

(No Model.)

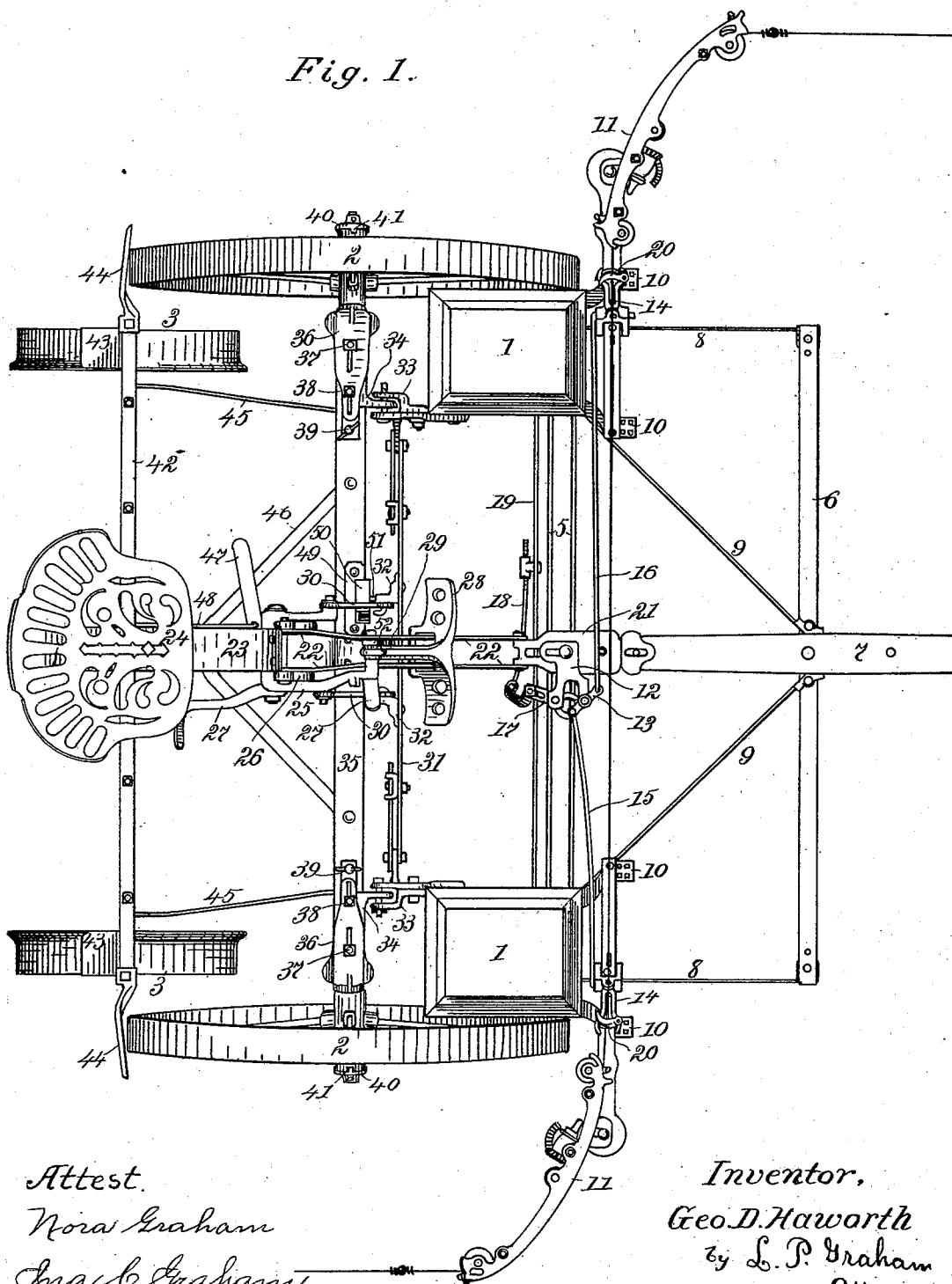
4 Sheets—Sheet 1.

G. D. HAWORTH.
CORN PLANTER.

No. 572,543.

Patented Dec. 8, 1896.

Fig. 1.



Attest.

