J. S. BOGLE.

HOE-SHIFTERS FOR GRAIN-DRILLS.

No. 195,477. Patented Sept. 25, 1877.

Fig. 1.

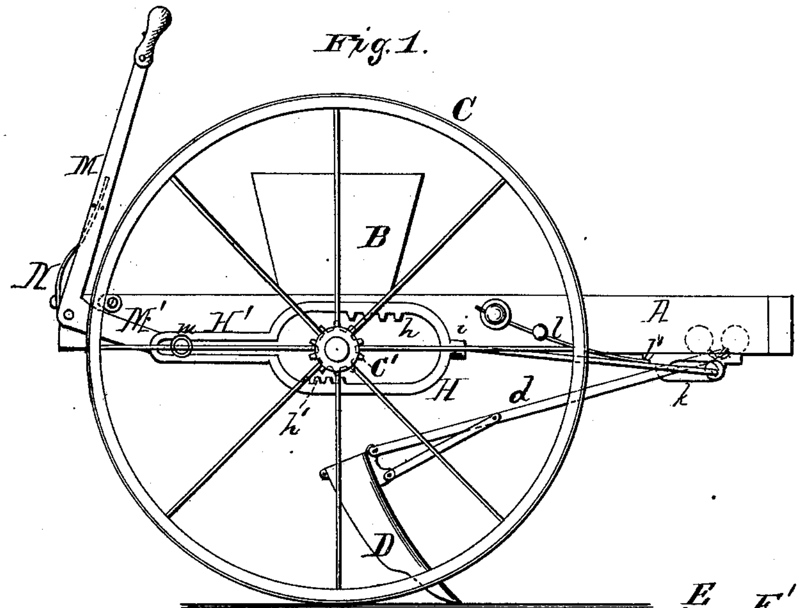


Fig. 2.

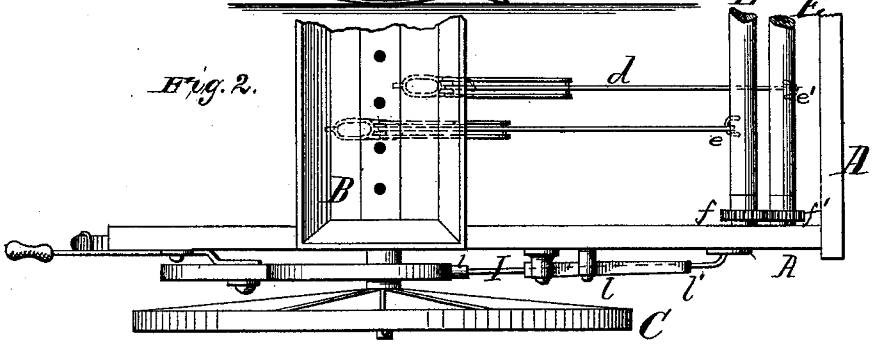
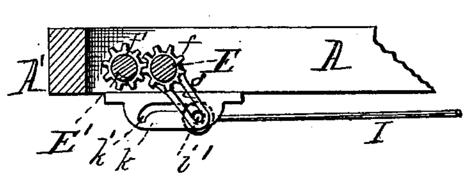


Fig. 3.



WITNESSES
Franck L. Ourand
John G. Center.

INVENTOR
James S. Bogle
by A. M. Smith
ATTORNEYS

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES S. BOGLE, OF SPRINGFIELD, OHIO.

IMPROVEMENT IN HOE-SHIFTERS FOR GRAIN-DRILLS.

Specification forming part of Letters Patent No. **195,477**, dated September 25, 1877; application filed August 20, 1877.

To all whom it may concern:

Be it known that I, JAMES S. BOGLE, of Springfield, county of Clarke, State of Ohio, have invented a new and useful Improvement in Hoe-Shifters for 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 represents a side elevation of so much of a grain-drill as is necessary to illustrate my invention. Fig. 2 is a plan view of one side or portion of the machine; and Fig. 3 is a vertical longitudinal section, showing the gears on the drag-bar rollers, together with the devices for operating and locking said rollers.

Similar letters of reference denote corresponding parts wherever used.

The object of my invention is to change the hoes from a position in which all are in the same transverse line to a zigzag arrangement, or one in which the hoes are alternately in two transverse lines, and vice versa, by means of power conveyed from the driving or carrying wheel or wheels of the machine, and, when so changed, to lock or hold them firmly in the required position.

The invention consists, first, in combining the rocking bars or rollers to which the drag-bars are attached with a reciprocating yoke surrounding the hub or axle of the driving-wheel, and provided with toothed racks upon its opposite inner faces adapted to be operated upon by a pinion on said hub or axle, as hereinafter explained.

It further consists in the combination, with the piston-rod connecting the actuating-yoke with the drag-bar rollers, of a rack-bar for engaging with said piston or piston-rod, and locking the rollers and the hoes connected therewith in any required position.

It further consists in certain details of construction and arrangement, hereinafter fully described.

