

Fig. 1.

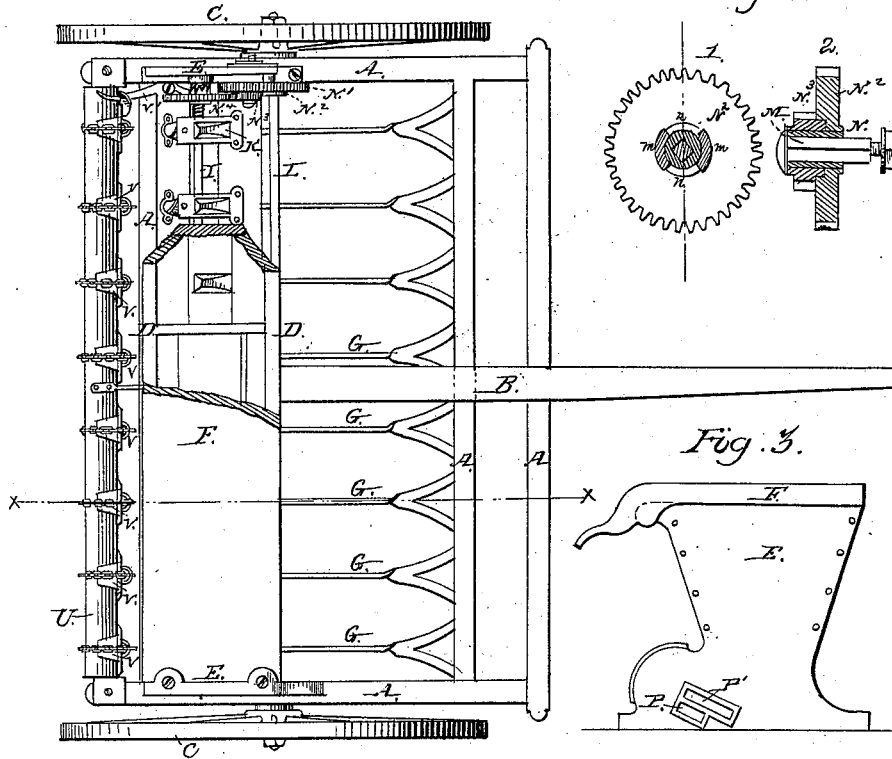


Fig. 5.

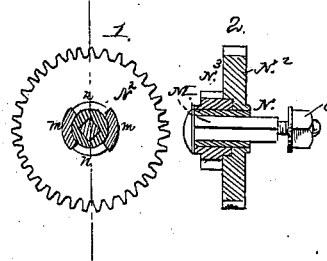


Fig. 3.

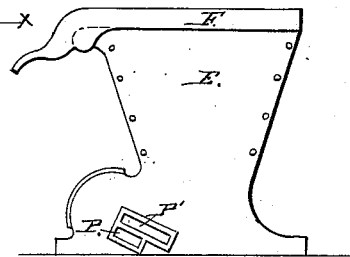


Fig. 2.

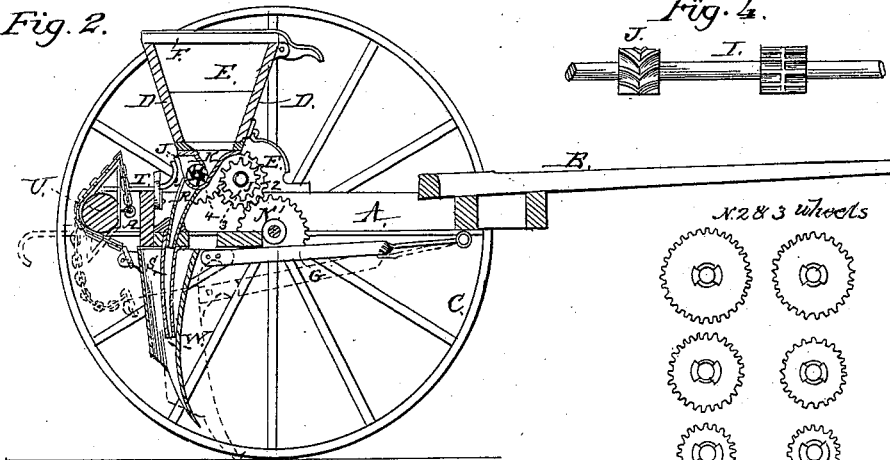
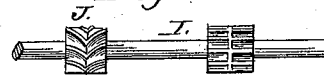


Fig. 4.



x283 wheels

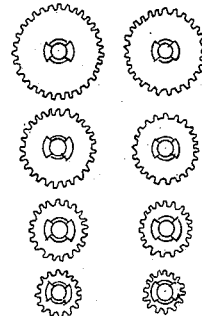


Fig. 6. Inventor:

J. Ingels
By *[Signature]*
Attorneys

Witnesses:

C. D. Smith
G. Schellin

J. INGELS.

Grain-Drill.

