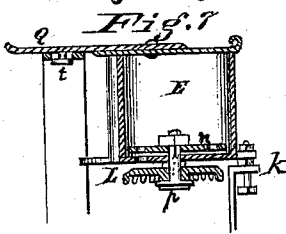
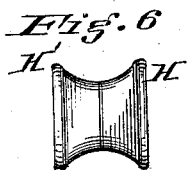
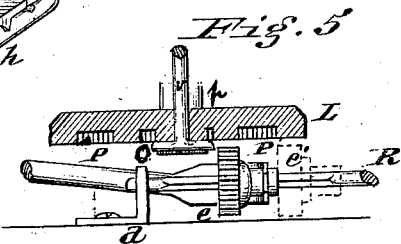
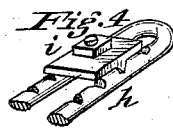
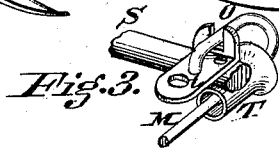
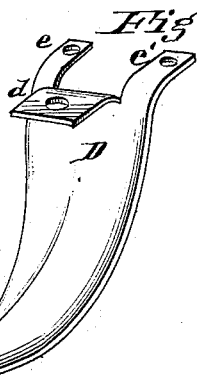
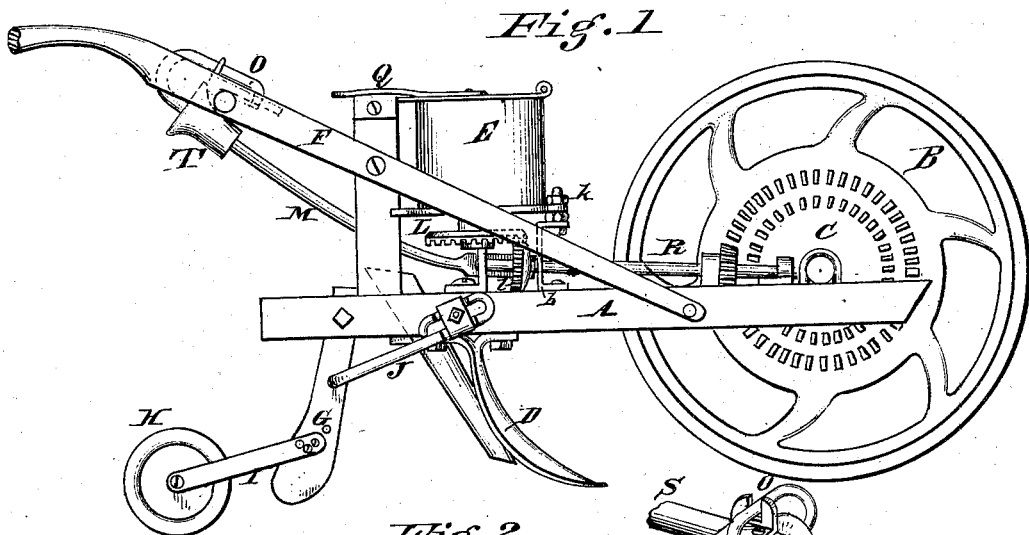


J. CAMPBELL.  
Pilot-Wheel Corn-Drill.

No. 165,155.

Patented July 6, 1875.



Attest  
Herman Merrell  
John O'Garra

Inventor  
James Campbell  
by Wood & Boyd  
his Attorney

Fig. 8



# UNITED STATES PATENT OFFICE.

JAMES CAMPBELL, OF HARRISON, OHIO.

## IMPROVEMENT IN PILOT-WHEEL CORN-DRILLS.

Specification forming part of Letters Patent No. 165,155, dated July 6, 1875; application filed December 19, 1874.

*To all whom it may concern :*

Be it known that I, JAMES CAMPBELL, of Harrison, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Pilot-Wheel Corn-Drills, of which the following is a specification :

My invention relates to an improvement in pilot-wheel corn-drills.

The object of my invention is, first, to construct the drill so that a change of speed may be made while the drill is in operation to drop the seed thicker or farther apart, according to the fertility or richness of soil; and consists in pivoting the seed-box so that it may be raised a sufficient distance to allow a shifting of the gear beneath the seed-box.

Other features of my invention relate to improved methods of constructing various portions of the drill, all of which will be fully explained in the following specification.

In the drawing, Figure 1 is a side elevation of my improvement. Fig. 2 represents an improved furrow-tooth. Fig. 3 is a perspective sectional view of a device for changing and holding the gear in mesh. Fig. 4 represents a sectional view of the adjustable brace for attaching the covering-shares. Fig. 5 is a sectional view of the gear for driving the seeder. Fig. 6 represents a covering-roller. Fig. 7 is a vertical section through the center of the seed-box. Fig. 8 is a catch-plate for holding the seed-box in position.

