2 Sheets—Sheet 1.

M. V. DADISMAN.

Combined Grain-Drill and Fertilizer.

No. 202,240. Patented April 9, 1878.

Fig. 1.

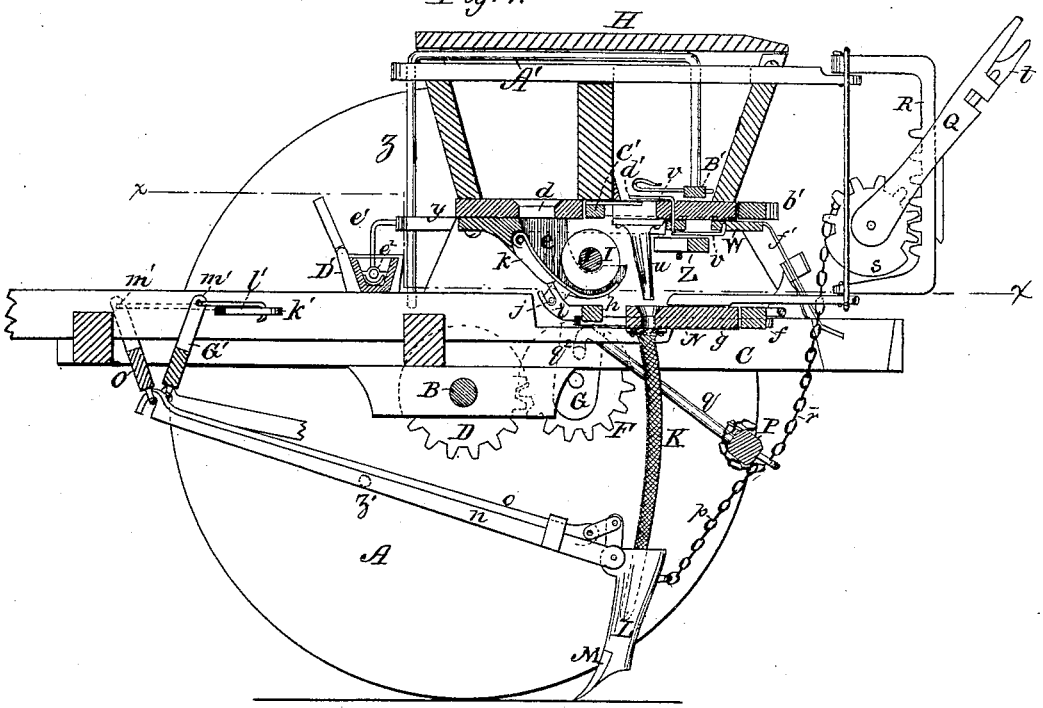

Fig. 2.

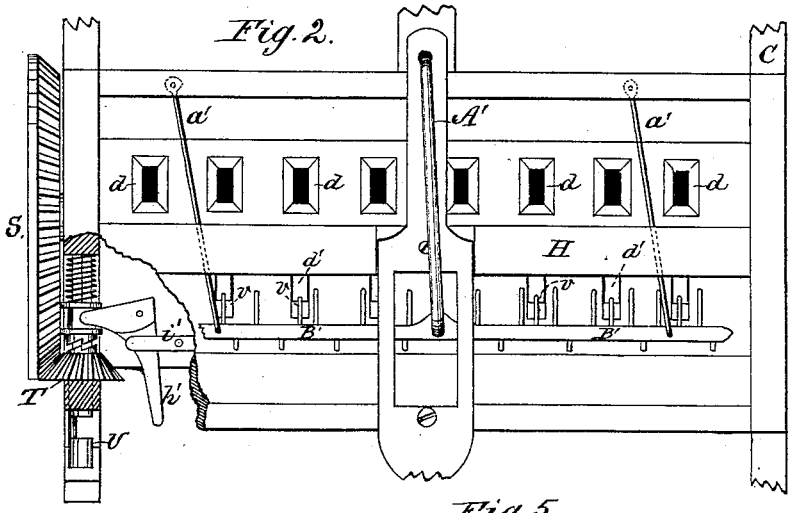

Fig. 5.

