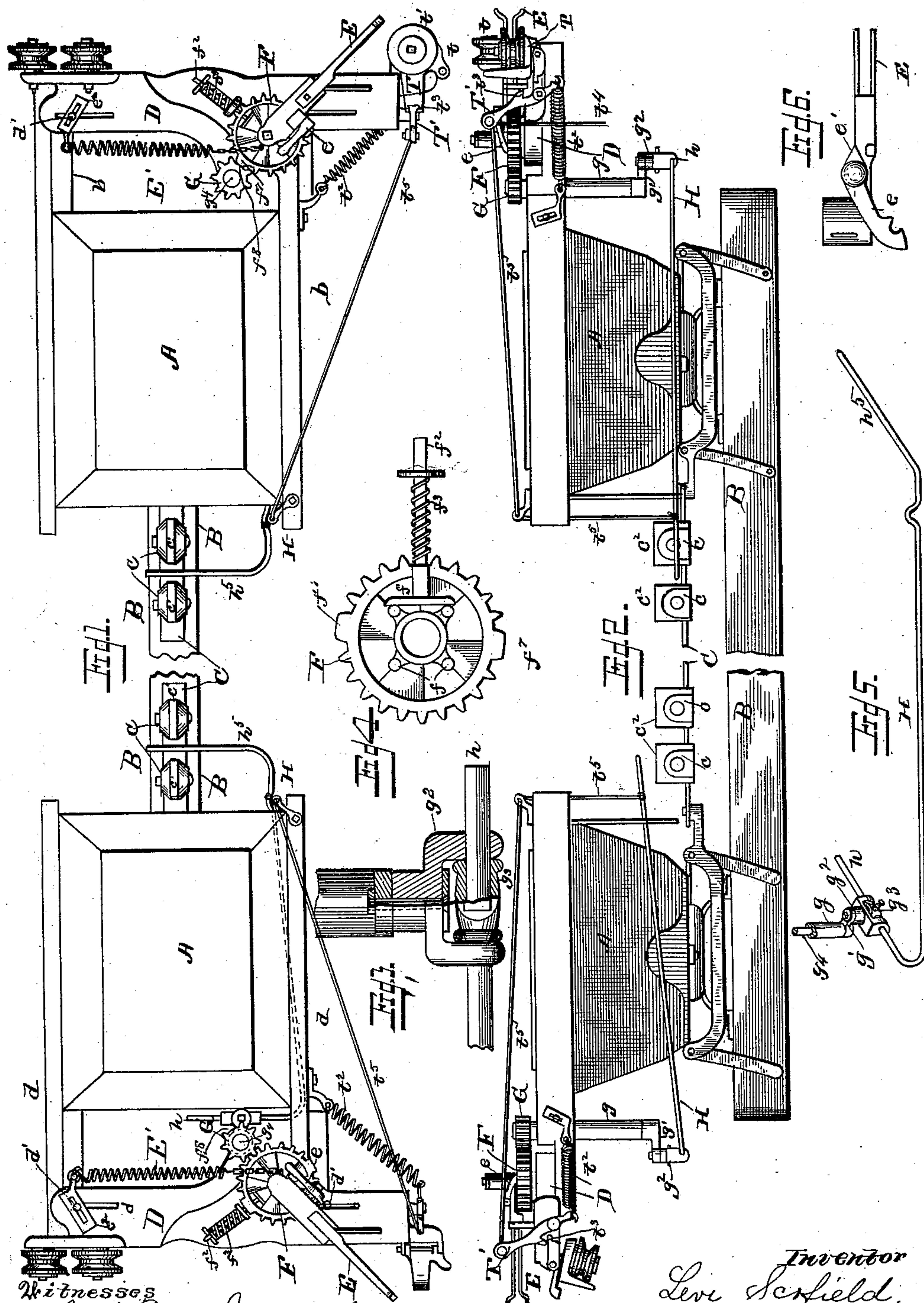


(No Model.)

L. SCOFIELD.
CHECK ROW PLANTER.

No. 466,431.

Patented Jan. 5, 1892.



