

E. D. MEAD.
Machine for Sowing Fertilizers.
No. 218,759. Patented Aug. 19, 1879.

Fig 1.

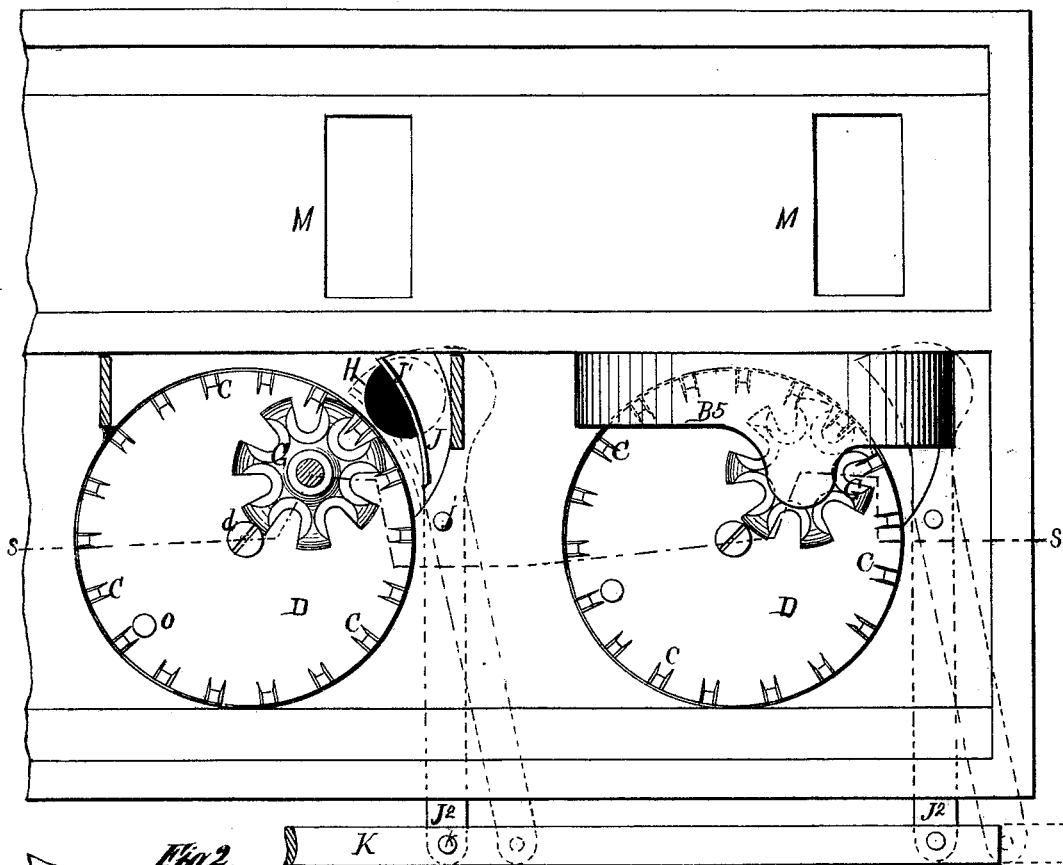
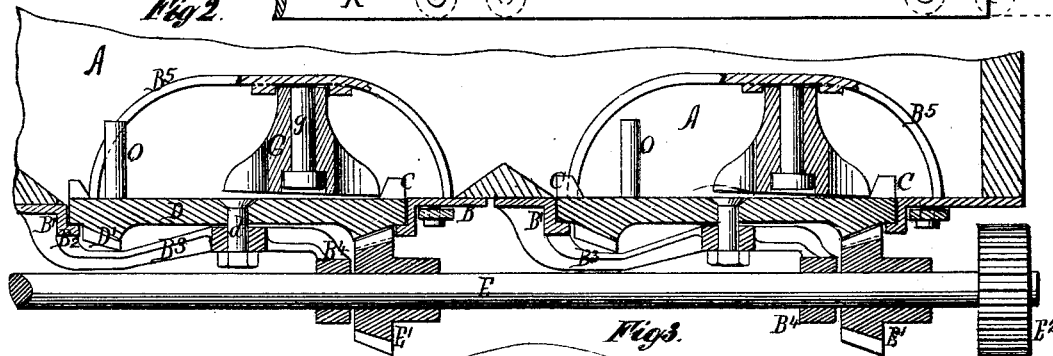
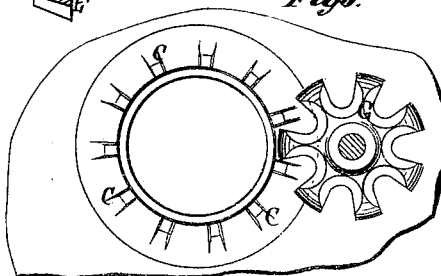


Fig 2.



Figs.

Witnesses:
W. C. Brookes
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Inventor:
E. D. Mead,
by his attorney
James D. Peterson

UNITED STATES PATENT OFFICE.

EDWIN D. MEAD, OF SHORTSVILLE, NEW YORK.