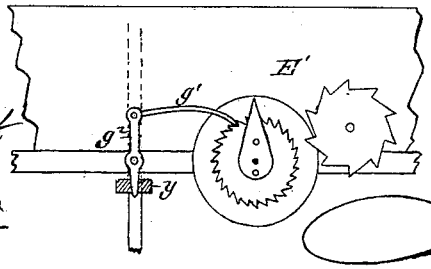

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Fig. 3.

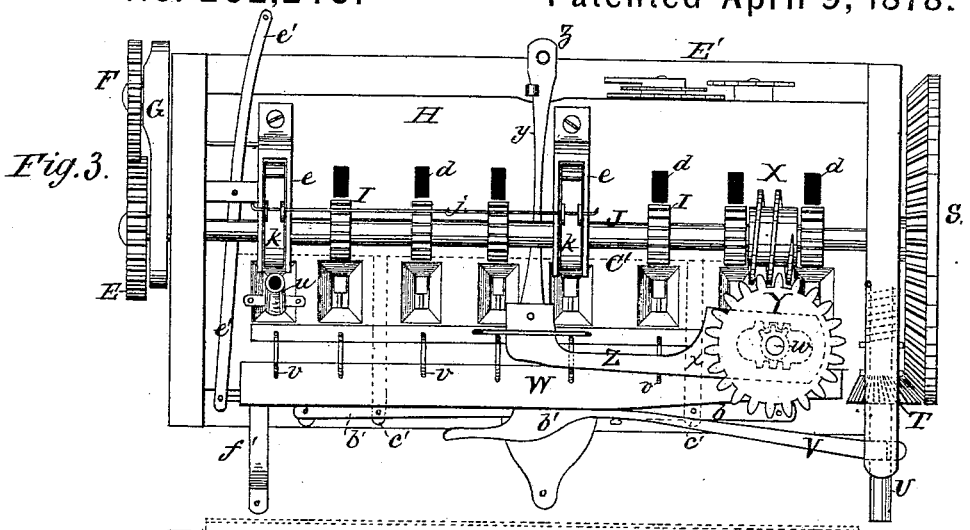
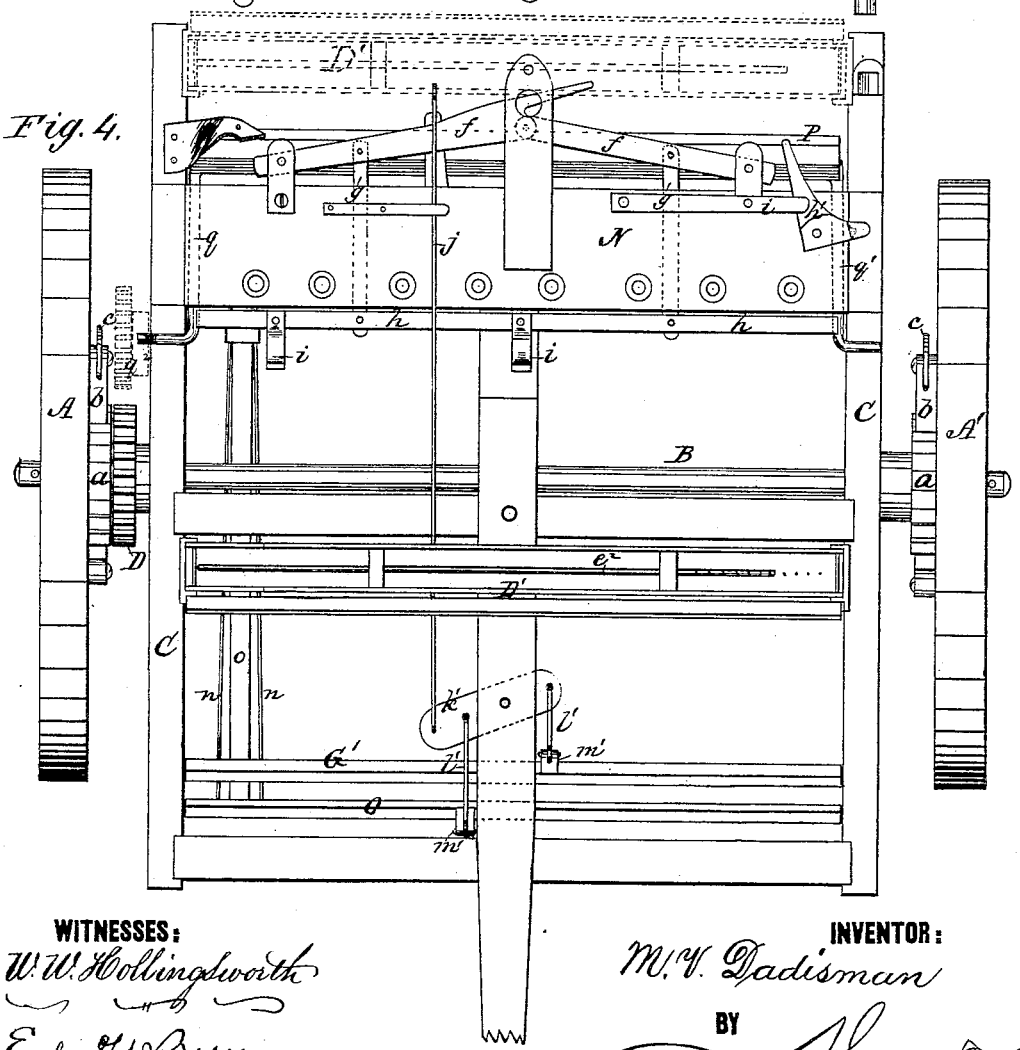