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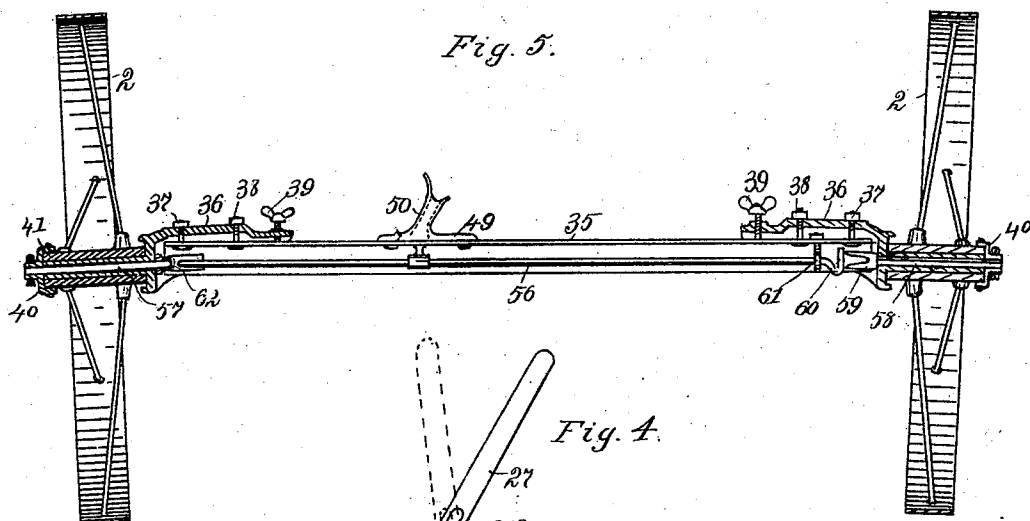
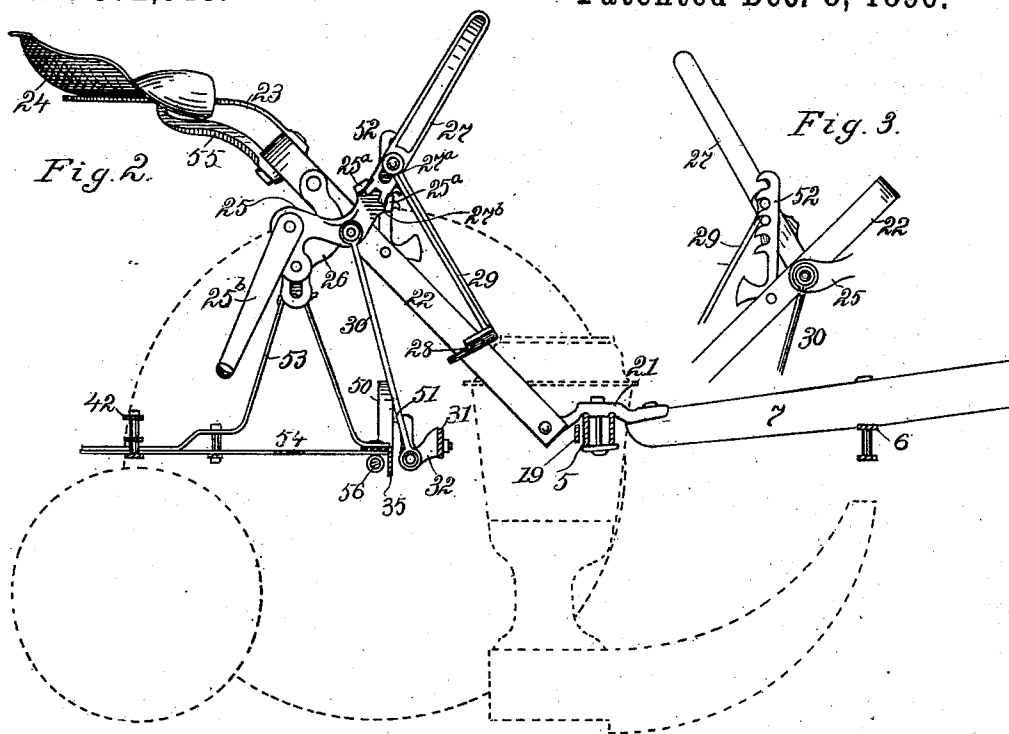
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Fig. 6.

