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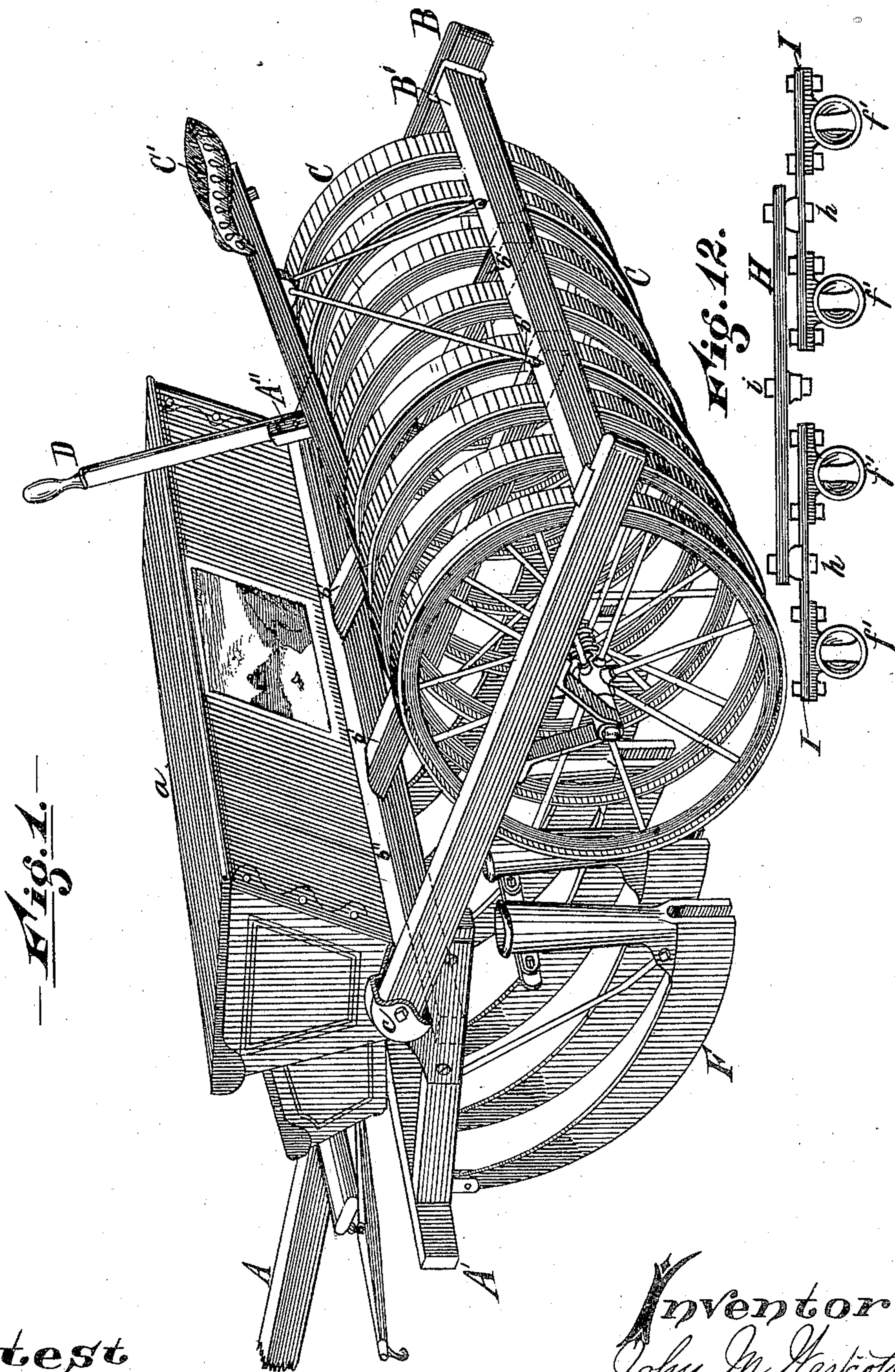
2 Sheets—Sheet 1.

J. M. WESTCOTT.

GRAIN DRILL.

No. 311,397.

Patented Jan. 27, 1885.



