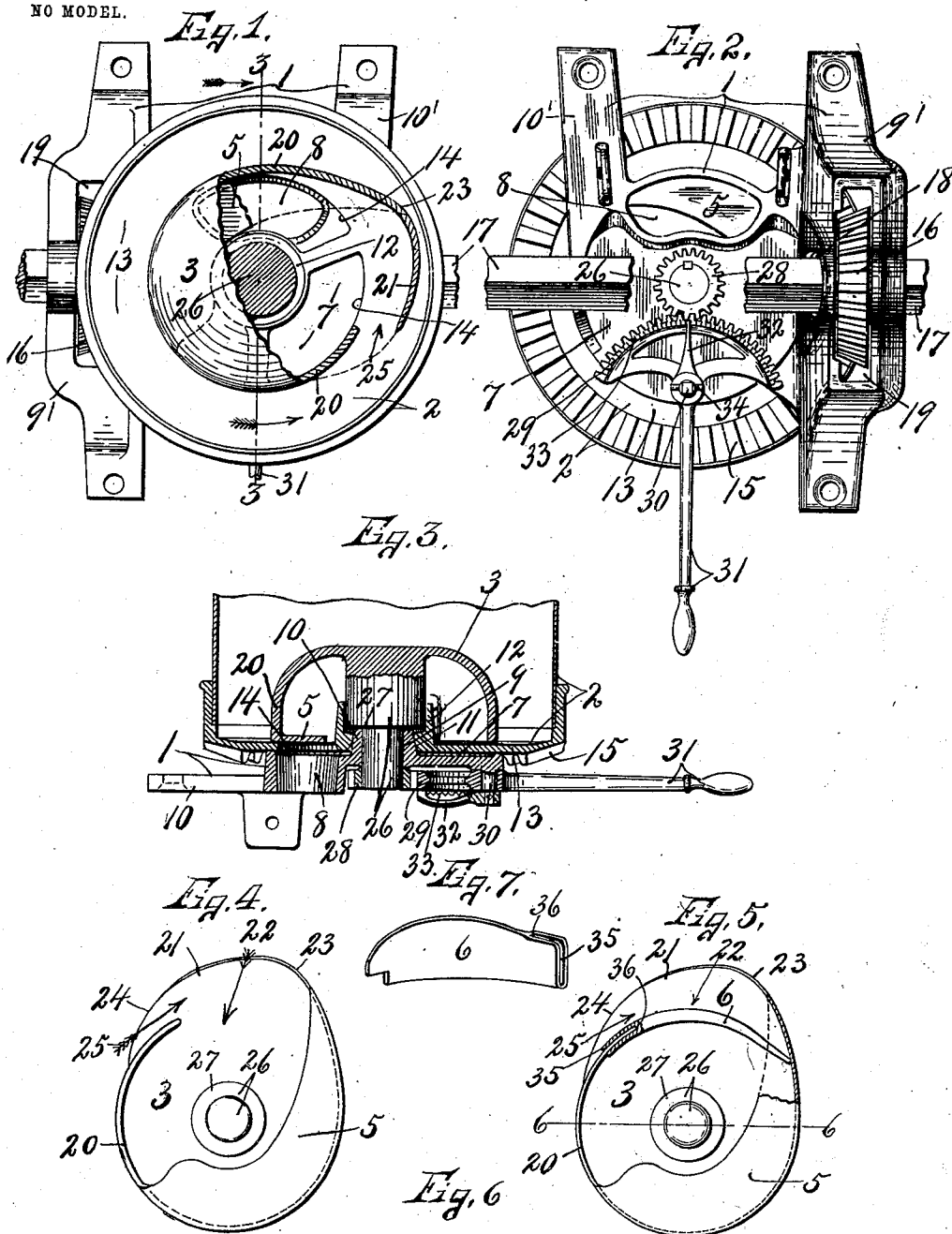


No. 718,504.

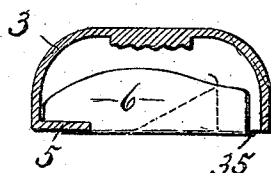
PATENTED JAN. 13, 1903.

E. F. NEEDHAM.
FERTILIZER DISTRIBUTER.
APPLICATION FILED JULY 17, 1902.

NO MODEL.



