

(No Model.)

L. E. WATERMAN.

GRAIN DRILL.

No. 365,109.

Patented June 21, 1887.

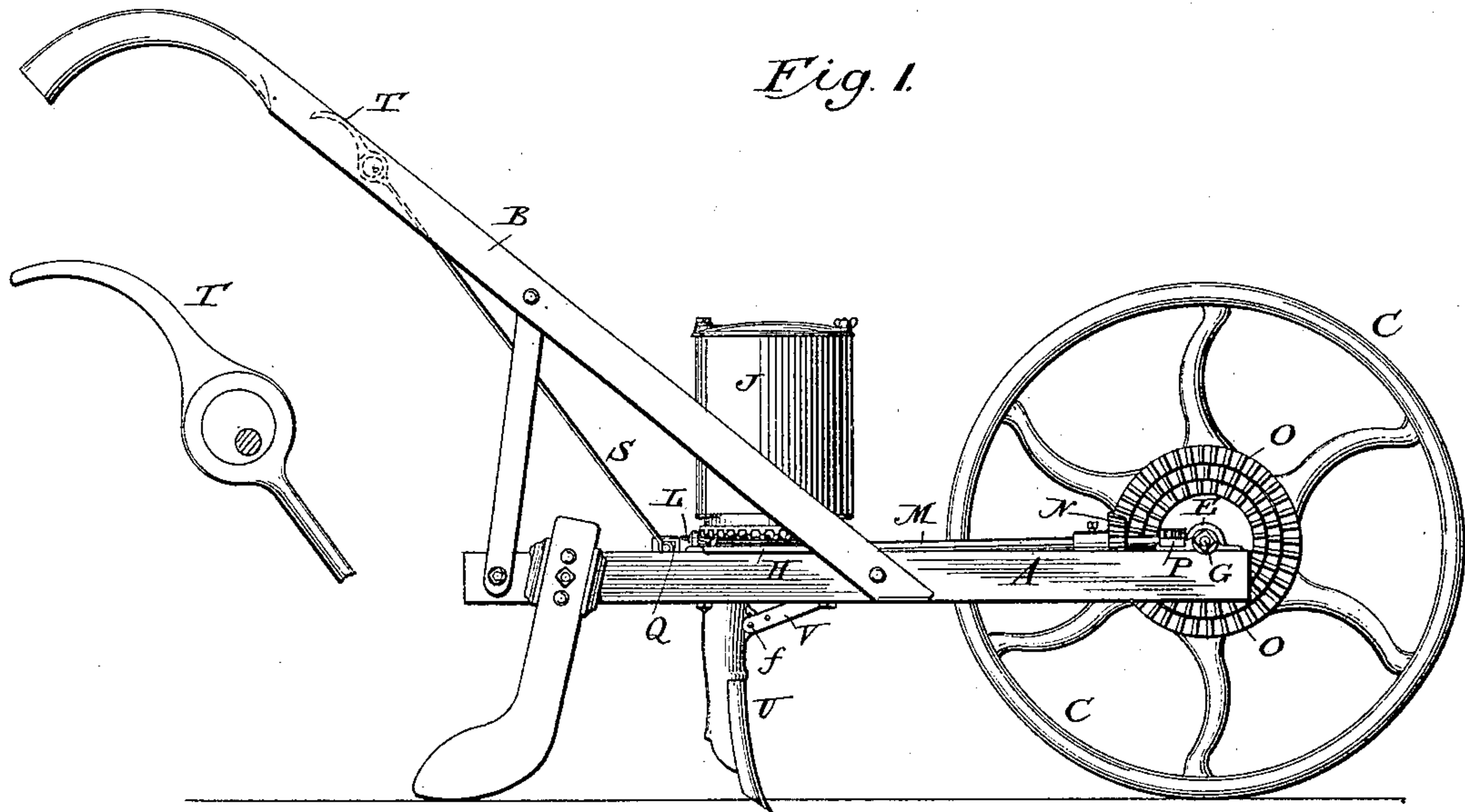
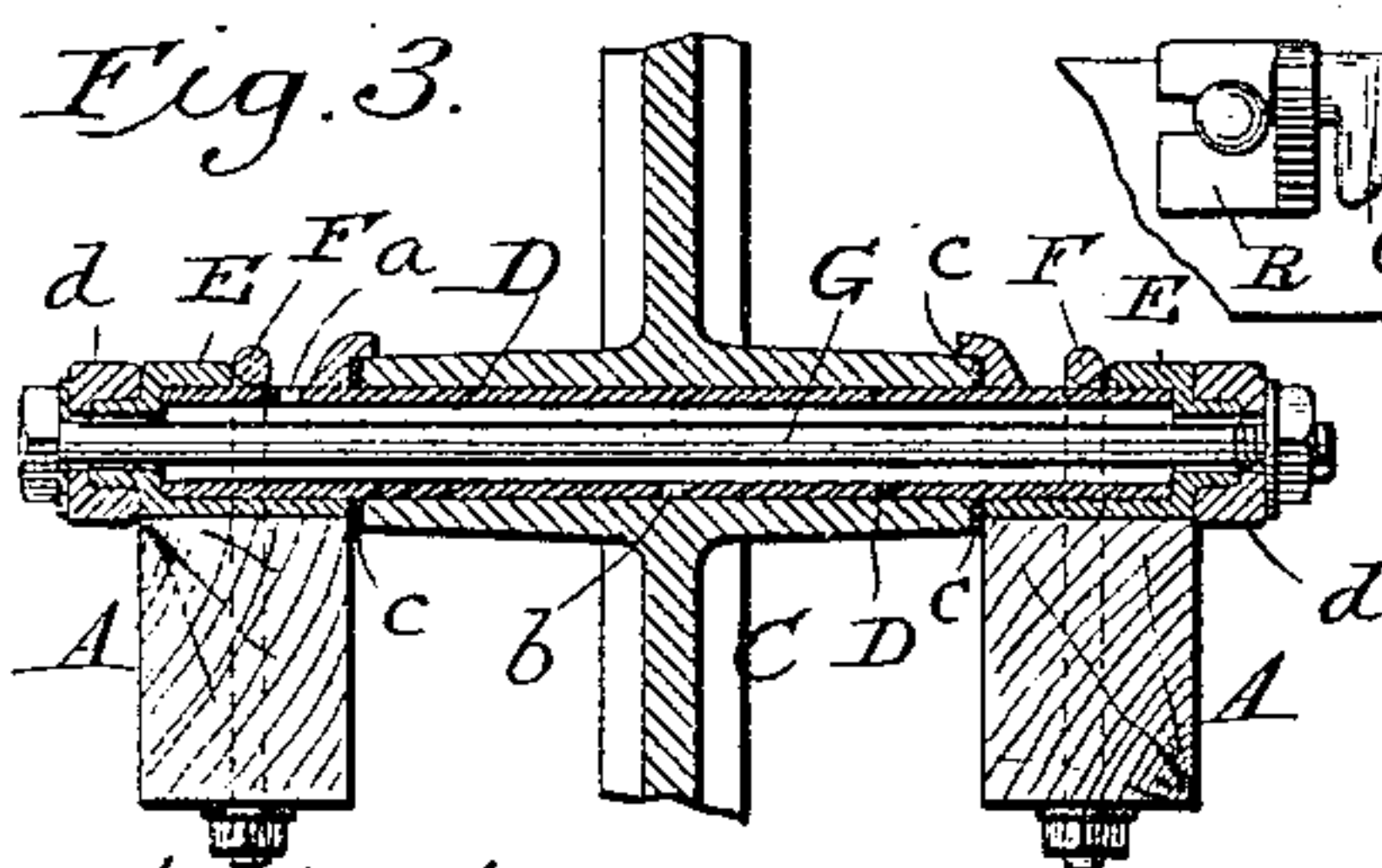