Fig. 4.



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UNITED STATES PATENT OFFICE.

MARTIN V. DADISMAN, OF LURAY, VIRGINIA.

IMPROVEMENT IN COMBINED GRAIN-DRILL AND FERTILIZER.

Specification forming part of Letters Patent No. **202,240**, dated April 9, 1878; application filed February 1, 1878.

To all whom it may concern:

Be it known that I, MARTIN V. DADISMAN, of Luray, in the county of Page and State of Virginia, have invented a new and Improved Grain-Drill and Fertilizer; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical longitudinal section. Fig. 2 is a top view of the seed-box, with one corner broken away to show the clutch for connecting and disconnecting the fertilizer-feed. Fig. 3 is an underneath view of the upper half of the device when divided at the line *x x* of Fig. 1. Fig. 4 is a top view of the lower half of the device when divided at the line *x x* of Fig. 1. Fig. 5 is a detail view of the land-measuring devices.

My invention relates to certain improvements in grain-drills designed to secure the seeding of the grain, the fertilizing of the same, and the sowing of the grass-seed, all in a single operation, or the performance of said operations singly, as may be desired.

The improvements consist in the particular construction and arrangement of devices for adjusting the pivoted trough-bottoms of the grain-seeding devices; in the peculiar construction and arrangement of the spring-bar for rendering the shovel-tubes flexible or yielding to obstruction; in arranging the devices for raising the lifting-bar and tubes in a vertically-pivoted frame to permit them to be operated from either side of the frame; in the construction and arrangement of one of the cranks of the tube-lifting bar, whereby it is made to do the double duty of supporting the said bar and disconnecting the driving devices; in the peculiar construction and arrangement of the fertilizer-feeding devices and devices for adjusting the fertilizer-feed gage, the peculiar arrangement of the land-measurer, and the construction and arrangement of devices for operating said land-measurer, together with a slow-motioned rake, all as hereinafter more fully described.

In the drawings, Figs. 1 and 4, A A′ represent the main drive-wheels, B the axle or drive-shaft, and C the main frame carrying the seeding devices. Said frame is supported in bearings upon the shaft B, and said shaft is connected with the drive-wheels, Fig. 4, by means of ratchet-wheels *a*, fixed upon the shaft, and pawls *b*, fixed upon the wheels, and pressed by springs *c* into engagement with the ratchet-wheels, so that when the machine is moved backward the wheels move freely upon the shaft and the pawls over the ratchet-wheels; but when the machine is moved forward the wheels engage with the shaft through the ratchets and pawls, and rotate the same to drive the seeding devices. These ratchet-wheels and pawls are arranged upon both sides of the machine, so as to insure the seeding when turning at the end of the row in either direction—as, for instance, when turning to the right at the end of the row, the right wheel being centered and relatively stationary, the left-hand wheel would be the one which would drive the seeding devices, while in turning to the left the left wheel would be idle, and the right would then be the driving-wheel.

