

(No Model.)

3 Sheets—Sheet 1.

L. E. WATERMAN.
CORN PLANTER.

No. 595,026.

Patented Dec. 7, 1897.

Fig. 1.

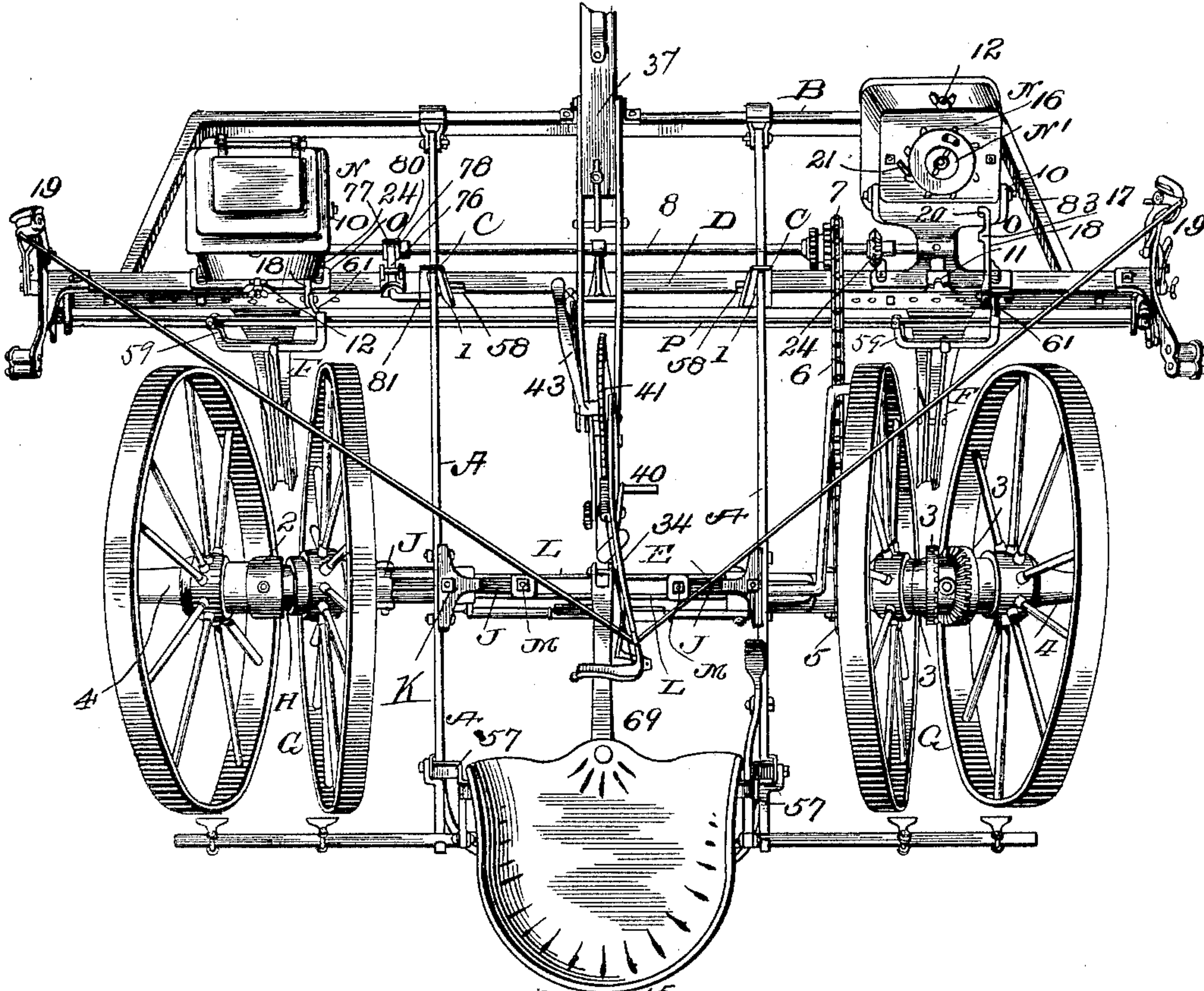
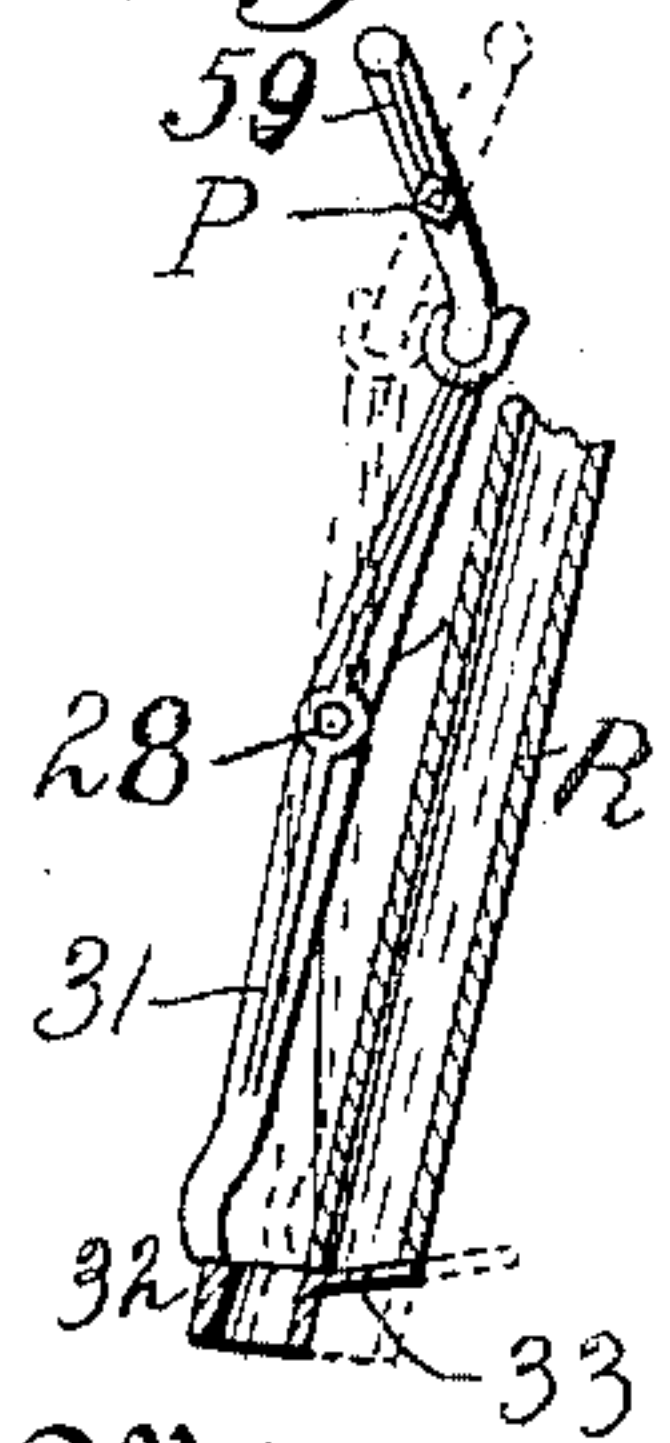


