

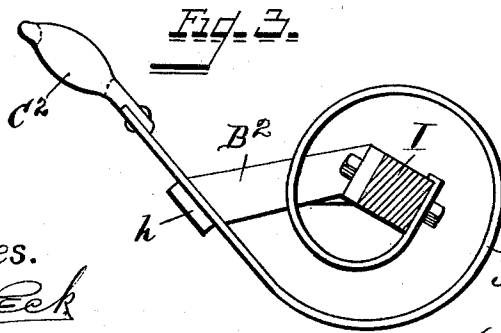
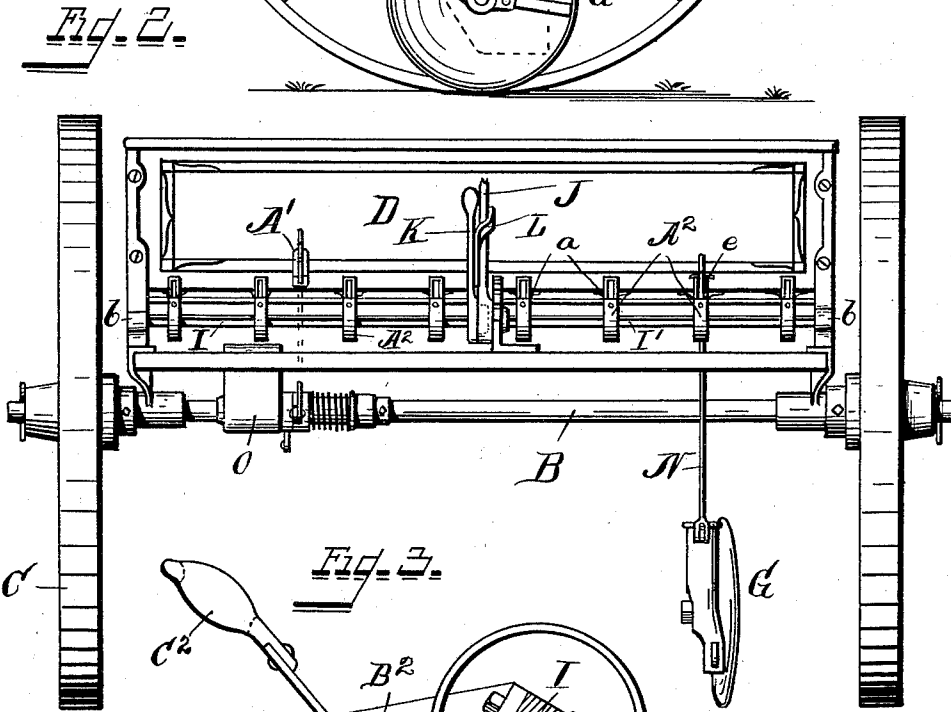
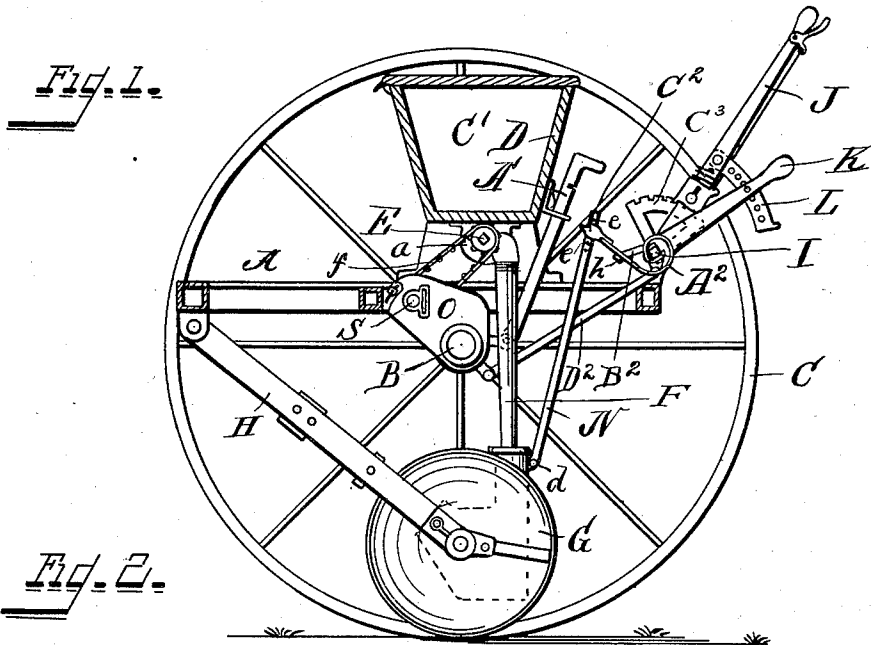
No. 685,946.

