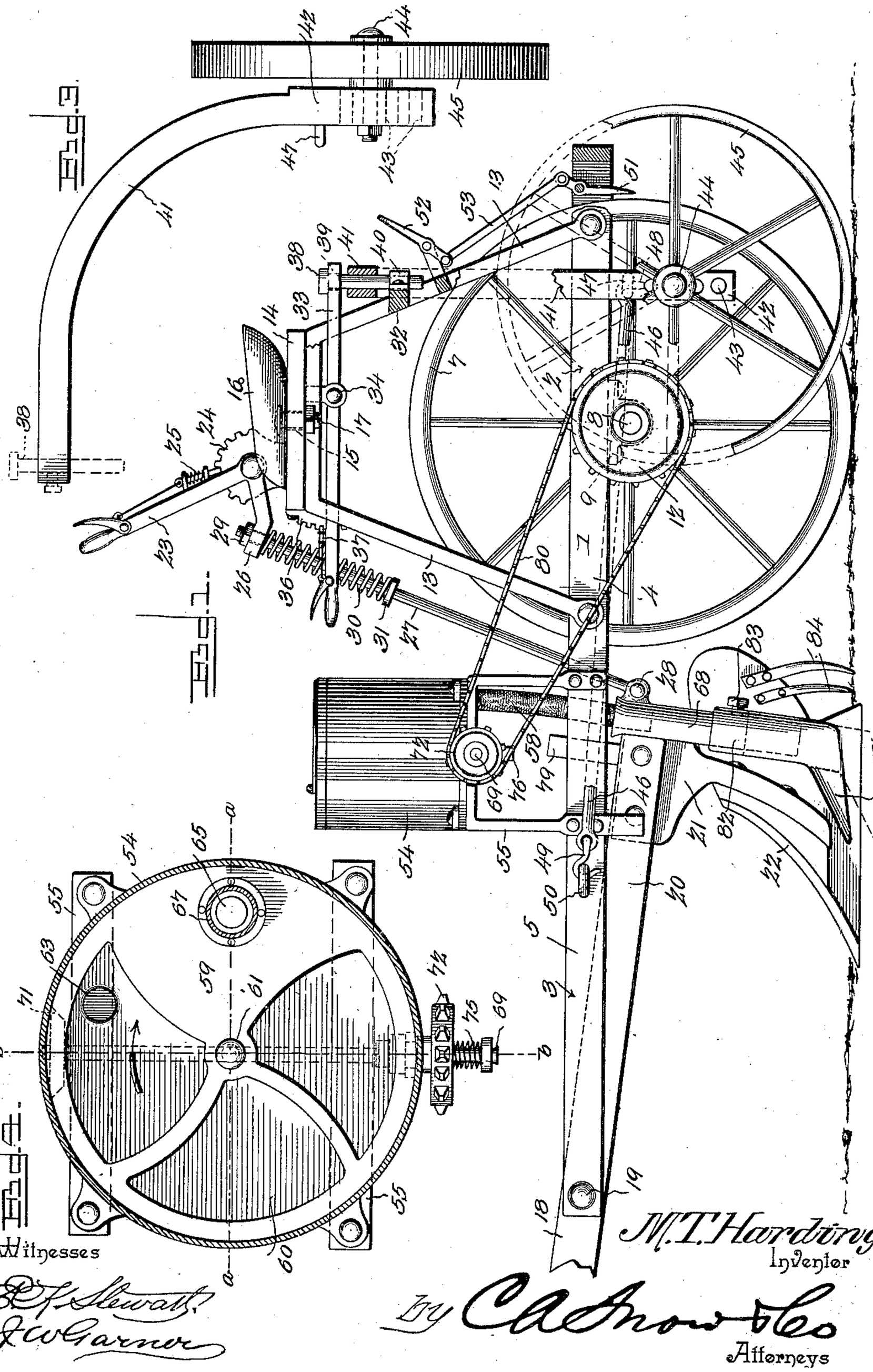
No. 662,621. Patented Nov. 27, 1900.

