(No Model.) 2 Sheets—Sheet 1.

L. SCOFIELD.

CHECK ROW ATTACHMENT.

No. 419,291. Patented Jan. 14, 1890.

Fig. 1.

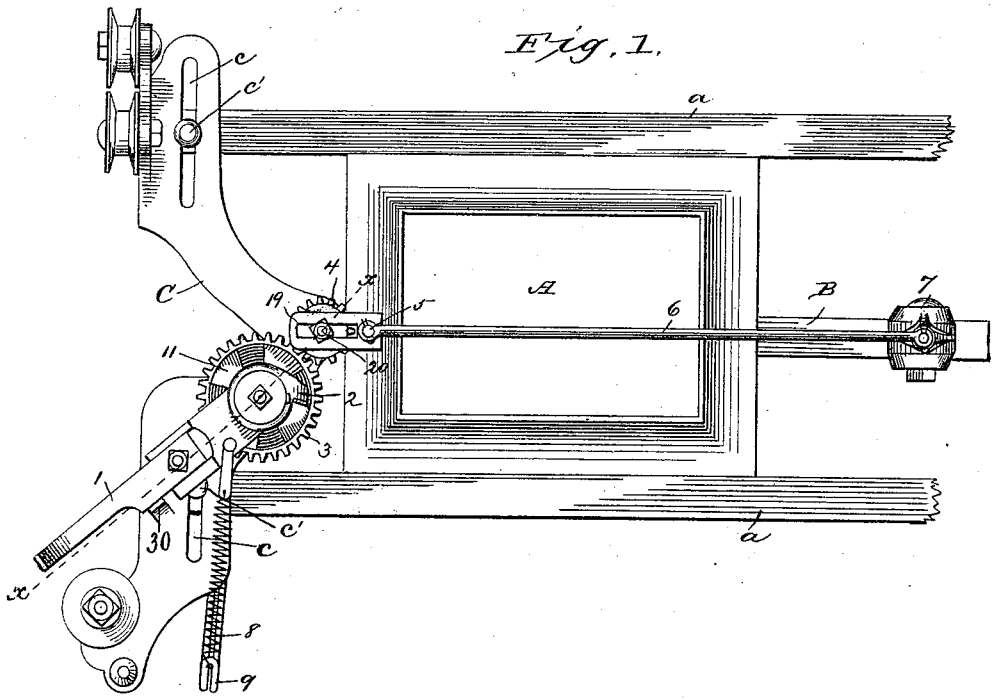
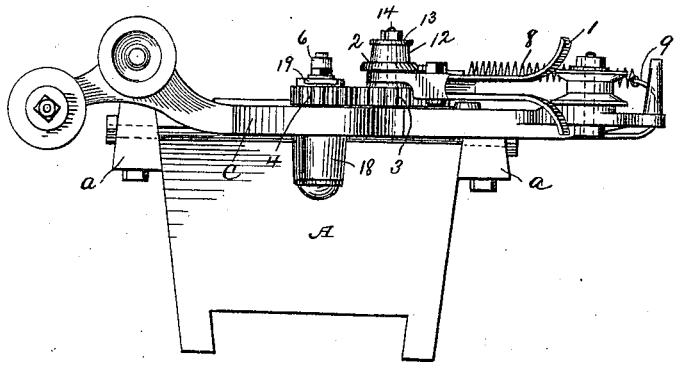


