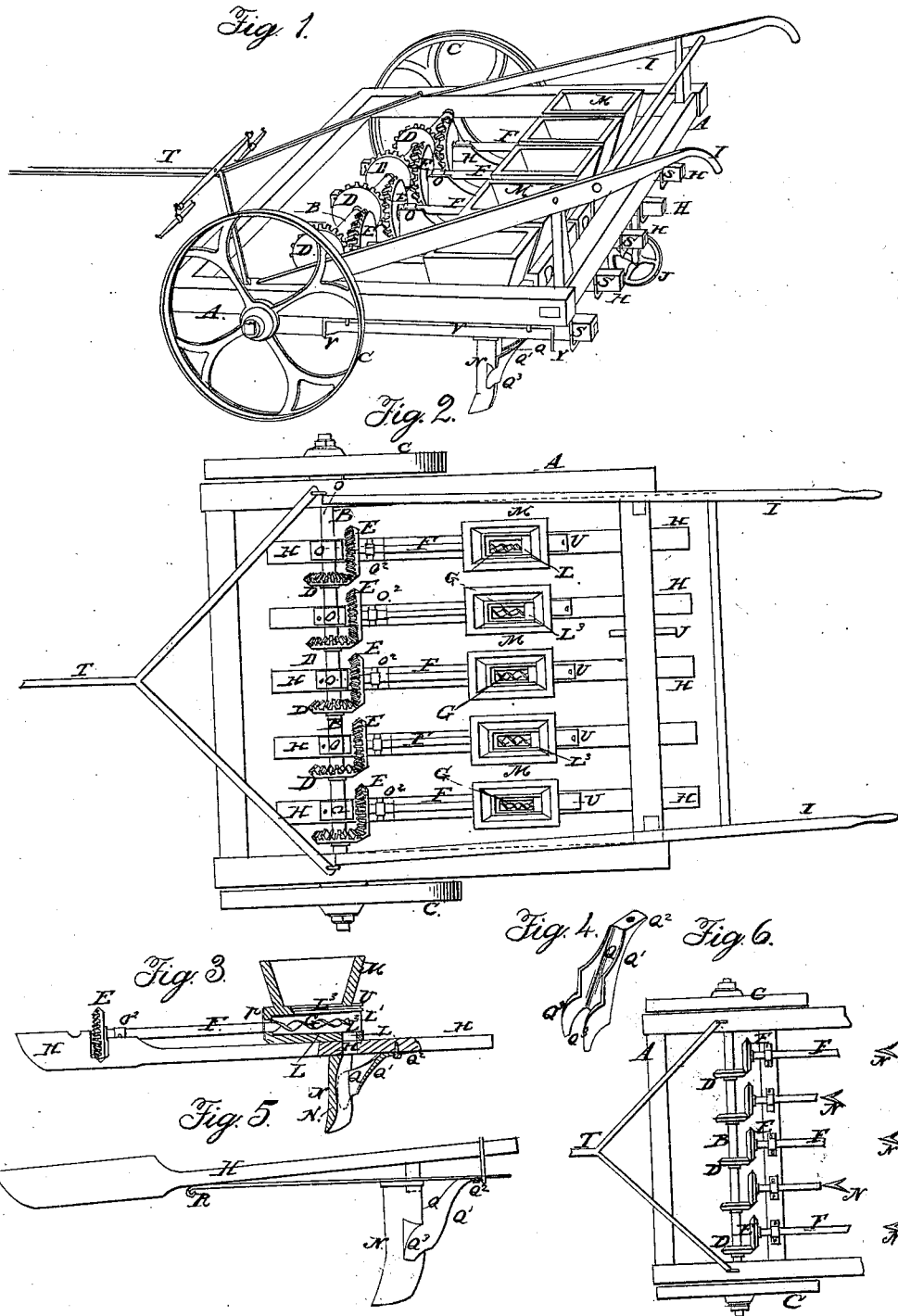


R. J. GATLING.

Grain-Drill.

No. 5,703.

Patented Aug. 10, 1848.



# UNITED STATES PATENT OFFICE.

RICHARD J. GATLING, OF MURFREESBOROUGH, NORTH CAROLINA.