WITNESSES:
W. J. Brewster.
H. S. Chace



INVENTOR
Edmund F. Needham
BY
Smith & Driscoll
ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDMUND F. NEEDHAM, OF PHELPS, NEW YORK.

FERTILIZER-DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 718,504, dated January 13, 1903.

Application filed July 17, 1902. Serial No. 115,917. (No model.)

To all whom it may concern:

Be it known that I, EDMUND F. NEEDHAM, of Phelps, in the county of Ontario, in the State of New York, have invented new and useful Improvements in Fertilizer-Distributers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in fertilizer-distributers, having reference more particularly to the means for controlling the feed of the fertilizer from a suitable hopper.

One of the objects of this invention is to provide means for oscillating or partially rotating the feed-controlling device without removing the same from the hopper.

Another object is to provide the feed-controlling device with a lateral passage and a cut-off plate movable across the discharge-opening of the distributor, whereby the said discharge-opening may be wholly or partially closed by said plate to regulate the feed independently of the position of the lateral passage relatively to the discharge-opening; and a further object is to provide the feed-controlling device with a removable closure for preventing the entrance of the fertilizer to the discharge-opening of the distributor from the lateral passage.

To this end the invention consists in the combination, construction, and arrangement of the parts of a fertilizer-distributor, as hereinafter described, and pointed out in the claims.

Referring to the drawings, Figures 1 and 2 are respectively top and inverted plans of a portion of a fertilizer-distributor embodying the features of my invention, portions of the feed-controlling device being broken away in Fig. 1. Fig. 3 is a transverse section taken on line 3-3, Fig. 1. Figs. 4 and 5 are inverted views of the feed-controlling cap, showing particularly the cut-off plate and lateral passage and also showing in Fig. 5 the removable closure for entirely preventing the entrance of fertilizer to the interior of the cap. Fig. 6 is a transverse sectional view taken on line 6-6, Fig. 5. Fig. 7 is a perspective view of the detached closure.

Similar reference characters indicate corresponding parts in all the views.

In this class of devices it has heretofore

been customary to secure the feed-controlling cap to the supporting-frame in such position that it became necessary in order to adjust the same to remove the fastening means which held it in position and then to reach into the hopper, elevate the cap, and adjust or partially rotate the same to change the position of the lateral inlet to the point desired and then to reseal the cap and reclamp the same in position. Furthermore, no provision was made for regulating the discharge of the quantity of material through the discharge-opening after once entering the interior of the cap, and, again, there was no provision made for closing the inlet-passage entirely from communication with the interior of the cap, as would be desirable in gang-feeds in case that was not necessary to distribute the fertilizer through one or more of the feed devices. My improved distributor is designed to overcome these difficulties in, first, providing means to oscillate the cap to adjust the lateral inlet-passage relatively to the main discharge-opening without removal or detachment of the cap; second, by providing the lower edge of the cap with an inwardly-projecting cut-off plate movable across the discharge-opening, so as to regulate the discharge of the material through the main discharge-opening irrespective of the inlet-passage, and, third, by providing a removable closure for the inlet-passage of the cap for entirely shutting off the entrance of the fertilizer into the interior of the cap. These several devices are clearly set forth in the drawings, in which I have shown a fertilizer-distributor consisting of a supporting-frame 1, a revoluble hopper 2, an inverted-bell-shaped cap 3, means for oscillating or partially rotating the cap, a cut-off plate 5, movable across the discharge-opening of the supporting-frame, and a closure 6 for the inlet-passage of a cap.

The supporting-frame may be of any desired construction, but preferably consists of a circular horizontal disk 7, having a vertical discharge-opening 8 and suitable arms or brackets 9' and 10', by which the frame may be secured to the truck. (Not illustrated.) I usually provide the disk 7 with a substantially central opening 9 and an upwardly-projecting boss 10, surrounding the central opening, which boss receives and holds the

rotary hopper 2 from lateral displacement, the main discharge-opening in the disk 7 being at one side of the central opening 9.