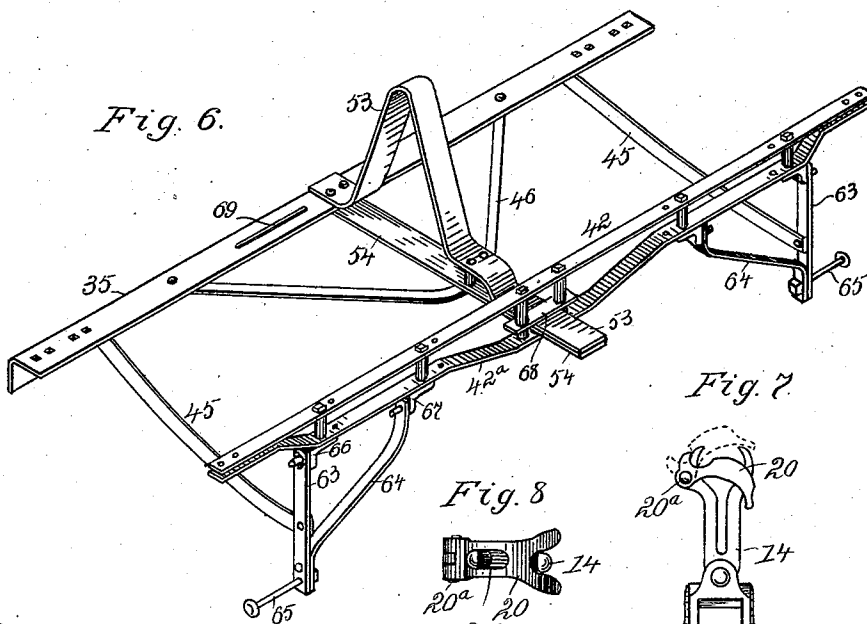


Fig. 7.

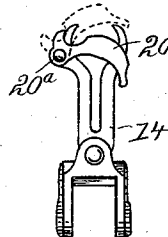


Fig. 8.

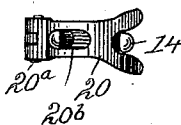


Fig. 9.

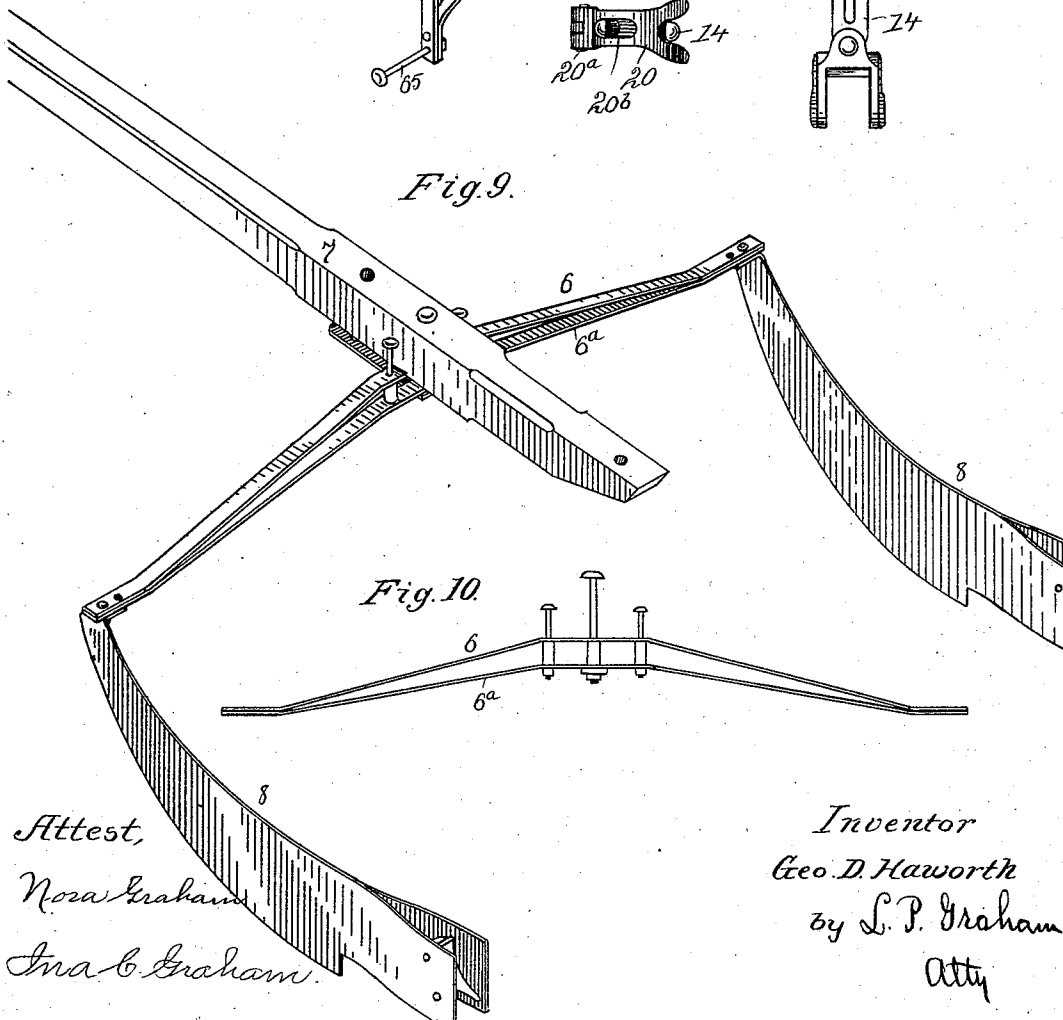
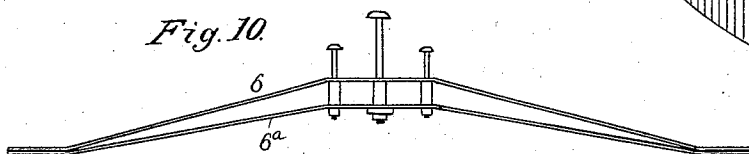