A represents the frame of the drill; B, the pilot driving-wheel; C, the driving-gear; D, a furrow-tooth, which is attached and braced to the frame of the machine by means of the ears *d e e'*, shown in Fig. 2. These ears are made by cutting and bending over the top of the furrow-tooth, which may be made of iron or steel, whereby the furrow-tooth is constructed in a much cheaper and simpler manner than heretofore. E is the seed-box, with the dropper-plate and box constructed generally as shown in reissued Letters Patent granted to J. & J. A. Campbell September 1, 1874. The box is secured to the frame A by means of bracket *b*. K represents a pivot-bolt, which extends below the seed-box E a sufficient distance to allow the box when not fastened down to rise a sufficient distance to allow gear L to rise out of mesh with worm-

pinion *l*. Q *t s* represent a slotted catch-fastening for holding down the cover, and for keeping the seed-box down and the gearing in mesh. L represents a gear-wheel, which is secured to the dropper-plate by means of a sleeve and a T-headed bolt. P O represent two sets of gear-teeth, cast on pinion L, to allow a change of speed as pinion *l* is shifted from one side to the other. Pinion L is cast with a sleeve, *p*, projecting up through the bottom of the seed-box a sufficient distance to pass through the revolving dropper-plate *n*. Pinion L is secured to the dropper-plate *n* by means of a T-headed bolt, *v*, passing up through the sleeve, the head of the bolt resting in a slot, *r*, in the face of pinion L, and firmly secured in position by means of a nut. This T-headed bolt may have three or more lugs, fitting in corresponding grooves in the face of pinion L, if desired. *l* represents an adjustable pinion sliding on shaft R. The dotted lines in Fig. 5 show its relative position with gear L when in mesh with the larger pinion. M represents an adjustable rod, which clutches pinion *l*. The upper end O is bent, and forms a hook for engaging in the holes *t*, as shown in Fig. 3. T is a thimble or wedge, sliding on rod M, which passes under brace-rod S to hold rod M in a fixed position. J represents a brace for adjusting the covering-shares G. These shares are bolted to the frame A, and the brace J is fastened to the shares G and frame A at a suitable angle for firmly bracing the shares. This brace has a slot at one end, so as to form an opening for the passage of the bolt, and it is constructed with a series of notches, *h*, as shown in Fig. 4. A nut, *i*, has a lug upon its under side, fitting into the notches of slot *h*, and they are firmly secured together by a tap. When it is desired to change the pitch of shares G the nut is slackened sufficiently to allow the lug to be moved up or down one or more notches, as desired. H H' represents a roller made in two parts, as shown in Fig. 6. This roller is attached to the shares G by means of shaft I, as shown in Fig. 1, and so as to enable it to be readily adjusted to roll over the ground with greater or less pressure, as desired, by changing the angle or height of the roller.

Instead of using covering-shares G, brack-

ets H may be used for attaching the roller H to the drill-frame, and the roller only being used to cover the seed if desired; but it is preferable to use covering-shares, as they cultivate the ground and check the growth of weeds more effectually than by the use of the roller alone.

The mode of changing the speed when the drill is in operation is as follows: Thimble T is drawn back on rod M, so that catch Q *t* can be raised out of its seat in slot *s*; and the grain-box is raised on bolt K, either by pressure on handle M or by pulling catch Q toward the operator, so that the gearing L *l* is drawn out of mesh. Rod M is pushed forward or pulled back, as the case may be, by shifting pinion *l*, so as to mesh with either pinion-teeth O or P, as desired. When handle O is in position, as shown in Fig. 3, pinion *l* is in mesh with pinion-teeth O. When the hook in handle O is caught in the forward slot, as shown in Fig. 3, the pinion *l* is in mesh with the large set of pinion-teeth P.

It is obvious that the machine can be left out of gear by bringing pinion between the two sets of pinion-teeth, O P.

Having thus described my improvement, what I claim as my invention is—

1. The adjustable pinion *l*, in combination with the pinion L on the seed-box E, adapted to rise to allow a change of speed when the drill is in operation, substantially as herein set forth.

2. The combination of the pinion *l*, slide-rod M O, with pinion L, and pivoted grain box E, constructed and arranged substantially as herein set forth.

3. The furrow-tooth D, having at its upper end the rearwardly-projecting ears *e e'* and the forwardly-projecting central ear *d*, all of said ears being stamped or cut from the end of the tooth, substantially as described.

4. The sliding-wedge or thimble T, for securing gear-rod M in any desired position, substantially as herein set forth.

5. The fastening device shown in Fig. 3, constructed and arranged as herein set forth.

In testimony whereof I have hereunto set my hand this 11th day of December, 1874.

JAMES CAMPBELL.

Witnesses:

JOHN O. GARA,  
E. E. WOOD.