No. 639,754. Patented Dec. 26, 1899.

W. A. MORGAN.

GRAIN DRILL.

(Application filed May 22, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

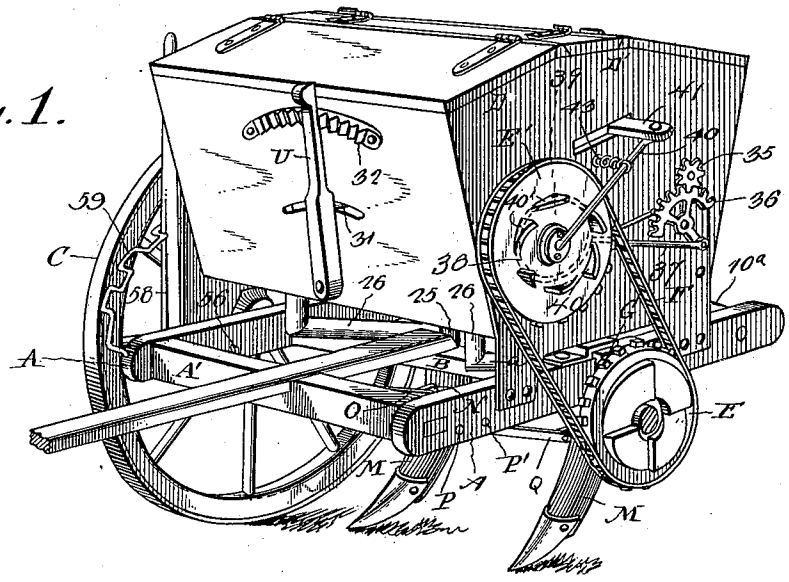
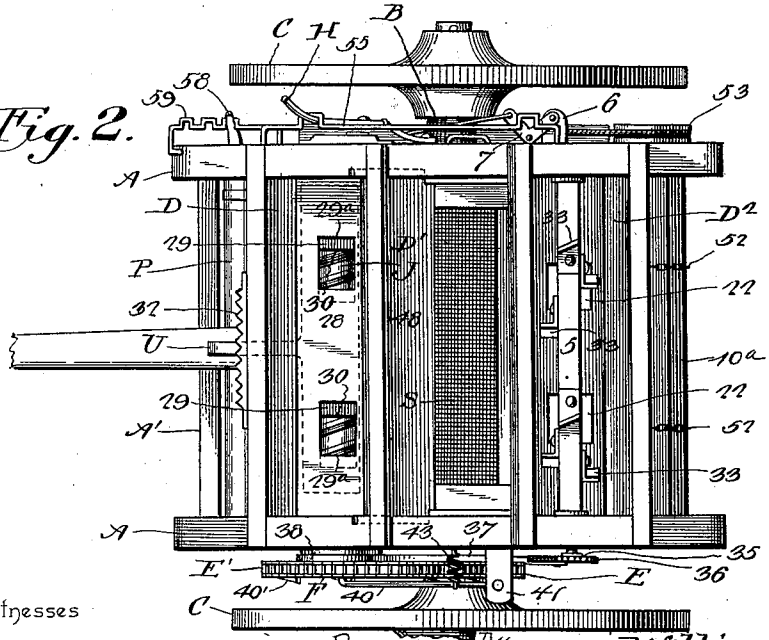


Fig. 2.



Witnesses

J. Frank Culverwell.

Good Chandlee

Inventor

William A. Morgan.

By his Attorneys,

C. A. Snow & Co.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 639,754. Patented Dec. 26, 1899.

W. A. MORGAN.

GRAIN DRILL.

(Application filed May 22, 1899.)

(No Model.) 2 Sheets—Sheet 2.

Fig. 3.

