(No Model.) 2 Sheets—Sheet 1.

E. D. MEAD.

COMBINED GRAIN DRILL AND FERTILIZER DISTRIBUTER.

No. 455,048. Patented June 30, 1891.

Fig. 1.

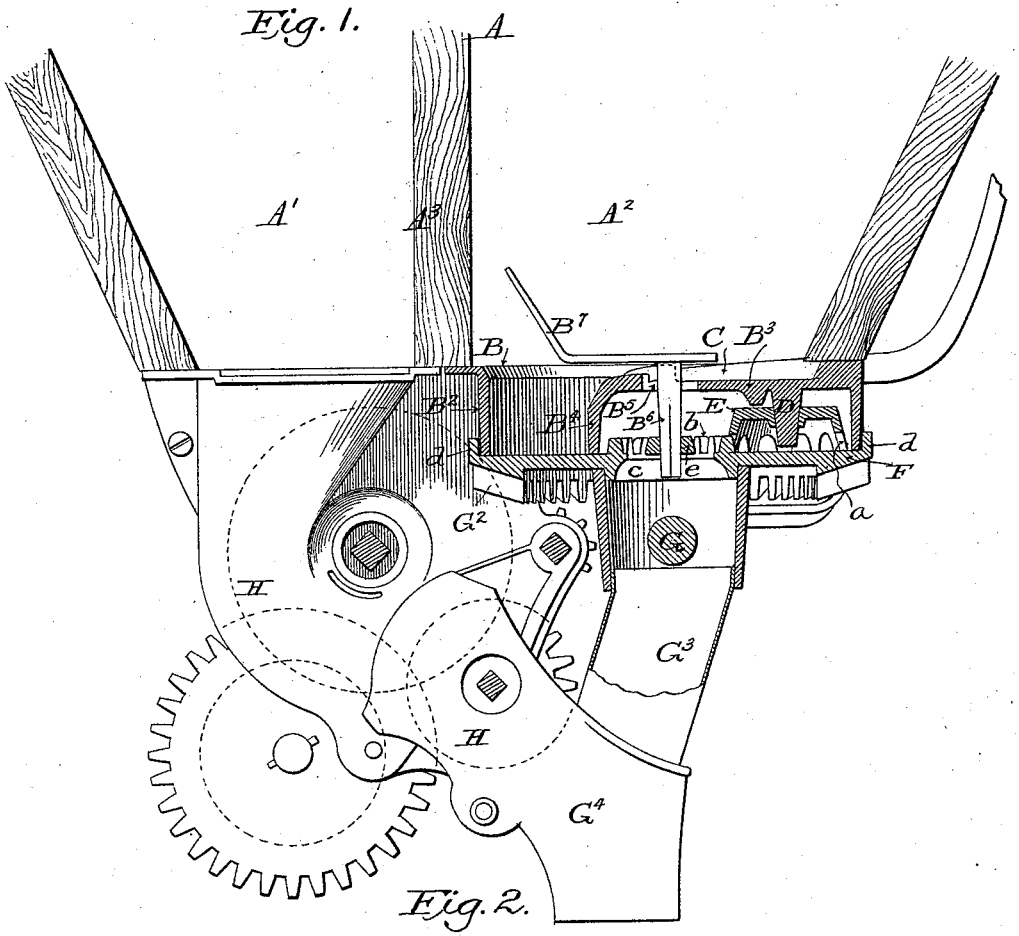
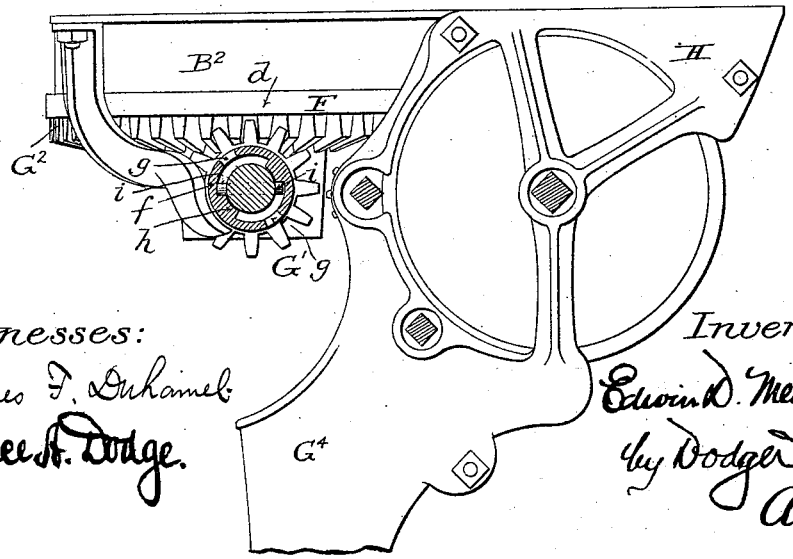