Witnesses
J. M. Fowler Jr.
A. J. Stewart.

Inventor
Levi Scofield,
By Church & Church
his Attorneys.

UNITED STATES PATENT OFFICE.

LEVI SCOFIELD, OF GRAND HAVEN, MICHIGAN.

CHECK-ROW PLANTER.

SPECIFICATION forming part of Letters Patent No. 466,431, dated January 5, 1892.

Application filed August 21, 1891. Serial No. 403,314. (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 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 letters of reference marked thereon.

This invention relates to improvements in that class of planters wherein the seed-dropping or feeding devices are controlled in their movements by actuating mechanism mounted upon the planter and driven by a check-row cord or wire; and it consists in certain improvements in the actuating mechanism, as hereinafter described.

In the drawings, Figure 1 is a top plan view, and Fig. 2 is a side elevation, of my improved attachment, showing the same as applied to seed-boxes. Fig. 3 is a side elevation, partly in section, of the adjustable connection between the crank and pitman or connecting-rod. Fig. 4 is a detail view showing the under side of the ratchet-pinion and the locking-plate. Fig. 5 is a view in perspective of the pitman and crank. Fig. 6 is a detail showing the pawl.

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

A designates the seed-boxes, B the cross-piece upon which they are mounted, and C the shake-bar for giving motion to the feeding devices. These parts may be of any usual or well-known construction, and in the example given I have selected the swinging pawl-frame of my patent, No. 313,891, dated March 17, 1885, as the means for supporting the shake-bar and transmitting motion from the latter to the seed-plate; but other devices may be employed for these purposes.

The actuating devices for giving motion to the shake-bar are preferably mounted upon a frame or plate D, which finds its support upon two bars *d d*, and is clamped thereto by bolts *d' d'*. The frame D is adjustably secured to its supports, so that it can be moved forward or backward to accommodate the speed of the team.

The actuating devices in general are sub-

stantially the same as shown in my patent, No. 419,291, dated January 14, 1890—that is to say, they have the same style of forked lever E, spring E', ratchet-wheel F, and crank-pinion G for communicating motion to the pitman or connecting-rod H; but it differs from and is an improvement upon said patented device in the particulars about to be explained. The pawl *e*, engaging the ratchet-wheel, is pivoted in a lug on the forked lever, and is provided with a stop-arm *e'*, engaging said lever to prevent the operating end of the pawl from being thrown off the ratchet. The shaft *g*⁴ of the crank-pinion G is extended down through the elongated bearing or sleeve *g*, formed on the plate D, and to the lower end of said shaft is attached a crank-arm *g'*, in or on which a yoke or head *g*² is pivotally secured.

The pitman or connecting rod H is provided with a laterally-projecting arm *h*, which is supported in guides in or upon the yoke or head *g*², and the said arm is held in position on the head by a collar *g*³. Two distinct results are accomplished by this connection. It permits the adjustment of the actuating devices upon or with respect to the rest of the machine, including the pitman, without disturbing the adjustment of the shake-bar, this being effected by sliding the yoke or head longitudinally of the crank *h*, thereby preserving the same distance between the crank and the point at which the pitman engages the shake-bar. Another important feature is the formation of a pivotal point upon which the connecting-rod can be turned in a vertical direction, for a purpose to be hereinafter described.

Other means may be provided for permitting vertical motion at the inner end or point of contact between the reciprocating pitman or equivalent connection and the shake-bar; but that described has been found satisfactory in practice.

The inner end or portion of the pitman H is furnished with an inwardly-projecting arm *h*⁵, substantially parallel with the arm *h*, arranged to play between or make contact with shoulders or stops *c c* on the shake-bar C. When, as in the present instance, the shake-bar is mounted upon pivotal supporting-links, which throw over the centers to hold the shake-bar at the ends of its strokes in oppo-

site directions, the stops c c are adjustably secured to the shake-bar, so that in setting the feeding devices the stop c on one side of arm h^5 is set up against the latter, after which the shake-bar is moved to the opposite end of its stroke, the crank is reversed, and the other stop c is set against the opposite side of the arm h^5 .

