W. E. WARNER.

FERTILIZER DISTRIBUTER.

APPLICATION FILED SEPT. 19, 1902.

899,580.

Patented Sept. 29, 1908.

2 SHEETS—SHEET 1.

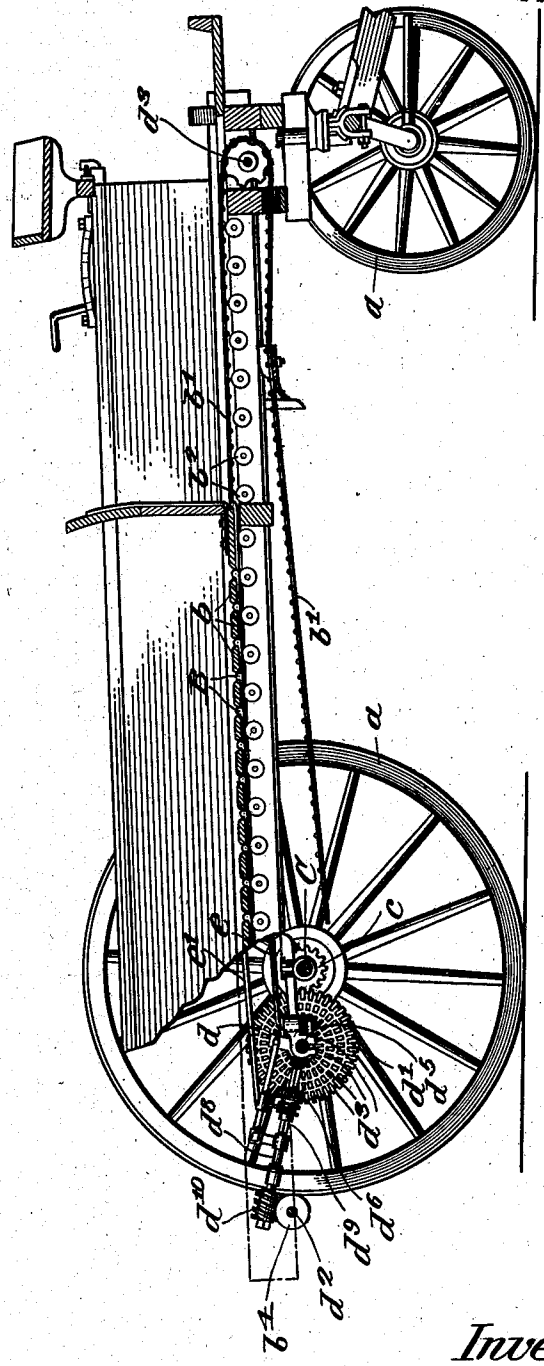


Fig. 1.

Witnesses:

Chas. H. Young.

S. Davis.

Inventor:

Warren E. Warner

by Key & Parsons

Attorneys

W. E. WARNER.

FERTILIZER DISTRIBUTER.

APPLICATION FILED SEPT. 19, 1902.

899,580. Patented Sept. 29, 1908.

2 SHEETS—SHEET 2.

Fig. 3.

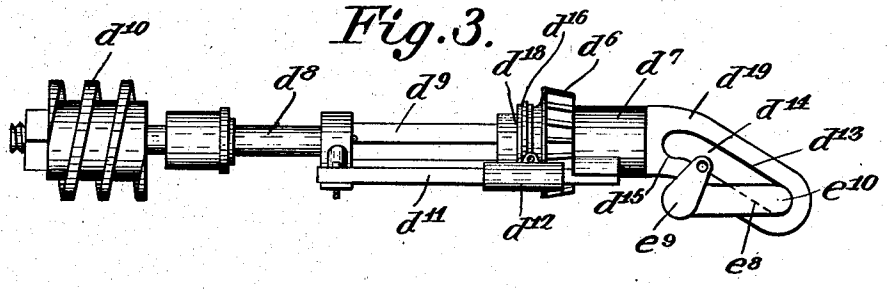
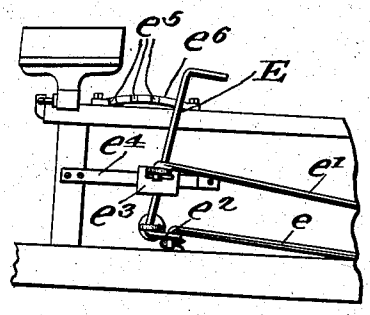


Fig. 2.