In the accompanying drawings, A A′ represent the frame of the machine; B, the grain box or hopper; C, one of the main carrying and driving wheels; D, the hoes; and *d*, the drag-bars connecting the hoes with the frame, said parts, except in particulars hereinafter explained, being constructed and arranged in any usual or preferred manner. The drag bars are connected at their forward ends, by means of loops or staples *e e′*, with two rocking bars or rollers, E E′, arranged transversely of the frame, at the forward end thereof, in suitable bearings in the side bars A of the main frame.

The rollers E E′ are provided at one end with pinions *f f′*, meshing one into the other in such manner that motion imparted to one of the pinions or rollers, rocking it in one direction, will serve to rock the other roller a corresponding distance in the reverse direction; and one of said rollers E, or its pinion *f*, has a slotted arm, *g*, (see Fig. 3,) rigidly connected with it, to which motion is imparted from the driving-wheel C for rocking the rollers and changing the position of the hoes, as follows, viz: The hub of the driving-wheel C has formed upon or otherwise rigidly secured to it a pinion, C′, and surrounding said pinion is an open or slotted yoke, H, provided on opposite sides of the pinion and upon the inner faces of the yoke with toothed racks *h h′*, arranged one in advance of the other, as shown in Fig. 1, in such manner that when one, *h*, has been acted upon by the pinion for bringing the hoes into, say, the same transverse line, the other, *h′*, will be in position ready to be thrown into engagement with the pinion for changing the hoes to a zigzag position, and vice versa.

The yoke has a screw-threaded socket on its forward end at *i*, adapting the correspondingly-threaded rear end of a piston-rod, I, to be secured to it, the forward end of said rod being connected by a traveling piston or pin at *i′* with the slotted crank-arm *g* in the roller E. This piston, made in the present instance in the form of an angular extension or pin on the forward end of the rod I, passes through a slotted rack-bar, *k*, secured under the forward end of the frame-bar A, as shown, and which serves not only to steady and guide the movement of the forward end of the piston-rod, but, by means of notches or depressions, as at *k′*, to lock the arm *g* in any desired position, as against the dragging action of the hoes on the rollers. These locking depressions or notches may be formed in the lower wall of the slot in the bar *k*, as desired, only

one at each end of the throw of arm *g*, however, being shown; and a spring, *l*, secured to the frame-bar A, with its free end *l'* resting and pressing down upon the forward end of the piston-rod, may be employed, if required, for forcing the traveling pin into the notches of, and holding it engaged with, the rack-bar *k*.

The rear end of the yoke H has a slotted arm, H', formed upon it, and an arm or pin at *m*, on the lower short arm M' of a lever, M, passes through said slot, and is provided with a friction-roller, adapting it to move easily in the slot in arm H'. By vibrating the lever M the yoke H may be raised or depressed, according to which of the racks *h h'* it is desired to engage with the pinion C', and according to the position it is desired the hoes shall assume.

When the hoes have been adjusted as desired, the lever M is held in position for holding both racks *h* and *h'* of the yoke out of engagement with the pinion, by means of a spring, N, attached to the frame A, as shown, and which serves to hold the yoke, with the pinion C', intermediate between its two racks. A spring of different form from that shown, or a weight, may be employed for the same purpose, if preferred.

The form, also, of the spring *l* and the manner of applying it may be changed, if preferred; and in some instances it may be found desirable to dispense with it entirely, the weight of the piston or pin and the action of the crank-arm *g* thereon serving to produce the desired result without the assistance of a spring.

The employment of pinions or toothed segments on the rollers, and of the slotted arm *g*, with which the piston-rod is connected for actuating the same, permits the piston or pin connected with said arm to move in a right line, thereby maintaining a uniform relation between the yoke H and its actuating-pinion C'.

The manner of attaching the piston-rod to the yoke adapts said rod to be adjusted for changing the throw of the crank-arm *g*, and to compensate for wear.

The operation of the parts will be understood without further description.

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

1. The combination, with the adjustable drag-bar rollers, of the reciprocating yoke H, provided with the toothed racks arranged on its opposite sides in the described relation to the actuating-pinion, whereby when one rack is disengaged from said pinion the other will be in position to be engaged therewith.

2. The combination, with the yoke H, of the lever M for throwing the yoke into and out of gear with the actuating-pinion, and the spring or its equivalent for holding said lever with the yoke disengaged from the pinion.

3. The combination, with the reciprocating piston for rocking the drag-bar rollers, of the slotted rack-bar for guiding said piston and locking the hoes in position, as described.

4. The combination, with the reciprocating piston and the rack-bar *k*, of the spring *l* for forcing the piston or pin into the sockets in the rack-bar, as described.

5. The geared drag-bar rollers, in combination with the slotted crank-arm *g*, permitting the piston to work in a horizontal plane, as described.

6. The piston-rod connecting the rocking drag-bar rollers with the yoke adjustably connected with said yoke, as described.

In testimony whereof I have hereunto set my hand this 14th day of August, A. D. 1877.

J. S. BOGLE.

Witnesses:

A. P. LINN COCHRAN,

WM. SHARON.