M. T. HARDING.

LISTER CORN PLANTER.

(Application filed July 31, 1900.)

(No Model.) 2 Sheets—Sheet 1.



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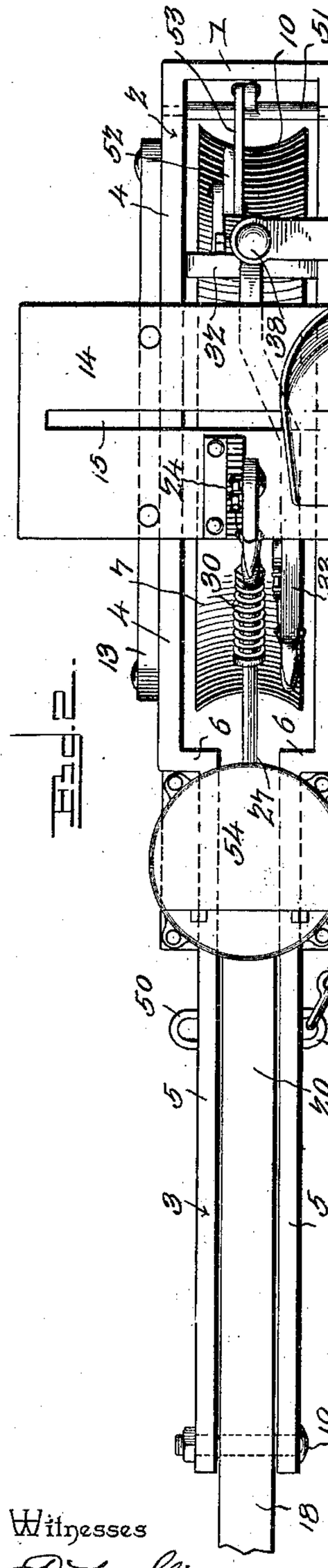

Fig. 2.

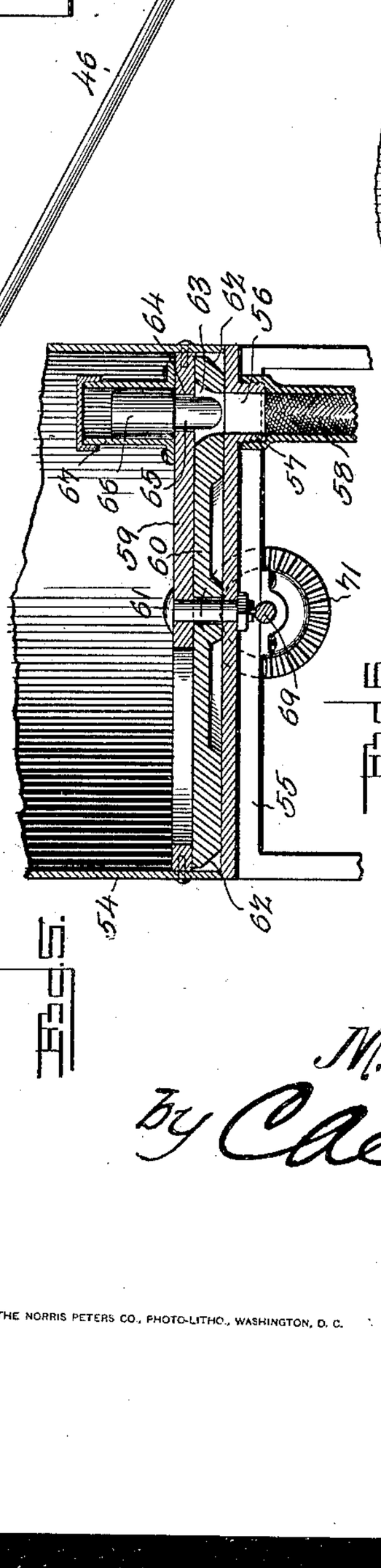

Fig. 5.

