C. E. PATRIC.

Grain-Drills.

No. 136,260. Patented Feb. 25, 1873.

Fig. 1.

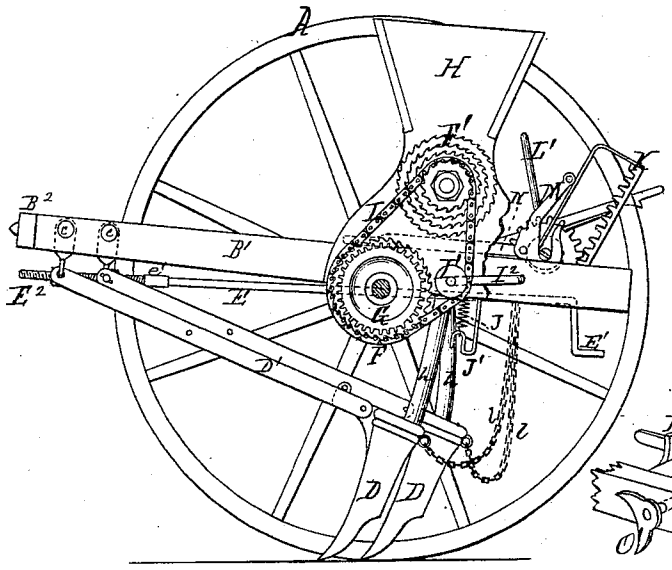


Fig. 4.

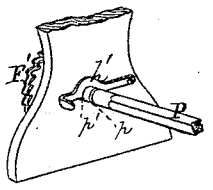


Fig. 3.

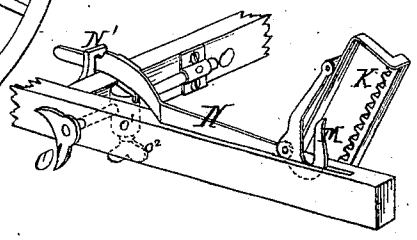
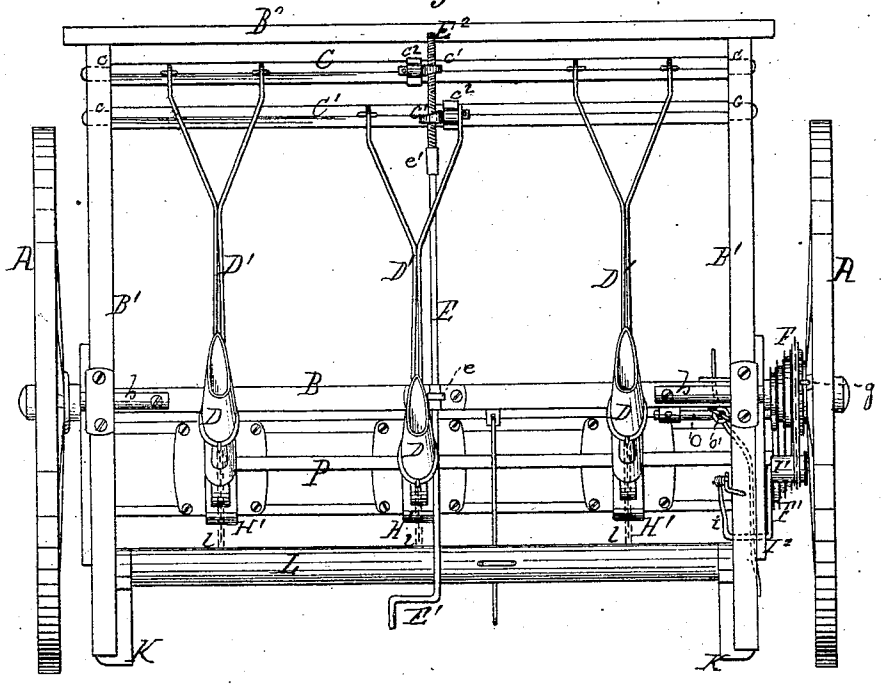


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

CHARLES E. PATRIC, OF SPRINGFIELD, OHIO.

IMPROVEMENT IN GRAIN-DRILLS.

Specification forming part of Letters Patent No. **136,260**, dated February 25, 1873.

To all whom it may concern:

Be it known that I, CHARLES E. PATRIC, of Springfield, county of Clarke, State of Ohio, have invented certain new and useful Improvements in Grain-Drills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1 is an end view with one of the carrying-wheels removed. Fig. 2 is a bottom view. Fig. 3 is a detached view of the devices which are employed in connection with the lifting-roller for throwing the distributers into and out of action; and Fig. 4 shows the devices for locking the distributer-shaft.

Similar letters of reference denote corresponding parts in all the figures.