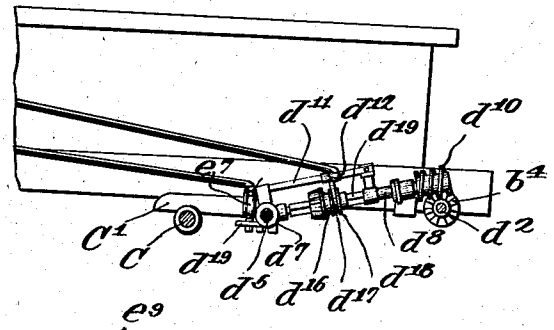
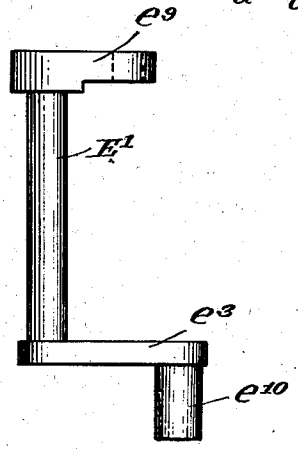


Fig. 4.



WITNESSES:

Chas. Young.

Herman McGann.

INVENTOR

Warren E. Warner.

BY

Hey & Parsons

ATTORNEYS

UNITED STATES PATENT OFFICE.

WARREN E. WARNER, OF SYRACUSE, NEW YORK, ASSIGNOR TO KEMP & BURPEE MANUFACTURING COMPANY, OF SYRACUSE, NEW YORK, A CORPORATION OF NEW YORK.

FERTILIZER-DISTRIBUTER.

No. 899,580. Specification of Letters Patent. Patented Sept. 29, 1908.

Application filed September 19, 1902. Serial No. 124,033.

To all whom it may concern:

Be it known that I, WARREN E. WARNER, of Syracuse, in the county of Onondaga and State of New York, have invented a certain new and useful Fertilizer-Distributer, of which the following is a specification.

This invention relates to fertilizer-distributers, and particularly to means for controlling the movement of the movable bottom, and consists in the combination and construction of the component parts of a fertilizer-distributer, as hereinafter fully described and claimed.

In describing this invention, reference is had to the accompanying drawings, forming part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 is a side elevation of my fertilizer-distributer partly in section, looking inwardly. Fig. 2 is a side elevation looking in the opposite direction. Figs. 3 and 4 are enlarged detail views.

My fertilizer-distributer embodies, essentially, a body or box A, a movable bottom B, actuating mechanism for the movable bottom, and means for moving the actuating mechanism out of operative connection with the movable bottom and coöperating with said actuating mechanism for changing the speed of the movable bottom while the fertilizer-distributer is in operation.

The body A is of any desirable form, size and construction, and is mounted on the wheels a. The movable bottom B is also of any desirable form, size and construction, and is here shown as consisting of strips b secured to an endless belt b', the outer ends of the strips being engaged with antifriction members b^2. Said belt b' is movable over the pulleps mounted on the shafts d^2 d^3 which are arranged at opposite ends of the body or box A.

The actuating mechanism for the movable bottom is preferably driven from the rear axle of the vehicle, and includes novel means for permitting the speed of travel of the bottom to be varied during the operation of the fertilizer distributer, and without requiring the dismounting of the operator. This novel mechanism includes generally a driving element operating in a fixed position or plane, provided with a plurality of differential drive surfaces and transmitting means having an element movable in two directions at angles to each other, so that it may be shifted into and out of the plane of operation of said drive surfaces in one movement, and out of register with one of said surfaces, and into register with another in its other movement in order that the same may be first shifted entirely out of engagement with the drive device and thereafter shifted into position to engage with the desired drive surface, when the element is again brought into the plane of operation of the drive devices. It further includes generally mechanism for shifting the movable element of the transmitting means in both of the directions referred to, which mechanism is controlled by a single lever.

In the particular embodiment of my invention disclosed herein, the driving element is in the form of a disk d, mounted on a shaft d^5, journaled in a bracket C', secured to the body of the fertilizer distributer. The disk is provided with a peripheral gear d', which intermeshes with a gear c, fixed to the axle C of the rear wheels of the vehicle.

The differential drive surfaces d^3 of the disk d are located on the inner face thereof, are arranged concentric to its axis, and are preferably formed by gear rims arranged varying distances from the axis of the disk, as shown in Fig. 1.