D, Figs. 1 and 4, is a gear-wheel, made fast to the shaft B, and arranged to communicate motion to the wheel E, Fig. 3, on the feed-wheel shaft through the intermediate wheel F, Figs. 1 and 3, which latter is fixed upon a bearing on a swinging arm, G, which arm is arranged to be adjusted, by means hereinafter described, so as to throw the wheel F into engagement with the wheel D to secure the operation of the devices, or remove the said wheel F from contact with D to stop the feeding devices.

H, Figs. 1, 2, 3, is a receptacle mounted upon the frame C, and arranged parallel with the drive-shaft B. Said receptacle is divided centrally by a longitudinal partition, forming upon the front side a box for the grain to be seeded, and upon the rear side a box for the fertilizer. In the bottom of the seed-box are formed a series of openings, *d*, Figs. 1, 2, 3, through which the wheat or other grain passes to a series of pendent troughs, *e*, Figs. 1 and 3, in each of which rotates a feed-wheel, I, and all of which feed-wheels are firmly fixed upon the shaft J, which is attached to and driven by the wheel E, so that as the wheels revolve, the seeds pass down the troughs, and are thrown out by the feed-wheels into the flexible spouts

K, Fig. 1, and pass down through the same into the tubes L, and thence drop into the furrow made by the shovel M on the bottom of the tube.

To regulate the feed of the grain, two levers, *f f*, Fig. 4, are pivoted at their outer ends to a cross-board, N, beneath the seed-box, and are connected near the center to each other, so as to be operated together. To these levers are attached parallel slide-bars *g g*, which pass to the front through grooves in the cross-bar N, and are connected with a continuous bar, *h*, Figs. 1 and 4, which carries inclined forks *i*, which grasp a rod, *j*, Figs. 1 and 3. This rod passes through the pivoted bottoms *k* of each of the feed-troughs *e*, so that by moving bars *g* and *h* by levers *f* the inclined forks *i* raise or lower rod *j*, and hence adjust the pivoted bottoms *k* of the trough closer to the feed-wheels to diminish the feed, or drop them farther away from the wheels to increase the feed.

With respect to the feature just described, I do not claim, broadly, the pivoted trough-bottom, as this has been used before, but only my specific devices for adjusting the same, the jointed levers *f* of which secure an equal movement for both ends of the bar *h*, and in adjusting the same in parallel position secure an equal adjustment for all of the troughs of the force-feed.

The upper end of each tube L is pivoted between two draft-bars, *n n*, Figs. 1 and 4, which bars are connected at their front ends with the rocking bar O. Between the said draft-bars is arranged a spring, *o*, which at its rear end is connected by pivoted links to an extension of the tube L, to render the latter elastic in its action and yielding to stumps, stones, or other obstructions.

I am aware that a short bar with a separate spring has been arranged between the draft-bars to make the tubes yielding, and therefore only claim my particular form of spring-bar *o* extended the full length of the draft-bars, and made to fulcrum or bear upon the connecting-bolt *z'* of the said draft-bars.

P, Fig. 1, is the tube-lifter. This consists of a bar extending the full width of the machine, which bar is connected, by means of chains *p*, to each of the tubes, so that when raised it lifts the tubes out of contact with the ground. By a peculiar arrangement of the tube-lifter, I make the same movement which lifts the tubes to effect the disconnection of the driving devices, and thus stop the operation of the seeding devices. For this purpose the bar P is attached at its extremities to crank-arms *q* q^1, Figs. 1 and 4, which are journaled in the main frame. One of these crank-arms, *q*, is extended through the main frame and bent down to form an outside crank, q^2, which is attached to the swinging arm G, carrying the adjustable wheel F, so that by the elevation of the tube-lifter the wheel F is thrown out of gear from the drive-wheel D. This result, though not broadly new, it will be seen is attained in a simple and economic manner by my devices, the crank *q*, when bent as described, serving the double function of sustaining one end of the lifting-bar, and at the same time affording means for connecting and disconnecting the driving devices without special levers for this purpose.