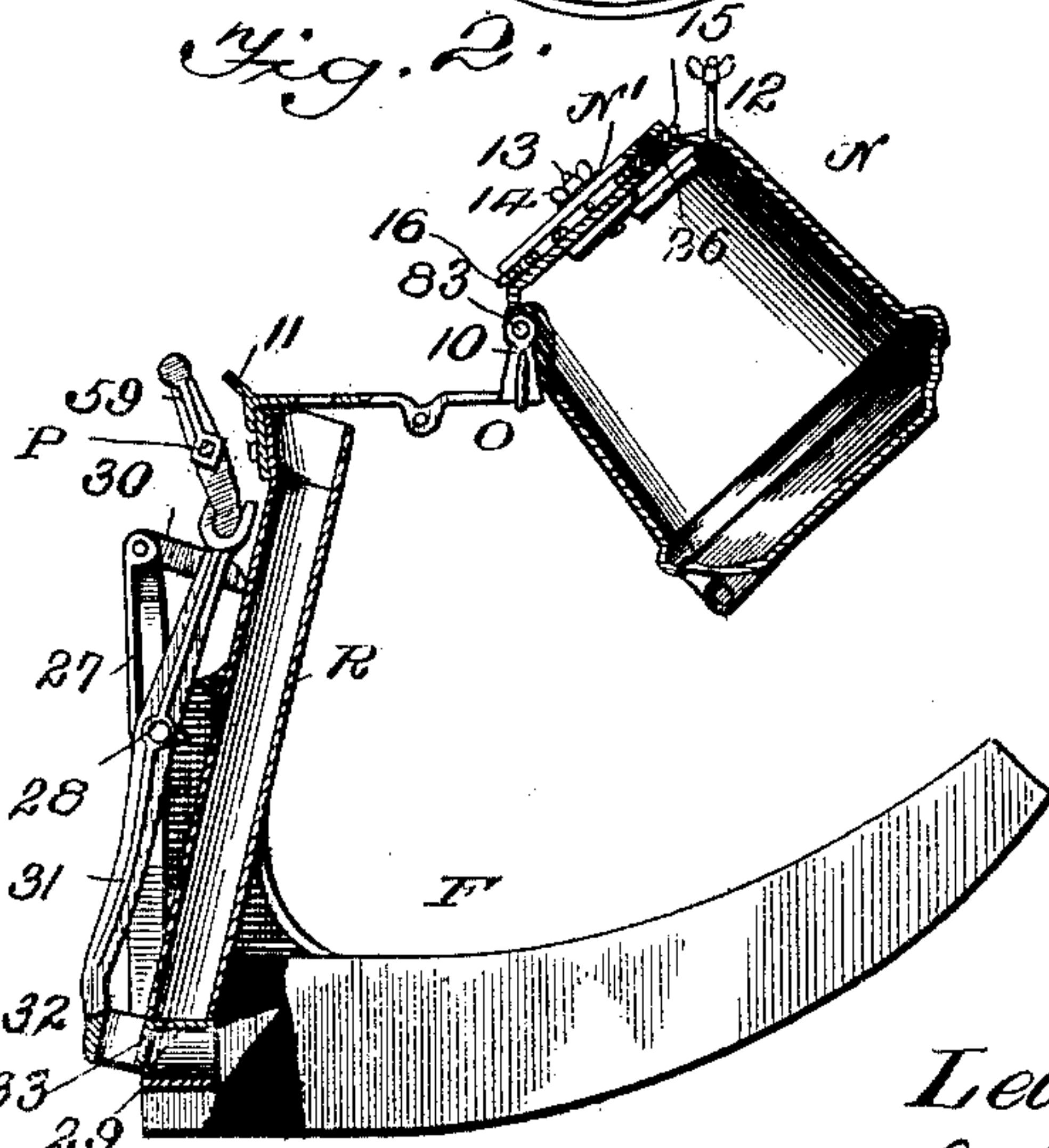
Fig. 2.

Fig. 14.



Witnesses

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Samuel Messer



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by John G. ...
his Attorney

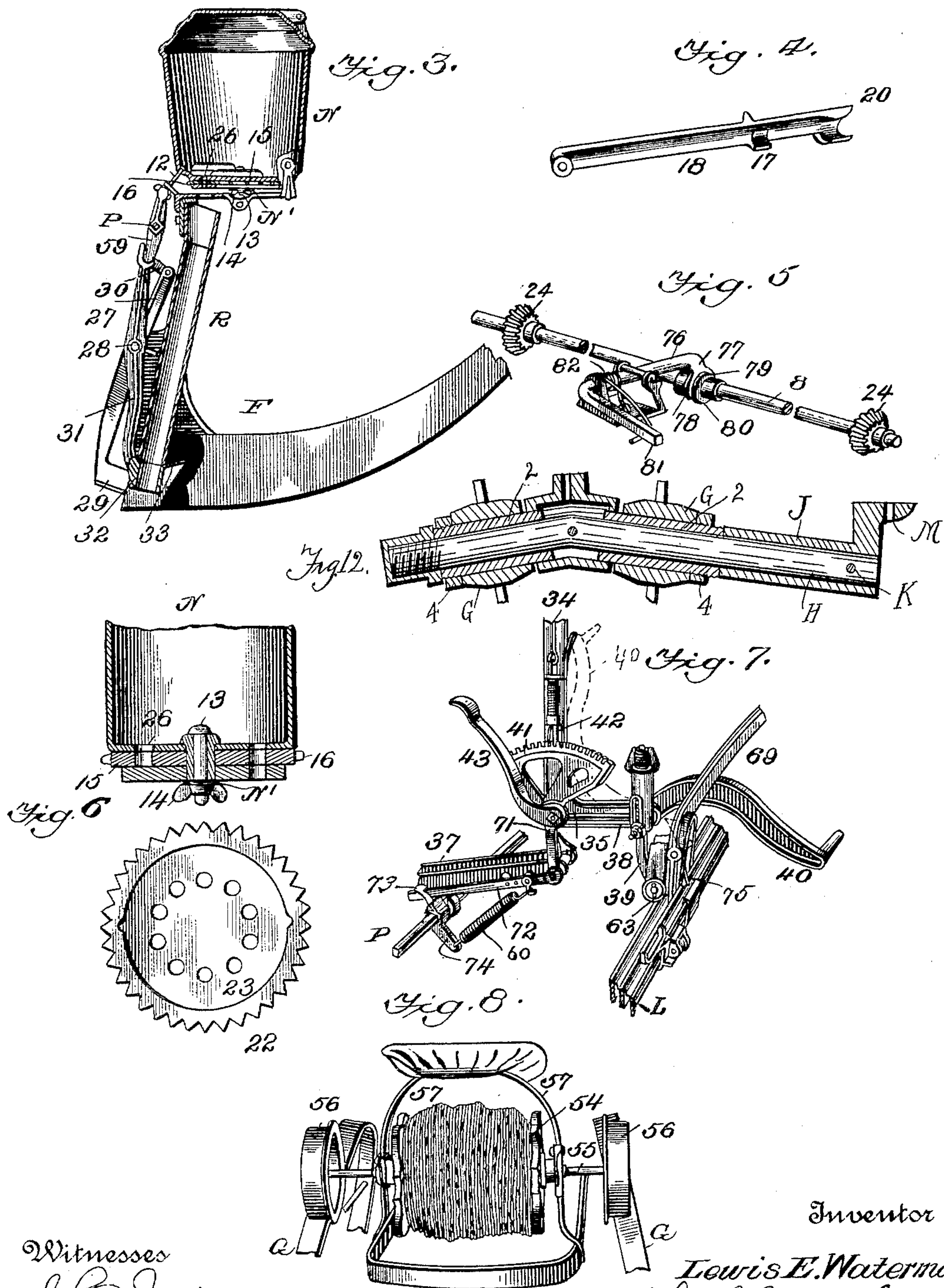
(No Model.)

