Dec. 11, 1923. 1,477,097

F. J. ANDERSON ET AL

PLANTER

Filed April 13, 1921 4 Sheets-Sheet 1

Fig. 1.

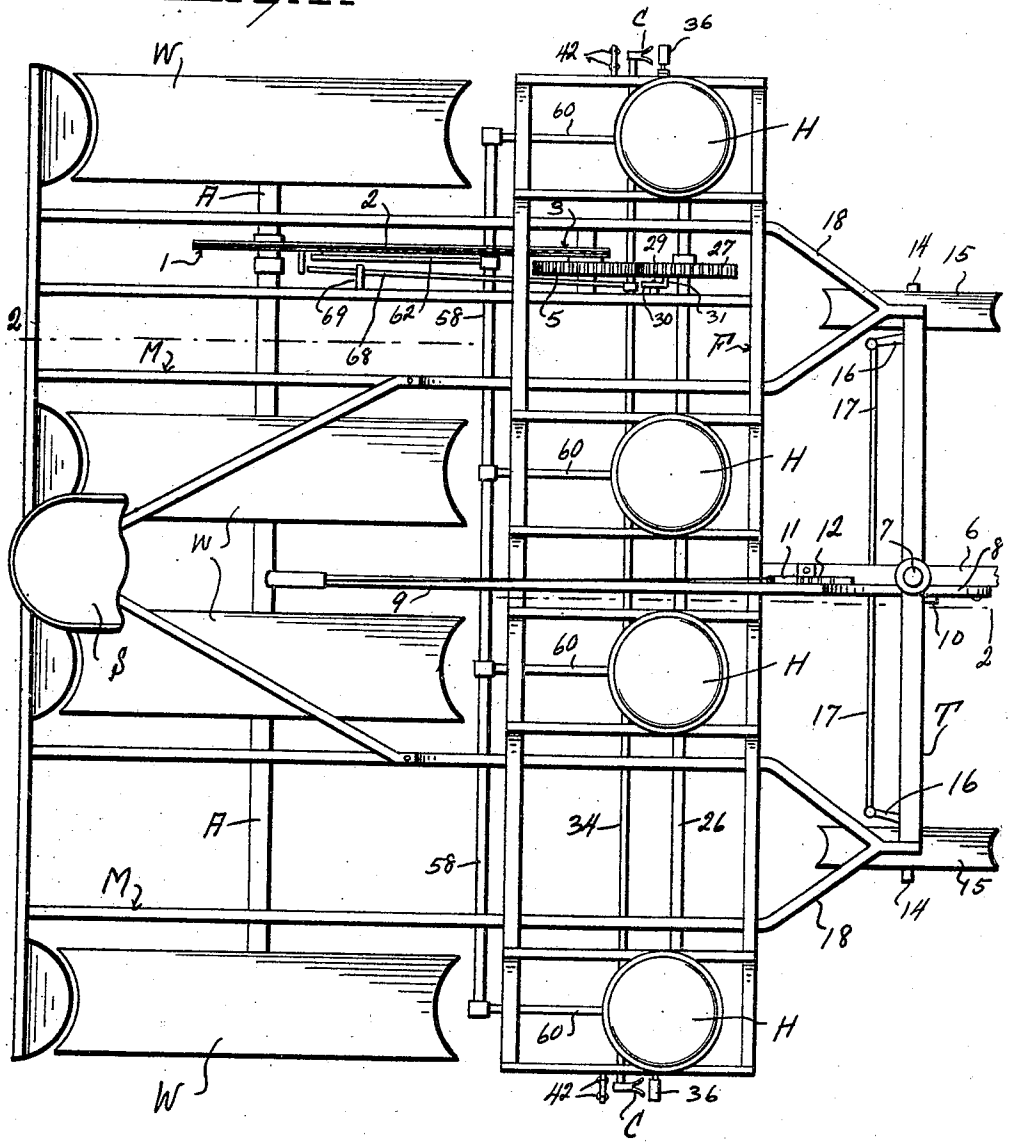
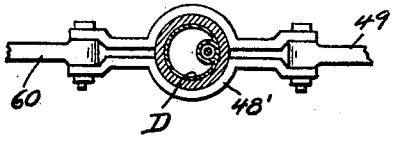


FIG. 15.



