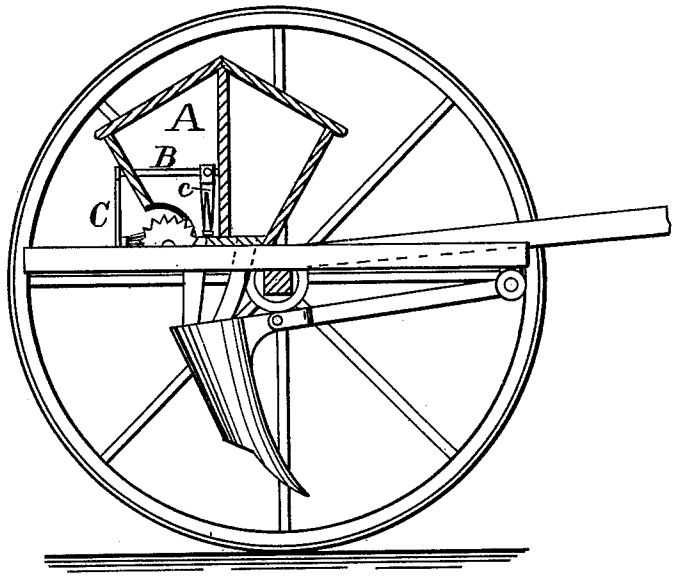
(No Model.)

J. TAYLOR.

Fertilizer Drill.

No. 231,374. **Patented Aug. 17, 1880.**

Fig. 1.



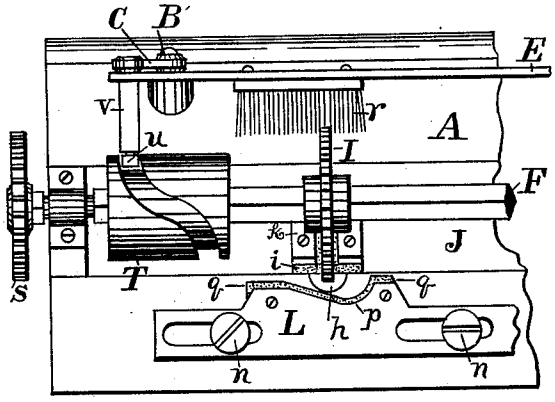


Fig. 2.

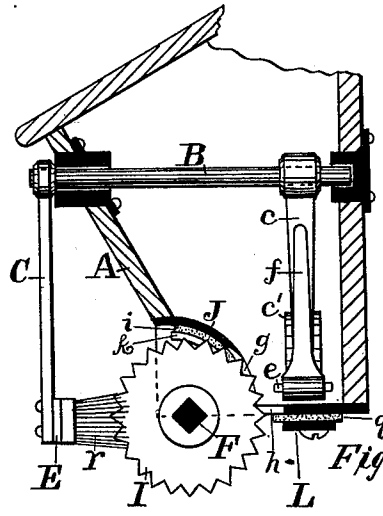


Fig. 3.

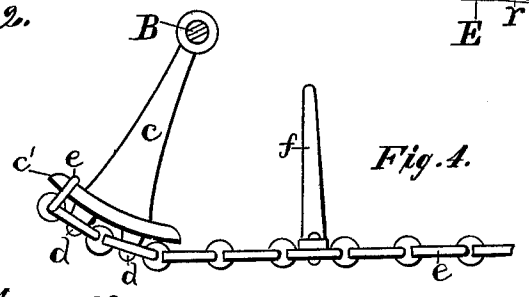


Fig. 4.

Witnesses:

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Inventor:

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By his Atty

Chas B. Mann

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES TAYLOR, OF LOUISVILLE, KENTUCKY, ASSIGNOR OF ONE-SIXTH OF HIS RIGHT TO JOHN CALDWELL, OF SAME PLACE.

FERTILIZER-DRILL.

SPECIFICATION forming part of Letters Patent No. 231,374, dated August 17, 1880.

Application filed April 20, 1880. (No model.)

To all whom it may concern:

Be it known that I, JAMES TAYLOR, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Fertilizer-Drills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to an improved apparatus for agitating the fertilizer in the box of a drill and means to cause the fertilizer to feed into the drill-tubes, all as hereinafter described and claimed.

In the drawings hereto annexed, Figure 1 is a vertical section of a drill embodying my invention. Fig. 2 is an exterior view of the bottom of a drill-box on a larger scale, showing part of my improvements. Fig. 3 is a cross-section of the fertilizer-box on same scale as Fig. 2. Fig. 4 illustrates the agitating device.

The letter A designates the fertilizer-box, mounted, as usual, on a grain-drill. Within the box, at each end, a rock-shaft, B, is mounted crosswise, with one end of the shaft projecting through the side of the box. An arm, *c*, is secured to each rock-shaft, and depends below, its extremity having a right-angled hook, *c'*, and forming a segment of a circle, from the periphery of which several sprockets, *d*, project. A chain consisting, preferably, of flat links *e*, extends lengthwise of the box, and each end of the chain is attached to one of the swinging arms *c* by one of the links *e* looping over the right-angled hook and one or more links looping over the sprockets.