No. 53,005.

Patented Mar. 6, 1866.

Fig. 9.

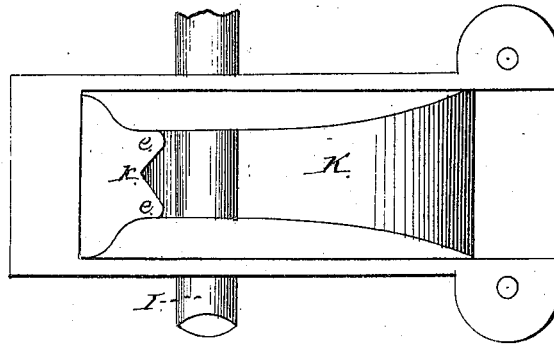


Fig. 7.

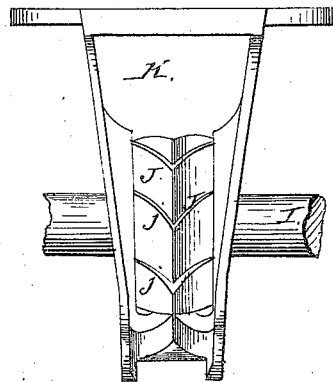
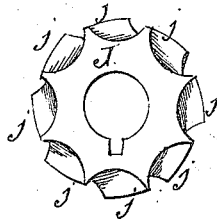


Fig. 8.



Witnesses:
E. D. Smith
G. Schuster

Inventor
J. Ingels
By Mumvols
Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH INGELS, OF MILTON, INDIANA.

IMPROVEMENT IN GRAIN-DRILLS.

Specification forming part of Letters Patent No. 53,005, dated March 6, 1866.

To all whom it may concern:

Be it known that I, JOSEPH INGELS, of Milton, in the county of Wayne and State of Indiana, have made new and useful Improvements in Seeding-Machines; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the same, reference being had to the accompanying drawings, which are made part of this specification, and in which—

Figure 1 is a plan view of my machine. Fig. 2 is a vertical section on the line *xx*, Fig. 1. Fig. 3 is a side elevation of the hopper-head or end of the box containing the seed. Fig. 4 is a view of two descriptions of feed-wheels, of which the one on the left illustrates my improvement. Fig. 5, first, is an elevation, and, second, a section of the wheels, which are interposed between the driving-shaft wheel and the feed-shaft wheel. Fig. 6 are views of the various comparative sizes of the said interposed wheels, by selection from which the rate of feed is changed, as will be further described. Fig. 7 is an elevation view from the rear of the feed-wheel, and of the concave in which said wheel revolves. Fig. 8 is an elevation of the feed-wheel, detached from its shaft and from the concave. Fig. 9 is a plan or top view of the concave detached from its surroundings, with the exception of a portion of the feed-shaft.

The same letters in the different figures indicate corresponding parts.

My invention consists, first, in an arrangement for varying the feed, and it is accomplished by the provision of two slots in the hopper-head at different radial distances from the driving-shaft; and in either of which may be placed a shifting axis provided with changeable wheels; secondly, in the construction of the lever-bar loops by the revolution of which the hoes are elevated; thirdly, in the construction of the feed-wheel in respect of the shape of its teeth; and, fourthly, in the form given to the lower plate or discharge-orifice of the concave in which the feed-wheel rotates.

To enable one skilled in the art to which my invention appertains to construct and use the same, I will proceed to describe it.

A is the frame of the drill; B, the tongue; C C, the wheels; D, the hopper in which the seed is placed; E E, the hopper heads or ends;

F, the lid of the hopper; G, the drag-bar, and H the hoe, of which there is a series, each hoe receiving seed from its appropriate feed-wheel, which rotates below the hopper.

I is a shaft which extends the length of the hopper and carries the series of feed-wheels J, each of which rotates in its appropriate concave, K. The said shaft is driven by gearing from the main driving-shaft L in a manner to be described.

The main driving-shaft L is provided with a geared wheel, which may be called "No. 1," and this meshes with the gear-wheel No. 2, which is on a short axis, Fig. 5, formed by the bolt and sleeve M N, and secured into either of the slots P P'. The wheel No. 3 is secured to the wheel No. 2 by the engagement of the pins, projections, or clutch exhibited in Fig. 5 at *m m*, so that these two wheels (2 and 3) rotate together, wheel No. 3 meshing into wheel No. 4, (which I term the "clutch-wheel,") and which is on the feed-wheel shaft I, running freely thereon, until, by the trigger Q, it is brought into engagement with the corresponding clutch on the head of the shaft I.