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Fig. 2.

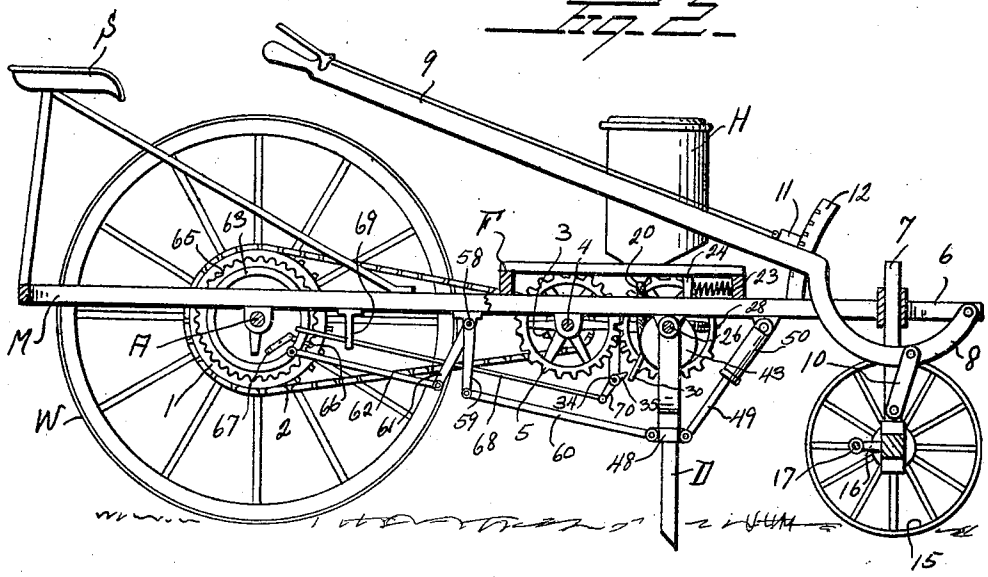


Fig. 3.

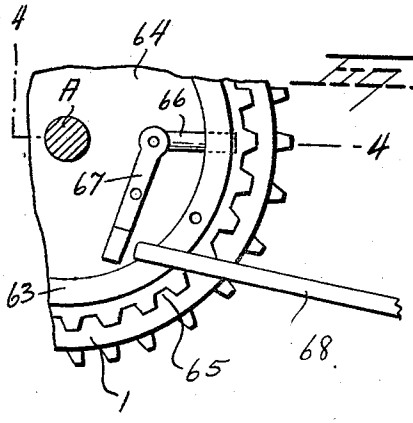


Fig. 5.

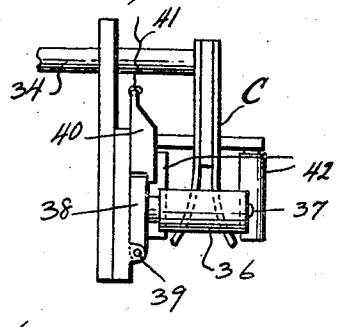


Fig. 6.

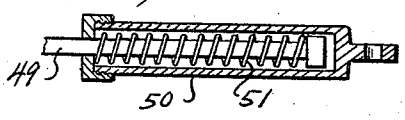
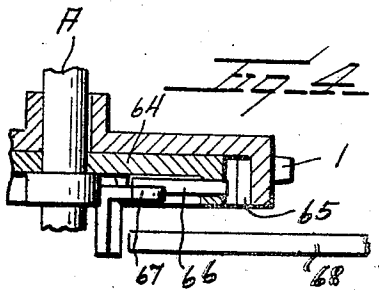


Fig. 4.



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Fig. 8.

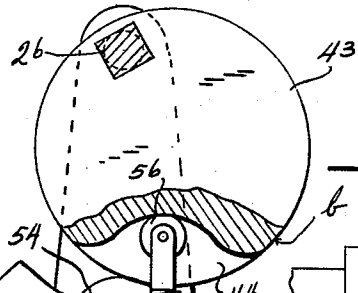


Fig. 7.