At short intervals on the chain upward-extending studs or stirrer-rods *f* are attached. It will be seen the rocking of the shaft B will cause the arms *c* to swing and these give to the chain an endwise reciprocating movement. As the chain is thus dragged endwise back and forth over the discharge-openings in the bottom of the hopper it serves effectually to agitate and pulverize the fertilizer.

At each of the ends of the rock-shaft which projects on the outside of the box a lever, C, is attached, and at the lower end of the levers is hung a horizontal bar, E, which extends lengthwise of the box from end to end.

A square shaft, F, is mounted in bearings below and outside of the box, and extends from end to end. Upon this shaft are mounted the saws I, one saw for each drill-tube.

The discharge-openings consist of slots *g*, formed in the cast-iron hopper or bottom J, up through which the teeth of the saws project into the hopper, and the lower end of each slot terminates in an enlargement, *h*, (see Figs. 2 and 3,) through which part the fertilizer discharges.

Upon the outer side of the hopper a strip, *i*, of sheet-rubber, is placed on each side of the slot, and between the strips the saw revolves, the rubber being held in its position by the metal plate *k*. By this arrangement leakage of the fertilizer is prevented, and the shaft on which the feed-saws work being entirely outside of the hopper, protection is afforded to the journals and bearings of the shaft, and gumming and clogging are obviated.

The feed-regulator consists of a flat plate or bar, L, secured to the outer side of the bottom of the hopper by screws or bolts *n*, passed through slots formed endwise of the plate. The plate may be secured in any other manner, the object being to permit it to be moved endwise back or forth.

In one edge of the plate a notch, *p*, is formed, one side of which describes a quarter-circle, and the other side tapers straight from the deepest part until it intersects the edge of the plate, as shown in Fig. 2. The quarter-circle part of the notch corresponds in shape and size to the enlarged part *h* of the discharge-opening in the bottom of the hopper.

It will be seen that by moving the plate L endwise, so as to bring the tapered side of the notch in coincidence with the discharge-opening *h*, said opening may be partly closed or closed entirely, as desired. Aside from moving the plate L to regulate the feed, the same may be effected by the saw when its speed is varied.

A piece of sheet-rubber, *q*, is interposed between the plate L and the bottom of the hop-

per, in the edge of which a notch is formed of the same shape as the notch *p*. The sheet-rubber extends slightly beyond the edge of the metal plate, and forms about the notch *p* an elastic edge, which bears slightly against the saw, and serves to prevent leakage of the fertilizer, and yet allows any hard lumps of fertilizer to pass without damage to the saw.

A brush, *r*, is secured to the horizontal bar E in such manner as to bear against the teeth of the saw, and as the bar is suspended from the levers attached to the rock-shaft said bar will have an endwise reciprocating movement, whereby the brushes are moved back and forth across the saw-teeth, thus brushing out any adhering fertilizer.

It will be understood the device consisting of the saw, the brush to clean it, the elastic packing between which it passes, and the regulator-notch on the plate is provided for each drill-tube of the entire gang attached to a grain-drill.

Any suitable provision may be made for imparting motion to the operative parts. In the present instance a cog-wheel, *s*, is mounted on the end of the shaft F, and is intended to gear with suitable mechanism, set in motion in the usual manner.

The requisite reciprocating movement may be imparted to the brushes and to the agitator-chain by a cam-roller, T, having a groove on its face, in which a pin, *u*, moves. This pin is at the end of a stud, *v*, which is rigidly attached to the horizontal bar E.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a fertilizer-drill, the combination of the rock-shafts mounted crosswise of the hopper, an arm, *c*, secured to each rock-shaft and depending below and adapted to swing when the shaft rocks, and having its lower extremity to form the segment of a circle, and a chain secured to the periphery of the segment-shaped extremity of the arms and extending lengthwise of the hopper, as set forth.

2. In a fertilizer-drill, the combination, with a chain adapted, as described, to have an endwise reciprocating movement, of upward-extending studs or stirrer-rods *f*, attached to the chain, as set forth.

3. In a feed device for a fertilizer-drill, the combination, substantially as set forth, of rock-shafts mounted crosswise of the box or hopper, an arm or lever secured to each rock-shaft, a horizontal bar attached to the swinging ends of the arms, whereby the bar has an endwise reciprocating movement, and brushes secured to the bar.

4. In a feed device for drills, the combination, with a saw mounted with its teeth projecting through openings in the hopper, of a strip of sheet-rubber placed on each side of the opening for the saw to revolve between, as set forth.

5. In a feed device for drills, the combination, with a hopper having a discharge opening and a saw mounted with its teeth projected through the opening, of a plate or bar, L, secured by means which permit it to move endwise and provided on the edge with a notch one end of which conforms in size and shape to the discharge-opening and the other end tapers gradually to the edge of the plate, whereby a movement of the plate brings the tapered part of the notch nearer to the saw-teeth and partly closes the discharge-opening, as set forth.

6. In a feed device for a drill, the combination, with a feed-regulator plate, L, secured to the hopper, of sheet-rubber *q*, interposed between the plate and the discharge-opening in the hopper, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES TAYLOR.

Witnesses:
JOHN CALDWELL,
JAMES HOLSTEN.