Fig. 2.



Witnesses:
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Horace R. Dodge.

Inventor:
Edwin D. Mead,
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Attys.

(No Model.) 2 Sheets—Sheet 2.

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No. 455,048. Patented June 30, 1891.

Fig. 3.

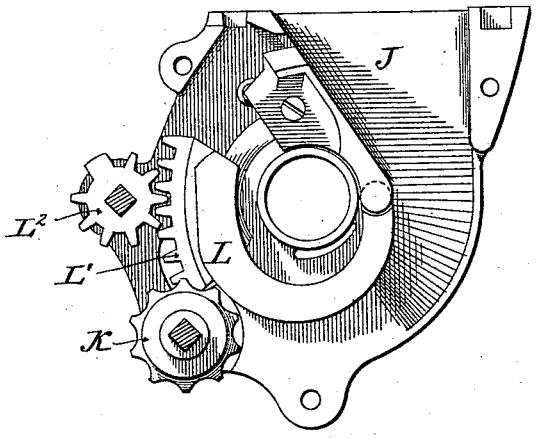


Fig. 4.

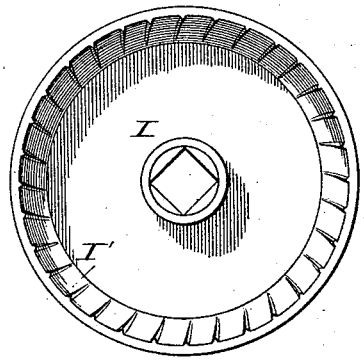


Fig. 6.

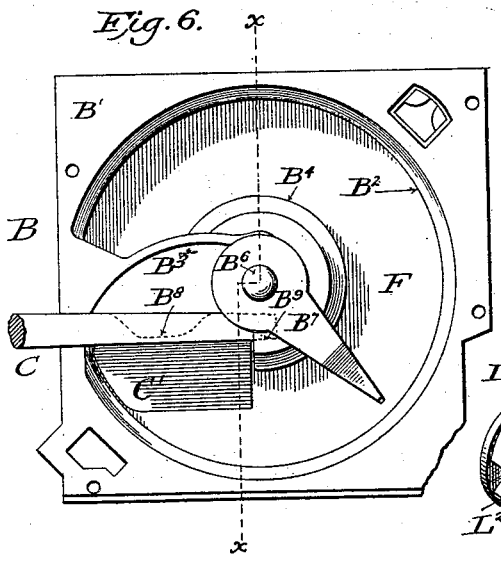


Fig. 5.