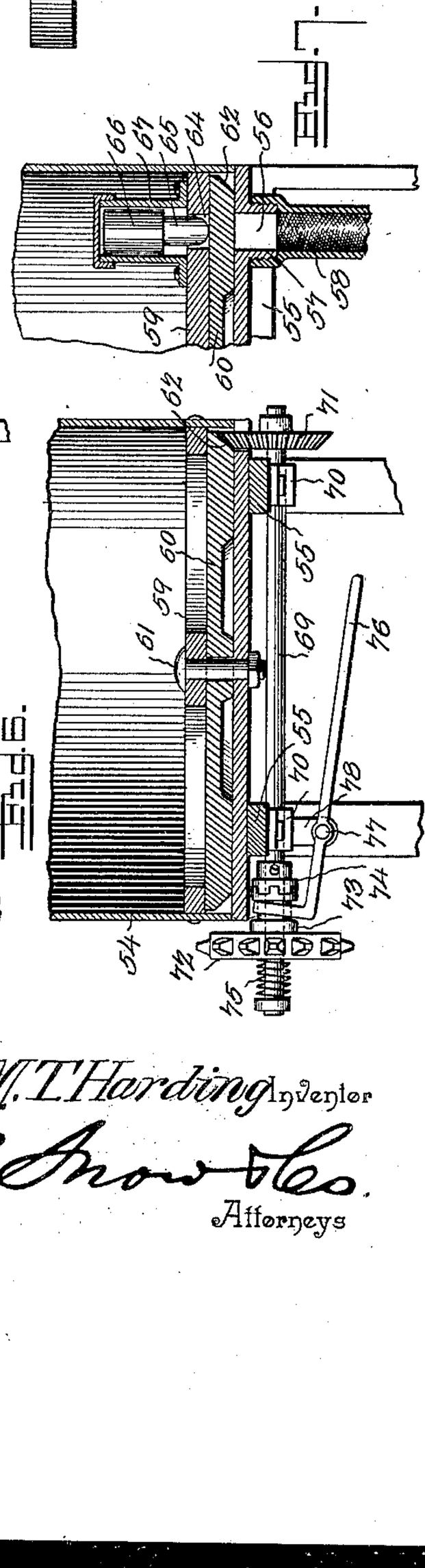

Fig. 6.

Fig. 7.

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UNITED STATES PATENT OFFICE.

MASON T. HARDING, OF OVERBROOK, KANSAS.

LISTER CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 662,621, dated November 27, 1900.

Application filed July 31, 1900. Serial No. 25,451. (No model.)

To all whom it may concern:

Be it known that I, MASON T. HARDING, a citizen of the United States, residing at Overbrook, in the county of Osage and State of Kansas, have invented a new and useful Lister Corn-Planter, of which the following is a specification.

My invention is an improved lister corn-planter; and it consists in the peculiar construction and combination of devices hereinafter fully set forth, and pointed out in the claims.

One object of my invention is to simplify the construction of the planter and reduce the cost thereof.

A further object of my invention is to effect improvements in the construction of the supporting-frame.

A further object of my invention is to effect improvements in the means for attaching the listing plow or shovel.

Another object of my invention is to effect improvements in the seed-dropping mechanism.

Another object of my invention is to effect improvements in the means for adjusting the listing plow or shovel.

In the accompanying drawings, Figure 1 is a side elevation, partly in section, of a lister corn-planter embodying my improvements. Fig. 2 is a top plan view of the same. Fig. 3 is a detail front elevation of the swinging supporting-arm and the marking-wheel carried thereby. Fig. 4 is a detail top plan view, partly in section, of the seed-dropping mechanism. Fig. 5 is a vertical sectional view of the same, taken on the line *a a* of Fig. 4. Fig. 6 is a similar view of the same, taken on the line *b b* of Fig. 4. Fig. 7 is a detail view of a portion of the mechanism shown in Fig. 5, showing the force-feed drop-pin or ejector in its elevated position.