To elevate the tube-lifter, a chain, *r*, Fig. 1, is attached to the lifter-bar about the center, and is connected at the top with a head, *s*, placed between the forked arms of a lever, Q, made rigid and fast thereto. One side of the head is grooved to receive the chain, and the rear side is provided with gear-teeth, which are held into engagement with a rack upon a clevis-shaped frame, R, connected by vertical pivots to rear extensions from the seed-box and cross-board N. Now, when the lever Q is pulled down, the head *s* both rises bodily upon the rack and turns upon its axis, and in so doing lifts, through chain *r*, the tube-lifter and tubes. The tubes are sustained in this elevated position by means of a spring-bolt, *t*, in lever Q, which engages with a notch or projection on the clevis-shaped frame. The vertical pivots of the clevis-shaped frame allow said frame and its lever to be turned to either side of the machine, so that the workman may lift the tubes when upon either side.

The chief feature of novelty in these devices consists in fixing the headed lever in a vertically-pivoted frame, whereby the tube-lifter may be operated from either side by turning the pivoted clevis-frame, in contradistinction to fixing a similar lever upon the lifting-bar itself.

In feeding the fertilizer from the rear compartment, openings are made in the bottom of the box, and pipes *u*, Figs. 1 and 3, (one for each seeding-wheel and spout,) are made to conduct the fertilizer down to the flexible spouts. In effecting the feed of the fertilizer two agitators are employed, one having a fast sifting motion immediately above the holes, and the other a slowly-raking movement. In securing the first or fast movement, a crown-wheel, S, is arranged upon the end of the feed-wheel shaft, Figs. 2 and 3, and is made to rotate a pinion, T, at right angles, which, in turn, rotates a cranked shaft, U. To this crank-shaft is attached a pitman, V, Fig. 3, whose opposite end is connected with the shaker-bar W, Figs. 1 and 3. This bar is connected with the bottom portion of the fertilizer-box by a series of bent-wire stirrers, *v*, which operate as links to allow the bar W a parallel motion, but which are also extended up through the bottom of the fertilizer-box, and again bent into horizontal position to form little arms, which, as the bar W reciprocates, are made to vibrate over the feed-throats, Figs. 1 and 2, for the fertilizer, and sift the same through.

In securing the other or slower raking movement, a worm, X, Fig. 3, is arranged on the

feed-wheel shaft, and is made to engage with a wheel, Y, journaled upon a vertical bearing on the cross-board N, Fig. 4. This wheel has attached to its axis a toothed segment, *w*, (see dotted lines, Fig. 3,) which plays in a yoke, *x*, having a rack upon each side, so that a slowly-reciprocating movement is given to the attached bar Z. The end of the bar Z is connected with an arm, *y*, of a vertical rock-shaft, *z*, Figs. 1 and 3, from the upper end of which a bent arm, A′, Figs. 1 and 2, passes over the grain-box and descends into the fertilizer-box, where it is attached to a longitudinal rake, B′, having teeth, one series of which are sharp, for cutting the fertilizer, and the alternate ones flat, to stir and transfer the same. The ends of this rake are supported in its back-and-forth movement by rock-arm *a′*, Fig. 2.

To regulate the amount of fertilizer to be sown, two levers, *b′ b′*, Figs. 1 and 3, are arranged in the rear of the box, after the manner of the grain-adjusting levers *f*—that is to say, they are pivoted at their outer extremities to the stationary frame, and in the center connected with each other. To these levers are attached slide-bars *c′*, connected at their front ends with a continuous bar, C′, Figs. 1 and 3, at right angles thereto, which carries metallic slides *d′*, Figs. 1 and 2, that fit the orifices of the feed-throats, and which, when the levers *b′* are moved, open or close said throats to the adjustment desired.

I do not claim, broadly, the moving of all of these slides together, but only my specific devices for accomplishing the same, which gives an equal and parallel motion.