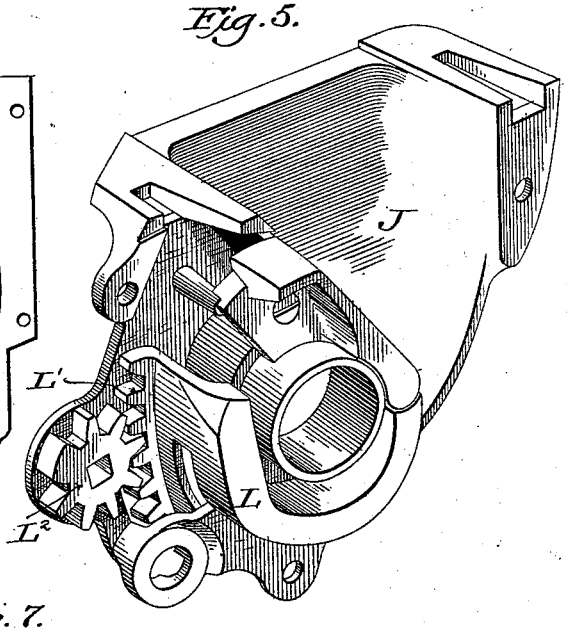
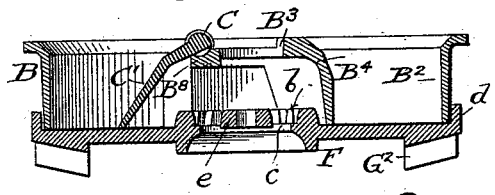


Fig. 7.



Witnesses:

James F. Duhamel.

Horace A. Dodge.

Inventor:

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Attys.

UNITED STATES PATENT OFFICE.

EDWIN D. MEAD, OF SHORTSVILLE, NEW YORK.

COMBINED GRAIN-DRILL AND FERTILIZER-DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 455,048, dated June 30, 1891.

Application filed November 10, 1890. Serial No. 370,913. (No model.)

To all whom it may concern:

Be it known that I, EDWIN D. MEAD, a citizen of the United States, residing at Shortsville, in the county of Ontario and State of New York, have invented certain new and useful Improvements in Combined Grain-Drills and Fertilizer-Distributers, of which the following is a specification.

My invention relates to combined grain-drills and fertilizer-distributers; and it consists in various features and details hereinafterfully set forth and claimed.

In the drawings, Figure 1 is a vertical sectional view, partly in elevation, of my improved machine; Fig. 2, a view of a portion of the supporting frame-work looking at it from the opposite side from Fig. 1. Figs. 3, 4, and 5 are detailed views representing the construction of the force-feed mechanism. Fig. 6 is a top plan view, with some of the parts removed, of the fertilizer-distributer; and Fig. 7 a sectional view of the same on the line x x of Fig. 6.

A indicates the hopper of the machine, which is divided into two separate compartments A′ A^2 by means of a partition A^3. Into the open bottom of the chamber A^2 is fitted a plate or casting B, which is shown in Figs. 6 and 7, comprises an open rectangular frame B′, a depending annular flange or rim B^2, and an inwardly-projecting radial arm B^3, carrying at its inner end a depending flange B^4, forming about a half of a circle. At the inner end of the arm B^3 there is a hole or opening B^5, through which projects the stem B^6 of the scraper or agitator B^7. The arm B^3 is provided on its forward end with a curved lug or lip B^8, and near its outer end, upon its under face, with a socket B^9, which is adapted to receive and support the axis or journal C of the cut-off gate C′, as clearly shown in Figs. 6 and 7, the axis or journal of the cut-off gate being extended outward and upwardly, as shown in Figs. 1 and 6, to work over a scale (not shown) usually carried by the machine, so as to indicate the position or adjustment of the gate.

Upon the under side of the arm B^3 is a downwardly-projecting lug D, which forms a journal for an inverted-cup-shaped wheel E, which has its rim or edge toothed or notched, as shown in Fig. 1, the teeth or notches a engaging with similar teeth or notches b, formed around a central discharge-opening c in the rotatable disk or plate F, forming the bottom of the distributer.

The plate F is provided with an upturned edge or rim d, which encircles the lower edge of the downwardly-projecting annular flange or rim B^2, as shown in Fig. 1, and the said plate is further provided with a cross-bar or support e, to receive the lower end of the stem B^6 of the scraper B^7. Rotary motion is imparted to the plate F by means of a shaft G, which is provided with a gear-wheel G′, adapted to mesh with the teeth G^2, formed upon the under side of the plate or disk, as shown in Figs. 1 and 2, and as is common in this class of machines. This gear-wheel G′ is provided with a hollow hub f, having one or more holes or openings g, in line with each other and approximately at right angles to two lugs h, formed on the inside of the hub, as shown in Fig. 2. A pin i, passing through the shaft G, engages the lugs and thereby locks the pinion and shaft together and causes them to turn in unison. When it is desired to detach the pinion from the shaft, the latter is turned until the pin i comes in line with the slots or openings g, whereupon the pin may be driven out of its seat in the shaft and out through the hub of the pinion.