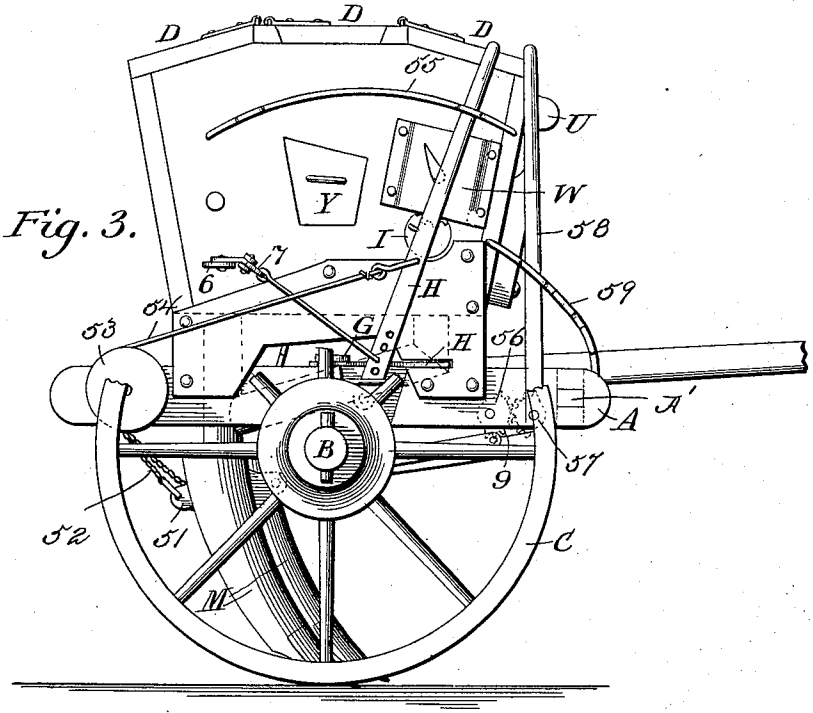
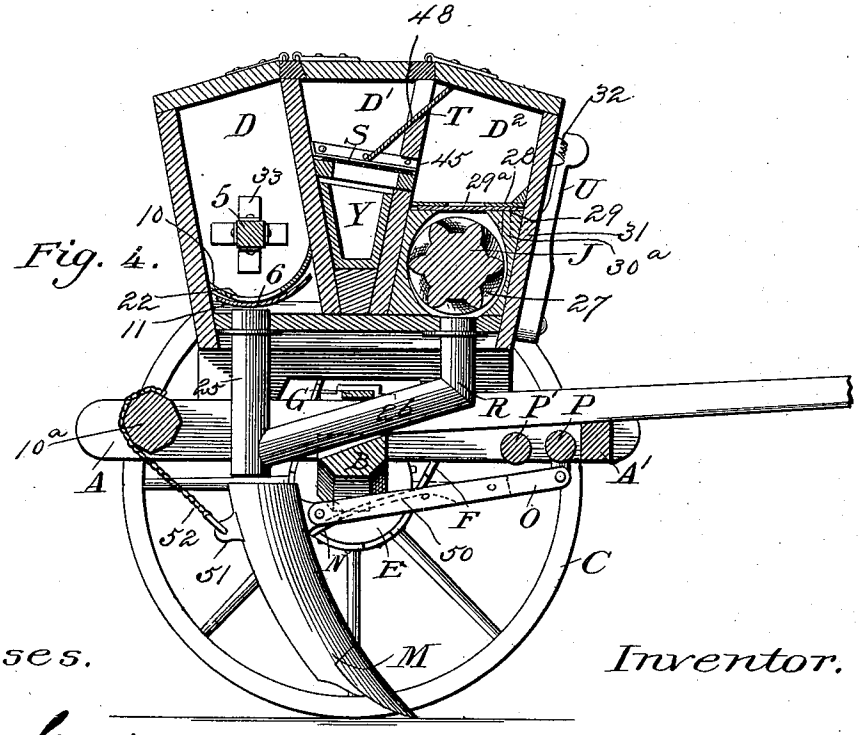


Fig. 4.



Witnesses.

John Gray

C. K. Remine

Inventor.

William A. Morgan

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM A. MORGAN, OF CHUCKY CITY, TENNESSEE.

GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 639,754, dated December 26, 1899.