IMPROVEMENT IN MACHINES FOR SOWING FERTILIZERS.

Specification forming part of Letters Patent No. **218,759**, dated August 19, 1879; application filed September 23, 1878.

To all whom it may concern:

Be it known that I, EDWIN D. MEAD, of Shortsville, Ontario county, in the State of New York, have invented certain new and useful Improvements Relating to Machines for Applying or Sowing Fertilizing Material; and I do hereby declare that the following is a full and exact description thereof.

I have in my experiments connected also machinery for sowing seeds; but my present improvements are in the parts which distribute the fertilizing material.

I place the distributing-wheel horizontally in the bottom of the box or hopper which contains the superphosphate.

One of the commonest forms of fertilizing material which it is desired to apply to land by means of my machine or analogous machines is a powdery superphosphate of lime. This material is liable to become, by the shaking of the machine, very closely compacted together. In damp weather it is liable to form a hard cake. It is important to provide means for agitating it and for clearing or cleaning the surfaces of the distributing machinery. The main part which is liable to become clogged is the wheel or corresponding device, which is provided with recesses and is partially immersed in the pasty mass.

I provide peculiar clearers, which revolve in the right position to free the recesses in which the superphosphate is liable to clog. I provide one or more pins, projecting upward from the top surface of the distributing-wheel, which, as they travel around, stir up and loosen the superphosphate from the under side. They keep it clear close to the wheel. I provide a controlling-gage of a form adapted to crush the lumps.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a plan view of a part of a machine sufficient to show two of the distributing-wheels.

It will be understood that I employ a series of as many of the distributing-wheels as may be desired, extending across the machine, and

all worked from a single driving-wheel. (Not represented.)

Fig. 2 is a vertical section through the same parts on the line S S in Fig. 1. Fig. 3 is a plan view representing a modification.

Similar letters of reference indicate corresponding parts in all the figures.

A is the hopper which contains the superphosphate to be distributed. B, B are castings formed with circular openings adapted to receive the feed-wheels D. Around each of the circular openings is a hanging lip, B¹, with an internal flange, B², adapted to support the wheel D by its periphery, as represented. The under face of each wheel D is formed with a series of beveled-gear teeth, D', placed immediately within the peripheral bearing. These engage with corresponding driving-pinions E¹ on the driving-shaft E, which latter is supported in suitable bearings B⁴ on the fixed frame-work of the machine, and receives motion through the pinion E² from gearing on or connected with the driving-wheel. (Not represented.)

The upper face of the wheel D may be plane, or may have ribs extending from its spaced projections C toward the center. The whole face of the feed-wheel carries the phosphate. The cavities or recesses between these projections C serve as conveyers. They are filled by their rotation under the mass of powdery fertilizer, and bring the material from distant points to the immediate vicinity of the discharge-orifice H.

A spider-frame, B³, formed in one piece with or fixed on the casting B, extends across under each wheel D, and forms a firm support for a central pivot, d, which steadies the wheel D. It also forms a support for the bearing B⁴.

A yoke-frame or arch, B⁵, is also cast on or firmly fixed to each casting B. It serves as a support for a stout pivot or axle, g, on which turns a clearing-wheel, G. This wheel performs an important function in clearing the upper surface of the distributing-wheel D and forcing off the proper quantity of superphosphate to be delivered down the spout or distributing-passage H. The form and functions of this clearing-wheel G and its mode of mounting are peculiar. Its lower face runs close to the up-

per face of the wheel D. Its axis g is slightly inclined, so that it bears only at the periphery of the wheel D. It is formed with wings analogous to cogs, which engage with the projections C on the upper face of the distributing-wheel D. These compel the clearing-wheel G to revolve and the wings of the wheel G to act as clearers to force out the superphosphate from the face of the feed-wheel.

The wings are beveled, as shown. The projections C are correspondingly beveled. In damp weather the superphosphate is liable to become pasty under a kneading action. When thus conditioned it will pack, if the form of construction is not carefully attended to. The beveled edge of my scraper-wheel scrapes the surface of the feed-wheel and lifts the phosphate as it is forced to the orifice for discharge sufficiently to keep it from packing.

As the machine is drawn over the ground, the shaft E is rotated by the power received from the driving-wheel, and, being provided with pinions E' , corresponding to each distributing-wheel D, gives a continuous rotatory motion to the entire set. Each wheel D being geared and pivoted, as shown, receives a strong uniform motion; its pin O keeping the superphosphate above stirred up in the immediate vicinity of the wheel. The upper part of the mass is saved from any agitation and kneading. No particle becomes stirred until the material below it has been so far consumed as to let it down into the vicinity of the feed-wheel. Then it is certain to be agitated by the revolution of the wheel D under it and by the action of the pin or pins O projecting from its upper face.

The projections C stand favorably situated to receive the phosphate, and, by the rotation of the wheel, to convey into the vicinity of the discharge-orifice H a liberal supply of the superphosphate.