Upon the under face of the ratchet-wheel F is formed or attached four lugs f , against which a locking-plate f' is arranged to bear, said plate being furnished with a guide-stem f^2 and held against the lugs by a spring f^3 . Each quarter-turn of the ratchet-wheel effects a half-turn of the crank-pinion and the locking-plate serves to retain the ratchet-wheel on the quarter during the backstroke of the forked arm.

The spring E' for retracting the forked lever is connected at one end to a slotted plate e^2 , which is clamped in an adjusted position by one of the bolts serving to secure the plate D to its support or by an independent bolt in suitable position on said plate. The opposite end of the spring is secured to a chain or equivalent flexible connection attached to the hub of the forked lever and winding thereon as the lever is drawn back to operate the seeding devices.

One and perhaps the most valuable feature of my present improvements consists in the novel means provided for disconnecting the pitman or equivalent element of an actuating mechanism of this kind from the shake-bar or equivalent part of the feeding mechanism in and by the act of disconnecting or throwing off the check-row cord or wire. To accomplish this result I provide means whereby the pitman or equivalent part can be readily detached from the shake-bar and connect said movable member to the tripping devices for throwing off the check-row cord, so that when the trip is operated the connection between the actuating devices and feeding mechanism will be broken. As illustrating a simple embodiment of this feature I have shown an ordinary tripping device consisting of the pivoted plate T , carrying the guide t and roller t' and arranged to swing outward or away from the forked lever to withdraw the cord. The plate T is held or locked in an upright position by a lever T' , forced forward by a spring t^2 , and provided with a lip or catch t^3 , engaging the plate T . A cord t^4 , attached to lever T' and extended to a convenient point to be grasped by the driver, serves to withdraw the lever and release the tilting plate.

The detachable part of the connection between the actuating devices and the feeding mechanism here represented by the inner end of the pitman is connected to the trip-lever T' , as by a cord t^5 or any equivalent connection, so that as soon as the check-row cord is thrown off the pitman will be raised from between and held removed from the shoulders on the shake-bar, and thus the connection will be held open so long as the throw-off remains

unlatched. When the check-row cord is inserted in the actuating devices—on the opposite side of the planter, for instance—the actuating devices on the other side will be disconnected from the shake-bar, and that on the side when the cord is inserted will be automatically placed in engagement with the shake-bar in the act of setting the throw-off. As it may sometimes happen that the shake-bar will be arrested at the end of its stroke opposite to that at which the pitman happens to stand when the throw-off is set, means are provided for guiding the pitman between the shoulders on the shake-bar during its first stroke. Such a means is furnished by the upper faces c^2 c^2 of the stops c , which are made long enough to receive the arm of the pitman and permit it to travel thereon until it enters between the stops.

In applying this part of my present invention to the particular form of actuating mechanism shown in the drawings I have taken advantage of the novel form of connection between the crank and pitman as providing a convenient means for permitting the vertical motion of the inner or free end of the pitman for effecting the engagement and disengagement with the shake-bar; but it is evident that other equivalent means may be substituted or used for this purpose. Moreover, other equivalent forms of connecting devices may be interposed between the throw-off and pitman or other device connected to the shake-bar, and the connection may be made with other parts of the throw-off instead of the catch-lever; but I prefer the latter arrangement, in that it permits the stroke of the forked lever to be completed before effecting the disconnection and permits the withdrawal of the pitman by the action of the spring after the shake-bar has completed its movement in either direction and without in the least interfering with the prompt action of the throw-off.