The seed, as it falls from the discharge-orifice of the concave, is conducted by channels R S to the hoe H, and the latter are raised as may be required by the lever T, which rotates the bar U, to which the hoe-chains are attached. These chains pass over the V-shaped pieces V as the bar U is rotated. This latter action, by the impingement of the plate U' upon the lever V', has the effect of unclutching the wheel No. 4 and shutting off the feed.

The wheels shown in Fig. 6 are the changeable wheels, which are made to occupy the positions shown in Figs. 1 and 2, between the wheel on the driving-shaft No. 1 and the clutch-wheel on the feed-shaft No. 4. This change is made to vary the speed of No. 4, according to the varying necessities of the case, to sow little or much, as may be desired.

It will be apparent that if the size of No. 3 is reduced from that shown *in situ* in Fig. 2 the rate of motion of No. 4 will be reduced in consequence; but my invention consists of something more than a single series.

There are two slots, P P', in either of which the spindle of the changeable wheel is placed. The object of these is to enable a greater number of variations of the feed than is possible

with but one slot for said axis, for when but one slot is used, the wheel No. 2, or that next in series to wheel No. 1, the main shaft or axle will be a constant size, and the number of changes will be equal to the number of the wheels which connect wheel No. 2 with the clutch-wheel No. 4.

By making two slots, P P', in either of which the axis of the changeable second wheel may be placed, the said second wheel in series may be of a changeable size, admitting of a duplication of the number of changes. The said second wheel and the one communicating with the clutch-wheel are fastened together in any way and always move together. The change in the second wheel necessitates, as has been said, a change of the axis of the same to the other slot. A change in the third wheel only requires that the axis, in whichever slot it may be, is rocked back or forth, as the case may be, so that the teeth of the third may mesh into those of the clutch-wheel No. 4.

As arranged, the No. 8 and No. 4 wheels are used as second wheels, the latter in the slot nearest the driving-shaft. When No. 8 is in the upper slot the machine is adapted to sow wheat, rye, barley, in any desired quantity, regulated by means of the selection for a third wheel from among the others. Using No. 4 second wheel increases the speed and the rate of feed, and, in connection with a suitably-selected third wheel, adjusts the rate to sow the required quantity of oats. The quantity of each grain sown is, as has been said, regulated by the wheels, which are calculated to sow a specific quantity each of a given grain—for instance, with No. 8 as a second wheel and No. 1 as a third wheel three pecks per acre of wheat are intended to be sown. With a change of No. 2 in the place of No. 1 the amount is increased to one bushel, &c. To produce the same result with rye in quantity sown, one size larger of the third wheel will be used than with wheat, as the latter feeds through a given opening faster than rye.

The gearing described is all placed inside of the hopper-head, and is there protected against dirt, brush, or other things which are gathered up by and drop from the wheel, as also from other casualties incident to a more exposed or exterior position. This description may suffice for this part of my invention.

The second part of my invention consists in the construction of the lever-bar and the V-shaped loops secured thereto by two feet or flanges for elevating the hoes by the partial rotation of the bar. It will be readily understood from an examination of the drawings, Figs. 1 and 2. It consists of a bent plate, whose extended portions clasp and are secured to the bar U, the projecting portion forming a take-up or lifter to expedite the elevation of the hoes.

The diagonal or V-shaped teeth on the feed-wheel, which rotate base first, drag the grain from the outside toward the center—that is, from the cheeks of the concave K toward its center, preventing mashing of the seed. The floor of the concave has a V shape, whose point *k* projects in a direction the reverse of those on the feed-wheel. The grain is drawn forward by the teeth of the revolving wheel and pushed over the edge of the floor of the concave. It is desired that this action may be continuous and entirely freed from all intermittent character. For this purpose, as the V-shaped teeth and opening cross each other before the grain against any one tooth is all pushed out over the point *k* of the V-shaped bottom, the outer flanges of the next tooth have commenced to push over the grain at the receding portions at edges *l* of the said bottom or floor.

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

1. The changeable gearing placed inside of the hopper-head.
2. The series (two or more) of slots in the hopper-head or other plate, for the purpose of adjusting the movable axis to suit the change of wheels.
3. Joining the diagonal teeth of the feed-wheel in the middle of the roller.
4. The V-shaped projection *k* on the floor of the concave, for the purpose described.

To the above specification of my improvement in grain-drills I have signed my hand this 25th day of May, 1865.

JOSEPH INGELS.

Witnesses:

CHARLES D. SMITH,
W. F. HALL.