B. DELONG.
Grain-Drill.

No. 209,386. Patented Oct. 29, 1878.

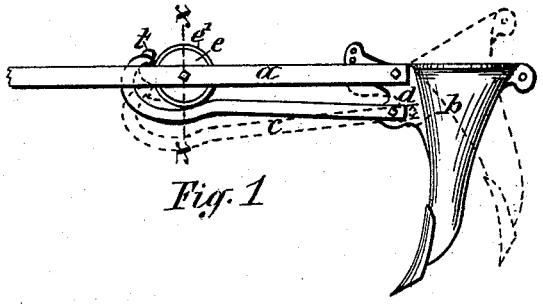

Fig. 1

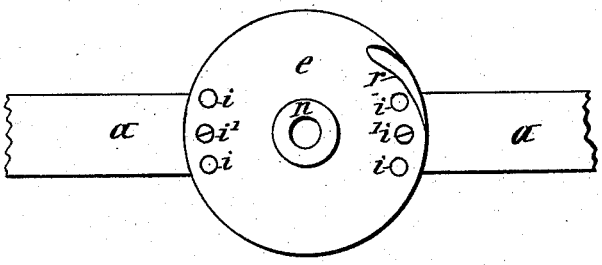

Fig. 2

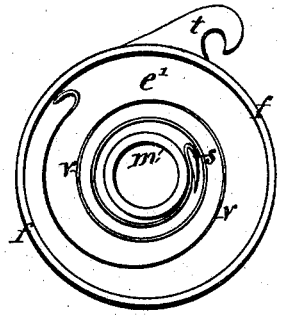

Fig. 3

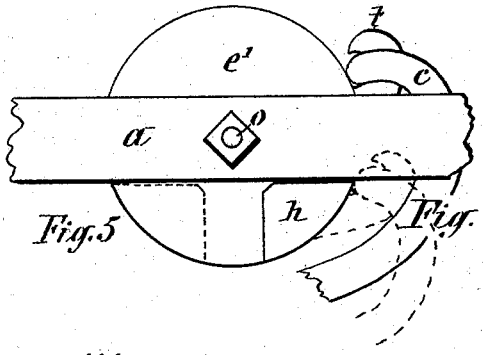

Fig. 5

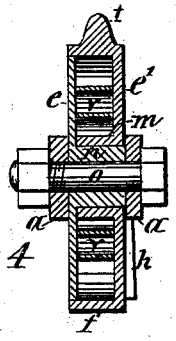

Fig. 4

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BENJAMIN DELONG, OF CAUGHDENOY, NEW YORK.

IMPROVEMENT IN GRAIN-DRILLS.

Specification forming part of Letters Patent No. **209,386,** dated October 29, 1878; application filed June 25, 1878.

To all whom it may concern:

Be it known that I, BENJAMIN DELONG, of Caughdenoy, in the county of Oswego and State of New York, have invented new and useful Improvements in Grain-Drills, of which the following, taken in connection with the accompanying drawing, is a full, clear, and exact description.

This invention relates to improvements in that class of grain-drills in which the seeding-tube or drill-tooth is held in its relative angular position on the drag-bar or leader by means of a spring, which allows the said tube to yield to obstructions in its passage through the soil, and restores it to its proper operative position when released from such obstructions; and it consists, first, in the combination, with a seeding-tube pivoted to the leader or drag-bar, and a spring-case having its spring wound to impart to it a rearward rotary force, of a connecting-bar bent at its forward end to bring it to bear against the lower periphery of the spring-case, and to connect with a hook on the front of the case, whereby the said connecting-bar is brought into a better and more effective position for retracting the seeding-tube to its operative position after its release from excessive rearward strain, and the forward thrust of the seeding-tube is arrested with greater safety to the connection of the parts, and without the aid of other extra stopping devices; second, in an improved construction and combination of the spring-case and its contained spring, and the means of pivoting the said case to the leaders, whereby the spring is completely inclosed, the attachment and detachment of same for repairs or renewal are facilitated, and the attaching-bolt of the spring-case is protected from abrasion; and, third, in the combination, with the coil-spring, of the fixed plate of the spring-case, provided with two series of holes, arranged, respectively, diametric opposite each other, and the leader, provided with corresponding holes and bolts or screws inserted through said holes, whereby simple, comparatively inexpensive, and reliable means for the adjustment of the tension of the spring are obtained, all as hereinafter more fully described.

The invention is clearly illustrated in the accompanying drawing, wherein Figure 1 is a side elevation of that part of a grain-drill to which my improvements pertain; Fig. 2, an enlarged view of the inner face of the stationary plate of the spring-case; Fig. 3, an interior view of the rotating plate of same; Fig. 4, an enlarged transverse section taken on line *x x* in Fig. 1; and Fig. 5, a view of the exterior face of the revolving spring-plate, showing additional means for limiting the rotation of said plate in both directions, and at the same time strengthening the same.

Similar letters of reference indicate corresponding parts.

a represents the so-called "drag-bar" or "leader" of a grain-mill, and *b* the hollow tooth or seeding-tube, provided in front with a lug or ear, *d*, to the upper part of which the leader is pivoted.