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

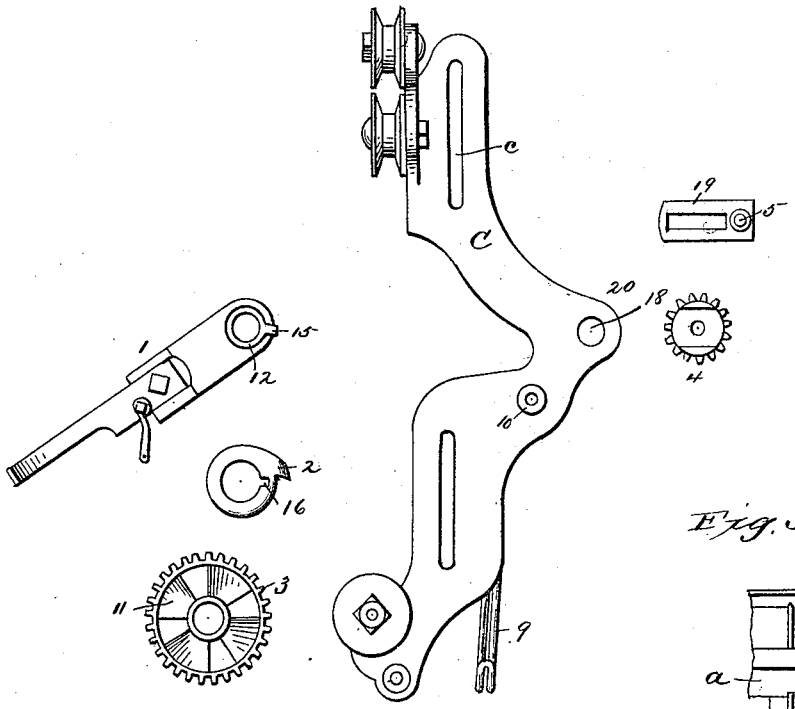


Fig. 5.

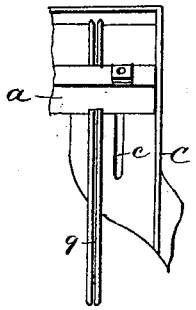
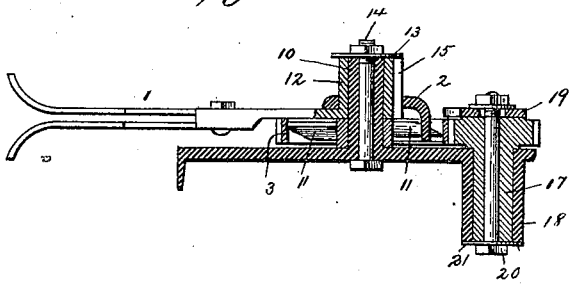


Fig. 4



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UNITED STATES PATENT OFFICE.

LEVI SCOFIELD, OF GRAND HAVEN, MICHIGAN.

CHECK-ROW ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 419,291, dated January 14, 1890.

Application filed September 28, 1889. Serial No. 325,408. (No model.)

To all whom it may concern:

Be it known that I, LEVI SCOFIELD, of Grand Haven, in the county of Ottawa and State of Michigan, have invented certain new and useful Improvements in Check-Row Attachments for Planters; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

My present invention relates to that class of planters wherein the seed-dropping devices are operated by an actuating mechanism mounted upon the planter and deriving its motion from a check-row cord or wire; and it has for its object to simplify and cheapen the construction and at the same time improve the operation of such an actuating mechanism; to which end my said invention consists in the novel construction, arrangement, and application of the check-row attachment hereinafter described and claimed.

In the drawings, Figure 1 is a top plan view, and Fig. 2 an end elevation, of my improved attachment. Fig. 3 is a view showing the several parts detached. Fig. 4 is a vertical section on the line *x x*, Fig. 1. Fig. 5 is a detail illustrating manner of attaching the spring-support.

Similar letters and figures of reference in the several figures indicate the same parts.

A designates one of the ordinary seed-boxes, *a a* the two cross-bars secured to and supporting the seed-boxes, and B the slide-bar connected to the seed-dropping devices.

C is a cross-head or plate carrying the usual or any approved guiding-pulleys for directing the check-row cord or wire. The plate C is provided with longitudinal slots *c* for the reception of fastening-bolts *c'*, engaging the cross-bars *a*, whereby said plate is securely held in position and can readily be adjusted in the line of travel of the planter to regulate the drop of the seed. This is a feature of some importance in its application to the particular style of actuating mechanism shown, as by it the operator is enabled to regulate the machine to suit the speed of the animals drawing it.