Attest  
Joseph H. Sims  
John S. Roebuck

Inventor  
John M. Westcott  
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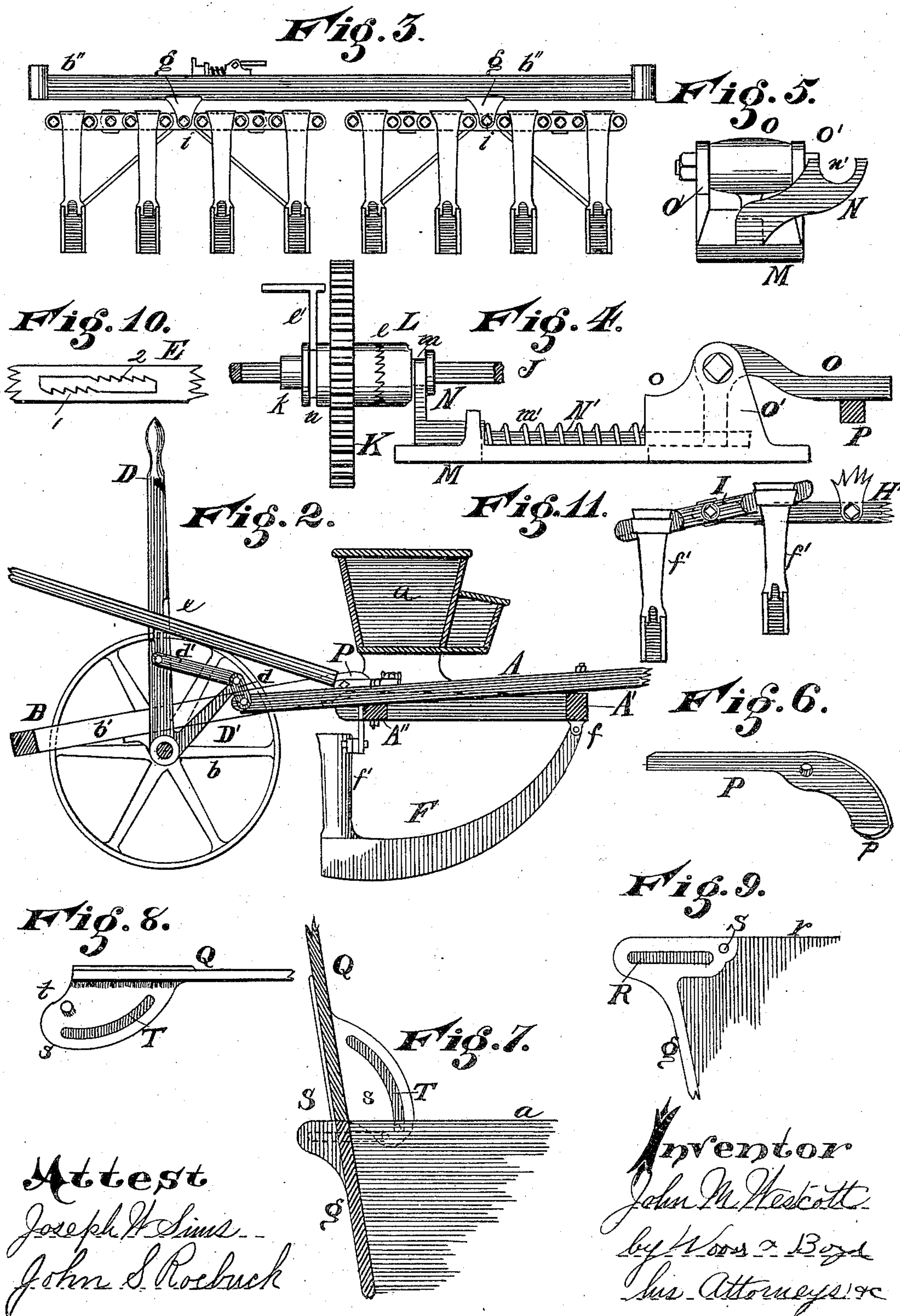
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# UNITED STATES PATENT OFFICE.

JOHN M. WESTCOTT, OF RICHMOND, INDIANA, ASSIGNOR TO THE HOOSIER  
DRILL COMPANY, OF SAME PLACE.

## GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 311,397, dated January 27, 1885.

Application filed September 6, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN M. WESTCOTT, a resident of Richmond, in the county of Wayne and State of Indiana, have invented certain new and useful Improvements in Grain-Drills, of which the following is a specification.