3 Sheets—Sheet 2.

L. E. WATERMAN.
CORN PLANTER.

No. 595,026.

Patented Dec. 7, 1897.



Witnesses

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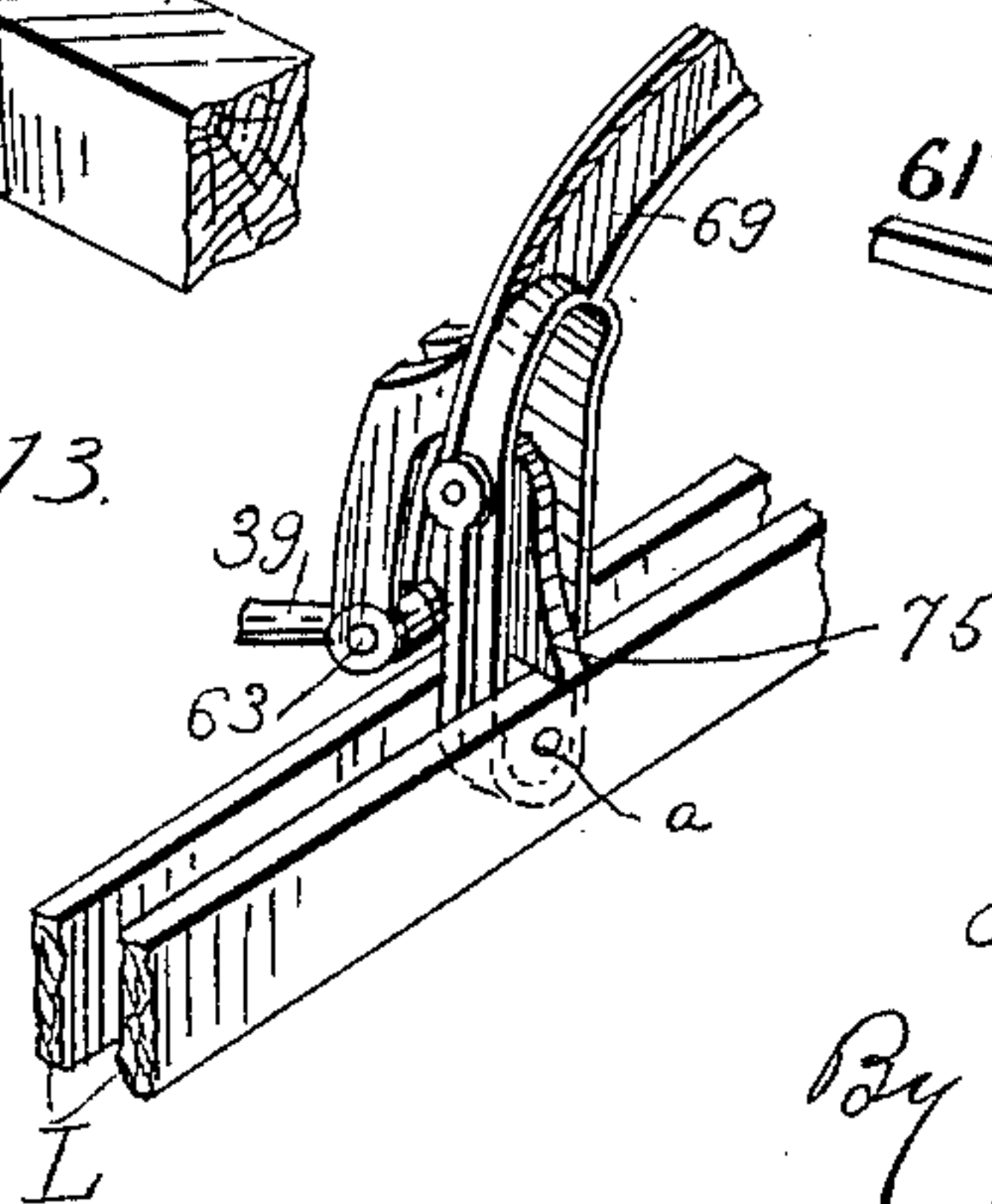
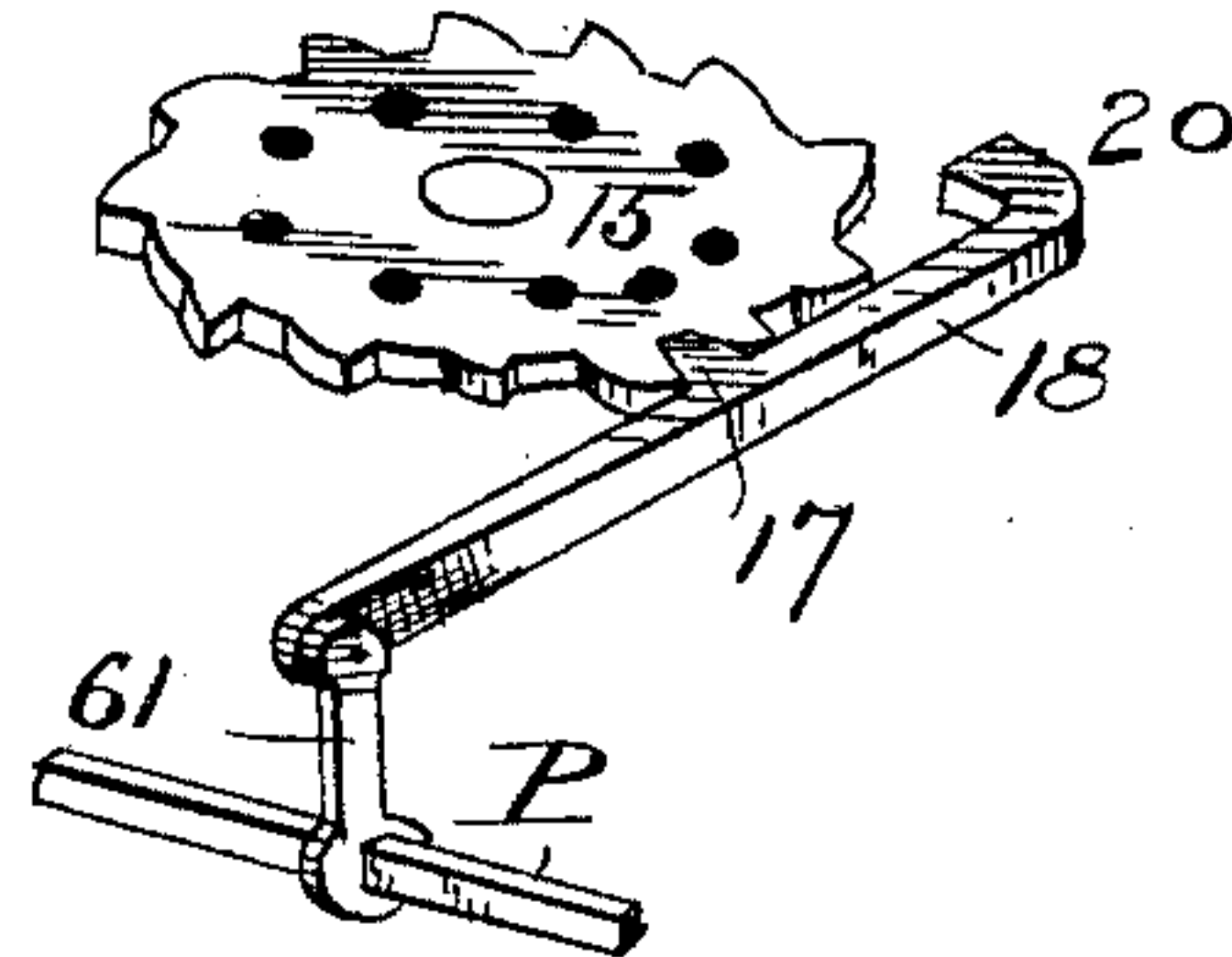
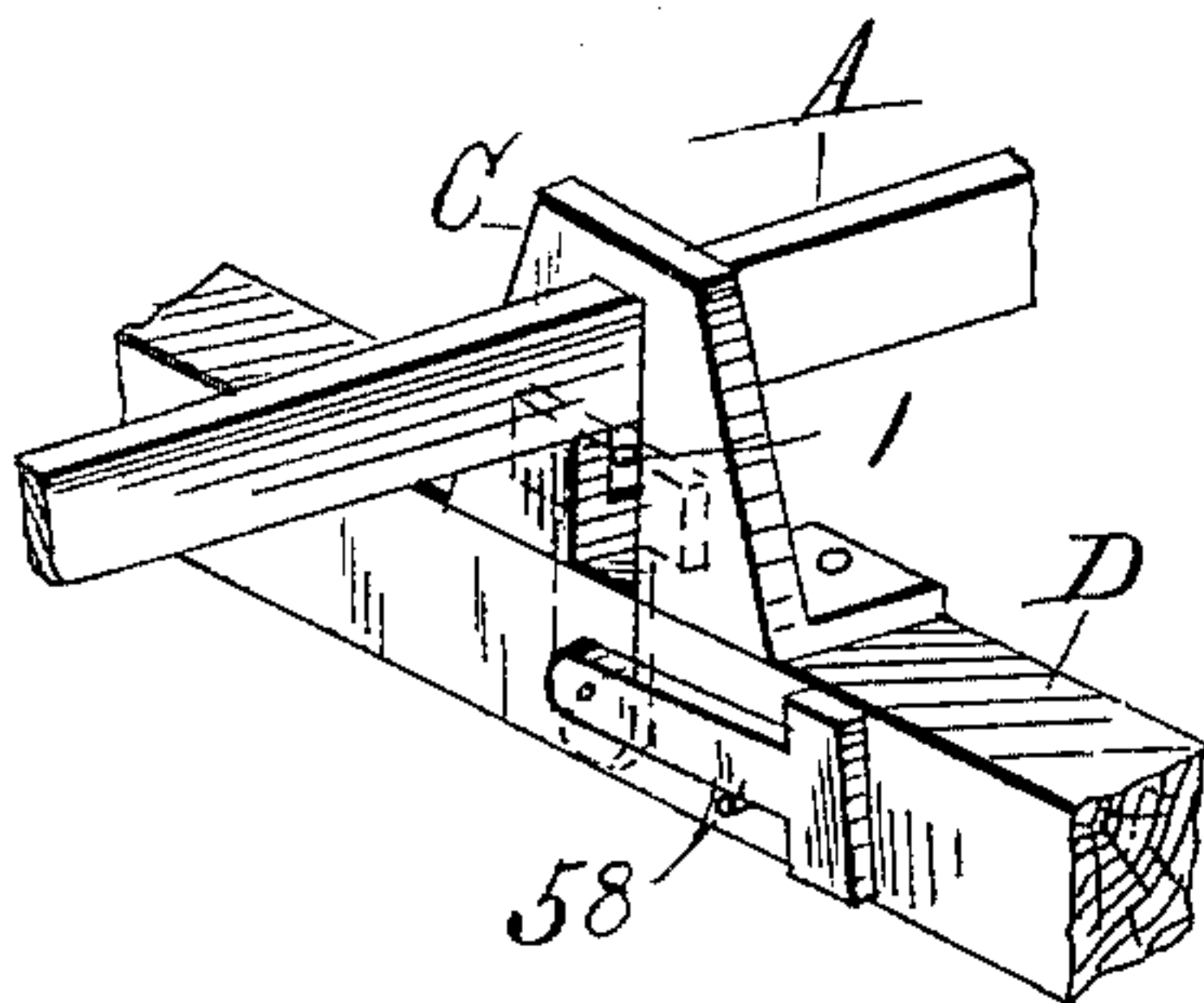
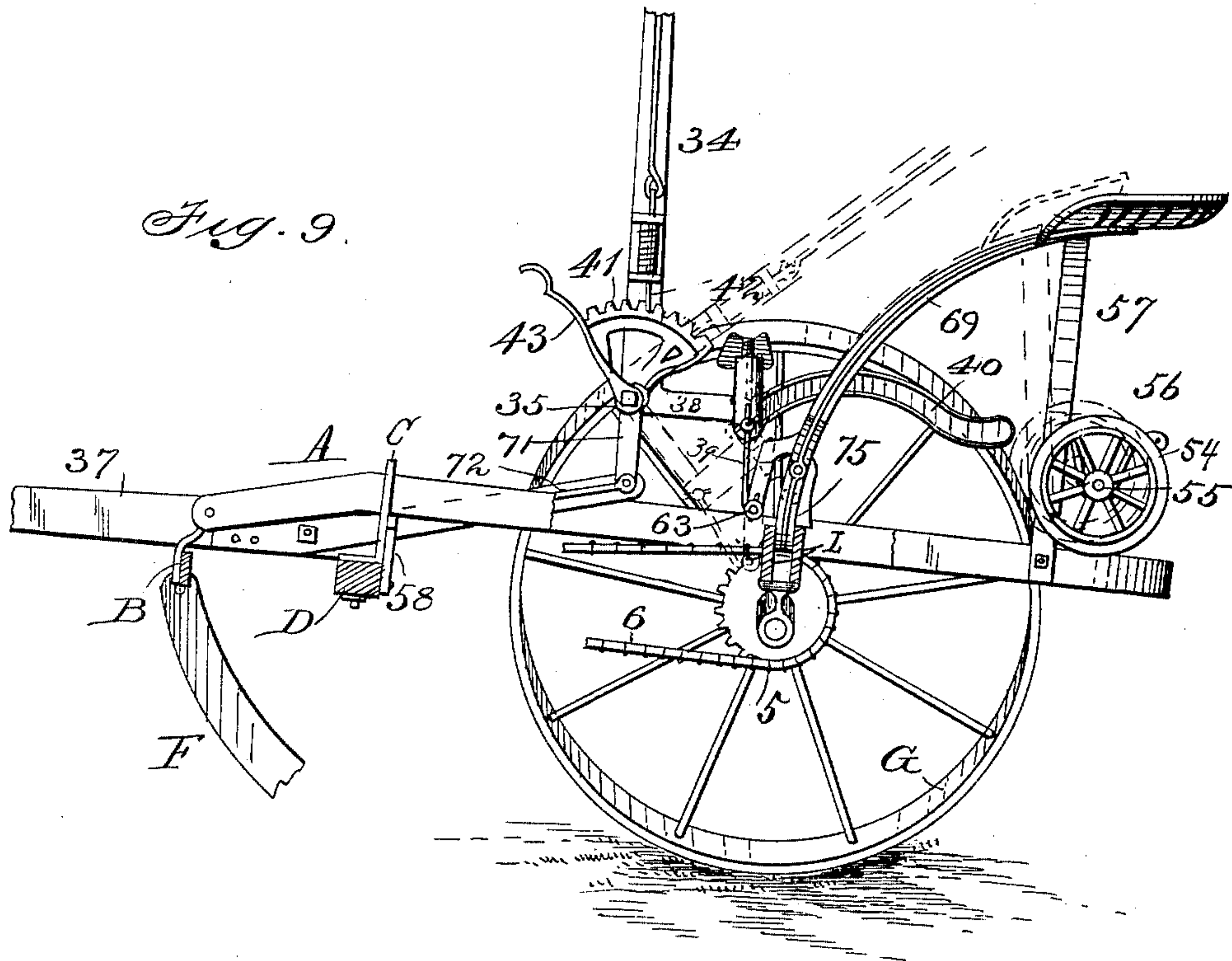
(No Model.)