The clearing-wheel G stands favorably situated to scrape the whole upper surface of the feed-wheel, and also by its beveled wings to act between each of the beveled projections C, and to force out all the superphosphate which may be contained between the said projections.

J is a gate turning on a center, j , fixed in the casting B, and adapted, when properly placed, to cover the whole of the discharge-orifice H, and by adjusting will feed out any desired quantity, as the distributing-wheel D brings around into the neighborhood of the orifice H a supply of the phosphate.

It will be seen that if the gate J is so nearly closed as to allow but little of the phosphate to pass through the orifice, the wings of the clearing-wheel G, being beveled, lift the balance, and it remains undischarged. The front face of the gate J adjacent to the distributing-wheel D has a high lip. This serves to crush any lumps of phosphate which may have been formed and brought around into the proper position. The revolution of the wheel G in acting on such lumps, instead of pushing them off radially over the upper surface of the gate,

lashes them against the front lip, J^1 , and the whole or a portion of each lump is dropped down the discharge-orifice. Each gate J J^1 has a long lever, J^2 , which is connected by a pin, k , to a rod, K. This rod K extends across the machine, and is controlled by the attendant. It may be held, by a pinching-screw or otherwise, in any desired position in which it is adjusted. This single rod K therefore adjusts all the discharge-gates of the entire series. So, also, the ratio of the size of the clearing-wheel G to the distributing-wheel D may be varied.

It will be understood that there may be some approved form of mechanism worked in the adjacent hopper M for distributing seeds, and that the seeds may be sown broadcast or conveyed down tubes, either with the fertilizing material, or independently, as may be preferred.

I have not deemed it necessary to represent any seeding device. Any desired form and arrangement of guide-tubes, plows, and the like may be employed with my invention in the same manner as with ordinary fertilizer-distributors.

Fig. 3 represents a modification in which the central pivot of the distributing-wheel is dispensed with. The discharge-orifice is in the center of the distributing-wheel. The great mass of the fertilizing material is prevented from falling through this by any convenient means, as a cylindrical casing, or a circular plate covering the main part of the whole, and leaving a sufficient orifice at the side adjacent to the clearing-wheel.

The motion may be imparted to the annular feed-wheel in the same manner as above, and the action of the wings and the clearing-wheel G will act by the beveled edges and wings to clear the spaces between the projections C in same manner as already described; but in this case they will work from the exterior inward. The pivot or axis on which the wheel G turns is in this case outside of the distributing-wheel instead of within its area. The bevel of the projections C must in this be on the outer instead of the inner edges of the projections C.

The parts may be made with sufficient accuracy, with little or no finishing by tools. With an ordinary good fit between the periphery of the feed-wheel D and the hanging lip B^1 which surrounds it, and the flange B^2 which underlies it, a little lubricating material applied at intervals serves not only to relieve the friction, but also to make and maintain a tight joint, and prevent any escape of the fertilizer around the feed-wheel.

It will be observed that my construction allows the pin or arm O to move freely around in combination with the clearer G, and without interfering with it. In passing the clearer the pin applies in one of the notches therein.

The notched form of my clearer is important in providing for the passage of the pin O; and it also serves a useful function in communi-

cating the proper rotatory motion from the wheel D by means of the projections C engaging therewith. The projections C in this case perform the double functions of conveyers to insure that the wheel shall by its rotation transport the loose material lying thereon to the delivery-hole H, and also of teeth to rotate the wheel G; but some of the benefits of my invention might be obtained by rotating the clearer G by other means.

Machines for sowing or distributing have been heretofore made with a horizontally-revolving feed-wheel. In these, however, the feed-wheel is located within the bottom of the hopper, or, when it forms itself a portion of the bottom, it is suspended below the bottom by a central shaft.

By this invention the feed-wheel itself forms part of the bottom of the hopper, and is supported at its rim by a depending lip and flange on the portion surrounding the aperture in which it is placed, so that its surface is level with the rest of the bottom of the hopper. There is, therefore, no liability of the feed-wheel to clog on account of packing of the fertilizer, nor will the latter escape by the opening about its edges.

I claim as my invention—

1. The hanging lip B¹ and internal flange B² on the hopper-base B, in combination with a horizontal rotating feed-wheel arranged to afford a continuous support around the wheel, with the upper surface of the feed-wheel flush, or nearly flush, with the upper surface of the base-plate B, as herein specified.

2. In a fertilizer-distributor, the revolving scraper and clearer G, in combination with the feed-wheel D and with the base B B¹ B², as herein specified.

3. A fertilizer-distributor having the feed-wheel D, revolving clearer G, and arm O, arranged to serve in combination, as herein specified.

4. The series of feed-wheels D, base-castings B B¹ B², and clearing-wheels G, in combination with the series of gates J and single operating rod K, adapted for joint operation, as and for the purposes herein specified.

In testimony whereof I have hereunto set my hand this 19th day of September, 1878, in the presence of two subscribing witnesses.

EDWIN D. MEAD.

Witnesses:

N. K. COLE,

GEO. H. PRESTON.