The transmitting mechanism includes a shaft d^8, carrying a gear d^{10}, at one end intermeshing with the gear b^4 on the shaft d^2, and it further includes a gear d^6 mounted on the shaft d^8 to have movement lengthwise of the same independent thereof, but coupled to the shaft, so that the two rotate together. One means for so mounting the gear d^6 on the shaft d^8 is illustrated in the accompanying drawings, in which the shaft is provided with an angular portion d^9, and the gear d^6 is provided with a corresponding axle opening for the reception of this portion of the shaft.

Rotation is imparted to the shaft d^8, and through the gears d^{10}, b^4 to the shaft d^2 by the engagement of the gear d^6 with any one of the drive surfaces d^3. The shaft d^8 is journaled at its inner end in a bearing d^7, which is mounted loosely upon the shaft d^5, so that it may be shifted lengthwise of the latter, and this bearing is provided with a bracket or extension d^{19}, having a slot d^{14} therein, the walls of which are designed to be engaged by mechanism to shift the bearing d^7 lengthwise of the shaft d^5, and thereby carry the

gear d^6 into and out of the path or plane of operation of the drive surfaces of the disk d.

Supported from the shaft d^8 and the bearing d^7 is a guide d^{11}, upon which a sleeve d^{12} is mounted, to move lengthwise of the same, and from said sleeve a fork d^{16} depends and engages the gear d^6 by projecting into a groove d^{17} between annular shoulders on the hub d^{18} thereof. It is obvious that as the sleeve d^{12} is reciprocated along the guide d^{11}, the gear d^6 will be shifted in unison through the intermediary of the fork d^{16}.

The means for controlling the transmitting mechanism from the operator's seat includes an operating lever E, having a pivotal movement, and a turning movement about its longitudinal axis, a link e' shifted in the pivotal movement of the lever E, having an operative connection with the sleeve d^{12}, and a link e having an operative connection with the bracket or extension d^{19}.

The lever E is pivoted to one side of the body or box A within reach of the operator, is movable on its pivot for changing the speed of the movable bottom, and on its longitudinal axis for moving the actuating mechanism out of operative connection with the movable bottom. Said lever is provided with an arm e^2 extending laterally from its pivoted end so that said arm will not partake of the movement of the lever when rocked on its pivot, and the intermediate portion of said lever is provided with a slide e^3, which is movable along the guide e^4 fixed to the body or box A. As seen in Fig. 2, the lever is held in its adjusted position when rocked on its pivot by the stops e^5 formed in the plate e^6, which is fixed to the body or box A, the number and position of the stops e^5 corresponding to the gears d^3.

Interposed between the rear end of the link e and the bracket or extension d^{19} is a rock-shaft E′, which is journaled in a bearing e^7 usually formed in the hanger C′ in which the driving shaft is journaled, is provided with crank arms e^8 e^9, the arm e^8 being provided with a wiper e^{10}, which is movable in the slot d^{14}, and is normally arranged in the socket d^{15}, at one end of said slot thus locking the member d in its operative position. The links e e' connect, respectively, the arm e^2 of the lever E with the crank arm e^9 of the rock-shaft E′, and the slide e^3 with the sleeve d^{12}. In use when it is desired to discontinue the movement of the bottom B, the lever is oscillated on its longitudinal axis, thereby actuating the rock-shaft E′, which in acting on the bracket d^{19} moves the member d^6 laterally into and out of connection with the member d.

When it is desired to change the speed of the movable bottom, the member d^6 is usually first thrown out of connection with the member d, by oscillating the lever on its longitudinal axis, and the gear d^6 is then moved radially of the member d to its desired position by rocking the lever E on its pivot, and the member d^6 again thrown into connection with the member d. However, it will be obvious that the gear may be moved radially of the member d without first throwing the member d^6 out of connection with the member d.

The construction and operation of my fertilizer-distributer will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be noted that more or less change may be made in the construction and operation of the component parts thereof without departing from the spirit of my invention.

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

1. In a fertilizer distributer, a movable bottom, actuating mechanism for said bottom driven from the axle of the distributer, said mechanism including a driving element having differential drive surfaces, and transmitting mechanism having an element coacting with said surfaces, and means for changing the relative position of the latter element in relation to the driving element in two directions, said means including a single controlling lever.

2. In a fertilizer distributer, a movable bottom, actuating mechanism for said bottom driven from the axle of the distributer, said mechanism including a driving element having differential drive surfaces, and transmitting means including a gear coacting with said surfaces, and means for shifting said gear relative to the driving element in two directions at right angles to each other, said shifting means including a single lever, operated from the operator's seat, for controlling both movements.