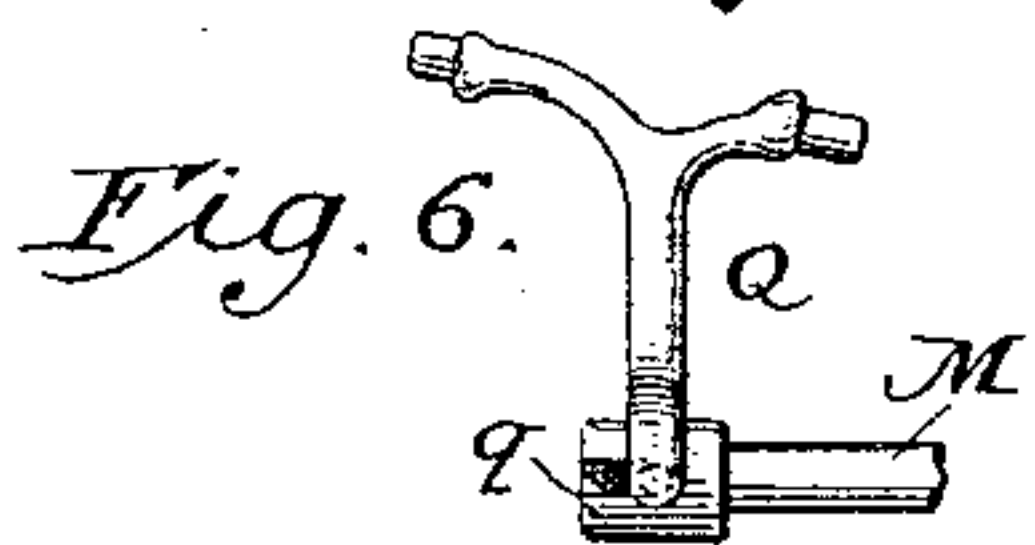
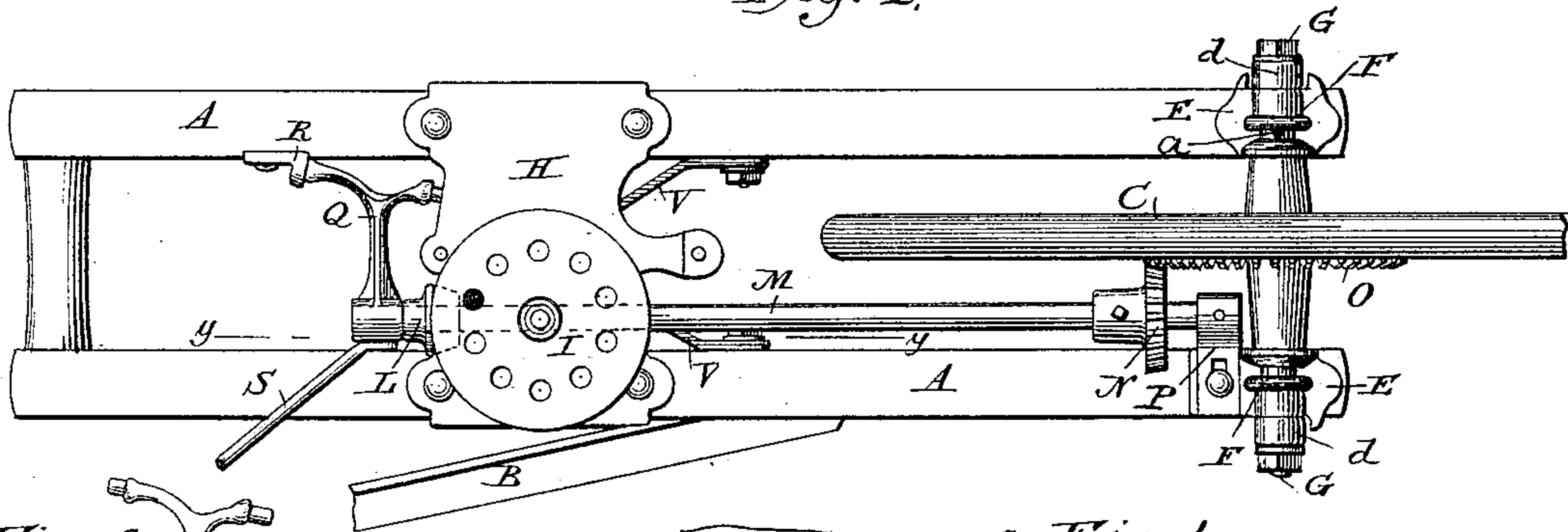