Application filed May 22, 1899. Serial No. 717,872. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. MORGAN, of Chucky City, in the county of Green, State of Tennessee, have invented a new and valuable Grain-Drill; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the drawings and to the letters and figures of reference marked thereon.

This invention relates to grain-drills; and it has for its object to provide a construction in which a plurality of rows may be simultaneously planted, in which the grain will be deposited with a quantity of fertilizer, and in which the grain will be sifted to remove the screenings.

A further object of the invention is to provide means for operating the several parts of the mechanism simultaneously and automatically and for adjusting the several parts.

In the drawings forming a portion of this specification, and in which similar letters and numerals of reference designate corresponding parts in the several views, Figure 1 is a perspective view of the implement, showing the front and one side, one of the wheels being removed. Fig. 2 is a top plan view. Fig. 3 is an elevation showing the opposite side from that shown in Fig. 1, one of the wheels being broken away. Fig. 4 is a central vertical section taken longitudinally.

Referring now to the drawings, the drill comprises a frame consisting of side sills A, having cross-piece A'. Mounted upon the sills A is an axle B, having the ends provided with spindles for the reception of the supporting-wheels C, and mounted loosely upon one of the spindles and adjacent one of the wheels is a sprocket E, adapted to be clutched to revolve with said wheel, the power for driving the mechanism of the drill being connected with this sprocket, as will be hereinafter described. Mounted upon the frame of the machine is a casing, divided transversely to form three hoppers D, D', and D^2, each of which hoppers is provided with a lid, as shown. At the bottom of the hopper D is arranged an arc-shaped plate 10, having two openings 22 therein, and arranged between this plate and the bottom of the casing is a slide-plate 11, having openings therein adapted to register with and to close the openings 22. This slide-plate has an extension 6, which projects outwardly through the side of the casing and is connected with a bell-crank lever 7, having connection with a lever H, fulcrumed to a suitable portion of the frame and through the medium of which the feed from the hopper D through the openings 22 may be regulated. The openings 22 communicate with delivery-tubes 25, which extend downwardly in a position to discharge into the boots, hereinafter described. Connected with the tube 25 at each end of the hopper D is a tube 26, which opens into a valve or feed chamber 27 at the bottom of the hopper D^2. This chamber is cylindrical in from and contains a horizontally-disposed feed-screw J, adapted to receive and feed the grain or seed from the hopper D^2 into the tube 26.

At the bottom of the hopper D^2 is a plate 28, having openings 29^a therein communicating with the chamber 27 and through which the grain falls to the feed-screw. The openings 29^a are adapted to be closed by a plate 29, slidably arranged therebelow, and which plate has also openings 30, adapted to register with the openings 29^a at times, and thus may a flow of grain from the hopper D^2 be regulated or cut off. The plate 29 has a depending portion 30^a, (shown in dotted lines in Fig. 4,) and connected with which is an inwardly-extending arm 31 upon a lever U, pivoted to the front of the casing, and which lever is adapted for engagement with a rack 32 to hold it at different points of its adjustment.

The screw J has its shaft extending exteriorly of the casing, and upon one end of this shaft is fixed a sprocket E', connected by means of a chain F with the sprocket E, and through the medium of which the feed-screw is rotated.

The hopper D is designed to receive fertilizer, and longitudinally of this hopper is journaled a shaft 5, having radially-extending wings 33, which scrape the fertilizer back and forth and crush the lumps as the shaft is oscillated. The shaft 5 extends exteriorly of the casing, and upon one end is fixed a pinion 35, engaged by a segmental gear 36, which is adapted to be rocked through the medium of a connecting-rod 37, pivoted thereto, and hav-

ing a strap 38 lying upon an eccentric 39 upon the shaft of the screw J, as shown in dotted lines in Fig. 1.