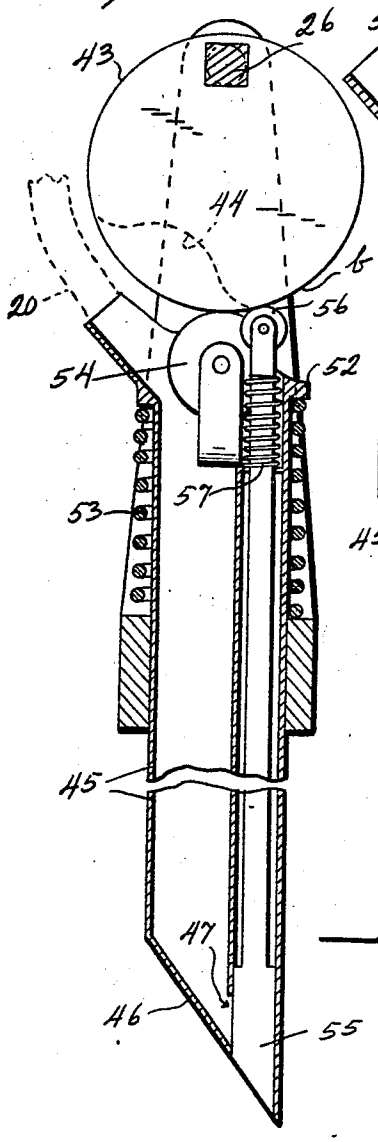


Fig. 9.

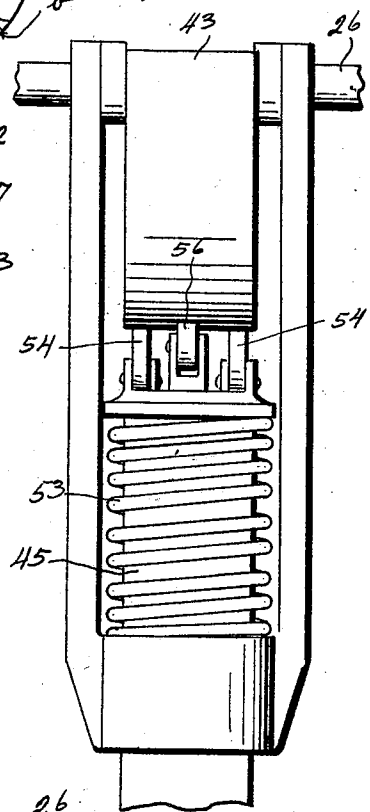
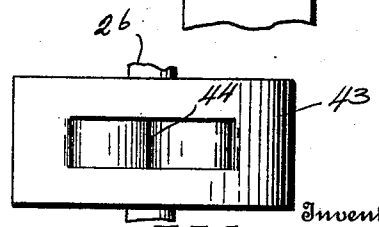


Fig. 10.