Fig. 10.



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Fig. 11.

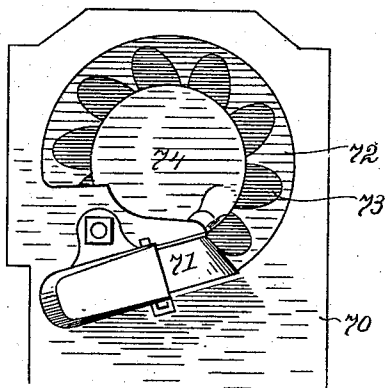


Fig. 12.

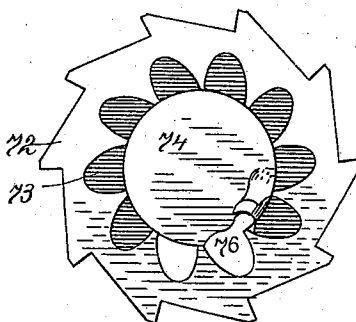


Fig. 14.



Fig. 13.

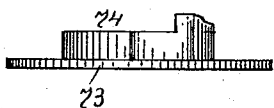


Fig. 15.

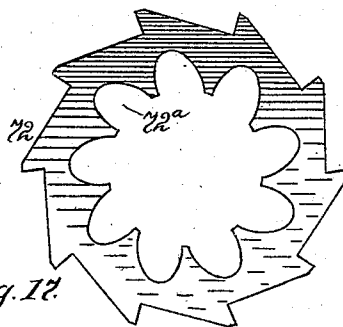


Fig. 17.

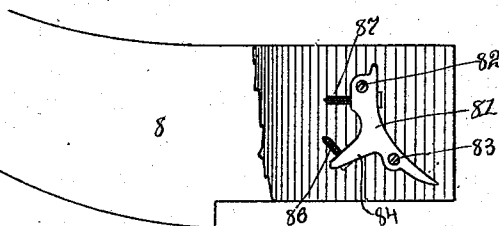
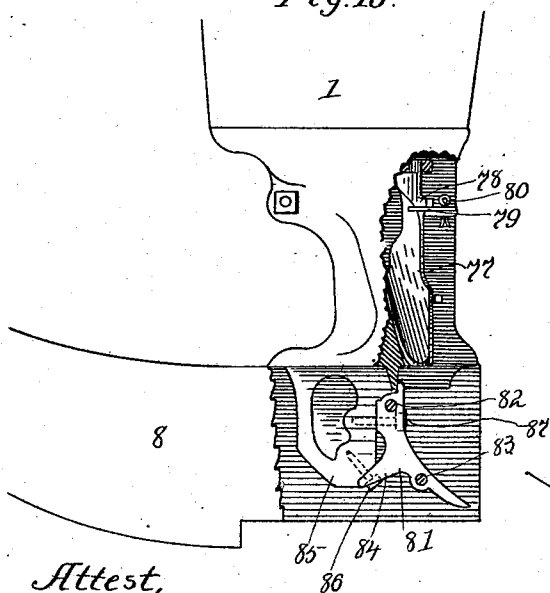


Fig. 16.



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UNITED STATES PATENT OFFICE.

GEORGE D. HAWORTH, OF DECATUR, ILLINOIS.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 572,543, dated December 8, 1896.

Application filed March 4, 1896. Serial No. 581,773. (No model.)

To all whom it may concern:

Be it known that I, GEORGE D. HAWORTH, of Decatur, in the county of Macon and State of Illinois, have invented certain new and useful Improvements in Corn-Planters, of which the following is a specification.