My invention consists in improvements in grain-drills, and more particularly to that class denominated "shoe" or "runner" drills.

The first object of my invention is to provide automatic vertically-adjusting shoes or runners, which are pivoted to evener-bars so that one shoe or more of the series will rise as the shoe at the opposite end is depressed, whereby the shoes are enabled to conform to the irregularities of the ground and secure a more uniform planting of the seed.

Another object of my invention is to provide automatic shipping devices for throwing the seeding devices out of gear as the shoes are raised, and bring them into gear when the shoes are lowered.

Another object of my invention is to provide means for locking the shoes in or out of the ground, as the case may be.

Another object of my invention is to suspend the principal part of the weight of the drill upon a series of covering-wheels mounted upon a supplemental frame attached to the main frame of the drill and supporting the driver's seat thereon.

Another object of my invention is to provide an improved hinge for the lid of the grain-box, so that it will, when raised, be in a plane practically parallel with the back of the box, all of which will be fully set forth in the description of the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of my improvement attached to a grain-drill. Fig. 2 is a central longitudinal section; Fig. 3, a rear elevation of the method of hinging the shoes to the evener-bar; Fig. 4, an elevation of the unshipping mechanism; Fig. 5, an end view of a part of the same; Fig. 6, a detail view of the lifting-latch; Figs. 7, 8, 9, detail views of my improved hinge; Fig. 10, a plan view of the lifting rack-bar; Fig. 11, a modification of the method of hinging the shoes. Fig. 12, a top plan view of the preferred form of hinging the shoes.

A represents the tongue of the machine,

which is fastened to the cross-rails A' A". The rear end of the tongue A is connected to the lever device swiveled upon the riding-frame.

B B represent the side rails of the main and riding frame; b, an axle supporting a series of ground and covering wheels, C. The axis is journaled to the frame B by means of hangers.

B' represents side rails of the main frame.

b' represents cross-rails secured to the rails B', the forward ends resting upon rail b'' of the supplemental frame A', upon which the grain or seed box a is mounted.

c represents an iron bracket, which is bolted to the rails of the frame A', and to which brackets the rails B are pivoted at either end of the seed-box, as shown in Fig. 1.

C' represents the driver's seat, which is supported upon the rails of the main frame B, which may be made adjustable thereon, so as to be moved forward or backward to regulate the weight of the driver upon the main frame and to balance the load upon the forward end of the tongue, which is supported by the neck-yoke.

D represents the lock-lever. It is provided with a bell-crank arm, D', which is pivoted to the tongue A by means of links d.

d' represents a brace connecting the lever D to the bell-crank arm D'.

E represents a rack-bar, which is slotted so as to receive the lever D, which projects up through the same.

e represents a catch, which is adapted to engage in notches 1 and 2, formed in the rack-bar E. As the lever D is pulled backward toward the operator it elevates or lifts the tongue A, and with it the rear end of the shoes F. The catch e engages with one of the notches 1 and holds the shoes out of the ground, or prevents their going too deep into the ground. When the lever D is moved forward, the shoes F are depressed, and the catch e engages with one of the series of notches 2 and locks the same in the ground. As the lever D is moved backward, the forward end of the main frame B is depressed and the shoes F are raised. This is a mere incident to the form of construction and hinging of the two frames together, and of the hinging of the shoes F to the drill-frame A'.

f represents the shoes or runners pivoted to



the forward end of the frame A'. The shanks  $f'$  are secured to the rear end of the frame by evener-bars, which I will now proceed to describe.

5  $b''$  represents the rear rail of the seeding-frame A'.  $g$  represents hangers or brackets rigidly secured to the rail  $b''$ .

H represents an evener-bar pivoted to one of the brackets  $g$  by an axial bolt,  $i$ .

10 I represents secondary evener-bars pivotally attached to the evener-bar H, as shown in Fig. 12.

This mode of pivoting the shoes to the main frame allows two of the series to rise as the  
15 other two are depressed; or it allows one of the series of two to rise, and the other one to fall as the supplemental bars I turn on their pivots  $h$ . A modification of this mode of hinging would be to pivot the shank of the shoes  
20  $f'$  and the evener-bar I to a stationary supplemental bar, H', as shown in Fig. 11, instead of having the bar H pivotally attached to the rail  $b''$ .