The hopper 2 preferably consists of an up-
 5 right circular drum revolubly mounted upon the supporting-frame 1 and having a central opening 11, receiving the boss 10, said drum being also provided with an upwardly-projecting boss 12, surrounding the opening
 10 11. This hopper is provided with a bottom 13, having openings 14 therethrough, and a circular toothed rack 15 on its bottom face, the openings 14 being successively registered with the discharge-opening 8 during the revo-
 15 lution of the hopper. Any desired means may be employed for revolving this hopper; but I preferably use a pinion 16, which is mounted upon a shaft 17 and secured thereto, said shaft being usually employed to drive a gang
 20 of the distributors similar to that shown in the drawings and is generally connected in such manner as to be rotated by the traction-wheels of the carriage upon which these distributors are mounted, the traction-wheels
 25 and other parts of the truck not being illustrated, as my device is applicable to various forms of trucks or carriages. The pinion 16 meshes with the circular rack 15 and serves to transmit rotary motion thereto, the shaft
 30 17 being arranged in an aperture 18 in the bracket or arm 9', which is also provided with an aperture 19 for receiving the pinion 16, said shaft being usually angular in cross-section and inserted in a similar angular aper-
 35 ture in the pinion 16, the walls of the opening 19 serving to hold the pinion from end-wise movement on the shaft.

The cap 3 usually consists of an inverted-bell-shape body arranged within the hopper
 40 2 and formed with a depending annular flange 20 and a laterally-extending lip 21, said annular flange being extended inwardly beyond one end of the lip 21 and is cut away for forming an inlet-opening 22, one end 23 of the lip
 45 being in substantially the same plane as the lower edge of the flange 20, and the other end 24 of the lip inclines upwardly from the end 23 and is disposed in a plane slightly above the lower edge of the flange 20 for forming
 50 an inlet-passage 25, communicating with the opening 22 and interior of the inverted cap for permitting the entrance of the fertilizer during the rotation of the hopper 2, in which said fertilizer is carried.

The annular flange 20 is of sufficient diameter to entirely inclose the outer edges of the openings 8 and 14, and the lip 21 extends beyond the openings 14 into close proximity to the inner face of the upright walls of the hopper 2, the inlet-passage 25 being opposed to the direction of feed of the fertilizer by the hopper, so that as the hopper is rotated the fertilizer is carried forwardly thereby and enters the inlet-passage 25, and is thus forced
 65 into the interior of the cap 3 and thence through the openings 22 and 14 and is finally discharged through the outlet-opening 8 onto

the surface of the ground or into a suitable chute, if desired. As previously stated, this cap is rotatable circumferentially independ- 70-
 70 ently of the rotation of the hopper for the purpose of adjusting the position of the inlet-passage 25 relatively to the discharge-opening 8 for varying the quantity of fertilizer discharged through said opening 8; but this 75-
 75 is found to be not always reliable, and I have therefore provided the base of the cap 3 with an inwardly-projecting flange 5, extending circumferentially and wider at one end than at the other, said flange gradually widening 80-
 80 from the end 23 of the lip 21 circumferentially toward the inlet-passage 25 and is formed of sufficient width at its wider end to substantially cover the opening 8, or rather the open- 85-
 85 ing 14, which may be alined with said opening 8, it being understood upon reference to Fig. 3 of the drawings that this flange 5 lies in close proximity to the upper face of the bottom 13 and is so arranged that when the cap is adjusted circumferentially the plate 5 cuts 90-
 90 off more or less of the discharge-opening 8, as may be desired, and thereby enables the operator to more positively control the feed of the required quantity of fertilizer through the discharge-opening 8, as will be apparent 95-
 95 upon reference to Figs. 1, 2, 3, 4, and 5, the cut-off plate 5 being shown as covering the greater portion of the opening 8 in Figs. 1, 2, and 3.

In order that the cap 3 may be held in its 100-
 100 proper position central within the hopper 2, I provide the same with a depending spindle 26, which is journaled in the opening 9 of the frame 1 and is supported by said frame independently of the hopper by means of an an- 105-
 105 nular shoulder 27, forming an enlargement of the upper portion of the spindle 26 and resting upon the upper end of the boss 10. The means for adjusting this cap 3 circumferentially preferably consists of a pinion 28, 110-
 110 secured to the lower end of the spindle 26, beneath the disk 7, and a toothed segment 29, which is pivoted to a spindle 30, depending from the disk 7 at one side of the pinion 28, said segment being provided with a hand- 115-
 115 piece 31, by which it is rocked on the spindle 30, and thereby rotates the pinion 28 and cap 3, secured thereto. This is a particularly important feature of my invention, for the reason that the inlet-passage 25 and the cut-off 120-
 120 plate 5 may be adjusted to any desired position relatively to the discharge-opening 8 without displacing the cap or any of the other parts of the device, the segment 29 being held in its adjusted position by a suitable 125-
 125 spring-detent 32, which engages serrations 33, formed on the lower face of said segment, the spring-detent 32 being secured to the spindle 30 by a pin or equivalent fastening means 34.