This invention is designed to improve a planter by perfecting its parts.

It relates to various matters of detail in the make-up of a complete planter, it is exemplified in the structure hereinafter described, and it is defined in the appended claims.

The details of the improvement are all applicable to a planter having the general structure described in Patent No. 314,240, granted to me March 24, 1885, though many of them are capable of use with other planters. They will to some extent be distinguished in the specification from the old features with which they are associated, but the claims will be relied on to make the distinction complete by including the new and excluding the old.

In the drawings forming part of this specification, Figure 1 is a plan of a planter embodying my improvements, such planter being built on the same general plan as that described in the patent aforesaid. Fig. 2 is a side elevation of certain peculiarities embodied in and connected with the lifting mechanism. Fig. 3 represents a part of the lifting mechanism as it appears on the side opposite that shown in Fig. 2. Fig. 4 is a detail of the hand-lever of the lifting mechanism, illustrating possibilities of adjustment thereof. Fig. 5 is a cross-section through the carrying-wheels and the spindles thereof, showing means for varying the angles formed by the wheels with the ground, and also showing means for preventing one wheel from turning independent of the other while the runners are in the ground. Fig. 6 is a perspective representation of the rear frame of the planter. Fig. 7 is a face view of a forked check-row lever. Fig. 8 is an end view of the lever aforesaid. Fig. 9 is perspective representation of the front cross-bar of the front frame of the planter, showing its form, mode of construction, and connection with the tongue and the runners. Fig. 10 is an elevation, front or rear, of the front cross-car. Fig. 11 is a plan of a cut-off plate, a seed-disk, and a bottom plate of a seed-hopper.

Fig. 12 is a plan of a seed-disk and a bottom plate. Fig. 13 is an edge view of a bottom plate, or that part thereof immediately beneath the seed-disk. Fig. 14 is a plan of the bottom plate. Fig. 15 is a plan of the seed-disk. Fig. 16 is a side elevation of the lower end of a seed-hopper, a shank, and the rear end of a runner, parts being broken away to expose novel features. Fig. 17 is an elevation of a runner with one wing broken away.

The seed-hoppers 1 are supplied with novel dropping mechanism to be hereinafter described. The carrying-wheels 2 are provided with novel mechanism for varying their angles with relation to the ground and thereby changing their pressure with relation to the furrows, and they also have novel means for preventing one from turning independent of the other when the planter is in operation. Wheels 3 are supplemental to the carrying-wheels in that they complete the closing of the furrows, and they perform their known function in a known manner.

The main cross-bar of the front frame is preferably composed of parallel strips of metal, as 5, which form a strong and comparatively light connection between the seed-hoppers. This feature, while probably new, is thought to involve no invention. The front cross-bar is composed of two strips 6 and 6^a, joined together at their ends, arched at their centers, and separated between their ends to form a truss. Strut-blocks are interposed between the strips and tie-bolts extend through the strut-blocks and the strips, binding them together. One of the tie-bolts extends through the tongue 7, and others extend through brace-bars 9, thereby performing double functions. A bar so constructed is particularly applicable to this place, its form enables the tongue to be suitably raised without unduly raising the front ends of the runners 8, and the metal is disposed in a manner to resist strain to the best advantage.

Brackets 10 are connected with the seed-boxes, and they carry check-rower heads 11 or other mechanism adapted to direct the wire across the planter. A casting 21 is fastened to cross-bar 5, its function being to provide points of connection for the tongue and the seat-bar 22, and to such casting is connected a bracket 12. A lever 13 is pivoted on the

bracket. Forked levers 14 are pivoted on the check-row heads. A rod 15 connects one end of lever 13 with a lever 14, and rod 16 connects the opposite end of lever 13 with the other forked lever 14. A verge or forked lever 17 is also pivoted on bracket 12. It is connected from one end with shake-bar 19 through rod 18, and it is actuated by a downward extension from lever 13, which extension engages the forks of the verge. Forked levers located at the sides of a planter have heretofore been connected with a center movement constructed substantially as that just described, but in such cases all the parts have been attached to a bar, usually called the "check-row" bar. In this instance the check-row bar is dispensed with and the planter is lightened and simplified without detracting from its efficiency. Another peculiarity in connection with the check-row mechanism is that the forked levers 14 are supplied with latches 20, each of which is pivotally connected with one bar of a lever and is extended across to the other bar. In Figs. 7 and 8 the pivot of a latch is shown at 20^a and a slot is shown in Fig. 8 at 20^b. The slot admits a point of a fork and permits sufficient swing with relation thereto to carry the latch from the position shown in solid lines in Fig. 7 to that shown in broken lines. When the latch is in the position shown in broken lines, the check-row wire may be placed in the lever by kinking it slightly and passing it between the forks of the latch and the point of a bar of the lever. In operation the latch tends to keep the wire in the narrow part of the fork, where the knots are always effective, and effectually prevents accidental detachment. The function of the latch is the same as that of the dog described in Patent No. 351,176, but it has the advantage of simplicity of construction and superiority of operation, its swing being more free than the slide of the dog.