The construction shown in Fig. 11 would accomplish a part of one of the objects of my invention, but not in so approved a manner as the form shown in Fig. 12.

The mode here shown of pivoting the shoes or runners to evener-bars so that one or two  
30 may rise as the opposite one or two of the series are depressed, accomplishes very important and useful results in the planting of seed, first, as it allows the shoes to automatically rise over small obstructions without  
35 throwing the entire series out of the ground; second, it allows the shoes or seed-dropping spouts to rise and fall and accommodate themselves to lateral inequalities of the ground; and the method of pivoting the entire series  
40 and operating it by a lock-lever, D, allows the entire series to be raised, lowered, or depressed to accommodate the runners to the inequalities of the ground which run transversely to the path of travel.

45 In order to automatically throw the seed devices in or out of gear as the shoes are raised and lowered by the lever D, I have provided the following instrumentalities:

The seeding devices are operated by transmitting the power of the team from the main axle  $b$  to the shaft J, attached to the seed-box  $a$  and connecting the seed mechanism.

55 K represents a sprocket or spur wheel, the hub of which journals upon the sleeve  $h$ , secured to the shaft J, so as to run loosely thereon.

L represents a clutch on the shaft J, and  $l$  clutch-teeth formed upon clutch L and the hub of the wheel K.

60  $l'$  represents a bracket projecting down from the seed-box, the lower end of which is forked, and rests in an annular groove,  $n$ , formed on the hub of the wheel K, and this holds the wheel from moving laterally upon the sleeve  $h$ , and yet allows it to run loosely  
65 thereon.

N represents an arm having a semicircular

journal,  $n'$ , which works in the groove  $n$  of the clutch L.

N' represents a reciprocating shaft, forming 70 a part of the arm N, which works in a supporting-plate, M.

$m'$  represents a coiled spring wound around said shaft N', so that its recoil will bring the clutch L up in contact with the wheel K. 75

O represents a bell-crank lever pivoted to ears O', formed upon the base M;  $o$ , the lower end of the bell-crank lever, the lower end of which engages with a slot pierced in the reciprocating bar N'. These parts are so  
80 arranged that when the lever O is raised bar N' will be reciprocated, coiling the spring  $m'$  and moving the clutch L out of engagement with the wheel K, which will then run loose on the sleeve K and convey no motion to the  
85 shaft J. When the arm O of the bell-crank lever is released or lowered, the spring  $m$  will recoil and bring the clutch L into engagement and set the shaft J in motion. In order that this action may be accomplished auto-  
90 matically as the series of shoes or runners F are raised and lowered, I provide the lifting-lug P, pivotally attached to one of the cross-rails  $b'$ .

$p$  represents a lug, which engages with the 95 under side of the tongue A, so as to prevent the forward end of lug P from dropping. As the tongue A is raised, the forward end of rail  $b'$  is depressed and the latch P lifts the lever O, throwing the clutch L out of engagement  
100 with the wheel K and stopping the motion of the feed-shaft. As the drill-shoes F are lowered, the spring  $m'$  brings it automatically into engagement and sets the feed in motion.

I do not desire to limit myself to the details 105 of constructing the automatic unshipping mechanism, as various forms of clutches and means of communicating the motion from the tongue A to the rocking-frame B may be employed in lieu of that here shown. 110

It has been customary in the use of grain-drills to stitch canvas upon the inside of the back of the grain-box and to the lid, so as to prevent the grain, when it is poured into the box, from passing out a crack or opening be-  
115 tween the lid and grain-box. This form of covering the crack in the grain-box, to prevent the grain from scattering out when the seed-box is filled, is objectionable. It is trappy and liable to be pulled off. 120

I have invented an improved form of hinge for connecting the lid Q to the grain-box  $a$ , so that the lid Q forms a close joint on a plane with the vertical edge  $q$  of the box. In order to accomplish this it is necessary for  
125 the lid Q to move forward as it is raised, and to move backward when it is lowered to bring it into position. This I accomplish in the following manner:

R represents a straight horizontal slot 130 formed upon the inner edge of the end partition,  $r$ .

S represents a pin projecting inward from the end  $r$ .



s represents an ear depending downward from the lid Q, as shown in Fig. 8.