The material which is placed within the hopper or compartment A^2 rests upon that portion of the plate F between the flanges B^4 and B^2, and as the plate is turned or rotated horizontally the material will be carried under the gate or cut-off C′, where it will be taken hold of by the inverted-cup-shaped wheel E, which latter draws the material inward beneath the arm B^3 and causes it to pass down through the discharge-opening c into the spout G^3.

It will be noticed upon reference to Fig. 6 that the cut-off or gate is set in advance of the inverted-cup-shaped wheel and covers the whole width of the channel formed between the flanges B^4 and B^2, thereby regulating more perfectly the quantity of material to be discharged and serving to effectually prevent the said material from running out when the machine is not in operation. It will also be noticed upon reference to Fig. 1 that the teeth upon the feed wheel or plate F are located a

considerable distance from the center, and that the teeth for imparting motion to the inverted-cup-shaped wheel are located comparatively near the center, thereby increasing the power of the driving-pinion and also the power of the gearing for rotating the inverted-cup-shaped wheel. Another difficulty in this class of machines lies in the fact that the phosphates are liable to become set, and this is overcome to a great extent by providing the rotatable disk or plate F with a flange *d*, which loosely encircles the downwardly projecting rim or flange B^2 of the plate B. The lower edge or rim of the plate B^2 rests upon the upper face of the rotatable plate or disk F, and while preventing the escape of material at the edge it does not bear with sufficient force to retard the rotation of the plate. The lower edge of the downwardly-projecting rim or flange B^2, where it rests upon the rotatable plate or disk F is made thin or narrow, so that it presents such a small surface as to practically preclude the fertilizing material rusting the parts together and retarding the rotation of the plate. The spout G^3 communicates with the spout G^4 extending downward from the force-feed mechanism, as clearly shown in Fig. 1. This spout G^4 is formed upon the lower end of a casting H, forming a part of the supporting frame-work and hopper for the force-feed mechanism, and is bolted or otherwise rigidly attached to the open bottom of the hopper-chamber A′, as clearly shown in Fig. 1.

Journaled in the cup, casting, or frame H is a feed-wheel I, which has an inclined rim I′ roughened or serrated or provided with teeth or ribs, as clearly shown in Fig. 4. The material, as it passes down into the contracted throat or opening J, Figs. 3 and 5, falls against the rim of the wheel or disk I, and is carried by said wheel or disk downward and then slightly upward, where it is taken hold of by a second wheel or toothed disk K, (shown in in Fig. 3,) and by the latter delivered into the discharge-spout G^4.

I do not wish to be understood as limiting myself to the use of the scattering wheel or disk K to the particular distributer herein shown, as it is applicable to many other styles of distributers operating upon substantially the same principle.

In order to regulate the amount of material passing through the throat J, I employ a pivoted cut-off or gate L, which is adapted to swing from a center or pivot located in advance of the center of the feed-disk I.

The cut-off gate is substantially **U**-shaped, and is provided on its free arm with teeth or cogs L′, which are adapted to mesh with a pinion L^2, journaled in the frame or casting H, as shown in Figs. 3 and 5. By turning or rotating the pinion the gate or cut-off L, which forms, in effect, a continuation of the throat or channel J, may be moved nearer to or farther from the opposite wall of the throat or opening J, and thereby contract or widen the latter, so as to accurately regulate the amount of material which shall pass therethrough.

In order to make a compact device and yet permit of the desired adjustment, I form the the teeth or cogs L upon an arm, which is set away a short distance from the main body of the cut-off or gate L, as shown in Fig. 5, and allow the toothed portion of the cut-off to project outside of the throat or opening J, as clearly shown in Fig. 5.