3 Sheets—Sheet 3.

L. E. WATERMAN.
CORN PLANTER.

No. 595,026.

Patented Dec. 7, 1897.



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UNITED STATES PATENT OFFICE.

LEWIS E. WATERMAN, OF MOLINE, ILLINOIS, ASSIGNOR TO THE ROCK ISLAND PLOW COMPANY, OF ROCK ISLAND, ILLINOIS.

CORN-PLANTER.

SPECIFICATION forming part of Letters Patent No. 595,026, dated December 7, 1897.

Application filed September 5, 1896. Serial No. 604,951. (No model.)

To all whom it may concern:

Be it known that I, LEWIS E. WATERMAN, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Corn-Planters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it ap-
10 pertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specifica-
15 tion.

My invention has reference to improve-
ments in corn-planters, and comprises the
several novel and useful features hereinafter
set forth.

The object of my invention is to provide a
20 machine of compact form, great strength,
light in draft, of the fewest possible number
of parts, minimum weight, simple in construc-
tion, convenient to handle, and reliable and
accurate in the depositing and the covering of
25 the seed.

I attain the foregoing advantages in the con-
struction shown in the accompanying draw-
ings, in which—

Figure 1 is a plan view of a machine em-
30 bodying my invention, one of the seed-hop-
pers being turned forward for the purpose of
exhibiting the exterior base thereof. Fig. 2
is a vertical sectional view of the seeding
mechanism with the seedbox thrown forward
35 in position for changing the seed-plates. Fig.
3 is a similar view with the seedbox in opera-
tive position. Fig. 8 is a broken detail plan
of the check-wire reel. Fig. 9 is a broken side
elevation of the machine, and Figs. 4, 5, 6,
40 7, 10, 11, 12, 13, and 14 are detail views of
of different parts of the machine.

Similar letters and figures refer to similar
parts throughout the several views.

My invention consists of two frames suit-
ably hinged together, the front or runner
45 frame carrying the seed-hopper, seed-dis-
charging mechanism, and the seed-runners,
and the rear or wheel frame carrying the
driver, the covering-wheels, and part of the
50 mechanism for controlling the elevation and
depression of the runner-frame.

The wheel-frame is connected to the run-

ner-frame by two horizontal parallel bars A
A, hinged at their front ends in a vertical
plane to the front cross-bar B of the runner- 55
frame and passed through the plates C, pro-
vided with the vertical slots 1 and seated on
the transverse bar D of the runner-frame.
The bars A are attached to the axle E of the
wheel-frame and, projecting rearwardly there- 60
from, furnish also a support for the driver's
seat and the scraper-bar at the rear of said
axle. An additional central connection be-
tween said frames exists in the system of le-
vers hereinafter described operating from the 65
rear end of the tongue. Each furrow-opener
or runner F is followed closely by two cover-
ing-wheels G G, each of which has an inde-
pendent rotation, except that one pair, uti-
lized as driving-wheels when the machine is 70
used as a drill, are geared together. Each pair
of the wheels G has a wide interval between
them at the top and a narrower interval about
the width of the runner F at the bottom, so
that each pair of wheels stands obliquely to 75
the vertical, but divergent therefrom in op-
posite directions, for the purpose of press-
ing each side of the furrow-gash and crowd-
ing inwardly the earth thereon, but leaving a
loose strip unpressed directly over the line of 80
the seed for the ready passage of the young
plants.

The oblique divergence of the wheels G ne-
cessitates the bowing upward of the spindle
upon which the said wheels rotate trans- 85
versely of the machine and retaining the same
rigidly in that position, so that the wheels
may maintain their aforesaid relative posi-
tion. To accomplish this, the round spindle
H, bowed, as aforesaid, upward in a vertical 90
plane, is held at its inner end by the sleeve
J and transverse bolt K, which passes hori-
zontally through the spindle H and sleeve J.
The inner end of the sleeve J is held adjust-
ably between the parallel cross-bars L L, 95
which constitute the central portion of the
axle of the rear or wheel frame. The adjust-
ment of the sleeve J on the bars L L is ef-
fected by vertical bolts M, which are inserted
between the bars L L and suitably capped 100
over the sleeve J and the upper surface of the
bars L and across the lower surface of said
bars.

