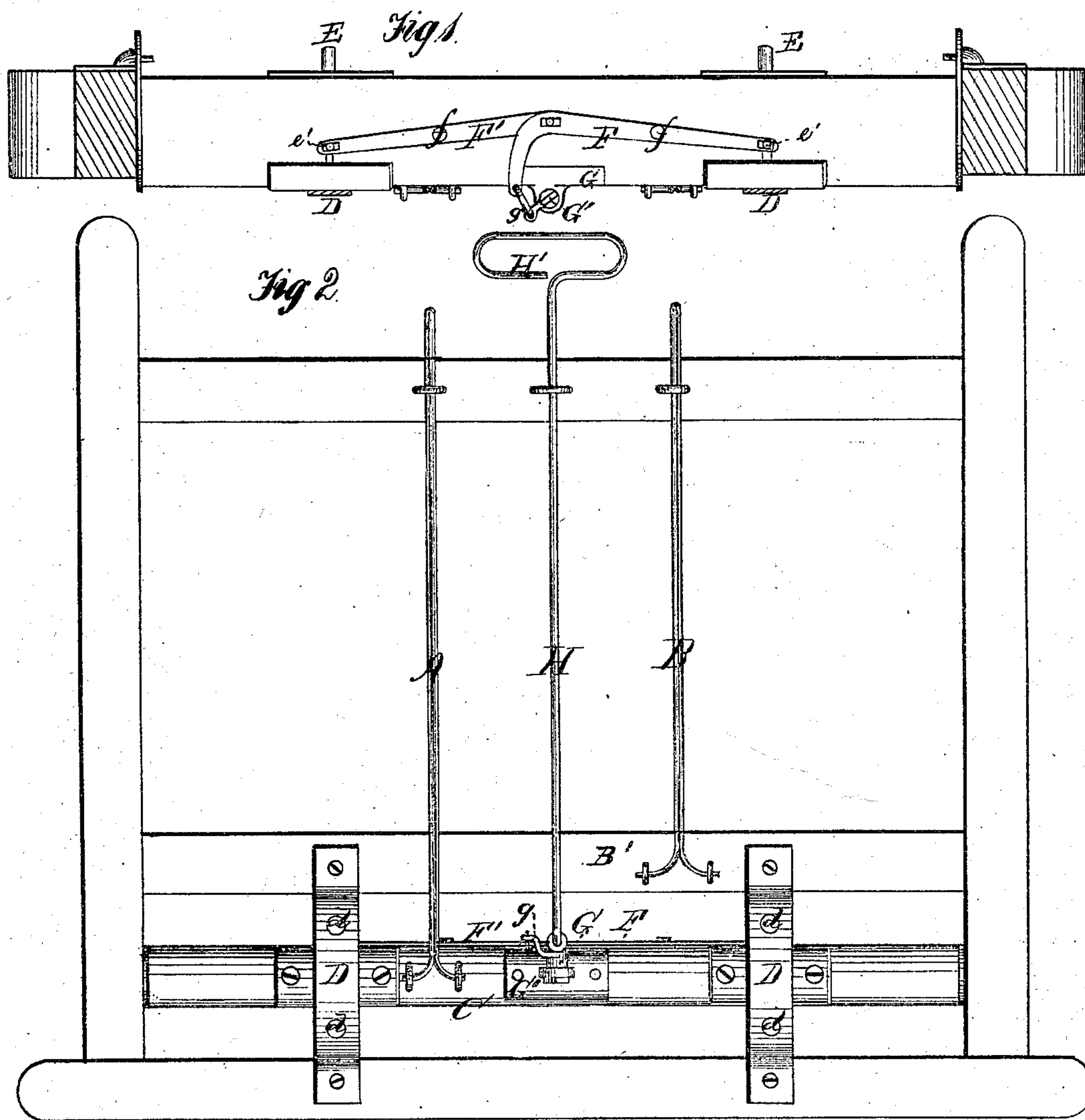


G. S. BALL.

Grain-Drills.

No. 133,292.

Patented Nov. 26, 1872.



Witnesses  
W. Bradford.  
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# UNITED STATES PATENT OFFICE.

GEORGE S. BALL, OF DAYTON, OHIO, ASSIGNOR TO W. H. BALL, OF SAME PLACE.

## IMPROVEMENT IN GRAIN-DRILLS.

Specification forming part of Letters Patent No. 133,292, dated November 26, 1872.

*To all whom it may concern:*

Be it known that I, GEORGE S. BALL, residing at Dayton, in the county of Montgomery and State of Ohio, have invented a certain Improvement in Grain-Drills, of which the following is a specification:

This invention relates to that class of grain-drills in which the hoes may be arranged either in a straight or in a zigzag line; and my improvement consists in the employment, in combination with an oscillating bar, to which the changeable hoes are connected, of one or more perforated bars fixed to the frame-work of the drill, and a corresponding number of movable bolts on the oscillating bar, so arranged as to enter the perforations in the fixed bars, for the purpose of locking the oscillating bar in any required position to the said fixed bars. It further consists in the combination, with said locking devices, of a system of levers so disposed that, by means of the hand or foot lever thereof, the oscillating bar may be first unlocked and then shifted to its new position.

Figure 1 is a bottom view representing so much of a grain-drill as is necessary to clearly illustrate my invention. Fig. 2 is a transverse section thereof. Fig. 3 is a transverse section of the oscillating bar at a point where it is provided with a locking-bolt.

The same letters of reference are employed in all the figures in the designation of identical parts.

The changeable hoes are carried by a series of drag-bars, A, and alternate with the unchangeable hoes, which are connected by the drag-bars B to the fixed cross-beam B' of the frame of the drill. The drag-bars A are hinged to the oscillating bar C, which is supported by its journals in suitable bearings upon the frame, and, in the example illustrated, moves over the two fixed metal bars D D, which are curved to correspond with the arc described by the under side of the oscillating bar C in

advancing or retiring the changeable hoes. Opposite to each of these bars D a bolt, E, is arranged in the oscillating bar C, said bolts being intended to enter the perforations *d* in the bars D to lock the oscillating bar when the changeable hoes have been arranged in proper relation to the unchangeable ones. The bolts are projected by spiral springs *e*, and are provided with laterally-projecting studs, *e'*, which extend, respectively, into eyes in the ends of the levers F and F'. These levers turn upon the fulcrums *f* and *f'*, and are pivoted together at *f''*, from which point the one marked F is bent downward, such bent end being linked to the arm or crank *g* of the swivel-bolt G, which is arranged in a pendant, G', fixed to the lower side of the oscillating bar C. The bolt G is fastened to the rod H, which extends toward the driver's seat and terminates in a handle, H'.

In shifting the changeable hoes, the operator first gives a partial rotation to the rod H, whereby the locking-bolts E are retracted and drawn out of the perforations in the bars D, and then pulls or pushes upon said rod to oscillate the bar C.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the oscillating bar C, fixed perforated bars D, and locking-bolts E, substantially as and for the purpose specified.

2. The combination of the oscillating bar C, fixed perforated bars D, locking-bolts E, levers F F', cranked bolt G *g*, and rod H, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEO. S. BALL.

Witnesses:

M. BENNET,  
E. S. YOUNG.