T represents a segmental slot, pierced in the ear s, into which slot the pin S projects, so as to assist in guiding the movement of the lid Q.

t represents a pin projecting from ear s into the straight slot R.

The pins S t and slots R T form the hinge, and act as follows: As the lid Q is raised, pin t moves forward in the slot R and the pin S moves circularly in the slot T, causing the upward and forward movement of the lid Q. These parts are preferably so constructed that the rear edge of the box a and the lid Q will lie in the same vertical plane when the lid is raised and form a butt-joint. Of course, a lap-joint might be employed; but it is not so durable. When the lid Q is depressed, the pin t moves backward in the slot R with the circular movement of the pin S in the slot T, and the rear edge of the lid Q will be carried backward, so that its under surface will rest upon the vertical edges of the grain-box, completely cover it, and shed the moisture.

The unshipping mechanism shown in the application operates differently from the unshipping devices used upon ordinary grain-drills in that the yielding hinged frame operates in the act of rising and bending upward to move a pivoted latch operating a lever for moving the clutch devices, and my claims herein are limited to this specific class of grain-drills.

I claim—

1. In a grain-drill composed, substantially, of a main frame, B, supported on the series of covering-wheels C, and hinged to the supplemental frame A, and the tongue B, rigidly secured to the supplemental frame, in combination with the runner F, hinged at their front ends to the supplemental frame and at their rear ends to an evener-bar, H, which is in turn secured to the supplemental frame, substantially as specified.

2. In a grain-drill composed, substantially, of a main frame, B, supported upon a series of ground-covering wheels and hinged to a supplemental frame rigidly connected to the tongue, in combination with the said runners F, hinged to the supplemental frame at their front ends and to an evener-bar, H, at their rear ends, and a locking-lever, D, journaled upon the axle of the main frame for operating the runner-frame, substantially as specified.

3. In combination with the main frame B, the bell-crank lever D, journaled on the main axle, said lever being loosely hinged to the main frame, and provided with locking devices for locking the frames together and allowing the runners F to vibrate vertically with the pivoted evener-bar H, substantially as described.

4. The combination, with the main frame, of the seed-frame rigidly connected to the tongue and hinged to the said main frame, supported on runners F, hinged at their front ends to the frame, and connected to supplemental evener-bar I, and pivoted on evener-bar H, whereby the runners automatically accommodate themselves to the unevenness of the ground by a vertical motion on the bar I in series of two.

5. In combination with the seed-frame, the runners F, pivoted at their front ends, and connected at their rear ends to a supplemental bar, I, which is pivoted to the evener-bar H, pivotally attached to the rear of the said frame, substantially as specified.

6. The combination, with the main frame B, of the seed-frame A, hinged to the main frame, the lifting-lever D, journaled on the main frame adapted to lift the shoes and tilt the seed-frame, and the latch P, pivoted on the seed-frame and operating the unshipping mechanism by the tilting of the hinged frame, substantially as described.

7. In combination with the feed-shaft J, the sliding clutch L, and shipping device N O, arranged upon the seed-frame, so as to be operated by the oscillation of the main frame when lever D is moved backward to elevate the runners, substantially as specified.

8. In combination with the clutch L, the shipping mechanism N O, mounted upon the oscillating frame and pivoted in a bearing, and adapted to be lifted by the contact of the main frame for unshipping the clutch L, when the runner-frame is raised by the lifting-lever, substantially as herein set forth.

9. In combination with the oscillating main frame mounted upon the covering-wheels, and the seed-frame hinged thereto, the shipping mechanism N O, clutch L, and shifting-latch P, mounted upon the seed-frame and automatically operated by the lever mechanism mounted upon a main frame in unison with the raising and lowering of the seed-frame, substantially as herein set forth.

10. In combination, with the lid Q of the seed-box, the eccentric hinge-joint uniting the lid to the box, whereby they occupy the same vertical plane when raised, and the lid moves back to form a cover when lowered, substantially as specified.

11. In combination with the box A and lid Q, the hinge-joint composed, substantially, of the slots R T and pins S t, constructed substantially as specified.

In testimony whereof I have hereunto set my hand.

JOHN M. WESTCOTT.

Witnesses:

JAMES A. CARR,  
F. A. WIEKE.