D′, Figs. 1 and 4, is the grass-seed box. This may be arranged in front of the grain and fertilizer box, as shown, or in the rear thereof, as indicated in dotted lines, Fig. 4, and for this purpose the frame has seats, both in the front and rear, to accommodate the supports of said box. When located in front of the grain-box, the feed-slide e^2, Fig. 4, in said box is attached to a lever, e^1, Figs. 1 and 3, which at the rear is connected with the shaker-bar W, Fig. 3, which latter serves, through said lever, to operate the slide of said grass-seed box. When said box is to be arranged in the rear of the grain and fertilizer box, as shown in dotted lines, Fig. 4, a lever, *f′*, Figs. 1 and 3, serves to operate the slide by its connection with the same shaker-bar.

E′, Figs. 3 and 5, is the land-measurer, consisting of a series of ratchet-wheels with graduated faces, arranged for a diminishing gear, as heretofore used. This land-measurer is moved by means of a pawl, g^1, and lever g^2, connected with the rocking arm *y*, Figs. 5 and 3, which operates the slowly-moving rake of the fertilizer-box.

I do not claim any special form of land-measurer here, but only its arrangement in connection with the slowly-moving rake-arm, whereby I avail myself of the diminished speed of these devices, and thus obviate the necessity of an increased number of wheels in the land-measurer.

In order to throw the fertilizing devices out of gear, the pinion T is provided with a clutch, T^2, which is made to slide upon its shaft against the tension of a spiral spring, so as to allow the pinion T to be either rigid or loose on the crank-axle U, and this movement is effected by an elbow-lever, *h′*, held to its adjustment by a spring, *i′*, Figs. 2 and 5.

In arranging the draft-bars of the tubes carrying the shovels, one series is attached to a rocking bar, O, and the alternate ones to a second parallel rock-bar, G′, as has been heretofore done, the object being to arrange the drill-tubes in zigzag style. These rock-bars are simultaneously shifted or secured by a rod, *j′*, from the rear, Fig. 4, connected at the front with a lever, *k′*, which, (see Figs. 1 and 4,) upon opposite sides of its fulcrum, is attached, through rods *l′*, with arms *m′* upon the rock-bars.

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

1. The combination, with the pivoted trough-bottom *k* and rod *j* for the grain-feed, of the inclined forks *i*, continuous bar *h*, slide-bars *g*, and connected levers *f*, substantially as shown and described.

2. The combination, with the draft-bars *n n* and the tubes L, of the spring-bar *o*, made continuous throughout the length of said draft-bars, and arranged to fulcrum or bear upon the connecting-bolt *z′* of said draft-bars, as shown and described.

3. The tube-lifting bar P, pivoted upon cranks, and having one of its cranks extended through and bent upon the opposite side of its bearing, in combination with the swinging arm G and its gear-wheels, to secure the simultaneous lifting of the tubes and disconnection of the driving devices, substantially as described.

4. The vertically-pivoted clevis-shaped frame R, having rack-teeth, combined with the independent toothed head and rigid lever located in said frame, the chain *r*, and lifting-bar P, substantially as and for the purpose described.

5. The feeding devices for the fertilizer, consisting of the shaker-bar W, having bent stirrers *v*, for supporting the bar and forming fast-motioned stirrers for the throats, and a longitudinal rake, B′, arranged in the hopper, and having a slow motion, all combined with each other and with the mechanism for driving the same, substantially as described.

6. The combination, with the continuous gage-bar C′ and gage-slides *d′*, for regulating the amount of the fertilizer, of the means for operating the same, consisting of the connected levers *b′* and the slide-bars *c′*, attached to said gage-bar, substantially as shown and described.

7. The land-measurer, combined with and

operated by the rock-arm *y* of the slow-motioned rake, for the purpose described.

8. The worm X on the feed-wheel shaft, combined with the wheel Y, having segmental pinion, the yoke-bar Z, the rock-arm *y*, the vertical rock-shaft *z*, rake-supporting rack-arm *a'*, and rake B', substantially as shown and described.

The above specification of my invention signed by me this 15th day of January, 1878.

MARTIN V. DADISMAN.

Witnesses:
SOLON C. KEMON,
EDWD. W. BYRN.