To the leaders *a*, at a proper distance from the seeding-tube, is connected the spring-case, composed of plates *e* and *e'*. The plate *e* is rigidly secured to the inner face of one of the leaders by means of screws *i' i'*, passing through two of a series of holes, *i i i*, diametrically opposite each other in the plate, and through corresponding holes in the leader. This plate is provided in the center of its inner face with a hollow journal, *n*, upon which revolves the plate *e'*, having a hub, *m*, fitted to said journal. The plate *e'* is provided at its outer periphery with a circumferential flange, *f*, which extends over the edge of plate *e*, and thus completely incloses the spring. The journal *n* is of sufficient length to protrude at the outer face of plate *e'*, and thus keeps the opposite leader apart from said plate, and allows the latter to revolve freely on its axis.

The parts are united by means of a bolt, *o*, passing through the leaders and hollow journal *n*. The latter, extending from leader to leader, protects the bolt from wear by the rotating plate, and relieves it from nearly all the strain.

v represents a helical spring having its ends bent in the form of a hook, the outer of which engages a lug, *r*, cast on the inner face of plate *e* near its periphery, and the inner extremity is hooked onto a lug, *s*, cast on the inner face of plate *e'* near hub *m*, thus dispensing with

bolts or rivets for securing the spring to the case, and admitting of a ready attachment and detachment of same for repairs or renewal, and reducing the cost of its construction generally.

The spring is wound to impart to the case a rearward rotary force, so that an object connected to the periphery of the spring-case at any point below the line of the leader will be forced forward.

c is the connecting-bar by which the power of the spring is transmitted to the seeding-tube. Its rear end is pivoted to the ear *d* on the seeding-tube below the leader *a*, and its forward end is extended around the bottom of the spring-case, and connected to a hook, *t*, on the periphery of said case, at such relative position that when the seeding-tube is in its proper operative position, as shown by full lines in Fig. 1 of the drawing, the points of connection at the ends of the bar will be nearly in line with the axis of the spring-case, and thus lock the parts in their relative position, so that it requires a heavy rearward jar against the lower extremity of the seeding-tube to dislodge them from said position.

In case the seeding-tube encounters in its operation obstacles of sufficient resistance to produce the aforesaid effect, the seeding-tube is allowed to swing rearward and draw the forward end of the connecting-bar *c* around the lower periphery of the spring-case, as indicated by dotted lines in Fig. 1 of the drawing, thereby bringing the said bar to such an angle with the seeding-tube as to fully maintain the leverage of the former upon the latter, and afford ample play for same. The forward end of the connecting-bar is bent in such a form that when the seeding-tube is in its operative position the said bar will bear against the lower periphery of the spring-case, and thus prevent disconnection of the bar from the case, relieve in a great measure the connection of said parts of the strain resultant from the sudden termination of the forward thrust of the seeding tube, and limit said thrust without the aid of other extra stopping devices.

The exterior of the rotating spring-plate *e'* may be provided with a sectoral protuberance or plate, *h*, projecting over the top edge of the adjacent leader, and having abrupt radial edges so arranged that one will be brought to bear upon the leader, and thus check the rearward rotation of the spring-case when the seeding-tube is in its proper operative position, as shown by full lines in Fig. 5 of the drawing, and the other collide with the leader when the said tube has attained its maximum backward movement, as indicated by dotted lines in the same figure of the drawing. Thus, by a simple, inexpensive, and durable device, the movement of the seeding-tube is limited in both directions, and at the same time the spring-plate braced.

The tension of the spring is adjusted by changing the stationary plate *e* in its relative circumferential position on the leader *a*, which is accomplished by removing the screws *i'*, and, after turning the plate sufficiently to compensate for the slack of the spring, bringing the required hole *i* in coincidence with the hole in the leader, and again securing it in its position by the screw *i'*.

I am aware that helical or coil springs have been employed before now for yieldingly retaining a pivoted drill tooth or seeding-tube in its operative position, and I therefore do not claim the same, broadly.

What I do claim as new, and desire to secure by Letters Patent, is—

1. In combination with the pivoted seeding-tube *b* and the spring-plate *e'*, having its spring wound to impart to it a rearward rotary force, the connecting-bar *c*, bent at its forward end to bring it to bear against the lower periphery of the spring-case, and to connect with hook *t* on the front of said case, substantially as described and shown, for the purpose set forth.

2. The combination of the plate *e*, provided with hollow journal *n* and lug *r*, the plate *e'*, provided with hub *m*, lug *s*, and circumferential flange *f*, and having the journal *n* protruding at its outer face, the spring *v*, having hooked ends, the bolt *o*, and leaders *a a*, all constructed and combined substantially as described and shown, for the purpose set forth.

3. In combination with the spring *v*, the plate *e*, provided with a series of holes, *i i i*, diametrically opposite each other, the leader *a*, provided with corresponding holes, and the screws *i' i'*, substantially in the manner shown and described, for the purpose specified.

In testimony whereof I have hereunto set my hand this 11th day of June, 1878.

BENJAMIN DELONG.

Witnesses:

G. E. WOOD,

E. BENDIXEN.