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Fig. 11

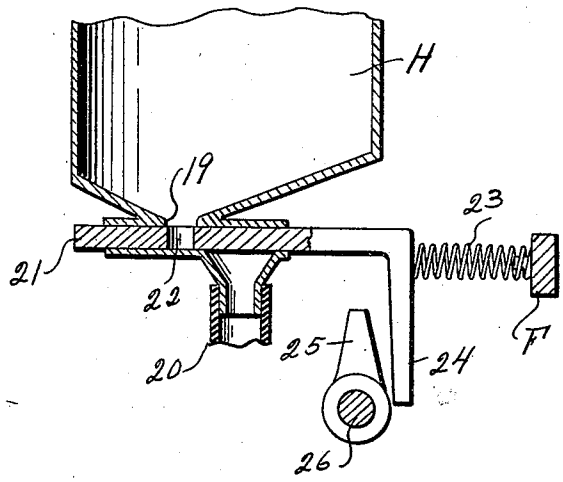


Fig. 13

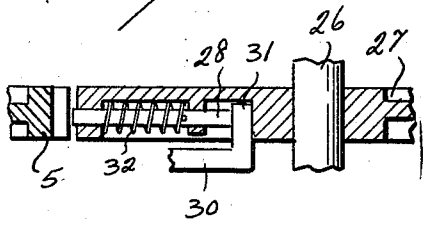


Fig. 12

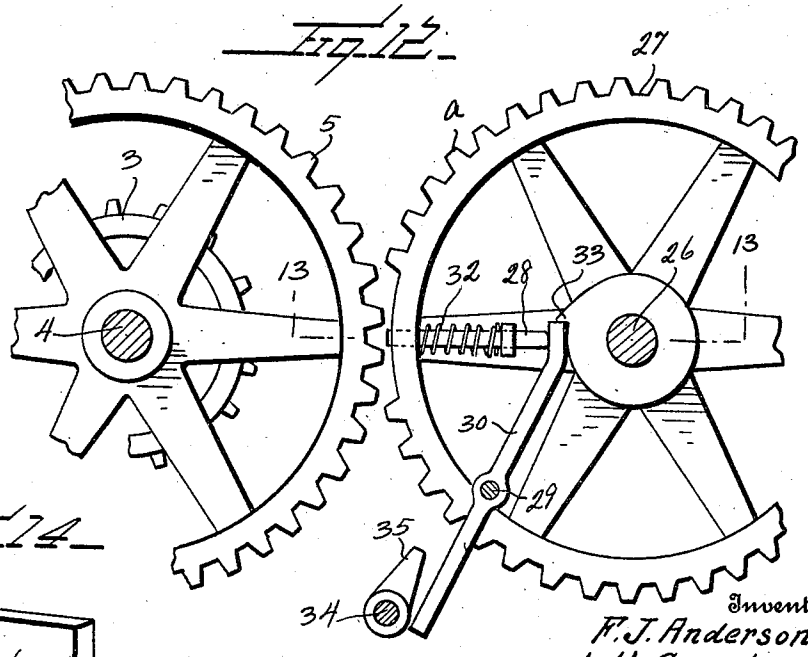
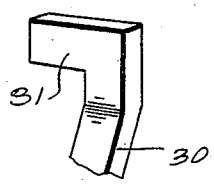


Fig. 14



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Patented Dec. 11, 1923. 1,477,097

UNITED STATES PATENT OFFICE.

FRED J. ANDERSON, OF BISHOP HILL, LAWRENCE H. COWDEN, OF KEWANEE, AND LE ROY ERICSON, OF BISHOP HILL, ILLINOIS.

PLANTER.

Application filed April 13, 1921. Serial No. 460,389.

To all whom it may concern:

Be it known that we, FRED J. ANDERSON, LAWRENCE H. COWDEN, and LE ROY ERICSON, citizens of the United States, said ANDERSON and ERICSON residing at Bishop Hill and said COWDEN residing at Kewanee, in the county of Henry and State of Illinois, have invented certain new and useful Improvements in Planters, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in planters and has relation more particularly to a machine of this character generally designated as corn planters, and it is an object of the invention to provide a device of this character having novel and improved means whereby the capacity of the machine is materially increased over the machines now generally employed and whereby the machine can be operated with a relatively light draft.

Another object of the invention is to provide a machine of this general character having a novel and improved dropping mechanism whereby the possibility of clogging is eliminated so that the efficiency of the machine is materially increased.

An additional object of the invention is to provide a machine of this general character including a dibble supported for swinging movement in a horizontal direction and for vertical movement, so that the dibble is prevented from dragging during the periods the seeds are being dropped.

Furthermore, it is an object of the invention to provide a device of this general character including a novel and improved dibble, said dibble embodying a casing and a valve movable therein for controlling the discharge therefrom and wherein a mechanism is employed for intermittently moving the valve into open position.

The invention consists in the details of construction and in the combination and arrangement of the several parts of our improved planter whereby certain important advantages are attained and the device rendered simpler. less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of our invention will hereinafter be definitely claimed.

