged to said tongue to prevent the downward movement of said tongue and beam below a predetermined plane, said beam being slidably mounted upon said main driving-shaft, a lever carried by said beam and adapted to engage with said dropper-shaft to elevate said shaft and forward frame structure, a pair of grain-receptacles carried by said forward frame structure, furrow-openers also carried by said forward frame structure, dropper mechanism for dropping the grain into said furrow-openers, and tappet-arms carried by said dropper-shaft for operating said dropper mechanism, and a sprocket-chain connecting said driving-shaft and said dropper-shaft, substantially as shown and described.

5. In a corn-planter, the combination with a two-part frame structure hinged to a dropper-shaft, one ahead of the other, a tongue rigidly connected with the forward frame structure and a pair of seed-receptacles and furrow-openers also carried by said forward frame structure, dropping mechanism carried by said receptacles, tappets carried by said dropper-shaft and adapted to operate said dropping mechanism, a hill-marker loosely mounted on said dropper-shaft, a frictional clutch carried by said dropper-shaft and adapted to engage with said hill-marker, a driving-shaft carried by said rear frame structure, supporting-wheels mounted thereon, a frictional clutch slidably mounted on said driving-shaft for engaging with one of said carrying-wheels, a sprocket-chain for connecting said driving-shaft with the hill-marker frictional clutch, substantially as shown and described.

6. In a corn-planter, the combination with a two-part frame structure, of a dropper-shaft to which said parts are pivoted, supporting-wheels for one of said parts and a tongue for the other, a beam hinged to said tongue and adapted to yield in an upward direction and be rigid in a downward direction, and supported at its other end by the wheel-supported part, and lever mechanism carried by said beam to elevate the parts of said frame structure, dropper-shaft and frame structure, substantially as shown and described.

7. In a corn-planter, the combination with a dropper-shaft, of a hill-marker loosely mounted thereon, hill-indicators carried by said hill-marker according to the distance the hills are to be planted from each other, a frictional clutch slidably mounted on said shaft and adapted to engage with said hill-marker, and means for holding such clutch in engaging contact therewith.

8. In a corn-planter, the combination with a dropper-shaft, of a hill-marker loosely mounted thereon carrying hill-indicators, such hill-indicators being adapted to indicate the distances the hills are to be apart, a clutch slidably mounted on said shaft and rotatable with said shaft, said clutch consisting of a body portion and a pair of pivoted arms extending in opposite directions from each other and passing through slotted openings in extensions from the body portion of said clutch to permit of movement of the arms in the direction of the shaft, and a flange carried by said hill-marker with which said arms frictionally engage, substantially as shown and described.

9. In a corn-planter, the combination with a dropper-shaft carrying a pair of adjustable tappets thereon, and a loosely-mounted hill-marker, a frictional clutch for engaging with said hill-marker, slidably mounted on and rotatable with said shaft, hill-indicators carried by said hill-marker to indicate the distances the hills are apart, said hill-marker being rotatably adjustable relatively to said tappet-arms, substantially as shown and described.

10. In a corn-planter, the combination with a frame structure, of a shaft rotatably mounted therein carrying a pair of spindles at right angles to each other, a marker-rod rigidly mounted on the outer end of said shaft, a marker carried by said rod, and means to hold said marker-rod and marker out of marking position when elevated by pressing upon one

of said spindles and release said rod and marker when the other of said spindles is pressed upon.

11. In a corn-planter, the combination with a frame structure, of a shaft rotatably mounted therein carrying a pair of spindles at right angles to each other, of a marker-rod and marker rigidly mounted upon said shaft, a pair of spring-detents adapted to hold said marker-rod in a vertical position, a pair of ropes engaging their respective detents, a foot-lever for each of said ropes, said levers being in close proximity to said spindles and operated at the same time, whereby said marker is thrown from one side of the machine to the other according to which detent is thrown out of engagement with said marker by their respective levers, substantially as shown and described.

12. In a corn-planter, the combination with a frame structure having a shaft rotatably mounted therein, carrying a pair of spindles extending through said shaft at right angles to each other, of a marker-rod rigidly mounted on said shaft, and carrying a disk-marker, a bracket carried by said frame structure above said shaft, a pair of pivoted detents carried by said bracket and also a pair of pulleys, said detents adapted to engage with said marker-rod when in an upright position, a pair of foot-levers pivoted to said frame structure, a pair of ropes connected at one end with the respective detents and pressing over said pulleys and secured to their respective foot-levers, said spindles being for the purpose of rotating said shaft by the foot of the operator in either direction, said levers being for the purpose of releasing one of said detents at a time according to which side of the machine the marker is to be used, substantially as shown and described.

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

EDWARD W. BOWERS.

Witnesses:
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LORAN A. KERR.