## IMPROVEMENT IN MACHINES FOR SOWING SEEDS, &c.

Specification forming part of Letters Patent No. 5,703, dated August 10, 1848.

*To all whom it may concern:*

Be it known that I, RICHARD J. GATLING, of Murfreesborough, in the county of Hertford and State of North Carolina, have invented a new and useful Machine for Seeding and Spreading Manures, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view of the machine. Fig. 2 is a bird's-eye view of the same. Fig. 2 is a vertical longitudinal section of a beam, screw, plow, &c., detached from the machine. Fig. 4 is a perspective view of one of the combined plow-braces and conductors. Fig. 5 is a section showing the plow attached to an additional hinged beam or bar, made of iron and hinged to the under side of the wood beam. Fig. 6 shows a modification of the machine which dispenses with hanging the beams to the main axle, and shows the plows arranged in advance of each other in alternate rows.

Similar letters in the several figures refer to corresponding parts.

The frame A is made of an oblong form, resting upon an axle, B, of a pair of supporting and propelling wheels, C C, the axle turning in suitable boxes fastened to the under side of the two side pieces of the frame, about one-third its length from the forward end thereof, said axle containing the cog-wheels D, which are geared with the cog-wheels E on the shafts F of the feeding-screws G, hereinafter described, said axle also supporting the ends of the parallel beams H, hereinafter described. The frame A is provided with two handles, I I, by which the machine is governed.

J is a third wheel, arranged under the rear end of the frame, for regulating the depth that the cultivators are to enter the earth. It turns in a box attached to the rear end of the frame, adjusted by a screw, by which the depth of drilling may be increased or diminished at pleasure.

Here the parallel beams, attached to the main axle B, and to which are attached cog-wheels E, feeding-screws G, concave blocks L, hoppers M, drill-teeth or plows N, combined conducting-spouts and braces Q', hereinafter described. These beams are made of hard wood or iron, of any convenient size, attached to the axle B by suitable boxes, O, fastened to

them near their forward ends, and to the rear end of the frame are connected loosely by staples S. They are pierced with round openings H<sup>2</sup>, Fig. 3, directly behind the plows, for the seed or manure to pass from the concave blocks.

The plows N are made and secured to the beam in the usual manner.

The combined conducting-spouts and braces Q' are made of cast-iron, the segment of a circle on the rear surface or back; or they may be made straight, in the form of a concave spout, on the side next the rear side of the plow, which is also made concave, having a perforated flange, Q<sup>2</sup>, Fig. 4, by which it is bolted or screwed to the under side of the beam, having also wings Q<sup>3</sup>, that embrace the plow by entering corresponding cavities or depressions made in the wings of the plow. These spouts are cast without the use of cores, which generally increase the expense of the casting operation.

The concave block L aforesaid is bored longitudinally through the center, forming an opening, L<sup>2</sup>, Fig. 3, in the form of a frustum of a cone, into which the seed or manure is conducted through a trapezoidal-shaped aperture, L<sup>3</sup>, made in the top of the block L, from which it is discharged (by the screw, which revolves in said concave block) through a vertical opening, L<sup>4</sup>, at the rear end of and in the bottom of the block L, leading to the opening H<sup>2</sup> in the beam which conducts to the spout Q and brace. The rear end of the opening L<sup>2</sup> in the block is open. The front or small opening is closed by a metallic plate, p, fastened to the end of the block, perforated in the center with a round opening, which forms one of the boxes of the screws, the other box being fastened to the top of the beam in such position as to bring the axis of the screw on a line with the axis of the main axle, so that when the rear end of the frame, with its appendages, is raised or lowered on the main axle as its fulcrum the cog-wheels will remain in gear, and the axis of the screw will always be in a straight line with the center of the main axle.

The feed-screw G for sowing and spreading is made in the form of a single or double twist auger or other screw, the twisted portion G for conveying the seed from the cavity I<sup>2</sup> in the block L to the opening H<sup>2</sup> in the beam and the conducting-spout Q being made about

the length of the cavity  $L^2$  in the block, and the shank F long enough to reach through the center of the cog-wheel fastened to the same. Only one feed-screw is described. The others are made in a similar manner.