The driving-wheels G are journaled, respec-

tively, on the boxes 2, rotative on said spindle. On the inner ends of said boxes are formed the beveled gears 3, which intermesh and thus unite the traction force of both of
5 said wheels. The boxes 2 and the wheels G are held on the spindles by the nuts 4 at the outer ends and the sleeves J at the inner end. The sprocket-wheel 5 is secured to the inner end of the inner box 2 of one of the wheels,
10 and the sprocket-chain 6 extends therefrom to the sprocket-wheel 7 on the drilling-shaft 8.

The advantage of having the two driving-wheels at either side of the machine is based upon the fact that one of said wheels is thereby
15 always upon the ground in position to operate whatever may be the unevenness of the surface of the ground. It is generally conceded that the traction of two wheels is necessary to furnish the requisite power to drive the
20 seeding mechanism when drilling.

Referring to Fig. 2, N is the seed-hopper, provided with transverse openings at its front corners, by which it is pivoted at the front of
25 its base to the bracket O, seated rigidly on the bar D. Ears 10 10 are formed on the bracket O, and a transverse bolt 83, seated loosely in said ears, passes through the hopper N in the transverse openings in said hopper and furnishes the pivot for turning said
30 hopper forward, as shown in Figs. 1 and 2. A recess 11, (see Fig. 1), is formed on the rear end of bracket O and adapted to receive the bolt 12, seated on the rear side of the hopper N, which holds the latter in working position.
35 A hollow central downward projection N' from the bottom of the hopper N serves as the central pivotal seat of the rotating seed-plates 15.

The advantage of turning the seed-hopper N forward, as shown, consists in the fact that
40 thereby it is rendered feasible to change the seed-measuring plates without removing the seed from the hopper. This is accomplished by suitably seating a short bolt 13 centrally in the base of the hopper and permitting the
45 same to extend downwardly through the bottom of the hopper and through the seed measuring and discharging mechanism seated on said bolt below and outside of said bottom and seating a thumb-nut 14 thereon below
50 said mechanism, by the removal and replacing of which all of the seeding mechanism, being on the under side of the base of the hopper N, can be readily changed to vary the quantity of seed discharged or the mode of
55 planting, as may be desired. The circular seed-plate 15 is intermittently rotated in check-rowing by the lug 17 on pawl 18 engaging with one of the projections 16 on the plate and moving it forward one projection. The
60 pawl is pivotally seated upon driving-arm 61, secured to the rock-shaft P, which is actuated in any suitable manner by the check-rower fork 19. A lug 20 at the front end of the pawl 18 limits the intermittent progression of the
65 seed-plate by engaging the same at the limit of the backward drawing action of the pawl 18, and the retrogression of the plate is pre-

vented by the pawl 21, seated on the base of the hopper N and engaging by its gravity the projections 16 of the seed-plate.

When the machine is used to drill the seed as distinguished from hill-dropping, a gear-rim 22, carrying a seed-plate 23, is substituted for the seed-plate 15 and is driven by the beveled pinion 24, seated on the shaft 8, driven
75 from the driving-wheels G, as aforesaid. The two bevel-pinions 24 are seated at the same sides of the gear-rims 22, respectively. A rock-shaft 76 is journaled lengthwise of the machine on the bar D and provided at its
80 front end with a downward bend 77 and has at its extremity a fork 78, adapted to loosely bestride the annular recess 79, formed in collar 80, which is keyed on shaft 8. The rear end 81 of the shaft 76 is projected laterally
85 under one of the bars A.

When the front or runner frame is raised for turning or other purposes, the bar A presses downward on the part 81 and automatically rocks shaft 76, and thereby draws
90 shaft 8 endwise sufficiently to disengage pinions 24 from gear-rims 22. A coiled spring 82 on the central part of shaft 76, suitably stopped at its respective ends, bears against the bar D and part 81, respectively, and re-
95 turns shaft 8 and pinions 24 to their working position when the front frame is again lowered.

The substantially vertical seed-duct R, seated in the rear end of the seed-runner or
100 furrow-opener H, communicates at its upper end with the seed-opening 26 in the base of the seed-hopper and conveys the grain in the case of drilling directly to the furrow-gash made by the runner H.

In the case of hill-dropping the grain is arrested and discharged from the bottom of the seed-duct R as follows: The vertical arm 27 is pivoted about centrally on pivot 28, seated
110 in the rear extension of the seed-duct R. The lower end of the arm 27 extends a short distance below the seed-duct R and is provided at its lower end with a lateral shelf 29, projected across the prolongation of said duct. To the upper end of the arm 27 is pivoted a
115 short toggle 30, which when it is desired to use the machine as a dropper is manually thrown forward against the back of the duct R, as shown in Fig. 2, and holds the shelf 29 directly under said duct. A vertical oscillating lever 31 is also pivoted on pivot 28 and has a forked connection at its upper end to the bracket 59, seated on the rock-shaft P. The lower forwardly-projecting end 32 of the lever 31 is adapted to be oscillated between
125 the shelf 29 of arm 27 and the lower end of the duct R. That portion of the lever 31 which passes over the shelf 29, as aforesaid, is preferably closed at three sides, but open at the top and bottom, so that when said lower
130 end of lever 31 is thrown forward between the duct R and shelf 29 said lower open end 32 forms a prolongation of the duct R to the shelf 29, the open side of end 32 being closed

by the vertical portion of arm 27 next above the shelf 29. When at the proper time, through the oscillation of the rock-shaft P, the end 32 is thrown backward, it sweeps or 5 knocks the hill of corn theretofore deposited on shelf 29 to the rear and permits said hill to drop into the earth through the open end 32. The rearward sweep of said end 32 in knocking the corn rearward from shelf 29 10 counteracts the forward motion of the machine and prevents said motion from carrying the hill of corn beyond the line of the check or cross rows. The movement of end 32 is about the same as the speed of the planter. 15 A forward projection 33 is formed on 32, which when 32 is at the limit of its back stroke closes the lower end of the duct R and prevents any seed escaping therefrom until the end 32 again registers in its forward stroke 20 with the lower end of duct R and permits the corn to pass down to the shelf 29 in position for the next ejection therefrom, as aforesaid.

When it is desired to drill into the bottom of the duct R, pawl 18 is removed and the 25 gear-rim 22 and seed-plate 23 substituted for seed-plate 15, and when enough grain has been accumulated at the bottom of the duct R to form a hill it is knocked back by the lever 31, as before described.

30 When the machine is used as a drill throughout, the upper end of the arm 27 is thrown forward and the toggle 30 thrown over backward against the bracket 59 on rock-shaft P, as shown in Fig. 3, which holds the lower end 35 of arm 27 back of the vertical line of the duct R, and the lower end 32 of lever 31 is thrown forward, so as to form a prolongation of the duct R, which permits each grain as it is discharged into the duct R by the drilling mechanism to pass directly into the earth. The 40 machine therefore can be changed almost instantly to hill-dropping from the hopper, drilling from the hopper into the seed-duct, and check-dropping from the base of the latter, or pure drilling from the seed-hopper to 45 the earth.