The frame 1 of my improved lister corn-planter is made of a single bar of metal or a single casting of the form shown in Fig. 2, having the rear portion 2 and the front portion 3. The sides 4 of the rear portion are parallel, and the sides 5 of the front portion of the frame are parallel and form practically longitudinal extensions of the sides 4, offsets 6 being formed at the points where the sides 5 extend forward from the sides 4 and the space between the sides 5 being less than the space between the sides 4.

A central supporting-wheel 7 has its axle-shaft 8 journaled in bearings 9, which are bolted under the sides 4 of the rear portion of frame 1 at the center thereof. The said central supporting-wheel has a broad tread, usually of about six inches, and the periphery of said wheel is concaved, as shown at 10, Fig. 2. One end of the shaft 8 projects beyond one side of the frame-section 2, and on the same is keyed or otherwise secured a sprocket-wheel 12.

A pair of longitudinally-disposed arch-bars 13 have their depending ends bolted on the outer sides of the rear section 2 of frame 1, the central portions of said arch-bars rising to a suitable height above the wheel 7. The transversely-disposed board 14 is secured on the raised central portions of the arch-bars in any suitable manner, as by bolts, screws, or otherwise, and said board has a slot 15 extending nearly throughout the length thereof. A seat 16 for the driver is secured on the said board 14 by a bolt 17, which operates in the slot 15 and adapts the seat 16 to be shifted to and secured on either end of the board 14, hence shifting the weight of the driver to either side of the frame 1, as may be required.

The tongue 18 is pivoted between the front ends of the sides 5 of the front section of frame 1 by a bolt 19, the said tongue having the rearward extension 20 of suitable length which operates between the sides 5. To the rear end of the said extension 20 and in a rabbet formed in one side thereof is bolted or otherwise suitably secured the upper end of the standard 21, which is adapted for the attachment thereto of a suitable listing-plow 22, as shown in Fig. 1, or for the attachment of a furrow-opening shovel, as may be preferred or required. A lever 23 is fulcrumed on a segmental rack-plate 24, which forms a bracket that is bolted on the board 14. The said lever has a detent 25 of usual form which by engagement with the said segmental rack-plate secures the said lever at any required adjustment. Said lever has an arm 26, which is connected to the heel of the tongue by a rod 27. Said rod has its lower end flexibly connected to the rear end of the tongue, as by a bolt 28, and the upper portion of the

said rod operates loosely in an opening in the said arm 26 and is provided with a retaining-nut 29. A spring 30 on the upper portion of the rod 27 bears between the lower side of the arm 26 and an offset 31 on said rod, the said spring permitting the plow to yield and move upward when it encounters an obstruction, and hence avoiding the danger of breaking the parts. Said lever 23 and said rod 27 serve to raise and lower the plow, as will be understood, either to regulate the depth to which the same operates in the soil or to raise the plow from the furrow when the planter is turned at the end thereof.

A suitable cross-bar 32 connects the arch-bars 13 at a point in rear of and below the board 14. A hand-lever 33 is fulcrumed on a pin 34 in a hanger or other suitable device that depends from the lower side of the board 14. The front end of the said lever extends forward of the board 14 and the rear end of said lever extends in rear of said board. A segmental rack-plate 36, which is secured to the board 14 in coaction with a detent 37 of usual construction, secures the said lever 33 in any desired position. A vertically-disposed pivotal bolt 38 has its upper end secured in an opening 39 in the rear end of the hand-lever 33. The lower portion of the said bolt is adapted to play vertically in a bearing 40, with which the cross-bar 32 is provided, the said bolt being of considerable length, and to the same is secured a swinging supporting-arm 41, which may be either curved, as here shown, or of any other suitable shape and is adapted to be swung and extended laterally from either side of the frame 1. The lower portion of the swinging supporting-arm 41 is vertical, as at 42, and said vertical portion of said arm has a series of adjusting-openings 43, in one of which is secured a bolt-spindle 44, which forms the bearing for a marking-wheel 45. The length of the arm 41 is such that the wheel 45 when disposed on one side of the frame 1, as shown in Fig. 2, will mark a furrow a suitable distance from the furrow opened by the listing plow or shovel. A rod 46 connects the outer end of the supporting-arm 41 to the front section 3 of frame 1. As here shown, the arm 41 has on its inner side, near its outer lower end, an eye 47, adapted to receive the downturned rear end 48 of said rod 46, and the latter is provided at its front end with a hook 49, adapted to engage an eye 50 on either side of the frame-section 3. Any other suitable means may, however, be employed to attach the rod to the said arm and the frame-section 3, and I do not limit myself in this particular.