The tongue T, to which the animals are geared for drawing the machine forward or for backing it, consists of a bar of wood or iron having two branches attached to ring-bolts inserted into the frame, nearly vertically over the axle-tree, provided with the usual kind of whiffletree, to which the horses are geared for drawing the machine forward, and the end of the tongue with rings and breast chains for backing the machine. One of the wheels is fast on the axle-tree and the other is loose.

A right-angled lever or lock-bar, V, is attached to the under side of the frame by staples or eyebolts, for locking the wheel that is fast on the axle to the frame to prevent the gearing and feed-screws from turning when the machine is about to be turned, at the end of the row, for the purpose of preventing the descent or feed of the seed or manure.

The rear ends of the beams are kept at their required distances apart and retained in their proper places, and lifted from the ground when desired, by the staples S, inserted into the under side of the frame.

A slide, U, with beveled edges, is inserted into corresponding grooves in the concave block for the purpose of partly closing or opening the trapezoidal opening  $L^3$ , or way leading to the opening  $L^2$  in the block, for the purpose of regulating the quantity of the seed or manure to be distributed from the hopper to the feed-sower, and for closing the bottom of the hopper entirely when required.

The plows and sowing apparatus may be arranged in front of the main axle, if desired. The plows may also be arranged the one in advance of the other, if desired, or in any convenient way.

The plow and concave brace may be fastened to a bar of iron hinged to the under side of the beam, as represented at R, Fig. 5.

Operation: The slides U being properly set to correspond with the kind of seed to be sown, the hoppers M are to be filled with the seed. The operator lays hold of the handle I and drives the team forward in a straight line across the field to be sown. The turning of the propelling-wheels C, by their friction on the ground, turns the main axle B and cog-wheels D, affixed thereto, and these turn the cog-wheels E, affixed to the screws G, which are caused to revolve, and the revolving of the screws carries the seed from the concave blocks L, or lower portions of the hoppers, to the conducting-spouts  $Q^x$ , which conduct it to the furrows made by the plows N. The loose earth, passing around the wings of the plows, falls over upon

the seed, and thus covers it. On the arrival of the machine at the end of the rows, or of turning, the fast wheel on the main axle is locked by turning the right-angled bar V so as to bring the arm against a spoke of the wheel. This locks the machine and prevents the cog-wheels and screws from turning, and holds the seed in the hoppers. The machine being turned round, the wheel is unlocked and the team driven forward, which causes the screws to revolve and the seed to be sown regularly and evenly in straight parallel rows. In backing the machine the screws will be made to turn in a contrary direction, having a tendency to screw or force the seed back into the hoppers, instead of screwing it from them, thereby wasting no seed in backing, as experienced in the use of other machines. When the plows become clogged or choked with weeds, stones, or grass, &c., the operator has only to elevate the handles, which instantly relieves the teeth of said obstructions without stopping the motion and operation of the machine or throwing any part of the machinery out of gear, the main axle answering as a fulcrum to the frame and handles, which are used as the lever for raising the plows, hoppers, &c., the attachment of the tongue being on the top of the frame, nearly over the center of the main axle, allowing of this effect being produced, and which cannot be accomplished in machines having the tongue inserted between hounds or jaws attached to the front of the machine.

The machine might be made of a triangular or harrow shape and the propelling-wheels and gearing placed behind to adapt the plows to the inequalities of ground.

The plows and hoppers could be placed in zigzag order or on parallel transverse lines, one in advance of the other, by which the plows would not be so liable to clog or choke, and might better pulverize the earth.

This machine may be used as a cultivator without removing the screws by simply bringing the plows between the rows.

The screws may be made tapering, if desired.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a revolving screw or screws, G, with a hopper or hoppers, M, and hollow cultivator-teeth N, for sowing seed, whether made in the manner above described or other mode substantially the same.

2. The peculiar manner of constructing and combining the concave winged braces Q' with the drill teeth or plows N, so as to make them answer the double purpose of conductors and braces, as above described.

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Witnesses:

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