Referring to the combined hand and foot lever shown in Figs. 7 and 9, the bell-crank hand-lever 34 is pivotally seated at its angle 50 35 on the quadrant 41, carried on the rear end of the tongue 37. The short horizontal arm 38 of lever 34 is extended to the rear and pivoted at its rear end to the post 39, the base of which is hinged longitudinally to the lower end 63 of seat-bow 69. The rearwardly-extending 55 foot-lever 40 is connected at its forward end to the rear end of arm 38 in such a manner as to become rigid with arm 38 in its downward movement, but capable of being thrown forward out of the way of the wire-reel when reeling up. By this means the hand and foot of the driver can be jointly or separately used to elevate or depress the front frame. The ability to operate lever 34 by 60 the foot alone is a great advantage when the hands of the driver are required to control his team. The usual quadrant 41 and spring-

pawl 42 may be used to lock the runner-frame in any desired position. The machine is often 70 used with the lever 34 disconnected from the quadrant, when said lever affords means for the driver to force the runner-frame into the ground with his foot when desired. When the foot-lever 40 is pressed downward, the top of post 39 moves forward and downward, passing 75 slightly beyond the line of the pivots 35 and 63, as shown in Fig. 9, thereby locking itself in such position.

The foot-lever 43 furnishes means for dropping the seed independent of the check-rower 80 through the following mechanism: The lever 43 is intermediately pivoted to the quadrant 41 on an independent pivot and has a projection 71 extended below said pivotal seat. To the lower end of 71 is pivoted adjustably 85 the rear end of pitman 72, the front end of which is attached to the crank-arm 73, rising from rock-shaft P. The coiled spring 60 connects the crank-arm 74, formed on the lower side of shaft P, to pitman 72 and re- 90 turns shaft P after each impulse to its normal position.

The check-wire reel 54 is seated on a shaft 55, which projects a short distance beyond its bearings when in position and is provided 95 with the friction-wheels 56, placed at each end of said shaft. In reeling or laying out the check-row wire the reel is supported on the seat-braces 57 in such position that the friction-wheels 56 may be engaged and actu- 100 ated by the inner one of each pair of wheels G. In order to secure the necessary amount of friction between the wheels 56 of the wire-reel and the driving-wheels G of the planter, there are pivoted on the bar D short stops or 105 latches 58 in position to be optionally thrown under the bars A in the line of the vertical slots 1 of the plate C, through which the bars A pass. This has the effect of rendering the two frames substantially rigid, which will pre- 110 vent the bar D, which is the rear end of the front frame, from rising when downward pressure through the tongue is exerted on the cross-bar B at the front of the front frame.

The lower end of the forwardly-extending 115 seat-bow 69 is bifurcated, the rear bifurcation being adapted to pass down between the transverse bars L L, constituting the axle of the carrying-wheel. The front end of said bifurcation is pivoted at its lower end 63 to 120 the lower end of the post 39. In the rear bifurcation is hung the reversible lock 75, adapted to be turned down upon the bars L L when the machine is in ordinary use and prevent the rear bifurcation of the bow 69 passing 125 down between said bars L L; but when it is desired to increase the friction between the wheels 56 of the reel-shaft and the carrying-wheels G of the planter the lock 75 is turned upward in said bifurcation of the bow 69 and 130 the latches 58 of the cross-bar D of the front frame are thrown up under the front bars A. Now when the lever 34 is drawn backward its short arm 38 pushes downward on post 39

and forces the seat-bow 69 downward, the rear bifurcation of bow 69 passing down between the bars L L. As the support 57 of the seat-bow 69 is pivotally secured at its lower
 5 end to the frame, the downward movement of the seat-bow draws the upper end of the seat-support forward, and with it the reel-support, and the reel-wheels 56 are thus drawn forward against the carrying-wheels of the machine with a pressure proportionate to the
 10 rearward movement of the lever 34.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

15 1. In a corn-planter, the combination of a rotating shaft 8, journaled on the front or runner frame thereof, provided with a beveled pinion 24 and adapted to engage and actuate seeding mechanism, the runner F provided
 20 with a seed-duct R, the hopper N seated on said frame and communicating with said seed-duct, the driving-wheels G journaled on the rear frame, and provided respectively with the beveled gears 3 adapted to intermesh, the sprocket-wheel 5 journaled on the hub of
 25 one of said wheels, the sprocket-wheel 7 journaled on the shaft 8 and the interconnecting sprocket-chain 6 substantially as shown and for the purpose described.

30 2. In a corn-planter, the driving-wheels G G journaled on a common spindle, and provided on the inner ends of their hubs with the beveled gear 3 respectively, adapted to intermesh and thus unite the traction of both of
 35 said wheels in the operation of said seeding mechanism, substantially as shown and for the purpose described.

40 3. In a corn-planter, the spindle H bowed upward centrally in a vertical plane transversely of the machine, cross-bars L, sleeve J held rigidly between said bars and extended over said spindle, and the bolt K, substantially as shown and for the purpose described.

45 4. In a corn-planter, a seed-hopper N provided with a central hollow post N' extending below the base thereof, a bolt 13 projecting downwardly through said post and a thumb-nut 14 seated on said bolt, and seed-plates having variant-sized openings adapted to be
 50 held in place on the base of the seed-hopper by said post, bolt and thumb-nut, and thereby be removable from said base exteriorly of said hopper, substantially as set forth.

55 5. In a seed-planter, a seed-hopper provided with discharging mechanism, of a seed-conduit leading therefrom, a movable shelf at the lower end of the conduit, and means for locking said shelf in or out of alinement with the end of the conduit, and a scraper for
 60 moving the seed from the shelf, substantially as set forth.

65 6. In a seed-planter, the combination, with a seed-hopper, provided with discharging mechanism, of a seed-conduit leading therefrom, a movable shelf at the end of the conduit, a lock for optionally securing said shelf

in or out of alinement with the end of the conduit, and a scraper between the end of the conduit and the shelf, said scraper being provided with a forward projection for closing the end of the conduit simultaneously
 70 with its movement across the shelf, substantially as set forth.

7. In a corn-planter, the combination of the seed-duct R, the lever 31 provided with an opening 32, and projection 33, means for oscillating said lever in the line of the machine, an arm 27 provided with a stop 29 adapted to be held in and out of the line of the seed-duct R, and a toggle 30 secured to the arm
 80 and adapted to engage with the duct, substantially as shown and for the purpose described.

8. In a corn-planter, consisting of two frames hinged together, the combination of a
 85 hand-lever 34 pivotally seated on the front or runner frame and provided with an arm 38 projected toward the rear or wheel frame, a post 39 hinged to the wheel-frame at one end and to the arm 38 at the other end, and the
 90 foot-lever 40 suitably locked against downward movement on the rear extremity of arm 38, whereby said foot and hand levers can be manually operated jointly or separately to control said front frame, substantially as
 95 shown and for the purpose described.