Fig. 2.



Attest.

*Sidney R. Hollingsworth*  
*William H. Shipley*

Fig. 4.

ON LINE Y-Y

Fig. 5.

ON LINE Z-Z

Inventor.

*Lewis E. Waterman*  
by *Phil. T. Dodge*  
attorney



# UNITED STATES PATENT OFFICE.

LEWIS E. WATERMAN, OF MOLINE, ILLINOIS, ASSIGNOR TO THE MOLINE  
PLOW COMPANY, OF SAME PLACE.

## GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 365,109, dated June 21, 1887.

Application filed August 9, 1886. Serial No. 210,428. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS E. WATERMAN, of Moline, in the county of Rock Island and State of Illinois, have invented certain Improvements in Grain-Drills, of which the following is a specification.

This invention relates to that class of walking-drills in which a frame carrying the seed-dropping mechanism and a drill-tooth is sustained at its forward end by a central wheel which imparts motion through suitable gearing to the dropping mechanism; and the improvement has reference to various peculiarities of construction and combinations of devices, hereinafter explained.

In the accompanying drawings, Figure 1 is a side elevation of my improved machine. Fig. 2 is a top plan view of the same, a portion of the seed-dropping mechanism being removed. Fig. 3 is a vertical axial section through the main wheel and adjacent parts. Fig. 4 is a longitudinal vertical section on the line *y y*, Fig. 2, showing the dropping mechanism and attendant parts. Fig. 5 is a cross-section on the line *z z*, showing the form of the drill-tooth.

In the drawings, A A represent two horizontal timbers, forming the base of the main-frame, suitably connected at their rear end, and provided, as usual, with handles B, by which the attendant guides and controls the machine while walking in rear thereof.

C represents the main wheel, located at the front of the machine, between the timbers A. It is commonly cast complete in one piece with a long tubular hub—that is to say, a hub having a central opening therethrough from one end to the other, for a purpose which will presently appear. This hub revolves upon a central tubular axle, D, which is extended therethrough and seated at its ends in bearing-plates E, secured to the top of the timbers A. The tubular axle is secured in place by means of hook-bolts F, which pass thereover, and thence downward through the plates E and through the frame-timbers A to the under side, where they are secured by nuts. The bolts thus applied serve the double purpose of holding the axle against longitudinal or rotary motion and securing the plates E firmly in place on the frame. At its outer end the

tubular axle is provided in an exposed position with an opening, *a*, for the introduction of oil or other lubricant, and at one or more points within the hub the tube is provided with openings *b*, through which the oil may escape to the inner surface of the hub.

The bearing-plates E are adapted to receive and encircle the ends of the hub, in order to seal the joints and prevent the entrance of dust and other foreign matters to the wearing-surfaces.

If desired, washers of felt or equivalent elastic material may be introduced between the ends of the hub and the plates E, as shown at *c*. These washers will serve the twofold purpose of preventing the escape of the lubricant and of closing more effectually the joints between the parts.

For the purpose of holding the bearing-plates E inward against the ends of the hub, I pass centrally through the axle and through the bearing-plates a horizontal bolt, G, having a head on one end and a nut on the other. If desired, caps *d* may be placed around this bolt at the outer ends of the bearing-plates E; but these are not necessary features of the construction.

By the construction and arrangement of the parts above described I am enabled to support the wheel firmly in place, to compensate for wear, and to keep the wearing-surfaces thoroughly lubricated at all times.

At a suitable point on the frame I mount a seed-dropping mechanism consisting of a horizontal base-plate, H, bolted firmly in place, a horizontal dropper-plate, I, provided with a series of seed-cells therethrough, a hopper or seed-box, J, above the dropper-plate, and an independent cut-off. The seed-cells, being filled from the mass above, are carried successively by the rotation of the plate beneath the cut-off and over an opening through which the seed descends, as in similar mechanisms at present known in the art.