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G. L. ROBY.
GRAIN DRILL.

(Application filed July 22, 1901.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

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GRAIN-DRILL.

SPECIFICATION forming part of Letters Patent No. 685,946, dated November 5, 1901.

Original application filed February 28, 1901, Serial No. 49,248. Divided and this application filed July 22, 1901. Serial No. 69,237. (No model.)

To all whom it may concern:

Be it known that I, GEORGE L. ROBY, a citizen of the United States, residing at Dayton, in the county of Montgomery and 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 drawings, forming part of this specification.

My invention relates to grain-drills, and more particularly to that class of grain-drills employing spring-pressure devices for the furrow-openers, whether the same be disks or hoes; and it has for its object the provision of novel means whereby the spring-pressure upon the furrow-openers may be distributed equally or unequally to enable the drill to do proper work, both on level ground and on hill-sides, all as will be hereinafter more fully set forth, and specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a sectional side elevation of a grain-drill embodying my invention. Fig. 2 is a rear elevation of the machine with parts omitted to better illustrate the remaining parts. Fig. 3 is an enlarged detail side elevation, partly in section, of one of the spring-pressure devices and associated parts.

The same letters of reference are used to indicate identical parts in all the figures.

Referring to Figs. 1 and 2, A is the main frame of the drill, of the usual or any suitable construction, supported on an axle B, having on its end the usual carrying-wheels C, which are united to the axle by ratchet-and-pawl mechanism in a well-known manner in this class of machines to cause the rotation of the axle forward when the machine is drawn forward or is being turned and to release it from rotation when the machine is being backed.

D is the hopper, carried upon the main frame and provided in its bottom with a series of openings, to which are united in the usual or any suitable manner the feed-cups *a*, containing the usual or any suitably-constructed force-feed wheels fast upon a shaft E, suitably journaled to the under side of the

hopper and extending through openings in all the cups *a* after a manner well known in grain-drill construction.

The feed-shaft E and the feed-wheels carried thereby are rotated by driving mechanism from the axle B in a manner described in a prior application of mine to feed the grain in a constant regulated stream from the hopper down through the feed-cups into usual spouts F, suspended therefrom, which convey it to depositing-channels either in the boots of hoes which form the furrow-openers or to sides of disks G near the ground, which disks form the furrow-openers, the disks and hoes being well known as interchangeable means for forming the furrows in grain-drills and both of which are carried on independent drag-bars H, whose forward ends are pivoted, usually, to the forward cross-bar of the main frame A, as indicated in Fig. 1.

The description of the machine so far is of a well-known type and familiar to those skilled in the art, and I will now proceed to describe the first feature of my invention for giving an equal or unequal spring-pressure to the furrow-openers.

Heretofore it has been common in grain-drills to employ a single rock-shaft connected by spring-pressure devices to all of the drag-bars or to the hoes or disks for the purpose of forcing the furrow-openers, whether hoes or disks, into the ground to the proper depth and at the same time by reason of the spring connection to permit any hoe or disk to ride independently in passing an obstruction, such as a stump or stone, and then immediately resume its proper working position in the ground and by means of the same rock-shaft and connections to raise all of the furrow-openers from the ground in transporting the machine from place to place when not in use. This old method of uniting all of the furrow-openers to a single rock-shaft has been found objectionable in hillside-work, for the reason that the lower side of the machine sustaining the greater part of the weight would force the furrow-openers from the middle to the lower end of the machine into the ground to a greater depth than the other furrow-openers from the middle to the upper end of the ma-