3. In a fertilizer distributer, a movable bottom, actuating mechanism for said bottom driven from the axle of the distributer, said mechanism including a driving element having differential drive surfaces, and transmitting means including a gear element coacting with said surfaces, one of said elements being shiftable in two directions relative to the other to bring the gear element into and out of the plane of operation of the driving element and out of register with one of the drive surfaces and into register with another of said surfaces and means for effecting the movements in two directions of the relatively shiftable element, including a lever.

4. In a fertilizer-distributer, a movable bottom, actuating mechanism for said bottom driven from the axle of the distributer, said mechanism including a rotating driving element having a plurality of differential drive surfaces arranged concentric to the

axis of rotation of the driving element, transmitting means including an element having lateral and radial adjustment in relation to said drive surfaces, and a single operating lever for effecting both the lateral and the radial adjustments, substantially as and for the purpose specified.

5. In a fertilizer distributer, a movable bottom, actuating mechanism for said bottom driven from the axle of the distributer, said mechanism including a driving element having differential drive surfaces, and transmitting means including a laterally-shiftable shaft and a gear mounted thereon for driving the same, said gear being shiftable axially of the shaft, means for shifting said gear axially and means for shifting the shaft to carry the gear into and out of the operative plane of the driving element the two means having an operating lever in common.

6. In a fertilizer-distributer, a movable bottom, actuating mechanism for said bottom driven from the axle of the distributer, said mechanism including a driving element having differential drive surfaces, and transmitting means including a laterally-shiftable shaft, a shiftable bearing for one end of the shaft, a gear mounted on the shaft, and means for shifting said bearing including a rock shaft having a pusher, a hand lever, and a link interposed between the lever and said rock shaft, substantially as and for the purpose described.

7. In a fertilizer distributer, a movable bottom, actuating mechanism for the movable bottom, said actuating mechanism comprising means for varying the speed of the bottom, said mechanism being also movable out of operative connection with the movable bottom, and an operating lever pivoted to the body of the fertilizer distributer and also journaled to said body, said lever being connected to said actuating mechanism for varying the speed of the bottom and moving said mechanism out of operative connection with the bottom.

8. In a fertilizer distributer, a movable bottom, a driving shaft, power transmitting mechanism connecting the shaft and the movable bottom, said power-transmitting mechanism comprising driving and driven elements, one of said elements being movable laterally relatively to the other element, said one of the elements being provided with a slotted extension, said slot being formed with a socket at one end thereof, a rock-arm journaled in the body of the fertilizer distributer and provided with a pin movable in the slot, said pin being arranged in the socket when the driven element is in operative connection with the driving element, a hand lever, and a link interposed between the same and the rock shaft.

9. In a fertilizer-distributer, a movable bottom, a driving shaft, actuating mechanism connecting the movable bottom and the shaft, said actuating mechanism consisting of driving and driven members, one of said members being provided with a plurality of gears of different sizes, and the other being provided with a gear for meshing with any one of the plurality of gears, said gear being movable radially of the member provided with a plurality of gears, and one of said members being movable relatively to the other for engaging and disengaging said members, an operating lever pivoted to the body of the fertilizer-distributer, said lever being connected to the gear for moving the same radially of the member provided with a plurality of gears and to the relatively movable member for engaging and disengaging said members from each other, substantially as and for the purpose specified.

10. In a fertilizer-distributer, a movable bottom, actuating mechanism for the movable bottom, said actuating mechanism being movable out of operative connection with the movable bottom and provided with means for varying the speed of the movable bottom, and an operating lever pivoted to the body of the fertilizer-distributer and connected to the actuating mechanism, said lever being movable on its longitudinal axis for moving the actuating mechanism out of operative connection with the movable bottom and on its pivot for varying the speed of the movable bottom, substantially as and for the purpose specified.

11. In a fertilizer-distributer, a movable bottom, a driving shaft, power-transmitting mechanism connecting the movable bottom and the shaft, said power-transmitting mechanism consisting of driving and driven members, one of said members being provided with a plurality of gears of different sizes, the other being provided with a gear normally in mesh with one of said gears of said one member, said gear being movable longitudinally of said other member and one of said members being movable relatively to the other for disconnecting the said member, an operating lever pivoted to the body of the power-transmitting mechanism, said lever being connected to the gear and movable on its pivot for adjusting the gear longitudinally of said other member, and also connected to said other member and movable on its longitudinal axis for moving said other member out of connection with said one member, substantially as and for the purpose set forth.

In testimony whereof, I have hereunto signed my name in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 8th day of September, 1902.

WARREN E. WARNER.

Witnesses:
D. LAVINE,
F. G. BODELL.