The first part of the invention relates to the employment of a right-and-left-hand screw, in combination with the rocking pivoted bars to which the drag-bars of the hoes are attached, the object being to provide a cheap, durable, and effective means whereby the hoes may be kept in a straight line, or may be arranged in a zigzag position, and may be locked at any point at the will of the operator. The second part of the invention consists in making one or both of the cones of pulleys or sprocket-wheels movable or adjustable laterally for the purpose of increasing the number of changes in the quantity of seed delivered per acre, as will be fully explained. The third part of the invention relates to a novel construction of the devices employed for throwing the distributer into and out of action, as will be hereinafter fully set forth and explained.

In the drawing, A A′ are the wheels, mounted by preference upon stub-axles *b* attached to main axle B, which, with side pieces B^1 and girt B^2, forms the frame upon which the working parts of the drill are secured, and to which the tongue is attached. C C′ are two parallel rocking bars, pivoted at the ends in side pieces B^1, as at *c*. D are the drill-teeth, and D′ the drag-bars, each alternate tooth being connected with the front and rear bars C C′, respectively, as is plainly shown in Fig. 2, by means of suitable eyes or staples. E is a shifting shaft. The rear end of this shaft is provided with a crank, E^1, arranged within convenient reach of the operator when walking behind the machine. This rear end is mounted in a suitable bearing in axle B so as to rotate freely therein. *e*, Fig. 2, is a collar rigidly attached to said shaft, and supported in the bearing in the axle in such manner as to prevent any movement of the shaft endwise, as will be readily understood by reference to the drawing. The front end E^2 of the shaft is provided with a right-and-left screw; or, when preferred, the screw may be made in a separate piece, and attached to the shaft by a thimble or sleeve, as shown at *e′*. c^1 c^1 are shanks or wrists, secured to rocking bars C C′ by means of loops c^2, screw-eyes, sockets, or other suitable devices. The heads of these shanks are each provided with a screw-thread, the thread in one being right-hand, and that in the other left-hand, to correspond to the thread upon the opposite ends of screw E^2, the change in the direction of the thread being made at or near its center.

From the above description it will be readily seen that, by turning shaft E in one direction or the other, the hoes may be moved from the position shown in the drawing into one and the same line; or they may be arranged in two lines still further apart, at the will of the operator; and that in whatever position they may be placed they are securely held by the screw, and are firmly supported against backward draft by collar *e*.

F is a cone of sprocket or spurred wheels, mounted loosely on the stub-axle of carrying and driving wheel A, and connected with said wheel by means of a notched wheel or disk, G, (see Fig. 1,) firmly secured to the outer end of said cone, and engaging with a pin, *g*, shown plainly in Fig. 2, projecting from the inner face of the wheel, whenever the cone and the notched or toothed disk are held firmly out against the wheel by means of a mechanism which will soon be described. F′ is another and corresponding cone of sprocket-wheels secured to the projecting end of the shaft which carries the distributer-wheels. As the hopper H, the distributers H′, and the grain-tube *h* form no part of the present invention, and may therefore be of any usual or desired description, they need not be particularly described. Of course, the relative position of the two cones must be reversed—that is, the largest wheel of one cone must be opposite to the smallest of the other

series, as shown in Fig. 2. I is an endless chain or belt passing around and connecting the two cones F F'. This belt is a little longer than would be required to merely encircle the cones, the slack being always taken up by a tightening-pulley, I^1, mounted on vibrating arm I^2. Arm I^2 extends through one of the side pieces B of the main frame, (or is attached thereto by a suitable bearing,) its inner end being bent into a return-arm, *i*, (see Fig. 2,) and connected with the upper end of a spring, J, (see Fig. 1,) for the purpose of imparting any desired tension to chain or belt I. The lower end of spring J is attached to a rod or bracket, J', which depends from the main frame. In practice I usually employ a rubber loop instead of the spiral spring shown in the drawing. K are cogged guiding guards and racks with which the cogged ends of lifting-roller L are made to engage in such manner that when the roller is rotated by means of lever L' the chains *l* and the hoes are lifted, as is customary in this class of machines. M, Figs. 1 and 3, is a shipping plate or hook pivoted to one of the guides K. The lower end of this plate is provided with a cam-slot traversed by the projecting end of the journal of roller L, the arrangement of parts being such that as roller L rises from the position which it occupies in Fig. 1, it must draw the lower end of the plate M backward before it (the roller) can escape from the open end of the slot, and, of course, when the roller descends it will force the plate forward. N is a shipping-bar pivoted at one end to the plate M and supported at the other in a slotted plate, N', attached to the axle. (See Fig. 3.) O is a sliding bar mounted in suitable bearings *o*—one or more—on the axle. One end of this shaft extends through the side pieces of the frame and has a crescent-shaped plate, O', or a fork rigidly secured to it. Plate O', or the fork, when one is employed, clasps into a peripherical groove formed upon the inner end of the cone F, which, as has before been stated, is mounted loosely upon the axle of wheel A. *o'* is a stud secured to bar O by a set-screw, o^2. The upper end of this stud is slotted and engages with shipping-bar N. This portion of bar N is bent so as to form an angle with the rear end, which is attached to plate M, and also to the front end which slides in the slotted plate N', so that, although the bar reciprocates in a right line parallel with the sides B' of the frame, yet the central portion serves as a cam, which, acting upon stud *o*, causes the bar O to reciprocate in its own bearings, carrying with it plate O' and cone F, the arrangement of these devices being such that when roller L is down and the drill-teeth consequently in the ground, cone F is thrust outward so that the notched wheel G is made to engage with the pin *g* on the driving-wheel, in order that when the hoes are in the ground and the machine is drawn forward the seed shall be properly distributed. In practice I prefer to make this portion of bar N curved in form, as shown in dotted lines in Fig. 2 and in full lines in Fig. 3; but this may not be essential. By providing the curved part of the bar with a downwardly-projecting lip which works in the slot in stud *o'*, as shown at *n*, Fig. 3, I reduce the tendency to cramp the bar O in its supports. P is the shaft which drives the distributers. The end of this shaft which passes through the vertical end support H^2 of the hopper H is round, so as to turn readily in its bearings, and is provided with the grooves *p p'*. (See Fig. 4.) *h'* is a latch pivoted to the inner face of end-support H.