It will be understood from the foregoing and by reference to the drawings that the wheel 45, which is trailed on one side of the frame 1 in coaction with the wheel 7, supports the frame and keeps said wheel 7 in an upright position, and that by means of the shiftable seat for the driver the weight of the driver is disposed between said wheels 7 and 45, thus counteracting any tendency of the machine to become overturned.

A scraper 51 is pivotally supported in the rear end of the frame-section 2 and is adapted to scrape the concaved tread of the wheel 7. A lever 52 and connecting-rod 53 adapt the scraper to be applied to or disengaged from the periphery of the wheel 7, as may be desired.

I will now describe my improved seed-dropping mechanism.

The bottom of the cylindrical seed-hopper 54 is secured on a pair of brackets 55, which are bolted on the sides 5 of the frame 1. The bottom of the seed-hopper is provided on its rear side with a discharge-opening 56, having a depending nozzle 57, to which is attached the upper end of a flexible depending seed-tube 58. A plate or disk 59, forming a cut off, and the false bottom of the seed-hopper are secured in the latter at a suitable distance above the bottom thereof, and said cut-off plate may be either of the form here shown or of any other suitable form. A revoluble seed plate or disk 60 is disposed between the bottom of the seed-hopper and the cut-off plate and has its bearing on a vertical bolt 61, disposed centrally therein. The said seed disk or plate is provided with beveled cogs 62 on its periphery, and the same is provided with a seed-opening 63, one or more, which is adapted to register with the opening 56 at each revolution of the seed disk or plate, and the said opening is flared in its upper side, as shown in Fig. 5. The cut-off plate 59 is provided with an opening 64, which is disposed in line with and above the opening 56, and a vertically-movable force-feed drop-pin or seed-ejector 65 operates in the said opening 64. The said drop-pin has an enlarged weighted head 66, and the same is inclosed in a cylindrical cap 67, secured on the cut-off plate. The lower end of the flexible tube 58 telescopes in a tube 68, which is secured to the rear side of the standard 21 and conducts the seed to the furrow immediately in rear of the plow or shovel.

A shaft 69 is journaled in bearings 70 under the bottom of the seed-hopper. The said shaft is provided at one end with a beveled pinion 71, which engages and rotates the seed-disk. On the opposite end of the said shaft 69 is a sprocket-wheel 72, which is loose thereon and is adapted to slide laterally thereon and is provided on its inner side with a clutch-section 73, adapted to be engaged by a clutch-section 74, which is fast on the shaft 69. A spring 75 keeps the said sprocket-wheel normally in engagement with the clutch-section 74 and fast on the shaft. A lever 76, which is fulcrumed, as at 77, on a hanger or other suitable support 78 below the seed-hopper, engages the clutch-section 73. The free end of the said lever extends inward over the rear portion of the tongue, and on the rear portion of the tongue is a tappet 79, which when the rear end of the tongue

is raised by the means hereinbefore described to lift the plow from the furrow engages the lever 76, operates the same, and moves the sprocket-wheel 72 out of engagement with the clutch 74, hence unclutching said sprocket-wheel from the shaft 69. An endless sprocket-chain 80 connects the sprocket-wheels 12 and 72 and communicates power from the wheel 7 to the seed-dropping mechanism, as will be understood. It will be understood from the foregoing that when the wheel 72 is automatically unclutched from the shaft 69 by lifting the plow from the furrow the seed-dropping mechanism is thrown out of operation.