The dropper-plate is provided at its under side with spur-teeth and receives motion from a beveled pinion, L, mounted on one end of a shaft, M, which is extended forward and provided with a second pinion, N, engaging teeth O, formed on the side of the main wheel. As shown in Fig. 1, there are three series or cir-



cles of these teeth at different distances from the center, so that the speed of the pinion N and the feed devices may be modified by adjusting the pinion N to engage the teeth of one or another series. To permit this adjustment, the pinion N is secured to its shaft by a set-screw or equivalent fastening.

The shaft M is supported at its forward end by a plate, P, slotted and secured to the frame by a bolt passing through said slot, this construction allowing the shaft and pinion to be adjusted to compensate for wear, so that the pinion will at all times run in close engagement with its driving-teeth. The rear end of the shaft M is supported in a plate, Q, arranged to swing vertically, in order that the pinion I may be thrown out of engagement when the dropping mechanism is to be stopped.

The frame Q is formed with arms or journals which are mounted one in the plate H and the other in a plate, R, bolted to one of the frame-timbers. The plate Q has its forward journal elongated, so that the plate may be moved forward to compensate for wear between its front side and the rear face of the pinion, and to permit this compensating adjustment the plate R is slotted and secured by a bolt passing through the slot.

In order to permit the proper movement of the parts to effect the disengagement of the pinion, the journals of the plate Q are arranged in a line oblique to the axis of the shaft M, as shown. The movement of the frame Q to throw the pinion into and out of gear is effected by a rod, S, attached thereto and extending thence upward by the side of one of the handles B, where its upper end is mounted on an eccentric lever, T, pivoted to the handle in such position that it may be conveniently operated by the attendant. When this eccentric is turned downward, the pinion is disengaged; but when it is turned upward it lifts the pinion and, passing the center, holds the same in engagement.

For the purpose of opening the furrow to receive the seed, I employ the hollow drill-tooth U, the upper end of which is formed with laterally-projecting journals or trunnions e, which are seated in holes in the inner sides of the frame-timbers A, as plainly shown in Fig. 5, this arrangement holding the tooth against lateral motion and permitting it to swing backward and forward, as required. The tooth is maintained normally in its operative

position by forked braces V, secured at their ends to the frame-timbers and united at their rear ends to an ear on the tooth by a wooden break-pin, f, or otherwise.

The plate or bracket Q, instead of being cast complete in one piece with the rear bearing for the shaft M, may be made, as shown in Fig. 6, with its free end divided or forked, to embrace a bearing-block, q, swiveled to it by studs entering slots in the upper and under sides of block q.

Having thus described my invention, what I claim is—

1. In a walking-planter, the ground-wheel having a tubular hub, in combination with the main frame, a continuous tubular axle extending through and beyond the ends of the hub and provided within the hub, and also exterior thereto, with perforations, whereby the axle forms a lubricant-receptacle, and cap-plates, substantially as described, closing the ends of the hub and axle, substantially as and for the purpose specified.

2. In combination with the wheel having the tubular hub, the tubular axle passing through and beyond said wheel, the end plates, E, flanged to encircle the ends of the hub, and the elastic packing inserted between said plates and the ends of the hub, as described, whereby the oil is retained and dust and dirt excluded from the wearing-surfaces.

3. In combination with the wheel having a tubular hub, the tubular axle passing there-through, the plates E, serving as bearings for said axle and as end plates for the hub, and the bolts F, applied, as described, to hold both the axle and the bearing-plates in position and connect them with the frame.

4. In combination with the dropper-plate having beveled teeth, the driving-shaft, the pinion fixed on said shaft and engaging the teeth of the dropper-plate, and the swinging shaft-supporting arm Q, having its axis arranged in a line oblique to the axis of the shaft, whereby it is permitted to swing and throw the pinion into and out of action without binding or cramping upon the shaft.

In testimony whereof I hereunto set my hand, this 30th day of July, 1886, in the presence of two attesting witnesses.

LEWIS E. WATERMAN.

Witnesses:

A. HANSON,  
L. C. ARP.