In order that our invention may be the better understood, we will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view in top plan of a planter constructed in accordance with an embodiment of our invention;

Figure 2 is a vertical sectional view taken substantially on the line 2—2 of Figure 1;

Figure 3 is a fragmentary view illustrating the intermittently operated means herein embodied for holding each of the dibbles against advance during a dropping operation;

Figure 4 is a sectional view taken substantially on the line 4—4 of Figure 3;

Figure 5 is a fragmentary view illustrating the check row fork herein employed and the parts concomitant thereto;

Figure 6 is an enlarged fragmentary view illustrating in detail the yieldable bracing member coacting with each of the dibbles;

Figure 7 is an enlarged fragmentary view partly in section and partly in elevation of one of the dibbles and the cam coacting therewith, said dibble being shown depressed with the valve closed;

Figure 8 is a view similar to Figure 7 showing the position of the parts when the valve is open;

Figure 9 is a fragmentary view in front elevation of the structure illustrated in Figure 7;

Figure 10 is a view in bottom plan of the eccentric or cam illustrated in Figure 8;

Figure 11 is a fragmentary view illustrating the valve mechanism associated with a hopper;

Figure 12 is an enlarged fragmentary view illustrating in detail the coacting gears for operating the dropping mechanism;

Figure 13 is a sectional view taken substantially on the line 13—13 of Figure 12;

Figure 14 is a fragmentary view in perspective of the upper end portion of the plunger or rock arm particularly illustrated in Figure 12, and Figure 15 is an enlarged fragmentary view partly in section and partly in elevation showing the means herein employed of connecting a brace 49 and a rod 60 with a dibble.

As disclosed in the accompanying drawings. M denotes the main frame of a planter which is mounted upon the axle A provided with the drive wheels W. F denotes a front frame of conventional construction and which supports the hoppers H, said hoppers

being herein disclosed as four in number so that our improved device can be employed as a four-row planter, although we do not wish to be understood as limiting ourselves in this respect.

Fixed to the axle A is a relatively large drive sprocket 1 around which passes the chain 2. The chain 2 also passes around a smaller sprocket wheel 3 mounted upon a countershaft 4 supported by the frame M at a point rearwardly of but in close proximity to the front frame F. Also fixed to the shaft 4 is a gear wheel 5 of a predetermined radius. The connection afforded by the chain 2 and the sprockets 1 and 3 causes a continuous rotation of the gear wheel 5 during the advance of the machine.

Extending forwardly from the main frame M at the central portion thereof is a draft tongue 6 with which coacts a front supporting truck T. The truck T embodies an upstanding shank 7 coacting with the tongue 6 whereby said shank and tongue have independent movement in a vertical direction.

Pivotally engaged with the tongue 6 at a point in advance of the shank 7 is the free extremity of an upwardly curved end portion 8 of an elongated lever 9 extending rearwardly and terminating in relatively close proximity to the seat structure S carried by the rear portion of the frame M. The inner part of the curved portion 8 of the lever 9 and the shank 7 of the truck T are connected by a link 10 so that upon swinging movement of the lever 9 in a vertical direction, the forward end portion of the frame M may be raised or lowered as desired and whereby an effective gauging means is provided for controlling the depth of penetration of the dibbles D to be hereinafter more particularly referred to.

The lever 9 carries a latch mechanism 11 of a conventional type which coacts with the upstanding rack 12 carried by the tongue 6 so that the forward end portion of the frame M may be held or locked in its different vertical adjustments.

The opposite end portions of the truck T are provided with the horizontal swinging spindles 14 upon each of which is mounted a ground engaging wheel 15. Each of said spindles 14 is also provided with a rearwardly directed spindle arm 16 connected in a conventional manner by the rod 17 whereby the wheels 15 are caused to swing in unison and in the same general direction. The truck T proper is held against swinging movement relative to the tongue 6 by the brace members 18 interposed between the opposite end portions of the truck and the frame M or more particularly the front frame F.

The bottom of each of the hoppers H is provided with a discharge opening 19 in communication with a tube 20 delivering to a dibble D and coacting with said discharge opening 19 is a sliding valve or cut-off 21 provided with an opening 22 adapted to register with the opening 19 when said valve or cut-off is in one position whereby the seed within the hopper H may be delivered to a dibble D through the tube 20. The valve or cut-off 21 is normally maintained in closed position by a spring 23.