chine, which would not be properly forced into the ground, and as a result furrows of unequal depths would be made, the upper furrows not being sufficiently deep and the lower furrows being deeper than necessary, and to overcome this objection I employ a two-part or divided rock-shaft I, journaled in brackets *b* at each end carried on the main frame A and at their abutting or middle ends in a segment-rack support *c*, secured to the rear cross-bar of the main frame at its middle. The inner end of the divided shaft I' has fast to it a hand lock-lever J, engaging the segment-rack C³, and the inner end of the shaft I has fast upon it a hand-lever K adjacent to the hand-lever J and capable of being locked thereto by means of a segment-arm L, containing a series of perforations with any one of which a pin secured to the lever K in any suitable or convenient manner can be made to engage in order to lock the lever K to the lever J in any of its adjusted positions, and thereby lock the shaft I' to the shaft I when the two have been properly adjusted to each other. Coiled around the shafts I I' are volute springs A², whose rear ends are bolted or made fast to the shaft and whose forward ends, straightened out, have secured to them slotted head-blocks C², through which the upper ends of the rigid rods N are passed and are engaged by pins *e*, extending through two of a series of perforations on the upper and undersides of the head-block, as seen in Fig. 1. The lower ends of the rods or bars N are pivoted, as at *d*, to the furrow-openers, the construction being such that the forward rotation of the shafts I I' will put the springs A² under tension, thereby pressing down the bars N to force the furrow-openers into the ground to the required depth, as will be readily understood. To lift all of the bars N and furrow-openers by the backward rocking of the shafts I I', I provide bracket-arms B², Figs. 1 and 3, which, secured to the shafts I I', extend forward and have angular extensions *h* engaging the under sides of the springs A² near the head-blocks, so that in lifting the furrow-openers very little, if any, strain will be put upon the springs A², and they are not uncoiled by the lifting of the furrow-openers to any degree whatever, as will be readily understood. While I have described this particular and novel form of coiled spring-pressure device applied to the rear ends of the furrow-openers, it is to be understood that my invention in respect to the divided rock-shaft and independent lever mechanism therefor is not to be limited to this particular form of spring-pressure device, as there are a variety of other well-known forms of spring-pressure devices common to the grain-drill art for applying spring-pressure to the furrow-openers which are yieldingly independent in passing obstructions. In the example that I have shown the lever K is locked to the segment L at about midway, as seen in Fig. 1, when the divided

shaft I I' is in normal position and all of the springs A² are either without tension or are under the same tension, and by operating the lever J under this condition of adjustment all of the furrow-openers are pressed into the ground with equal tension or may be lifted entirely out of the ground, and this is the adjustment used when the machine is working on level ground. Should the machine be worked on a sidehill and assuming that the left-hand end of Fig. 2 was on the upper side of the hill, the lever K would be advanced toward the lever J, thereby imparting a much greater tension to the springs carried by the shaft I than to those carried by the shaft I', thereby equalizing the depth of penetration of the entire set of furrow-openers and insuring the depositing of the seed to the right depth in the soil. If, on the other hand, the right-hand side of the machine of Fig. 2 was on the elevated side of the hill, the lever J would be advanced and the lever K drawn backward to give greater pressure to the springs on the right-hand side than to those on the left, as will be readily understood. At the same time it will be observed that both levers are coupled for unitary action through the medium of the hand-lever J, as will be readily understood.

This application is a division of the application filed by me February 28, 1901, Serial No. 49,248, and the machine herein illustrated and described is the same as the machine shown in said application, and any subject-matter claimed by said application is hereby disclaimed in this case.

Having thus fully described my invention, I claim—

1. In a grain-drill, the combination of a series of drag-bars carrying furrow-openers, seeding mechanism for conveying the grain into the furrows made by said openers, a two-part rock-shaft connected by spring-pressure devices with said furrow-openers, means for adjustably uniting the two parts of said rock-shaft together, and lever mechanism for operating both rock-shafts to press the furrow-openers into the ground and to raise them from the ground, substantially as described.

2. In a grain-drill, the combination of a series of drag-bars carrying furrow-openers, seeding mechanism for conveying the grain into the furrows made by said openers, a two-part rock-shaft connected by spring-pressure devices with said furrow-openers, an adjustable locking device between the two parts of said shaft for putting the springs carried by each under different tensions, and lever mechanism for operating both rock-shafts to press the furrow-openers into the ground and to raise them from the ground, substantially as described.

3. In a grain-drill, the combination, of a series of drag-bars carrying furrow-openers, seeding mechanism for conveying the grain into the furrows made by said openers, a two-

part rock-shaft connected by spring-pressure devices with said furrow-openers, means for adjustably uniting the two parts of said rock-shaft together, and a single lever for operating both rock-shafts to press the furrow-openers into the ground and to raise them from the ground, substantially as described.

4. In a grain-drill, the combination of a series of drag-bars carrying furrow-openers, seeding mechanism for conveying the grain into the furrows made by said openers, a two-part rock-shaft connected by spring-pressure devices with said furrow-openers, an adjustable locking device between the two parts of said shaft for putting the springs carried by each under different tension, and a single lever for operating both rock-shafts to press the furrow-openers into the ground and to raise them from the ground, substantially as described.

5. In a grain-drill, the combination of a se-

ries of furrow-openers, a rock-shaft for raising and lowering the same, a series of volute springs surrounding said rock-shaft and fast thereto at one end, and rigid links connecting the free ends of said springs and the furrow-openers, substantially as described.

6. In a grain-drill, the combination of a series of furrow-openers, a rock-shaft for raising and lowering the same, a series of volute springs surrounding said rock-shaft and fast thereto at one end, rigid links connecting the free ends of said springs and the furrow-openers, and stops applied to said springs near their free ends to engage the same when the rock-shaft is turned to raise the furrow-openers, substantially as described.

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Witnesses:

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