There will be attached to the shaft of the pinion L^2 an arm adapted to move over a graduated scale or index, so as to indicate to the operator the adjustment of the gate.

The peculiar construction and arrangement of the gate or cut-off L give me a uniform discharge under all adjustments and all kinds of grains, which in prior devices has to a considerable extent been impracticable.

It will be noticed upon reference to Figs. 3 and 5 that after the grain passes the narrow part of the throat or opening it is released from pressure in the horizontal portion of the channel.

While the two devices applied, respectively, to the bottoms of the chambers A′ and A^2 are designed primarily for joint operation, they may nevertheless be operated independently of each other.

I have not shown and described in detail the arrangement of gearing for imparting motion to the respective parts of the different feeding devices, as there is nothing novel in the gearing.

Having thus described my invention, what I claim is—

1. In combination with the plate or casting B, having the downwardly-projecting rim B^2, the plate F, provided with teeth upon its lower face, and provided, also, with a central discharge-opening *c* and teeth *b* around said opening, an inverted-cup-shaped wheel E, toothed, as at *a*, to engage the teeth *b* upon the upper face of the disk or plate F, and means for rotating the plate.

2. In combination with the plate or casting B, having the arm B^3 and downwardly-projecting lug D, the rotatable plate F, provided with a central discharge-opening, and the inverted-cup-shaped wheel E, journaled upon the stud D and adapted to receive motion from the plate or disk F.

3. In combination with the plate or casting B, having the horizontal arms or flanges B′, the depending flanges B^2 and B^4, separated as shown, the central discharge-opening B^5 in the arm B^3, the rotatable plate or disk F, provided with a central discharge-opening *c*, and a cross-bar *e*, a scraper B^7, having a stem B^6 projecting downward through the opening B^5 and supported by the cross-bar *e*, and means for rotating the plate or disk F, and the cup-shaped wheel E resting thereon.

4. In combination with plate or casting B, having the arm B^3, the cut-off or gate C′, having its shaft or axis C journaled in the arm B^3, all substantially as shown and described.

5. In combination with the plate or casting, B and its arm B^3 the gate or cut-off C′, journaled therein, a rotatable feeding disk or plate F, a scraper-wheel E, located between the arm B^3 and the plate or disk F and in rear of the gate or cut-off C′, and means for imparting motion to the plate or disk and the rotatable wheel.

6. In combination with the frame or casting, having the throat J, the rotatable feed-wheel I, journaled therein, and an adjustable U-shaped gate L, forming a continuation of one wall of the throat or opening J.

7. In combination with the frame or casting, having a throat or hopper J, a rotatable feed-wheel I, journaled therein, a pivoted gate L, having its pivot or center of motion located in advance of the center of the feed wheel or disk, and means for adjusting the rear end of the gate or cut-off.

8. In combination with the frame or casting, provided with the throat or hopper J, the rotatable feed-wheels I and K, arranged for operation substantially as shown, and the adjustable U-shaped cut-off or gate L, forming one wall of the hopper or throat J.

9. In a force-feed distributer, the combination, with a frame or casting having a throat or channel J, of the pivoted U-shaped cut-off or gate hung in the throat or channel, substantially as shown, so as to make the narrowest point in the channel in its perpendicular portion, and to gradually increase in width in the horizontal portion.

10. In a force-feed distributer, the combination, with a frame or casting having a hopper or throat, of the rotatable feed-wheel I, journaled therein, and the scattering wheel or disk K, overlapping the feed-wheel, substantially as shown and described.

11. In combination with the pinion G′, having the hollow hub *f*, which is provided with the holes or openings *g*, (one or more,) and lugs *h*, the shaft G, provided with a pin *i*, all substantially as shown.

In witness whereof I hereunto set my hand in the presence of two witnesses.

EDWIN D. MEAD.

Witnesses:
FRED A. WHEELER,
JEAN LA RUE BURNETT.