Depending from an end portion of the valve or cut-off 21 is a lug or finger 24 with which is adapted to contact an outstanding lug or finger 25 fixed to the shaft 26. The shaft 26 is rotatably supported by the front frame F and extends longitudinally thereof, said shaft 26 being of a length substantially coextensive in length with said frame F, said shaft extending below but in close proximity to the hoppers H.

Mounted upon the shaft 26 is a mutilated gear 27, the toothless portion of the perimeter being normally directly opposed to the gear wheel 5 hereinbefore referred to, the teeth *a* of the mutilated gear 27 meshing with the teeth of the gear wheel 5 upon partial rotation of the gear 27 and which partial rotation is accomplished in a manner to be hereinafter more particularly referred to.

Disposed radially of the mutilated gear 27 and supported for endwise movement is a pin or rod 28 which, upon being moved outwardly, engages between the teeth of the gear wheel 5 so that as said gear wheel 5 rotates partial rotation is imparted to the gear 27 whereby the teeth *a* of said gear 27 are brought into mesh with the teeth of the gear wheel 5 and whereby said gear 27 is caused to make one complete revolution from the gear wheel 5. Pivotally supported at a desired distance intermediate its ends, as at 29, by the frame F is a plunger or rock arm 30. This plunger 30 is vertically disposed, and is provided at its upper end portion with an inwardly directed lug or finger 31 which normally engages behind the inner end of the pin or rod 28 so that upon swinging movement of said plunger 30 in one direction, the pin or rod 28 is moved outwardly for proper coaction with the gear wheel 5. After the gear 27 has been rotated sufficiently to effect the proper mesh between the teeth *a* of the gear 27 and the teeth of the gear wheel 5, the pin or rod 28 clears the finger or lug 31, whereupon said pin or rod 28 is automatically returned into inoperative position by the expansible spring 32, said inward movement of the pin or rod 28 also imparting return movement to the plunger 30.

When the plunger or rock arm 30 is in its normal position, the finger or lug 31 at the upper end portion thereof is positioned

in the path of travel of a stop lug 33 carried by the gear 27, whereby said gear 27 is positively held against turning more than one revolution. When the plunger or rock arm 30 is swung to force the pin or rod 28 outwardly, the lug or finger 31 of the plunger or rock arm is out of the path of travel of the stop lug 33.

Supported by the front frame F and extending lengthwise thereof is a shaft 34, said shaft being positioned above the lower end portion of the plunger or rock arm 30. This shaft 34 has fixed thereto an outstanding lug or finger 35 which, upon the shaft 34 being rocked in one direction, contacts with the lower portion of the plunger or rock arm 30 whereby the rod or pin 28 is moved outwardly to effect the desired rotation of the gear 27.

The shaft 34 constitutes the check row shaft and associated with said shaft is the check row fork C and with which coacts in a conventional manner a check row wire or other flexible member having positioned thereon in a well known manner the desired buttons so that, during the advance of the machine, the shaft 34 will be intermittently rocked.

Arranged in close proximity to the fork C in advance thereof is a horizontally disposed roller 36 over which the check row wire passes and whereby the wire is held up between the arms of the fork C. The roller 36 is mounted on a stub shaft or axle 37 carried by a block 38 hinged, as at 39, to the adjacent end of the front frame F. The block 38 is vertically disposed and is maintained in a raised or operative position by the latch 40. A trip cord 41 is engaged with the latch 40 whereby the latch may be swung in a position to release the block 38, whereupon said block drops resulting in a release of the check row wire from the fork C. Also associated with the fork C at opposite sides thereof are the vertically directed guide rollers 42.

The shaft 26 adjacent each of the hoppers H has fixed thereto an eccentric 43. Each of the eccentrics 43 is of desired diameter and is provided in its periphery to one side of the high point b with a pocket or depression 44, the bottom wall of which is arcuate. The pocket or depression 44 is of a width less than the width of the periphery of the eccentric 43 so that the side marginal portions of said eccentric are continuous and unbroken or unobstructed.