9. In a corn-planter consisting of two frames mutually hinged, the combination of a hand-lever 34 seated on the front or runner frame and pivotally connected by a movable
 100 joint to the rear or wheel frame, and a foot-lever 40 pivotally connected to said movable joint and projected rearwardly therefrom, whereby said front frame may be raised or depressed by the manual use of said levers
 105 jointly or separately, substantially as shown and for the purpose described.

10. In a corn-planter, the combination of a lever 34 pivoted intermediately on the front or runner frame and having downward
 110 projection 71, shaft P, crank-arms 73 and 74 extending oppositely from said shaft and rigidly seated thereon, pitman 72 connecting projection 71 and arm 73 and coiled spring 60 connecting arm 74 to the rear portion of
 115 said pitman, substantially as shown and for the purpose described.

11. In combination with a corn-planter, a foot drop-lever pivoted on said machine, the rock-shaft P suitably connected with the seed-
 120 ing mechanism of said planter, projecting arms 73 and 74 seated rigidly on said shaft and projected respectively upwardly and downwardly therefrom, a pitman connecting one of said arms with the working end of said
 125 lever and a counteracting spring, substantially as shown and for the purpose described.

12. In a corn-planter, the combination of two frames mutually hinged, a reel-frame journaled on the rear frame of said planter, a lever seated on the front frame thereof and
 130 means substantially as shown of drawing the

said reel-frame snugly against the driving-wheels of said planter to increase the friction thereon, for the purpose set forth.

13. In a corn-planter, the combination of the front frame supported by furrow-openers, and provided with front cross-bar B, and rear cross-bar D, plates C seated in pairs on said cross-bar D, and provided with vertical slots 1, a rear frame supported on the covering-wheels G, rear frame-axle E, longitudinal parallel bars A, A, hinged respectively at their forward ends in a vertical plane to the front cross-bar B of the front frame and projected through the slots 1 and attached to said axle L of the rear frame, latches 58 pivotally seated on the bar D in position to be turned up under the bars A respectively when the latter are at the upper end of the vertical slot 1 in plate C, seat-bow 69, reversible lock 75 pivotally seated in seat-bow 69, in position to be turned down on said axle L and thereby stop said bow, wire-reel 54 provided with friction-wheels 56 and lever 34 adapted to draw the top of the rear frame forward and force the wheels 56 against the inner wheels G, substantially as shown and for the purpose described.

14. In a corn-planter the rock-shaft 76 journaled lengthwise thereof, and provided at its front end with a crank-arm 77 having, at its extremity, fork 78, provided at its opposite end with the lateral projection 81, the shaft 8, pinions 24 seated thereon, collar 80 keyed on said shaft and provided with the annular recess 79 adapted to receive said fork 78, and the bar A adapted to press down upon the end 81 when the front frame of said planter is elevated and thereby withdraw the pinions 24 from engagement with the seeding mechanism substantially as shown and for the purpose described.

15. In a corn-planter consisting of two frames mutually hinged, a transverse shaft journaled on the front or runner frame and provided with beveled gear adapted to engage the seeding mechanism of the machine and provided with a collar having the external annular recess, and a rock-shaft journaled longitudinally on said runner-frame and provided at one end with a crank-arm and at its extremity with a fork adapted to engage said annular recess, said rock-shaft being provided at its opposite end with a lateral projection adapted to be engaged by a suitable part of the rear frame when the runner-frame is raised, whereby said transverse shaft is shifted laterally to disengage said beveled pinions and a suitable spring adapted to restore said shaft to its original position when the pressure of the rear frame is removed, substantially as shown and for the purpose described.

16. In a corn-planter, the combination of two frames, a hand-lever 34 seated on the rear end of the tongue of the machine having a rearwardly-extending arm 38, the tongue pivotally attached to the front bar B of the front

frame and extending rearwardly beyond said front frame, bars A, pivoted at their front ends to the bar B and extending to the rear beyond the axle of the rear frame and rigidly attached to said axle, vertical plates C seated on the rear bar D of said front frame and provided with vertical slots 1 through which said bars A pass, latches 58 seated respectively on the bar D in position to be thrown under the bars A and fill up the lower portion of said slots 1 respectively, and thereby render the connection of the bars A to the front frame a rigid one, the seat-bow 69 a driver's seat and the wire-reel frame mounted thereon, and provided with wheels 56 said bow being bifurcated at its lower end with its rear bifurcation sleeved between the bars L, L, and its front bifurcation pivoted to the post 39, a lock 75 pivotally connected with the rear bifurcation of the bow and adapted to be optionally turned down to engage the bars L or upwardly to permit said rear bifurcation of the seat-bow 69 to freely pass downwardly between the bars L, and the post 39 pivotally connected at its upper end to the rear end of the arm 38 and its lower end to the bifurcation 63 whereby the backward movement of the lever 34 throws the wheels 56 over on the covering-wheels G, substantially as shown and for the purpose described.

17. The combination of a front frame supported by the furrow openers or runners and having the front cross-bar B and the rear parallel cross-bar D, the rear frame, longitudinal bars A suitably fastened to the axle of the rear frame and projected forwardly through the vertical slots 1 on said bar D and hinged at their forward ends to the said bar B, the plates C seated on said bar D and provided with the vertical slots 1, a suitable tongue supported at its forward end by the necks of the team, hinged intermediately on the bar B and projected some distance in the rear of said front frame, latches 58 pivoted on bar D in position to be thrown up under bars A at said plates C, a hand-lever 34 having a rearward-projecting arm 38 and pivotally seated at its angle on the rear end of the tongue, a seat-bow 69 adapted to carry the wire-reel and to have free vertical movement between the bars L, and a post 39 pivotally connected at its upper end to the rear end of the arm 38 and its lower end to the lower end of the forward bifurcation of the lower portion of said seat-bow whereby in the backward movement of the lever 34, the interconnection of the front and rear frames is rendered rigid and a flexion obtained at the bars L, which causes said rear movement of the lever 34 to depress the seat-bow 69 and throw the reel-rollers against the carrying-wheels G with any desired force, substantially as shown and for the purpose described.

18. In a corn-planter, the combination, with the seed-boxes, of a seed-disk in each box, a shaft provided with means for operating the disks, and means for moving the shaft longi-

tudinally and throwing it into or out of engagement with the seed-operating mechanism, when the frame is raised or lowered, substantially as set forth.

- 5 19. In a corn-planter, the combination, with the seed-boxes, each of which is provided with a seed-disk, of a longitudinally-movable shaft provided with means for operating the disks, a rock-shaft connected with the first-
10 mentioned shaft, and means for automatic-

ally operating the rock-shaft when the frame of the machine is raised or lowered, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

LEWIS E. WATERMAN.

Witnesses:

H. H. HUBBARD,
WM. H. BAUMANN.