One of the defects heretofore existing in actuating mechanism of this class, wherein a reciprocating member—such as the forked lever and its pawl—is employed for impelling the transmitting devices, has been the tendency of the parts so acted upon to continue in motion after the forked lever has been arrested. This racing of the parts has the effect of changing the position of the shake-bar and feeding devices so that they do not stand in the proper positions at each end of the stroke of the forked lever, but are arrested at some intermediate point where they interfere with the proper feeding action. It is with a view to overcoming this defective action and insure the proper positioning of the transmitting devices that the locking-plate f' is applied to the ratchet-wheel F . The lugs or shoulders F on the ratchet-wheel are so disposed relatively to the excursions of the forked lever E that the plate f' will bear equally on two of them when said lever completes its stroke, and should there be any

tendency to racing or carrying ahead it will be resisted by the plate f' and its spring, and the ratchet-wheel will be returned to and held in the proper position by the action of the spring f^3 . It will be noticed that the plate f bears against lugs on opposite sides of the center and is pressed against said lugs by the spring, and any attempt to turn the lugs about the center of rotation will have the effect of transferring the pressure of the spring from on opposite sides of the center to one side only. The pressure brought to bear upon the forked lever is sufficient to overcome spring f^3 and permit the lugs to pass the plate f' ; but when the forward or operative stroke of the forked lever is completed the spring f^3 will press the plate f' so as to engage lugs f on opposite sides of the center of rotation. Hence the further motion of the ratchet-wheel and connections will be prevented until such time as sufficient pressure is brought to bear to overcome the spring f^3 and force the plate f' back sufficiently to pass the lugs f .

In setting up the mechanism some difficulty is experienced by unskilled hands in properly adjusting the relative positions of the pinion G and ratchet-wheel F , and as it is of the utmost importance to the correct and satisfactory action of the feeding devices that the crank should always stand in proper relation to the ratchet-wheel I have made provision whereby it is rendered impossible that any but the correct adjustment can be made, even by the most ignorant. This I accomplish by forming the pinion with one wide space f^8 between the teeth and providing the ratchet-wheel F with one or more wide teeth f^7 , there being two such teeth in the example illustrated, corresponding to the two positions of the crank. The teeth f^7 are adapted to enter the wider space between the teeth of pinion G and cannot enter at any other point. Hence in order to cause the ratchet-wheel and pinion to run together or in gear it is essential that one of the wide teeth f^7 should be inserted in the wider space, and when this is done the proper adjustment is secured.

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

1. The combination, in a planter such as described and with the actuating devices and seeding mechanism, of a throw-off for the check-row cord, a detachable connection between the actuating and seeding devices, and a connection between the throw-off and said detachable connection, substantially as described, whereby when the check-row cord is disengaged by the throw-off the actuating devices will be released from the seeding mechanism.

2. In a planter such as described, the combination, with the seeding mechanism and actuating devices jointed to the seeding mechanism by a detachable connection and provided with a throw-off for disengaging the check-row cord from the actuating devices, of

connecting devices intermediate the throw-off, said detachable connection operating when the former is brought into action to disconnect or render inoperative the connection between the actuating devices and the seeding mechanism, substantially as described.

3. In a planter such as described, the combination of the actuating mechanism and a throw-off for the check-row cord, a seeding device provided with a reciprocating actuating member, and a reciprocating bar or pitman forming a part of the actuating devices and detachably engaging the reciprocating actuating member of the seeding devices, said reciprocating bar or pitman being connected to move in unison with a movable part of the throw-off, substantially as described.

4. In a planter such as described, the combination, with the pitman, of the actuating devices, the shake-bar of the seeding mechanism, the throw-off for the check-row cord, and a detachable connection between the pitman and shake-bar connected to the trip-lever of the throw-off, substantially as described.

5. In a planter such as described, the combination, with actuating devices provided with a vertically movable or swinging pitman and a bar connected to the seeding devices and provided with stops or shoulders for the pitman to engage, of a throw-off for the check-row cord connected to the pitman and operating when the throw-off is brought into action to raise the pitman from engagement with the shoulders on the said bar, substantially as described.

6. In a planter such as described, the combination, with the shake-bar carrying shoulders and the pitman engaging said shoulders to reciprocate the shake-bar but movable with respect thereto to disconnect the pitman and shake-bar, of a throw-off for the check-row cord, provided with a catch-lever or latch, the latter being connected to the pitman for moving it out of engagement with the shoulders on the shake-bar when the check-row cord is cast off, substantially as described.