A subsoil-share 81 is provided with a tubular standard 82, which is disposed on the seed-tube 68 and adjustable vertically thereon to raise and lower the subsoil-share. Said tubular standard 82 has a set-screw or bolt 83 to secure the subsoil-share at any desired adjustment. The function of the subsoil-share when the same is lowered, as shown in dotted lines in Fig. 1, is to deepen the furrow made by the listing-plow, and hence increase the depth at which the seeds are planted. Hooks 84, two or more, are secured detachably to the inner side of the moldboard of the listing-plow and operate in the soil on the side of the furrow to pulverize the same. The wheel 7, which follows the listing-plow, covers the seeds by filling the furrow, and the concaved periphery of the said wheel forms a ridge over the covered seed.

The wheel 45, by means of the openings 43 and spindle-bolt 44, may be set at any required vertical adjustment on the arm 41, and the latter, together with the wheel 45, may be raised and lowered, as required, by the lever 33 in order to compensate for inequalities of the ground and adapt the machine to be used on sloping land and hillsides.

Having thus described my invention, I claim—

1. The combination of a frame, a tongue pivoted thereto, and having an extension projecting in rear of the pivot, and a plow attached to said rearward extension of the tongue, the latter serving as the plow-beam, substantially as described.

2. The combination of a frame having a covering-wheel centrally disposed therein and a laterally-shiftable seat supported on said frame, a seed-dropping mechanism, a plow to open a furrow in advance of said covering-wheel, a supporting-arm adapted to be swung to either side of the said frame, and a trailing wheel carried by said arm, substantially as described.

3. The combination of a frame having a covering-wheel centrally disposed therein, a seed-dropping mechanism, a plow to open a furrow in advance of said covering-wheel, a supporting-arm adapted to be swung to either side of the said frame, means to vertically adjust said supporting-arm and a trailing wheel carried by said arm, substantially as described.

4. The combination of a frame, a tongue pivoted thereto and having an extension projecting in rear of its pivot, a plow attached to said rearward extension of said tongue, and means to raise and lower the rear extension of the tongue and thereby raise and lower the plow, substantially as described.

5. The combination of a frame, a seed-dropping mechanism thereon having a shifting-lever to throw the same in and out of gear, a tongue pivoted to the frame and having an extension projecting in rear of its pivot, a plow attached to the rearward extension of said tongue, the latter serving as the plow-beam, means to raise and lower the rear end of the tongue and thereby raise and lower the plow, and a tappet on said tongue to engage said shifting-lever when the same is raised, for the purpose set forth, substantially as described.

6. In a planter, the combination of a supporting-frame having a seed-dropping mechanism provided with a depending flexible seed-tube, a tongue pivoted to said supporting-frame and having an extension projecting in rear of its pivot, said extension serving as a beam for the attachment of a furrow-opener plow, and a seed-tube carried by the rear extension of the tongue and in which the lower end of the flexible seed-spout is disposed, and means to raise and lower the rear end of said tongue, substantially as described.

7. In a planter, the combination of the furrow-opening plow, the vertically-disposed seed-tube rigidly secured to the rear side of and supported by the standard of said furrow-opening plow, the subsoil-share, having the tubular standard vertically adjustable on the said seed-tube, and means to secure said tubular standard at any desired vertical adjustment on said seed-tube, substantially as described.

8. In a planter, the combination of a frame having a supporting-wheel centrally disposed thereon, a seed-dropping mechanism on the front portion of said frame, a plow to open a furrow in advance of said wheel, a rearward-extending lever, supported by said frame, a supporting-arm pivotally connected to said rearward-extending lever, adapted to be swung to either side of the frame, and to be raised and lowered by said lever, and a trailing wheel carried by said arm, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

MASON T. HARDING.

Witnesses:
E. J. HILKEY,
T. A. CORDTS.