The lower part of the seat-bar 22 is preferably composed of parallel bars. A flat bar 23 is fastened to the upper end of bars 22, and the seat 24 is sustained by the flat bar, assisted by the auxiliary support 55. Rock-arms 25 and 26 are connected together and to the seat-bar, foot-lever 25^b is fastened rigidly to arm 25, links 30 connect arm 25 with brackets 32 on rear cross-bar 31 of the forward frame, and bar 29 connects said arm with treadle 28, which is mounted slidably on the seat-bar, all substantially as set forth in Patent No. 314,240 aforesaid, and for the obvious purpose of providing means for lifting the front frame. As an improvement on the planter of the patent mentioned the hand-lever 27 of the lifting mechanism is slotted at 27^a and provided with teeth 27^b at its lower end. The upper end of arm 25 has a pin that extends through the slot of the hand-lever, and it is supplied with teeth 25^a, between which the entire lower end of the hand-lever may extend and with which the teeth of the

lever may engage. By means of this construction the lever may be set nearer to or farther from the seat to accommodate different drivers, and it may be thrown forward out of the way after the front frame is raised and locked.

The device employed for holding the front frame raised and for regulating the depth of planting consists of a toothed bar 52, which is pivotally connected with seat-bar 22, is preferably counterbalanced in a manner tending to hold it vertical when once it is raised, and is adapted to engage with a lateral extension from the upper end of arm 25. When not in use, the lock-bar lies thrown back between the strips of the seat-bar, and its use is illustrated in Figs. 2 and 3 of the drawings.

In order that the front frame may be raised with relation to the wheel-frame, brackets 33 on the one connect with brackets 34 on the other, the connection being made by means of bolts that extend through vertical slots in the brackets in a manner well understood prior to this particular invention.

The axle 35 of the carrying-wheels is preferably, at least, made of an angle-bar. Brackets 36 carry the wheel-spindles. They are secured to the axle by means of vertical bolts 37 and 38, that extend through the brackets and the horizontal plate of the axle-bar, and they are provided with the set-bolts 39, that extend through the inner ends of the brackets and bear against the upper surface of the axle-bar. By screwing the set-bolts through the brackets and tightening bolts 37 and 38 the wheels may be inclined more or less with relation to the ground and to the axle, according to the distance the set-bolts project. This enables the carrying-wheels to be utilized to any desired extent, as circumstances may require, to press soil sideways into the furrows formed by the runners.

The wheel-spindles are tubular, and through them extend short shafts 57 and 58, respectively. A head 62 is formed on or fastened to the inner end of shaft 57. It has a longitudinal slot, and through such slot extends a rectangular bend of shaft 56. The shaft 56 extends from one end of the axle to the other or substantially so, and its end nearest short shaft 58 has the cross-head 60, which may be made by bending the shaft at right angles, as indicated. This end is sustained by an eyebolt 61, which encircles the shaft and is fastened to the axle, or in place of such bolt other means may be employed to form the support. The short shaft 58 has a head 59, that is longitudinally recessed. Such recesses cut the head diametrically and are adapted to receive the cross-head 60 of the long shaft. The short shafts are preferably square or prismatic in cross-section. They have caps 40 fastened onto their outer ends, and such caps engage the wheel-hubs, as indicated at 41 in Fig. 1. The axle is slotted, as shown at 69 in Fig. 6, and through such slot a slide 49 connects with shaft 56. An