Each of the dibbles D includes an elongated cylindrical casing 45 having its lower end or bottom 46 closed, said bottom wall 46 being disposed downwardly on a predetermined incline or bevel with its low portion provided with a discharge opening 47. The casing 45 has vertical movement and is slidably disposed through a boxing 48. Engaged with the casing 45 below the boxing 48 are the plates 48′ extending forwardly and rearwardly of the casing 45 and connected with the forward portion of the plates 48′ is a brace 49 telescopically engaged within a bracing sleeve 50 pivotally engaged with the frame F. Arranged within the sleeve 50 and surrounding the inserted end portion of the brace 49 is an expansible spring 51, said spring coacting with the sleeve and brace in a manner to constantly urge the brace inwardly whereby the plates 48′ are yieldably maintained in desired position.

Each of the boxings 48 is provided with diametrically opposed upstanding arms 72 having their upper end portions freely mounted upon the shaft 26 and between which is positioned an eccentric 43.

The upper end portion of the casing 45 is provided with an outstanding flange 52 and interposed between said flange 52 and the upper face of the boxing 48 is an expansible spring 53 encircling said casing and whereby the casing is normally urged upwardly so that the spaced rollers 54 carried by the upper end portion of the casing are in constant contact with the side marginal portions of the periphery of the adjacent eccentric 43 so that, as said eccentric rotates, the casing 45 will be forced downwardly within the soil and returned to its upper or raised position upon each revolution of the eccentric.

The discharge opening 47 in the bottom wall of the casing 45 is normally closed by a sliding valve 55 arranged within the casing 45 and which valve extends upwardly through the casing 45 and is provided at its upper end with a roller 56 which constantly contacts with the central part of the periphery of the eccentric 43. This constant contact of the roller 56 with the periphery of the eccentric 43 is maintained by an expansible coil spring 57 surrounding the upper portion of the valve and coacting therewith in a conventional manner.

When the roller 56 is in contact with the unbroken or unobstructed portion of the central part of the periphery of the eccentric 43, the valve 55 is maintained in its lowermost or closed position but when the pocket or depression 44 passes over the upper end of the valve, said valve moves upward into open position and is then returned to closed position and during this period of operation the seeds within the casing 45 are dropped through the discharge opening 47. The pocket or depression 44 is so positioned that the opening movement of the valve 55 occurs when the casing 45 is at substantially its limit of penetration within the soil.

During the period of dropping or plant-

ing of the seeds and when the dibble is within the soil, it is of importance to prevent the lower or discharge end of said dibble from dragging as the machine advances so that a proper spacing of the seeds is assured. In the present embodiment of our invention, this result is obtained by an intermittently operating mechanism for holding the lower or working end of the dibble against forward movement throughout substantially the entire period when the valve 44 is operating.

Rotatably supported by the frame M at a predetermined point rearwardly of the frame F is a transversely disposed shaft 58 provided with the rock arms 59. Connecting each of the rock arms 59 with one of the pairs of plates 48′ is a rod 60 whereby, upon rocking movement of the shaft 58 in one direction, the working or lower ends of the drills D are held against forward movement with the machine.

The shaft 58 is provided with another rock arm 61 with which is operatively engaged a rod 62 engaged with a strap 63 coacting with a cam or eccentric 64 loosely mounted on the axle A. The cam or eccentric 64 is also positioned in close proximity to the drive sprocket 1 and which sprocket is provided with the internal gear 65. Carried by the cam or eccentric 64 is a clutch pin 66 which, when moved outwardly, engages between adjacent teeth of the internal gear 65 whereby the cam or eccentric 64 is caused to rotate in unison with the sprocket 1 and in a direction whereby the lower or working ends of the dibbles are held against forward movement upon advance of the machine.

Carried by the cam or eccentric 64 and coacting with the clutch pin 66 is a clutch pin trip 67 pivotally supported intermediate its ends for swinging movement. 68 denotes a bar loosely supported by a guide 69 depending from the frame M and the forward end portion of said bar is operatively engaged with a rock arm 70 depending from the check row shaft 34 so that when the shaft 34 is rocked through the instrumentality of the check row wire, the bar 68 will be moved rearwardly for contact with the lower portion of the clutch pin trip 67 and the clutch pin 66 moved outwardly into operative engagement with the internal gear 65.