The actuating devices proper embrace a forked lever 1, carrying a pawl 2, engaging shoulders upon a spur-gear 3, and a pinion 4, engaged by the spur-gear 3 and carrying an adjustable crank 5, while a pitman 6 extends from said crank-pin to an adjustable post 7, mounted directly upon the slide-bar B. A spring 8, connected at one end to the lever 1 and at the other to an adjustable support 9, serves to return the lever when released by the knot.

To assemble and connect these operating elements in the most compact and desirable form with the least expenditure of time and labor in fitting the parts, the following plan of construction has been devised: The plate C is formed or provided with a hub or boss 10, forming a bearing to receive the gear 3 and the lever 1, both of which are thus supported and work directly upon said boss. The gear 3 is formed with inclined arms 11, something after the manner of a rotary fan or propeller, the highest points on the upper surface forming abutments to receive the thrust of the pawl, and as both faces of the gear are the same it can be applied either side up, and should one side become worn or otherwise rendered defective the gear can be turned over, thus presenting a new ratchet-surface. As the gear 3 can be and is cast in finished form, no special fitting is required to adapt it to the pawl, and, being formed with arms providing openings through the gear, it is rendered self-clearing, and is not so liable to become clogged as the ordinary ratcheted disk.

The lever 1, mounted upon the hub 10 above the gear 3, is or may be furnished with a collar 12 to receive the pawl 2, and the several parts are retained in operative position by a washer 13 and bolt 14, the latter passing into or through the hub 10. The pawl 2 is made in the form of a disk with a tooth at one edge projecting downward to engage the shoulders on the gear 3. It is fitted loosely upon the collar 12 of lever 1 and prevented from rotary movement independent of the lever by a projection or key 15, entering a slot or groove 16 in said pawl. The groove 16 is preferably formed in the side of the disk to which the pawl is secured, thus preventing cramping on the key as the disk rises and falls, or is tilted on its supporting collar or bearing. The pawl is thus supported wholly upon

the lever 1, and its vertical play is limited by the washer at the top of the hub, and, being loosely fitted upon the lever, it is held by its own weight in contact with the gear 3, thereby dispensing with the use of springs to hold the pawl upon the ratchet, and in like measure eliminating the element of friction and jamming resulting from the use of springs. The pawl is at all times free to rise, as the lever is retracted, to pass the abutments or shoulders on the gear 3.

The pinion 4 is formed or provided with a hub 17, which is received in a hole or bearing 18, formed in the plate C, thus furnishing a firm bearing and support for said pinion, and upon the upper face of the pinion is mounted an adjustable plate 19, carrying the crank-pin 5. This plate 19 is preferably received in a groove or between shoulders on the upper side of the pinion, and the plate is retained in adjusted position and the pinion confined within its bearing in the plate C by a bolt 20, passing through the plate 19 and pinion 4 and provided with a washer 21 beneath the plate C.

Although I have in the drawings shown a single seed-box and check-row attachment, it is understood that two are employed on the machine, with a single slide-bar connecting both seed-dropping mechanisms.

A separate post 7 is provided for each check-row attachment, and they are connected to the slide-bar B so as to permit of their adjustment longitudinally of the slide-bar, as shown, for example, in my patent, No. 388,077, dated August 21, 1888. The pitman 6, connecting the crank-pin and post 7, is detachably applied to the latter, as by being furnished with an eye or socket fitting the upper end of said post, so that it can readily be connected and disconnected from the slide-bar.

The support 9 for the outer end of the retracting-spring 8 is adjustably mounted, so as to vary the tension of the spring by inserting the inner end of said support between the cross-bar *a* and the plate C (a shallow groove having been formed in the surface of said bar) and tightening up the nut on the bolt *c* to clamp and hold said support in adjusted position. By loosening the bolt *c* the support can be drawn out or pushed in, thereby increasing or diminishing the tension of the spring.

The support is preferably formed with an upturned end to receive the spring and of greater width than thickness, so as to prevent turning, and at the same time require but a shallow seat in the cross-bar *a*.