The hopper D′ is tapered downwardly and at the bottom is disposed a sliding drawer Y, above which is slidably arranged a screen S. This screen is adapted for reciprocation through the medium of a lever 40, connected with a projection 41 upon the screen-frame and extending outside of the casing. This lever is fulcrumed at the end of the shaft of the screw J, as shown in Fig. 1, and extends parallel with the face of the sprocket E′ and is adapted for engagement by wedge-shaped lugs 40 upon the sprocket. Intermediate the fulcrum of the lever and its connection with the screen is a helical spring 43, which acts to hold the lever inwardly and against the action of which the lever is moved by the lugs 40. The screen S is tilted, as shown in the drawings, and in the side of the partition dividing the hoppers D′ and D^2 is a slot 45, through which the grain may pass from the screen to the hopper D^2. A slide 48 is arranged in the hopper D′, as shown in Fig. 4, and may be raised or lowered to regulate the passage of the grain from the sieve or screen.

In practice the grain is supplied to the hopper D′, and by the reciprocation of the screen the screenings are caused to fall into the drawer Y, and the cleaned grain passes into the hopper D^2, from which it is fed through the pipes 26 and 25 and thence to the boots. At the same time the fertilizer is fed through the pipes 25 to the boots and through which it passes to the ground. As shown in the drawings, these boots M are of the usual construction and each is provided with an ear N upon its front face, with which is pivotally connected a rod O, pivoted at its outer end to a crank-shaft P and P′, respectively. A flat spring 50 is secured to each of the rods O and bears at its free end against the corresponding ear N, and thus holds the boot yieldably in fixed relation to the rod. Upon the rear face of each boot is fixed a second ear 51, to which is connected a rope 52, leading to a drum 10^a, journaled transversely of the frame. This drum has a groove-pulley 53 fixed thereto, and upon this pulley is wound a cord 54, leading to the lever H. Thus as the lever is operated the drum 10^a will be rotated or released to raise or lower the boots. A rack 55 is arranged to hold the lever H at different points of its adjustment.

Upon the shafts P and P′ are arranged intermeshing segmental gears 56 and 57, and to the shaft P is fixed a lever 58, which coöperates with a rack 59 to move and hold said shafts in their adjusted positions.

It will of course be understood that in practice any desired number of boots may be employed and that various other modifications in the construction and arrangement of the device may be made without departing from the spirit of the invention.

What is claimed is—

1. In a grain-drill, the combination with a casing and delivery-pipes connected therewith, of a fertilizer-hopper connected with one set of pipes, a grain-hopper connected with the second series of pipes, and a grain-receiving hopper disposed between the first-named hoppers and opening into the grain-hopper, a screen in the grain-receiving hopper and having a discharge end disposed in the opening between the grain-receiving hopper and the grain-hopper, a drawer below the screen, and means for reciprocating the screen to discharge the grain therefrom into the grain-hopper.

2. In a grain-drill, the combination with a grain-hopper having feed-pipes, of a second hopper communicating therewith, a reciprocatory slanting screen in the second hopper and adapted to receive the grain and pass it to the grain-hopper, and a chute in the second hopper leading to the upper edge of the screen and adapted to convey the grain thereto.

3. In a grain-drill, the combination with a casing and delivery-pipes connected therewith, of a fertilizer-hopper connected with one set of pipes, a grain-hopper connected with a second series of pipes, a grain-receiving hopper disposed between the first-named hopper and having an opening through one side leading to the grain-hopper, a slanting reciprocatory screen disposed in the grain-receiving hopper and having one end disposed to discharge through the side thereof and into the grain-hopper, a chute leading to the upper side of the screen to convey grain thereto, and means for reciprocating the screen.

4. A grain-drill comprising a frame having supporting-wheels, boots carried by the frame, a grain-hopper having delivery-tubes, and feed mechanism, a sprocket carried by the feed mechanism and operatively connected with a supporting-wheel, a fertilizer-hopper, feed mechanism in the fertilizer-hopper, operating means for the last-named mechanism connected with said sprocket, a grain-receiving hopper having a reciprocatory screen adapted to receive the grain and pass it to the grain-hopper, a lever connected with the screen, and lugs carried by the sprocket and adapted for engagement with the lever to operate it.

WILLIAM A. MORGAN.

Witnesses:
W. R. EARNEST,
I. E. BROYLES.