Although I have described a specific con- 130-
 130 struction of adjusting means for the cap 3, it is evident that other equivalent means may be employed without departing from the spirit of my invention. Therefore I do not

limit myself to the precise construction shown and described.

It is sometimes necessary to entirely stop the feed of the fertilizer from one of the distributors when a gang of these distributors are used without interfering with the operation of the other distributors, and I therefore provide the closure 6, which forms a continuation of the flange 20, to close the opening 22, and is usually detachably mounted on said flange, being provided with a lengthwise socket 35, which fits over the end of the flange 20, adjacent to the opening 22, and its other end extends across the opening 22 and abuts against the opposite side of the flange 20, this closure being prevented from dropping down by the bottom wall of the hopper and is held from endwise movement at one end by the end wall 36 of the socket 35 and the other end abutting against the opposite side of the flange 20.

The operation of my invention will now be readily understood upon reference to the foregoing description and the accompanying drawings, and it will be noted that some change may be made in the detail construction and arrangement of the parts without departing from the spirit thereof.

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

1. A fertilizer-distributor comprising a supporting-frame and a revoluble hopper having a discharge-opening, a cap in the hopper covering its opening and having a lateral passage communicating with said opening, means to rotate the hopper, and separate means to rotate the cap independently of the hopper to change the position of the lateral opening.

2. A fertilizer-distributor comprising a supporting-frame having a discharge-opening, a rotary hopper having an open bottom movable across the discharge-opening, means to rotate the hopper, a cap in the hopper having a lateral passage leading from the interior of the hopper to its open bottom, and means to rotate the cap independently of the hopper to change the position of the lateral passage relative to the discharge-opening.

3. In a fertilizer-distributor the combination of a fixed frame having a discharge-opening, a rotary hopper having a bottom movable across the discharge-opening and provided with an opening registering with the former opening as the hopper is revolved, means to revolve the hopper, an inverted-bell-shaped cap covering the opening in the hopper and having a lateral passage connecting the opening with the interior of the hop-

per, and means to rotate the cap independently of the hopper for the purpose set forth.

4. A fertilizer-distributor comprising a supporting-frame having a discharge-opening, a rotary hopper mounted on the frame and having a bottom provided with an opening movable into and out of registration with the former opening, a tapering plate movable across the opening to vary the amount of discharge through the opening in the frame as described.

5. In a fertilizer-distributor, a supporting-frame and a rotary hopper mounted thereon one part having a discharge-opening, an oscillatory plate mounted on the frame and movable across the opening to regulate the discharge of material therethrough and means to oscillate the plate independently of the hopper.

6. In a fertilizer-distributor, a supporting-frame and a rotary hopper mounted thereon one part having a discharge-opening, a bell-shaped cap inverted over the opening and provided with a lateral passage, and a closure for the passage detachably engaged with the cap.

7. In a fertilizer-distributor, a supporting-frame and a rotary hopper mounted thereon one part having a discharge-opening, a bell-shaped cap inverted over the opening and provided with a lateral passage, means to rock the cap independently of the hopper, and a closure for the passage removably engaged with the cap.

8. In a fertilizer-distributor, a supporting-frame and a rotary hopper mounted thereon one part having a discharge-opening, a bell-shaped cap inverted over the opening and provided with a lateral passage, a tapering plate secured to the lower edge of the cap at one side of the passage and means to rotate the cap to change the position of the passage and plate relative to the opening.

9. In a fertilizer-distributor, a supporting-frame and a rotary hopper mounted thereon one part having a discharge-opening, a bell-shaped cap inverted over the opening and provided with a lateral passage, a tapering plate secured to the lower edge of the cap at one side of the passage and means to rotate the cap to change the position of the passage and plate relative to the opening and a closure for the passage removably secured to the cap.

In witness whereof I have hereunto set my hand this 9th day of July, 1902.

EDMUND F. NEEDHAM.

Witnesses:

STUART DE C. PRICHARD,
JOHN T. WATKINS.