inclined member 50 extends upward from slide 49, and such member is grooved to receive pin 51, that projects rearward from a bracket 32 of the front frame. When the front frame is raised, the pin 51 acts on the incline to separate head 60 from the recess of the short shaft, and when it is lowered it has the reverse effect. Under this arrangement the wheels are virtually rigid one with the other when the runners are in the ground, and when the runners are raised one wheel is entirely independent of the other. This provision enables one wheel to hold the other against slippage, and it is useful when connection is made with drill mechanism or an automatic reel from one wheel. Stalks and the like frequently accumulate on a runner of a planter and drag in the path of the adjacent wheel. The wheel runs onto the accumulation and tends to disengage it from the runner, but it sometimes happens under such circumstances that an independently-rotating wheel will slide with the stalks instead of disengaging them, and in that instance the rigid connection between the wheels is of special utility, as two wheels will easily effect a result that is impossible to one. Of course the wheels must act independently in turning, and this requirement is met by the automatic detachment of the clutch in act of raising the runner-frame. The specific mechanism herein described is preferable, in this particular planter at least, but in the broadest sense of this feature of the invention such mechanism simply comprises connections between the wheels, including a clutch adapted to hold the wheels against independent rotation in both directions.

In Patent No. 314,240 the lifting mechanism and the seat are sustained from a standard carried by the rear frame, such frame and standard being of solid construction. In this case the frame and the standard are skeletonized, and in making such change some novel features have been developed. The rear cross-bar of the rear frame is composed of strips 42 and 42^a, placed one above the other and secured together to form a truss. The ends of the strips approach each other rather closely. Between them are inserted the scraper-blades 43 for wheels 3, and they are fastened together and clamped onto the scraper-blades by the bolts that secure scraper-fingers 44 to the ends of the bar. Vertical bars 63 and oblique braces 64 are pivotally connected with the under side of the rear cross-bar, and they are supplied at their junctions with bolts 65, that extend through spindles and hold wheels 3 in place. Links 45 have pivotal connections with the axle and with vertical bars 63. Brackets 66 and 67 are preferably employed to connect the bars 63 and braces 64 with the rear cross-bar. A short strip 68 is held between the principal strips of the rear cross-bar by means of the central truss-forming struts and ties, and through the space so formed extend the rear

ends of bars 53 and 54. The front end of bar 54 is fastened to the under side of the horizontal plate of the axle-bar, and it extends in a straight line rearward. The front end of bar 53 is fastened to the upper side of the horizontal plate of the axle-bar. It extends upward and downward, describing two sides of a triangle, and its apex or summit forms a seat for the bracket with which the lifting mechanism is connected. A brace-bar 46 keeps the bar 54 at right angles with the axle-bar, and bar 53 is fastened to bar 54. A foot-lever 47 is pivoted on bar 54, and a link 48 connects the lever with cross-bar 42. The rear bar is rocked on the connections of braces 45 with standards 63 when pressure is applied to the foot-lever and one or the other of the sets of scrapers are put into operation, depending on the direction given to the pressure on the lever.

A frame constructed as described has many advantages over the old solid frame, among which may be mentioned lightness and durability, and the particularities in which invention resides will be set forth in the claims.

In Figs. 11 to 15 are illustrated peculiarities in dropping mechanism as follows: Cut-off plate 70 is of a shape and size required to fit the seed-hopper, and it has a cut-off 71 of the customary construction. The seed-disk 72 is of a generally annular outline. It is in this particular instance supplied with peripheral teeth, by means of which it may be rotated intermittently, and its seed-cells are open through its inner surface and of frusto-elliptical shape. Something more than half of the wall of a cell is formed in the seed-disk, and the complement is formed by a disk-like protuberance or boss rising from the bottom plate 73. This boss is shown at 74, and its coöperation with the seed-disk is shown in Figs. 11 and 12.

The operative part only of the bottom plate is shown in the drawings; but it will be understood that such plate is held in position in the seed-hopper by suitable means. It has the somewhat-enlarged discharge-opening 75, and this opening is augmented by a vertical depression or recess 76 in the wall of the boss adjacent to the discharge-opening and coincident with the discharge location of the cells of the seed-disk. The cells (designated by 72^a in Fig. 15) diminish in size as they recede from the boss or from the position the boss normally occupies, and they somewhat resemble semiellipses cut on their minor axes. The discharge-opening of the bottom plate and the cut-away portion of the boss are covered by the cut-off plate. The corn fills the cells in the customary manner as the disk is rotated and is carried under the cut-off. The perimeter of the boss limits the size of the cells until the discharge-point is reached, when, by coincidence of cut-away surface 76 with the open side of the cell, what amounts to a lateral opening is added to the ordinary bottom opening and discharge of the grain is

made certain. The lateral enlargement of the cell is illustrated in Fig. 12, and the result thereof should be obvious.