The object of grooves *p p'* and latch *h'* is to increase the number of changes that can be made in the amount of seed to be sown per acre, as follows: In the drawing chain I is represented as driving from the largest sprocket-wheel on the axle to the smallest one on the distributer-shaft, thus giving the distributers the highest possible speed and delivering the largest quantity of grain to the acre of which the machine is capable. In order to diminish the rate of sowing I shift the chain to the next smallest driving-wheel and also to the next largest driven wheel, thus reducing the speed of the distributer, the relation between the wheels in regard to size being such that the delivery per acre is reduced about one peck by the above-described change; but if, instead of shifting the chain from both the driving-wheel and the driven wheel at the same time I merely shift to the next smallest driving-wheel, and then, lifting latch *h'*, slide shaft P inward until the latch will enter groove *p'*, thus bringing the first or smallest driven wheel into the same vertical plane with the larger driving-wheel, the chain will drive equally well, as the tightening-pulley will take up the slack, while the change in the amount delivered per acre will be but half as great as when the chain is shifted upon both cones at the same time, as will be fully understood without further explanation.

I have shown but four sizes of sprocket-wheels upon each cone, with which I can make eight half-peck changes; but in practice I use eight or more wheels in each cone, proportionately increasing the number of changes; and it will be apparent that variation in the amount of seed delivered at each change of driving-gear may be regulated at will without departing from the nature and spirit of my invention.

Band-wheels and a belt may be used in place of the sprocket-wheels, although they would probably be very imperfect in their operation; and the shipping devices may be employed with equal advantage in combination with other arrangements of driving-gear for throwing said gear into and out of action.

It will be apparent that the shaft P may be made stationary, and the sprocket-wheel made movable thereon to produce the half-peck changes, without departing from the spirit of my invention; and also that the same arrangement may be applied to drills employing different seeding devices.

I am aware that the hoes have been hereto-

fore shifted by means of a single screw engaging with a cogged wheel on one of the bars, said cogged wheel gearing with a second one on the other bar; but, by the employment of a right-and-left-hand screw which engages with both of the rocking bars the strain upon the pivots of these bars is much reduced and liability of breaking greatly diminished thereby, as each bar sustains only the amount of thrust that is necessary to move its own set of hoes.

Any desired form of clutching device may be substituted for the notched wheel G and operated by the sliding bar O; or this bar may be employed for throwing any of the known drill-gearing into and out of action with little or no modification in its connections and arrangement.

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

1. In combination with the rocking-bars C C′ and drag-bars D′ of a grain-drill, a right-and-left-hand screw for shifting the position of the hoes, substantially as described.

2. In combination with the seeding devices of a grain-drill, an adjustable cone of sprocket-wheels or pulleys for varying the delivery of the grain, substantially as described.

3. In combination with the gearing for driving the seeding devices of a grain-drill, the angular or curved sliding bar N and sliding bar O, substantially as described.

4. The combination of cone F, disk G, bar O, plate or fork O′, bar N, plate M, and wheel A provided with pin *g*, substantially as described.

5. The combination of cones F F′, chain I, shaft D provided with grooves *p p′*, and latch *h′*, substantially as described.

CHARLES E. PATRIC.

Executed in our presence:
A. P. LINN COCHRAN,
JOHN W. PARSONS.