7. In a planter such as described, the combination, with the crank of the actuating devices and the shake-bar or an equivalent reciprocating member of the seeding devices, of the pitman connected to the shake-bar or its equivalent and provided with a laterally-projecting arm journaled to turn in a yoke pivoted on the crank, substantially as described.

8. In a planter such as described, provided with an adjustable actuating mechanism and in combination with the crank thereof, a yoke pivoted to the crank-arm, an arm on the pitman adjustably held in said yoke and standing substantially at right angles to the pitman, and a shake-bar engaged by an arm on the inner end of the pitman, substantially as described, whereby the yoke may be moved laterally of the pitman or the pitman laterally of the shake-bar without altering the position or throw of the latter, substantially as set forth.

9. In a planter such as described, and in combination with the crank-arm of the actuating devices and the reciprocating shake-bar, the pitman pivotally supported upon a yoke 5 carried by the crank-arm, the inner end of said pitman operating between shoulders on the shake-bar and being adapted to be raised out of engagement therewith when turned in the yoke, substantially as described.
10. In a planter such as described, the combination of the pitman hinged or pivoted to the crank-arm of the actuating mechanism, the shake-bar, and the shoulders or stops thereon, between which an arm on the pitman 15 operates, said shoulders being formed or provided with extended faces to receive and guide the arm of the pitman, substantially as described.
11. In a planter such as described, the combination, with the swinging or laterally-movable arm of the pitman, the shake-bar, and the stops or shoulders thereon, with an extended bearing for sustaining the pitman, of the throw-off connected to the pitman and 25 operating to raise the latter above the shoulders on the shake-bar, substantially as described.
12. In a planter such as described, the combination of the shake-bar mounted to swing upon pivotal supports which serve to hold said bar at the ends of its movements in opposite directions, the stops adjustably secured to said bar, a pitman movable with respect to said stops to disengage the actuating mechanism from the seeding devices, and 35 a throw-off connected to the pitman, substantially as described.
13. In a planter such as described, the combination, with the trip-lever, of the throw-off 40 and the retracting spring therefor, and a cord or equivalent connection interposed between said trip-lever and the detachable connection between the actuating and seeding mechanisms, substantially as described, whereby when 45 the throw-off is released the spring connected to the trip-lever will operate to disconnect the actuating devices from the seeding mechanism and when the throw-off is reset the connection will be re-established.
14. In an actuating mechanism such as described, the combination of the arm of the pitman and its collar, the yoke embracing said collar and provided with bearings for the arm, and the crank-arm to which said yoke is pivotally attached, substantially as described, 55 scribed.
15. In a planter such as described, the combination of the two feeding mechanisms and the shake-bar, two separate actuating mechanisms detachably connected to the shake-bar, a throw-off for each actuating mechanism, and a connection uniting each throw-off and the detachable connection between its actuating mechanism and the shake-bar, substantially as described, whereby when the 65 check-row cord is thrown off from either actuating mechanism it will effect a disengagement and when applied to either it will effect a re-engagement.
16. In an actuating mechanism such as described, the combination of the forked lever and ratchet-wheel, the pawl pivoted upon the lever and provided with a stop-shoulder for preventing the disengagement of the pawl with the ratchet-face of the wheel, substantially as described. 75
17. In a planter such as described, the combination, with the seeding devices and the shake-bar, of an actuating mechanism provided with a crank-shaft depending from the supporting-plate and substantially in the plane of the shake-bar, and a pitman standing to one side of the seed-box and connected to the crank-arm and the shake-bar by parallel arms, substantially as described. 85
18. In an actuating mechanism of the class described, the combination, with the transmitting devices for communicating motion to the feeding devices, of a pair of gears F G, the one provided with an abnormally wide 90 tooth and the other with a corresponding space to receive it, said abnormally wide tooth being so disposed relatively to the rest of the transmitting devices as to insure their proper adjustment when the gears are set to operate 95 together, substantially as described.
- LEVI SCOFIELD.
- Witnesses:
W. C. SHELDON, Jr.,
B. F. HARBECK.
- 50 14. In an actuating mechanism such as de-