The preferred, because the cheapest and most easily constructed, form of support is that shown, composed of a rod folded or bent at the center and having its outer end turned upward to bring the loop about in the plane of the lever 1.

The operation of my improved check-row attachment will readily be understood. The parts are preferably so adjusted that when the arm 1 is retracted against a limiting stop 30 the crank-pin will be in line with the post and the axis of the pinion, or, in other words, on the dead-center. When the lever 1 is drawn back by a knot on the check-row cord or wire, the pawl, being in engagement with the gear 3, will cause the latter to make a partial rotation and drive the pinion half-way around, thus producing a reciprocating movement of the slide-bar. When the lever is released by the knot, it is drawn back by the spring to the first position, and during this movement the pawl rides loosely up and over the incline on the gear until the end of the return-stroke, when it settles down behind one of the abutments or shoulders in position to again engage and move the gear. It will be observed that a direct connection is formed between the crank and slide-bar, the post being rigidly connected to the latter, so that the amount of lost motion is reduced to the minimum. Moreover, the crank being located in line with the slide-bar and connected to a post rigidly secured thereto, there is little, if any, liability of twisting or cramping the slide-bar in its bearings, as the thrust of the pitman is in line with the movement of the slide-bar.

Having thus described my invention, what I claim as new is—

1. In a check-row attachment such as described, the combination, with the cross-bars and seed-box, of the plate or cross-head adjustably secured to the cross-bars, the actuating mechanism and guiding-rollers mounted upon said plate, and a pitman directly connecting the crank of the actuating devices and the slide-bar controlling the seed mechanism, substantially as described.

2. In a check-row attachment such as described, the combination, with the slide-bar, of the actuating mechanism therefor, the same comprising a swinging lever and ratchet-gear, a pinion carrying a crank-pin, and a pitman connecting said crank-pin and the slide-bar, substantially as described.

3. In a check-row attachment such as described, the combination, with the cross-head or plate provided with a boss or hub, of the gear-wheel and lever mounted upon said boss, and the disk-pawl mounted upon the lever and engaging abutments on the gear-wheel, substantially as described.

4. In a check-row attachment such as described, the combination, with the supporting-plate provided with a boss or hub formed integral therewith, of a gear-wheel mounted upon said boss, a lever also mounted upon the boss above the gear, a pawl loosely supported upon a collar on said lever, with devices to prevent its rotation thereon, said pawl engaging shoulders on the gear, and a bolt passing into or through the boss for confining the lever and gear in position thereon, substantially as described.

5. In a check-row attachment such as de-

scribed, the combination of the pinion carrying the crank-pin and provided with a hub taking its bearing in the supporting-plate, a driving-gear mounted upon a boss or stud and provided with ratchet-teeth or abutments, and a lever mounted upon said stud above the gear and carrying a gravitating pawl, substantially as described.

6. In a check-row attachment such as described, and in combination with the supporting-plate and a reciprocating lever carrying a pawl, a gear-wheel provided with inclined arms or spokes forming ratchet-teeth for cooperating with the pawl, substantially as described.

7. In a check-row attachment such as described, the combination, with the cross-head or plate detachably applied to the cross-bar and carrying the actuating mechanism, of a retracting-spring and its adjustable support, the latter inserted and confined between the plate and cross-bar, substantially as described.

8. In a check-row attachment such as described, and in combination with the plate or cross-head supporting the actuating mechanism detachably secured to the cross-bar, the adjustable spring-support consisting of a bent rod seated in a groove in the cross-bar and confined by the plate or cross-head, substantially as described.

9. In a check-row attachment such as described, the combination, with the slide-bar, the seed-box, and the cross-bars secured to the seed-box at or near the upper portion thereof, of the cross-head or plate secured to said cross-bars and carrying the actuating mechanism, a post secured to the slide-bar, and a pitman extending above the seed-box in line with the slide-bar and connecting the post to the crank-pin of the actuating mechanism, substantially as described.

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