When the cam or eccentric 64 makes substantially a one-quarter revolution downwardly, the lower end portion of the clutch pin trip 67 comes into contact with an arm depending from the axle A and whereupon the lower end portion of the clutch pin trip 67 is swung forwardly, resulting in the clutch pin 66 being retracted from operative engagement with the internal gear 65. About this time the coacting dibble or more particularly the casing 45 moves upwardly out of the soil and said casing is then automatically swung forwardly resulting in the cam or eccentric 64 being also returned to its initial or normal position.

In operation, as the planter advances, the check row shaft 34 is intermittently rocked in a conventional manner and when the shaft 34 is rocked in one direction, the lug or finger 35 contacts with the lower portion of the plunger or rock arm 30 whereby the rod or pin 28 is moved outwardly to cause the gear 27 to be driven from the shaft 4. As the gear 27 rotates, the associated shaft 26 effects the desired turning movement of each of the eccentrics 43. As the eccentric 43 rotates, the casing 45 is forced downwardly within the soil and returned to its upper or raised position upon each revolution of the eccentric. As the roller 56 travels within the pocket or depression 44, the valve 55 will be permitted to open, such opening movement of the valve 55 occurring when the casing 45 has been forced downwardly by the eccentric 46. The shaft 4 is driven through the instrumentality of the chain 2 passing around the sprocket wheels 1 and 3. During the period of dropping or planting of the seeds and when a dibble is within the soil, the lower or discharge end of said dibble is prevented from dragging, as the machine advances, through the action of the rod 60 and the mechanism associated therewith and which has hereinbefore been described in detail. As the shaft 26 revolves, the valve or cut-off 21 of each of the hoppers H is moved into open position by contact of a lug or finger 25 fixed to the shaft 26 contacting with a lug or finger 24 depending from an end portion of the valve or cut-off 21, the seed discharged from the hopper H being delivered to a dibble D through a tube 20.

From the foregoing description it is though to be obvious that a planter constructed in accordance with our invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that our invention is susceptible of some change and modification without departing from the principles and spirit thereof and for this reason we do not wish to be understood as limiting ourselves to the precise arrangement and formation of the several parts herein shown in carrying out our invention in practice except as hereinafter claimed.

We claim:

1. In a planter, a dibble comprising a casing supported for movement in a vertical direction, said casing being provided with a discharge opening, a movable valve for closing said discharge opening, an eccentric supported above the casing, means for rotat-

ing the eccentric, means for constantly urging the casing toward the eccentric, said casing having a part constantly in contact with the eccentric whereby the casing has movement in a vertical direction upon rotation of the eccentric, said eccentric being provided with a pocket, means for constantly urging the valve toward the eccentric whereby said valve enters the pocket of the eccentric thereby moving the valve into open position with respect to the discharge opening of the casing.

2. In a planter, a dibble supported for swinging movement, a driving member, a member loosely supported for rotation, intermittently operated means for connecting the driving member and the rotatable member for unitary rotation, an operative connection between said rotatable member and the dibble for swinging the dibble in one direction during the period the driving member and the rotatable member are connected, and automatically operated means for disconnecting the driving member and the rotatable member.

3. In a planter, the combination of a driven shaft, a boxing suspended from said shaft, an eccentric fixed to said shaft, a dibble slidably disposed through the boxing and having a part arranged for contact with the periphery of the eccentric, means for constantly maintaining said part of the dibble in contact with the periphery of the eccentric, said dibble being provided with a discharge opening, a movable valve for closing the discharge opening of the dibble, and means for constantly urging said valve in contact with the periphery of the eccentric, said periphery of the eccentric being provided with a pocket to permit the valve, during rotation of the eccentric, to move into open position.

4. In a planter, a support mounted for swinging movement, a dibble comprising a casing engaged with the support for movement in a vertical direction, means for constantly urging the casing upwardly, an eccentric arranged above the casing, said casing having constant contact with the periphery of the eccentric, means for rotating the eccentric to move the casing downwardly, the lower portion of the casing being provided with a discharge opening, a valve coacting with said opening, means associated with the eccentric for intermittently opening and closing the valve, and means for swinging the support.

In testimony whereof we hereunto affix our signatures.

FRED J. ANDERSON.
LAWRENCE H. COWDEN.
LE ROY ERICSON.