In Fig. 16 a rocking second drop-valve, such as I generally use in my planters, is shown at 77; but in this case I have supplied such valve with a lateral extension 78, placed a shelf 79 under the extension, and fastened it to a ledge of the shank by means of a draw-out pin 80. By means of this provision the second drop-valve may be easily detached from the shank when for any reason it becomes necessary or desirable to make such disconnection.

It often becomes necessary to detach runners from shanks—for resharpening, for instance—and as the customary way of fastening the shanks and runners together is by means of rivets connecting one with the other the task of separation is not an easy one. To provide for such emergencies, I have supplied the runners each with a casting or block 81, shaped somewhat as shown, and have fastened such casting in the crotch of the runner by means of rivets, as 82 and 83. The casting comprises the approximately vertical main portion and the oblique projection 84. Through the head of the casting and through the projection 84 are formed holes that admit tap-bolts 86 and 87, and the runner-entering part of the shank 85 is shaped to conform to the casting and is tapped and threaded to receive the bolts.

With this provision the runners may be easily removed and replaced, and the arrangement of parts makes the connection secure.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A planter-runner having a block fixed between its wings, a shank having its runner-entering portion shaped to conform to the block, and a bolt detachably connecting the shank with the block.

2. A planter-runner having a block fixed between its wings, somewhat to the rear of the conjunction thereof, a shank having its runner-entering portion shaped to conform to the front surface of the block, and a bolt passing through the block and into the shank.

3. A planter-runner having a block fixed between its wings, somewhat to the rear of the conjunction thereof, holes through the block in different directions, a shank having its runner-entering part shaped to conform to the front surface of the block and tap-bolts extending through the openings of the block and into the shank.

4. A planter-runner, a block fixed between the wings of the runner, such block having a substantially vertical upper part and a downward and backward extension, a shank having its runner-entering part shaped to conform to the vertical part and the oblique extension thereof, and tap-bolts extending one

through the vertical part of the block and the other through the oblique projection, and both of them entering the shank, all in combination, substantially as set forth.

5. A planter in which a portion of the runner-entering part of the shank is fixed in the runner, and the complement of such runner-entering part is bolted to such fixed portion.

6. In a corn-planter, a vertical rocking second drop-valve having a lateral extension, and a detachable plate fitting under the lateral extension of the valve and sustaining the valve vertically.

7. In lifting mechanism for planters, of the class described, the combination of a lift-arm, as 25, having teeth, as 25^a, and a hand-lever 27 slotted at 27^a to receive a pin of the arm, and toothed at 27^b to engage the teeth of the arm.

8. In a planter, the combination of an axle-bar, spindle-brackets for the carrying-wheels saddled onto the ends of the axle-bar, bolts to bind the brackets to the axle-bar, and set-bolts, in the inner ends of the brackets, adapted to bear against the surface of the axle-bar and regulate the inclination of the wheels.

9. In a planter, the combination of an axle-bar having tubular spindles, a line of shafting extending through the spindles and connecting with the wheels, and a clutch in the line of shafting.

10. In a planter, the combination of an axle-bar having tubular spindles, a line of shafting extending through the spindles and connecting with the wheels, a clutch in the shafting, and a clutch-shifter adapted to be actuated by raising and lowering the front frame of the planter, substantially as set forth.

11. In a planter, the combination of an axle-bar having tubular spindles, short shafts extending through the spindles, a long shaft having longitudinally-sliding connection with one of the short shafts and endwise clutch-contact with the other short shaft, a slide on the axle-bar in engagement with the long shaft, an inclined plane on the slide, and a finger on the front frame of the planter adapted to engage the inclined plane, the short shafts being connected with the wheel-hubs, substantially as set forth.

12. A forked check-row lever, for planters, having a latch swung across its open end, substantially as set forth.

13. A forked lever for check-row planters, such lever having a latch pivotally connected with one bar and recessed to receive the opposite bar, substantially as set forth.

14. In a cross-wire planter, the combination of brackets attached to the seed-hoppers, check-row heads attached to the brackets, a drop-actuating movement attached to the planter-frame between and independent of the check-row heads, and rods connecting the levers of the check-row heads with the drop-actuating movement, substantially as set forth.

15. A planter in which the wheels are connected together by means including a shift-
able clutch, such means being capable of hold-
ing the wheels against independent rotation
5 in both directions when the clutch is engaged
and of permitting free rotation in both direc-
tions when the clutch is disengaged.

In testimony whereof I sign my name in the
presence of two subscribing witnesses.

GEO. D. HAWORTH.

Attest:

NELLIE E. HUBBARD,
D. A. STRADER.